THE OPERATION AND BENEFITS

OF COMPETITIVE ELECTRICITY MARKETS

IN PENNSYLVANIA

A WHITE PAPER

BY

WILLIAM L. MASSEY*

ON BEHALF OF THE

ELECTRIC POWER GENERATION ASSOCIATION (EPGA)

NOVEMBER 5, 2007

***William L. Massey served as Commissioner of the Federal Energy Regulatory Commission (FERC) from 1993 through 2003. He was a key architect of the Commission's electricity competition policies. He has testified many times on electricity policy before Congress and state regulatory and legislative bodies, and has delivered presentations at numerous energy conferences abroad. Mr. Massey is a partner at the law firm of Covington & Burling LLP in Washington, DC.**

THE OPERATION AND BENEFITS

OF COMPETITIVE ELECTRICITY MARKETS

IN PENNSYLVANIA

EXECUTIVE SUMMARY

Competitive electricity markets offer the best way to effectively and efficiently meet customers' electricity needs. Evidence confirms that competitive electricity markets provide the lowest possible cost resources, improve reliability, and are good for the environment because they reduce pollution through improved operations, more efficient generating plants, greater demand responsiveness, and market entry by renewable resources.

Prior to competition, utilities were allowed to recover their costs, even if their plants did not run, were inefficient or were too expensive. And customers bore the risk of utility decisions. The result of this lack of market discipline was high rates to consumers caused by excess generation that, for various reasons, was costly to build.

Beginning in the late 1970s, Congress began to pass a series of laws encouraging competitive wholesale electricity markets. As a result, competition has been introduced to interstate wholesale electricity markets throughout the United States and in retail markets in Pennsylvania and certain other states. Unlike monopoly regulation, competition provides the best incentive for lowest cost production and innovation. Under the competitive model, some companies have flourished; others have failed. Most significantly, customers no longer bear the risk for utility decisions and no longer support inefficient operations with guaranteed returns, which further incents efficient performance and lower costs.

Since retail electric competition was introduced in Pennsylvania in 1996, the prices of fuels used to generate electricity have increased tremendously due to forces in the global energy markets and electricity demand has continued to rise. To promote construction of new generation plants to meet this increased demand, both wholesale and retail electricity prices must be allowed to reflect the true cost of power. Extension of rate caps, however, would have a chilling effect on investment in this required new generation.

The following highlights some of the substantial benefits for consumers that competitive electricity markets in Pennsylvania and the broader PJM region have produced.

- ***Lowest possible costs through more efficient generating plant operation.*** Nuclear plants in Pennsylvania are operating more, saving over $120 million per year. Increased availability and better plant efficiency also help keep market prices down in PJM. Because of increased efficiencies spurred by competition, average PJM market prices over the past six years have not increased as fast as the prices for the fuel generators use to make electricity.
- ***Lowest possible costs through demand response.*** The competitive regional wholesale market in PJM enables demand response and conservation to be accurately

valued. Registered demand response resources in PJM have increased six-fold since 2002. Demand response programs saved customers in the region more than $650 million in just one record setting week in August 2006[1] and one day in August 2007 such programs reduced demand by almost 2000 MW, enough to power a mid-sized city.[2]

- ***Lower customer prices.*** Pennsylvania consumers are paying 12% less for electricity, when adjusted for inflation, than in 1996.[3]

- ***Entry of renewable resources.*** Hundreds of megawatts of wind generation are in various stages of development in Pennsylvania. In addition, the renewable-friendly rules of competitive markets like PJM spur the entry of renewable resources. According to the American Wind Energy Association and environmental groups, "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."[4]

- ***New generating plants.*** Since 1998, competitive suppliers have added 9,000 MW of new generation in Pennsylvania, enough to power 9 million homes.[5]

- ***Customer satisfaction.*** A group of major retailers that are large consumers of electricity in Pennsylvania earlier this year wrote that "(o)ur companies' collective experiences in Pennsylvania and many other states reflect that well-designed, competitive electricity markets allow our businesses to recognize substantial savings on electricity costs, which can in turn be passed on to customers through lower priced consumer goods and services."[6]

With competitive wholesale markets now well developed in the PJM region, which includes Pennsylvania, competitive procurement of utilities' new resources strongly promotes more efficient decisions and the lowest possible consumer rates. Competitive procurement must be as unconstrained as possible to incent economic procurement decisions. Set asides for certain technologies, however, will reduce the benefits of competitive procurement.

