FEDERAL POWER ACT: HISTORICAL PERSPECTIVES

HEARING

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OF THE

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FEDERAL POWER ACT: HISTORICAL PERSPECTIVES

WEDNESDAY, SEPTEMBER 7, 2016

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:05 a.m., in Room 2322, Rayburn House Office Building, Hon. Pete Olson (vice chairman of the subcommittee) presiding.

Members present: Representatives Olson, Barton, Shimkus, Latta, Harper, Pompeo, Kinzinger, Griffith, Johnson, Ellmers, Flores, Mullin, Hudson, McNerney, Tonko, Engel, Green, Welch, Loebsack, and Pallone (ex officio).

Staff present: Will Batson, Legislative Clerk, Energy and Power; Tom Hassenboehler, Chief Counsel, Energy and Power; A.T. Johnson, Senior Policy Advisor; Ben Lieberman, Counsel, Energy and Power; David McCarthy, Chief Counsel, Environment and the Economy; Brandon Mooney, Professional Staff Member, Energy and Power; Annelise Rickert, Legislative Associate; Chris Sarley, Policy Coordinator, Environment and the Economy; Dan Schneider, Press Secretary; Andy Zach, Counsel, Environment and the Economy; Robert Ivanauskas, Detailee, Energy and Power; Jeff Carroll, Democratic Staff Director; Rick Kessler, Democratic Senior Advisor and Staff Director, Energy and Environment; John Marshall, Democratic Policy Coordinator; Alexander Ratner, Democratic Policy Analyst; Timothy Robinson, Democratic Chief Counsel; Tuley Wright, Democratic Energy and Environment Policy Advisor; and C.J. Young, Democratic Press Secretary.

OPENING STATEMENT OF HON. PETE OLSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. OLSON. The hearing will come to order. This hearing is called Historical Perspectives on the Federal Power Act. And that is just what it is: historical perspectives, so we can learn more going forward.

It is a little awkward day for me. I am not used to being in this seat. But I will do my best. As per normal, I will have an opening statement, Mr. McNerney will, Mr. Upton will, and Mr. Pallone will, if they come. And then 5-minute statements from the witnesses and questions from the Members.

OK. First, I want to say a word or two about our good friend Ed Whitfield. Ed knows these issues. He knows about the policy. And above all, he wants the best for his home State of Kentucky.

Chairman Whitfield was a great steward for this committee. He was a mentor, a teacher, and he will be missed around here. And of course he helped get this ball rolling on this new series of hearings on the Federal Power Act. This should be a great opportunity for this committee. We can bring a new and much-needed focus to today's power markets. We can see what works, what doesn't work, and find long-term solutions.

But before we take any next step, we need to know how these markets developed. Back in 1996, FERC issued Order 888. In general, that required open access for transmission lines of our Nation's utilities. And since that time, consumers of electricity have gained more competitive options beyond their local utility.

Today, at least for the wholesale markets, a large purchaser of electricity can not only purchase from the local utility, but that consumer can purchase power at wholesale from a neighboring utility or an independent power producer or any number of competitive suppliers. Texans, and those at half other States, can even pick their retail electric electricity provider. All these options to choose an electric supplier were designed to keep costs down for consumers everywhere by checking the prices charged by utilities.

Yet the markets by no means are perfect. Some people still object to subsidies and tax breaks granted to a few types of power sellers. Others complain that certain power plants generate too much pollution, even if their power helps pay lower bills for their users. The owners of power plants object that the markets don't always establish the right prices. They say prices can be artificially low at times of high demand. Not because prices should be low during high demand but because the organizations running the markets are too sensitive to political pressures.

We won't solve the serious problems facing our market this morning. We won't sort out the difference between the real properties and the empty allegations today either. Rather, this hearing will set the stage for our work on all of these topics in the future. To set this stage, we have gathered four witnesses today who have deep experience in the development of the markets. They were in the markets in senior policymaking positions when the key decisions were made on how these markets would roll out. Two were former counsel generals at FERC. One was a FERC commissioner. And one was a senior official with the Department of Energy. They have a valuable perspective to offer this committee. I look forward to today's hearing.

[The prepared statement of Mr. Olson follows:]

PREPARED STATEMENT OF HON. PETE OLSON

First, I want to say a word or two about my good friend Ed Whitfield. Ed knows these issues, he cares about the policy. Above all, he wants what is best for the people of Kentucky. Chairman Whitfield was a great steward for this committee, and he will be missed around here. And of course, he helped get the ball rolling on a new series of hearings on the Federal Power Act.

This could be a great opportunity for this committee. We can bring a new-and much- neededfocus to today's power markets. We can see what works, what doesn't, and find long-term solutions. But before we take any next step, we need to look at how these markets developed.

Back in 1996, FERC issued Order No. 888. In general, that order required open access over the transmission lines of our Nation's utilities (except in Texas, where we'd rather cut our interstate power lines than let FERC tell us what to do.). Since that time, consumers of electricity have gained more competitive options beyond the local utility.

Today, at least for the wholesale markets, a large purchaser of electricity can not only purchase from the local utility, but that customer can purchase power at wholesale from a neighboring utility, or an independent power producer, or any number of competitive suppliers.. Texans and those in a handful of other States can even pick their retail electricity provider. All these options to choose an electric supplier were designed to keep costs down for consumers everywhere by checking the prices charged by utilities.

Yet the markets are by no means perfect. Some people object to subsidies and tax breaks granted to a few favored types of power sellers. Others complain that certain power plants generate too much pollution, even if their power helps people pay lower electric bills.

The owners of power plants object that the markets don't always establish the right prices. They say that prices can be artificially low at times of high demand —- not because prices should be low during high demand but because the organizations running the markets are too sensitive to political pressure.

We won't solve the serious problems facing the markets overnight. We won't sort out the difference between the real problems and the empty allegations today either. Rather, this hearing will set the stage for our work on all of these topics. To set the stage, we've gathered four witnesses today who have deep experience in the development of the markets. They were in the markets, in senior policymaking positions, when the key decisions were made on how these markets would roll out. Two were former general counsels at FERC. One was a FERC Commissioner. And one was a senior official with the Department of Energy.

They have a valuable perspective to offer this committee. I look forward to today's hearing.

Mr. OLSON. And with that I yield to my friend from California, Mr. McNerney, for 5 minutes.

OPENING STATEMENT OF HON. JERRY MCNERNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. MCNERNEY. Well, I thank the chairman for holding this important hearing on the Historical Perspective of the Federal Power Act.

Mr. Chairman, it is clearly important to give Members the opportunity to review some of the thinking and reasoning that went into the laws that we do have today. Considering all the latest and ongoing developments that the grid now faces, it is worthwhile to hear from prominent stakeholders who can provide historical and current analysis from legislative, administrative, and judicial perspectives.

The Federal Power Commission, and later the Federal Energy Regulatory Commission, played a significant role in providing the regulatory structure that provided a balance between competition and public interest to help make the United States a leader in the generation of distributed public and affordable energy. This subcommittee played a significant role in enacting the policies that led to those agencies and to how the current grid is structured.

It is time to consider what changes, if any, are needed to meet the challenges of today. Mr. Chairman, new technology is bringing about fundamental changes in how and where we produce and deliver electricity to consumers. This provides policymakers with both challenges and opportunities for establishing a modernized electric grid. Exciting developments such as the emergence of renewables and cheap natural gas, distributed power system, demand-side management, improved energy storage, local and regional micro grids, electric vehicles, rooftop solar, and high speed switching technology must now be incorporated into a modern, efficient, and reliable grid.

Today's hearing will provide additional insight into what this modern grid should look like, how it should be regulated, and what entities should have what authorities. The fact of the matter is that with the current regulatory framework established back in 1935 with the Federal Power Act may no longer be suitable as the bright line distinguishing Federal and State regulations of the electric power grid.

The dividing line giving Federal regulators exclusive authority over the wholesale electric sales and interstate commerce and relegating retail sales to State regulators may in fact need to be updated to account for the current realities of today's grid operations. Just as the grid has changed, policymakers may need to consider a new regulatory structure that takes into account State-by-State decisionmaking processes for issues such as permit siting, demand response, blended fuel sources, and net metering policies.

Mr. Chairman, I believe today's hearing is a great first step into examining these issues and in gaining valuable insight into how we got here in the first place. I hope today's bipartisan hearing, one of the first of its kind, can be a model for future legislative hearings that may ultimately lead to a consensus approach to addressing essential challenges that the Congress must additionally address: What should a 21st century grid look like. Once against, Mr. Chairman, thank you for holding this timely hearing. And I yield the balance of my time.

Mr. OLSON. The gentlemen yields back. I have heard Chairman Upton will not be here on our side. Anybody want to take some time? His time? Going, going, gone.

We recognize the ranking member of the full committee, Mr. Pallone from New Jersey, for 5 minutes, opening statement.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. We are going to have an auction on the other side for the time.

I want to thank Mr. Olson as the chair of the committee now, and also thank Mr. Whitfield for his service to the subcommittee. Thank you for holding this important hearing to provide us with a historical perspective on how our system of electricity regulation has evolved over the past three decades.

The Energy and Power Subcommittee was the first subcommittee where I had the privilege to serve as ranking member opposite the late Chairman Dan Schaefer of Colorado. And I mention this today because today's hearing is about historical perspectives on the Federal Power Act and because there was a time, beginning with Chairman Phil Sharp, when this subcommittee focused an enormous amount of its time on electric utility restructuring.

In my 2 years as subcommittee ranking member, Chairman Schaefer held what seemed to be almost weekly hearings on electricity. And these hearings focused on the vision of a national mandate for retail competition as well as overseeing the Federal Energy Regulatory Commission or FERC's development of wholesale electric competition. And Chairman Barton then continued the subcommittee's focus on the electric utility sector and the development of regional wholesale markets that led to the Energy Policy Act of 2005. And that law included critical structural and regulatory changes that modernized and solidified the regional system that we have today.

Since that time, the subcommittee has turned its attention to other issues. However, new developments in the electricity sector and the regional markets, both promising and concerning, require us to return again to a serious assessment of the state of the electric sector and how it is regulated. For one thing, technology has dramatically transformed the possibilities for cost effective generating and efficiently delivering electric energy to homes, businesses, and manufacturing facilities. Today this can all be done from a variety of sources. For example, distributed generation, both fossil and renewable based, along with improving storage options, smart meters, micro grids, and other technologies, have altered the possibilities for effectively and economically ensuring reliability. And this has called into question even the most basic tenets of rate making.

At the same time, these technological and market changes have challenged the longstanding and financial models for utilities, and the economic viability of many large nuclear and coal-fired facilities. Beyond technological transformation, recent decisions by the Supreme Court have also called into question many of our past assumptions about electric sector regulation. One example of that is the court's decision earlier this yearly in the FERC versus Electric Power Supply Association case. This decision provided for markets where conservation and efficiency could be sold at wholesale alongside electric power. It has also upended traditional views of what constitutes sales of wholesale or retail and what is within the purview of the Federal Government and FERC as opposed to State governments and their public utility commissions. And these are enormous and complex matters that are important and should be examined by Congress and specifically this committee.

We need to begin exploring what types of changes if any need to be made to the Federal Power Act or whether some of the technological and legal developments I have discussed have made the act itself obsolete. And these are legitimate questions that we should be exploring. And while we represent different parties and philosophies as well as different States and regions, it is critical that our committee spend significant time examining these matters so that we arrive at decisions that are informed by fact.

Again I will say, Mr. Chairman, it is an important hearing because we have worked in a bipartisan fashion to bring together some of the best minds and public servants in the area of electricity. These are not just academic experts. They are people who played significant roles at key moments in the development of our modern electric regulatory regime. And again I want to commend Chairman Upton, you, Mr. Chairman Olson, and of course our Ranking Member Rush for not only holding this hearing but doing so in a thoughtful, collaborative, and serious manner that this subject deserves.

And I am grateful to our witnesses who include a former FERC Commissioner, former general counsels, and the former deputy Energy secretary, all of whom continue to be well-respected experts in this field, for helping begin this effort to understand and assess the evolution of the electric sector.

I yield back unless somebody wants my time on our side. I don't think so. Thank you.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you for holding this important hearing to provide us with a historical perspective on how our system of electricity regulation has evolved over the past three decades. I also want to welcome Mr. Olson as the chair and thank Mr. Whitfield for his service to the subcommittee.

The Energy and Power Subcommittee was the first subcommittee where I had the privilege to serve as ranking member, opposite the late chairman, Dan Schaefer of Colorado.

I mention this because today's hearing is about historical perspectives on the Federal Power Act, and because there was a time -beginning with Chairman Phil Sharp—when this subcommittee focused an enormous amount of its time on electric utility restructuring. In my 2 years as subcommittee ranking member, Chairman Schaefer held what seemed to be almost weekly hearings on electricity. These hearings focused on the vision of a national mandate for retail competition, as well as overseeing the Federal Energy Regulatory Commission's (FERC's) development of wholesale electric competition. Chairman Barton then continued the subcommittee's focus on the electric utility sector and the development of regional wholesale markets that led to the Energy Policy Act of 2005. That law included critical structural and regulatory changes that modernized and solidified the regional system we have today.

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These are enormous and complex matters that are important and should be examined by Congress and, specifically, this committee. We need to begin exploring what types of changes, if any, need to be made to the Federal Power Act, or whether some of the technological and legal developments I've discussed have made the Act itself obsolete. These are legitimate questions that we should be exploring. And while we represent different parties and philosophies, as well as different States and regions, it is critical that our committee spend significant time examining these matters so that we arrive at decisions that are informed by fact.

This is an important hearing. We have worked in a bipartisan fashion to bring together some of the best minds and public servants in the area of electricity. These are not just academic experts: they are people who played significant roles at key moments in the development of our modern electric regulatory regime.

I commend Chairman Upton, Chairman Olson, and Ranking Member Rush for not only holding this hearing, but doing so in such a thoughtful, collaborative and serious manner that this subject deserves. And, I am grateful to our witnesses, who include a former FERC Commissioner, former general counsels and a former Deputy Energy Secretary—all of whom continue to be well-respected experts in this field—for helping begin this effort to understand and assess the evolution of the electric sector.

Mr. OLSON. The gentleman yields back. And now it is the fun time.

Our four witnesses will speak for 5-minute testimony. We are starting from my left to my right. No politics involved. That is just how we do that. Our first witness will be Mr. Doug Smith. Doug was a former general counsel at FERC from 1997 to 2001, and now is a partner at Van Ness and Feldman LLP. Mr. Smith.

STATEMENTS OF DOUGLAS W. SMITH, PARTNER, VAN NESS FELDMAN, LLP, AND FORMER GENERAL COUNSEL, FEDERAL ENERGY REGULATORY COMMISSION; CLIFFORD M. (MIKE) NAEVE, PARTNER, SKADDEN, ARPS, SLATE, MEAGHER & FLOM, LLP, AND FORMER COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION; SUSAN TOMASKY, FORMER GENERAL COUNSEL, FEDERAL ENERGY REGULATORY COMMISSION, AND FORMER PRESIDENT, AEP TRANSMISSION OF AMERICAN ELECTRIC POWER CORPORATION; AND LINDA G. STUNTZ, PARTNER, STUNTZ, DAVIS & STAFFIER, P.C., AND FORMER DEPUTY SECRETARY, DEPARTMENT OF ENERGY

STATEMENT OF DOUGLAS W. SMITH

Mr. SMITH. Good morning. My name is Doug Smith. I am a partner at Van Ness Feldman. I did serve at both FERC and the Department of Energy before I was at Van Ness. But the views I am going to express today are my own, not those of my employers, past employers, clients, colleagues, or anybody else.

I have been asked today to provide a brief review of the legal history of the Federal Power Act, and to address particularly the relationship between Federal and State regulatory responsibilities as shaped by that act. When utility regulation got started in the early 1900s, it was States that comprehensively regulated electric utilities. There wasn't a Federal role. But in 1927 there was a Supreme Court decision called Attleboro in which the Supreme Court found that the U.S. Constitution put some utility activities beyond the reach of State regulation.

In particular, the court held that the dormant commerce clause prevented Rhode Island from regulating the rates charged by a Rhode Island utility to a utility in neighboring Massachusetts. This constitutional limitation was referred to as the Attleboro gap. In 1935 Congress moved to fill that gap by enacting what is now part two of the Federal Power Act.

Part two authorized the Federal Power Commission, the predecessor of the Federal Energy Regulatory Commission, to regulate two categories of transactions; wholesale sales of electricity in interstate commerce, and transmission of electricity in interstate commerce. And sections 205 and 206 of the Federal Power Act require that the rates, terms, and conditions for such wholesale sales and transmission must be just and reasonable, and must not be unduly discriminatory or preferential. And those standards enacted in

1935 remain in place today and are the foundation for much of what FERC has done in the intervening years.

Importantly, the Federal Power Act expressly provides that the Commission does not have jurisdiction over retail sales, generation, and local distribution, reserving those areas of activity to State regulation. In 1964, the Supreme Court, in a case called Colton, described this division of labor in the Federal Power Act as a bright line easily ascertained. As we might see from today's discussion, it may not be quite so bright or easily ascertained anymore.

In 1935, and for several decades thereafter, the electric utility business model was a vertically integrated utility principally focused on serving their own retail customers, not wholesale sales, not transmission for third parties. But that industry structure and the related regulatory structure started to change in the late 1970s, moving towards increased competition in generation.

In 1978, Congress enacted the Public Utility Regulatory Policies Act, a provision of which section 210 enabled non-utilities to own and operate certain cogeneration and renewable generation facilities, really providing a first step into competitive generation.

In the Energy Policy Act of 1992, Congress further opened the door to independent power production by authorizing FERC to require transmission owning utilities to provide wheeling service on case-by-case basis. And by reforming PUHCA, the Public Utility Holding Company Act, to provide for exempt wholesale generators, which allowed IPPs to avoid the most significant regulatory obstacles created by PUHCA.

And on that basis, the next steps were really taken by FERC as an administrative agency. Under sections 205 and 206 it authorized sellers to make wholesale sales at market-based rates if the seller could show that it did not have market power. It issued its landmark ruling on transmission open access, Order No. 888, and it moved further to promote formation of regional transmission organizations.

In the Energy Policy Act of 2005, Congress again amended the Federal Power Act, responding in part to perceived regulatory problems that were highlighted by the California electricity crisis by, for instance, imposing a statutory ban on market manipulation, raising the civil penalties under the act to $1 million per day, providing for mandatory reliability standards for the first time, and adopting policies that were intended to support transmission investment, some of which were successful and some less so.

But all these changes from PURPA on, that I have listed, were intended to promote competitive wholesale markets. The questions about the boundary between Federal and State regulatory jurisdiction continue to arise. Just this year the Supreme Court was presented with two such questions. In a case called FERC v. EPSA, the court held that regulation of the price that demand response receives in an organized wholesale energy market is a proper subject for FERC regulation, and was not an impermissible intrusion on State authority to regulate retail sales.

And in a case called Hughes, the court held that a Maryland State program to support development of in-State generation that was directly linked to FERC-regulated wholesale capacity markets was preempted. Further, technology and market changes such as expanded use of distributed generation, micro grids, energy storage, and plug in electric vehicles will continue to present questions about the proper roles for Federal and State regulatory authority.

I look forward to your questions.

[The prepared statement of Mr. Smith follows:]

Hearing Before the House Energy and Power Subcommittee on
Federal Power Act: Historical Perspectives
September 7, 2016
Testimony of
Douglas W. Smith
Partner, Van Ness Feldman, LLP

Good morning Chairman Whitfield, Ranking Member Rush, and members of the Subcommittee. My name is Doug Smith. I am a partner at the firm of Van Ness Feldman, LLP, where I am the coordinator of the firm's electricity practice. I previously served as General Counsel at the Federal Energy Regulatory Commission from 1997 through 2001, and as Deputy General Counsel for Energy Policy as the Department of Energy before that. In this testimony, I present my personal views, not those of Van Ness Feldman or any of its clients.

Thank you for the invitation to speak with you about the history of the Federal Power Act and the division of electric sector regulatory jurisdiction between Federal and State regulators. Section I provides an overview of this history of Federal regulation of the electricity sector. Section II reviews the split of regulatory jurisdiction over electric utilities between Federal and State regulators, and how that relationship has changed over time. Section III flags some recent questions on the Federal-State split of regulatory authority.[1]

[1] I note that this written testimony is informed by research I have done with colleagues under contract to Lawrence Berkeley National Laboratory on the Federal/State jurisdictional split. The views expressed herein are my own.
I would commend to the Subcommittee two excellent articles as resources on these issues: Robert R. Nordhaus, "The Hazy 'Bright Line': Defining Federal and State Regulation of Today's Electric Grid," 36 Energy L. J. 203 (2015); and Jeffrey S. Dennis, "Twenty-Five Years of Electricity Law, Policy and Regulation: A Look Back," 25 Natural Resources & Env't 33 (2010).

I. Key Developments in the History of Electric Sector Regulation Under the Federal Power Act

In the early 1900s, states began comprehensively regulating the activities of electric utilities, including generation, transmission, distribution and sale of electricity.

In 1927, the Supreme Court found that the Constitution imposes limits on state regulation of electric utilities when it decided *Public Utilities Commission of Rhode Island v. Attleboro Steam & Electric Co.*[2] In that case, the Public Utilities Commission of Rhode Island sought to regulate the terms of a wholesale sale by a utility in Rhode Island to a utility in neighboring Massachusetts. The Court held that the dormant Commerce Clause barred Rhode Island from regulating interstate wholesale electricity sales, stating "such regulation . . . can only be attained by the exercise of the power vested in Congress."[3] Because at that time no such Federal regulation of the electricity sector existed, the Court's decision left a regulatory void that would come to be known as the "*Attleboro* gap." Congress had the authority to regulate interstate electricity sales under the Commerce Clause, but unless it acted, no federal agency existed to regulate interstate wholesale electric sales.

In 1935, Congress enacted the Federal Power Act (FPA) to fill the *Attleboro* gap.[4] Under Section 201(b) of the FPA, the Federal Power Commission (FPC), the predecessor to the Federal Energy Regulatory Commission (FERC),[5] was granted the authority to regulate "the transmission of electric energy in interstate commerce and . . . the sale of electric energy at wholesale in

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[2] 273 U.S. 83 (1927) (*Attleboro*).
[3] *Attleboro*, 273 U.S. at 90.
[4] 16 U.S.C. §§ 791a-825r (2012 & Supp. II 2014).
[5] Created in 1920, the FPC was originally composed of three cabinet secretaries – the Secretary of the Interior, the Secretary of War and the Secretary of Agriculture – charged with administering the Federal Water Power Act. In 1930, Congress amended the law to establish the FPC as an independent, five-person, bipartisan commission. In the 1977 DOE Organization Act, the FERC was established as a successor to the FPC, as an independent agency within the Department of Energy. Department of Energy Organization Act, Pub. L. No. 95-91, §§ 204, 402; 91 Stat. 565, 571-72, 583-585 (1977) (codified as 42 U.S.C. §§ 7134, 7172 and 16 U.S.C. §§ 792, 824, 824a).

interstate commerce."[6] The core provisions of the Act provide for public utilities to file "rates and charges for any transmission or sale subject to the jurisdiction of the Commission, and the classifications, practices, and regulations affecting such rates and charges, together with all contracts which in any manner affect or relate to such rates, charges, classifications, and services."[7] Such rates must be just and reasonable, and may not be unduly discriminatory or preferential.[8] The Commission's cost-of-service ratemaking, and subsequent authorization of market-based rates and requirements for open access transmission, were all founded on these broadly stated statutory standards enacted in 1935.

Part II of the FPA enacted in 1935 contains a number of other provisions which address other aspects of electric utility regulation, including requirements for approval of certain stock or debt issuances by a public utility,[9] requirements for approval of certain mergers, acquisitions or other corporate transactions,[10] and emergency authorities.[11]

For a number of decades after enactment of Part II, the electric sector regulated under the FPA, was characterized by vertically integrated electric utilities operating as monopoly service providers within state-designated service territories. The Commission's principal function with respect to electricity regulation was applying cost-of-service rate principles in reviewing rates for wholesale sales, that is, sales by a public utility to another utility. Most of the activities of the public utilities related to providing bundled retail service to end-use customers, which was subject to state, not Federal, regulation.

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[6] 16 U.S.C. § 824(b)(1).
[7] 16 U.S.C. § 824d(c).
[8] 16 U.S.C. §§ 824d(a), (b), 824e(a). Section 205 governs the filing of rates and rate changes by the public utility. 16 U.S.C. § 824d. Section 206 governs changes to utility rates sought by the Commission or third parties. 16 U.S.C. § 824e. The substantive standards – just and reasonable, and no undue discrimination or preference – are the same under the two sections.
[9] 16 U.S.C. § 824c.
[10] 16 U.S.C. § 824b.
[11] 16 U.S.C. § 824a (as amended by Pub. L. No. 114-94, § 61002(a) (2015)).

The industry and the regulatory structure both began to change in the late 1970s, when Congress enacted the Public Utility Regulatory Policies Act (PURPA). PURPA was part of an energy legislative package that also included the Natural Gas Policy Act and the Fuel Use Act, and was driven by concerns about oil and natural gas shortages. PURPA included provisions that enabled non-utilities to own and operate certain cogeneration and renewable generation facilities, by requiring utilities to purchase the output of such plants.[12] This led to the first substantial influx of non-utility generators.

The Energy Policy Act of 1992 further opened the door to independent power producers by amending the FPA to authorize FERC to order transmission-owning utilities to provide wheeling services to other participants in the wholesale market,[13] and by reforming the Public Utility Holding Company Act to remove regulatory obstacles to the development and ownership of generators by independent power producers.[14] These changes were intended to support more competition in wholesale markets.

The next big electric regulatory reforms were undertaken by FERC. In the late 1980s, FERC began authorizing wholesale sellers to make sales at market-based rates, as opposed to the traditional cost-of-service rates, if the seller could demonstrate that it did not have market power.[15] In 1996, FERC issued Order No. 888, a rule that required all public utility transmission owners to unbundle transmission service from wholesale sales, and to provide transmission service to any party requesting it under the terms of an Open Access Transmission Tariff.[16] The

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[12] 16 U.S.C. § 824a-3.
[13] 16 U.S.C. §§ 824j, 824k.
[14] Energy Policy Act of 1992, Pub. L. No. 102-486 § 711, 106 Stat. 2776, 2905 (1992).
[15] *See, e.g.*, *Heartland Energy Services, Inc.*, 68 FERC ¶ 61,223 (1994) (reviewing early FERC decisions granting requests for market-based rate authority).
[16] *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Servs. by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, 61 Fed. Reg. 21,540 (May 10, 1996), FERC Stats. & Regs. ¶ 31,036 (1996), *order on reh'g*, Order No. 888-A, 62 Fed. Reg. 12,274 (Mar. 14, 1997), FERC Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, 81 FERC ¶ 61,248 (1997), *order on*

legal foundation for this rule was the FPA Section 206 authority to remedy undue discrimination – FERC found that open access transmission service was necessary prevent transmission-owning utilities from favoring their own wholesale sales relative to third-party sales in their provision of transmission service. In 1999, FERC issued Order No. 2000 which sought to drive the development of regional transmission organizations (RTOs) to provide for regional operation of the transmission grid.[17] All of these changes – authorizing market-based rates, providing for transmission open access, and encouraging the regional operation of the transmission grid – supported the development of more competitive wholesale power markets.[18]

In parallel with the reforms moving toward wholesale electricity market competition described above, a number of states were introducing competition into the provision of retail electric service in the late 1990s. California was a leader, and a number of states, particularly states with relatively high retail rates, pursued a similar course. As part of this movement, a number of states also directed the utilities they oversaw to restructure – typically by divesting most or all of their generation assets and relying instead on purchases from the competitive wholesale market for electricity supply to serve retail load. The movement among states toward retail competition largely came to a halt in the wake of the California electricity crisis in 2000-2001.

Congress made further amendments to the FPA in the Energy Policy Act of 2005. A number of changes were made in direct response to perceived gaps in FERC's authority to

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reh'g, 82 FERC ¶ 61,046 (1998), *aff'd in relevant part sub nom. Transmission Access Policy Study Grp. v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC*, 535 U.S. 1 (2002).

