Joan
✓ B. Meyer
✓ D. Winter
✓ Mark

Exhibit No.:
Witness: David Meade
Type of Exhibit: Direct Testimony
Issue: Rate Design
Intervenor Issues;
Rate Impact
Sponsoring Party: Praxair, Inc.
Case No.: ER-97-81

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY DIVISION

THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-97-81

PREPARED DIRECT TESTIMONY OF

DAVID MEADE

February 20, 1997

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of The Empire District Electric Company for authority to file tariffs increasing rates for electric service provided to customers in the Missouri service area of the Company.	))))))	ER-97-81

AFFIDAVIT OF DAVID MEADE

STATE OF NEW YORK)
) ss
COUNTY OF ERIE)

David Meade, of lawful age, on his oath states: That he has reviewed the attached written testimony in question and answer form to be presented in the above case, that the answers in the attached written testimony were given by him; that he has knowledge of the matters set forth in such answers; that such matters are true to the best of his knowledge, information and belief.

David Meade

Subscribed and sworn to before me this 18th day of February, 1997.

Terry L. Benner
Notary Public

TERRY L. BENNER
Notary Public, State of New York
Qualified in Erie County
My Commission Expires Apr 30, 1997

[SEAL]

My Commission expires: Apr. 30, 1997

PREPARED DIRECT TESTIMONY OF
DAVID MEADE

Q. Please state your name and business address.

A. David Meade, Praxair, Inc., 175 East Park Drive, Tonawanda, New York, 14151

Q. What is your professional employment?

A. I am regional energy manager of Praxair, Inc.

Q. What is your educational background?

A. I graduated from Cornell University, Ithaca, New York, in 1981 and received a Bachelor of Science degree in Operations Research and Industrial Engineering. In 1986 I received a Master of Business Administration degree with a major in Finance from New York University, New York, New York.

Q. What is your prior experience?

A. Upon graduation from college in 1981, I joined Praxair, then known as the Linde Division of Union Carbide Corporation, as an operations engineer in the National Logistics Center. My responsibilities included conducting performance audits and developing projects and systems to reduce distribution costs and improve customer service. In 1986, I joined Linde's energy management department as a senior analyst, and managed an information systems and analysis group responsible for

competitive assessment and modelling, verifying, analyzing, planning and forecasting energy use and costs. In 1990, I became an energy manager and took on additional responsibilities to currently include management of electricity use and procurement in Missouri, Illinois, Indiana, Ohio, Oklahoma, West Virginia, Kentucky, and Minnesota. In that capacity, I am actively involved in seeking appropriate electricity pricing and the development of innovative power supply agreements. I am also responsible for optimizing plant tactical and operating strategies to minimize electricity costs. I have spoken at various conferences and seminars on topics of energy management and procurement, most recently in 1996 at events organized by Infocast and International Business Communications.

Q. Who is Praxair?

A. Praxair is the largest producer of industrial gases in North and South America, third largest on a worldwide basis. Formerly the industrial gases division of Union Carbide, known in North America as Linde, Praxair was spun off as a separate, independent company in June, 1992. In 1996, the company completed the acquisition of Liquid Carbonic making it the world's largest producer of carbon dioxide. Praxair began

operations in 1907 with its first plant in Buffalo, New York and now has a worldwide network of plants.

Q. What is the nature of Praxair's products?

A. Praxair's major products include the products of air separation: oxygen, nitrogen and argon. These products are manufactured by separating air into its component parts. These gases are used in production and to improve efficiency, quality, and environmental compliance in a variety of industries, including steel, chemicals, metals, electronics, paper, food, glass and medical care. Customers generally receive Praxair's products in one of three ways: (1) by truck delivery from regional bulk liquid production plants into tanks at the customer site, (2) by pipeline from large bulk production plants, or (3) from smaller "on-site" non-cryogenic production facilities dedicated to an individual customer (vacuum pressure swing adsorption plants for oxygen supply, membrane plants for nitrogen supply). Praxair also produces and distributes carbon dioxide, hydrogen, helium and specialty gases, and operates a surface technologies business.

