

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

Electricity Market Design and Structure

Docket No. RM01-12-000

Comments of the  
Electricity Consumers Resource Council  
(ELCON)

The Electricity Consumers Resource Council respectfully submits the following comments in response to the October 15-19 workshops on RTO market design and structure, and to the Commission's November 12 Order Providing Guidance On Continued Processing of RTO Filings. These comments focus exclusively on the applicability of the PJM market design as a Standard Market Design for some or all RTOs.

**Summary of ELCON's Comments**

ELCON's primary concern is the potential adoption and replication of the PJM market design in a larger Northeast RTO or elsewhere before certain market flaws have been rectified. These comments consist of a collection of affidavits describing these flaws by ELCON member companies with facilities in the PJM market. These affidavits—sponsored by the *Occidental Chemical Corporation*, *Ford Motor Company*, *International Paper Company*, *MG Industries Inc.*, and *Praxair, Inc.*—explain the problems faced by large industrial electricity buyers in the PJM market. Other ELCON members with one or more facilities in PJM—including *Anheuser-Busch Companies, Inc.*, *Bethlehem Steel Corporation*, *BOC Gases*, and *Eastman Chemical Company*—share the concerns expressed in the affidavits. All are united in believing that the PJM market design must be corrected and enhanced within PJM and before it is applied elsewhere. An additional affidavit—by *BOC Gases*—describes how similar market design flaws

had plagued the electricity market in England and Wales and how the recent abandonment of the bid-based “Pool” made the market more competitive for customers. Given the relevancy of the abandonment of a bid-based central market structure in the UK, ELCON believes that the Commission should examine why that market design failed and whether bid-based markets in the United States face the same risk to customers.

### **Comments of the Electricity Consumers Resource Council**

As stated in the Summary, ELCON’s primary concern is the need to correct certain flaws in the PJM market design. In particular, this needs to be done before the market design is replicated in a consolidated Northeast RTO or elsewhere. As presently implemented, the PJM market design does not provide the intended benefits of competition to end-use customers. We are greatly concerned that, should the Commission adopt or endorse the PJM market design as the Standard Market Design for other RTOs, the PJM design flaws will be perpetuated. Thus, we strongly urge the Commission to consider whether and how the PJM market design can be rectified before approving the application of this design in other RTOs. Several panelists at the RTO workshop in October said that it was essential to get the market design “right” from the start because, once in place, changes—including best practices from other markets—will be very difficult, if not impossible, to implement. For example, Robert Nordhaus said:

... it’s very important to get the market design right before you embark on running a market. I think once you get started, it’s very, very hard to untangle it. So I think that making sure that the markets work right, and you’ve got the right institutional arrangements before you direct or authorize the startup of an RTO, is quite important.<sup>1</sup>

One design flaw is the absence of customer demand response, a fact well known and not disputed. A market without a downward sloping demand curve cannot be deemed competitive by any stretch of the imagination. But there are other flaws, as well, related to the forward

markets and auction format used to clear prices in the LMP markets, the allocation of transmission rights, and the design of the capacity markets—the last two flaws are related to the absence of customer demand response.

A related concern evolved from the mediation efforts for the Northeast RTO, where the Commission clearly endorsed the PJM market design as the “preferred platform” for the RTO resulting from the consolidation of the three existing Northeast ISOs. At issue is whether so-called “best practices” from outside PJM should also be considered, and the PJM market design enhanced accordingly. There appears to be staunch opposition against any such changes. This opposition would seem to contravene Order 2000’s “open architecture” requirement, and the Commission’s more recent November 7 Order in which FERC states: “We do not believe that the best way to create a national marketplace is to begin with the lowest common denominator, but instead intend to build on successful concepts here and in other countries.”<sup>2</sup> Thus, if the PJM market design as currently implemented is indeed flawed, it makes perfect sense that “best practices” from outside PJM be considered as potential solutions to such flaws.

Attached to these comments are affidavits of several ELCON member companies with facilities in PJM. These companies are all multinational corporations with facilities throughout the United States and in many foreign markets. Their experiences with the PJM market design should be given credence by the Commission if, in fact, the Commission’s policy is truly intent on accomplishing what Chairman Wood said in his opening remarks to the RTO workshops: “... to make markets work for the customer.”<sup>3</sup>

The affidavits of several real customers are summarized as follows:

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<sup>1</sup> *Transcript* (Friday, October 19, 2001), page 202.

<sup>2</sup> *Order Providing Guidance On Continued Processing of RTO Filings*, November 7, 2001, page 6.

<sup>3</sup> *Transcript* (Monday, October 15, 2001), page 5.

- *Affidavit of Joseph T. Marone* – Mr. Marone is responsible for power procurement at the Occidental Chemical Corporation’s facilities in the PJM, Entergy and TVA service territories. He describes how the PJM market’s lack of liquidity in the forward locational marginal price (LMP) market limits the company’s procurement options to PJM’s day ahead and hourly spot markets. He describes how the structure of the PJM market design acts as a disincentive to true bilateral negotiations that is an essential characteristic of a highly functioning competitive market.
- *Affidavit of Gary L. Groner* – Mr. Groner has global responsibility for the Ford Motor Company’s energy procurement. He believes that there can be no competitive electricity market without a robust forward market that allows buyers to negotiate bilateral contracts and that allows the entry of many sellers and buyers. He notes that a simple review of alternative suppliers still in existence in the PJM market, combined with the small number of customers that are no longer with their incumbent utility, clearly indicates that the PJM market design has not lead to a sustainable competitive market.
- *Affidavit of Glenn S. Poole* – Mr. Poole is energy manager for the International Paper Company. Mr. Poole believes that the PJM LMP model should not be applied to the New England market “until and unless fundamental flaws in that market are addressed.” In particular, Mr. Poole identifies problems with PJM’s method for allocating financial transmission rights. He believes that reforms are necessary in order to improve liquidity in the forward market and to prevent the “collapse” of retail access that has plagued the PJM market due to the lack of such liquidity.
- *Affidavit of Paul R. Williams* – Mr. Williams is responsible for power procurement at MG Industries’ air separation facilities in the United States. MG Industries is a wholly