[17] *Regional Transmission Organizations*, Order No. 2000, 65 Fed. Reg. 809 (Jan. 6, 2000), FERC Stats. & Regs. ¶ 31,089 (1999), *order on reh'g*, Order No. 2000-A, 65 Fed. Reg. 12,088 (Mar. 8, 2000), FERC Stats. & Regs. ¶ 31,092 (2000), *aff'd sub nom. Pub. Util. Dist. No. 1 of Snohomish County, Washington v. FERC*, 272 F.3d 607, 348 U.S. App. D.C. 205 (D.C. Cir. 2001).

[18] The movement toward allowing market-based rates for wholesale sales, requiring open access transmission, and unbundling of transmission and energy sales had strong parallels to Congressional and FERC reforms in the natural gas sector in the 1980s and 1990s.

regulate new competitive markets. For instance, an express prohibition on market manipulation was added to the Act,[19] and FERC's civil penalty authority was increased from $5000 to $1,000,000 per violation.[20] Congress also authorized mandatory reliability regulation, and took several steps intended to promote transmission infrastructure investment.

Although there have been a number of amendments to Part II of the FPA since its enactment in 1935, the core authorities concerning regulation of public utilities providing transmission service in interstate commerce and making wholesale sales in interstate commerce, applying the just and reasonable standard and barring undue discrimination or preference, remain unchanged. It is these authorities, contained in sections 205 and 206 of the Act, which have been the basis for the Commission's landmark rulemakings on issues such as transmission open access, RTO development, and regional transmission planning and cost allocation. Likewise, FERC was applied these authorities as it transitioned from universal cost-of-service regulation to a regulatory construct emphasizing market-based rates and competitive market principles, with a related focus on policing of market power and market manipulation, for the great bulk of wholesale power sales.

II. Division of Electric Industry Regulatory Jurisdiction Between Federal and State Governments

A. Federal Power Act Specifications of Federal Jurisdiction

As noted above, regulation of electric utilities began at the State and local level. However, in 1927, the Supreme Court significantly constrained state regulation when it decided in *Attleboro* that dormant Commerce Clause principles barred Rhode Island from regulating

[19] 16 U.S.C. § 824v.
[20] 16 U.S.C. § 825o.

interstate wholesale electricity sales, leaving a regulatory void that would come to be known as the "*Attleboro* gap."[21]

In 1935, Congress enacted the Federal Power Act to fill the *Attleboro* gap. Under Section 201(b)(1) of the FPA, the FPC was granted the authority to regulate "the transmission of electric energy in interstate commerce and . . . the sale of electric energy at wholesale in interstate commerce."[22] That same section, however, specifically excluded from FERC's jurisdiction: (1) *retail sales* of electricity; (2) facilities used for the *generation* of electricity; and (3) facilities used for *local distribution* of electricity.[23] Section 201 also states that "Federal regulation . . . extend[s] only to those matters which are not subject to regulation by the states."[24]

In addition to the express reservations of jurisdiction over generation, local distribution and retail sales to the States, Section 201 contains two other important limitations on FPA jurisdiction. First, it limits Federal regulatory authority to transmission and wholesale sales *in interstate commerce*. Applying a commingling test, the courts have read "in interstate commerce" broadly. Thus, as a practical matter, this "in interstate commerce" requirement excludes only activity in Alaska, Hawaii, and the ERCOT portion of the Texas grid (because ERCOT is a separate, single-state interconnection).

Second, the core requirements of the FPA apply only to public utilities. Public utilities are entities that own or operate jurisdictional transmission facilities or have jurisdictional "paper facilities" such as wholesale contracts or tariffs, but expressly excludes government-owned utilities and certain cooperatively owned utilities.[25] So investor-owned utilities and investor-owned independent power producers and marketers are public utilities, but Federal utilities (*e.g.*,

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[21] *Attleboro*, 273 U.S. at 90.
[22] 16 U.S.C. § 824(b)(1).
[23] 16 U.S.C. § 824(b)(1).
[24] 16 U.S.C. § 824(a).
[25] 16 U.S.C. § 824(f).

TVA and BPA), municipal utilities, public utility districts, and most electric cooperatives are not public utilities subject to full FPA rate and corporate transaction regulation.

B. Court Precedent Addressing FPA § 201 Jurisdiction Questions

The courts have wrestled with defining and applying the jurisdictional line drawn in Section 201 of the FPA from the beginning. It is worth noting that, while the *Attleboro* case was decided on dormant Commerce Clause grounds, nearly all the litigation concerning the bounds on Federal and State jurisdiction since the enactment of the FPA has been fought over how to properly interpret the FPA's authorities and limitations, and the resulting preemption of state action under the Supremacy Clause.[26]

The Commission's interpretation of its jurisdiction under the FPA has generally been granted deference by reviewing courts, whether before or after the *Chevron* decision announced now-familiar principles for reviewing agency interpretations of statutes they administer.[27] So, for instance, the courts have sustained the Commission's interpretations that it has authority over wholesale sales between two parties in a single state if the state is part of a larger multistate transmission interconnection (*Colton*), and that it has jurisdiction over unbundled retail transmission (*New York v. FERC*).

One question under FPA Section 201 was whether the transmission of electricity between two points in a state, or a wholesale sale between two parties in a single state, was in interstate commerce and thus subject to FPA jurisdiction.[28] In 1964, the Supreme Court addressed this

[26] *Cf. North Dakota v. Heydinger*, 825 F.3d 912 (8th Cir. 2016) (a decision invalidating a Minnesota law limiting sales of electricity from out-of-state coal-fired generators to utilities in Minnesota, with one judge finding the law invalid under the dormant Commerce Clause, a second finding it preempted by the FPA, and the third finding it preempted by the Clean Air Act).
[27] *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984).
[28] In *Connecticut Light & Power Co. v. FPC*, the Supreme Court noted that the interconnected nature of the industry is "such that if any part of a supply of electric energy comes from outside of a state it is, or may be present in every connected distribution facility." 324 U.S. 515, 529 (1945). As a result, the Commerce Clause authority for Congress to regulate interstate commerce could in theory extend Federal regulation to "a toaster on the breakfast

question in its "*Colton*" decision: *FPC v. Southern California Edison Co.*[29] *Colton* involved a wholesale sale of out-of-state power by a public utility, Southern California Edison Company, to a municipal utility in the same state, the City of Colton. The United States Court of Appeals for the Ninth Circuit found that the wholesale sale was subject to *state* regulation, relying on the language of FPA Section 201(a) – that the FPC's jurisdiction "extend[s] only to those matters which are not subject to regulation by the states" – coupled with its finding that state regulation of the Edison-Colton sale was permissible under the Commerce Clause.[30] Under the Ninth Circuit's interpretation of FPA Section 201(a), "the FPC could not assert its jurisdiction over a sale which the Commerce Clause allowed a State to regulate."[31]

The Supreme Court, however, disagreed with the Ninth Circuit's reasoning and reversed.[32] The Court clarified that "Section 201(b) embodies a clear grant of power."[33] By contrast, the Court found that "§ 201(a) was merely a 'policy declaration . . . of great generality. It cannot nullify a clear and specific grant of jurisdiction, even if the particular grant seems inconsistent with the broadly expressed purpose.'"[34] Thus, the Court concluded that "Congress meant to draw a *bright line* easily ascertained, between state and federal jurisdiction . . . making FPC jurisdiction plenary and extending it to all wholesale sales in interstate commerce except those which Congress has made explicitly subject to regulation by the States."[35]

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table." 324 U.S. at 529. The Court explained that the limiting language of Section 201 of the FPA prevents this result. 324 U.S. at 529-31.

[29] 376 U.S. 205, *reh'g denied*, 377 U.S. 913 (1964) (*Colton*).

[30] *Colton*, 376 U.S. at 209-10.

[31] *Colton*, 376 U.S. at 210.

[32] *Colton*, 376 U.S. at 216.

[33] *Colton*, 376 U.S. at 215.

[34] *Colton*, 376 U.S. at 215 (citing *Conn. Light & Power Co. v. FPC*, 324 U.S. at 527).

[35] *Colton*, 376 U.S. at 215-16 (emphasis added). Later cases developed the "commingling" test used today, under which particular facilities or utilities fall under FPA jurisdiction if any portion of the electricity involved is transmitted to or from another state. *See FPC v. Fla. Power & Light Co.*, 404 U.S. 453, *reh'g denied*, 405 U.S. 948 (1972).

The extent of Federal jurisdiction over transmission of electric energy was later considered in *New York v. FERC*,[36] in which the Court upheld FERC's landmark Order No. 888. In particular, the Court upheld FERC's authority to apply Order No. 888's requirements to unbundled retail transmission of electricity[37] against a challenge from New York, which asserted that such transmission supports a retail transaction and is thus subject to State retail regulatory authority.[38] The Court concluded that such transmissions "are indeed transmissions of 'electric energy in interstate commerce,' because of the nature of the national grid," and that "[t]here is no language in the statute limiting FERC's *transmission* jurisdiction to the wholesale market, although the statute does limit FERC's *sale* jurisdiction to that at wholesale."[39]

In Order No. 888, FERC specifically declined to assert authority over the transmission portion of *bundled* retail transactions in order to avoid potentially disruptive shifts in jurisdiction. The Supreme Court concluded that this was a "statutorily permissible policy choice," without deciding the issue of whether FERC could have asserted such authority.[40]

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[36] 535 U.S. 1 (2002).

[37] Unbundled retail transmissions are those made by utilities that have either voluntarily, or at the direction of their State regulator, separated the transmission function from the retail sales function, offered their customers retail access, and transmitted power sold by others to retail customers.

[38] *New York v. FERC*, 535 U.S. at 16.

[39] *New York v. FERC*, 535 U.S. at 17.

[40] *New York v. FERC*, 535 U.S. at 27-28 ("[E]ven if we assume… that… the FPA gives FERC the authority to regulate the transmission component of a bundled retail sale, we nevertheless conclude that the agency had discretion to decline to assert such jurisdiction in this proceeding in part because of the complicated nature of the jurisdictional issues."). The Court agreed with FERC that the prospect of asserting jurisdiction over all retail transmissions would have "implications for the States' regulation of retail sales – a state regulatory power recognized by the same statutory provision that authorizes FERC's transmission jurisdiction." *New York v. FERC*, 535 U.S. at 28. The partial dissent by Justice Thomas, joined by Justices Scalia and Kennedy, argued that there was no question as to FERC's statutory authority to regulate the transmission portion of bundled retail service: "Because the statute unambiguously grants FERC jurisdiction over all interstate transmission and § 824e mandates that FERC remedy undue discrimination with respect to all transmission within its jurisdiction, at a minimum the statute required FERC to consider whether there was discrimination in the marketplace warranting application of either the OATT or some other remedy." *New York v. FERC*, 535 U.S. at 42 (J. Thomas, concurring in part and dissenting in part).

III. Current Issues at the Interface of Federal and State Jurisdiction

Part II of the FPA uses factors such as customer type (wholesale v. retail), facility type (generation v. transmission v. distribution), geography (interstate commerce v. intrastate commerce), and utility type (public utility v. public power) to divide exclusive regulatory responsibilities between Federal and State regulators. However, applying what *Colton* characterized, in 1964, as this "bright line easily ascertained" between Federal and State regulatory jurisdiction has become more complex with recent technology and market changes in the power sector. Discussed below are three examples of current issues raising questions about the reach of Federal and State regulation. Other ongoing developments, including electricity storage, electric vehicles and microgrids, may raise similar jurisdictional questions.

A. Demand Response Participating in Wholesale Markets

Demand response refers generally to the ability of customers to reduce their electricity consumption, based either on an upfront commitment to do so when called upon by the system operator or in response to price signals. Since the early 2000s, RTOs/ISOs have allowed retail end-users, or aggregators of end users, to submit offers "to decrease electricity consumption by a set amount at a set time for a set price"[41] into wholesale energy and capacity markets.[42] As the Supreme Court has noted, "[t]he wholesale market operators treat those [demand response] offers just like bids from generators to increase supply."[43] In the Energy Policy Act of 2005, Congress established policy in favor of reducing barriers to participation of demand response in wholesale markets.[44]

[41] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760, 770 (2016).
[42] *See, e.g.*, *PJM Interconnection, L.L.C.*, 95 FERC ¶ 61,306 (2001); *Cal. Indep. Sys. Operator Corp.*, 91 FERC ¶ 61,256 (2000).
[43] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. at 770.
[44] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1252(f), 119 Stat. 594, 966 (2005) ("It is the policy of the United States that . . . unnecessary barriers to demand response participation in energy, capacity, and ancillary service markets shall be eliminated.").

In 2011, FERC issued Order No. 745, which required that, if established prerequisites and conditions are met, a "demand response resource must be compensated for the service it provides to the energy market at the market price for energy."[45] Opponents of Order No. 745 argued, in part, that FERC lacked authority to regulate the price paid to demand response resources because demand response involves retail consumption and retail sales, which are matters reserved to the authority of the States. FERC rejected these arguments.

On judicial review, the United States Court of Appeals for the District of Columbia Circuit vacated Order No. 745, agreeing with opponents that FERC lacked jurisdiction to regulate the participation of demand response resources in the wholesale market. Specifically, while acknowledging that demand response compensation is a practice that "affects the wholesale market" under Sections 205 and 206, the court found that FERC's "jurisdiction to regulate practices 'affecting rates' does not erase the specific limit[]" imposed by the FPA on FERC regulation of retail rates.[46] The court held that Order No. 745 exceeded this limit because, in luring retail customers into the wholesale market, and causing them to decrease "levels of retail electricity consumption," the rule engages in "direct regulation of the retail market."[47]

The Supreme Court reversed the D.C. Circuit's jurisdictional determination and upheld Order No. 745.[48] First, the Court found that FERC's assertion of authority fit within its authority under Section 206 of the FPA to remedy "any rule, regulation, *practice*, or contract affecting" a rate or charge subject to its jurisdiction. In reaching this conclusion, the Court acknowledged that FERC's authority to address "practices" affecting wholesale rates is not boundless, finding

[45] *Demand Response Compensation in Organized Wholesale Energy Markets*, Order No. 745, 76 Fed. Reg. 16,658 (Mar. 4, 2011), FERC Stats. & Regs. ¶ 31,322, at PP 2, 48, *order on reh'g & clarification*, Order No. 745-A, 137 FERC ¶ 61,215 (2011), *reh'g denied*, Order No. 745-B, 138 FERC ¶ 61,148 (2012), *vacated sub nom. Elec. Power Supply Ass'n v. FERC*, 753 F.3d 216 (D.C. Cir. 2014), *rev'd & remanded sub nom. FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760 (2016).
[46] *Elec. Power Supply Ass'n v. FERC*, 753 F.3d at 222.
[47] *Elec. Power Supply Ass'n v. FERC*, 753 F.3d at 223-24.
[48] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760.

that such practices must *directly* affect jurisdictional rates.[49] Applying that "common-sense" limit, the Court concluded that "the practices at issue in the Rule – market operators' payments for demand response commitments – *directly* affect *wholesale* rates."[50]

Secondly, the Supreme Court found that Order No. 745 does not directly regulate retail electricity sales, contrary to the holding of the D.C. Circuit. While the Court conceded that any regulation of wholesale electricity sales will naturally affect retail rates in some way, it made clear that such affect "is of no legal consequence."[51] The Court found: "When FERC regulates what takes place on the wholesale market, as part of carrying out its charge to improve how that market runs, then no matter the effect on retail rates, § 824(b) imposes no bar. And in setting rules for demand response, that is all FERC has done."[52] The Court further found that FERC's "notable solicitude toward the States" – specifically its decision to continue to allow States to "opt out" and prohibit their retail customers from participating in the wholesale market – "removes any conceivable doubt as to [Order No. 745's] compliance with [the FPA's] allocation of federal and state authority."[53]

B. State Generation Programs and Capacity Markets

Several RTOs/ISOs[54] operate mandatory centralized capacity auction markets through which retail sellers of electricity must acquire capacity (*i.e.*, the availability to produce energy

[49] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. at 764 (citing *Cal. Indep. Sys. Operator Corp. v. FERC*, 372 F.3d 395, 403 (D.C. Cir. 2004)).
[50] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. at 773 (emphasis added). In considering whether FERC's action in Order No. 745 amounted to an impermissible direct regulation of retail rates, the Court also looked to the "'target at which [it] . . . aims,'" and concluded that FERC's rationale for the order was "all about, and only about, improving the wholesale market." *FERC v. Elec. Power Supply Ass'n*,, 136 S. Ct. at 776-77 (quoting *ONEOK, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591, 1599 (2015)).
[51] *FERC v. Elec. Power Supply Ass'n*,, 136 S. Ct. at 764, 776.
[52] *FERC v. Elec. Power Supply Ass'n*,, 136 S. Ct. at 776.
[53] *FERC v. Elec. Power Supply Ass'n*,, 136 S. Ct. at 779-80.
[54] Specifically, PJM Interconnection, L.L.C., (PJM), the New York Independent System Operator, and ISO New England.

when called upon) sufficient to cover their projected peak demand.[55] Maryland, concerned that the PJM capacity auction "was failing to encourage development of sufficient new in-state generation,"[56] adopted a program to support development of generation capacity to be built within the state. The state program identified a developer to build new gas-fired generation at a specified location, required the generator to bid into the PJM capacity market, and required load-serving entities in the state to execute "contracts for differences" with the developer to pay, or be paid, the difference between the price the developer received in the capacity market and the fixed price established in the contract.

The Maryland program faced legal challenges from existing generators, arguing that the state program, by setting the price that generators would receive for selling capacity, conflicted with Federal law and FERC's capacity market policies and was thus preempted under the Supremacy Clause. In *Hughes*, the Supreme Court unanimously held that Maryland's program impermissibly conflicted with and was preempted by Federal law.[57] The Court found that the program "sets an interstate wholesale rate, contravening the FPA's division of authority between state and federal regulators."[58] By guaranteeing to the developer a rate for capacity different from the capacity rate resulting from PJM's capacity auction, the Court found that Maryland's program adjusts an interstate wholesale rate, and thus, impermissibly "invades FERC's regulatory turf."[59]

The Court emphasized that its holding was limited, explaining that states "may regulate within the domain Congress assigned to them [under the FPA] even when their laws incidentally

[55] *Hughes v. Talen Energy Mktg.*, 136 S. Ct. 1288, 1293 (2016) (Hughes).
[56] *Hughes*, 136 S. Ct. at 1294.
[57] *Hughes*, 136 S. Ct. 1288. A similar New Jersey program was also found preempted and invalidated, on substantially similar grounds, by the United States Court of Appeals for the Third Circuit in *PPL EnergyPlus v. Solomon*, 766 F.3d 241, 246 (3rd Cir. 2014), *cert. denied sub nom., CPV Power Holdings, LP v. Talen Energy Marketing, LLC*, 136 S. Ct. 1728 (2016).
[58] *Hughes*, 136 S. Ct. at 1297.
[59] *Hughes*, 136 S. Ct. at 1297.

affect areas within FERC's domain."[60] But states "may not seek to achieve ends, however legitimate, through regulatory means that intrude on FERC's authority over interstate wholesale rates."[61] In this regard, the "fatal defect that renders Maryland's program unacceptable," the Court explained, was the fact that it "condition[ed] payment of funds on capacity clearing the auction."[62] Nothing in the opinion, the Court emphasized, "should be read to foreclose" states from "encouraging production of new or clean generation through measures 'untethered to a generator's wholesale market participation.'"[63] Thus, the Court noted that it was not addressing "the permissibility of various other measures States may employ to encourage development of new or clean generation, including tax incentives, land grants, direct subsidies, construction of state-owned generation facilities, or re-regulation of the energy sector."[64]

As states consider different policies, such as policies intended to keep existing nuclear plants in operation, the bounds of what states can and cannot do without running into FPA preemption may have to be further litigated to obtain clear answers.

C. Net Metering for Distributed Renewable Generation

Net metering of distributed generation presents potentially thorny questions of state and federal regulatory jurisdiction. A distributed generator participating in a net metering program provides excess electricity to a distribution utility that will resell the power to another consumer in exchange for a bill credit at the retail electric rate – that is, the distributed generator arguably makes wholesale sales (at least for periods when on-site generation exceeds on-site load). Such sales could, in theory, subject on-site generators to Federal regulatory jurisdiction over wholesale sales.

[60] *Hughes*, 136 S. Ct. at 1298.
[61] *Hughes*, 136 S. Ct. at 1298.
[62] *Hughes*, 136 S. Ct. at 1299.
[63] *Hughes*, 136 S. Ct. at 1299.
[64] *Hughes*, 136 S. Ct. at 1299.

FERC has largely disclaimed jurisdiction over net-metering arrangements to date, concluding that net-metering does not constitute a wholesale sale subject to its jurisdiction "when the owner of the generator receives a credit against its retail power purchases from the selling utility" and remains a net buyer over the relevant utility billing period. FERC has made a series of interpretations of its jurisdiction that allow state net metering programs to continue without Federal regulatory interference.[65] Asserting Federal jurisdiction over a very large number of very small entities selling relatively little electricity to the electric system in direct response to supportive state policy would arguably provide little public benefit.

FERC's decisions to date rest on finding that net metering consumers are merely "offsetting" consumption with on-site generation and are not selling at wholesale. This construct is increasingly under strain, however. Some state are considering distributed generation policies that move away from traditional net-metering, however, and toward more complex regulatory and pricing systems aimed at more directly compensating distributed generation for the variety of grid services that such generation can provide.[66] Such new policies may require a different jurisdictional analysis.

IV. Conclusion

Although Part II of the Federal Power Act has been amended over the years since its enactment in 1935, its core provisions on FERC jurisdiction and its core standards for reviewing rates, terms and conditions of transmission service and wholesale sales have remained largely the

[65] *MidAmerican Energy Co.*, 94 FERC ¶ 61,340 (2001); *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003, 68 Fed. Reg. 49,845 (Aug. 19, 2003), FERC Stats. & Regs., ¶ 31,146 (2003), *order on reh'g*, Order No. 2003-A, 69 Fed. Reg. 15,932 (Mar. 26, 2004), FERC Stats. & Regs. ¶ 31,160, at P 747, *order on reh'g*, Order No. 2003-B, 70 Fed. Reg. 265 (Jan. 4, 2005), FERC Stats. & Regs. ¶ 31,171, *order on reh'g*, Order No. 2003-C, FERC Stats. & Regs. ¶ 31,190 (2005), *aff'd sub nom. Nat'l Ass'n of Regulatory Util. Comm'rs v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007), *cert. denied*, 552 U.S. 1230 (2008); *Sun Edison LLC*, 129 FERC ¶ 61,146, at P 18 (2009), *order on reh'g*, 131 FERC ¶ 61,213 (2010).
[66] *See, e.g.*, Mike Taylor et al., National Renewable Energy Laboratory, Value of Solar: Program Design and Implementation Considerations (March 2015), http://www.nrel.gov/docs/fy15osti/62361.pdf.

same. The Commission has deployed these flexible authorities, with targeted statutory amendments by Congress, to adjust the Federal regulatory approach in the face of changes in the power sector's organization and changes in technology.

It is worth noting that, while the categories of activities that are subject to the core FPA regulation – wholesale sales in interstate commerce and transmission in interstate commerce – have not changed, the volume of activity within those categories has grown exponentially with changes in the industry, increasing the influence of Federal regulatory policies on the shape of the industry. The number of "public utilities" subject to FERC regulation has increased, with new entry of IPPs and marketers far outstripping the effect of consolidation among traditional investor-owned utilities. Moreover, with the restructuring of a number of utilities, the growth in IPPs, and the emergence of organized energy and capacity markets in many regions, the volume of FERC-jurisdictional wholesale sales has grown dramatically. Likewise, with the advent of open access transmission requirements and RTOs, there are many more transmission transactions now than there were 25 years ago.

The statutory "bright line" between Federal and State regulation remains largely as it was when the *Colton* Court coined that phrase, but applying those jurisdictional principles is a growing challenge. The Commission and the courts are being called on to address novel questions of jurisdiction with increasing frequency. In the first instance, these new questions will be addressed by FERC, and by State regulators and legislators, subject to judicial review on whether their actions are consistent with the split of regulatory authority set out in the FPA. If those outcomes become untenable from a policy or political perspective, Congress, as the ultimate arbiter of this jurisdictional split, can expect pleas that they become engaged in considering reforms to the current statutory arrangements.

I look forward to addressing any questions you might have.

Mr. OLSON. Thank you. I recognize now Mr. Naeve.

Mr. Naeve was a former Commissioner of the FERC. He is currently a partner at Skadden, Arps, Slate, Meagher & Flom, LLP. And he wants to be called Mike. So, Mike, you have 5 minutes.

STATEMENT OF CLIFFORD M. (MIKE) NAEVE

Mr. NAEVE. Thank you very much, Mr. Chairman, members of the committee. We are focusing today on the evolution of electric power markets. When I was on the Commission, in effect, those markets did not exist. So I would like to describe how they came into being. And you really can't discuss the evolution of electric power markets until you first discuss the evolution of natural gas markets. Because FERC cut its teeth bringing competition to the natural gas industry, and then later applied those lessons to the power industry.

In the mid-1980s when I served on the Commission, we had a strange phenomenon. We had gas surpluses and rising prices. Now, how does that happen with a surplus and rising prices? You have to go back actually to the mid 1970s. In the mid 1970s the Nation was confronted with severe natural gas shortages, at least in the interstate markets. In the unregulated intrastate markets, which constituted about 40 percent of the gas sales, supplies were plentiful. Prices were a little bit higher but supplies were plentiful. But in the interstate markets, which were regulated at the time by the Federal Power Commission, which was the predecessor to FERC, prices were set much lower and they weren't sufficiently high to attract new supply. So we had shortages.

So in response to that, Congress passed the Natural Gas Policy Act. And what Congress did in the Natural Gas Policy Act, is it basically substituted itself for the Federal Power Commission, and the later FERC, in establishing prices. And where the Federal Power Commission had set prices too low, Congress in effect set prices too high. It specifically dictated prices. They were inflation adjusted prices. And in response to those prices, those higher prices, gas producers began to drill again and sell into the interstate market. And we created a surplus. But even though we had a surplus, we had rising prices. And the reason for the rising prices was because we had rigid market structure. We had very long-term contracts. We had obligations to purchase that had all been entered into at a time when there was pervasive regulation. And that rigid structure of those rigid contracts caused prices to increase, notwithstanding the surplus supplies.

So when I joined the Commission, we were faced with a dilemma. How do we address this perplexing problem. We began to ask ourselves, Why are we even regulating gas production? We regulate natural monopolies. But there is nothing about gas production that appeared to look like a natural monopoly. There were 12,000, at the time, 12,000 natural gas production companies. That looked like plenty of companies to produce robust competition. So we concluded that to get the right prices so that prices would rise when there was a shortage, prices would fall when there is a surplus, the normal workings of the market, we needed to introduce competition into the marketplace.

So that was a decision made by FERC that they were going to attempt to do that. It wasn't so easy, though, as to just simply pull back from the market. The market itself was structured, as I previously mentioned, in a response to pervasive historic regulation. So the Commission actually had to begin to restructure the market so that competition could take root. So among the other things that I had to do, first they had to make sure that suppliers could reach their customers. And in those days, pipelines only carried the gas that they themselves owned. They wouldn't carry gas for competitors. So we had to require pipelines to carry their competitors' gas, open access on the pipeline system. That was the first step. We had to free gas supplies from pervasive regulation.

The FPC had set prices, the Natural Gas Policy Act had set prices. We had to find a way to allow prices to float up and down with the market. And we worked on that and then later the Wellhead Deregulation Act helped us further on that. But we had to let prices float. We had to make sure that pipelines couldn't compete against—excuse me—couldn't favor their own supplies when they transported gas over supplies from their competitors. So we had to develop a series of rules to prevent favoritism.

And then finally we had to free up the supply. Because as strange as it may sound, back in 1983, 1984, 1985, if a producer made a sale to an interstate pipeline under a 5-year contract or a 10-year contract, and if that contract expired, the Commission nonetheless required that producer to continue to sell in perpetuity to that same pipeline for the same price. So we had gas supplies—gas contracts that had been entered into in 1950s for 16 cents and 17 cents. And they were being told that even though those contracts had expired 20 years earlier, they had to continue to deliver supplies to the interstate market at those prices.

So we had to find a way to allow those prices to be—those supplies to be freed up and so they could go to the parts of the country where the supply was needed the most at a market price. So those were changes that had to be made in the structure of the industry before competition could even be made to work.

