

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Conference on Competition
In Wholesale Power Markets

Docket No. AD07-7-000

Statement of

William L. Massey

Covington & Burling LLP

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William L. Massey
Covington & Burling LLP**

Mr. Chairman and Commissioners:

Overview: Achieving National Priorities Through Competitive Electricity Markets

Thank you for inviting me to speak about the future of competitive electricity markets, a subject that is vitally important to our nation. With well-functioning electricity markets, we embrace the bright future. Congress certainly understands this, having taken progressively more expansive steps toward promoting electricity competition with PURPA of 1978,¹ EPAct of 1992,² and EPAct of 2005.³ And, in turn, recently this Commission, under Chairman Kelliher's leadership, has taken numerous steps to improve competitive markets, including last year's California market redesign order,⁴ which was voted out unanimously by the Commission despite

¹ Public Utility Regulatory Policies Act of 1978, Pub. L. No. 95-617, 92 Stat. 3117 (1978) (codified in U.S.C. titles 15, 16, 26, 30, 42, and 43).

² Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776 (1992) (codified at, among other places, 15 U.S.C. 79z-5a and 16 U.S.C. 796 (22-25), 824j-1).

³ Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005) (to be codified in scattered titles in the U.S.C.).

⁴ *Order Conditionally Accepting the California Independent System Operator's Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade*, 116 FERC ¶ 61,274 (2006).

powerful political headwinds, and more recently, Order No. 890,⁵ intended to update the venerable Order No. 888.⁶

Large regional competitive electricity markets are essential to meeting our national priorities. Both political parties in Washington have advocated reduced dependency on foreign energy sources for quite some time. The urgency of this goal has been reinforced since the November elections by the White House and Congress. We are also seeing an elevated focus on climate change and environmental values. To meet our nation's goals for renewables, energy efficiency, demand response, cleaner air and greater energy independence, we must have the innovation and efficiency that well-functioning regional markets bring. I will speak more about the relationship between markets and meeting these important values later in my presentation.

I intend to deal with three questions. First, what problems were competitive markets designed to solve? Second, what have been our successes and our disappointments? And, third, how can electricity markets help to achieve our national goals with respect to technological innovation, renewable generation, demand response, efficient use of energy, implementing environmental values including a focus on responding to climate change, and ultimately greater energy independence?

⁵ *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, 18 CFR Parts 35 and 37 (2007).

⁶ *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, 61 FR 21540 (May 10, 1996), FERC Stats. & Regs. ¶ 31,036 (1996), *order on reh'g*, Order No. 888-A, 62 FR 12274 (Mar. 14, 1997), FERC Stats. & Regs. ¶ 31,048 (1997), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in relevant part sub nom, Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000) (*TAPS v. FERC*), *aff'd sub nom, New York v. FERC*, 535 U.S. 1 (2002).

Exhibits for the Record

Before I continue, however, I would like to mention that my statement will have attached four exhibits for the record of this proceeding. Exhibit 1 is a June 26, 2006 open letter to policymakers signed by eight distinguished economists explaining the benefits of competitive electricity markets. Exhibit 2 is a December 4, 2006 letter to Chairman Kelliher from eight large commercial customers touting the customer benefits of large regional markets operated by RTOs. Exhibit 3 is a February 26, 2007 letter from the American Wind Energy Association (AWEA), individual wind developers, and a number of environmental groups such as NRDC touting the benefits for renewable generation that have been achieved by RTOs and regional wholesale electricity markets. And Exhibit 4 is a March 1, 2007 white paper prepared by COMPETE articulating how organized regional electricity markets promote technological innovation, renewable generation, energy efficiency, and demand response.

The Historical Development of Competitive Electricity Markets: Providing Solutions in the Electricity Industry

I will begin by providing personal perspective, as a former Commissioner who served from 1993 through 2003, about the rationale for the steady evolution of competition policy. What problems were we trying to solve, and how did we get where we are today?

Early during my tenure, the Commission was concerned, as was Congress, about operational and other inefficiencies under regulation. Regulation did not create appropriate incentives for efficient investments and efficient plant operation. Plants were operating at low capacity factors, and more efficient non-utility generators were facing vast barriers to entry. Customers, rather than suppliers, were often forced to bear the risk of large cost overruns as expensive nuclear and other plants were placed in rate base, and there was almost no customer choice. Municipal utilities and rural electric cooperatives, the so-called “transmission dependent

utilities,” were often trapped inside large utility systems and could not shop for the cheaper or more efficient supplier. Neither could the large industrial customers.

We were hearing from all of these groups. Personally, I was concerned that these smaller businesses could not gain access to the transmission grid within any reasonable time frame. They had no choice. Individual purchasers of power, often munis and coops, were applying to FERC for transmission access under the rather complicated process set out in EPAct of 1992, but they faced litigation, delay and frustration. In truth, despite the new law and the best of Congressional intentions, no one was getting access, and even the Commission was frustrated.⁷

We decided to move generically with Order No. 888.⁸ We wanted to spur the somewhat embryonic industry of independent suppliers that would bring new technologies such as combined cycle gas plants. We wanted to encourage suppliers who would innovate, suppliers who would have an incentive to operate more efficiently, suppliers who had no rate base and therefore would bear (along with their investors) the risk of bad or more-costly-than-intended investments. We wanted to shift this risk from the customer. We wanted customers to have choice -- it was, in the end, a question of fundamental fairness.

Order No. 888 was a success, and it radically changed the electric power industry. Scores of transmission-owning public utilities -- 167, to be exact -- filed open access tariffs and unbundled their supply function from their transmission function. The result, while expected, was impressive. There were greater efficiencies, customers had greater choices, the risk of bad

⁷ See e.g., *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Notice of Proposed Rulemaking and Supplemental Notice of Proposed Rulemaking, 70 FERC ¶ 61,357 at 47-57, 62-84 (1995).

⁸ Order No. 888, *supra* note 6.

investments shifted from customers to power suppliers, and the independent power industry, frankly, just exploded.

Yet, as the Order 888 markets emerged, there were still problems with discrimination in the form of market foreclosure and transmission foreclosure. Some market participants could not reliably gain access to the grid or to the market. Customers and suppliers were faced with pancaked transmission rates as their power crossed a utility's corporate boundary. Transmission pricing was for the most part based on the contract path, which had little to do with grid operations in real time. And congestion was socialized. Moreover, even as power markets were evolving into large regional markets, regional institutions, regional transmission planning, and dispatch had yet to be established.