This white paper is intended to provide perspective on the great value to Pennsylvanians of competitive electricity markets. It presents a discussion of the benefits of competition, federal and state jurisdiction, the role of PJM, the evolution of competition, and the value of competitive procurement of electricity resources.

COMPETITION IN ELECTRICITY MARKETS HAS EVOLVED AT STATE AND FEDERAL LEVELS

Economic regulation of electricity is shared between the federal and state levels of government. The Federal Energy Regulatory Commission (FERC) regulates wholesale sales of electricity and transmission service. Wholesale sales include sales by traditional utilities, independent generators and marketers. At the state level, public utility commissions (PUCs) regulate the other important aspects of electricity, such as sales to retail, or end-use, customers. As part of this jurisdiction in Pennsylvania, the PUC determines state policy with respect to the regulation of distribution rates and facilities.

From the early 1900s to the 1970s, the electric utility industry operated under a monopoly structure and traditional "cost plus" regulation. All stages -- generation, transmission and distribution -- were considered a "natural monopoly" because it was cheaper for one very large firm to provide service exclusively in a given geographic area than to have more than one firm. Under this traditional regulation, utilities were allowed to recover their costs, even if their plants did not run or were too expensive, and customers bore the risk of utility decisions. Utilities had poor incentives to operate efficiently because they could usually recover their costs from consumers. The result of this lack of market discipline was high rates to consumers caused by excess generation that, for various reasons, was costly to construct.

Developments in the late 1970s challenged this approach. Technological progress allowed electricity to be sent longer distances economically and smaller generators to produce electricity efficiently. This meant that electricity markets could be geographically larger and that more than one firm could provide electricity in those markets. In other words, there could be competition among generators.

In 1978, Congress started the move toward competitive wholesale markets by passing the Public Utility Regulatory Policies Act, which created a market for certain types of small independent generators. In the 1980s and 1990s, FERC sought to make wholesale electricity markets competitive. First, FERC allowed generators that do not have market power, i.e., the ability to significantly affect the market price, to charge market-based prices for wholesale sales. Secondly, FERC required transmission owners to file open access transmission tariffs to let competing generators use their transmission lines. FERC's actions spurred the entry of independent generators that have built the majority of new generating capacity in the past ten years. Congress also passed energy legislation in 1992 and 2005 that further established competitive wholesale electricity markets as the policy of the United States.

States have proceeded toward competitive markets at different paces. Some, such as Pennsylvania, have opened retail service to competition and independent retail service providers now compete for customers. Other states require their traditional monopoly utilities to hold competitive procurements for their new generation resources. Still other states have taken less ambitious paths. Significantly, however, Pennsylvania's 1996 electric competition legislation shifted the financial risk of constructing, owning and operating generating plants from electricity consumers to investors, provided market incentives for

more efficient generation plant construction and operations, and promoted competition and innovation in retail markets.

PJM PLAYS A CRITICAL ROLE

The PJM Interconnection is a FERC-regulated, Regional Transmission Organization that manages the high-voltage transmission system and operates wholesale power markets over a thirteen state area. It operates similarly to an air traffic controller, instantly dispatching electricity across the region to meet consumers' needs as efficiently as possible and maintain reliability. PJM's regional scope ensures reliability far better than a single company approach. Its scale of operations allows it to see a broader picture of grid conditions than the typical, smaller, stand-alone grid operator. Because of this "big picture" view, PJM is better positioned to detect developing problems on the grid and has increased flexibility to respond to the rapidly changing situations.

PJM's market approach enables it to address system needs through price mechanisms instead of having to interrupt valuable transactions that benefit consumers, as must be done in single company models. In the event of a system emergency, PJM is the central authority within its footprint, determining what actions transmission and generation owners should take to protect the grid.

PJM is also the largest and most vibrantly competitive wholesale power market in the world. PJM performs the following functions that are crucial to the success of the wholesale market in this region:

Dispatching generation resources. PJM assures supply and demand are balanced by operating a bid-based energy market. Generators and demand side resources submit hourly bids and PJM selects the lowest ones necessary to meet demand.

Assuring adequate generation resources. Each utility or competitive retail supplier in PJM is responsible for providing sufficient generation resources to meet its forecasted demand. That obligation can be met through the utility's own generators, through contracting with independent suppliers, or by buying generation services in PJM's annual capacity auction. In the auction, PJM selects the lowest price offers necessary to meet the projected capacity obligations.

Providing adequate transmission. In consultation with hundreds of market participants, including customer representatives, PJM develops a regional plan for adding new transmission resources.