owned North American operating subsidiary of Messer-Griesheim GmbH. His affidavit concludes that PJM's existing market design is not competitive because it does not adequately include customer demand response. This is not the only flaw in the PJM market design. He believes that a replication of this and other market design flaws across a wider geographic region (or elsewhere in the United States), may result in significant harm to residential, commercial and industrial consumers of electricity. He argues that these flaws should be recognized and rectified before the Commission considers imposing this model on other regions as a Standard Market Design.

- *Affidavits of James B. Rouse* – Mr. Rouse is associate director for energy policy and state affairs for Praxair, Inc. He is also ELCON's chairman and the chairman of Multiple Intervenors, a state industrial group in New York. Mr. Rouse has submitted two separate affidavits. The first describes the demand response programs implemented by the New York ISO. These programs are examples of "best practices" that are superior to the practices in the PJM market. The New York ISO programs are prototypes of markets for price-responsive customer loads that should be a required function of all RTOs. In his second affidavit, Mr. Rouse describes the New York ISO's Automated Mitigation Procedure (AMP), another potential "best practice" that should be adopted in other bid-based ISO or RTO markets such as PJM.

Finally, we note that the market design debate in the United States is often limited to "best practices" that are derived from working examples (or proposals) of strictly domestic origin. This is unfortunate because the U.S. generally lags the rest of the industrialized world with respect to electric industry reforms. Industrial end users with global operations are watching closely the evolution of the UK (England and Wales) electricity market. That market

was originally opened in 1990 with a centralized “Pool” as both the market maker and market operator—much like PJM today. That market design—a bid-based central exchange—was recently abandoned in favor of a more decentralized structure based almost exclusively on bilateral contracts.<sup>4</sup> Called the “New Electricity Trading Arrangements” (NETA), the reforms included the abandonment of economic dispatch by a centralized authority because it was deemed a relic of an outmoded industry. To date, the markets in England and Wales have responded quite favorably to the changes. Certainly the evidence suggests that there is tremendous confidence in NETA. Wholesale prices are lower; liquidity has greatly improved; price volatility is reduced and the spread of prices has narrowed; and the energy balancing market is trading very small volumes at around 3% of total national sales. Table 1 summarizes the evidence to date. In addition, BOC Gases—another ELCON member with major operations in England and Wales—sponsors the following affidavit that is summarized as follows:

- *Affidavit of Hugh Mortimer* -- Mr. Mortimer is Commercial Manager for BOC Gases operations in England and Wales. His affidavit describes the bid-based market (the “Pool”) that was established in April 1990 and the problems faced by BOC in that market. Mr. Mortimer describes the 1997 government review of the trading arrangements leading to the introduction of the New Electricity Trading Arrangements (NETA) in March 2001. Mr. Mortimer summarizes the key features of the NETA and BOC’s recent experience with the new market design.

We urge the Commission not to exempt the PJM market design from any enhancements necessary to establish liquid forward markets or from the “best practices” of other ISOs, markets or regions, including the experiences of other restructuring efforts in foreign countries. Given the relevancy of the abandonment of a bid-based central market structure in the United Kingdom,

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<sup>4</sup> [http://www.ofgem.gov.uk/docs2001/53\\_neta\\_review.pdf](http://www.ofgem.gov.uk/docs2001/53_neta_review.pdf)

we believe that the Commission should examine why that market design failed and whether bid-based markets in the United States face the same risk to customers.<sup>5</sup>

Dated: November 26, 2001

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<sup>5</sup> The Commission is urged to review a recent study by a team of Cornell University economists and engineers that presents experimental evidence that bid-based, wholesale-only markets are not competitive regardless of auction format (*e.g.*, uniform price, discriminative or soft-cap). See T.D. Mount, W.D. Schulze, R.J. Thomas, and R.D. Zimmerman, *Testing the Performance of Uniform Price and Discriminative Auctions*, Rutgers' Center of Research in Regulated Industries, 14<sup>th</sup> Annual Western Conference, Advanced Workshop in Regulation and Competition, Competitive Change in Network Industries, San Diego (June 2001), Revised 7/16/01.

**Table 1.**

<b>Comparison of Electricity Market Conditions in England &amp; Wales: 2000-2001</b> (Under "Pool" Operation, 2000; Under "NETA" Operation, 2001)		
Source: Ofgem, "The New Electricity Trading Arrangements: A Review of the First Three Months," August 2001.		
	2000	2001
Forward Prices: <sup>6</sup> OTC Baseload Trades (3-month average)	£20.51/MWh	£19.21/MWh (6% reduction)
Forward Prices: OTC Peak Trades (3-month average)	£31.24/MWh	£24.81/MWh (21% reduction)
Trend in Average Natural Gas Prices (One-third of installed generation is gas-fired)	---	12% increase
Day-Ahead Spot Prices: Volatility (Range)	£15 to £65/MWh	£15 to £30/MWh (£35 or 70% reduction)
Day-Ahead Spot Prices: OTC Baseload Trades (weighed average prices)	£24.25/MWh	£18.44/MWh (24% reduction)
Liquidity: Volume of Contracts (MW)	34,096	141,490 (315% increase)
Liquidity: Number of Contracts	1,104	4,292 (289%)
Number of Products Offered in Market	24	148 (517% increase)
Customer Switching: Customers per week	93,500	100,000 (6.9% increase)

<sup>6</sup> Year-over-year price reductions do not capture the total price reductions resulting from the change in market design. Significant price reductions appeared in the UK market prior to the "NETA Go Live" date (March 27, 2001) in anticipation of the new market arrangements.