To move toward solving these problems, we encouraged the formation of new institutions called regional transmission organizations (RTOs), large regional institutions that would both dispatch generation and provide transmission access independently of market participants. In other words, RTOs provided a level playing field with no transmission or market foreclosure. RTOs would also eliminate pancaked transmission rates. They would rationally price congestion through locational marginal prices. They would operate well-functioning spot markets that would provide the necessary price signals.⁹

The development of RTOs made sense in the year 2000, and their continued development and permanence makes even more sense now. As one of the architects of Order No. 2000, I am pleased that RTOs are now in place in regions that cover roughly two thirds of our nation's

⁹ *Regional Transmission Organizations*, Order No. 2000, 65 FR 809 (Jan. 6, 2000), FERC Stats. & Regs. ¶ 31,089 (1999), *order on reh'g*, Order No. 2000-A, 65 FR 120888 (Mar. 8, 2000), FERC Stats. & Regs. ¶ 31,092 (2000), *aff'd sub nom. Public Utility District No. 1 of Snohomish County, Washington v. FERC*, 272 F.3d 607 (D.C. Cir. 2001).

electricity load. They provide reliable price signals, price congestion rationally, operate independently of bias for or against any market participant, conduct regional planning, and eliminate inefficient transmission pricing. It will come as no secret to this Commission or to this audience that these large institutions have my full support and confidence.

Implementing Competitive Electricity Markets: Successes and Disappointments

The second question I raised is: What are our principal successes and what have been the disappointments? With respect to successes, the first one I would mention is excellent transparency in RTOs with locational price signals published in real time. Congestion is managed rationally through market-based mechanisms and re-dispatch, and, rather than socialize the financial responsibility, market participants responsible for congestion are also responsible for the costs. Another great success for RTOs has been independent dispatch and transmission operation with no conflicting incentives to favor any particular market participant. Clearly, there has been substantially more efficient plant dispatch, regional sharing of efficiencies, the elimination of corporate seams and balkanization, and more efficient transmission pricing through the elimination of pancaked transmission rates. Importantly, in competitive markets, competitive suppliers have no rate base that would cause customers to bear the risk of cost overruns or bad business decisions. Instead, suppliers bear those risks, as evidenced by the number of bankruptcies in the sector for which electricity customers did not pay. Sophisticated regional planning has emerged to ensure that market participants and the regional system operator understand the transmission, generation and demand resources that must be installed for the market to thrive. And it is working -- transmission construction and investment is rebounding strongly in the RTO markets.

Disappointments have arisen only when essential market elements are not in place. The lack of a somewhat uniform policy promoting competitive procurement has been disappointing. Without such procurement, customers do not have assurance of the lowest cost generation available. I am pleased that the Commission is working closely with the states in this regard. I am additionally concerned about inefficiencies in areas outside of the RTO markets. Despite good progress with Order No. 890, I fear that we will continue to see a balkanized grid with inefficient transmission pricing, plus lingering opportunities for both transmission and market foreclosure. We also see in these areas that transparency is lacking in price signals, dispatch, and a host of other elements that characterize good markets. All markets, both RTO markets and those in other regions, struggle with how to incentivize a robust demand response. Much more work must be done in this area, but large RTOs undoubtedly hold the best hope for solving this problem.

Advantages to Competitive Electricity Markets: Promoting Renewables, Efficiency, Demand Response, Environmental Values and Technological Innovation

Last, let me turn to my third question regarding how regional markets for electricity help us to achieve our goals with respect to innovation, renewable generation, efficient use of energy and demand response, while at the same time promoting our environmental values and greater energy independence. I am attaching materials that make this point effectively and persuasively, so I will just make a few points.

With respect to renewables, AWEA has found that 73% of installed wind capacity is in RTOs, while the wind energy potential in the same regions is just 44%. The fact is that wind resources are disproportionately locating in RTO markets because of the large regional dispatch, efficient transmission pricing, and easier facilitation of electricity delivery from resources that may be remote from load. Hourly and day ahead markets in the RTOs provide the best means of

addressing the variability of intermittent resources, and the consolidation of balancing areas through RTOs reduces the cost of integrating intermittent resources. Wind generators and environmental groups understand that a great future for wind lies in the organized regional markets.¹⁰

Effective demand response programs can thrive in organized RTOs. The price signals in regional markets are transparent, giving customers information about how changes in real-time demand affect prices and reliability. The price signals in RTOs are also accurate and credible, allowing purchasers to make usage decisions to limit inefficiency, curb price increases and reduce volatility.¹¹ Locational price signals turn customers into participants, along with the system operator, in ensuring a reliable dispatch. It is well known that in just one week during August of 2006, demand response programs in PJM saved customers over \$650 million.¹² This is just one example of a robust demand response that can be achieved in a large regional market.

Clearly, energy efficiency is significantly enhanced by markets. A study by Global Energy Decisions shows that plant operating efficiencies dramatically improve with market incentives,¹³ and price signals allow customers to make more efficient usage decisions in real

¹⁰ Exh. 3.

¹¹ *Cf.* Exh. 2; Exh. 4 at 6, n.21 (COMPETE White Paper “Meeting the Challenges Ahead: Regional Electricity Markets Foster America’s Energy Independence and Security” (March 1, 2007)) (citing PJM Interconnection, Early August Demand Response Saves PJM \$650 Million (August 23, 2006)).

¹² See Exh. 4 at 6, n.21 (COMPETE White Paper “Meeting the Challenges Ahead: Regional Electricity Markets Foster America’s Energy Independence and Security” (March 1, 2007)) (citing PJM Interconnection, Early August Demand Response Saves PJM \$650 Million (August 23, 2006)).

¹³ See Exh. 4 at 7, n.28 (COMPETE White Paper “Meeting the Challenges Ahead: Regional Electricity Markets Foster America’s Energy Independence and Security” (March 1, 2007)) (citing Putting Competition Power Markets to the Test - The Benefits of Competition in America’s Electric Grid: Cost-Savings and Operating Efficiencies, Global Energy Decisions (continued...))

time. Cost-of-service regulation, on the other hand, may provide a disincentive for efficiencies in both operations and pricing.

Finally, markets spur technological innovation. Nobel Laureate economist Vernon L. Smith, in addition to several other distinguished economists, have written about how competitive electricity markets spur technological innovation through advanced metering and monitoring technologies, among other things.¹⁴ Intuitively, we all know this to be true, that competition spurs innovation, and often an explosion of it. An obvious parallel is the telecommunications revolution incited by deregulation in that industry -- we now have our ubiquitous Blackberries and other hand held communications and data devices. We are on the verge of the same dynamic in the electricity industry. I think of the work that is going on at EPRI and elsewhere with respect to the concept of “prices to devices,” a concept that some day could turn literally hundreds of thousands of devices and appliances in a large regional market into demand, efficiency and reliability resources. Indeed, it is hard to imagine cutting-edge innovation taking hold if the system is re-monopolized, as some have urged, and it is also hard to imagine such innovation without accurate price signals, ease of entry, and a dispatch that is welcoming to renewables, demand response and efficiency products.