Monitoring the markets. The PJM Market Monitoring Unit provides additional consumer protection by collecting bid and other data to assess the overall performance of the PJM markets and determine whether the markets are competitive or any participant is exercising market power.

EXPERIENCE WITH ELECTRICITY COMPETITION HAS BEEN POSITIVE

The experience with competitive electricity markets confirms that markets are very beneficial to consumers. Competitive markets produce the lowest possible costs through more efficient generating plant operations and the increased use of demand response, the entry of renewable resources to help meet energy diversity and environmental goals, and the lowest possible rates for customers.

Lowest possible costs through more efficient generation plant operation.

PJM operations have been beneficial to Pennsylvania and the PJM region. Generating plants are out of service less often and they operate more efficiently. This is especially true for the low cost nuclear plants in Pennsylvania. Prior to competition, those plants operated only 75% of the time, whereas now they operate more than 90% of the time.[7] This means the state's nuclear plants are producing far more carbon-free, round-the-clock energy, about 1.7 million mwh per year more today than prior to competition. This improved efficiency is estimated to save more than $120 million annually in Pennsylvania and $450 million in the eastern region of PJM [8]. Increased low cost nuclear plant production reduces the need to run higher cost plants in PJM and thereby lowers the overall market price across PJM, including Pennsylvania. This has the same effect on prices as reducing demand.

Because of the greatly expanded geographical scope and diversity in electricity usage, PJM now requires fewer plants to be held in reserve to cover unexpected outages. Before competition, this reserve margin was 22% or higher, but now the same or better reliability is maintained at 15%.[9] Better plant efficiency also helps to keep PJM market prices as low as possible. Average PJM market prices over roughly the past six years have not increased as fast as the prices for the fuel -- coal, natural gas, uranium -- that generators use. Since 2000, natural gas prices increased over three fold, coal prices increased 60% and uranium prices soared over 700%. [10] Yet, by comparison during this time, average market prices for electricity in PJM increased only 56% and actually declined 16% in 2006 from their 2005 levels.[11]

Lowest possible costs through demand response.

The clear market price signal that the competitive regional market in PJM provides enables demand response and conservation to be accurately valued. Prices that reflect the true market value of resources transmit appropriate price signals to customers and encourage efficient use of energy resources. PJM uses demand response to help meet its load, thereby saving resources and lowering costs by eliminating the need to run more expensive generating units. It also helps maintain reliability by reducing demands on the power supply system. Registered demand response resources in PJM have increased six-fold since 2002, [12] and demand response programs saved customers in the region more than $650 million in just one record setting week in August 2006. [13] In addition on August 8, 2007, PJM set a new record, with consumers voluntarily reducing almost 2000 MW of usage, enough to power a mid-size city.[14]

Lower customer prices.

Since restructuring began, real consumer rates in Pennsylvania have been going down. When adjusted for inflation, Pennsylvania consumers are paying 12% less for electricity than in 1996.[15] According to U.S. Department of Energy information, Pennsylvania's average electricity rate is 3% below the national average, but, in contrast, was 15% above the national average prior to restructuring in 1991.[16]

While rate caps imposed at the start of restructuring are mostly still in place, they have expired in the Duquesne and Penn Power areas, and the news is good: electricity rates in constant dollars are lower in 2007 than they were in 1991 in those areas.[17] Compared to 1991, residential rates, when adjusted for inflation, are down 38% in the Duquesne service area and down 11% in the Penn Power area.[18]

Entry of renewable resources.

Competition has facilitated hundreds of more megawatts of wind generation in various stages of development in Pennsylvania.[19] That's enough to power hundreds of thousands of homes. In addition, the renewable-friendly rules of competitive markets such as PJM promote the entry of renewable resources. According to the American Wind Energy Association and national environmental groups: "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."[20]

New generation plants.

Competitive markets have spurred investment in new generating capacity. Since 1998, competitive suppliers have added 9,000 MW of new generation in Pennsylvania, enough to power 9 million homes.[21]

Consumer satisfaction.

A representative of Safeway recently told the FERC that "customer choice keeps energy costs competitive at all levels" and "restructured competitive markets provide…increased risk management options, new product opportunities and better service at the wholesale and retail levels."[22] And in Pennsylvania in October 2007, a group of major retail stores wrote that electric competition "results in improved products and services at competitive prices."[23]

BEWARE OF SIMPLE RATE COMPARISONS AMONG STATES

Because Pennsylvania still has rate caps in place in most electric utility service territories, the success of restructuring cannot be measured by its impact on prices. Under any circumstances, it is difficult to draw conclusions about restructuring by comparing retail prices across states or the rate of increase in those prices. For one thing, states can have substantially different fuel mixes for generation. Because fuel is by far the largest component of generation costs, these differences significantly affect both the level of costs and the percentage increases in those costs. Simple rate comparisons can also be misleading because some states have rate caps in place while others do not, and differing rate making policies can indicate different rate levels. Further, differences in rates across states existed prior to competition. The advent of competition has tended to reduce these differences.