## Affidavits

UNITED STATES OF AMERICA  
BEFORE THE  
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Electricity Market Design and Structure

Docket No. RM01-12-000

AFFIDAVIT OF JOSEPH T. MARONE  
THE OCCIDENTAL CHEMICAL CORPORATION

1. My name is Joseph T. Marone. I am a Director of Power Purchasing at Occidental Energy Ventures Corporation. My business address is 5 Greenway Plaza, Suite 1500, Houston, Texas, 77046. As Director of Power Purchasing, I am responsible for the procurement of electric supply for Occidental Chemical Corporation's facilities within Entergy, PJM and TVA. My activities include the negotiation of direct supply contracts, standby agreements, interconnection agreements, and any contracts associated with the supply of electricity. I also represent company interests at state utility commissions and as a representative to industrial user groups. I also direct legal activities in conjunction with FERC and State Commission interventions.

I. Summary

2. The purpose of my affidavit is to provide information regarding the wholesale electricity market in PJM and, in particular the ability of large industrial buyers of electricity to procure long-term forward contracts for electricity in states, such as Delaware, that allow such customers to purchase their power requirements in the PJM markets. I describe the PJM market's lack of liquidity in the forward locational marginal price (LMP) market that limits our options to PJM's day ahead or hourly spot market. Also, I describe how the structure of the PJM market model acts as a disincentive to true bilateral negotiations

which I believe to be an essential characteristic of a highly functioning competitive market.

## II. Discussion

3. Occidental Chemical Corporation operates a 60 MW chloralkali facility in Delaware City, Delaware. Delaware is located on a peninsula and all supply not originating within the peninsula must enter from the north. Because of a relatively large summer seasonal load in the southern peninsula and limited transfer capability, Delaware is prone to high congestion prices. Conectiv operates on a one zonal system so congestion costs in PJM's DPL South zone are borne as well by loads in the north such as Occidental's. Electricity costs can represent as much as 70% of a chloralkali facility's variable manufacturing cost and as such is a critical raw material. Chloralkali plants are high load factor (> 90%) yet interruptible power consumers, which means that Occidental's facilities make a significant contribution toward the efficient allocation of existing generation and transmission resources. Competitive electricity prices are essential to the viability of a chloralkali facility.
4. Delaware's House Bill No. 10 provided industrial consumers access to the competitive PJM market on October 1, 1999. In mid 1999, I contacted ten potential new suppliers from the PJM list of licensed alternative suppliers. Five responded with interest and only one, a low cost producer in Pennsylvania, provided a quotation. They have since withdrawn from the Delaware market. As of today, the only alternative supplier that has expressed an interest in servicing Occidental's load is the deregulated affiliate of the native utility.

5. Within a bilateral transaction, either the supplier or customer must bear or share the risk of transmission congestion. The other alternative is to quantify and hedge the risk in a forward financial market and then ascribe those costs to either the supplier or the customer. No liquid forward financial market exists at this time to manage congestion risk in Delaware. Financial transmission rights (FTR)s have not provided sufficient fungibility or volume to support the liquidity required for a forward LMP market. The other remaining alternative in PJM is for either the supplier or the customer to bear or share the risk of transmission congestion. Within PJM the costs of congestion are imbedded in the LMP price. LMP therefore becomes the pseudo “default tariff” of the competitive market.
6. Suppliers are willing to sell at an LMP based price, but only LMP, because it is the only available mechanism that captures all the risk of transmission congestion and passes it along to the customer. At the same time, because LMP is a last price auction in both constrained and unconstrained periods, it guarantees generation owners the best available price at all times in PJM, while rarely placing their generation at risk of not being dispatched. There is no room for the creativity, flexibility, and ingenuity in this market that typically drive a competitive market to lower prices, higher levels of service, or products tailored to individual needs. Because of the lack of a liquid forward financial market for transmission congestion, an alternative supplier can only offer me a comparison price by estimating the likely risk, pass the likely risk on to me and then bear the remainder of the total possible risk. This is proving to be a deterrent to competition in Delaware. A supplier could offer an LMP-based price, but how many consumers can

determine if their current known costs will be higher or lower than next year's average LMP?

7. PJM's energy market model with a last price auction LMP stifles true bilateral transactions and therefore competition. One of the provisions of Delaware's House Bill No. 10 is that up to five customers can direct connect to a generator as a source of supply. There is a generation facility located next to Occidental's Delaware facility. I pursued the potential of supply from this facility. The generator is already guaranteed the LMP price by PJM and wants to sell at no lower than that. Occidental can already purchase at LMP and wants to pay no higher than that. Neither party would be induced to do business bilaterally and be exposed to each other's operational risk with no financial incentive. The pool market allows suppliers to take their power to the pool with essentially no operational risk.
8. In a true bilateral market, if a generator has no customers, he doesn't run his plant. There is a strong incentive to reduce costs, to increase efficiency, to be responsive to customer needs, and to be creative. While PJM is predominantly bilateral (I've heard estimates as high as 85%), in the PJM lexicon, any party that remains on its original tariff is counted as a bilateral transaction. True bilateral transactions occur when a customer has the opportunity to express, directly to a supplier, its preferences for the terms and conditions of service. The customer can make choices to establish the priorities for price, quality and reliability of service. By comparison the pool dampens any entrepreneurial spirit. Load always exists but any individual producer doesn't need customers. In fact, as in the case of the generator next door, customers are a risk not worth taking, as evidenced by the lack of suppliers in PJM. It is my opinion that for competition to thrive, the

electricity market must be bilateral in the true sense with a working forward financial market to manage total price risk.