I submit that it is highly unlikely that we can meet our goals with respect to innovation, efficiency, renewables or demand response, and indeed our broader goals for greater energy independence and solutions to the problem of climate change, without large regional markets for electricity and customer benefits they provide.

Study at ES-1 (2005); Howard J. Axelrod, The Fallacy of High Prices, 144 Public Utilities Fortnightly at 55 (Nov. 2006).

¹⁴ Exh. 1.

Thank you for the opportunity to submit this statement. Four exhibits are attached.

June 26, 2006

Open Letter to Policymakers

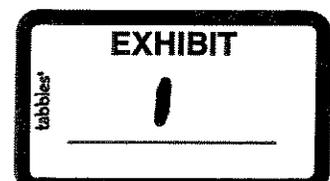
Dear Policymaker:

As economists that have both followed and participated in the discussion on restructuring the electricity industry to support competitive wholesale and retail electricity markets, we prepared this letter to provide our views about the value of continued support for the development of competitive markets for electricity.

Among economists, it is almost universally accepted that well functioning competitive electricity markets yield the greatest benefits to consumers in terms of price, investment and innovation especially when regulated alternatives are no longer warranted. And, despite currently high electricity prices in many regions, driven by very high fuel input costs used to generate electricity, we are confident that well structured markets and robust competition are providing substantial benefits to electricity consumers. More importantly, these benefits will increase over time if an effective restructuring process and competitive market implementation program continue to receive support from policymakers. Unfortunately, recent reports have blamed rising electricity prices on industry restructuring. These reports fail to identify the primary cause of today's rising electricity prices --- dramatic increases in fuel costs at a time when retail rate freezes introduced as a transition to competition have come to an end. We are concerned that faulting competitive markets for today's high prices diverts the focus and resolve of policymakers to continue with restructuring and make further improvements in market institutions and design in order to provide consumers with the full benefits of competition.

First, competition and markets are not to blame for recent increases in electricity prices. The current high electricity prices are largely the result of dramatically higher fuel costs. During the period 2000-2005, the price of natural gas increased 375%, and the price of coal increased 30%. These are the two primary fossil fuels used for electricity generation. These increases have been magnified by the end of many retail price freezes that were put in place in many states as part of the transition to competition. Commodity price increases are being felt both in restructured states and in states with vertically integrated utilities. Retail prices have increased more in restructured states than in regulated states in the last year, largely because of their greater use of clean, natural gas-fueled generating capacity, but they increased less in restructured states in the previous few years. While there has been considerable publicity about sharp increases in electricity prices in restructured states such as Maryland and Delaware, where long-term retail rate freezes are expiring, we would point out that, during 2000-2005, regulated rates increased by 47% in Oklahoma and, since 2000, by 43% in Colorado, just to give two examples. No state, regulated or restructured, will ultimately escape the burden of the higher generation fuel prices we are experiencing now.

Second, properly structured, competitive markets shift the risk of bad business and investment decisions away from consumers by having the shareholders of competitive suppliers, and not electricity customers, bear those risks. Cost-of-service regulation clearly has its place in some aspects of the electricity industry such as distribution and transmission. However, where market forces can operate, as they have for electric generation, competition can shield consumers from construction and operating cost overruns. The shifting of risks from customers to suppliers



in a competitive market is a huge benefit for consumers in the long run since wiser investment choices and better cost control incentives will lead to more efficient outcomes.

Third, restructured electricity markets are an efficient and reliable way to allocate resources, and there is growing evidence and convincing studies that show that consumers have saved billions of dollars in energy costs as a result of competitive markets when compared to the traditional regulation in effect before competition was implemented. The savings from competition are real dollars in the pockets of consumers, and those savings will continue after fuel prices retreat from their current high levels. In addition, there have been multiple new entrants and large gains in generator performance with competition. One estimate found that performance improvements from divested power plants produced enough additional energy to power more than 25 million households in the Eastern interconnect for a year. Customers are beginning to gain access to more tailored products and services. Credible price signals provide opportunities to develop a robust demand response that both has a significant price dampening effect and relieves the stresses and strains on the delivery systems. And, restructuring and competition have brought significant environmental benefits, with reduced emissions resulting from increased operating efficiencies, improved regional dispatch of generating resources, and the use of market signals to stimulate increased investment in transmission, emission control technology, highly fuel-efficient new generation and renewables.

In sum, despite the recent increases in electricity prices, policymakers should stay the course and continue to support restructuring and the evolution of competitive wholesale and retail markets for power. Competition is the very foundation of our nation's economy. Competitive electricity markets are relatively new and will continue to evolve. We urge policymakers to focus on making necessary improvements in market design and resist the temptation to reject competition for a return to heavy-handed regulation. We are persuaded that competition in electricity markets will stand the test of time and continue to provide visible customer benefits.

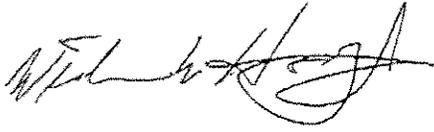
Sincerely,



Paul L. Joskow
Professor of Economics and Director of the
Center for Energy and Environmental Policy
Research
Massachusetts Institute of Technology



Alfred E. Kahn
Robert Julius Thorne Professor of
Political Economy, Emeritus
Cornell University



William W. Hogan
Raymond Plank Professor of Global Energy
Policy, John F. Kennedy School of
Government
Harvard University



Peter Cramton
Professor of Economics
University of Maryland



Howard J. Axelrod
President
Energy Strategies, Inc.



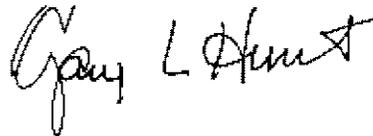
Vernon L. Smith
Interdisciplinary Center for Economic
Science
George Mason University

Founder and President
International Foundation for Research
in Experimental Economics

<http://nobelprize.org/economics/laureates/2002/index.html>



David W. DeRamus, Ph.D.
Partner
Bates White, LLC



Gary L. Hunt
President
Global Energy Advisors

December 4, 2006

The Honorable Joseph T. Kelliher
Chairman
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Dear Chairman Kelliher,

The companies who have endorsed this letter strongly support the development of competitive electricity markets and encourage the Federal Energy Regulatory Commission to support policies which allow for the continued evolution and implementation of such markets.

Nationally, we collectively represent nearly 14,000 facilities and over \$8.5 billion in annual electricity costs as consumers of electricity. Electricity is one of the most substantial costs to our business operations which ends up impacting our 1.9 million employees, our customers, and - ultimately - all Americans.