It is amazing that FERC was able to kind of take all of those steps under the Natural Gas Act. The Natural Gas Act was passed in 1938, just 3 years after the Federal Power Act. It was largely structured after the Federal Power Act. Very, very similar. FERC was to set just and reasonable rates. Well, FERC used that power to set just and reasonable rates to require or permit market-based rates. So they concluded that if we can show there is enough competition, then market competition can set just and reasonable rates. And the courts agreed with that determination. FERC used the power in that statute that said you have to prevent undue discrimination. They used that power to order open access transportation.

So it was a broadly written statute written in very broad strokes that gave FERC the ability to fill in between the lines as the market changed, as conditions changed. And it turned out to be a very powerful and lasting statute. We will get to this in a second. But the Federal Power Act is very similar to that. It gives FERC very broad powers. And it has lasted, you know, more than 85 years.

So after FERC had great success in deregulating the Natural Gas Act, and today we have a very thriving industry, it is largely because of the work that FERC did, they turned their attention to the Federal Power Act and to the power industry. And they concluded maybe we should be doing the same thing here as we had accomplished in the gas industry. After all, generation doesn't look, again, like a natural monopoly business. Why not permit competition for generation like we permitted competition for gas production. By that time, PURPA had been passed. We had an independent power industry. There wasn't much competition. The PURPA generators signed up under long-term contracts and their supplies were locked in. So there wasn't a tremendous amount of competition. And their prices were set by regulators, not by the market. But nonetheless, we did know that an independent power industry could stand alone on its own. So the Commission then set about trying to deregulate the power industry.

Initially they tried to apply the same model that they had applied to the natural gas industry. Let's require open access transportation. If we can show adequate competitions, let's let the market set the price, not set the price ourselves through cost of service type regulation. Let's prevent favoritism in transmission service by transmission owners and so forth.

So that was the initial approach. And that approach was a very good start. But there were major differences between the power industry and the gas industry which frankly made it much more difficult to implement competition in the power industry. So let's talk about some of those major differences. The first is the statutory framework.

I am sorry?

Mr. OLSON. I am sorry, sir, I know it didn't occur to you about the microphones, but you are about 4 minutes over. So wrap up quickly.

Mr. NAEVE. Oh, OK. All right. Well, let me just say there are very, very significant differences between the two industries that make competition and the implementation of competition more difficult. Power doesn't flow in a straight line like gas through a pipeline. That makes it harder. Reliability is much more difficult to impose in the power industry because supply and demand have to be a perfect balance minute to minute. There are structural differences in the industry and shared jurisdiction and so forth. And I will be happy to respond in the Q and A session to some of those issues.

[The prepared statement of Mr. Naeve follows:]

Summary of Clifford M. Naeve's Testimony

Mr. Naeve discusses how and why the Federal Energy Regulatory Commission (FERC) took steps to introduce competition to wholesale natural gas and electric markets. He reviews the persistent regulatory failures that led FERC to reform the natural gas industry and describes the structural changes that were necessary to establish competitive markets.

Mr. Naeve then summarizes how FERC applied the lessons it learned to promote competition in wholesale electric markets. He describes the theoretical and practical reasons for expanding competition in wholesale electricity markets, the similarities between wholesale electricity and natural gas markets, and the important differences that complicate the task of restructuring electricity markets.

Testimony of Clifford M. Naeve

In my testimony I discuss how and why FERC took dramatic steps to transform wholesale energy markets by substituting competition for pervasive regulation. In the course of transforming wholesale markets, FERC also transformed itself, changing its understanding of when and how to regulate and its understanding of its statutory duties and powers.

FERC first was motivated to consider competitive solutions when it faced perplexing regulatory failures in natural gas markets. In the mid-1970's the nation had faced severe natural gas shortages in interstate markets. Lively disputes arose over how best to allocate scarce supplies as factories were shuttered and schools closed. The cause of the problem was flawed regulation by the Federal Power Commission, FERC's predecessor. At the time the FPC regulated gas producers as if they were utilities, and misguidedly set wellhead prices so low as to disincentivize new exploration and drilling. In contrast, intra-state gas markets, which were exempt from FPC regulation, generally enjoyed plentiful supplies.

Congress responded to the shortages by passing the Natural Gas Policy Act of 1978. The NGPA was highly prescriptive, mandating specific, inflation adjusted prices for both intra- and inter-state wellhead sales. In effect, Congress got into the business of dictating natural gas prices.

The higher statutory prices had the desired effect—by the early 1980's the gas shortage had been replaced by a rapidly expanding surplus. Oddly, the growing surplus did not cause prices to fall. Instead, prices continued to increase. The law of supply and demand was being overridden by a mix of rigid regulations and archaic contracting practices.

Having the government set the market price for gas had created both shortages (when prices were set too low) and surpluses (when prices were set too high). FERC began to question the economic rationale for regulating wellhead production in the first place. Natural gas was essential to the public welfare, but the business of exploration and drilling for gas did not have the attributes of a natural monopoly. At the time there were 12,000 natural gas production companies—more than enough to sustain a competitive market.

FERC concluded that to rationalize the gas markets it had to replace utility-style regulation with competition so that floating prices could balance demand and efficiently allocate supplies between regional markets. The task, however, was not simple. The agency had to break down numerous entrenched barriers before competition could take root:

- Gas supplies had to be freed from prices set by the government.
- Producers and marketers had to be afforded direct access to the pipeline system so they could deliver their product to potential customers. FERC had to require pipelines to transport gas for their competitors.
- To ensure fair access, FERC had to issue and enforce rules to prevent pipelines from discriminating against their competitors in the price or quality of transportation service.

- FERC also had to abolish regulations that prevented producers from moving gas from one market to another. At the time, once a producer signed a gas sales contract with an interstate pipeline, FERC's rules required the producer to continue gas deliveries under the terms of the contract in perpetuity—even after the contract had expired.
- And ultimately, FERC had to address the transition cost of re-configuring an industry—costs which disproportionately fell on interstate pipeline operators.

FERC implemented these and other changes through dozens of rulemakings and cases. It is remarkable that FERC was able to implement these changes while working within the 50-year old statutory framework created by the 1938 Natural Gas Act (NGA). Although the NGA was passed in a different era, it delegated broad powers to the Commission which allowed FERC to adapt its approach to changing market conditions. In the mid-1980's FERC frequently revisited the statutory language to find new authority. In the Act's prohibition against undue discrimination, FERC found the power to require pipelines to transport their competitors' supplies. In the Act's commandment to set "just and reasonable" rates, FERC found flexibility to substitute competition for cost-based regulation. Fortunately, the courts gave FERC leeway to depart from precedent and, on occasion, the courts took the lead in finding new powers in the old statute. These regulatory changes, subsequently reinforced by the Natural Gas Wellhead Decontrol Act, transformed a troubled industry into the thriving industry we have today.

By the mid-1980's, FERC began to turn its attention to the electric power industry. As Susan Tomansky will discuss in more detail, at the time, wholesale power prices varied tremendously from region to region. Would not broad competitive markets balance regional price disparities and encourage the most efficient use of generation resources?

Besides, FERC asked, what is the economic justification for regulating the power generation business? Is it a natural monopoly, or is it more like gas production? FERC already had witnessed the rapid birth of an independent generation industry in response to the incentives created by the Public Utilities Regulatory Policy Act of 1978 (PURPA). Although PURPA opened the door for independent power generation, it perpetrated the flaw of assigning regulators (in this case state regulators) the job of setting wholesale commodity prices. Often those prices were excessive, burdening consumers for decades to come.

Confronted with regulatory failures similar to those it had encountered in the gas industry, FERC began to apply the lessons it had learned to the wholesale electric power business. Unfortunately, however, fundamental differences between the electric and gas industries made FERC's job far more daunting:

- Unlike gas moving down a pipeline, the transmission of electric power does not follow a single path. Instead, when electricity is transmitted from Point A to Point B, the power flows are distributed across dozens, and maybe hundreds, of interconnected transmission lines that are part of the integrated transmission grid. Consequently, independent transactions on different parts of the grid can have overlapping and far-reaching consequences. A transaction scheduled on one part of the grid can burden remote grid elements, preventing other transactions from being scheduled.

- To further complicate matters, different pieces of the integrated grid are owned and operated by different companies, who also are injecting and withdrawing their own power. These grid operators may not have visibility into transactions being scheduled by other operators, and consequently may not be able to anticipate or control power flows on the segment of the integrated grid that they operate.

- Yet further complications arise from the difficulty of ensuring grid reliability. Basic differences between the gas and power industries make power reliability far more complicated than gas reliability. For one thing, the net input of power into the grid must at all times equal the net withdrawal of power from the grid to serve load. In the gas industry the need to balance gas pipeline injections and withdrawals is far less demanding. At times pipelines can accept more gas than they deliver, storing the surplus in what is known as line-pack. In addition, the pipeline industry has numerous supply-area and market-area storage fields that can be used to balance out temporal differences between supply and demand. The lack of storage on power systems requires system operators to keep significant amounts of generation resources at the ready to ramp up or down to follow moment-by-moment load changes and to provide emergency supplies when generation or transmission facilities unexpectedly fail.

- Moreover, due to the ability to inject surplus gas supplies into storage and to withdraw supplies in periods of excess demand, natural gas prices are less sensitive than power prices to short-term market perturbations. The volatility of gas prices is further dampened by the ability of many industrial gas users to switch to alternative fuels if gas supplies are either unavailable or too expensive. In contrast, very few power customers can replace electricity with alternative energy supplies. Consequently, wholesale electricity prices are highly volatile.

- In addition, compared to wholesale gas prices, wholesale electricity prices are strongly affected by regulatory intervention by state and federal legislative and regulatory bodies. State resource and environmental programs such as renewable portfolio requirements, feed-in tariffs and net metering influence price formation in wholesale markets. Federal investment tax credits subsidize new market entry and influence capacity and energy prices. Production tax credits influence bidding behavior and energy market outcomes. Changes in federal environmental laws and regulations can change the composition of regional generation portfolios, affecting both market outcomes and reliability requirements.

The differences between the gas and power industries have complicated and prolonged the process of enhancing competition in power markets. That process is far from complete, both because of the complexity of the issues and because the industry operates in a constant state of flux due to changing environmental requirements, technological developments and state policies.

As I previously mentioned, in the course of transforming wholesale energy markets FERC also has transformed itself. FERC has moved from being an agency primarily focused on regulating rates and services, supported by an army of accountants and engineers, to an agency intent on protecting competition, so that wholesale market prices accurately reflect the balance between supply and demand. As FERC has changed its mission it also has changed the make-up of its staff, now employing large teams of economists and enforcement personnel who monitor market behavior, help evaluate market design changes and work to curtail abusive market practices.

I will conclude by expressing admiration for the role FERC has played in reshaping the natural gas and electric power markets. Through both Republican and Democratic administrations, the Commission has been steadfast in its commitment to improving market efficiency and consumer welfare. Thank you for the opportunity to submit this testimony, and I would be pleased to respond to questions.

Mr. OLSON. Thank you, sir.

Our next witness will be Mrs. Susan Tomasky. Susan was a former counsel general at FERC. After that she was the president of the Transmission of American Electric Power Corporation. And she will talk about Order No. 888. Five minutes, Ms. Tomasky, please.

STATEMENT OF SUSAN TOMASKY

Ms. TOMASKY. Yes, sir. Good morning, Mr. Chairman, Mr. Pallone, and members of the committee. Thank you so much for the opportunity to actually come back before this committee after many years to talk about the history of electric supply competition in the United States.

I would like to start by first explaining that, from my perspective anyway, Order 888 was very much the product of changing market conditions that FERC observed at the time, as well as the regulatory model that it had previously seen with respect to natural gas. Really, for most of the 20th century, from a customer perspective, electric service wasn't very complicated. People paid a bill. That bill was, for the most part, regulated by State commissions, and they paid a single bundled rate. And behind all that was a complicated set of assets; transmission, distribution, generation. That was all priced on a cost-of-service basis. The State figured out the bill, the utility charged it, and the customer turned the lights off and we hope, in the utility industry, in most instances paid for the bill. However, in the 1990s we saw an extraordinary escalation of the price of electricity in many parts of the country. And that was due largely to the decision of utilities that really had a lot to do with securing power supply to build large nuclear generation facilities. There was significant cost escalation associated with that. And as a result, customers resisted that. They resisted it in State regulatory proceedings, but they also resisted it by trying to escape from the regulatory regimes that were in place in that time and find alternative suppliers.

In the early days, the alternative supply market was pretty thin. But as it became pretty clear that the opportunity was available, technology improved, capital was available, but customers were still bound to their utilities under existing regulatory rules. And even if they could escape those, they didn't have the ability to get power from the independent generator to the transmission because they didn't have access across the utilities monopoly transmission system.

At that point FERC began to face a number of case-by-case requests to address this for individual customers, to make market-based rates available, and the Commission did begin to respond to that. But ultimately came to the conclusion that not only was it a slow process, but it created uncertainty and risks for both the utility industry and all parties, and in the end only benefitted a handful of customers. And, really, it was to address these issues more broadly and systematically that the Commission undertook the rulemakings in Order 888.

At the heart of the Commission's action was the conviction that electricity customers would benefit from power prices if they were determined on the basis of efficient competitive marketplace rather than through a utility-driven process that was overseen by regulators and paid for by States on the basis of the utility's cost. To accomplish this, as Mr. Naeve said, they did turn to the model of the natural gas industry. They ordered the separation of wholesale sales from transmission service. And that helped to create a distinct transparent power supply market. They also provided a relatively simple path for market-based rates for both utility and non-utility sellers. And then they continued to regulate the transmission business as a monopoly business but under a new set of standards that required terms for the utilities to provide open access service to both non-utility service users and to themselves on essentially the same terms.

So the question is how are things working. And in my view, we have had some very painful learning lessons along the way. But the competitive markets that do exist are working fairly effectively. We have a large number of suppliers. And capitalis generally available to support new investment when it's justified. And I think equally important, when markets are permitted to work, capital doesn't flow to projects that aren't justified. That is the market discipline, and it directly benefits customers. In recent years we have seen price declines that pass through to customers. And we also have seen price increases that pass through to customers.

I am sorry. Is there something wrong? No. OK.

These are good things. These are price signals that go to the marketplace. They prompt generation and in transmission development. And those are the operation of a properly functioning market. There are winners and losers. Some generators are not effective competitors. Others are. And of course there are external factors that affect this. But generally I would have to say that the outcome is that the customer isn't at risk when these risks are assumed by the generators. And that is pretty much the vision that the Commission had of the competitive marketplace.

This committee, I know, is going to be looking at significant challenges. I would be happy to discuss any of those in my comments if you like, but that concludes my testimony. Thank you.

[The statement of Ms. Tomasky follows:]

TESTIMONY OF SUSAN TOMASKY BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES COMMITTEE ON ENERGY AND COMMERCE SUBCOMMITTEE ON ENERGY AND POWER

SEPT 7, 2016

Good morning Mr. Chairman, Ranking Minority Member and members of the Committee. Thank you for the invitation to speak to you about the history of competitive electricity markets in the US. My specific topic today concerns the efforts of the Federal Energy Regulatory Commission (FERC or the Commission), through Order No. 888 and its progeny, to create a framework for fostering competition in power generation and supply. My testimony reflects my experiences as General Counsel of the Commission as these policies were being developed, as an executive of an electric utility implementing these policies and developing a significant competitive power business, and more recently as a Director on the Board of an energy company that is an active participant in the competitive wholesale marketplace. Although these experiences have shaped the comments I make today, I am not appearing on behalf of any of those entities and the views I express are entirely my own.

As the Committee is well aware, the array of rules, precedents, purposes and opinions that surround the administration of US wholesale markets is complex, arcane, and often subject to dispute, so that any attempt to tell the story of its evolution will most assuredly omit much and oversimplify almost everything. Recognizing that my comments will do both, I will nevertheless offer my thoughts on a few questions that I hope will be useful to the Committee's work:

1—Why did the FERC establish competitive wholesale markets?

2- What were goals of Order 888 and what are the essential elements of the competitive market framework as envisioned by FERC at that time?

3- How did Order 888 approach the issue of Federal vs. state regulation of competitive markets?

4-Are competitive markets working as FERC envisioned, and do current market conditions pose challenges that the competitive market and the current regulatory framework cannot address?

1. WHY DID FERC ESTABLISH COMPETITIVE WHOLESALE MARKETS?

To answer this, it is necessary to talk about the structure of the industry before the introduction of competition. In general, the nation's electricity service industry grew quickly throughout the mid-20th century in relation to a significant expansion of residential, commercial and industrial demand in most parts of the country. Federal laws adopted in the 1930's created a strong regulatory preference for keeping utility operations in a single state or contiguous states and utility infrastructure – power plants, high voltage transmission lines and local distribution systems -- expanded within the ownership structure of many investor-owned regulated utilities, and, in some areas of the country, municipally-owned utilities and rural electric cooperatives. For the most part, utilities provided an end product (electricity service) to customers at the point of use -- a home, a manufacturing plant, a grocery store – and the customer paid a rate established by a regulator (typically a state regulator) that was intended to permit the utility the opportunity to recover the cost of providing service (primarily the cost of building and maintaining power plants, transmission lines and distribution facilities, and the cost of fuel to run the plants) and a "reasonable", i.e., regulatory-determined, return on capital invested to provide that service.

While most electricity service during this time was delivered through retail sales, and thus regulated by states, exceptions emerged, giving rise to Federal rather than state authority over electricity transactions. For example, some local utilities, often municipalities and coops, did not have their own generation facilities, and instead relied upon neighboring utilities for the generation supply, requiring wholesale contracts for power and the provision of Federally regulated transmission service to get the power to the wholesale customer. As networks and interconnections between utilities improved, and separately owned systems became operationally more interdependent, utilities began to buy power from each other in "bulk" sales; these were wholesale sales, i.e., they were sales for resale, and the power was delivered to customers through high voltage transmission interconnections, and thus they were Federally regulated. In some cases, utilities that owned assets serving multiple jurisdictions, or groups of utilities across states, pooled their generation facilities and allocated the costs and benefits through wholesale contracts that were also Federally regulated. Then, with the enactment of the Public Utility Regulatory Policies Act of 1978 (PURPA), utilities were required to purchase power from independently owned generation sources that met national policy goals of fuel source diversity, creating a new universe of wholesale transactions and mandates for transmission service, and expanding the scope of electricity transactions that were subject to Federal regulation.

In my view, this framework served the country fairly well for quite some time, through the 1980's at least, but was eventually tested and found wanting for several reasons. First, and perhaps most significantly, was the rising cost of power supply reflected in increasing consumer rates, due primarily to the escalating costs of new nuclear power plants in some parts of the country. Disputes over the recovery of these costs (or the costs of abandoning that investment when it faltered in the face of regulatory delay or local and environmental opposition) plagued regulatory proceedings at the state and Federal level; however, these disputes in and of themselves may not have led to industry structural change – simply because for a long time there was nowhere else for customers to go. Although a handful of industrial customers could build facilities for their own use, most generation technology required long lead times to build, large capital commitments, and significant skill and cash flow to maintain and operate, creating significant barriers to entry for new suppliers. And even if those issues could be addressed, utilities owned and controlled the delivery systems, and were not inclined to offer them up to competitors seeking to woo away their customers.

Despite these barriers, the rise in retail rates did indeed create a demand, particularly from more sophisticated industrial customers, for access to lower cost generation supply. In relatively short order, technological innovation rose to meet that demand, with the development of new natural gas fired turbines that could enter the market with materially shorter lead times and at much lower investment cost than the utilities' large scale plants and operate more efficiently than their predecessor natural gas technologies. Many customers bound under state regulatory regimes to pay some utilities' higher cost-of-service rates sought the freedom to leave their utility suppliers and negotiate directly with independent generators or intermediary marketers for the power supply portion of their electricity service; these willing buyers and sellers wanted FERC to permit the transactions <u>and</u> to require utilities to make their transmission facilities available to facilitate these transactions. Capital sat ready to support that new investment, if contracts and regulatory approval could be obtained. For understandable reasons, many utilities resisted this new market entry, and regulators were conflicted – while there was a strong desire to make lower cost generation available to customers, (and considerable argument over whether the utilities' large investments were "prudently incurred" and therefore appropriate for recovery), there was also a commitment to the "regulatory compact" -- the concept inherent in the regulatory framework that utilities and their investors should be fairly compensated for their substantial capital commitments, and that financially stable utilities are essential to ensuring that customers have a safe, adequate and reliable source of electricity. There was also the concern that if some more sophisticated industrial and commercial customers were permitted to depart the system, residential and other less agile customers would be left with an undue cost burden. As a result, regulators, utilities and customers found themselves mired in litigated battles over costs and service commitments without a real framework for dealing with the issues created by the emerging demand for different supply arrangements.

Although some new generation facilities and related wholesale deals were working their way through the regulatory system, vertically integrated utilities in the 1990's were still by far the major owners of generation in the US; many had excess power to sell and were drawn to the opportunities to participate in this emerging marketplace. In a relatively short period of time, the Commission found itself facing frequent requests from utilities to sell power to "off-system" customers at market based rates, and FERC began to grant these requests subject to the condition that the utility provide some form of "open access" to third party generators seeking to move power across the utility's transmission system. Although the terms of open access conditions were very general at first, they had in common the requirement that the utility provide the service on non-discriminatory basis, i.e., the utility was expected to provide transmission access to third parties on terms and conditions that were "comparable" to those governing the way it used its own system for its own wholesale transactions. The proceedings to determines those terms and conditions became, in effect, ad hoc regulatory laboratories where parties debated complex operating and economic issues under the supervision of administrative law judges before arriving at "settlements" that would work their way to the Commission for case-by-case modification and approval.

So, after all of this, why did the FERC seek to establish competitive wholesale markets in Order 888? The simple answer is that the need for a competitive wholesale market had begun to emerge from customer demand for access to a lower cost supply. The potential for that lower cost supply to be met by independent generators was demonstrated, both technologically and financially. However, the piecemeal approach to approving wholesale transactions and providing transmission access was slow, creating litigation opportunities on every issue of charges and terms of access. It offered limited advantages and only to a small number of customers, created risks for others, provided only a glimmer of capital markets security to new market entrants, and created uncertainty for utilities who still had the job of provide reliable power at reasonable costs to all customers. Concluding that the demand for change needed to be met more efficiently, fairly and transparently, the Commission initiated the regulatory inquiries and rulemakings necessary to establish a systematic set of rules governing wholesale sales of electricity and open access to the nation's high voltage transmission facilities.

2. WHAT WERE THE GOALS OF ORDER 888 AND WHAT ARE THE ESSENTIAL ELEMENTS OF THE COMPETITIVE MARKET FRAMEWORK AS ENVISIONED BY FERC AT THAT TIME?

In my view, the FERC's primary goal in Order 888 was to create a framework in which the price of electricity in wholesale transactions could be determined efficiently by the forces of competition, rather than through a utility-driven process overseen by regulators and compensated for by customers on the basis of the utility's cost. Its chief regulatory instrument for achieving this was to eliminate impediments faced by competitive power suppliers in gaining access to transmission service necessary to get their power to their customers. To find an appropriate regulatory model, the Commission looked first to the success of similar efforts on the natural gas side of its regulatory house. From that experience, the Commission drew upon certain critical principles that had worked well in the natural gas context: the adoption of standard open access tariff terms that would set common terms and conditions for use of transmission facilities, whether by third parties or the utility itself; the grant of authority to buyers and sellers to engage in market-based rather than cost of service transactions, where the Commission was satisfied that competitive market conditions exist; and, a requirement that changed the basic transactional structure of a wholesale sale by separating the sale of the commodity from the contract for transmission service. In short, the Commission intended to create a distinct and transparent commodity market for power generation and supply while continuing to regulate the transmission business as a monopoly service, albeit under a new set of terms designed to ensure that the transmission system was operated to maximize the effective functioning of the emerging competitive wholesale marketplace. So borrowing largely from the gas model, the FERC adopted a rule with the following essential components:

1. A general requirement that each FERC regulated utility file an open access tariff that conformed to a fairly specific and common set of terms, and which provided third

parties reasonable access to transmission service necessary to meet their contracted for load;

2. A set of rules that provided a fairly simple path for all jurisdictional wholesale sellers of electricity — for example, independent generators, marketing arms of utilities, and independent marketers -- to win authority to sell power in wholesale transactions at market-based rates. In addition to requiring the filing of an open access tariff as a pre-condition to receiving market based rate authority, the Commission also established a set of rules, or codes of conduct, for utilities to ensure that their wholesale marketing arms did not gain unfair advantage viz. independent market participants;
3. A requirement that rates, terms and conditions for the wholesale sales and transmission of electricity be "unbundled", i.e., utilities making wholesale sales would be required to sell the electricity commodity separately from transactions governing the provision of transmission service; they would also be required to obtain and pay for wholesale transmission service, even across their own system, under the open access tariff, on the same terms and their competitors;
4. To ensure transparency and fairness, utilities were required to develop electronic platforms or systems – accessible to all market participants on the same basis -- for communicating the rules for using the systems and providing critical information, such as what transmission capacity would be available and when, the priorities for using the system, the terms on which service could be terminated and interrupted, and a host of other extraordinarily complicated matters that needed to be clear in order to

permit the utilities to run the system effectively while integrating third party suppliers and ensuring they didn't favor their own company's marketing arms.

5. Recognizing that some utilities may have undertaken investments based on the expectation of serving load under pre-existing supply arrangements, the FERC provided an opportunity for utilities to seek to recover their stranded costs. (Although this was at the time one the most controversial aspects of Order 888, as events unfolded there were few requests for stranded cost recovery at the Federal level. However, by offering the possibility of a non-bypassable wires charge as a recovery mechanism, the FERC set an influential precedent for states pursuing similar competitive market programs.)

The natural gas model was useful in many important respects; however, in applying these rules to electric power supply, FERC faced a number of complicating factors that made it impossible simply to just swallow whole the natural gas model and call it a day. First, as you will hear from others – probably everyone who appears before you to talk about the electricity industry – electricity is, as a matter of physics, different from natural gas and almost every other delivered product: it moves along the path of least resistance at the speed of light, and because it cannot (yet?) be stored economically on a large scale, it must be produced and consumed at about the same moment in time. So while we may talk about transmission as a "pipe" and describe transactions as having "contract paths" where power flows from a seller to a buyer, in fact those concepts are virtual at best. The power goes where it goes, and it is remains an extraordinary feat of engineering design and operational skill to coordinate supply and demand across large geographic regions and keep the system up and running day in and day out.

The unique physical characteristics of the electricity system prompted significant legitimate concern on the part of utilities as they contemplated the operational changes necessarily to integrated a wide variety of power sources, with different operational characteristics and under the control of a wide variety of entities with different levels of expertise, financial wherewithal and varying business objectives. The FERC took these concerns seriously, but ultimately concluded that the prevailing integrated business structure of the industry was not essential to its operational integrity and that utilities were capable of figuring out how to unbundle generation and transmission transactions and accommodate multiple sellers and market-based pricing, while maintaining the system's superior operational performance. FERC ultimately looked to the industry's experience in successfully integrating PURPA facilities and the extraordinary technical expertise embedded in the utility companies, and concluded that operational issues could be addressed by giving the industry a reasonable period of time for compliance and by creating collaborative (if sometimes contentious) proceedings in which market participants and experts could work through the many technical implementation issues. The initial resolution of these operational and technical issues by market participants was critical to successfully implementing competition amid the unique complexities of the country's electrical systems. Emerging from those collaborative proceedings were independent governing organizations (e.g., the RTO's and the reliability councils overseen by FERC) that today play critical -- if sometimes cumbersome-- roles in convening industry experts and market participants to address emerging issues and ensure that markets function effectively and reliability is maintained. While electricity markets are not truly deregulated, in many regions of the country wholesale markets now function effectively to set prices efficiently and with significant benefit to wholesale customers – without undermining the systems' reliability.

3- HOW DID ORDER 888 APPROACH THE ISSUE OF FEDERAL VS. STATE REGULATION OF COMPETITIVE MARKETS?