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AFFIDAVIT OF GARY L. GRONER  
THE FORD MOTOR COMPANY

1. My name is Gary L. Groner. I am Vice President of Energy for Ford Land Motor Services Corporation, a wholly owned subsidiary of Ford Motor Company, with global responsibility for Ford Motor Company's energy requirements. My business address is 550 Town Center Drive, Suite 200, Dearborn, Michigan 48126. My duties include overseeing the complete energy supply and demand side functions that are required in the automobile manufacturing process from both a reliability and cost advantage viewpoint. This also includes the regulatory and legislative intervention interests on behalf of my company. My team also represents Visteon Corporation in its energy management, negotiations and regulatory intervention.
2. I have read the Affidavit of Joseph T. Marone of Occidental and agree with his analysis of the PJM market design. Like Occidental, Ford Motor Company believes that there can be no competitive electricity market without a robust forward market that allows buyers to negotiate bilateral contracts and that allows the entry of many sellers and buyers.

I. Summary

3. The purpose of my affidavit is to provide information relevant to the wholesale electricity market in PJM. In particular, I am providing my experience as a large industrial buyer of electricity to procure long-term forward contracts for electricity in states that allow such

customers to purchase their power requirements in the PJM markets. I describe the PJM market's lack of liquidity in the forward market that limits our options to PJM's day ahead or hourly spot market. Also, I describe how the structure of the locational marginal price (LMP) model acts as a disincentive to bilateral negotiations, which I believe to be an essential characteristic of a highly functioning competitive market.

## II. Discussion

4. Ford Motor Company does not have a big presence in the PJM market. However, I am mindful that the PJM market design may become the Standard Market Design (SMD) for all RTOs, in which case all of Ford's North American facilities may be at risk to any market design flaws in the existing PJM model. Prior to my position with Ford, I lead Honeywell's (formerly AlliedSignal) energy procurement team with a large presence in PJM and experiences that I also personally draw upon regarding the lack of market development. Ford operates an assembly plant in Edison, New Jersey (PSE&G's service territory) that produces Ford Ranger, Ranger Electric and Mazda B-Series trucks. . In Pennsylvania (PECO's territory), Visteon operates a large electronics manufacturing facility. Both of these facilities operate under special electricity service agreements and are served by the incumbent utility. Due to the lack of suppliers and high wholesale prices resulting in non-competitive offers, neither of these plants has been able to take advantage of the newly restructured electricity markets created in either state. While initially in Pennsylvania some customers with high shopping credits were able to find alternative suppliers with cost savings, most if not all have since returned to their host utility under the capped retail tariff. Such was my experience with Honeywell in Pennsylvania. In New Jersey, most facilities for which I was responsible were unable to

find a competitive alternative except on a short 4 to 5 month contract with much uncertainty as to what the future would hold. While I agree with Mr. Marone's contention that bilateral contracts are better for us than a pool and congestion pricing, in order for a competitive bilateral offering to occur, market rules must be developed whereby price transparency and related risk can be seen and managed. Through the bid solicitation process I have been involved in, it quickly became apparent that much uncertainty in pricing occurs within PJM for which suppliers expect the customer to bear the risk either outright or by internalizing these risks in their offers, thereby making them simply non-competitive.

5. Within a bilateral transaction, either the supplier or customer must bear or share the risk of transmission congestion. The other alternative is to quantify and hedge the risk in a forward financial market and then ascribe those costs to either the supplier or the customer. No forward financial market exists at this time to manage congestion or price risk in PJM. While there is a spot market, retail customers are effectively excluded. If a customer subjects itself to daily spot pricing, my understanding is that customer will not know the price he will pay for power until after he has consumed it (much later, in fact). This lack of price transparency does not allow a customer to make logical decisions on price elasticity and corresponding consumption behaviors. What if I decide to continue with plant operations and then later find that, due to congestion, I have to pay 4 times what I thought the price to be?
6. I therefore agree with Mr. Marone that (1) within PJM the costs of congestion are imbedded in the LMP price which therefore becomes the pseudo “default tariff” of the competitive market; (2) a creative market design and hedging tools, typically found in a

competitive commodity market, do not exist; and (3) LMP essentially stifles bilateral transactions. A simple review of alternative suppliers still in existence in the PJM market, combined with the small number of customers that are no longer with their incumbent utility, should clearly indicate that the PJM design has not lead to a sustainable competitive market.

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

Electricity Market Design and Structure

Docket No. RM01-12-000

AFFIDAVIT OF GLENN S. POOLE  
INTERNATIONAL PAPER COMPANY

1. My name is Glenn S. Poole. I am The Energy and Utilities Manager at International Paper's Bucksport, Maine mill. My business address is River Road, Box 1200, Bucksport, ME 04416. As Energy and Utilities Manager, I am responsible for operation of the mill energy plant as well as being the key mill contact for our corporate energy procurement group for the procurement of electricity and fuels for the mill. My activities include overseeing the entire production, supply and conservation of energy required to operate this paper mill as well as regulatory and legislative issues impacting our operations. I am also an active member of the Board of Directors for the Industrial Energy Consumer Group ("IECG"). The IECG is a non-profit Maine trade association formed for the purpose of representing the interests of Maine industrial energy consumers before regulatory and legislative bodies. During the period of 1986 through 1999, I served as President of the IECG and have since been Vice President. During my tenure as President, the IECG faced many formidable challenges not the least among them was the development of NEPOOL's proposal for a Congestion Management System which was filed with and approved by the Commission.