Our companies' experiences reflect that competitive electricity markets allow our businesses to recognize substantial savings on electricity costs, which can in turn be converted to lower cost to customers, improved products and services, additional sales people, and more. Fostering policies which allow electricity users to manage their energy purchases in an efficient manner is critical to achieving such benefits.

Success at the retail level, where we operate, requires robust competition at the wholesale level. Therefore, we strongly support the Commission's restructuring policies with respect to Regional Transmission Organizations and Independent System Operators.

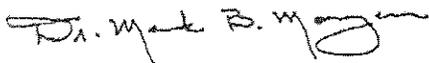
We believe that regional competitive wholesale markets for electricity, with independent oversight, provide the greatest flexibility in responding to consumers' needs. Competitive wholesale markets achieve this flexibility by providing access to generation at the lowest available cost; promoting transparency and reliability; enhancing the nation's transmission infrastructure; and providing price signals that promote sound investment decisions regarding generation, transmission, demand response, and energy efficiency.

We urge the Commission's continued support for non-discriminatory access to transmission and power markets, greater transparency, independent oversight, and other pro-market policies that are in the best interests of consumers.



December 4, 2006 -- Letter to Chairman Kelliher re: Competitive Electricity Markets

Sincerely,



Dr. Mark B. Morgan
Corporate Engineer / Manager Stores
Engineering
7-Eleven, Inc.



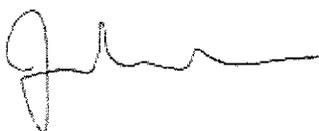
James S. Kirk
Director of Engineering and Energy
Management
A&P



Thomas M. Brennan
Director of Finance
Archdiocese of Chicago



W. Dustin Mirick
Manager, Utilities and Energy
Management
Best Buy Co., Inc.



Jeff Dummermuth
Director, Energy & Engineering
Big Lots Stores, Inc.



Hal Bozarth
Executive Director
Chemistry Council of New Jersey



William R. Lyon
Operating Vice President - Energy
Services
Federated Department Stores



Angela S. Beehler
Director, Energy Regulation
Wal-Mart Stores, Inc.

cc: Commissioner Suedeen Kelly, Commissioner Philip Moeller, Commissioner Marc Spitzer, Commissioner Jon Wellinghoff

February 26, 2007

The Honorable Joseph T. Kelliher
Chairman
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Dear Chairman Kelliher,

We are writing to highlight the benefits regional wholesale electricity market structures can provide in bringing more renewable energy and demand response into the nation's resource portfolio. Because renewable energy and demand response resources benefit America's economy, environment, and security, it is vital that we have the institutions and rules necessary for them to thrive. In particular, independent regional transmission operators such as Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) not only can promote electric system reliability and wholesale competition, they can also facilitate renewable energy and demand response development. We understand that some groups question whether the benefits of such regional organizations exceed their costs to customers. The groups joining this letter, however, are convinced that properly structured regional wholesale electricity markets with independent regional transmission operators can provide net benefits to customers and promote critical national goals related to fuel diversity, energy security, and environmental protection.

Well-structured regional wholesale electricity markets operated independently allow far greater amounts of renewable energy and demand response resources to be integrated into the nation's electric grid. In fact, approximately 73 percent of installed wind capacity is now located in regions with such markets, while only 44 percent of wind energy potential is found in these areas. Large, regional energy markets provide for cost-effective balancing of generation and load with significant penetrations of variable, non-dispatchable power sources, and they facilitate delivery of resources remote from load centers. A summary of utility industry research by the Utility Wind Integration Group (www.uwig.org) states that "well-functioning hour-ahead and day-ahead markets provide the best means of addressing the variability in wind plant output." Further, "consolidation of balancing areas or the use of dynamic scheduling can improve system reliability and reduce the cost of integrating additional wind generation into electric system operation."

A recent study required by the Minnesota legislature to assess the reliability and cost of providing 20 percent of the state's electricity from wind stated:

"The MISO [Midwest Independent System Operator] energy market also played a large role in reducing wind generation integration costs. Since all generating resources over the market footprint are committed and dispatched in an optimal fashion, the size of the effective system into which the wind generation for the study is integrated grows to



almost 1200 individual generating units. The aggregate flexibility of the units on line during any hour is adequate for compensating most of the changes in wind generation.” (See www.puc.state.mn.us/docs/windrpt_vol%201.pdf.)

Independently run regional grid operations can foster renewable energy and demand response development by:

- Eliminating “pancaked” transmission rates that are assessed across every utility area;
- Providing energy markets where variable or intermittent resources can sell excess energy or purchase shortages at a transparent and fair price;
- Minimizing operational impacts of variable resources by netting out aggregate load and generation over a wide region;
- Facilitating regional transmission planning to access generating resources as well as address reliability, congestion, and load growth in the most efficient overall manner;
- Providing a mechanism to pursue regional cost allocation policies; and
- Providing for flexible transmission tariffs that allow rates to be paid on an as-used basis as opposed to a capacity reservation basis.

It is important for policy makers to understand the values of properly designed regional wholesale electricity market structures, as well as regional coordination of control area functions, in supporting national policy objectives including energy security, environmental protection, and economic development. The ability of such structures to integrate renewable energy and demand response and facilitate their use is critical to these policy goals.

Sincerely,



Robert Gramlich
American Wind Energy Association

On behalf of:

Ralph Cavanagh
Natural Resources Defense Council

Seth Kaplan
Conservation Law Foundation

Don Furman
PPM Energy

David Brewster
EnerNOC

Michael Skelly
Horizon Wind Energy

John N. Moore
Environmental Law & Policy Center

John Hanger
Citizens for Pennsylvania's Future

Beth Soholt
Wind on the Wires

Daniel L. Sosland
Environment Northeast

Natalie McIntire
Renewable Northwest Project

Roger Hamilton
West Wind Wires

Nancy Rader
California Wind Energy Association

David Olsen
Center for Energy Efficiency and
Renewable Technologies

Steve Weiss
NW Energy Coalition

Michael Vickerman
RENEW Wisconsin

Terry R. Black
Project for Sustainable FERC Energy
Policy

Grant Smith
Citizens Action Coalition of Indiana

David Lamm
Energy Unlimited, Inc.