Q. Please describe Praxair's operations in the Empire District Electric Company ("Empire") service area.

A. Praxair has operated a bulk production plant and distribution center in Neosho, Missouri since 1960. The plant produces liquid oxygen and nitrogen for the regional industrial gas merchant market, and has a liquid production capacity of 325 tons per day. Praxair's Neosho plant provides nitrogen and oxygen to the food processing, metal fabrication, steel, health care and petroleum industries in Missouri, Oklahoma, Arkansas and Kansas. A $6 million expansion and modernization completed in 1992 doubled plant capacity. The expansion was done with long-term expectations of competitively priced power. This facility has 26 employees and an annual payroll of $1.3 million. In the state of Missouri, Praxair has a total of 328 employees and a payroll of over $18 million. Praxair recently paid over $160,000 in property taxes, collected and paid to Missouri over $200,000 in sales and use taxes from its Missouri customers and paid over $300,000 in sales and use taxes on its own purchases.

Q. What is the general nature of competition which Praxair faces in the industrial gas industry?

A. The industrial gases business is an extremely competitive business, with several large companies operating with production networks throughout North America and the world. There are also many regional companies and distributors adding

to the competition in specific markets. The distribution radius of a plant is generally within a range of 250 miles. Industrial gases prices are held to competitive levels due to increased overall supply and the demands of customers, many of whom face intense and relentless competition in national and global markets. The development of alternative non-cryogenic industrial gas production technologies is providing more supply options and adding to competitive pressures.

Q. What competitive challenges does Praxair face at its Neosho plant in particular, and how are these challenges evolving?

A. The competition is intense and growing. There are several other industrial gas companies and facilities capable of competitively serving the same customers as our Neosho plant. In many cases they do. These include facilities located in Missouri, Arkansas, Oklahoma, Illinois, and Tennessee. Due to the competitive situation, our Neosho plant is no longer fully loaded as evidenced by our operations over the past year. Of further concern is the prospect of higher power prices at Neosho while prices at our other facilities and those of our competitors are generally declining. It is also noteworthy that Praxair has electrical pricing at or below the levels at our Neosho plant at several other of our Midwest locations.

Q. Is there potential for expansion or contraction of Praxair's business at Neosho?

A. There is potential for either expansion or contraction at Neosho, based upon the relative competitiveness of our costs here vis-a-vis those of our other current and future production facilities and those of our competitors. Operations at Neosho have actually contracted over the past year. On the other hand, there is the opportunity to recapture this load and even expand through upgrades and additions at our existing plant site. Growth and retention opportunities are dependent upon the extent that current and potential customers choose to use industrial gases, the extent they choose to use our products instead of those of our competitors, and the extent that we source our requirements from our Neosho plant.

Q. What is the significance of electricity to Praxair and how is it used in the Neosho plant?

A. The industrial gas business is extremely electricity-intensive, more so than any other industry. The production of liquid oxygen and nitrogen at Neosho is accomplished by the filtering, liquefaction and separation of large volumes of air, followed by liquefaction of nitrogen through a compression/expansion process. The entire process utilizes three large compressors, which are powered by large electric motors.

Over 96% of the electricity at Neosho is consumed in the production process by these large motors. Electricity comprises over 70% of our operating costs. Since our expansion in 1992, we are Empire's largest customer. Nationally, we spend over $220 million per year on electricity.

Q. Are there unique aspects to your Neosho operation which relate to electricity use?

A. Our Neosho operation has been designed to operate with great flexibility in its power consumption. While capable of running at a very high load factor, the Neosho plant can quickly adjust its production output while maintaining efficiency, and change power demand by over two thousand kilowatts. Our Neosho plant has also been designed to interrupt over 95% of its demand load on very short notice.