A second challenge the FERC faced in using the natural gas model to restructure electricity supply arrangements stemmed from the underlying division of labor between state and Federal electricity regulators. For natural gas, the FERC's authority is fairly comprehensive. For most natural gas consumers, gas is produced in one part of the country and transported to consuming markets through FERC regulated pipelines; the gas is typically sold to separate (though sometimes affiliated) local gas distribution companies at a fictional point called "the city gate," creating a wholesale transaction and a clearly marked jurisdictional line between Federal and state authority. When FERC ordered the upstream unbundling of commodity sales and transportation service, it was setting the stage for a national competitive market for almost all natural gas, except that produced and consumed in a single state. In contrast, at the time of Order No. 888, the vast majority of electricity transactions -- electricity delivered to consumers in their homes, factories, and workplaces -- were bundled retail sales; consequently, unbundling wholesale electricity transactions only would not have the same reach and effect as did unbundling of upstream natural gas transactions. As FERC was keenly aware, unless states followed the FERC lead and unbundled retail transactions, or the FERC chose to test its jurisdictional mettle and force retail unbundling itself, most electricity would continue to be sold in bundled retail transactions and the scope of the competitive wholesale electricity market would be severely limited.

Given this, it is important to note what FERC did not do in Order No. 888: the FERC did not attempt to require utilities to unbundle all transmission service, although there are strong arguments that it had the authority to do so, by virtue of its broad jurisdiction of all transmission in interstate commerce, and the equally broad definition of interstate commerce that was well establish under Supreme Court precedent at the time. Instead FERC limited the unbundling requirement to wholesale transactions, leaving to the states the decision whether to unbundle retail transactions and create a broad foundation for competitively priced generation in their states. The objective of this decision, in general, was not to disturb the state's historic purview over generation. While most states, either through their Commissions or their legislatures, studied a possible move to generation competition, many, typically those satisfied with their utility cost structure, ultimately chose not to move forward. However, other States, experiencing significant generation cost increases (usually due to expensive nuclear power) quickly found themselves facing the same kinds of arguments raised at FERC by customers seeking lower cost supplies and generators seeking to serve them. Either by legislative or regulatory action (usually both) they ordered the restructuring of retail transactions with the hope of opening up new power supply options to customers, and creating a competitive market that would over time reduce the cost of electricity. While there were similarities in many of the state approaches, there were also stunning variations: for example, to assure non-discrimination in transmission service the FERC rules required that utilities functionally separate their transmission and power supply businesses, with different personnel and codes of conduct that limited communication and proscribed certain business dealings between the two sides of the business. Several states went much further, mandating "structural separation" i.e., requiring utilities to sell their generation to independent parties, jump-starting a generation-only sector that became immediately subject to both the opportunities and the risks of a competitive business in a sometimes volatile marketplace. States also took varied views as to what stranded utility costs would be compensated and how they would be recovered. These various state approaches, alongside the FERC pro-competition mandates, have led to the network of independent and affiliated utility ownership of generation we have today.

Although FERC left the states to their own devices in certain respects, it would be unfair to suggest that the Order 888 was broadly welcomed among the states. Even though FERC did not force retail unbundling, its pro-competition policies, combined with restructuring actions in some states, broadened FERC's influence over transmission service dramatically, and also increased the breadth of power supply transactions subject to FERC control. This was an uncomfortable outcome for many states and hung as a cloud over the otherwise cooperative efforts of states and the FERC to work through many of the complex issues addressed in Order 888 implementation. In general, FERC has embraced this enhanced sphere of influence wholeheartedly, as it continues to refine and advance its regulation of both transmission and wholesale power, in the interest of ensuring that competitive markets prosper and the transmission systems operates effectively and reliably to meet that purpose. However, the patchwork of state and federal regulation that the Commission chose not to disturb remains today, providing both opportunity for many voices to be heard and the risk that important issues will not be addressed, either because it is not clear where the decision-making authority lies or because authority is so diffuse, and policy goals so much in conflict, that decisions cannot be made to address them.

4-ARE COMPETITIVE MARKETS WORKING AS FERC ENVISIONED, AND DO CURRENT MARKET CONDITIONS POSE CHALLENGES THAT THE COMPETITIVE MARKET AND THE CURRENT REGULATORY FRAMEWORK CANNOT ADDRESS?

It is hard for me, or for any one person involved the development of Order 888, to say whether the competitive markets are working as the Commission envisioned, since there were so many different ideas, principles and constructs that were melded together to push these policies to fruition. But I will attempt to hazard a guess. Fundamentally, the competitive markets that do exist are working quite effectively to achieve their primary objective: to create a functioning commodity market for electricity where price is set by competitive forces. The value of competitive markets is clear: we have many suppliers and capital has been available when new investment has been justified. And, when the market is permitted to work, capital does not flow to projects that are not justified, either because there is no new demand or investment cost is too high to be competitively viable. That is market discipline that directly benefits customers who do not have to pay for unnecessary facilities or overpriced supply. In recent years, we have seen a significant decline in prices being paid for capacity in competitive markets due the availability of shale gas, and in prior periods we have also seen relative higher prices which may signal the need for new generation or transmission – also a necessary outcome of a properly functioning market. There are winners and losers, of course, and they change over time based on external conditions and how effectively and nimbly suppliers are able to respond to those conditions. There are of course conditions that affect a generator's fortunes that are beyond its control, changing environmental requirements for example or newly advantaged conditions for a competitor (e.g. lower fuel costs.) The market does not correct for these circumstances and assumes that the generator, not the customer, is at risk for these changing conditions. In this regard I think the market has worked generally as FERC had hoped, incentivizing disciplined investment and insulating customers from investor risk.

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I do think many of us had also hoped that wholesale markets would evolve more quickly and that other states would follow the positive example being set in regional competitive markets. Of course, few were prepared for the damage done to the goal of competitive electricity markets by the market manipulation and illegal activities that compounded the inherently difficult supply conditions in California in the early 2000's. I believe from that experience came some important lessons for market advocates and skeptics alike, including a recognition of the value of effective enforcement of market rules. Perhaps most importantly, we were reminded that while it is possible to construct market rules that permit electricity to be bought and sold as a commodity, when a supply related outage occurs, or future supply is not expected to be adequate, or the price escalates beyond some point of customer tolerance, that commodity becomes an essential service and everyone – utilities, regulators and suppliers -- is required to come together to solve the problem.

Overall, I believe we have many examples in which competitive markets, and the existing regulatory structure as complex as it is, have responded appropriately to address emerging issues since Order 888. On the positive side, we have in many regions of the country effective and efficient competitive markets that work well for consumers in the near term. Also in recent years, we have seen some improvement in the framework for authorizing new transmission facilities, which has permitted necessary build out of some, though not all, the transmission infrastructure necessary to strengthen the system and open up bottlenecks. Across many regions, transmission and distribution investment is receiving support, systems are being upgraded and reliability oversight has improved. The financial strength of the regulated utility business is in general pretty strong. However, there are some significant issues on the horizon that current market and regulatory structures may not be able to resolve. These issues generally revolve around questions of new generation choices and the future of existing generation facilities, including certain coal and nuclear plants, that competitive markets do not currently favor. At the time of Order No. 888, we had before us a broad range of studies projecting various outcomes for future power market conditons. Some things have played out as expected – a strong role for natural gas in new generation builds, for example. Other events have been surprising, most significantly, a long period of flat demand I many parts of the country, and the vast amount of natural gas that has become available not only to support new supply but also to substitute on an economic basis for existing, for some coal and nuclear power supply. I cannot say that the FERC envisioned the specific market conditions that exist today. But what we did expect was that the market would operate efficiently, whatever those conditions proved to be, to make the most cost effective choice for consumers and, in my view, in competitive markets that is happening.

The challenge is, as I mentioned earlier, that even in competitive markets and regardless of the legal structure, electricity supply is both a commodity and an essential service. Policymakers, whether they are state and federal regulators, or members of Congress, don't stop caring about the many public policy issues that affect and are affected by this industry, simply because the markets are working the way one might expect. To this end, the Committee will hear much in the way of arguments in the future about the relative social value of adversely affected nuclear and coal plants, such as the value of a diverse generation mix, the value of coal plants to local economies and the challenge of aggressive environmental regulation, the environmental value of nuclear generation and the need for a reasonable price structure that supports their complex operations and safety requirements, the relative merits of renewable power subsidies, the locational value of plants for reliability purposes and the overall value of existing plants to regional supply adequacy. These are difficult and heavily debated matters that are generally are beyond the scope of this hearing. I point to them only to observe that the challenge faced by those generators are not challenges to the effectiveness of competitive markets but rather public policy challenges. Although the industry has changed considerably in the last twenty years, we find ourselves in some regions with good systems for operating short term markets, and for incentivizing economic capacity additions, but with limited ability to commit to long term strategies that take other values and policy objectives into account. Other regions continue to operate within state-based regulatory constructs that are largely unchanged from twenty years ago, which may effectively support ordinary regulatory activity but which cannot reach very well across state boundaries to solve broader problems on a regional basis. Between these two sets of challenges there are many committed, creative individuals, Federal and state regulators, entrepreneurs and market participants who are fully capable of shaping an excellent future for this industry, if a framework for decision-making around these broader issues can be agreed upon. I greatly appreciate the willingness of this Committee to look to the history of this industry to begin to identify the path forward. I hope you find these comments useful in those efforts. I would be happy to answer any questions.

Mr. OLSON. Thank you very much. Our final witness is Ms. Linda Stuntz. And Ms. Linda Stuntz was the former Deputy Secretary of Energy from 1992 to 1993. And she is currently a named partner at Stuntz, Davis and Staffier, P.C.

Five minutes, please, ma'am.

Mr. BARTON. And a former staffer of this committee.

Mr. OLSON. I apologize.

STATEMENT OF LINDA G. STUNTZ

Ms. STUNTZ. Thank you, Mr. Barton and Mr. Chairman. It is an honor to be before you today, to be back. As you have heard, part two of the Federal Power Act was enacted in 1935 to fill a regulatory gap. It provides the Federal Power Commission, now FERC, with the ability to regulate what the States could not. The States retained authority over generation, intrastate transmission, local distribution, and retail sales of electricity. Interestingly, it is a challenge. None of those things is self-defining, of course. And a lot of what we at this table have done over many, many years is try and flesh out what those terms mean.

As the economy has grown, and not to repeat what some of my colleagues have said before, and as electricity markets and industry structure have evolved, Federal jurisdiction under the Federal Power Act has expanded. The gap-filling function has how become much more a blanket. Wholesale markets for electricity administered by RTOs and ISOs now provide power across much but not all, and that is an important—not all of the country. I included in my testimony a chart, I think on page 5, that reveals that. It is about two-thirds of all customers. The restructuring of the electric industry was driven by multiple factors. And as Mr. Pallone mentioned, I think sat through a lot of those hearings, you have heard some of these, but let me just tick them off.

Clearly PURPA sort of established the principle that generation could be competitive. It didn't need to be provided by utility suppliers under cost of service regulation. And yes there were rate shocks in some parts of the country. In part because of over-budget nuclear plants, in part because of general inflation and the price of oil and so forth where oil was used in the Northeast. But there was also, I think, a favorable experience with oil and natural gas deregulation, as you have heard from Mr. Naeve, which drove a desire to rely more on market forces and markets rather than cost of service utility regulation, to better protect consumers and to encourage innovation.

Finally, even back then there was technology development. And I think this is often overlooked. But the simple adaptation of the aero derivatives, sort of jet engine, to be able to be used to supply electricity from natural gas-fired turbines was huge. Because this was a lower capital cost. It could be built more quickly. It could be almost modular. And in the 1990s this became a source of tension. And there may be important lessons there as you look at technology developments today.

Electric restructuring has taken many different forms across the country, as many of you know based on your own experiences with the States. But as Mr. Smith observed, the Supreme Court decisions earlier this year confirmed that FERC jurisdiction under the

FPA now extends to the purchase of demand management resources, energy efficiency, if you will, by RTOs and ISOs, and that States may not act in a way that a just and interstate wholesale rate, even if the State is acting in a way that it believes is necessary to secure supply generation adequacy.

Other pending State initiatives known well to many of you, ranging from support for nuclear power to perhaps coal plants in Ohio, are likely to raise similar questions in the future and likely to be equally difficult. One thing that has not changed, and here is where the lawyer is going to play engineer if you will forgive me for just a minute, one thing that has not changed since passage of the FPA is that electricity cannot be stored in meaningful amounts, despite very considerable current efforts to change that. This simple fact has very large consequences because demand for electricity varies greatly over the course of a day and over the course of the year.

What this means is that—and yet at the same time supply and demand have to be balanced perfectly in order to preserve reliability in real time. Doing this is becoming more challenging as intermittent resources such as wind and solar play bigger roles. Reserve margins are no longer sufficient to ensure reliability. We need new planning paradigms. And again, I put a chart in my testimony, the famous duck curve, on page 12, which shows a sort of extreme version of this. But those of you from Texas are already seeing this. In other places, Colorado, where there have been significant penetration of renewable resources.

And finally with great respect to Mr. Pallone, there is no such thing as the grid. North America is actually made up of four separate networks, if you will. The western interconnection, the eastern interconnection, ERCOT, most of Texas, and Quebec. There are only weak direct current ties between these two. We can talk more about why that exists and whether it is a good idea. Certainly there is a lot of history there. But again, that has meaning because it affects the jurisdictional status of the folks in Texas.

And in addition, there are some 500, more or less, it changes almost every day, transmission owners in the U.S., ranging from TVA, the PMAs, to co-ops to large industrial and utilities. Each of these is regulated differently, each with greater or less FERC involvement. In all cases that I know of, States do the siting. So you have to—it is unlike natural gas which has Federal eminent domain, you don't have that to site electric transmission. This complexity creates major challenges for initiatives to change the way that the grid in this country is upgraded, operated, paid for, and constructed.

With that, let me conclude my oral statement. And I welcome your questions.

[The prepared statement of Ms. Stuntz follows:]

Before the Subcommittee on Energy and Power
Committee on Energy and Commerce
U.S. House of Representatives

Hearing on

Federal Power Act: Historical Perspectives

Testimony of Linda G. Stuntz
Stuntz, Davis & Staffier, P.C.

September 7, 2016

Mr. Chairman, Ranking Member Rush, and Members of the Subcommittee, thank you for the honor of inviting me to address you this morning on the Federal Power Act and the electric industry subject to it. This testimony reflects my personal views and not necessarily those of any client, colleague or firm with which I am affiliated.[1]

It has been 35 years since I began my first public service as associate minority counsel to this subcommittee, then known as the Fossil and Synthetic Fuels Subcommittee. It has been even longer since I first grappled with the Federal Power Act in the private practice of law. In that time, there have been momentous changes in the energy industry, including the electricity industry. With material amendments in 1992 (open access to transmission on a case-by-case basis, as well as amendment of the Public Utility Holding Company Act of 1935 ("PUHCA") to enable more non-utility generation) and 2005 (mandatory reliability standards, incentives for transmission investment, prohibition on market manipulation and increased penalties), the Federal Power Act of 1935 has weathered these changes, though whether it remains fit for purpose for the electricity industry of the 21st Century is an important question to consider.

In 1981, there were no regional transmission organizations. Indeed, there were only limited electricity markets, largely reflected in bilateral wholesale contracts between neighboring utilities. The electric industry was organized around integrated electric utilities with exclusive service territories. [There are exceptions to every general statement with respect to U.S. electric industry structure and regulation, but this is generally true.] Utilities were granted the exclusive right to serve consumers ("native load") in a state-defined area in exchange for accepting the obligation to serve all customers in that area at retail rates regulated by the states. Typically, these rates were based on recovery of prudently incurred costs to provide service, plus a

[1] I thank my colleagues, Randy Davis and Ellen Young, for their help with this, but am solely responsible for any errors or omissions.

reasonable return on invested capital. Planning to provide reliable service meant estimating the future demand in one's service territory, and building the generation, transmission and distribution to serve that demand. Application of the Federal Power Act to this electricity industry was fairly straightforward, although not without questions.

A. Origin of the Federal Power Act – To Fill a Regulatory Gap.

The so-called "Dormant Commerce Clause" is an implicit limitation under the Constitution on state regulation of, or discrimination against, interstate commerce.[2] The first electricity systems were largely based in cities and independent of each other. In the early 20th Century, with the beginning of interstate transmission of natural gas and electricity, the Supreme Court had to determine the limits of state authority to regulate these industries. A series of cases culminated in 1927 with *Public Utilities Commission of Rhode Island v. Attleboro Steam & Electric Co.* (*Attleboro*).[3] There the Supreme Court relied on the Dormant Commerce Clause to hold that a state may not regulate wholesale sales of interstate electric power, and that only Congress could regulate such sales. After *Attleboro*, States could regulate retail sales and intrastate sales, which at that time made up most of the electricity business, but states could not regulate interstate wholesale sales of electricity, which at that time were not extensive. Since the

[2] The Commerce Clause, U.S. CONST. art. I, § 8, cl. 3, reserves to the Congress the exclusive authority to regulate commerce "among the several States." The constitutional principle known as the Dormant Commerce Clause is a restraint on state power to legislate in a manner that discriminates against or unreasonably burdens interstate commerce. This portion of my testimony draws heavily from Robert R. Nordhaus, *"The Hazy 'Bright Line': Defining Federal and State Regulation of Today's Electric Grid,"* Energy Law Journal, Vol. 36: 203, 2015. Mr. Nordhaus is the true expert on this along with Charles B. Curtis, both of whom I am grateful to count among my FPA teachers.

[3] *Public Utils. Comm'n v. Attleboro Steam & Elec. Co.*, 273 U.S. 83, 89-90 ("The order of the Rhode Island Commission . . . is a regulation of the rates charged by the Narragansett Company for the interstate service to the Attleboro Company, which places a direct burden upon interstate commerce. Being the imposition of a direct burden upon interstate commerce, from which the state is restrained by the force of the commerce clause, it must necessarily fall. *** The rate is therefore not subject to regulation by either of the two states in the guise of protection to their respective local interests, but, if such regulation is required it can only be attained by the exercise of the power vested in Congress.")

states could not regulate wholesale sales, and since Congress had not regulated them either, the wholesale, interstate power market was unregulated -- the so-called "*Attleboro* gap."

Congress approved the Federal Power Act (FPA) in 1935 to fill this gap. Section 201 of the Federal Power Act establishes a comprehensive regulatory scheme for the electric industry, which is still in force today. The states are given the authority over generation, intrastate transmission, local distribution and retail sales of electricity. The Federal Energy Regulatory Commission (FERC, the successor to the Federal Power Commission) is given jurisdiction only in two areas: (1) wholesale sales in interstate commerce; and (2) transmission in interstate commerce. Under the *Attleboro* case, these were the two areas constitutionally beyond state authority to regulate. By its terms, the FPA extended federal regulation "only to those matters which are not subject to regulation by the States."[4]

For the next 30 years, the Federal Power Commission gradually played a bigger role in electricity regulation as wholesale sales and transmission of electricity in interstate commerce increased with the growing U.S. economy and population. In 1964, the Supreme Court was confronted with a case involving a wholesale sale of out-of-state power by a public utility to a municipal utility in the same state. The public utility, Southern California Edison, and the state of California argued for state jurisdiction over the rates for the wholesale sale, and the 9th Circuit concluded that state regulation was permissible under the Commerce Clause.[5] The Supreme Court reversed the 9th Circuit, holding that Section 201(b) of the FPA "grants the [Federal Power Commission] jurisdiction of all sales of electric energy at wholesale in interstate commerce not expressly exempted" by the FPA itself.[6] The Court concluded that the language of Section

[4] FPA § 201(a), 16 U.S.C. § 824(a).
[5] *Federal Power Comm'n v. S. Cal. Edison Co.* (*City of Colton*), 376 U.S. 205, 210 (1964).
[6] *Id.*

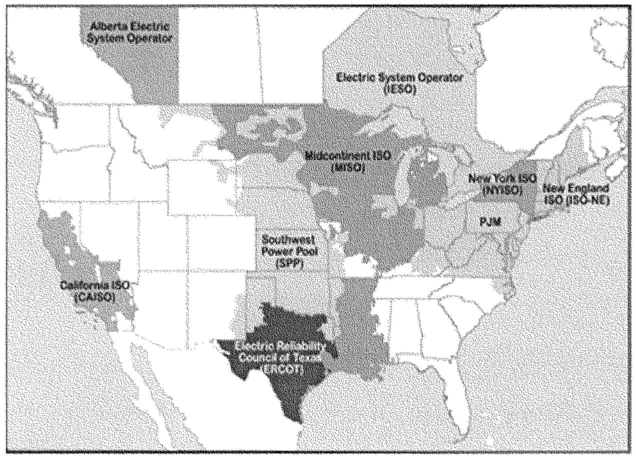
201(a) of the FPA stating that federal regulation should "extend only to those matters which are not subject to regulation by the states" was only a "policy declaration ... of great generality" that could not nullify the clear and specific grant of jurisdiction in Section 201(b).[7] Rather, Congress had drawn "a bright line, easily ascertained, between state and federal jurisdiction," making federal jurisdiction "plenary and extending it to all wholesale sales in interstate commerce."[8]

B. The Growing Role of Federal Power Act Jurisdiction as Electricity Markets and Industry Structure Have Evolved.

Fast forward 50 years. In some parts of the country, electric service continues to be provided by integrated utilities with native load service obligations. This is primarily in the Southeast and the West. In much of the country, however, the model has changed in various ways. Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) now provide functional, independent control of transmission assets to assure open, nondiscriminatory access to transmission. They also administer wholesale electricity markets in broad swaths of the country. These markets encompass electric energy and also, in some cases, capacity to produce electricity. Figure 1 shows the coverage of existing RTOs and ISOs across the United States and Canada.

[7] *Id.* at 215.
[8] *Id.* at 215-216.

Fig. 1: RTOs/ISOs



Source: FERC

Some generation assets remain subject to cost of service regulation, but much electricity is now sold at market-based rates in RTO/ISO-administered wholesale markets or via bilateral contracts, by utilities and by non-utilities, including marketing and trading entities. Hundreds/thousands of non-utility generators operate facilities ranging from large fossil generation to wind, solar, and landfill gas at both "utility scale" and smaller (rooftop solar). Amidst this proliferation of generation and with the advent of open access to transmission, RTOs/ISOs also administer markets for important transmission-related "ancillary services," such as spinning and non-spinning reserves, and increasingly are defining new products needed to keep the lights on, such as "ramping" capabilities (more on that later). Finally, RTOs/ISOs and utilities are also procuring "negawatts" or demand side management as a resource to meet load.

Utilities generally retain at least a Provider of Last Resort (POLR) responsibility for serving retail customers, but in some states, these "Load Serving Entities" have no generation.

Instead, they purchase electricity at wholesale in RTO/ISO-administered markets or via bilateral contracts for delivery to retail consumers.

How did we get to this kind of a patchwork from the simpler world of electricity industry structure and regulation in 1981? In my view there were four primary factors:

1. The Public Utility Regulatory Policies Act of 1978 (PURPA)[9] established that electric generation need not be treated as a monopoly and could be provided competitively by non-utilities, although this was not PURPA's stated purpose.[10]
2. Many areas of the country suffered "rate shocks" as a result of over-budget nuclear plants, which followed the Three Mile Island accident. This rate shock created demand for lower cost generating resources and shook public confidence in the wisdom of leaving monopoly utilities exclusively in charge of procuring electricity supplies.
3. Experience with oil and natural gas deregulation caused a growing belief that markets were the best way to obtain the most reliable and efficient supplies of energy, not regulation. Enabling natural gas customers to obtain natural gas from other suppliers and requiring natural gas pipelines to provide open access for those alternative suppliers reduced consumer natural gas prices and increased competition among suppliers. Surely, the electricity industry could follow the same path.
4. Finally, the adaptation of the jet engine to utility purposes, combined with healthy supplies of natural gas and low prices following deregulation created a tremendous

[9] 16 U.S.C. § 2601 and following.
[10] While PURPA has become known for the opportunities it mandated for sales of power by so-called "qualifying facilities" owned and operated by non-utilities, the statute was enacted to encourage energy conservation through changes to utility rate structures that previously rewarded higher electricity consumption with lower per unit costs. *See* PURPA § 111(d)(1)-(6), 16 U.S.C. § 2621(d)(1)-(6).

opportunity for non-utility generators to offer energy that in many areas was lower priced than the incumbent utility offered.

All of these came together in the 1992 Energy Policy Act, which among other things, amended PUHCA to allow non-utility generators other than PURPA Qualifying Facilities to operate without burdensome PUHCA regulation. FERC's landmark Order No. 888, providing for open access to all jurisdictional transmission lines, followed in 1996.

For a time it seemed as if all the country would be organized into RTOs, and that electricity competition would extend from wholesale to retail markets all across the country.[11] But the California energy crisis of 2001 and the implosion of Enron slowed this movement. In addition, low utility rates in many areas of the country diminished the demand for restructuring. While some RTOs have expanded and more expansion is being discussed, no new RTO has been approved in some time. Meanwhile, full retail competition remains in effect only in a minority of states.

Over time, the growth in importance of wholesale electricity markets and interstate transmission has caused a similar growth in federal jurisdiction under the FPA. Two Supreme Court decisions earlier this year highlight this. In *FERC v. Electric Power Supply Association,*[12] decided January 25, the Court upheld FERC Order No. 745,[13] which requires RTOs to pay the same price to demand response providers for conserving energy as to generators for producing it, so long as a "net benefits" test is met (designed to ensure that accepted bids actually save consumers money). The Court of Appeals for the District of Columbia Circuit vacated Order

[11] In anticipation of this, FERC initiated what came to be known as the Standard Market Design rulemaking in 2002 (Docket No. RM01-12-000). Finding it overtaken by events, the Commission terminated the rulemaking in 2005.
[12] 136 S.Ct. 760, 577 U.S. ___ (2016).
[13] *Demand Response Competition in Organized Wholesale Energy Markets*, Order No. 745, 76 Fed. Reg. 16658 (2011).

No. 745, holding that because the order regulates retail electric rates, FERC lacked the authority under the FPA to issue it. The Supreme Court (Justices Scalia and Thomas dissenting) disagreed, saying that "the practices at issue . . . directly affect wholesale rates" and that FERC has not regulated retail sales. Accordingly, Order No. 745 complies with the terms of the FPA. A contrary view, the Court reasoned, "would conflict with [the FPA's] core purposes."

This broad view of FERC's FPA jurisdiction foreshadowed the outcome in *Hughes v. Talen Energy Marketing,*[14] decided April 19. In this case, the State of Maryland became concerned that the PJM RTO capacity market was not encouraging enough new generation in Maryland. To address this, Maryland selected a generation project for construction and ordered Load Serving Entities in Maryland to enter into a 20-year pricing contract with the generator to pay (or receive) the difference between the rate specified by the generator in the contract to construct the project and the amount the generator received for the sale of its capacity in the PJM market. The Court held that Maryland's program was preempted by the FPA because the program unlawfully seeks to have Maryland regulate wholesale rates: ". . . Maryland – through the contract for differences – requires CPV to participate in the PJM capacity auction, but guarantees CPV a rate distinct from the clearing price for its interstate sales of capacity to PJM. By adjusting an interstate wholesale rate, Maryland's program invades FERC's regulatory turf."

Perhaps anticipating arguments to come, the Court went out of its way to distinguish what Maryland had done here from other types of state programs:

> Our holding is limited: We reject Maryland's program only because it disregards an interstate wholesale rate required by FERC. . . . Nothing in this opinion should be read to foreclose Maryland and other States from encouraging production of new or clean generation through measures "untethered to a generator's wholesale market participation." . . . So long as a State does not condition payment of funds on capacity clearing the auction, the State's program would not suffer from the fatal defect that

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[14] 136 S.Ct. 1288, 578 U.S. ___, (2016)(*consolidated with CPV Maryland LLC v. Talen Energy Marketing).*

renders Maryland's program unacceptable.

What does this mean for programs to support nuclear power plants?[15] What about coal plants? Nowhere in the FPA does it say that state jurisdiction depends upon the nature of the generation being addressed. And what happens if wholesale market rules, particularly concerning price formation in capacity markets, don't lead to the results that the states desire?

There will be plenty of work for lawyers, indeed, and perhaps for you as these and other questions arise and are addressed by regulators and the courts.

C. Three Things You Need to Know About Electricity.

Any discussion of the FPA, its relevance, its performance, and its future reform, must be based on a clear understanding of the industry it governs. While that is a large subject, I offer three foundational elements that are too often overlooked, and that properly understood, will enable better policy formation.

1. Unlike oil, natural gas and liquid fuels, electricity cannot be stored in meaningful amounts.
2. Adequate supply is necessary, but not sufficient, to provide reliable electricity service. Supply and demand must be balanced in real time, an ever more challenging task.
3. There is no such thing as "The Grid."