Michael Noble
Fresh Energy

R. Brent Alderfer
Iberdrola Renewable Energies USA

John Calaway
Babcock and Brown

cc:

The Honorable Suedeen Kelly, Federal Energy Regulatory Commission
The Honorable Philip Moeller, Federal Energy Regulatory Commission
The Honorable Marc Spitzer, Federal Energy Regulatory Commission
The Honorable Jon Wellinghoff, Federal Energy Regulatory Commission
The Honorable Harry Reid, Majority Leader, U.S. Senate
The Honorable Mitch McConnell, Minority Leader, U.S. Senate
The Honorable Nancy Pelosi, Speaker, U.S. House of Representatives
The Honorable John Boehner, Minority Leader, U.S. House of Representatives
The Honorable Jeff Bingaman, Chairman, Senate Committee on Energy and Natural Resources
The Honorable Pete Domenici, Ranking Member, Senate Committee on Energy and Natural
Resources
The Honorable John Dingell, Chairman, House Committee on Energy and Commerce
The Honorable Joe Barton, Ranking Member, House Committee on Energy and Commerce



COMPETE

Electricity Competition IS the Public Interest

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Meeting The Challenges Ahead: Regional Electricity Markets Foster America's Energy Independence And Security

Promoting Renewable Energy, Demand Response, Conservation, Efficiency, and Technological Innovation

Everyone agrees that the United States must reduce its dependence on foreign energy sources. The Energy Policy Act of 2005 reflects this basic sentiment, providing new or enhanced programs for alternative fuels, renewable energy, conservation, and efficiency. Furthermore, the policy signals emanating from both Congress, the White House, and at the state level since the November 2006 election have only served to reinforce these national priorities. Yet, policymakers have only just begun to recognize the key role that vibrant regional competitive markets can play in fostering energy independence and security.

As detailed in this issue brief, well-structured markets for electricity promote renewable generation, environmental improvement, energy efficiency, demand response, enhanced operational efficiency, and technological innovation. They enhance our ability to deliver more innovative energy services without increasing our dependence on foreign sources of energy and without doing further damage to our environment. Because competitive markets provide high-quality information -- embedded in price signals that reflect the forces of supply and demand -- and because they place a premium on the efficient utilization of resources, they incentivize key stakeholders to find new and better ways to meet the challenging energy demands of a dynamic and growing economy.

As we enter an era of rising energy prices, stemming from a global scramble for fossil hydrocarbons and increasing environmental constraints on fossil-based generation, we must recognize the value of markets in providing the proper signals that can shift resource allocation decisions toward a leaner, and less carbon-intensive energy system. Today, more than two-thirds of the nation's electricity consumers live or do business in states that are part of regional competitive electricity markets. Simply put, markets provide the only viable approach to eliminating the barriers, spurring the innovation, and creating the necessary information flows that will allow electricity suppliers, transmission system operators, and millions of customers to collectively navigate the inevitable transition to a new energy era.

I. Competition Is the Bedrock of Our Economy, Electricity Is a Crucial Commodity, and Electricity Competition Provides Benefits to Customers.

As Daniel Yergin, Chairman of Cambridge Energy Research Associates, has explained, while America cannot isolate itself from the world, we can, and must, ensure our "energy independence and energy security." We must ensure our



"resilience, robustness, [and] reduced vulnerability" to sudden plunges and spikes in worldwide energy supply and demand. The keys to this independence and security are "a new push for energy conservation," "diversification" of energy sources by developing "alternative . . . energy sources," "higher energy efficiency," and "new technologies."¹

Over the past decade, regional wholesale competitive markets have markedly increased demand response, electricity conservation, use of renewable resources, grid reliability, and technological progress. In a June 2006 Open Letter to Policymakers, eight distinguished economists, including Alfred E. Kahn, Vernon L. Smith (Nobel Laureate in Economics), and Paul Joskow made just these points. They observed that competition has engendered "multiple new entrants and large gains in generator performance," and they reminded policymakers of the demand response improvements, efficiencies, technological innovation, renewable generation, and environmental benefits brought about by competitive electricity markets.²

Eight large commercial electricity customers echoed these views in a recent letter to FERC Chairman Joseph T. Kelliher. They stated that regional competitive markets provide the greatest flexibility in responding to consumers' needs by "promoting transparency and reliability . . . and providing price signals that promote sound investment decisions regarding generation, transmission, demand response, and energy efficiency."³

Preserving and expanding competitive electricity markets will yield greater gains in the future. Federal Reserve Board Chairman Ben S. Bernanke, and former Chairman Alan Greenspan, have both spoken eloquently about the benefits of robust energy markets, including the increased flexibility and the resilience to economic shocks that they foster. Chairman Bernanke has commented that in the short-run, prices for natural gas and crude oil are likely to remain high given strong world economic growth and limited ability to increase energy supplies. He has expressed great confidence, however, in the power of market forces stating that "in the long run, market forces will respond" with new "energy-saving technologies," alternative fuels and "growth in energy supplies."⁴

The challenge of continuing to deliver high-quality energy services at affordable prices while enhancing America's energy security will not go away. America's electricity needs are projected to grow to 5.478 billion kilowatt-hours by 2030 -- a 43% increase from 2005.⁵ Meeting the growing needs of electricity consumers in the most efficient and environmentally sound way must be a national priority.

¹ Daniel Yergin, *Energy Independence*, Wall St. J. (Jan. 23, 2007) at A-19.

² Paul L. Joskow, et al., Open Letter to Policymakers (June 26, 2006).

³ Customer Letter to Chairman Joseph Kelliher (December 4, 2006). Also see Assessment of Demand Response & Advanced Metering, FERC Staff Report, August 2006, Docket Number: AD-06-2-000, at 11, citing NYPSC Order, April 24, 2006, 1-2: "The New York Public Service Commission suggests that demand response can also reduce a state's dependence on natural gas-fueled generation."

⁴ Chairman Benjamin Bernanke, Remarks before the Economic Club of Chicago, Chicago, Ill. (June 15, 2006).

⁵ Energy Information Administration, Annual Energy Outlook 2007 with Projections to 2030, at 7 (Feb. 2007), available at <http://www.eia.doe.gov/oiaf/aeo/index.html>.

II. Regional Electricity Markets and Competition Promote Renewable Generation, Thereby Enhancing Energy Independence and Security.

Independent regional transmission operators such as RTOs and ISOs not only promote electric system reliability and wholesale competition, they facilitate renewable energy development. RTOs, such as PJM and NYISO, have rules and protocols in place that can accommodate the intermittent characteristics of renewable generation sources such as wind energy. The American Wind Energy Association (AWEA) has pointed to spot markets for balancing supply and demand in real time financial transmission rights, elimination of "pancaked" rates between utilities, credit for capacity, and regional transmission plans as examples of the advantages offered by RTOs for wind and other intermittent, renewable generation.

According to AWEA, as of 2006, about 73% of the 11,603 MW of installed wind capacity is located in RTOs, even though only 44% of wind energy potential is in those areas.⁶ Wind developers are attracted to RTO markets because of the advantages for intermittent resources that such markets provide.

In addition, well-functioning regional electricity markets successfully eliminate barriers to renewable energy development that arise from outdated industry rules. By eliminating balkanized and inefficient grids -- which create opportunities for discrimination with respect to grid access and market foreclosure and which maintain highly inefficient and expensive approaches to transmission pricing (e.g. the anachronistic contract path of pricing with "pancaked" rates) -- organized regional markets remove obstacles that have traditionally stood in the way of efforts to develop and deploy renewable generation.