## I. Summary

2. The purpose of my Affidavit is to provide information relevant to FERC's development of a unified wholesale electricity market for the Northeast. In particular, I am providing information relevant to the ability of large industrial buyers of electricity to procure long term forward contracts for electricity and the difficulties of reasonably hedging risks in the electricity market absent a vigorous forward bilateral market which permits price certainty and transparency. I have reviewed the Affidavit of Joseph T. Marone and am deeply concerned with the prospect of applying the PJM LMP model to the New England market until and unless fundamental flaws in that market are addressed. Such reform is necessary in order to improve liquidity in the forward market and to prevent the "collapse" of retail access that has plagued the PJM market due to the lack of such liquidity.

## II. Discussion

3. International Paper ("IP") operates a 95-megawatt (load) paper manufacturing facility in Bucksport, Maine. Taking advantage of cogeneration opportunities the facility recently installed a 175-megawatt gas turbine and Heat Recovery Steam Generator to supply much of the plants steam requirements and most of our electrical needs except for backup power. In addition to the Bucksport Facility, IP operates a 100-megawatt (load) paper mill in Jay, Maine and has several other facilities throughout the Northeast and a large number throughout the nation that rely upon the availability of reasonably priced and reliable power for their economic viability.
4. During my tenure as President of the IECG, the New England Power Pool ("NEPOOL") began the process of developing a Congestion Management System for New England. IP

and the IECG recognized that the key to the successful implementation of retail access and a robust competitive market would be liquidity, price certainty and transparency in the market. A fully functioning forward bilateral market with multiple sellers and buyers is essential to achieve these goals.

5. For these reasons, the IECG vigorously advocated a “full auction” of all Financial Congestion Rights (“FCRs”) created under the Congestion Management System (“CMS”). While other parties were more concerned with assuring their own share of revenues from the auction or from retention of FCRs, consumers, led in NEPOOL by the IECG, pushed vigorously for a system which forced all congestion rights into a full and fair periodic auction which would award such rights to the highest bidder. Such a structure causes the beneficial owners of Auction Revenue Rights (“ARRs”) to incur lost opportunity costs in the event they attempt to hoard such rights. This will, hopefully, support a vigorous bilateral market that would allow suppliers to hedge risks and secure price certainty to support a forward bilateral energy market. The thinness of PJM’s residual auction approach has resulted in a market that, as noted by Mr. Marone, leaves no room for “creativity, flexibility and ingenuity, which typically drive a competitive market to lower prices, higher levels of service or products tailored to individual needs.”
6. In spite of the obvious implosion of retail access in PJM, PJM refused to acknowledge the full auction concept as a “best practice” in the recent RTO mediation discussions. The importing of PJM’s non-liquid, incumbent utility friendly CMS, into New England is not a prospect to gladden the hearts of IP/Bucksport or of the IECG consumers who have fought so long and at such expense to secure approval of a superior market design which emphasizes the need for liquidity.

7. I am greatly concerned that amidst the chorus of marketer and supplier voices all clamoring for a hasty implementation of the PJM model in order to increase their own opportunities for profit, the true needs of consumers are being overlooked. The ability of marketers to profit through increased wholesale transactions will only be helpful to consumers if it serves as the platform for delivery of direct savings at the retail level based on a vigorous bilateral market characterized by certainty, transparency, and multiple suppliers. The PJM platform as it currently exists, does not provide these benefits. The Commission's priority should be to see that any market that it approves delivers these benefits to consumers and not just increased opportunity for arbitrage and profit at the wholesale level for utilities, generation suppliers and traders.

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Docket No. RM01-12-000

AFFIDAVIT OF PAUL R. WILLIAMS  
MG INDUSTRIES INC.

1. My name is Paul R. Williams. I am a Manager of Energy Management for MG Industries. My business address is 3 Great Valley Parkway, Malvern, PA, 19355. As Manager of Energy Management, I am responsible for the procurement of electricity supply for various MG Industries facilities across the United States. My activities include the negotiation of any contracts associated with the supply of electricity. I also represent company interests at State and Federal Regulatory Commissions and Legislatures and as a representative to Industrial Energy User Associations. In addition to that I also direct legal activities in conjunction with interventions at the Commission and State Commissions either as part of a larger group of consumers or independently for MG Industries.
3. MG Industries ("MG") is a wholly owned North American operating subsidiary of Messer-Griesheim GmbH, a global manufacturer and provider of industrial and specialty gases, primarily oxygen, nitrogen, argon, and carbon dioxide. MG has over thirty production facilities located across the United States. MG's production facilities are located in every region of the country, and serve various industrial, commercial, medical, agricultural and food processing consumers throughout the United States. For a producer of industrial/specialty gases, reliable, competitively priced electricity is essential because

electricity is, by far, MG's largest cost of production. MG consumes power in every major electricity market in the United States. MG is a member of the PJM Interconnection, LLC ("PJM"), with voting rights at Members Committee meetings and participates, to the limited extent possible, in PJM and other ISO/RTO collaborative processes directly or through industrial energy consumer coalitions.

### I. Summary

3. The purpose of my affidavit is to present information relevant to the functionality of PJM's wholesale electricity markets, with an emphasis on the shortcomings that exist today within PJM's market model. Simply put, PJM's existing market design is not competitive, and a replication of this market design across a wider geographic region, may result in significant harm to residential, commercial and industrial consumers of electricity. While many market participants are advocating the rapid adoption of the PJM market model within the larger Northeast RTO (and elsewhere), MG is deeply concerned with existing flaws in that model. We believe that these flaws should be recognized and rectified before the Commission considers imposing this model on other regions as a Standard Market Design.