1. Electricity now cannot be stored in meaningful amounts.

Electricity demand varies greatly over the course of a day and from season to season. Yet, because electricity cannot be stored economically and in meaningful amounts, that changing demand must be met in real time every second of every day over the course of the year by

[15] For example, as part of its recently adopted Clean Energy Standard (http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-e-0302), the New York Public Service Commission has authorized ratepayer subsidies for nuclear power plants, as well as wind and solar plants.

adjusting the amount of power flowing on the system. This is no small feat, particularly when you consider that, again unlike gases and liquids, electrons do not follow contract paths and are not controlled by valves. Instead electrons flow over the path of least resistance.

What this means is that as demand increases or decreases, power must be added or taken away at the correct places by adding or removing generation or demand. On a hot August day, as we've recently experienced, we need more generation than we need the rest of the year, except perhaps on those very cold days in January and February. The rest of the time, the generation that we need on those peak demand days is idle. RTOs/ISOs and utility operators try to manage this as efficiently as possible, but providing sufficient revenues to support the availability of generation that is needed only for short periods of time is an increasingly difficult challenge in wholesale markets, especially as more intermittent resources are added.

2. Adequate supply is necessary, but not sufficient, to provide reliable electricity service. Reliability requires balancing supply and demand every second.

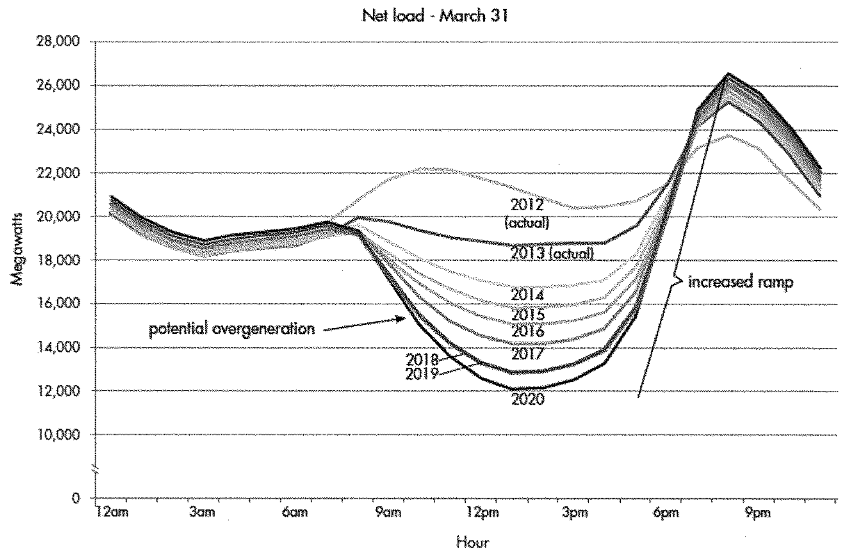
In the 1981 electricity industry, the integrated utility serving load could plan for a margin of spare capacity to meet the needs in its service territory based on normal weather and the historic performance of its equipment. Utilities also planned generation fleets with the "peakiness" of electricity demand in mind. Large baseload plants, primarily nuclear and coal, were built to run most of the time (very high capacity factors) to take advantage of their low marginal costs. Natural gas was used for intermediate or peaking plants with higher fuel and marginal costs, but which could be turned on and off more easily and could follow the load as it moved up and down.

RTOs and ISOs now seek to replicate this kind of planning, but in a very different environment. One difference is the increasing role of intermittent generation such as wind and solar. Significant amounts of these resources have been installed recently, especially in Texas, the West and the Midwest, and more will be installed in the future, but only a fraction of the installed capacity of intermittent renewable resources can be counted on to be available during peak periods of demand, *e.g.*, a hot summer afternoon. In certain areas of the country, the wind blows best at night when demand is lowest, or in the Spring and Fall when demand is lower. This has resulted in negative prices in energy markets at certain times of the day (or night) and has led to market distortions. Solar generation tends to increase as the day goes on, but then as the sun declines around 4 in the afternoon, that falls off quickly and must be replaced by other generation, just as peak demand in the day occurs with the overlap of business operations and residential evening use ramping up.

This has been studied by the California ISO, where this challenge is being presented most acutely given the large amounts of solar and wind generation in California. A Cal ISO paper[16] describes what has come to be known as the "duck curve" (shown in Figure 2).

[16] https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf.

Fig. 2: The "Duck Curve"



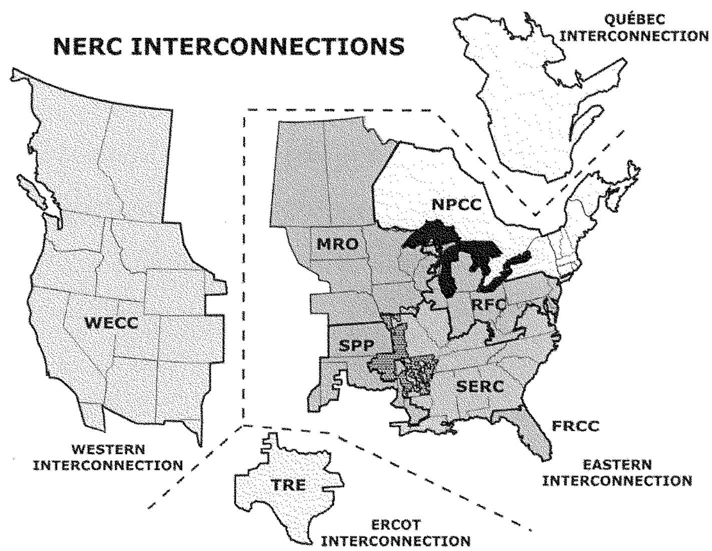
Source: California ISO

The bottom line is that using greater amounts of intermittent generating resources will require more resources that can ramp up and down quickly. How these ramping resources will be maintained and compensated is an ongoing challenge given that their owners need to recover their investment and a reasonable return on that investment, even if that resource operates only a small fraction of the day. Suffice it to say that in the 21st Century, the existence of reserve capacity margins is necessary, but not sufficient to ensure reliability. The challenge is to assure that supply and demand are met in real time, all the time.

3. There is no such thing as "The Grid."

Many use the term, "the grid," as shorthand to describe the wires over which electricity is carried as opposed to generation. But as you now know, the distribution system is regulated by the states, while the transmission system is regulated by FERC. Moreover, even if the term is intended to describe just the bulk power system of high voltage transmission lines, there is not one single North American network; there are four: 1) the Eastern Interconnection; 2) the Western Interconnection; 3) ERCOT (most of Texas) and 4) Quebec, as shown in Figure 3.

Fig. 3: North American high voltage transmission networks



Source: NERC

These Interconnections are separate networks, with only limited DC lines interconnecting them. Neither Quebec nor ERCOT is subject to FERC FPA rate jurisdiction (ERCOT because of this separation).

Finally, there are some 500 transmission owners in the U.S. ranging from the large Federal Power Marketing Agencies, such as the Bonneville Power Administration and the Western Area Power Administration, to large and small investor owned utilities to large and small municipal utilities to large and small rural electric cooperatives. And there is the Tennessee Valley Authority. Of these transmission owners, only investor-owned utilities are fully subject to the Federal Power Act. Some municipal utilities and rural electric cooperatives are subject to state regulation; some are self-regulated. Some are members of RTOs/ISOS, many are not. I highlight this because nowhere else in the world is grid ownership and regulation this fragmented. Initiatives to reform or upgrade "the grid" that do not take this reality into account will not succeed.

Conclusion

The Federal Power Act has seen the electric industry evolve from a collection of city and regionally focused, vertically integrated utilities subject to pervasive cost of service regulation into a very different enterprise. As our economy becomes more electrified, and ever more dependent on reliable and affordable electricity, and as the demand increases for ever cleaner sources of electricity, consideration of whether the policies and lines of jurisdiction embodied in the Federal Power Act remain appropriate is wise and necessary. I hope this testimony is helpful in this effort and welcome your questions.

SUMMARY OF LINDA G. STUNTZ TESTIMONY

1. The Federal Power Act was enacted in 1935 to fill a regulatory gap. The Supreme Court had determined that the States under our Constitution could not regulate wholesale sales of interstate electric power, but could regulate retail sales and intrastate sales. The Federal Power Act was enacted to provide the Federal Power Commission (now FERC) with the ability to regulate what the states could not. The states retained authority over generation, intrastate transmission, local distribution and retail sales of electricity.

2. With significant amendments in the Energy Policy Acts of 1992 (PUHCA reform to enable more non-utility generation to flourish and FERC authority to order access to transmission service on a case-by-case basis) and 2005 (reliability, transmission incentives and increased authority to address market manipulation along with increased penalties), the FPA has remained largely intact. However, the structure and composition of the electric industry has changed dramatically in many parts of the country.

3. As our economy has grown, and as electricity markets and industry structure have evolved, federal jurisdiction under the Federal Power Act has grown. Wholesale markets for electricity administered by RTOs and ISOs now provide power across much, but not all, of the country. The restructuring of the electric industry was driven by multiple factors, but chiefly:

    a. PURPA – demonstrated viability of competitive generation;
    b. "rate shocks" due to over-budget nuclear plants following the Three Mile Island accident;
    c. favorable experience with oil and natural gas deregulation, which drove a desire to rely on markets to a greater degree rather than cost of service regulation; and
    d. technology development adapting jet engines fueled by natural gas for use by utilities.

4. Electric restructuring has taken many different forms across the country, but Supreme Court decisions earlier this year confirm that FERC jurisdiction under the FPA now extends to the purchase of demand management resources by RTOs and ISOs, and that states may not act in ways that "adjust an interstate wholesale rate," even if the state is acting in a way it believes is necessary to preserve generation adequacy. Other pending state initiatives, *e.g.*, to protect nuclear power generation, are likely to raise similar questions.

5. One thing that has not changed since passage of the FPA is that electricity cannot be stored in meaningful amounts. This simple fact has large consequences. It means that supply and demand must be balanced every second to preserve reliable service. Doing this is becoming more challenging as intermittent resources play bigger roles.

6. There is no such thing as "The Grid." North America is actually made up of four separate high voltage transmission networks: the Western Interconnection, the Eastern Interconnection, ERCOT (most of Texas) and Quebec, with only weak DC ties between these. In addition, there are some 500 transmission owners in the U.S.

Mr. OLSON. Thank you, Mrs. Stuntz. And I will yield myself 5 minutes for a round of questions.

This hearing is called, again, the title was, the “Federal Power Act: Historical Perspectives.” The subtitle, I think, could be, “Those who forget the lessons of history are doomed to repeat them.”

I would like to start with you, Mrs. Stuntz, and open this to the panel.

Mike is on my right? Curveball from up on stage here.

Early in the course of the electrical restructuring efforts at FERC, Congress and this committee were fairly active on the topic. We kept our oversight and passed significant legislation. Overall, Mrs. Stuntz, for you, and then work down the panel, were these efforts of this committee helpful in guiding FERC in improving efficiency in markets? Yes? No? Lessons learned?

Ms. STUNTZ. Absolutely yes. And as the one person here who never worked at FERC, I guess, but I worked closely with this committee both as a staffer but then particularly in the 1990s Energy Policy Act, which probably gets insufficient appreciation in my view, for its role of contributing to generation competition. And the oversight and the guidance provided by that committee, and I know Mr. Barton remembers that well, and Mr. Schaefer, I think, was critical in setting a path which FERC then went beyond. But in 2005 as well, this committee was very important.

Mr. OLSON. Ms. Tomasky, in your comments you mention a painful experience. Do you want to elaborate on that how we don’t repeat a painful experience? Your comments on oversight by this committee with FERC and this issue.

Ms. TOMASKY. Well, sir, and I am sure Mr. McNerney would agree that the most painful experience was the experience of the California marketplace. And there are some really important lessons from that, I think. I will say that one of the things FERC didn’t do when it moved to competition was require States to do exactly as FERC was doing and didn’t mandate unbundling.

But some States like California did take the lead in moving forward. And their markets today, I want to say, it ends as a good story, their markets work very effectively as part of a competitive market. California was plagued with a lot of issues. One of the most significant of course was that the markets were new. The regulations were new. And there was a lot of market manipulation that led to unfortunate circumstances. There also were extraordinary supply problems. And California did a good job under tough circumstances of responding with efficiency initiatives and things like that that we have also learned from.

I think the most important thing that we have all learned from these experiences is that while we have a vision of electricity as a commodity, we have to always remember that to society as a whole, it is an essential service. And we all have to figure out how to come together when there is a crisis, when there is an outage, when things aren’t working right, to acknowledge that. Because it has to work. And I think that to me is the most significant lesson of these painful experiences. Thank you.

Mr. OLSON. Thank you, ma’am. Mr. Naeve, you were a FERC Commissioner. Did we help you or hurt you back in the old days?

Mr. NAEVE. I think the oversight of the committee and the legislation passed by the committee with respect to the power industry has been helpful. I think, for example, both of the prior witnesses mentioned the Energy Policy Act of 1992. That act was very important if for no other reason it eliminated some of the restrictions under the Public Utility Holding Company Act.

The independent power industry was being held back by the Public Utility Holding Company Act. If you owned a generator—generators were considered utilities. If you owned a generator, you were a utility holding company. There are a lot of restrictions on utility holding companies. In some ways they are a shared jurisdiction with the SEC and FERC over in this area.

Mr. NAEVE. And it eliminated to some extent the restrictions on generation ownership through EWGs and the creation of EWGs. That was very helpful. The Energy Policy Act of 2005 finally repealed the 1935 act. That was extremely helpful as well. So that gave FERC more or less exclusive Federal jurisdiction in this area. And the 1935 act had itself served its usefulness and its purpose and was no longer needed. So that was also very helpful.

Granting FERC greater enforcement authority and powers was very helpful again. If one thinks backs about it, FERC was really a cost-of-service regulator with engineers and accountants and that sort of stuff. And once we had competition, the model changed. And FERC, now their role is to preserve competition. So they need new resources and new powers, and that statute give it to them. Also you gave FERC more jurisdiction over certain entities that previously—over their transmission systems that they previously didn't have. So that was also very helpful.

But I want to add—I am sorry. Let me add one thing. Notwithstanding all those important changes, the Federal Power Act, as I mentioned, like the Natural Gas Act, is very broadly written. And it is written in a way that has given FERC the flexibility to adapt to changing conditions. So it is a very useful statute. And it has served well over the 85 years that is has been there.

So thank you.

Mr. OLSON. Thank you. Mr. Smith, how did this committee help or hurt restructuring about a decade ago?

Mr. SMITH. Well, I will endorse the comments of my colleagues about the 1992 act and some of the core provisions in the 2005 act. In addition, I think it is important that the reliability provisions in the 2005 act were enacted. There was concern that as the market got more competitive, moved away from cost-of-service rates, that spending on things, that promote reliability might decline when all of a sudden that couldn't necessarily be recovered directly from ratepayers.

So the conversion of what had been up until then essentially a voluntary industry program of reliability standards into a regulatory program was important. The 2005 act also made important policy changes on transmission development, some of which worked and some of which didn't work. So, for instance, the Congress directed FERC to provide for incentive rate treatments for new transmission investment. And I think overall that has been quite successful at getting the industry focused on deploying capital to needed transmission investments.

There were provisions that you might recall on backstop transmission siting which I would say have had no effect on easing the problems of transmission siting at all. So it's a mixed bag on that front.

Mr. OLSON. And my time has expired. I now yield time to the ranking member from California, Mr. McNerney, and you will have 6 minutes and 17 seconds per my example. Bipartisanship.

Mr. MCNERNEY. You know, I really appreciate the sort of bipartisan sheen that this hearing has so far. So thank you for that, Mr. Chairman.

Ms. Stuntz, you mentioned technology developments had a large impact. And you cited the jet engine adaption. It seems to me that technology is changing at a very rapid pace now. And I think that is going to have a large impact on the way we have to structure this thing. How do you feel about that?

Ms. STUNTZ. I agree absolutely both at sort of the utilities level but also the whole rise of distributed generation, is this going to cause a whole new business model, who will be in charge, are we going to end up with RTO-type entities at the distribution level the way we have at the transmission level? You know, New York is sort of probing that. You know, it is not at all clear whether that is the right answer.

But yes, it is forcing a change. And there are real questions, interesting questions, about whether regulators can keep up with the pace of technology and what happens if they don't and——

Mr. MCNERNEY. Not to mention that the legislators keeping up is even more of a challenge. Thank you.

This leads into my next question. Mike, you mentioned a lot of stuff that the I think the FERC was able to do—or not the FERC, but the power commission—was able to do before FERC on natural gas based on the Natural Gas Act. Were there a lot of court challenges in that time? And if not, has the current sort of legal ecosystem changed enough that we have to worry significantly about that today?

Mr. NAEVE. Certainly not with respect to natural gas. We don't need to worry about that. There were court challenges. And as a general rule, the Commission did very well in those court challenges. The courts accepted the proposition that if there is adequate competition, competition can set just and reasonable rates. The courts accepted the proposition that to prevent undue discrimination you have to require the pipelines, if they are going to carry their supplies for themselves or more specific customers, they have to carry supplies for everybody.

So the courts as a general rule were very supportive. And at times the courts actually led the Commission. There was a famous case, the Maryland People's Counsel case in which the court turned down a proposal that FERC had approved because it provided transportation for only a certain class of customers and not for all customers. So I think that educated FERC that they had the power to go out and require transportation for all customers. So as a general rule, I think the statutory boundaries today in the gas industry are more than adequate. They are very robust.

Mr. MCNERNEY. Thank you.

Mr. Smith, you mentioned that some of the legislation in more recent years had some problems in it and some successes. How hard was it to overcome the problems that legislation introduced?

Mr. SMITH. Well, the particular example I was giving was about backstop transmission siting. So transmission siting is fundamentally a function at the State level. The 2005 act attempted to provide a means through a combination of actions by the Department of Energy and then the Federal Energy Regulatory Commission for transmission developers to be able to go to FERC to get certificates to develop transmission if they couldn't get State approvals. And for a variety of reasons, including a couple of court of appeals cases, that authority hasn't gotten used.

So in the absence of that, transmission developers are going to the individual States in which the transmission is located and working through those State processes. And if they need to—if there are disputes about that, they get litigated in the State courts instead of through a Federal system.

Mr. MCNERNEY. Thank you.

We talked about technology a minute ago. Cyber issues are a big part of that. Is that something that we are going to be able to take specific language out or should we leave that to the regulators, the cybersecurity and cyber protections?

Ms. STUNTZ. The part—because of this committee, and I remember it was Mr. Boucher was involved in 2005 when it set up the reliability framework, it expressly granted sort of FERC the ability to monitor cyber as part of—and to promulgate reliability standards on the subject of cyber. So under FERC's direction North American Electric Reliability Corporation or NERC and its regional entities have been embarked on on doing that. It is a tough enterprise, very challenging enterprise.

You can never be complacent about it. They are up to like critical infrastructure protection standards five or six now, I think. But it is certainly something that bears look because it doesn't respect jurisdictional lines or the law, for that matter, and it will affect the weakest link of the systems.

Ms. TOMASKY. I would add to that. I would agree with it. And I would say that the focus of legislators on this issue is an extremely important one. It is very difficult, and I share my experience as a member of a board, of an electric utility, it is very difficult, and it is not appropriate, I think, to get into the weeds of a lot of these issues. But the importance of it is significant. And what the committee did, what the Congress did, was to change the governance structure and essentially direct FERC to make sure that utilities were focusing on it in a systemic way.

And having been involved in the implementation of these from the utility side, I can say that it was an extremely important refocusing of efforts. It is a very, very difficult and a constant area. I continue to urge you to oversee it.

Mr. MCNERNEY. Thank you. Mr. Chairman, I yield back.

Mr. OLSON. The gentleman yields back. And perfect 6 minutes and 17 seconds. Thank you, my friend.

The Chair recognizes the chairman emeritus from a happy, double-overtime Texas Aggies, Chairman Emeritus Joe Barton. For 5 minutes.

Mr. BARTON. Well, let's wait until we see what happens with Alabama and LSU before we see how happy we are this year in Aggieland.

Well, thank you, Mr. Chairman and ranking member, for holding this hearing. And thank you, panelists, for your excellent testimony. I have been on this committee for 30 years. So I have lived through most of what you folks talked about. And I would postulate that we have three basic requirements for our utility system here in the United States. First and most important is we have to have an absolutely guaranteed adequate base load supply. If you don't have supply, the rest doesn't matter.

You saw that in California. The lady talked about the California market. They wouldn't let outside power bid into the system and they had $2,000 per megawatt hour charges. And the State of California, rightfully so, revolted against that. So we have to have an adequate base load supply. And it is difficult in the Northeast because the demand is not where the supply is.

Second, you have to have a transmission system that has adequate capacity to deliver that supply. In a large State like Texas, which as Mrs. Stuntz pointed out, we have ERCOT. So we basically have one entity that regulates the transmission system. So you don't have the interstate problems between States.

And finally, you have got to have a retail framework that the customers consider fair. And we have been all over the map on that the last 30 years. Again, what happened in California compared to States like Georgia, Mississippi where they have always had retail rates regulated by the State PUCs. And in my State of Texas, we have tried it both ways. We have gone from retail regulation to an open competitive system where in the home that I live in I routinely get five or six requests a month to switch power supply.

So this is a complicated issue. It is not an issue that any of us get any kudos for at our townhall meetings. You know, I have never had a question at a townhall meeting about an ISO or an RTO or any of the things that we have to do to make the system work.

So I am not sure where the committee is going to go based on this hearing. I think there is work to be done on a bipartisan basis if we want to. But this is a very complicated issue. And we have tried a number—I mean, 1992, 2005. We tried to handle the interstate transmission siting issue. And we have yet to get that right. I thought we had it right in 2005, and the court struck it down two to one.

So I guess my question, since I am supposed to ask a question, you all are sitting here looking at me. Yes, I could say: Don't you agree with what I just said. That would be not fair.

I am going to ask Mrs. Stuntz, which is something that hasn't come up yet, how do we interact between the Federal Power Act and the Clean Air Act? Because EPA more and more is usurping the decisions in providing power at adequate prices to the customers. The Clean Power Plan that has currently be stayed, if that is fully implemented, we are going to have base load supply problems in Texas in the next 4 or 5 years. So how would you interact those two so that you get a fair balance between environmental protection and power availability?

Ms. STUNTZ. Thank you, Mr. Barton. That is a really——

Mr. BARTON. You have got 33 seconds to answer.

Ms. STUNTZ. That is a really tough question and it is an important question, and it is one of the reasons why I commend you all for what you are doing today. Speaking strictly for myself, I have thought from the begin—I have not understood from the beginning of the announcement of the clean power plan how that would—how a plan that envisions individual States or potential regions adopting compliance plans on a rate or a mass basis is going to work on the back of a market base regional wholesale electric system.

I mean, the simplest way I could put it is, if you are a State and you have a plan that depends on importing power from somewhere else, but they are not going to send it out anymore because they want the clean power, I mean, I don't know how it is going to work. And it leads to a bigger—you know, maybe the bigger question is sort of, do these markets adequately reflect—you know, we want competitive markets that are based on marginal costs. Is that the value that we want now? If you want to overlay on top of that environmental dispatch, which is really what we are doing now, but we are not putting a tax on carbon, we are doing something else, I foresee real difficulties. I can't fit them together. I don't know how that is going to work.

Mr. BARTON. I thank the chairman. I thank the panel.

Mr. OLSON. The gentleman yields back. The Chair recognizes the ranking member of the full committee, Mr. Pallone, for 6 minutes and 11 seconds.

Mr. PALLONE. OK.

Mr. OLSON. Following Chairman Barton's example.

Mr. PALLONE. I wanted to ask Ms. Stuntz, but then anyone else can answer as well, but in your testimony you raised a point regarding the Federal Power Act that I raised in my opening statement, and that is, you know, where you said, and I quote, "the Federal Power Act has weathered these changes, but whether it remains fit for purpose for the electricity industry in the 21st century is an important question to consider."

I honestly don't know whether the act has outlived its usefulness, but I think it is an important perspective to consider, particularly as I see not only the blurring of regulatory jurisdictions, but also the growth of technologies that really make me question whether traditional rate-making formulas are able to fairly value deployment of things like distributed generation, micro grids, and storage.

So I just wanted to ask you, and again, I would like to hear from the other witnesses, this is my only question, whether we have come to a point in time where all these technological, legal, and other developments warrant us to conclude that the Federal Power Act has outlived its usefulness. I will start with you, and if anybody else wants to answer.

Ms. STUNTZ. I will try to be very brief, because others, I am sure, have views. As Mr. Naeve said, that one of the strengths of the Federal Power Act is its breadth that has enabled regulators to accommodate a lot of developments, but fundamentally this Colton wholesale retail bright line, I think, is going to be challenged by things like distributed generation. I mean, we already—you are seeing on the net metering sites, I mean, is that really the basis on which you want to decide whether the Federal or the State regulator has the ultimate say? And is that a distinction that even will make sense when, as in California now and some parts, you are seeing very large amounts given certain times, of generation coming on the system from the customer. So that may be an adaptation that is beyond the capability of the current FPA.

Mr. PALLONE. All right. Thank you. Would the others like to—go down the table there.

Ms. TOMASKY. Sure. Mr. Pallone, I am not prepared to conclude that the basic framework of the power act is no longer useful. As Ms. Stuntz and others have said, it is pretty broad. And the competitive market design that we have today, I think, is very effective. I think that we have an inherent problem in its implementation that is pretty thorny and I don't have a good answer to, which is that we have a lot of different approaches, because one of the things FERC didn't do was to require retail and bundling and have a uniform system across the country, so you have got some States that have competition and others don't.

And the way it is relevant to the question of technology is that I do think that the States and the local—which had the retail jurisdiction, they are going to be the testing ground and the proving ground for a lot of these new technologies, but ultimately their implementation needs to be on a much broader and regional scale. There really isn't a coincidence between the boundaries of the State jurisdiction and how a technology should operate and deploy in order to be efficient. We know that. That is why we have regional markets.

So I think it is probably fair to say that at the end of this inquiry, you would come to conclusions that changes to the power act need to be made, but I think it would be most useful to try to understand what are the values in terms of generation power supply you are trying to accomplish, you know, where are you going to—what technologies and how do you want to facilitate them, and then figure out how to change the boundaries under the Federal Power Act to make that effective.

Mr. PALLONE. Thank you.

Mr. NAEVE. I would add that it is very difficult to always anticipate the effects of new technologies or new developments. Often they have unintended consequences, the so-called duck curve that Ms. Stuntz mentioned is a good example of that.

So I would tend to prefer, as much like the Federal Power Act statutes, that are broadly written, that delegate broad authority to the experts and allow them the flexibility to adapt to changing market conditions as opposed to having Congress constantly passing new bills trying to catch up with yesterday's technology.

The Federal Power Act is one of those statutes. It gives FERC very broad authority. It could well be that they need additional authority in the future, but to say make rates just and reasonable, it doesn't tell them how to do it. It gives them a lot of flexibility to do it. It gives them a large amount of jurisdiction. I think some of these issues where they have deferred to the States, they probably have the power if they want to choose to assert jurisdiction over many of these issues, they could probably do so.

So I think it is kind of—I would take a wait-and-see approach, but it is a statute that has served well for a great many years, and the reason it has held up over that time is because it does paint with such a broad brush and delegate to the Commission authority to be flexible.

Mr. PALLONE. Thanks.

Mr. SMITH. I would agree with the conclusion that I think I heard from my colleagues, which is that it hasn't outlived its usefulness, that the core provisions of the Federal Power Act should be kept in place and then adjusted as necessary as market changes or technology changes present problems where the answer doesn't make sense under the current allocation of responsibilities. And I think the best example of that is for most of the life of the Federal Power Act, generation was interconnected to the transmission system. And now that you have generation in little tiny chunks that is connected to the distribution system on one side or the other of the consumer meter and is often owned by a retail seller so that you have somebody—I mean, retail customer who is both a buyer and a seller potentially, it leads to versions of this application of this bright line that were never anticipated when the act was written.

So in my mind, the way to deal with that is not to get rid of the Federal Power Act and start over again, but rather to—if that becomes a problem that is not fixable under the current regime, to make adjustments for things like net metering, distributed storage, that is workable for those particular technologies.