Recognizing that Pennsylvania still has rate caps, one study has shown that retail rates in neighboring New Jersey, where restructuring was adopted and rate caps expired in 2003, have also risen more slowly than in the Appalachian states that are neighbors to Pennsylvania, and New Jersey rates have risen more slowly than in the traditionally regulated so called "low cost" states of Alabama, Georgia, Louisiana, Mississippi and South Carolina.[24]

When comparing prices among states, it is important for policymakers to take a long-term view. Snapshots can be misleading because prices will go up and down in markets to reflect fuel prices and capacity conditions. These are fundamental economic conditions that no regulatory model can eliminate. Their effects can be masked for a short time, but eventually they will appear in consumers' bills whether or not the utility's generation rates are regulated at the state level. Nationally, over the last ten years retail rates have increased on average 31% in both restructured and unrestructured states confirming the pronounced influences of fuel costs on final electricity prices.[25]

Over the next few years, the remaining retail rate caps in Pennsylvania are due to expire. In some states, the expiration of rate caps all at once resulted in sharply higher rates. These sudden rate increases, however, often were mistakenly and unfairly blamed on competitive markets when in fact they merely reflect the sudden impact of costs that have risen steadily over the many years of the retail rate caps. Because of multi-year below market capped rates and today's much higher costs in global energy markets, increases are inevitable.

Transition mechanisms to mitigate the impact of any initial rate increases in Pennsylvania should be considered. One possible approach is that pursued by Allegheny Power in Maryland. Under this approach, rates are gradually increased before the rate caps expire, and the extra revenue that is in excess of the capped rates is placed in escrow where it earns interest. These dollars are then credited against the rates that would result when the caps expire. Other approaches such as staggered competitive procurements and use of various contract durations also have merit.

One thing is certain: an extension of rate caps as suggested by some policymakers is not the answer. An extension of the rate caps would discourage conservation and demand response,

discourage investment in new generation plants, and make the inevitable transition to market prices even more difficult.

THE VALUE OF COMPETITIVE PROCUREMENT OF ELECTRICITY SUPPLY

Under traditional cost-based regulation, state regulators evaluate the prudence of utilities' decision to acquire or build new resources, and the reasonableness of the expenses incurred, before allowing them to be recovered from consumers. This presents huge challenges to the regulators who first must determine if the utility's choice is the best one and whether the costs are as low as possible, and then must disallow poor choices, usually after the fact, and they must make such determinations while billions of dollars in investment options are on the line. Notably, such non-competitive portfolio management creates market uncertainty and discourages investment in new generation, eventually driving costs up.

With competitive wholesale markets now well developed in PJM, requiring competitive procurement of new generation and demand response resources offers a far better way for Pennsylvania. An open, independently monitored procurement process that allows all resource types, including demand response, to bid to supply consumer needs, helps to ensure efficient decisions and the lowest possible consumer rates. Competition among all resource proposals helps ensure that the best resources, including renewables, are chosen and that those resources are provided at the lowest cost possible. Significantly as well, the risk of poor performance is borne by investors, not consumers. These risks include construction cost overruns, operational problems that could shut down plants, and the cost of uneconomic electricity transactions.

Once a fair competitive procurement process is adopted, it is important that it be as unconstrained as possible. Electric utilities and alternative suppliers should be allowed the flexibility to purchase electricity supply through a variety of options including auctions and requests for proposal. Moreover, they should be allowed to determine the best resource mix of long-term, short-term or spot market purchases to satisfy their capacity needs.

Although it is important to respect the role of renewables, and to support the incentives contained in the 2004 Alternative Energy Portfolio Standard Act, any additional set asides or purchase requirements for certain resource types or technologies will lessen the benefits of competitive procurements. For example, the suppliers' incentives for efficiency and innovation will be undercut because they have a guaranteed spot in the resource mix and need only bid lower than the other suppliers with the same technology. If preferred technologies are higher cost than other available resources, relatively inefficient suppliers will be chosen, and consumer rates will be higher than they otherwise would be.