### II. Discussion

4. The most obvious flaw in the PJM market design is the absence of meaningful demand response in the short-term (day ahead or day of) markets. For example, the only demand response mechanisms that PJM has attempted to implement are the Active Load Management (ALM) program for capacity (a carry-over program from PJM's days as a tight power pool) and the recently added Load Response Pilot Program. These very simple programs have many restrictions that limit end-users' access to the market, and in

no way provide the type of demand response necessary to establish a truly competitive market. By comparison, suppliers are provided with a wide array of capacity and energy market products and opportunities that maximize their access to the market . Without the checks and balances of price-responsive load, suppliers can use their greater access to the market to exercise market power.

5. The PJM market design is made up of many separate markets, processes, rules and procedures for energy, capacity, congestion management and ancillary services, and I believe that, in aggregate, these are biased to ensure that suppliers or generators have a place to sell their “products” to captive consumers. In a truly competitive market, both supply and demand are able to respond to changing market conditions with equal opportunities. The PJM market design does not now allow this. This preserves a market with virtually inelastic demand, where suppliers can readily estimate the demands for their products and can price them accordingly to their own advantage.
6. A comparison of the manner in which PJM’s capacity market is accessed by generators, load serving entities (LSEs), and end users is illustrative. Loads do have the opportunity to participate in the capacity market through PJM’s Active Load Management (ALM) programs, but on a very limited basis. In these programs, loads must work through an LSE. LSE’s effectively own the rights to a load’s curtailability, and the load has no discretion to move the associated capacity credits without the LSE’s consent. Contrast that to the flexibility afforded to generation owners who can designate as a capacity resource or not, de-list, and generally have several more degrees of freedom (selling daily, weekly, monthly etc.) with their capacity resources than loads do. Once an LSE has “earned” the capacity credits associated with a load’s curtailability in the summer

months, that initial LSE, not the end-use load that was curtailed, retains the rights to that capacity value on PJM if the load subsequently switches LSEs . Similarly generation owners have many energy market options, and can freely tier bids in a manner that allows them to exert upward pressure on market clearing prices. Loads on the other hand cannot offer curtailments directly into the PJM dispatch mix. These factors conspire to make forward prices higher than what a competitive market would allow, with no opportunity for loads to respond through effective demand response mechanisms. For example, at the beginning of 2001, I suspect, as do most other market participants, that one supplier was able to take advantage of the market bidding rules to significantly drive up capacity prices. Captive loads had no market within which to respond and mitigate or constrain such prices. In fact, had every load on PJM shut down completely so that the PJM loads in January of 2001 were 0 MW, the resource owners providing capacity into the ICAP market would still have been compensated at non-competitive prices. While the PJM made a capacity market bidding rule change to address one aspect of the mechanism used by this entity, the patch is neither sufficient nor complete. The fundamental flaw is that the existing PJM market design provides no mechanism for loads to respond to energy or capacity market price movements on a comparable basis.

7. In conclusion, loads and suppliers must have the same opportunities of entry in a competitive market otherwise it cannot be competitive . In bid-based markets, loads and other resources should be allowed to bid on the same terms and conditions, cleared in the same manner, and receive the same compensation. The flaws in the PJM market design should be recognized and rectified before the Commission considers imposing this design on other regions as a Standard Market Design.

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

Electricity Market Design and Structure

Docket No. RM01-12-000

AFFIDAVIT OF JAMES B. ROUSE  
PRAXAIR, INC.

1. My name is James B. Rouse. I am associate director, energy policy/state affairs for Praxair, Inc (Praxair). My business address is 39 Old Ridgebury Road, Danbury, Connecticut 06810-5113. My duties include general oversight of Praxair's energy regulatory and legislative strategies and state government relations. I also chair the Electricity Consumers Resource Council (ELCON) and Multiple Intervenors, the state industrial group in New York.

I. Summary

2. The purpose of my affidavit is to describe and explain the benefits of the New York State Independent System Operator (NYISO) Demand Response Programs (DRPs). Praxair is a member of the NYISO. It is beyond dispute that aggressive customer load response is critical to ensuring that energy price bid auctions result in a competitive market. NYISO currently has in place two demand response programs that represent "best practices" that should be implemented by a Northeast regional transmission organization (Northeast RTO) at the commencement of operations: the Emergency Demand Response Program (EDRP) and the Day-Ahead Demand Response Program (DADRP). The programs are prototypes of markets for price-responsive customer loads that should be a required function of all RTOs. Customer demand response will enhance short-term system

reliability and create more competitive markets by mitigating the market power of suppliers in the near real-time markets. The NYISO programs provide—to the greatest extent possible—customer loads with the same service options and payment streams that generators enjoy. A general description of each program follows.

## II. Discussion

3. **Emergency Demand Response Program (EDRP)** – The EDRP is a voluntary load curtailment program. Qualified curtailment service providers (CSPs) have the option of providing load curtailment during emergency situations on not less than two hours' notice from the NYISO. CSPs include end users that can register and deal directly with the NYISO.
4. If a CSP participates: (1) in general, it is paid the higher of \$500/Mwh or the zonal real-time locational-based marginal price (LBMP) for the load reduced; and (2) it is guaranteed payment for no fewer than four hours - even if the emergency is for a shorter period. The four-hour minimum payment provision is unique to New York and is designed to ensure that customers receive a base level of compensation for curtailment. Payments are for actual performance, which is measured against a predetermined customer base line.
5. Importantly, a customer can participate in the EDRP and receive payment for energy it actually curtails and participate in the NYISO installed capacity (ICAP) market as a Special Case Resource and receive payment for the capacity to curtail. This feature is a primary distinction between the EDRP and programs offered by other ISOs; it treats curtailable loads similar to generators, who receive payments for capacity and energy.