These points are forcefully and persuasively made in a recent letter to FERC Chairman Kelliher and other policymakers from AWEA, Natural Resources Defense Council and other significant groups that support the growth of renewable energy.⁷ Seeking "to highlight the benefits of regional wholesale electricity market structures . . . in bringing more renewable energy . . . into the nation's resource portfolio," the letter states that the groups are

convinced that properly structured regional wholesale electricity markets with independent regional transmission operators can provide net benefits to customers and promote critical national goals related to fuel diversity, energy security, and environmental protection. Well-structured regional wholesale electricity markets operated independently allow far greater amounts of renewable energy and demand response resources to be integrated into the nation's electric grid.⁸

Large, regional electricity markets provide for cost-effective balancing of generation and load with significant penetrations of variable, non-dispatchable power sources. Furthermore, organized regional markets facilitate delivery of resources remotely located from load centers. As stated in organized regional markets "*Utility Wind Integration State of the Art*" by the Utility Wind Integration

⁶ <http://www.awea.org/projects/>

⁷ Letter from AWEA, et al. dated February 26, 2007 to Chairman Kelliher, et al.

⁸ *Id.*

Group, in cooperation with the utility associations EEI, APPA, and NRECA, "Well-functioning hour-ahead and day-ahead markets provide the best means of addressing the variability in wind plant output. . . . Consolidation of balancing areas or the use of dynamic scheduling can improve system reliability and reduce the cost of integrating additional wind generation into electric system operation."⁹

Further, independent regional grid operations accommodate renewable energy by eliminating "pancaked" transmission rates that are assessed across every utility area; providing electricity markets in which variable or intermittent resources can sell excess energy or purchase shortages at a transparent, fair market price;¹⁰ minimizing operational impacts of variable resources by netting out aggregate load and generation over a wide region; facilitating regional transmission planning to access generating resources as well as address reliability, congestion, and load growth in the most efficient overall manner; providing a mechanism to pursue regional cost allocation policies; and providing for flexible transmission tariffs that allow rates to be paid on an as-used basis as opposed to a capacity reservation basis.

Texas provides a successful example of electric restructuring and renewable generation where competitive markets have met state renewable requirements. As part of its restructuring legislation passed in 1999, Texas established a renewable mandate of 2,000 MWs by 2009. Currently there are 2,923 MWs of renewable generation in service, with over 1,662 MWs of additional wind generation likely to be in service by the end of 2007.¹¹ These resources were not procured through any regulated procurement programs or state cost recovery guarantees. Rules were established to comply with the renewable statutory requirements, but did not institute terms and conditions for contractual arrangements. The success of the Texas market is clear evidence that renewable contracting and development can occur without regulated procurement and may be left to the competitive marketplace. Other than the rules to comply with the statutory requirement and the means to account for compliance, regulating the terms and conditions of such contractual arrangements in the competitive marketplace has been unnecessary.

Roughly two-dozen states have implemented market-based programs to encourage companies to switch to alternative, renewable resources. Indeed, at the state level, these "are the favored way to spur investment in renewables."¹² The results can be dramatic. The city of Evanston, Illinois has eliminated 7.4 million pounds of carbon dioxide from the atmosphere each year by adopting a market-based system. The city has instituted a system that rewards electricity producers for using cleaner, renewable resources in place of fossil fuels. As a result, Evanston, a city of roughly 79,000 people, conserves enough electricity each year to power more than

⁹ Utility Wind Integration Group, *Utility Wind Integration State of the Art*, at 4 (May 2006).

¹⁰ A recent study in Minnesota to assess the reliability and cost of providing more than 20 percent of the state's electricity from wind stated: "The MISO energy market also played a large role in reducing wind generation integration costs. Since all generating resources over the market footprint are committed and dispatched in an optimal fashion, the size of the effective system into which the wind generation for the study is integrated grows to almost 1200 individual generating units. The aggregate flexibility of the units on line during any hour is adequate for compensating most of the changes in wind generation." www.puc.state.mn.us/docs/windrpt_vol%201.pdf.

¹¹ www.ercot.com

¹² Leila Abboud, *Regulations: Alternative Approaches*, *Wall St. J.* (Feb. 12, 2007) at R13.

500 average American homes.¹³ New York State has instituted a market-based policy that is slated to increase renewable energy use to 25% by the year 2013.¹⁴ The policy rewards electricity producers for substituting renewable resources for fossil fuels.¹⁵ In Pennsylvania, there are now eight operating wind farms; before electric restructuring there were none. More than 3,000 MWs of wind, or enough to power about one million homes, is in various stages of development.¹⁶ In addition, renewable portfolio standards (RPS) programs in many states, such as the Pennsylvania AEPS program, recognize that RTO regions and the availability of tradable certificates (RECs) are a way to increase participation and meet the goal of reducing emissions. (See Section IV. regarding technological innovation). Because the electricity producers, and not the regulators, determine how to implement the changes, they are carried out more efficiently and with fewer administrative costs.

Finally, on a more global note, it is important to recognize that in the European Union (EU), there is a continued movement toward liberalization, or restructuring, of electricity markets. One of the drivers of this trend is a desire to make a substantial contribution to the reduction of greenhouse gases. The EU acknowledges that reduction in carbon emissions and its proposed energy policies go hand in hand.¹⁷ Indeed, the EU states that two of its "dual aims" are "to ensure global average temperatures do not rise more than 2° above pre-industrial levels and to build a more energy-competitive, cleaner, low-carbon European economy."¹⁸ The EU appears to understand the relationship between competitive electricity markets and meeting its environmental, renewable and energy efficiency goals. As the EU advocates climate change, it does so in the context of a commitment to competitive markets that welcomes technological innovation and provides both transparency and reliability.

III. Competition Promotes Conservation and Improved Energy Efficiency

A. Demand Response

Demand response programs that promote conservation and energy efficiency contribute to greater energy independence. The goals set forth by the Department of Energy for demand response programs include: fostering price-based demand response; improving incentive-based programs; strengthening analysis and valuation; integrating demand response into resource planning; and adopting enabling

¹³ PR Newswire-First Call, Twenty Percent Renewable Wind Power to Help Lower City's Carbon Footprint (Feb. 8, 2007).

¹⁴ New York State Dep't of Public Service, Staff Report on the State of Competitive Energy Markets: Progress To Date and Future Opportunities at 54-55 (March 2, 2006).

¹⁵ *Id.*

¹⁶ PennFuture Newsletter at 2 (February 15, 2007).