Mr. PALLONE. Well, thank you all.

Thank you, Mr. Chairman.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from Illinois, Mr. Shimkus, for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman. It is great to have you here. This shows you how nerdy I am getting. I am really enjoying this panel.

Ms. STUNTZ. Thank you.

Mr. SHIMKUS. And this is a great topic, because there are issues and evolution and processes. Just a brief comment to Mr. Naeve, though. I understand his statement on vagueness and flexibility, but really on the Republican side here, we have been burnt too much by vagueness of law, and there is really a desire by many of us to be more specific, because in other agencies, we feel that they have kind of overstepped that, and then it gets into litigation and you have all these problems.

I want to kind of talk about two kind of regional problems, and so maybe—and so let's start with the RTOs and, quote unquote, "price takers." So you know in an RTO, generators can bid, we have a whole bunch that would bid zero to make sure that they can keep their plants running, but the question is, if you have—if the market has too many price takers bidding at zero, does that mean it is no longer a competitive market? Does anyone want to try that out?

Ms. TOMASKY. Well, I don't know whether it is no longer a competitive market, but it is not a function——

Mr. SHIMKUS. Pull that a little closer.

Ms. TOMASKY. I am sorry. It is certainly not a functioning market that is going to bring suppliers in, because there is only so long you can bid at zero. The——

Mr. SHIMKUS. See, let me go where I am. Illinois used to be a net exporter of power.

Ms. TOMASKY. Yes.

Mr. SHIMKUS. And now with this change, Illinois may be transforming through decommissioning for a lot of reasons, one of it might be this market that is not functioning normally because of the price takers. So that may be added onto some generators who now aren't getting a market signal for price, already feeling the pressure from other regulatory pressures, and will in essence walk away from the market.

Ms. TOMASKY. Well, I think the fundamental problem, as I understand it, it really kind of goes to nuclear plants. Is that really what you are talking about, sir?

Mr. SHIMKUS. No, because I don't think they are the—they are not the price takers. They are not bidding—they can't, because their operating costs are too high.

Let me—so I guess the question is, who is a price taker? Who is a price taker, in your—in these markets?

Mr. NAEVE. Let me begin with your first question, if you have significant numbers of price takers that are bidding zero, for example, can you have a functioning market? And I think the answer depends on why people are bidding zero. So, for example, if you are a nuclear plant, nuclear plants can't be turned off and turned right back on 5 hours later. They have to run continuously. So they can't bid a price such that at some point—if they bid a higher price and then the market sets a lower price, they will be told to shut down. They can't afford that. So they bid a very low price so that regardless of the market price, they are still taken by the RTO, because they can't turn back on again the next day.

So they hope to make enough money during the daytime to make up for their losses in the evening, and that is their hope at least. So——

Mr. SHIMKUS. But it is a risk, it is a gamble too on their part?

Mr. NAEVE. It is a gamble, right, of course. And if they are not making enough sufficient revenue, then they may have to shut the plant down, but they are behaving like a rational market participant. And I think if participants are bidding with those characteristics, they are bidding that way, it still means you have a functioning market. Now, if you have people bidding——

Mr. SHIMKUS. Let me stop. I only have 1 minute left, and I want to get this out. So I do appreciate that, because we are seeing that right now and it is forcing decommissioning early of—well, I don't know about early, but plants along with the other stress.

Let me address another kind of a distortion of the market that we see right now. So you have, you know, States who enact PURPA laws, so then you have granted transmission siting which will go from—and my colleague, Mr. Pompeo, is not here—from Kansas, through the State of Illinois, through a couple States just to reach PJM, because some of these States are making State regulatory decisions on the State portfolio, but there is really no benefit. That is not feeding into MISO. They are designed to feed into PJM and access these State requirements. That is kind of a distortion of the market too, wouldn't you say? Anybody can jump in. I mean, I don't——

Mr. NAEVE. Well, can I finish just one comment on the prior question, and then I will be happy to respond to that?

Mr. SHIMKUS. Yes.

Mr. NAEVE. That is, if you are bidding as a price taker at very low prices because of a particular Government subsidy that you have, then that subsidy makes it profitable to bid at a low price, like a price below zero.

Mr. SHIMKUS. What kind of subsidy are you referring to?

Mr. NAEVE. Well, like production tax credit, for example.

Mr. SHIMKUS. OK. We all know what that is, right?

Mr. NAEVE. And that does affect the functioning of the marketplace, so I kind of depends on why they are bidding.

With respect to your second question, I am not sure I quite understood the context. People are——

Mr. SHIMKUS. Well, I am just saying you have got multi-State transmission grids built solely to affect the PURPA market in PJM, crossing State lines that have no—really in essence are designed to feed the PJM market and not to feed the MISO market.

Ms. TOMASKY. Sir, I think that that is a legitimate policy issue. I am not sure that I would agree that it is a function of the design of the marketplace. I think it is a result of the fact that the transmission entities have an opportunity, the suppliers have an opportunity to build, but these lines are not built yet. They are seeking to build them.

Mr. SHIMKUS. No. They have being built. There are two crossing the State of Illinois right now.

Ms. TOMASKY. Yes, sir. They are being built. They are not in service at this point, so I don't think we know how the market works. But I completely agree with you that one of the issues that we have as a result of the divisions among the regions is that we don't have a consistent policy for reconciling the interests of one region to another. I think that is a very legitimate issue.

Mr. SHIMKUS. Thank you. Thank you.

Mr. OLSON. Well, thank you. The gentleman yields back. The Chair recognizes the gentleman from New York, Mr. Tonko, for 5 minutes.

Mr. TONKO. Thank you very much, Mr. Chair. And let me thank our witnesses for being here today. I very much appreciate hearing more about the historical changes to our electricity markets from the Federal perspective, because I have a slightly different perspective from my time as chair of the New York State Assembly Energy Committee beginning in the 1990s. I saw the rush to restructure utilities in my home State and some of the unintended or even unconsidered consequences, where consumers to this date are paying for stranded assets a long time after the fact.

That being said, it is clear that utilities' business models were changing then. It is even clearer now that they will continue to need to evolve drastically. We should do our best to understand these changes, and that is why this hearing, I think, is very helpful. We need to keep up to ensure reliable and affordable electricity is the result.

So, Ms. Tomasky, let me ask, in the years since FERC's Order 888, have there been times when competitive markets have worked better and worse than anticipated? And, in your opinion, what have been the most influential factors in having a working market?

Ms. TOMASKY. Thank you, sir. I would say that, as I mentioned earlier, certainly the poster child for failures of marketplaces were the events that happened in California. There have been other— and I think that this committee has looked at them extensively, and they have a lot to do with bad actors in the marketplace, inadequate supply planning. I personally believe that supply needs to move effectively across State lines whenever it can and that that actually creates efficiency. We had some of those issues in California as well.

There have also been certainly perturbations in the marketplace, but generally I would say that we have a lot of good things that happen. They happen—when I say "good," though, I mean from the perspective of achieving that goal of a competitive marketplace, which is to have your price set by the marketplace. For example, we have seen a recent decline in capacity prices into competitive markets that have been occasioned by the vast supply of natural gas available. So that is good from the perspective that it brings down the cost, but as I think others have alluded to, it does create public policy issues, because it creates questions around the viability of nuclear plants, it creates issues about local investment values for other existing facilities, and it really doesn't have that ability to look at other values.

So I guess I would say that there is a lot of success in the operation of competitive marketplaces, but there is a whole host of policy issues that people want to talk about and should talk about that aren't necessarily able to be addressed by competitive markets.

Mr. TONKO. Thank you. And for our panelists that were at FERC in the 1980s and 1990s, there was this decision obviously that FERC made to open access, allowing the creation of competitive markets. Do you, individuals, believe that the decision to open access envisioned preserving the traditional jurisdictional boundaries between States and Federal authorities?

Mr. NAEVE. Well, first I would say the experiment proved, I think, in many ways, certainly with gas markets, incredibly beneficial and stabilized the gas markets and lowered prices. I think, as the other witnesses have testified, competitive markets have functioned in most circumstances, certainly recently, very well.

With respect to how that has affected—open access has affected State boundaries—the jurisdictional boundaries, in some ways the boundaries are the same, but what happens is more and more of the, for example, power supply becomes wholesale supply, and wholesale supply is subject to FERC jurisdiction as opposed to local supply. So FERC's jurisdictional reach has increased.

When you have regional transmission organizations, previously most transmission service was part of the integrated system when serving local service, it was regulated by the State, maybe 5 or 10 percent or 15 percent for some utilities was regulated by FERC as they served interstate markets. Today if you are in a regional transmission organization, 100 percent of that transmission is now regulated by FERC. So because of the change in the operation of the industry as a result of competition, more subject matter is subject to FERC jurisdiction than previously, although the boundaries are the same; it is just simply the system operates differently than it previously did.

Mr. TONKO. Mr. Smith, did you want to add to that at all or——

Mr. SMITH. Well, I would just say I recall specifically conversations with policymakers from California in which they seemed surprised that the market restructuring that they had undertaken was going to cause State regulators to lose a lot of jurisdiction over things that they had previously regulated. So I am not sure the regulatory shift that was caused by the creation of the RTO markets was fully understood by some of the proponents of the RTO markets.

Ms. TOMASKY. Would you like me to add? Having been there, I can say that we certainly sought to respect at the time that division, but it was our expectation that over time there would be a pretty significant shift and that markets should—and regulators should be adjusting to that.

Mr. TONKO. OK. Thank you. Mr. Chair, I yield back.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from Ohio, Mr. Latta, for 5 minutes.

Mr. LATTA. Well, thanks, Mr. Chairman. And thanks very much for our panel for being here. Again, it has been very, very informational this morning. I really appreciate it.

If I could go back to the gentleman from Illinois' questions, especially when we are talking about the price takers.

Ms. Tomasky, if I could ask you, when they were designing the markets, how do you think FERC anticipated the participation of the price takers? Do you think that there was a lot of anticipation of exactly what was going to happen there, the price takers?

Ms. TOMASKY. Well, sir, I would say that there were—we actually did anticipate that there would be—I don't think we spent a lot of time talking about that particular issue, but I will say that there was an expectation that there would be plenty of circumstances—particularly as the RTOs and the more complicated market structures developed, we certainly did expect that people would be—that the market would set a price and people would have to make a decision whether to bid into that market on the basis of what was there or they wouldn't be able to support their generation. There were, of course, things we didn't expect.

And as I mentioned, the price of natural gas and the effect that it is having on existing generation is not something—while we expected it to happen at times and in cycles, the sort of pervasive sustainable preference that the market currently has for natural gas and the effect it is having on people who are putting in—having to make those decisions into the marketplace, I think it is fair to say we did not anticipate that.

Mr. LATTA. Thank you very much.

Ms. Stuntz, if I could ask you a couple questions here. You mentioned in your testimony that during the advent of the regional transmission organizations, the RTOs, and also the independent system operators, ISOs, were designed to be independent entities to manage transmission with the ultimate goal of opening access to transmission. Would you share your thoughts to the subcommittee on whether the RTOs and the ISOs have been successful opening that access to transmission?

Ms. STUNTZ. I think they have been. I think fundamentally FERC started that and imposed an obligation on all entities, really all transmission owners whether or not they are in RTOs, but I think the advent of those entities—I mean, it is a sort of a strange situation where the owners of transmissions still own them, but they basically have turned over functional control of those assets to this nonprofit entity who runs markets as well as sort of really manages the transmission system to ensure that it is operated on a nondiscriminatory basis.

It also does planning. It helps determine on a regional basis where they exist on a regional basis or in an in-State basis, whether it is just a single State, with ERCOT or California or New York, here is what we need, here is when we need it. It has gotten more complicated lately because we now have fights about who gets to build it, which we don't need to go into today, but it is—I think they have been successful in that area.

Mr. LATTA. Let me ask you a follow-up. Do you think there are any improvements out there that you would suggest to the RTOs and the ISOs, what kind of improvements that could be made?

Ms. STUNTZ. Well, I think there—you know, I think what—particularly coming into a State like Ohio, I mean, I think the seams, planning across the seams and where they exist—you know, electrons don't respect the boundaries of PJM and MISO, and when you have two RTOs adjacent that have different policies on capacity markets or different kinds of planning paradigms, it is creating—even how to measure whether they are—and FERC has tried to set rules about how you measure whether transmission is available. FERC has tried to work on those seams, but to me, that is—it is not so much—I mean, they are different, they are not the same, they do things differently, but the seam issue, I think, is a big problem and stands in the way of, I think, markets that operate better for consumers and planning that works better for consumers.

Mr. LATTA. OK. But when you say that FERC is out there trying, trying is not the same thing as succeeding.

Ms. STUNTZ. Right.

Mr. LATTA. Wouldn't you agree?

Ms. STUNTZ. I agree. I don't—I would say that on the area of sort of interregional planning and you across the seams, I don't think FERC has had a lot of success yet, and they need to pursue it more aggressively.

Mr. LATTA. OK. When you say, "pursue it more aggressively," how do they pursue it more aggressively, then, so they can be successful in that, then?

Ms. STUNTZ. Well, I don't—I mean, they have created Order 1000, which is more recent history than we are talking about today, but they have specified that there should be interregional planning, but I think—and they have sort of—but it is more—to me it is more an exhortation. It hasn't been backed up with firm requirements and compliance requirements. And I think that—and I think they are still struggling with the balance we have talked about today in terms of trying to be sensitive to regional differences and the way regions and States want to do things, but when you have two, as I said, next to each other in places like Ohio that have differences, how do you—when do they come in and say, all right, this is how you have to do it? And being that prescriptive, I think, has been hard for them. At some point I think they may have to be that prescriptive on these seams issues.

Mr. LATTA. Thank you very much, Mr. Chairman. My time has expired and I yield back.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from New York, Mr.—oh. Oh, from Texas. I am sorry. Mr. Green from Texas.

Mr. ENGEL. Almost got in there when——

Mr. OLSON. He slipped in there on you.

Mr. GREEN. It is very seldom a Texan moves faster than a New Yorker.

I want to congratulate our new chair and neighbor and friend. Congratulations, Pete. And I look forward to working with you. The good news is we both speak Texan and we both work together on energy, so—but, again, looking forward to working with you.

I want to thank the chair and ranking member for holding the hearing. The Federal Power Act has provided a foundation for stable, low cost electricity, and I hope to learn how the policy developed and how the market has changed.

Mr. Naeve, Mike, in your testimony, you discussed how over time FERC has moved from being an agency primarily focusing on regulating rates to an agency that protects competition and balances supply and demand, and I think this is an extremely important role. You also provided an important context on the difference between natural gas markets and electric power markets. Can you elaborate on the challenges the electric power markets face in balancing supply and demand while enhancing competition?

Mr. NAEVE. Well, the ideal would be if we have robust competition. Competition itself would balance supply and demand, just as it happens in the natural gas markets. However, in the power markets, there are, as I mentioned, important differences; one difference being, for example, that you have to instantaneously balance supply at any given moment with demand at any given moment. That is not so much the problem in the natural gas industry where you have line pack, you have fuel storage, and so forth. So it is far more complicated in the power industry. And so consequently, you have to have much more robust regulation to provide reliability.

In terms of having adequate supply, we have designed capacity markets to try to ensure sufficient surplus supply, that we meet the reserve requirements, but that is complicated. It is really a tweak on the competitive market to add these capacity markets to see if we can ensure sufficient surplus capacity, but it is complicated. If you left it purely to the market and asked the markets to respond to prices, it is not clear that we would have enough surplus capacity at any given moment to meet our needs. We may have more, we may have less, but it wouldn't be the right amount, so we have had to tinker with the markets to try to address that problem.

Mr. GREEN. What constraints has the Federal Power Act placed on these factors, in your opinion, or what improvements, if any, are needed statutorily that would improve that balance?

Mr. NAEVE. In my mind, the jury is still out on whether additional changes are needed to the Federal Power Act. I don't see any immediate constraints at this stage. The Commission has been given additional jurisdiction by this committee and the Congress over reliability, and they can use those powers. As I mentioned earlier, the statute gives them tremendous amount of flexibility. So at this stage, in my mind, the jury is still out as to whether additional changes are necessary.

Mr. GREEN. OK. Of course, in Texas we have a deregulated market for our retail and we have ERCOT, and we still have some challenges during the heat—we didn't have them this year during the hot summer, but we have had over the years, and the interconnect issues. Would States and regions like the Southeast choose to continue to stay regulated, and what are the advantages or disadvantages of that model? And, again, even though we have the three different or four different grids, how we can somehow still keep their independence and yet still have the reliability helping one region over the other?

Mr. NAEVE. Well, it is interesting with respect to ERCOT, because ERCOT has limited interconnections with the rest of the—with the other grids.

Mr. GREEN. And let me just say, years ago we said we are willing to sell it to you, we just don't want you to take it from us.

Mr. NAEVE. No. And actually, I was working in the Congress, in the Senate when we had some issues relative to ERCOT, and central and southwest company, and attempted to connect their nonERCOT utilities with the ERCOT utilities, and it created a jurisdictional crisis. And in PURPA, a statute we have mentioned, they created a fixer in that which allowed FERC to order ERCOT utilities to interconnect with utilities outside of Texas, and by doing it under FERC order, they wouldn't become FERC jurisdictional. So you do have a few high voltage DC interconnections between ERCOT and the rest of the country.

Would there be greater stronger reliability if there were more interconnections? I think there would be, yes. Texas faces this issue, perhaps some other areas as well, like Florida, for example, probably could stand to have stronger interconnections as well.

Mr. GREEN. Anybody else on the advantage or disadvantages of the model?

Ms. TOMASKY. Yes, sir. I do—the advantages of increased interconnection, I think, are going to be demonstrated over time. I really do. I think that, as we have mentioned before, the physical limitations aren't the same as geography. There is a lot of important stuff that gets done at States, including attention to reliability. I can't emphasize the importance of the State regulator being local and being able to address local needs, but with that said, we really do have the ability now to move power in a very broad geographic region to coordinate it, and there is so much resource that is in one area that can be moved to another.

I think the key is continued build-out of transmission and continued build-out of interconnection. It has to be done sensitively, but

I really do think there is a lot of advantage in continuing to pursue that.

Mr. GREEN. Mr. Chairman, I know I am out of time. Thank you.

Mr. OLSON. The gentleman yields back. And on behalf of my friend from Texas, don't mess with Texas.

The Chair now recognizes the gentleman from Mississippi, Mr. Harper, for 5 minutes.

Mr. HARPER. And we are excited to know that the Dallas Cowboys now have the Mississippi State quarterback, Dak Prescott starting, Mr. Chairman, so we are happy with that.

But thanks to each of you being here. And I would like to also say how much we appreciate everything that now former chairman Ed Whitfield did on this committee. He will be missed, and we wish him the very best.

These two questions that I have, the comments and then a couple of questions, are really for the entire panel, so when I get done, I will start with you, Mr. Smith, and we will go down the line on this.

We have two basic types of wholesale power markets in the country today, largely but not entirely coinciding with the type of retail regulation present in individual States. In States where there is traditional retail rate regulation, it seems we have bilateral wholesale markets where generators sell to utilities through company-to-company contracts for power. In areas where States have decided to move to retail market competition, it seems we have bid-based wholesale markets where multiple generators bid into a centrally operated market to serve the load.

So my questions are, in which market are we seeing lower levels of concern about maintaining reliability; and then, second, in which market are we seeing capital intensive—or which areas are we seeing capital intensive new facilities like nuclear power plants being built?

Mr. SMITH. Thank you for those questions. I guess the first observation I would make is I think there is not a perfect correlation between competitive wholesale—or organized wholesale markets and retail competition. There are areas of the country in which there are RTOs or ISOs operating but don't have retail competition. There are also areas of the country that have traditionally resisted RTO formation that are now inching, inching towards competitive markets.

There is something called the energy imbalance market that is being developed sort of around California starting with Pacificore and some other utilities in that area joining it. So anyway, those aren't perfectly correlated.

But to get to the thrust of your question, I think the question of how to assure adequate capacity is one that was traditionally handled by States. When States were regulating vertically integrated utilities, they could establish reserve margins, they could essentially oversee the resource planning, including the generation planning, the vertically integrated utilities. And in States where the utilities were restructured and in particular divested most or all of their generation, the States no longer have that sort of direct control over what generation is owned by the—what generation is being used to serve the retail customers in that State.

So in many places we have many RTOs, we have now developed organized capacity markets of one sort or another. As you may well know, those have—there is controversy around capacity markets: A, are they too expensive, are there ways they could work better; B, are they accomplishing what they are supposed to accomplish, and maybe part of the problem there is they are supposed to accomplish several different things which don't always necessarily entirely line up, but certainly one of them is assuring sufficient resource availability on a long-term basis.

I think it is—there is a quite observable pattern that investment in new nuclear carbon caption sequestration projects, for instance, are happening in States that are not restructured, where essentially State regulatory oversight of a vertically integrated utility is providing regulatory comfort that the utilities will recover their costs for those new assets.

Mr. HARPER. OK. Thank you. And my time will be up before we can go all the way down the line, but if you have a quick response, that would be great.

Mr. NAEVE. I do think it is not entirely clear that in the bid-based markets, that reliability have proven to be a problem at this stage, but it is the case that in, you know, the markets that have not been restructured, regulators have the ability to choose particular technologies that might not otherwise be attractive in a competitive market and saying we are going to support that particular technology, and can cause investment in that technology and recovery in that investment from customers, so it does give regulators more power to direct resources to particular technologies.

Mr. HARPER. It appears that my time has expired, but thank you all for being here.

Mr. OLSON. The gentleman——

Mr. HARPER. I yield back.

Mr. OLSON. The gentleman's time has expired. The Chair recognizes the gentleman from Vermont, Mr. Welch, for 5 minutes.

Mr. WELCH. Thank you very much, Mr. Olson. Thank you to the panel. Very good testimony.

Mr.—or I guess, Mike, I wanted to ask you a little bit about your experience doing a very difficult thing when you were at FERC with respect to the changes you had to make and how that might apply to trying to have much more sensitivity and flexibility with demand response energy efficiency and distributed generation. I mean, one of the challenges we have with energy policy is trying to make certain that those options are treated fairly in the process, and it is difficult, because it is a big change. Generally the focus on reliability and costs, obviously very legitimate, have been driven by the centralized generators. They have a seat at the table.

The only ISO where some of these other folks with alternative energy have a seat at the table is ISO New England, but in Vermont where we have had some utilities that have been all in on being leaders rather than resisters to this, there is documented savings on transmission costs of about $400 million. Now, we are a small State. That is real money.

So if we want to have some flexibility here so that those regions of the country want to implement as much as possible demand response distributed generation, what are the one, two, three steps that we would need to take in order to facilitate that effort?

Mr. NAEVE. Whenever the Commission goes about trying to restructure a market, they have to be careful about a lot of things. If they are restructuring a market, there are going to be winners and losers. There are some people that will have invested in reliance on regulations, for example, and then that regulation is taken away and their investments may not be attractive at all. They also need to be sensitive to evolving technologies and to regional differences. And I think FERC has been sensitive to those concerns over the years.

So, for example, with respect to distributed generation, some would say FERC has jurisdiction over distributed generation. Sales back to the utility by distributed generation to many look like wholesale sales. FERC has chosen not to regulate many of those sales, and step back. You have a laboratory in a lot of the States with respect to distributed generation, with respect to demand response——

Mr. WELCH. Yes, but what I am looking for is what, if any, changes do we need to make at FERC or either expansion of their authority or legislative direction in order to facilitate States that are choosing to invest in this distributed generation approach?

Mr. NAEVE. I think States today are making those decisions, and FERC is not standing in the way, so I, frankly, don't think that there are changes that are necessary right now. You see a tremendous growth in distributed generation throughout the United States, certainly in States that have abundant renewable resources available to them, but the Commission has exercised its flexibility to allow that growth to occur. So at this stage, I am not sure if there is a——

Mr. WELCH. I don't have much time, so let me go to Ms. Tomasky. Thank you very much.

Ms. TOMASKY. Same question?

Mr. WELCH. Yes, same question.

Ms. TOMASKY. Well, I would agree that FERC has done some things to accommodate that. I would really direct your attention to the RTOs. I do think you are right. I think ISO New England has created a framework that is useful for integrating that. I don't think it is easy. It is certainly easy to establish the principle. It is—but the system still has to be managed. And it is really a question of how do you effectively balance the cost value versus the compensation back on distributed generation. I think that actually over time, these costs are coming in and there really will be the opportunity to do it, but I think it is a nitty-gritty issue, it is not a big policy issue. And because I think as a policy issue, it is accepted, so it is really something that the RTOs have to be told that it is a high value and it needs to be integrated. I think that is the solution.

Mr. WELCH. But there is a tension, I mean, it goes to the point you made about companies that rely on a certain regulatory framework. I mean, the old energy model was centralized distribution, and the more you produced and the more you could sell, the better it was. We have got some utilities now. And in Vermont, there was an effort to change the compensation model to actually include the ability of utilities to reduce demand and get paid for it, and it has been a tremendous savings for our businesses and to our consumers.

Ms. TOMASKY. Yes.

Mr. WELCH. And, you know, on this committee, it is very tough, because we all come from different regions, and some are oil areas and some are renewable areas, and we have all got to try to represent our constituents here, but it has got to be a policy where FERC has a huge role.

I guess my time is up, but thank you all very much.

Ms. TOMASKY. Thank you.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from Illinois, Mr. Kinzinger, for 5 minutes.

Mr. KINZINGER. Thank you, Mr. Chairman. Thank you all for being out here; appreciate it. Ms. Stuntz, thank you for giving us your time as well. I appreciate it. My question is for you.

In your testimony, you highlight the vital importance of balancing supply and demand in realtime to create electricity service, something that I believe is becoming even more important as new intermittent technologies are being increasingly deployed around the country.

In designing electric markets, did FERC consider how intermittent resources would impact overall reliability?

Ms. STUNTZ. I probably should defer to Susan since—Ms. Tomasky since she was at FERC and I wasn't. I think given the tremendous growth in intermittent resources and given the policy framework around them in terms of we talked a little about it about the investment tax credit and so forth, you know, I guess I am not sure that they could have anticipated the way that is—the way that is all developing, but—and it certainly is producing, I think, some challenges in some markets, but maybe I would defer to Susan to——

Mr. KINZINGER. Yes. And if you can add on, just, you know, what considerations were made, like, production tax credit, things like this into the overall.

Ms. TOMASKY. Well, with respect to the issues like production tax credits, Congressman, we really took whatever was there as a given. We didn't initiate them, of course. We accepted them in the marketplace. And they were coming and going at that point in time. We certainly had the lessons from PURPA, very, you know, different than the situation we have today, but what we really were concerned about was making sure that as an operational matter, whoever was running the utility system, notwithstanding our competition requirements, had the ability to operate it effectively, so they had the ability to make judgments about the integration of resources.

So I think it is fair to say that while we didn't envision—we certainly didn't envision the issues of intermittency, we didn't envision the challenges of moving power across long distances to accommodate that, and the underlying adequacy issues that needed to be addressed, we did understand that when you bring a lot of different sellers together with different performance characteristics and then you are going to distribute them against long distances, there were real challenges to getting that done effectively. That is one of the reasons that we looked to the RTOs as coordinating organizations, because we thought they had the ability to bring together the technical knowledge in order to do that.

Mr. KINZINGER. So just to kind of follow up, did anybody perceive that there could—I mean, obviously we didn't envision what has happened, but did anybody perceive that wind, in fact, wind energy would become so dominant that you would see a lot of these current existing power plants have to actually throttle back or shut down because of the them?

Ms. TOMASKY. Well, certainly at the time of Order 888 we didn't contemplate that scenario. As you got further down into the years and we began to see wind development, I saw that as a utility developer of transmission in Texas, we saw some similar kinds of issues there.

Mr. KINZINGER. So in the existing regulatory framework, what options does FERC have to value existing generation that contributes to overall reliability, generation diversity and the ability to run in severe weather?

Ms. TOMASKY. Yes. I would have to say that FERC has very little ability to value generation. I think that——

Mr. KINZINGER. Is that because of what we have done or, like, kind of the rules you are operating under?

Ms. TOMASKY. I think it has to do with the basic structure of the regulatory framework. Now, in the RTOs, there has been some allusion to capacity markets that overseen by FERC. There has been some ability to try to think about longer term supply, but really I think you are hitting on the fundamental policy issue that has to be addressed, which is are there—do we—are we going to see values outside the marginal costs of a power supply that we want to choose to integrate and that we want to require RTOs. And the problem, of course, is that there are a long list of those and they are conflicting——

Mr. KINZINGER. Yes.