6. **Day-Ahead Demand Response Program (DADRP)** – The DADRP is designed to allow CSPs to bid curtailable load into the NYISO day-ahead market. CSPs may submit bids in strips of one or more hours, and bids can include curtailment initiation costs. Curtailment bids in the Day-Ahead market are accepted when they displace higher price generation bids (*i.e.*, they reduce total day-ahead production costs).
7. DADRP bids can set the Day-Ahead LBMP, just as a comparably bid generator can. Nonperformance is penalized. The payment—and penalty—are intended to ensure that the load does not show up in the real time market. This is not a “virtual bidding” program like those offered by other ISOs. Rather, the goal is to reduce price spikes by removing load from the system.
8. Accepted bidders are paid the higher of their bid price or the LBMP clearing price. Payments are based on actual performance, which is measured against a predetermined customer base line. In addition to receiving payment, loads do not pay for energy not consumed. Loads participating in the DADRP also can qualify for ICAP payments under the NYISO’s Special Case Resource category.
9. The EDRP and DADRP are designed to treat customer load on a par with generation, as nearly as possible. The DRPs encourage participation by providing loads with flexible options and meaningful payments, similar to what are available to generators. Both programs are designed to reduce overall system costs by: (1) displacing more costly supply options, and avoiding system-wide failures; (2) providing the NYISO with options

to deal with emergencies; and (3) introducing additional competitors in the Day-Ahead market.<sup>7</sup>

10. By any measure, the DRPs have been a success in the limited time they have been in effect. The EDRP commenced in June 2001 with more than 679 MWs of curtailable load. During the period August 6-10, 2001, the EDRP was invoked on four days, and on three days more than 430 MWs responded. On one other day, an advisory was issued but an event was not called. The NYISO credits the EDRP with ensuring reliable operations and dampening potentially catastrophic economic consequences this past summer.
11. With respect to the DADRP, it started on July 20, 2001, and participants have reserved more than thirty bidding slots to participate in the program. Curtailment bids were validated and accepted during most days in late July and August. The NYISO currently is currently analyzing the benefits associated with operation of the DADRP to date, but early indications are that they will be significant (*i.e.*, the cost of payments to CSPs will be far outweighed by the overall costs which the market avoided by displacing higher-priced supply options). The benefits of a more competitive, price-responsible market will only multiply as the customers are educated about the program and encouraged to participate.

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<sup>7</sup> The very presence of multiple CSPs competing in the Day-Ahead market should affect the bidding strategies of generators.

UNITED STATES OF AMERICA  
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Electricity Market Design and Structure

Docket No. RM01-12-000

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2. The purpose of my affidavit is to explain certain benefits of the New York Independent System Operator's (NYISO) Automated Mitigation Procedure (AMP). Praxair is a member of NYISO. By Order dated June 28, 2001, the Federal Energy Regulatory Commission (FERC) approved the NYISO's AMP. As explained below, the AMP plugs a gaping hole in the NYISO's otherwise applicable market mitigation measures (MMMs) by dampening day-ahead bid prices that exploit market power before those bids set the clearing price for all bidders. Thus, when poised for launch, the AMP ameliorates the impact on consumers of market power abuses. A prospective MMM would be of great value to consumers in a Northeastern regional transmission organization (Northeast RTO).

3. Prior to the AMP, the NYISO did not have the authority to retroactively correct prices that result from market power abuses, or to deter such behavior by assessing financial penalties to eliminate gains realized from noncompetitive conduct. Because prices cannot be corrected retroactively, a delay of even a single day in mitigating prices attributable to the exercise of market power can cost New York State consumers tens of millions of dollars. For example, according to the NYISO, on June 26, 2000, consumers were charged \$100 million in unwarranted energy costs because improper bids could not be mitigated without a day's lag.
4. The AMP is designed to automatically identify and address excessive bids in the Day-Ahead market (DAMkt) as defined in the MMM, as well as to modify suppliers' bidding behavior. The AMP allows the NYISO to mitigate prospectively using the MMM's parameters. With the AMP, mitigation takes place within the DAMkt when the conduct and price thresholds are exceeded, thereby avoiding the one-day delay inherent in the manual procedures of the MMM.
5. The AMP is constructed carefully to eliminate the possibility of mitigating bids that are attributable to true market forces. First, the Market Monitoring Unit (MMU) of the NYISO activates AMP procedures only if it projects that prices, absent mitigation, would exceed \$150 per MWH. Second, the AMP is applicable only when both explicit conduct<sup>8</sup> and impact thresholds<sup>9</sup> are exceeded. Those thresholds are identical to those approved by FERC as part of the MMM. Only after these objective measurements of the exercise

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<sup>8</sup> For energy and minimum generation bids, the conduct threshold for economic withholding is defined as the lower of a 300 percent increase or an increase of \$100 per MWH.

<sup>9</sup>The market impact thresholds are defined as the lower of an increase of 200 percent or \$100 per MWH in the day-ahead or real-time energy location-based market price ("LBMP") or on any other price in a NYISO-administered market.

of market power are met is the AMP triggered. Even then, market participants have an opportunity to justify questionable bidding behavior.

6. The harm to consumers from an unmitigated exercise of market power can be devastating, as evidenced by the \$100 million impact on the NYISO DAMkt of June 26, 2000. The AMP represents a partial, very conservative solution to the problem, by allowing the ISO (or RTO), based on objective criteria, to mitigate bids which constitute a potential abuse of market power before those devastating impacts are visited upon consumers. Without AMP, or its equivalent, bidders may exercise market power and reap windfall gains by exploiting the one-day delay inherent in manual procedures of the MMM.
7. According to the NYISO, as a result of the AMP's operation, New York electricity customers avoided more than \$11 million in excess energy charges during the 2001 summer. These savings do not include the pre-emptive benefits that resulted from suppliers' altering their bids to avoid the AMP, according to testimony of the New York Market Advisor. As this summer's experience demonstrated, permitting excessive bids to go unchecked - even for one day - would have resulted in millions of dollars of excess costs to consumers. Because prices cannot be mitigated retroactively, it is essential that adequate mitigation of market power occur prospectively.