¹⁷ Questions and Answers on the Commission Communication *Limiting Global Climate Change to 2°C*, (Jan. 10, 2007), at <http://europa.ec/rapid/pressReleasesAction.do?reference=MEMO/07/17>

¹⁸ *Id.* See also Commission of the European Communities, Communication from the Commission to the European Council and the European Parliament - An Energy Policy for Europe (Jan. 10, 2007) (emphasizing goals of enhancing competitiveness and decreasing reliance on carbon energy), at http://ec.europa.eu/energy/energy_policy/index_en.htm.

technologies.¹⁹ Competitive markets are significantly better equipped to meet these goals than traditional cost-of-service regulation.

A robust demand response is a necessary element of any viable energy efficiency and conservation program, and efficiency and conservation are, in turn, essential to achieving greater energy independence. Competitive electricity markets are a solid foundation for installing demand resources and achieving a robust demand response. "Demand response may provide conservation effects, both directly from load reductions (that are not made up at another time) and indirectly from increased customer awareness of their energy usage and costs."²⁰

In an RTO, generators and customers obtain a clear signal on the value of demand response resources and the regional system operator can integrate the product into the least cost dispatch. PJM's demand response program has grown from 359 MW in 2002 to over 2,200 MW in 2005 -- a six fold increase. During August of 2006, PJM found that during a week with high peak prices, demand response programs saved customers in its 13-state region over \$650 million (\$230 million in a single day).²¹ Such a response not only conserves valuable resources and reduces emissions, but benefits consumers in substantial dollar savings. In addition, a study by the five Mid-Atlantic public utility commissions and PJM as part of the Mid-Atlantic Distributed Resources Initiatives (MADRI) found that a modest reduction in electricity use during peak hours would reduce energy prices by at least \$57 million to as much as \$182 million annually in the Mid-Atlantic region.²² Clearly, even greater efforts to facilitate demand response must be made, and the organized regional electricity markets will lead the way.

There are other similar examples of how markets have facilitated demand response and conservation. In communities across the nation, these programs have increased energy security by reducing the strain on electrical grids and have saved purchasers millions of dollars. New York State had over 1,165 MW of demand response that received capacity payments during the summer of 2006. Nearly 700 MW of these resources responded to emergency calls in New York City and on Long Island during peak summer hours in July and August, thus helping to preserve reliability in this critical region.²³

Several communities have promoted conservation through programs that use price signals to reduce electricity consumption during peak hours of the day or peak seasons of the year. Companies such as Community Energy Cooperative of Chicago set varying prices throughout the day, giving purchasers the option to save money by

¹⁹ Dep't of Energy, Benefits of Demand Response in Electricity Markets and Recommendations for Achieving Them, Report to Congress (required by EPCA 2005) at xviii (2006).

²⁰ See FERC Staff Report, An Assessment of Demand Response & Advanced Metering - Docket Number: AD-06-2-000, at 12 (August 2006) (FERC Staff Report), citing Chris King and Dan Delurey, "Efficiency and Demand Response: Twins, Siblings, or Cousins?" *Public Utilities Fortnightly*, 143 # 3, March 2005.

²¹ PJM Interconnection, Early August Demand Response Saves PJM \$650 Million (Aug. 23, 2006).

²² Mid-Atlantic Distributed Resources Initiative, News Release Jan. 30, 2007. The study by the Brattle Group "examined the effects of reducing electricity use by three percent during the highest use hours for five utility areas."

²³ NYISO Summary of Historical EDRP/SCR event performance (August 14, 2006), available at http://www.nyiso.com/public/webdocs/products/demand_response/general_info/H.

using less electricity during peak hours which are more expensive.²⁴ Not only does this benefit consumers who can save as much as 60% during peak days,²⁵ it benefits the environment as well. Reducing peak demand allows electricity plants to function at more efficient levels and to consume fewer natural resources. These market-based programs save market participants from having to build additional structures for generating, transmitting, and distributing electricity, and thus conserve the natural resources that would have been expended building these structures.²⁶

DOE has identified other efficiency benefits that are unique to competitive retail markets: "In competitive retail markets, default-service real time pricing (RTP) can stimulate innovation by retail suppliers, and ISO/RTO-administered demand response programs can provide value-added opportunities for marketers. Demand response can provide expanded choices for customers in varying retail market structures (e.g., states with or without retail competition) through additional options to manage their electricity costs."²⁷

B. Operational Efficiency

Maximum operational efficiency is an essential element in achieving overall energy efficiency and environmental benefits. Competitive wholesale electricity markets encourage continuous efficiency improvements in the generation used to meet electric demand over time. Potential new market entrants have the highest possible incentive to develop more efficient technologies and to enter the market under a competitive market structure. This is because a generation facility that uses less fuel to generate one megawatt of energy has a lower variable cost of production than a less efficient generator and, as such, has assurance that it will gain market share if it enters the market. An owner of such a facility knows that it will be able to sell its output at a lower price than less efficient competitors. As new technologies with lower heat rates and increased efficiency become available, suppliers will continue to enter the market and sell electricity at lower prices than existing sellers. This provides them with assurance of a market opportunity, and encourages investments in more efficient generation facilities, thus providing consumers with an assurance of continuing efficiency improvements over time. As more efficient generation continues to enter the market, the amount of input fuel required to generate a megawatt of electricity on average will decline. Consequently, this will increase energy security and reduce emissions associated with electricity generation.

A study by Global Energy Decisions found strong evidence that the electric utility industry has improved its operations and efficiencies primarily because of competitive forces. The study concluded that competition has dramatically improved the operating efficiency of power plants, resulting in cost savings, fewer refueling outages, and enhanced reliability.²⁸ Improved operating efficiencies and higher

²⁴ GAO Rep. No. 04-844, *Electricity Markets - Consumers Could Benefit from Demand Programs, but Challenges Remain* at 22 (2004) (GAO Rep.).

²⁵ *Id.*

²⁶ FERC Staff Report at 11; GAO Rep. at 23.

²⁷ U.S. Dept. of Energy, *Benefits of Demand* at 29, citing Barbose et al. (2005) and Neenan et al. (2003).