Ms. TOMASKY [continuing]. But I do think that that is very much something the committee should be looking at.

Mr. KINZINGER. OK. And any—yes. Go ahead.

Ms. STUNTZ. Could I just add to that? I do think FERC—maybe a slightly different take on it. There are—going back to a thing called ancillary services, which have been developed and are called transmission services because they support the grid and they are regulated by FERC, but essentially they are things like spinning reserve, nonspinning reserve, A black start capability, there are being developed markets for those things, they are valued. They can—people that provide voltage support, reactive power are able to collect a value for that. And although a lot of this has been developed from sort of the ground up either by State regulators or by RTOs, FERC has been pretty good, I think, about saying, yes, OK. And I think the Cal ISO is now in the lead of trying to say, well, if we are going to handle that duck curve thing, we need a generator out there or a demand response offerer who can either ramp up really quick or ramp down really quick, because when the sun starts going down at 4 o'clock in the afternoon, we have got to have somebody that can step up, and if you can do that, we will pay you for that. I mean, that is the only way these markets can work, right, is you define a product that meets the need you have, and then let—and then hopefully find a value for it, but it is the big challenge, because sometimes standing by with a gas plant that is only going to operate 20 minutes of a day, you know, 3 months of a year and then getting a return on that investment, that is a big challenge.

Mr. KINZINGER. OK. I yield back. Thank you.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from New York, Mr. Engel, for 5 minutes.

Mr. ENGEL. Thank you, Mr. Chairman. I had almost gotten in under the wire about 20 minutes ago, so it shows you when you don't get under the wire, things get delayed, but thank you very, very much. And I want to thank all of four of you. This has really been very interesting, very enlightening, bipartisan. That is what makes this committee great. So thank you.

As we consider applying the lessons of the past to energy markets of the future, I think it is important to keep three fundamental goals in mind. First is resilience. We in New York suffered through superstorm Sandy and other tropical storms, such as Lee and Irene, which left millions of New Yorkers without electricity. In the face of increasingly common extreme weather events, we obviously need to keep the power running at all times so Americans can keep their food and medicine cool and their homes warm.

Second is financial cost, because we can't ignore that. As with virtually all goods, the price of electricity has risen through the years. Though the increasing electricity prices have been relatively low compared to other goods, we need to be mindful of generation, transmission, and distribution costs all with an eye on keeping prices low for rate payers.

And thirdly, environmental costs. Power generation is the primary source of greenhouse gas emissions in the U.S. and across the globe. We have to diversify our sources of energy and accelerate deployment of clean, low-carbon technologies to protect the health and well-being of all Americans. So with these objectives in mind, we must adapt to the changing ways that we are generating and using electricity.

Today's consumers are taking advantage of various smaller scale distributed energy resources like solar panels and electric vehicles to generate and store power in line. They are monitoring and managing their energy consumption through smart meters and other devices.

So in light of these game-changing technologies, let me ask anyone who cares to answer, was there a time in the past when we experienced widespread changes in power generation similar to the changes we are experiencing now, and if so, how did we handle that and what lessons should we take from that experience?

I stumped everybody.

Ms. TOMASKY. Well, I will go. I think it is fair to say although the pace has accelerated, that we have, throughout the history that we are talking about, seen new technologies change where we are and what we—how we needed to adjust. To be fair, most of those technological innovations have happened in larger scale generation, but as Linda said and I discussed at length in my testimony, the natural gas turbine really did precipitate a lot of this. Similarly, we have seen improvements in solar and we have seen improvements in wind, and as the cost structure associated with that has come down, we have had—we have seen proliferation and changes in the marketplace that we have had to adjust to.

The specific things that you are talking about, which I think are very interesting, take us to sort of the different arena. They take us to the retail side of the equation, because they really are things that have the ability for the customers to change the shape of the way the utility does business. We have seen over the last few years, and I think this is one of the things that surprised us, is seen relatively flat demand, even as the economy has come back from the recession, and some of that has to do with efficiency, some of that has to do with choices. There is still huge still, in my view, low hanging fruit out there to be harvested in terms of energy efficiency, and there is this whole arena of things that you are talking about.

I think it is fair to say—what we have learned from them is that you need to be flexible, that you need to have enough authority in the hands of people making the decisions that they can move the pieces around to make that happen. I think, to me, that is the single most important lesson.

Mr. ENGEL. Well, thank you. I want to get in one other question before my time is up, and I want to piggyback on some of the things that Mr. Welch asked, and tie it to my home State. New York is leading a program called Reforming the Energy Vision to overhaul the longstanding electricity business model, and its aim is to modernize, to centralize and decarbonize the grid largely through substantial additions of distributed energy. In early July, New York's six investor-owned utilities submitted their 5-year plans to add distributed energy sources to the grid.

How do you see the intersection between FERC's oversight of markets and New York's program, and do you foresee any potential problems? Let me ask Ms. Stuntz and Mr. Smith, because they didn't comment on Mr. Welch. And I am wondering if you could comment on that.

Ms. STUNTZ. As I understand it, and I have reviewed it briefly, because California is very interested and I serve on a board there, I don't see any conflict at this point, because it appears to me that New York is focused on sort of the distribution system.

Now, as I said at the outset, sometimes that line between distribution and transmission is as wavery as the line between wholesale and retail, but I think looking at retail and distribution and what the future of sort of the whole distribution system means and who administers it and how do you make it more effective to support distributed generation is something that California is very much in the middle of as well, and I don't—you know, I think so long—again, there may come a time when you run up against that Hughes Supreme Court decision that you are directly affecting the wholesale rate, but as I pointed out in my testimony, the court—the majority—the court there went out of its way to say, you know, we are mindful that States are doing things like trying to decarbonize their energy, like trying to increase security, and we will not—we don't intend this to be read broadly to interrupt those efforts so long as they don't directly affect a wholesale rate.

I would just add, you know, the three criteria you point out, you know, resilience, cost, and environmental improvement, the real challenge to me on a lot of these things is those are not necessarily going to be consistent. Some of the things that will make your grid most resilient, you know, there are really hard questions about how you incorporate a lot of new distributed generation while maintaining security, while maintaining safety, you know, both at its very low level, you have got to know whether the line is energized or not, somebody has got to be able to work on it, and at a much higher level, cyber and so forth. So keeping those things in balance, but keeping them, I think, at the forefront appropriately is going to be the challenge, but I don't see FERC as being a problem for what New York is trying to do.

Mr. ENGEL. Thank you. Thank you both for your answers.

Mr. OLSON. The gentleman yields back. The Chair recognizes the gentleman from Virginia.

Mr. GRIFFITH. Thank you very much, Mr. Chairman.

Mr. Barton his on it earlier when he said the EPA's clean air versus what FERC is trying to do and are they in conflict, and, Ms. Stuntz, you indicated there were going to be some stress there, if I remember your answer correctly. Those weren't your words, but that was pretty much what you were saying, there was going to be some difficulty there. And we have got all kinds of things going on in my district. I represent southwest Virginia, the mountains, the coal district. We have lost two of our power facilities there, as you would know, Glen Lyn and one of our Clinch River, the other two were converted from coal to natural gas, given us about half that power, and so that is a concern to the area, but as a result of some of what is going on with coal around the country, we also have the stress of all these pipelines coming through that FERC has to take a look at. And I am told that in regard to the pipelines, that FERC is just looking to see if there is some kind of market, and this is open for everybody, but there is some kind of a market out there, but not necessarily the full. So I have got—in coming through the mountains, one of them is in Bob Goodlatte's district and Robert Hurt's district, the other is in mine and Robert Hurt's and touches Bob's a little bit. We have got two large proposed gas pipelines coming through to make sure that there is reliable electricity in other parts of the country, and I think Mr. Shimkus touched on this too, and yet we are disrupting all kinds of communities, some of them have been there for hundreds of years that are now having a pipeline going right through them. This is a great concern.

So how do we balance all that out? And did we make a mistake in shutting down those plants? And I am not talking about the electric power companies shutting them down, because EPA had rules that forced it. But as a sense of reliability, did we make a mistake in shutting some of these plants down? Could we not have figured out a way to leave them on to make sure we had reliability?

I will open that up to you all, and then I have got some more questions about what do we do about the stranded assets and the fact that should we be paying those folks who have the baseload plants for being there, for their reliability, not just gas, but also coal, because we are losing coal and we are seeing some even nuclear plants get shut down.

Anybody want to touch any of those five or six issues I threw out there? That is what happens when you only get 5 minutes and you have got all kinds of things.

Ms. STUNTZ. And I will try to be brief, to allow my colleagues to speak, but you are touching on one of, I think, the greatest challenges we confront right now, which is infrastructure. You know, we have the benefit in this Nation of tremendous clean natural gas resources, and if we want to decarbonize, it is just a fact that natural gas prior to electricity is about half as carbon intensive, depending on your studies, as coal-fired.

So given that premise, so we should want to move to natural gas generation, but you have to transport it, and, you know, we have to find a way for people to understand either as a shared value, this is good and we should accept it given appropriate royalties and so forth, payments, or not, or we are not going to get there in terms of where we want to go decarbonizing the economy, where public policy seems to want to go.

And it is not just gas pipelines. It is oil pipelines. You see all the news. It is all that infrastructure. We have got to figure out—because it doesn't always—you are right. Exactly. It doesn't always benefit the place where it goes. But it benefits us as a country. So how do we bring that together? And that is an—I don't have an answer to that.

Mr. GRIFFITH. Well, and as one interesting side note, many of the people who are opposed to the pipelines also favor getting rid of coal. So you have got the dilemma that they didn't want the coal plants. And now they don't want the pipeline. But you also have this dilemma that I have in one of my communities that is really—I don't know the answer. And I guess I should ask if FERC actually pays attention to this.

I have got a little community that butts up against the National Forest. It even butts up against or pretty close to a wilderness area. And you have got a historic community, and they want to put the pipeline basically through the middle of the town. Does FERC look at those things? Because I got to tell you, I can't figure out where that goes where you don't destroy something that is a natural wonder or destroy this little community that has been nestled in the mountains for a couple hundred years. Does FERC looks at those things when it is trying to approve this?

Ms. TOMASKY. Yes, sir, the FERC does. And it certainly should. I mean, that is exactly the kind of thing in the siting process that should come forward. And I would certainly encourage that community, if they haven't done so——

Mr. GRIFFITH. Oh, they are all over this.

Ms. TOMASKY. I bet they are all over it. It is a consideration, at least in my experience. We went to great effort. Even though there was general support for pipeline development, we went to great effort to make sure that the right analysis was done and that important issues like that were protected.

Mr. GRIFFITH. That is my dilemma. I can't figure out at that one spot, I cannot for the life of me figure out how you approve the pipeline without doing damage to something. Because there is just a narrow spot there where you don't have much choice.

Ms. TOMASKY. Of course I don't know anything about that.

Mr. GRIFFITH. Yes ma'am.

Ms. TOMASKY. But I would think routing around it, I would hope, could happen.

Mr. NAEVE. You know, it is almost impossible, of course, to site a pipeline without doing some damage. And the responsibility of FERC is to try to find a routing that does the least damage at not too great an expense. But it is not unusual at all for a pipeline to propose a particular route, and then that hold—for FERC to hold public hearings and investigations to decide what are the effects of that particular route and to ask for changes in the routing to avoid some of those damages. That is a fairly common result.

Mr. GRIFFITH. Stay tuned. Thank you very much. My time is up. I yield back.

Mr. OLSON. The gentleman's time has expired. The Chair recognizes the gentleman from Ohio, Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Well, thank you, Mr. Chairman. And thank you to the panel for joining us today. I appreciate your time. You know, earlier this year in FERC versus EPSA, the Supreme Court case held in favor of the Commission's demand response program. Finding that FERC has jurisdiction because the program directly affects wholesale rates.

And we will go right down the line here to all four of you. Do you think this ruling could be interpreted in a manner that expands FERC's jurisdictional or other types of electricity programs or practices? Mr. Smith.

Mr. SMITH. Well, the affecting jurisdiction is one that the court tried hard to draw some bounds around because—in fact, it announced a principle about direct effects or directly affecting. Because there is so much interconnection between—bad word. So much interrelationship between things subject to FERC jurisdiction and things subject to State jurisdiction, that if you read affecting literally, it might swallow everything that had been previously State jurisdiction.

So the court tried hard to impose some bounds there. I guess the other thing I would say is the court noted that in that particular policy that the States had the option of opting out so that the State could decide that the demand response providers in its State couldn't participate in the PJM market. And the court seemed to lean on that as a helpful fact to say this isn't a FERC power grab. This is FERC trying to stay in its lane and leaving the related choices that are the State regulatory choices to the State.

Mr. JOHNSON. OK. Any of the rest of you have anything to add to that or you agree?

Ms. TOMASKY. I think it is a really good summary.

Mr. JOHNSON. OK. All right. Well, given the fact that the Supreme Court ruled on two cases focused on the Federal Power Act this year, do you anticipate that the Supreme Court will continue to be active in the area of electricity markets? Now, you know, this is asking you to pull out your crystal ball. I realize that. Mr. Naeve, why don't you take that one.

Mr. NAEVE. I think they will be merely because we are in such a state of flux and there will undoubtedly be future concerns about the scope of FERC's jurisdiction, the scope of State jurisdiction, other issues. So I do think we will see future challenges. And the court has shown its willingness to step in and decide these cases. So I can't say today what that case may be, but I do think, yes, they will continue to be active.

Mr. JOHNSON. OK. All right. You know hydropower often can be dispatched into the power grid a lot like a battery. That is, sometimes hydro dams can store up a lot of water and then they can spill it when it is needed to generate electricity. When the markets were being developed, how did FERC value that storage capacity in hydro? Ms. Tomasky, do you have a——

Ms. TOMASKY. You know, we certainly were aware of it. But I have to tell you, there was so little new development. You know, there is an awful lot of existing facilities out there. And some of them are within the geographic areas that were likely to go to competition. But a lot of the larger facilities out West, sort of publicly owned, and maybe outside the kind of sort of operation of the system.

So it is something that I would say was probably on the list of things that we thought might develop in an interesting way. But I can't say that it was central to our consideration.

Mr. JOHNSON. OK. All right. Did FERC make any effort, Ms. Stuntz, to create a market value or product for the capabilities of hydro plants?

Ms. STUNTZ. Not specifically. But they have certainly approved—I am aware in the Northwest and a litigated proceeding involving BPA. They have approved sort of tariffs that essentially offer firming service for wind because you are absolutely right. Hydro is one of the few things which you can—by keeping water up or letting it go, it is instantaneous.

You don't have to worry about ramping things up and fuel and all that. And so when the wind goes down, it has enabled wind to be sold on a firmer basis in the Northwest, where it is prevalent. And FERC approved those kinds of services.

Mr. JOHNSON. OK. Well, thank you very much. Mr. Chairman, let it be noted that Ohio left 10 seconds on the grid. I yield back.

Mr. OLSON. So noted. And that is all of our members right now. So here is the second round of questions. Just kidding. It was his idea.

I thank our witnesses. I also want to apologize. I noticed about 10 minutes into the hearing your lights aren't working. They are going straight from green to red. So there is no warning going to yellow. So that is why we let you go way beyond 5 minutes. Because you guys had no chance to curtail your remarks based on those lights. So I apologize for that.

I ask unanimous consent that a letter is entered into the record from FEC Commissioner Bay to Chairman Upton and Chairman Whitfield about the current and future state of organized electricity markets. Without objection, so ordered.

[The information appears at the conclusion of the hearing.]

And I remind all Members you have you 5 working days to submit questions for the record.

This hearing is adjourned.

[Whereupon, at 12:12 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Today marks the first time since I became chairman of the full committee that my friend Ed Whitfield is not the chair of the Energy and Power Subcommittee. For 119 hearings over the last 6 years, Ed has held the gavel. A workhorse for sure. Today we say thank you. He's been a trusted, respected, and valued voice and a terrific friend. He's a gentleman through and through. With Mr. Whitfield's departure, Mr. Olson as vice chair will carry out the duties for the subcommittee, and we appreciate him stepping in.

Today's hearing lays the foundation for a new effort to take a more comprehensive look at recent developments in the way we generate, transmit, and consume electricity in the United States, and how that system has evolved under the Federal Power Act. This effort began with a letter I sent, along with Mr. Whitfield, to FERC Chair Norman Bay, outlining several current and evolving issues that the committee will begin to explore more thoroughly next year. These issues include newly blurring lines between historic Federal and State jurisdictional divides, how regulated and competitive markets continue to fare under both FERC's and the States' oversight, how reliability and security of the grid, innovation and distributed energy resources are prioritized in the current system, and how other external factors, such as tax policy and renewable mandates factor in to the functioning of competitive markets.

But before we do that, we need to take a look back in order to better understand how we got here. Electricity is critical to all of our daily lives, here, in Michigan, and across the country—something often taken for granted until the power goes out. It is also a lifeline to our national security, our economic interests and our basic health and welfare. Both the committee and FERC have the important responsibility of ensuring that electricity markets function in a reliable and efficient manner. We have an outstanding and distinguished panel here today to help us learn from the tough decisions that each of them had to make in the past, in order to help build a successful grid for the future.

As you know, this committee has a longstanding history of legislating on these issues, a history that spans numerous congresses and decades. In fact, Part II of Federal Power Act, passed in 1935, originated in this very committee under then-Chairman Sam Rayburn. Those amendments granted the Federal Power Commission, the predecessor to FERC, its jurisdiction over wholesale electricity transactions. In the intervening years, Congress has acted through its oversight role and on legislation to ensure that wholesale electricity rates continue to result in "just and reasonable" rates. This hearing continues that long tradition of oversight.

I am glad to say we have worked to conduct this hearing together in a bipartisan manner. Electricity plays a crucial role in all of our everyday lives, and disruptions in supply create farreaching implications. Today, power generated by windmills in Kansas will energize lights and toasters from Georgia to Michigan. And natural gas and coal plants in Kentucky will likewise power smart phones and electric cars from Iowa to Washington, DC. Nuclear plants, an unknown technology in 1935, continue to provide a baseload supply of energy that Americans across the country can rely on for reliable and carbon-free energy. Modern electricity markets are unprecedented in scope and scale, allowing us to send electrical energy across the Nation both quickly and efficiently.

The evolving questions facing us going forward on developments and changes in the electricity system will be difficult. When faced with difficult questions, it's often essential to understand how we faced—and resolved—similar issues in the past. That's really the purpose of our hearing.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426

August 30, 2016

OFFICE OF THE CHAIRMAN

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Upton:

Thank you for your June 10, 2016, letter asking about my perspective on the current and future state of the organized electricity markets. As you know, my first priority is to focus on the fundamentals in the competitive markets, to continue to look for ways to improve the efficiency of the markets, and to deliver greater value to consumers. To meet these goals, the Federal Energy Regulatory Commission (FERC or Commission) continues to work to promote greater efficiency, competition, and transparency in the wholesale markets.

While I answer your specific questions below, I want to first highlight some work the Commission has done with respect to the organized markets. The Commission continues to rule on proposals by each regional transmission organization (RTO) and independent system operator (ISO) to promote greater efficiency, competition, and transparency in the markets when and as such proposals are filed. In addition, the Commission initiated a generic effort aimed at improving the functioning of the organized wholesale markets by taking steps to identify any rules for pricing, settlements, and operator actions that may be causing prices in markets to not reflect the underlying market fundamentals. This effort has been referred to generally as price formation. Specifically, the Commission initiated its price formation efforts in the organized markets to pursue the following goals: (1) maximize market surplus for consumer and suppliers; (2) provide correct incentives for market participants to follow commitment and dispatch instructions, make efficient investments in facilities and equipment, and maintain reliability; (3) provide transparency so that market participants understand how prices reflect the actual marginal cost of serving load and the operational constraints of reliably operating the system; and, (4) ensure that all suppliers have an opportunity to recover their costs. As an example of recent actions in price formation, the Commission issued a final rule this June to ensure that resources are compensated for the value they provide when they provide it to the system (press release is attached). This energy market reform should reduce uplift charges, which are charges from an RTO/ISO collected outside of the market-clearing commodity price; these charges can include payments to reliability must run units, other out-of-merit-order power purchases, administrative costs of the RTO/ISO, or other cost categories. It should also improve efficiency, promote the more efficient use of resources, and encourage greater price transparency, which informs decisions to build or maintain resources, especially flexible resources. The Commission has also signaled that it expects to address other issues affecting price formation, including mitigation, uplift transparency, uplift drivers, and a recently issued notice of proposed rulemaking on offer price caps.

As the Commission explores additional reforms, we must ensure that we have thought through and addressed the numerous policy and technical details that are affected by any market reforms we adopt. I am committed to being thoughtful and judicious in prioritizing and pursuing solutions to address price formation issues. I think this is an example of the way in which the Commission continually seeks to achieve incremental progress, improving its markets and building upon what it has done in the past.

Turning to your questions:

1. Have the competitive markets fared as expected since restructuring began over 20 years ago, particularly in terms of market efficiency, capital investment, reliability, electricity rates, and consumer impacts?

Response: The markets have delivered some unquestioned successes since their launch more than twenty years ago. Wholesale energy prices are at historically low levels. While the development of new low-cost technologies and the decline in fuel prices have played a role in lower electricity costs, this trend is also a product of the efficiency and transparency of a competitive market design that rewards efficiency and conveys pricing signals to the marketplace. In addition, competitive markets have clearly led to the substantially more efficient use of the transmission system, in the form of priority use for the lowest cost resources and greater utilization of the transmission system overall.

In addition, the markets have adapted well to rapid changes in the generation fleet. Although it is unlikely that considerable thought was given to the possibility of such turnover when restructuring was first contemplated, robust market design has enabled this ongoing transition to unfold with relatively little manual intervention at the wholesale level and without significant impact to overall reliability. While there have been challenges along the way, such as the polar vortex of January 2014, the markets have largely addressed such obstacles with a "bend but not break" approach in which market prices indicate the need for additional infrastructure or services.

Of course, the driving force behind pursuing competitive market design is the consumer. Due to the complexity of the system, there are always improvements that can be made to the markets. The Commission remains focused on evaluating the markets on an ongoing basis, seeking opportunities to improve efficiency and transparency wherever possible. One example of this is the Commission's price formation effort described above. In addition to the final rule regarding settlement intervals and shortage pricing, last

November, the Commission also directed RTOs/ISOs to file reports on five price formation issues: (1) pricing of fast-start resources; (2) commitments to manage multiple contingencies; (3) look-ahead modeling; (4) uplift allocation; and (5) transparency on a range of price formation issues. Interested parties were invited to submit comments in response to those reports. Commission staff is currently reviewing this information. The Commission also issued a proposed rule on offer caps this January, and Commission staff is currently reviewing the comments submitted in that docket.

2. Are the competitive markets equipped to promote, integrate, and adapt to new technologies, new products and services, and state and federal policy changes?

Response: Yes, the competitive markets are well-equipped to adapt to new technologies, new products and services, and state and federal policy changes. In fact, developers of new technologies largely have chosen to concentrate their development activities in regions with competitive markets. However, to ensure that adaptation is timely and efficient, the Commission must continually assess whether there are barriers to interconnecting with the grid or to the ability to participate in those markets in a non-discriminatory manner. We must also make sure that the markets value resources correctly. The Commission is currently taking action to evaluate each of these issues. For example, in May 2016, the Commission held a technical conference on generator interconnection issues, including interconnection of electric storage resources. The Commission will carefully consider the information gained during the conference, as well as post-technical conference comments on specific questions, which are due June 30, 2016.

The Commission also continually reviews the markets it oversees for barriers to entry for new technology. For example, in April 2016, Commission staff issued a data request to each RTO/ISO and a request for public comments to examine whether barriers exist to the participation of electric storage resources in the capacity, energy, and ancillary service markets in the RTOs and ISOs. If it is determined that potential barriers exist, Commission staff will examine whether any tariff changes are warranted. The RTOs/ISOs submitted responses May 16, 2016, and the public was invited to submit comments on those responses by June 6, 2016. We continue to evaluate these comments.

Finally, with respect to valuing resources correctly, as noted above, the Commission has already taken some actions to address appropriate compensation and continues to pursue additional reforms. For instance, in October 2011, the Commission required reforms to the rules for frequency regulation compensation to ensure that resources that are fast and accurate receive compensation that reflects the quality of service they provide. The Commission is currently examining price formation in the organized markets to further the goals as described above.

The Commission will continue to assess the competitive markets it oversees and take action to ensure that they are equipped to promote, integrate, and adapt to new technologies, new products and services, and state and federal policy changes.

3. What is the Commission's view as to how non-FERC jurisdictional federal and state actions, such as the federal production tax credit or state renewable energy mandates, impact the operation of wholesale markets generally, and, specifically, in terms of impacts on reliability, resource and technology neutrality, and wholesale power prices?

Response: There is a wide range of federal and state actions that can impact wholesale power markets. These actions often take the form of public policy choices at the state level. As you note, one such example is compliance with state renewable portfolio standards. The Commission needs to carefully consider a state's desire to promote generation resources with certain attributes when exercising our responsibility to ensure that wholesale power rates remain just and reasonable. These issues have arisen in a variety of situations, and the Commission has considered them on several occasions, such as during its September 2013 technical conference on capacity markets. The Commission has also addressed these issues on a case-specific basis, allowing limited exemptions for such resources from certain minimum offer price rules in both New England and New York, and limiting the types of resources that face such minimum pricing rules in the PJM Interconnection market. In those decisions, the Commission sought to carefully consider the interests of the states in carrying out our obligation to ensure that rates remain just and reasonable. This remains an important issue for the Commission and one which we continue to monitor.

In response to the changing generation resource mix, the Commission has taken or proposed several technology-neutral actions related to reliability, such as a final rule in July requiring new small generating facilities to ride-through minor changes in grid voltage or frequency, comparable to an existing requirement for large generating facilities. Also, in June, the Commission issued a final rule requiring new non-synchronous generators such as wind turbines to provide reactive power, similar to an existing requirement for other generators. Finally, the Commission has opened a proceeding, and received public comment, on the obligations of generators for an essential reliability service referred to as "primary frequency response," and I am hopeful that the Commission can propose specific action on that issue soon. Actions such as these can help maintain grid reliability while accommodating the policy preferences adopted under other federal or state laws.

4. How do new technologies, programs, incentives, and policy changes at the state and federal levels affect the jurisdictional "bright line"? Is that line becoming increasingly blurred as a result of such changes?

Response: The question of the jurisdictional line between the Commission and the states is not a new one and dates back to the passage of the Federal Power Act. More recent changes in the electric industry have brought additional focus to that issue. There are several major trends or developments driving these changes. First, the shale gas revolution has resulted in an abundant and historically low-priced natural gas supply. Second, organized markets are expanding, and the Nation is seeing a period of low load growth and increased energy efficiency, which impact the markets the Commission oversees. Third, more renewables and distributed generation are being integrated into the energy system. Fourth, state and federal public policies are affecting the energy industry. Finally, the energy industry is seeing a period of increased technological innovation. These trends may raise new or different questions about the relative areas of state and federal jurisdiction, as they already have in the proceedings that led to the recent *FERC v. Electric Power Supply Assn.* and *Hughes v. Talen Energy Marketing* Supreme Court decisions. However, as has been the case in the past, I believe that future questions can be resolved effectively through the collaborative efforts of state and federal regulators and, when necessary, judicial action.

5. Does the Federal Power Act continue to be well-suited for today's electricity sector? Is it well-suited for the electricity system of the future?

Response: Yes, on both counts. I believe that the responses to questions 1 through 4 above show how the Federal Power Act is flexible and thus well-suited to respond to changing circumstances and how the Commission continually assesses its markets to ensure that they can adapt to the challenges presented by changes happening in the energy space.

Again, thank you for your interest in the current and future state of the organized electricity markets. I look forward to discussing these issues with your office and providing any technical assistance you might require.