# **BOC GASES COMMENTS ON NEW ELECTRICITY TRADING ARRANGEMENTS (NETA) IN ENGLAND AND WALES**

AFFIDAVIT OF HUGH MORTIMER

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21 November 2001

## **1. Introduction to BOC Gases**

BOC Gases (BOC) is part of the BOC Group plc which has manufacturing operations in 50 countries. BOC Gases is the major UK operating company which owns and operates air separation plants. These plants separate the air into their component parts. These industrial gases, such as for example oxygen, nitrogen and argon, are supplied to customers by pipeline, road tanker or compressed into cylinders.

BOC's production of industrial gases is very energy intensive and large amounts of electrical energy are used to provide the driving force for the separation, liquefaction and compression processes involved.

In England and Wales BOC's electricity requirement is nearly 2,000,000 MWhs per annum. This makes BOC one of the UK's very largest industrial consumers.

BOC employs a dedicated team of commercial professions to concentrate on electricity supply matters.

## **2. BOC's objectives on electricity matters**

BOC devotes a great deal of time and effort to electricity supply matters and has done so over many decades. Our objectives are two-fold:

- a) Seek to obtain the best commercial deal for BOC's electricity requirements in the current trading and regulatory environment
- b) Seek to influence the future current trading and regulatory environment to secure beneficial changes for BOC and for other large customers, many of whom are BOC customers.

## **3. Contrast of Trading Arrangements**

It is in the context of 2b) above that BOC provides this written affidavit contrasting, our experiences of the two types of trading arrangements which have been in existence since the England and Wales electricity supply industry (ESI) was privatised in 1990.

### **3.1 The Electricity Pool**

In the period from 1 April 1990 until 27 March 2001 the trading arrangements were determined by the terms of the Pooling and Settlement Agreement (PSA). The PSA was a multiparty agreement between the electricity generators and electricity suppliers. One key feature of the arrangements were that, generally speaking, all electricity generated had to be sold into an “electricity pool” (the Pool) and all electricity supplied to customers by the suppliers had to be purchased from the Pool.

BOC’s experience of and views of the Pool system can be summarised as follows:

- 1) cost and efficiency benefits brought about by privatisation of the ESI were not fairly shared with the customers.
- 2) BOC and customers generally were consistently overcharged.
- 3) For many years there was a lack of competition among generation companies, primarily due to the privatised structure, creating two very large fossil fuel generating companies (National Power and PowerGen) and a large nuclear generator Nuclear Electric. This was compounded by the operation of the Pool rules.
- 4) The Pool prices were capable of manipulation, and were manipulated, as several investigations by Offer (the regulatory body showed).
- 5) Customers were only price takers as prices were set using demand forecasts produced by National Grid Company, the System Operator.
- 6) The Pool was the market of first resort and customers who wished not to have exposure to ½hourly prices were required to pay a premium except during the 2 year period of a Pool price cap imposed by Offer, 1994-1996.
- 7) The governance arrangements were such that there was a structural rigidity which meant no significant changes in trading arrangements were possible

### **3.2 Government Review**

In October 1997, the Government, under pressure from customers, announced a review of electricity trading arrangements which led to the introduction of the new electricity trading arrangement (NETA) in March 2001.

At the time of the commencement of NETA, 27 March 2001, the then Energy Minister Peter Hain said “ The previous Pool arrangement was deeply flawed – it was effectively a means of generators setting a wholesale price which suppliers and large customers had little choice but to accept. It was no better than a generators’ club. In contrast, NETA is a genuine market in which, for the first time, generators have to seek out customers, giving the electricity suppliers and large customers real choice.”

### 3.3 NETA

The key features of NETA are:

- *A forwards market* where generators are able to contract with suppliers and large customers for the physical delivery of electricity. Such contracts can be struck close to the time of delivery or a year or more ahead;
- *Screen-based short-term power exchanges* to enable participants to refine their contract positions close to real time in the light of current information (*e.g.* on the weather). Five power exchanges have either set up or are in the process of being set up;
- *A balancing mechanism* operating from 3½ hours ahead of real time up to real time, managed by the National Grid Company (NGC). As electricity cannot be stored, NGC needs to manage the grid system on a second-by-second basis and the balancing mechanism is the mechanism under the new arrangements that allow it to do this. However, the vast majority of trading is likely to take place in the forward markets rather than in the Balancing Mechanism;
- *Associated derivatives markets* are expected to develop to enable market participants to manage commercial risks; and
- *A settlement process* to deal with the financial settlement of balancing mechanism trades and to deal with those whose generation or consumption of electricity is out of balance with their contracted position.

### 3.4 BOC's experience of NETA and comments on NETA

These are as follows:

- 1) BOC experienced very large reductions in electricity prices for the period 1 October 2000 to 30 September 2001.
- 2) Most reductions in prices occurred in anticipation of NETA.
- 3) Price reductions were also due in part to the results of merger and acquisition activity (M&A) in the ESI. These occurred in the run up to NETA start and resulted in the England and Wales generating capacity being owned by many more players.
- 4) Prices to BOC for the period 1 October 2001 to 30 September 2002 rose as ESI M&A activity continues and companies seek to consolidate and vertically integrate generation and supply activities. This trend is a major concern; it is a response to NETA rather than a NETA design flaw.

- 5) BOC believes NETA requires further development in such areas as properly including the demand side in the market.
- 6) In addition, BOC believes that, while the governance regime allows for change, the present system is too slow and bureaucratic.

#### **4. Summary**

In summary, BOC has seen real benefit from the change in Pool based to NETA trading arrangements. The challenge now is to refine NETA to ensure that a competitive and customer-focused market is always available to customers.