²⁸ *Putting Competition Power Markets to the Test - The Benefits of Competition in America's Electric Grid: Cost-Savings and Operating Efficiencies*, Global Energy Decisions Study at ES-1, (2005); Howard J. Axelrod, *The Fallacy of High Prices*, 144 *Public Utilities Fortnightly* at 55 (Nov. 2006).

capacity factors mean that fewer new generation facilities (which may rely on foreign fuel sources) will need to be built. Moreover, there have been significant environmental improvements in New York and New England as a result of the move to competitive markets. Generating capacity increased in the New England area and power plants in New York produced less emissions.²⁹

Investment in new and efficient generation has resulted in a reduction in the use of older, less efficient and higher emission power plants, thereby delivering both economic and environmental benefits to consumers. For example, the move to more efficient gas-fired generators has decreased the use of New England's oil and older gas power plants, and from 2001-2004 is estimated to have reduced annual carbon dioxide emissions by 6%, nitrogen oxide emissions by 32%, and sulfur oxide emissions by 48%.³⁰

IV. Competition Promotes Technological Innovation.

Regional competitive markets have become an incubator for technologically innovative energy products and services that respond directly to consumer preferences. The substantial investments in the communications infrastructure required for these sophisticated markets to operate efficiently and reliably have created enormous opportunities for integrating real-time price signals into dispatch determinations, and for providing the information flows necessary for the efficient use of demand resources and renewable generation. The RTOs and ISOs have installed the most advanced systems for network analysis, monitoring and visualization, real-time enablers, operations planning, transaction scheduling, grid history and forecasting in the industry. Furthermore, they are on the cutting edge of technological innovations involving grid management and delivery of energy services that will redefine the way Americans use electricity.³¹

As we move more aggressively into the digital age, it will be increasingly difficult to capture the benefits from such innovation in the electricity industry without price signals and well-functioning markets. The organized regional markets will lead the way in providing the incentives and price signals that will drive innovation. In addition, the technological innovation that wholesale and retail markets will spur will radically change the usage of electricity in the future.

With the ability to respond directly to price signals in real time via smart meters installed at the point of end-use, consumers will be empowered to schedule their electricity usage according to their own individual preferences. In the power network

²⁹ For example, over the past seven years, generating capacity in New England has increased 11,000 MW -- of which 9,480 MW is fired by natural gas and was installed over the last five years. This is after the region lost a total of approximately 600 MW of generation over the same period of time before restructuring. In 2003 alone, natural gas generating capacity as a portion of all fuel sources increased dramatically to 21% from 13% the year before. Cleaner burning generation translated into reduced emissions. Massachusetts power plants emitted 33% less SO₂ and 30% less NO_x over the same period. Transmission: The Critical Link, Delivering the Promise of Industry Restructuring to Customers at 5 (2006). (citations omitted).

³⁰ Progress of New England's Restructured Electric Industry and Competitive Markets: The Benefits of ISOs and RTOs (April 2005).

³¹ For example, new generation scheduling software, which allows PJM to schedule more accurately the hours that generating units must be ready to run, was projected to save customers about \$56 million annually. PJM News Release (June 24, 2004).

of the future, digital technology and two-way communication will transform energy efficiency into a resource. Efficient distributed generation will be enabled. Appliances will not only use power efficiently, but will become demand resources that may be utilized instantaneously. Myriad devices will be interconnected and able to utilize real-time information to facilitate the delivery of electricity and efficiency products seamlessly. Smart end-use appliances will manage their own operation and energy requirements, and will respond to real-time and day-ahead price signals delivered from the electricity provider via two-way communications links that run through advanced meters. This is the basic thrust of the "prices-to-devices" concept advanced by EPRI and others, which promises a quantum leap in system-wide optimization based upon more efficient dispatch and more efficient end-use of electricity. These technological advances will usher in a whole new era for electricity consumers, allowing them to transmit their preferences directly through their end-use devices to their service providers. Competitive markets are fundamental to making this a reality. Facilitating the development of the necessary communications infrastructure, providing reliable price signals, and stimulating innovation in the development and deployment of smart devices will foster this reality.³²

At the state level, regulation can provide a barrier to the free entry of alternative energy providers to serve the needs of end use customers. Such providers would have the incentive to introduce demand response technologies and metering, and switching and monitoring technologies designed to fit the preferences and budgets of customers. "The increasingly advanced functionality of enabling technologies has the potential to provide wider power systems and societal benefits beyond those solely within the scope of demand response programs. Automated customer responses are now possible in more situations, allowing both greater customer receptivity and higher utility confidence that customers can and will respond to price-based demand response. These advances have contributed to the rekindling of interest in demand-side policies."³³

One example of technological innovation that could not be envisioned a decade ago is the role of RTOs in the monitoring and verification of renewable portfolio standards (RPS). Organized wholesale markets greatly assist in the success of existing state RPS programs, and can do so for any future federal RPS or any energy efficiency portfolio standards, because the regional grid operator understands both the environmental attributes of the generation that it dispatches and the load profile characteristics of its entire market footprint. PJM, for example, operates a program called the Generation Attribute Tracking System (GATS). GATS is a centralized registry and accounting system that enables renewable electricity markets and information disclosure of generation attributes across the PJM region. GATS creates a certificate for each megawatt hour (MWh) of electricity production. It provides a verifiable method for complying both with renewable portfolio standard requirements of the various states, and with environmental disclosure policies which require electricity suppliers to provide information about fuel mix and environmental emissions. The system can be used by suppliers that are marketing "green" electricity products. The certificate approach and central database of relevant information

³² See EPRI, *Advancing the Efficiency of Electricity Utilization: "Prices to DevicesSM"* (2006).

³³ R.N. Boisvert et al., *Benefits of Customer Participation in Wholesale Electricity Markets*, 15 *Electricity Journal* at 43, and more generally at 41-51 (2002).

provide the tools to monitor, verify and document compliance.³⁴ The same system could be transformed to verify energy efficiency requirements for load serving entities.

We have all observed and taken advantage of the explosive technological innovation that was spurred by the deregulation of the telecommunications industry. There is no reason not to expect the same explosive innovation in a highly competitive electricity industry. Competition opens that door, providing opportunities for technological innovations that we can only imagine now. We must embrace this bright future.

V. Conclusion

The need for innovative solutions with respect to achieving greater energy independence and security, and promoting our environmental values, is an issue of critical national importance. While no one doubts that the United States has become overly dependent on foreign energy, much of it coming from unstable parts of the world, it will not be easy to effect a transition to a sustainable energy system that provides the same level of energy services that Americans now enjoy. Competitive electricity markets provide a critical, but often neglected, tool in this respect. By facilitating the infrastructure, and providing the price signals necessary to spur a sharp increase in renewable generation, reward conservation and demand response, enhance energy efficiency, and incentivize innovative approaches to the delivery of services, these markets enhance our energy independence and security and help our nation achieve its environmental goals.

The traditional, cost-of-service supply-side approach to electricity is simply not up to the task of promoting the scale and scope of investments, and innovation, needed to usher in a new electric power system that is responsive to the priorities of the 21st century. Well-functioning markets have always been key drivers of innovation and problem solving in the American economy. With the support of policymakers, electricity markets will spur the innovation necessary to achieve our national priorities.

³⁴ PJM Interconnection, PJM EIS Launches Environmental Tracking System for Electric Generation (April 15, 2005).