CONCLUSION

Experience has confirmed that competitive electricity markets not only help ensure that costs are as low as possible, but also are good for the environment because they reduce pollution through improved operations, more efficient generating plants, greater demand responsiveness, and increased renewable resources. An open competitive procurement process will ensure efficient decisions and rates that are as low as possible. Consumers benefit from restructured markets because they have a choice of suppliers, are offered flexible and innovative products, and are no longer saddled with the risk of poor investment or out-dated decisions by their suppliers. Competitive markets attract the power sources needed to meet the nation's future demands and spur the technological innovation that will keep the United States competitive in the global economy.

A group of well-respected economists (including a Nobel laureate) recently observed in an open letter to policymakers, "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."[26] Similarly, nine major Pennsylvania commercial customers wrote this year that "competition is the path forward for Pennsylvania" as it "keeps costs as low as possible, drives innovation and produces the benefits customers are seeking."[27]

Pennsylvania is generally recognized as a leader in successfully implementing competitive electricity markets. Experience proves it. Now is not the time to step backward toward monopoly regulation and reverse the market benefits enjoyed by Pennsylvania consumers. Moreover, such a policy reversal would produce uncertainty that would harm both investors and consumers and deter investment in required new generation. Pennsylvania should continue to move forward with its successful transition to competitive electricity markets.

END NOTES:

---

[1] PJM News Release, "Early August Demand Response Produces $650 Million Savings In PJM," August 17, 2006. http;//www.pjm/contributions/news-releases/2006/20060817-demand-response-savings.pdf

[2] PJM News Release, "Demand Response Sets New Record in PJM . . .", August 10, 2007. http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/dsr-report-2005-august-29-%202006.pdf

[3] Jan Freeman, Testimony Before the Pennsylvania House of Representatives Energy Task Force, August 30, 2007 at 4.

[4] Letter from American Wind Energy Association, et al., to FERC Chairman Kelliher, February 26, 2007.

[5] Colin Cain and Jonathan Lesser, "The Pennsylvania Electricity Restructuring Act: Economic Benefits and Regional Comparisons," February 2007 at EX-2.

[6] Letter to Governor Rendell by representatives of 7-Eleven, Inc., Best Buy Co., Inc., Albertsons/ACME, Big Lots Stores, Inc., Federated Department Stores, J.C. Penney, SMC Business Councils, Wal-Mart Stores, Inc. and Yum! Brands Inc., January 19, 2007.

[7] Cain and Lesser *op cit.*, at 8.

[8] Cain and Lesser *op cit.*, at EX-4 and -5.

[9] Douglas Biden, "Remarks Before IECPA Conference," May 9, 2007 at 7.

[10] Cain and Lesser *op cit*., at EX. 4 – 5.

[11] 2006, PJM State of the Market Report, Vol. 1, March 8, 2007 at 12.

[12] PJM Market Monitoring Unit, "Assessment of PJM Load Response Programs", Report to the FERC, Docket No. ER02-1326-006, August 29, 2006, Table 4. http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/dsr-report-2005-august-29-%202006.pdf

[13] PJM News Release, August 17, 2006, *op cit.*

[14] PJM News Release, August 10, 2007, *op cit.*

[15] Freeman, *op cit*., at 4.

[16] Pennfuture, It Just Isn't So: Part 3 __3, Vol. 9, No. 2 February 15, 2007 at 2, *op cit*.

[17] Pennfuture *op cit.*, at 3.

[18] Pennfuture *op cit.*, at 3.

[19] 3American Wind Energy Association, http://www.awea.org/projects/pennsylvania.html.

[20] Letter from American Wind Energy Association, et al., *op cit*.

[21] Cain and Lesser, *op cit* at EX-2.

[22] Comments of Safeway, submitted to the FERC, Docket No. AD07-7, September 12, 2007 at 1.

[23] Letter to Governor Rendell by representatives of 7-Eleven, Inc., Best Buy Co., Inc., Wal-Mart Stores, Inc., ACME, Macy's Inc., Yum! Brands, Inc., October 19, 2007.

[24] Cain and Lesser, *op cit* at EX-2.

[25] Pfeifenberger, Basheda and Schumacher, "Restructuring Revisited," Public Utilities Fortnightly, June 2007 at 65.

[26] Open letter to policy makers from Paul Joskow, Alfred Kahn, William Hogan, Peter Cramton, Howard Axelrod, Vernon Smith, David DeRamus, and Gary Hunt, June 26, 2006. http://www.competecoalition.com/economists_letter.pdf

[27] Letter to Governor Rendell by representatives of 7-Eleven, Inc., et al., *op cit*.