Sincerely,

[redacted]

Norman C. Bay
Chairman

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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September 29, 2016

Mr. Douglas Smith
Partner
Van Ness Feldman, LLP
1050 Thomas Jefferson Street, N.W.
Washington, DC 20007

Dear Mr. Smith:

Thank you for appearing before the Subcommittee on Energy and Power on Wednesday, September 7, 2016, to testify at the hearing entitled "Federal Power Act: Historical Perspectives."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on October 12, 2016. Your responses should be mailed to Will Batson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Will.Batson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Fred Upton
Chairman

cc: The Honorable Bobby Rush, Ranking Member, Subcommittee on Energy and Power

Attachment

Responses of Douglas Smith to Additional Questions for the Record

Energy and Power Subcommittee Hearing
on "Federal Power Act: Historical Perspectives"
September 7, 2016

The Honorable Morgan Griffith

1. **Do you believe that the markets are adequately compensating baseload plants for their unique attributes (including dependability and reliability) they provide the grid?**

   Organized electricity markets run by regional transmission organizations (RTOs) and independent system operators (ISOs) provide market-based compensation for generators, including baseload plants, for delivery of energy, ancillary services, and in some cases capacity. Because the auction results are based on market conditions, they may provide revenues to generators that are above or below a generator's actual costs.

   Some regions have reformed elements of their markets to better recognize the value of highly reliable generators. PJM and ISO-NE have recently made changes to their capacity markets, in response to supply shortages during extremely cold winter conditions in January 2014, to recognize the reliability benefits of generators with secure fuel supply arrangements, and to penalize more harshly generators that cannot deliver on capacity commitments.

2. **What reforms do you think could be made to ensure baseload plants—particularly coal-fired power plants—are adequately compensated for these attributes?**

   One approach is to make adjustments to organized market structures to ensure that all valuable attributes of a generator are recognized, and paid for, in the market. As mentioned above, PJM and ISO-NE have recently made changes to their capacity markets in order to recognize the reliability benefits of generators with secure fuel supply arrangements, and to penalize more harshly generators that cannot deliver on capacity commitments. Such reforms do not assure, however, that all coal-fired plants will find it economic to continue operating, given low electricity prices, low natural gas prices, and costs of environmental compliance.

   Where vertically integrated utilities exist, and the costs of utility-owned generation are recovered primarily through cost-of-service retail rates, the decisions about whether to maintain or retire baseload plants are made in the utility resource planning process, subject to state regulatory oversight, not in response to wholesale market conditions.

3. If baseload units are forced to close—by a combination of market dynamics, unfavorable market rules, and escalating regulatory costs—will it require a major restructuring of transmission infrastructure?

As a general matter, additions and retirements of generation, the location of such additions and retirements, and changes in load drive transmission planning decisions, and in particular decisions about whether additional transmission infrastructure investment is needed. The effect of any particular generating unit retirement, or addition, on the need for new transmission infrastructure is inherently case-specific. There are often numerous factors that play into transmission planning decisions.

A. Have the cost and impact of massive new transmission facilities been evaluated if major baseload stations continue to close?

The transmission planning regions plan for transmission development in light of projected changes in load and generation. For example, PJM has authorized more than $29 billion in transmission upgrades and additions since 2000 to address a wide range of needs, including alleviating congestion, ensuring system reliability, and replacing outdated infrastructure.[1] The Brattle Group projected in 2015 that of an anticipated $120-160 billion in national transmission investment over the next decade, between $10-20 billion might be specifically attributable to coal plant retirements.[2] There is significant uncertainty in this estimate because of uncertainty about the role of factors such as the Clean Power Plan and potential coal-to-gas conversions.

4. What effect do renewable energy subsidies and mandates have on the grid and our bulk power supply—particularly on reliability?

Federal incentives, such as the production tax credit and the investment tax credit, and State incentives, such as renewable portfolio standards, have been a significant driver for investment in renewable generation resources. The bulk of the recent investment has been in intermittent renewable generation such as solar and wind generation. According to the Energy Information Administration, coal-fired generation accounted for 33% of U.S. electric energy generation in 2015; natural gas-fired generation accounted for 33%; wind accounted for 5% and solar accounted for 1%.

In areas of the country with high levels of intermittent renewable penetration, the need for generators that can ramp up and down quickly had grown significantly. In California, for instance, daily net load patterns now follow a "duck curve," with solar

[1] *See* PJM Interconnection, "PJM Board Approves $636 Million Investment in Transmission Projects" (Aug. 9, 2016), *available at* www.pjm.com/~/media/about-pjm/newsroom/2016-releases/20160809-rtep-news-release-market-efficiency-project.ashx.

[2] *See* Pfeifenberger, Chang, and Tsoukalis, Brattle Group, "Investment Trends and Fundamentals in US Transmission and Electricity Infrastructure" (July 15, 2015), *available at* http://www.brattle.com/system/publications/pdfs/000/005/190/original/Investment_Trends_and_Fundamentals_in_US_Transmission_and_Electricity_Infrastructure.pdf?1437147799.

accounting for significant generation midday, but need for other resources ramping up steeply in the late afternoon.[3]

A. How are baseload units affected by these market preferences?

Generally, non-market incentives for renewable generation support greater levels of investment in renewable generation than would otherwise occur. Wind and solar generation typically have no fuel costs and very low operating costs, and so are able to economically make quite low bids into organized energy markets, creating a downward pressure on energy market prices. In some cases, the incentives are based on the output of the plant (e.g., the production tax credit, the generation of renewable energy credits under a State renewable portfolio standard), which may make it economical for renewable generators to make negative energy price bids (i.e., where they would pay to deliver energy in the market) in some cases. This is good for ratepayers, as it puts downward pressure on energy prices. It reduces revenues for baseload generators, however, because renewable generators have lower bids than some baseload generators and are thus displacing some baseload generation, and because it generally pushes down market clearing prices.

B. Have these preferences contributed to the closure of certain baseload units—particularly coal-power units?

Many existing coal and nuclear generators have found current and foreseeable electricity market conditions challenging, and some have made an economic decision to retire plants before the end of their useful lives. Coal plant owners face added challenges as compliance with current and future environmental regulatory requirements necessitates additional investment in pollution control equipment or other compliance costs. Generation unit retirements are typically attributable to the confluence of multiple cost and market factors, which may include flat demand for electricity, low natural gas prices, low wholesale electricity prices, environmental compliance requirements and costs, and unit lifespan or relicensing issues. I am not aware of analysis showing that renewable energy incentive policies have been the primary cause of baseload coal plant retirements. I expect that low natural gas and electricity prices, and the prospect of additional environmental compliance costs, are likely more significant economic drivers.

[3] *See* California ISO, "What the duck curve tells us about managing the green grid" (2016), available at: https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf.

The Honorable Paul Tonko

1. **It is clear that today's grid is different than 20 years ago, and it is continuing to change rapidly. Mr. Smith's testimony explained how different technologies and grid management techniques are testing the boundaries between federal and state jurisdictions. Tomorrow's grid will raise even more questions with the growth in storage capacity and microgrids.**

    A. **Are there any lessons we can learn from FERC's actions in the 1980s and 1990s on how to plan for these impending changes, which will make our grid and electricity markets even more complicated than they are today?**

It will be important for both FERC and Congress to be alert to how the regulatory arrangements, and in particular jurisdictional assignments, may need to be adjusted in order to ensure that beneficial technology deployment and market changes can be accomplished. In some cases, FERC has chosen to interpret its jurisdiction in a manner that leaves certain decisions to State oversight. For instance, in Order No. 888, FERC chose not to exercise jurisdiction over the transmission component of bundled retail rates, and the Supreme Court sustained this decision. More recently, FERC has chosen to interpret its jurisdiction over wholesale sales in a manner that allows States to set net metering policies without FERC interference. In some areas, it may not be possible to craft appropriate boundaries between the jurisdiction of Federal and State regulators through FERC interpretation of the current Federal Power Act. In such areas, Congress may need to make adjustments to the Federal Power Act itself.

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

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September 29, 2016

Mr. Mike Naeve
Partner
Skadden, Arps, Slate, Meagher & Flom LLP
1440 New York Avenue, N.W.
Washington, DC 20005

Dear Mr. Naeve:

Thank you for appearing before the Subcommittee on Energy and Power on Wednesday, September 7, 2016, to testify at the hearing entitled "Federal Power Act: Historical Perspectives."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on October 12, 2016. Your responses should be mailed to Will Batson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Will.Batson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Fred Upton
Chairman

cc: The Honorable Bobby Rush, Ranking Member, Subcommittee on Energy and Power

Attachment

Mike Naeve Response to Additional Questions for the Record

The Honorable Morgan Griffith

1. Do your believe that the markets are adequately compensating baseload plants for their unique attributes (including dependability and reliability) they provide the grid?

2. What reforms do you think could be made to ensure baseload plants – particularly coal-fired power plants – are adequately compensated for these attributes?

3. If baseload units are forced to close – by a combination of market dynamics, unfavorable market rules, and escalating regulatory costs – will it require a major restructuring of transmission infrastructure?

    A. Have the cost and impact of massive new transmission facilities been evaluated if major baseload stations continue to close?

Question 1-3 Answer:

With low natural gas prices and the growth of renewable generation facilities many baseload power plants cannot earn sufficient funds from market operations to cover their operating expenses and required capital investments. These market conditions most affect coal and nuclear generation, although many natural gas generation facilities also are challenged. The extent to which retirements of baseload plans will require transmission investment will depend on the number and location of plant retirements. Each of the nations' Regional Transmission Organizations and Independent System Operators engage in both short and long term transmission planning, and evaluate the need for incremental transmission investment under a number of potential generation supply scenarios.

4. What effect do renewable energy subsidies and mandates have on the grid and our bulk power supply – particularly in reliability?

    A. How are baseload units affected by these markets preferences?

    B. Have these preferences contributed to the closure of certain baseload units – particularly coal-power units?

Question 4 Answer:

The addition of renewable supplies to regional energy markets has had numerous effects on system operations and on the performance of existing generating facilities. In hours when renewable resources are producing electricity, the amount of renewable resources entering the market displace an equivalent amount of higher cost generation. When this happens, market prices for energy fall, and all generators operating at the time receive fewer revenues. Renewable resources also increase the quantity of supply being offered into regional capacity markets, thereby lowering capacity charges to customers and capacity revenues paid to generators.

Because renewable resources are intermittent and generally not dispatchable, the increased supply of renewable resources also has changed the manner in which system operators call upon other resources to quickly reduce their output when renewables become available, and to ramp up their output to replace lost supply when renewables no longer are available. The greater the penetration of renewables in a market, the greater the need for generation that can ramp up or down quickly to balance supply and load. Not all generation resources have sufficient ability to quickly increase or decrease their output to meet the demands imposed on the system by intermittent resources. Moreover, the ramping and cycling of replacement generators can increase wear and tear and decrease performance.

It is reasonable to assume that the price effects of adding renewable to regional generation fleets have contributed to the economic difficulties faced by baseload generation plants, along with lower market prices for electricity due to abundant and low cost natural gas supplies.

The Honorable Paul Tonko

1. It is clear that today's grid is different than 20 years ago, and it is continuing to change rapidly. Mr. Smith's testimony explained how different technologies and grid management techniques are testing the boundaries between federal and state jurisdictions. Tomorrow's grid will raise even more questions with the growth in storage capacity and microgrids.

    A. Are there any lessons we can learn from FERC's actions in the 1980's and 1990's on how to plan for these impending changes, which will make our grid and electricity markets even more complicated than they are today?

Question 1 Answer:

In the 1980's and 1990's FERC promoted the concept of regional planning involving participants from each major section in the power industry. In the intervening period FERC has broadened the scope of regional planning, and expanded the opportunities for new market participants to bring new ideas, resources and technologies to the process. The development of comprehensive and inclusive regional planning has enabled the grid to better adapt to rapidly changing market conditions, although many of the implementation details need to be refined in light of real-world experiences.

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

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September 29, 2016

Ms. Susan Tomasky
3007 Bennett Point Road
Queenstown, MD 21658

Dear Ms. Tomasky:

Thank you for appearing before the Subcommittee on Energy and Power on Wednesday, September 7, 2016, to testify at the hearing entitled "Federal Power Act: Historical Perspectives."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

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Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Fred Upton
Chairman

cc: The Honorable Bobby Rush, Ranking Member, Subcommittee on Energy and Power

Attachment

RESPONSE OF SUSAN TOMASKY TO ADDITIONAL QUESTIONS FOR THE RECORD

The Honorable Morgan Griffith

1. **Do you believe that the markets are adequately compensating baseload plants for their unique attributes (including dependability and reliability) they provide the grid?**

Wholesale electricity markets are designed to benefit consumers by providing adequate and reliable power supply at competitively determined prices. In general, competitive markets have successfully accomplished this; the competitive advantage currently enjoyed by natural gas-fired generators is a product of the preference in the marketplace for lower priced supply. In prior periods, when natural gas prices were higher, the markets have strongly favored other fuel types, including both coal and nuclear, and in those market conditions those generation owners prospered. These price responses signal a properly functioning competitive market, delivering electricity to customers at the lowest price the market can provide.

Nevertheless, there are important goals related to the operation and longer term planning of the electricity system that current wholesale market rules haven't fully addressed. When Order No. 888 was adopted, it was generally assumed that most of the nation's baseload fleet (composed primarily of nuclear plants and a substantial number of highly efficient large scale coal plants) would continue to operate at a low marginal cost relative to other generators (natural gas and less efficient coal plants). While there were different views among experts about the future price of coal vs. natural gas, the radical and sustained price decline in natural gas associated with shale development was not predicted. This has undermined early expectations, and as a result we are seeing a number of baseload plants not being dispatched as expected. In the absence of economic support, some plants are being retired well before the end of their operational lives; some others, though currently operating, are at risk of premature retirement as the wholesale market price continues to be affected by low natural gas prices.

The key question, then, is whether those plants provide a special value to the system, so that it is important for electricity customers to pay to have them available, even if they do not dispatch economically under a low gas price environment. I believe that in some instances (though not necessarily all) they do have special value: for example, large steam plants can play a role in the reliability of the system by protecting the grid from electrical disturbances. Certain plants also provide locational stability. While some of these plants may not compete well against today's very low natural gas prices on a marginal cost basis, they do represent a significant part of the country's generation investment. They cannot be replaced easily and quickly, and certainly not without significant new investment that customers would ultimately have to pay for. Toward this end, some markets operators (ISO's and RTO's) have begun to embrace capacity markets as a means to provide compensation to secure the availability of capacity to meet future needs. These efforts are headed in the right direction, though it appears that in some cases stronger incentives will be needed. I believe that these solutions are well within the operating framework of an efficient regulated market place, i.e., that it is possible to establish a reasonable value for contribution of these facilities to the operational security of the system. This will not "save" every baseload nuclear and coal plants; nor should it. These plants vary in their efficiency and importance from an electrical perspective. But through an RTO-based (or in some cases a state based) planning process it is possible to identify the longer-term capacity needs of the system and provide incentives to ensure continuing adequacy of supply.

2. **What reforms do you think could be made to ensure baseload plants – particularly coal-fired power plants – are adequately compensated for these attributes?**

As noted above, I believe that it is possible to use devices such as capacity markets and payments adders to compensate generators who provide additional value to the electrical system by making longer term commitments to keep generation available to meet current and future needs for capacity, grid stability and similar functions. In these cases, the inherent value to be compensated has more to do the baseload characteristics of the plant, or its location within the grid, than it has to do with fuel type. Nevertheless, if incentives are needed to support the efficient and cost-effective operation of the grid by maintaining the availability of certain capacity (nuclear or coal), RTO's and market managers should take the initiative to pay for that added value, and they should have the ability to do so within the current regulatory framework.

There are other values, however, that are more difficult to quantify and whose relative merits are subject to substantial public policy debate. These values -- such as fuel diversity, environmental benefits, and local economic impact – have less to do with the baseload characteristics of a plant and more to do with their contribution to other public policy goals that are often part of the debate over the future of electric power supply in the U.S.

For example, fuel diversity is often embraced as an important attribute of the U.S. generation fleet, both as a device to moderate volatile price effects over time and to ensure security of supply by ensuring that the system is not exposed to a single set of operational risks (e.g., fuel supply interruption for gas or coal plants or operational issues for nuclear plants). Similarly, many have argued for environmental reasons that price penalties should be attached to high carbon emitting fuels, or that adders should be available to support environmentally preferred nuclear plants, energy efficiency and renewables. Indeed, renewables do receive subsidies in various forms Federally and in various states; energy efficiency is favored in some state programs and also is emerging as a product in competitive markets. There are strong arguments for supporting existing nuclear capacity as it comprises, by far, the largest contribution to low/no carbon generation in the nation's existing fleet. In some jurisdictions there are significant local economic benefits associated with existing coal plants and their supporting industries, which may compel preferences for protecting those units; and, in some states policymakers may argue for the benefits of a local power supply, which could support a variety of generation sources. In each case, opponents will argue that compensating for these other values distorts the market and adversely affects the price of power.

Whatever the relative merits of these solutions, the challenge in compensating for these attributes lies not in the design of the competitive market, or the inability to design regulatory mechanisms to reward them. The real challenge lies in the difficulty of forging a policy consensus as to which attributes should be rewarded, and who -- state or federal decision-makers -- should make those decisions. Until a framework for resolving both of those issues is established, we may see piecemeal responses that benefit particular generation choices, but we will not see a systematic approach to future power supply decisions that incorporates a recognition of these values.

3. If baseload units are forced to close by combination of market dynamics, unfavorable market rules, and escalating regulatory costs - will it require a major restructuring of transmission infrastructure?

The closure of some baseload units could create system reliability and stability issues and if so, they would need to be addressed through transmission upgrades, replacement generation resources or a combination of the two. The answer to the question about the scope of needed new infrastructure requires engineering analysis based upon the particular facilities involved.

Have the cost and impact of massive new transmission facilities been evaluated if major baseload stations continue to close?

I am not personally aware of broad-based transmission related studies in this regard, though I would expect that Regional Transmission Organizations and regulators are evaluating those issues in a variety of contexts. For example, I understand that the New York ISO has published a study indicating a need for significant transmission upgrades to accommodate the goals of the Clean Energy Standard, and PJM regularly studies the operational consequences of plant retirements on future resource needs.

4. What effect do renewable energy subsidies and mandates have on the grid and our bulk power supply - particularly on reliability?

A. How are baseload units affected by these market preferences?

Because of the subsidies and mandates, renewable resources have the ability and incentive to offer their facilities below their cost of production in both energy and capacity markets. While in most areas renewable generation still only comprises a very small percentage of available supply, it is capable of displacing baseload resources and suppressing the price in both energy and capacity market prices. The most obvious example is the phenomenon whereby wind generators are incentivized to produce electricity at a loss, where the value of the federal tax credit alone makes it worthwhile. This has had the adverse effect of overloading the grid in certain parts of the country, particularly at night, forcing nuclear generators to be taken offline.

B. Have these preferences contributed to the closure of certain baseload units - particularly coal-powered units?

The specific factors contributing to the decision to close a particular plant will vary. Under current market conditions a number of factors are contributing to the closure of baseload coal units, including increasing operating costs due to environmental requirements and other changing operation conditions, the age of plants and related capital maintenance requirements and the relative cost of natural gas relative to coal. There may well be instances in which preferences for renewables have also contributed. However, I have not personally studied each of these decisions and am not able to say with certainty what factors ultimate contributed to each.

The Honorable Paul Tonko

1. **It is clear that today's grid is different than 20 years ago, and it is continuing to change rapidly. Mr. Smith's testimony explained how different technologies and grid management techniques are testing the boundaries between federal and state jurisdictions. Tomorrow's grid will raise even more questions with the growth in storage capacity and microgrids.**

   A. **Are there any lessons we can learn from FERC's actions in the 1980's and 1990's on how to plan for these impending changes, which will make our grid and electricity markets even more complicated than they are today?**

   I believe that the most important lesson we have learned is that competitive markets have created not only competitive prices but have also encouraged ingenuity and innovation, and have laid the foundation for further technological progress. I believe in principle that the most important part of planning for change is creating a framework open to many different market participants and technological solutions. Decision-makers should open pathways to participation in the marketplace but should resist the temptation to map too specific a course forward, based on today's vision of preferred technologies. States can be excellent proving grounds for fostering new technologies that are not developed enough to win broad support and that innovation should be encouraged, particularly in the customer-facing aspects of the business. At the same time, I believe strongly that in the years since Order No. 888, we have seen the validation of regional approaches to wholesale power supply and transmission planning. We should draw from that a compelling case for fundamental confidence in the market to operate efficiently to bring value to consumers. In my view, it is critically important to preserve both the Federal role in supervising and designing these markets.

2. **At the time of FERC's Order No. 888, were there any formal attempts to forecast the potential for the adoption of new technology or other changes that might impact the federal-state jurisdictional relationship significantly.**

3. **If so, were those forecasts accurate in predicting the ways the grid and electricity markets have evolved.**

   I do not recall any such studies.

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

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Congress of the United States

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September 29, 2016

Ms. Linda G. Stuntz
Partner
Stuntz, Davis & Staffier, P.C.
555 12th Street, N.W., Suite 630
Washington, DC 20004

Dear Ms. Stuntz:

Thank you for appearing before the Subcommittee on Energy and Power on Wednesday, September 7, 2016, to testify at the hearing entitled "Federal Power Act: Historical Perspectives."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

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Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Fred Upton
Chairman

cc: The Honorable Bobby Rush, Ranking Member, Subcommittee on Energy and Power

Attachment

Linda G. Stuntz' Responses to additional questions
regarding the hearing entitled "Federal Power Act: Historical Perspectives"
held on Wednesday, September 7, 2016
before the House of Representatives' Subcommittee on Energy and Power

The Honorable Morgan Griffith

Q1: DO YOU BELIEVE THAT THE MARKETS ARE ADEQUATELY COMPENSATING BASELOAD PLANTS FOR THEIR UNIQUE ATTRIBUTES (INCLUDING DEPENDABILITY AND RELIABILITY) THEY PROVIDE THE GRID?

A: Some are; some are not. The North American Electric Reliability Corporation (NERC) has identified a number of "Essential Reliability Services" that are necessary to preserve reliable service. These include reactive power and voltage support. Many of these Essential Reliability Services have been provided by base load power plants, but they can also be provided by non-baseload plants. In those parts of the country experiencing the most rapid increase in renewable generation resources, there is less demand for baseload power and more need for ramping capability and quick start capability to keep supply and load in balance. This is illustrated by the California Independent System Operator's "Duck Curve," that I discussed in my testimony. While the rest of the country does not feature load curves like this now, high wind resource areas such as Texas and the Midwest are discovering that they also need more resources to "firm up" wind. Once the services needed to maintain reliability are fully identified, those services can be provided via cost-based rates or through markets.

Q2: WHAT REFORMS DO YOU THINK COULD BE MADE TO ENSURE BASELOAD PLANTS — PARTICULARLY COAL-FIRED POWER PLANTS — ARE ADEQUATELY COMPENSATED FOR THESE ATTRIBUTES?

A: Essential Reliability Services need to be identified. Then all those who can provide those services should be compensated based on the market for that service or at a cost-based rate. This would ensure that all generation sources that provide these services are fairly compensated.

Q3: IF BASELOAD UNITS ARE FORCED TO CLOSE — BY A COMBINATION OF MARKET DYNAMICS, UNFAVORABLE MARKET RULES, AND ESCALATING REGULATORY COSTS — WILL IT REQUIRE A MAJOR RESTRUCTURING OF TRANSMISSION INFRASTRUCTURE?

A: In the Energy Policy Act of 2015, FERC was directed to provide incentives for investment in transmission, which had been lagging. FERC implemented this direction in Order No. 679, and it has worked to encourage substantial new investment in transmission. In part because of this new investment, the transmission system has been able to adapt to a 15% decline in coal fired generating capacity between the end of 2010 and May 2016, according to a July 26, 2016 Energy Information Administration report. However, it is becoming increasingly difficult to site any kind of energy infrastructure, including electric transmission and natural gas pipelines. If substantial additional coal and nuclear generation is retired, sufficient time must be allowed to plan and construct transmission to access alternative supplies of power, including renewable generation, which generally is not located near load, except for rooftop solar. New natural gas pipeline infrastructure will also be needed to fuel new natural gas plants. If the development of this new infrastructure does not occur in time to replace retiring plants, reliability could be damaged.

Q3A: HAVE THE COST AND IMPACT OF MASSIVE NEW TRANSMISSION FACILITIES BEEN EVALUATED IF MAJOR BASELOAD STATIONS CONTINUE TO CLOSE?

A: The impact of baseload plant retirements has generally been assessed on a case-by-case basis by the utility owner and/or the RTO or ISO in which the facility is located. Determining who should pay for the cost of new transmission to reach renewables is a challenge in many areas of the country, and is a barrier to a number of these projects.

Q4: WHAT EFFECT DO RENEWABLE ENERGY SUBISIDIES AND MANDATES HAVE ON THE GRID AND OUR BULK POWER SUPPLY — PARTICULARLY ON RELIABILITY?

A: FERC and the Electric Reliability Organization, which is NERC, seek to ensure the reliability and security of the Bulk Power System, the high voltage transmission system. In general terms, they work to see that the system is planned and operated in a way that maintains reliability despite some outages of generation and lines. The matter of supply adequacy is largely entrusted to states, although as we discussed at the hearing, RTOs and ISOs now play a role in ensuring supply adequacy. The increasing amounts of renewable power do create challenges for proper management of the Bulk Power System and to maintain supply adequacy when the availability of these resources cannot be precisely predicted. But the electric industry and regulators at all levels are working to address these challenges through upgrades to the system to improve its flexibility, improved forecasting capabilities, and better understanding the need for services such as voltage ride through. Before any resource is interconnected at the transmission or distribution levels, studies must be performed to insure that this resource can be properly managed and will not create a reliability problem.

Thus far, the system has proven resilient, but except for California, and the states of Iowa, South Dakota and Kansas, where wind produced more than 20% of their total generation in 2015 (EIA Report of September 27, 2016), renewable generation remains a relatively small fraction of total generation. As the amount of renewable generation increases, the challenge of maintaining reliability will also increase.

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Q4A: HOW ARE BASELOAD UNITS AFFECTED BY THESE MARKET PREFERENCES?

A: It is hard to determine how much public policy preferences for certain renewable resources have affected baseload generation as compared to the low price of natural gas, environmental regulation and the role of NRC regulation for nuclear plants. The CEO of the owner of the Diablo Canyon nuclear power plant has said that California's public policy choices for renewables and efficiency made it appropriate to retire Diablo Canyon. Whether these choices have had such a direct effect on other baseload plants that are being retired is unclear. However, nuclear and other "baseload" generation was built to run at high capacity factors (operating most of the time) and may not be economic or able to ramp up and down or operate at lower capacity factors. To the extent these plants cannot operate at high capacity factors, therefore, their viability is challenged.

Q4B: HAVE THESE PREFERENCES CONTRIBUTED TO THE CLOSURE OF CERTAIN BASELOAD UNITS- PARTICULARLY COAL-POWER UNITS?

A: Yes, but the relative contribution of these preferences as compared to low natural gas prices and environmental regulation is unclear.

The Honorable Paul Tonko

Q1: IT IS CLEAR THAT TODAY'S GRID IS DIFFERENT THAN 20 YEARS AGO, AND IT IS CONTINUING TO CHANGE RAPIDLY. MR. SMITH'S TESTIMONY EXPLAINED HOW DIFFERENT TECHNOLOGIES AND GRID MANAGEMENT TECHNIQUES ARE TESTING THE BOUNDARIES BETWEEN FEDERAL AND STATE JURISDICTIONS. TOMORROW'S GRID WILL RAISE EVEN MORE QUESTIONS WITH THE GROWTH IN STORAGE CAPACITY AND MICROGRIDS.

A:

Q1A: ARE THERE ANY LESSONS WE CAN LEARN FROM FERC'S ACTIONS IN THE 1980s AND 1990S ON HOW TO PLAN FOR THESE IMPENDING CHANGES, WHICH WILL MAKE OUR GRID AND ELECTRICITY MARKETS EVEN MORE COMPLICATED THAN THEY ARE TODAY?

A: I fear electricity markets already are too complicated for mere mortals to understand, and yet the lesson of the 1980s and 1990s is that the government does a lousy job of picking technology and resource winners and losers. Electricity is absolutely vital to our quality of life and our economy, and will become even more so, but reliance on properly structured and well-functioning markets will produce the best outcomes for consumers. We also need to keep in mind the differences in resources, regulation and ownership of the electric system across the country. What works in New York may not work in Ohio

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or Missouri. Flexibility must be retained for the states and regions to find the solutions that make sense for them, but that do not impose unfair burdens on neighbors.