Q. How is Praxair dealing with its competitive challenges?

A. There is a renewed emphasis on customers and marketing throughout the company. We are developing a better understanding of our customers and what is important to them. Determining and providing for customers' needs and wants has become even more of a priority. The demands of our customers are often unique and varied, but if we do not accommodate

them, someone else will. One general theme we see is that virtually all customers want options and choices.

It is important to realize that Praxair does not operate in a "cost plus" business environment. We must meet market clearing prices for our products or lose sales and ultimately our markets to competitors. Our prices are set, not with respect to our costs, but rather with respect to our markets. The business of particular customers may be won, retained or lost often on differences of mere pennies per 100 cubic feet of product. Our costs do not determine the market or the prices we charge. The market is insensitive to our cost of production. Thus cost of production is extremely relevant, not from a pricing standpoint, but as to whether we can make a profit or even continue our business. This is quite different from how regulation has historically functioned.

It follows from this that another theme is the key Praxair strategy of cost minimization. Note that adequate quality is a given, otherwise one would go out of business in a competitive marketplace. Low costs are thus imperative to success in the industrial gas industry, and we must give constant attention to the reduction of costs in all areas. Work processes have been re-engineered and overhead reduced.

Continuous improvement is demanded, as it is for most industries today. For the years preceding 1996 and our acquisition of Liquid Carbonic, our worldwide and U.S. employment had declined by more than 6500 and 2200 respectively, a proportion of over 25%. Competitive pressures have forced significant cuts in our management, operational and clerical staff at Neosho as well.

Many supplier agreements have been renegotiated with lower pricing and better terms. Competitive bidding is being actively employed. In fact, electricity is the one major cost input in our business which can not yet be competitively sourced on a universal basis even though the overall economic benefits of doing should be apparent.

In other areas, competition for our business had assured us wide choices of products and services at attractive pricing. Competitive marketplaces have also resulted in a great deal of useful innovation on the part of suppliers. This has always been the case in competitive markets. As an example, with regard to our substantial natural gas and long-distance telephone usage (industries which were more recently deregulated), we now enjoy much greater customer focus and innovation on the part of suppliers. Deregulation in these

industries as well as others has resulted in a plethora of appropriate products and services at competitive prices. We have every reason to believe that similar benefits will be realized in a competitive retail market for electricity.

Q. Are there other steps that Praxair has taken to better meet its markets?

A. We also employ a process that we term "economic dispatch."

Q. Please explain.

A. Economic dispatch refers to our approach to track overall costs and hold them to a minimum on a national basis. Combining Praxair's incremental production and distribution costs determines how much and when to produce at each plant and how to distribute to customers in order to minimize overall costs. Changes in power prices of one mill per kWh can affect our distribution radius by many miles. We do this through a process of tactical planning performed on a monthly basis. A sophisticated program consisting of rigorous models of customer demands and of our efficiencies, distribution costs, and electricity costs for each of our production facilities is utilized to perform this optimization. This process results in assigning customers to plants and indicates

how much (and when) to produce at each location in order to minimize our total cost over the specified planning period.

More frequent operational planning is done still within the context of the monthly tactical plan. We adjust plant operations and power consumption on a daily or hourly basis as dictated by revised customer demands, inventory levels, vehicle and driver availability, and real time electricity prices where such information is available, all with the objective of cost minimization.

Q. What is the role of electricity in Praxair's strategy for addressing its competitive challenges?

A. Given electricity's strategic importance to us, it is mandatory that we use and manage it well. High energy efficiencies and competitively priced power are essential for us to compete. Improving the efficiencies of our equipment, processes, and technologies is an ongoing process. With regard to competitive power sourcing, strategies which play a role for us include:

(1) Development of innovative rates and contracts with utilities, including interruptible rates, economic

development incentives, time-of-use and incremental pricing, market-indexed pricing.

(2) Location of plants and expansion based upon electricity considerations. We have shut down old plants and started new ones a few miles away on several occasions.

(3) Economic dispatch among plants based on production and delivery costs to minimize total supply costs to serve our customers. Even small power price changes will affect distribution radius. The equivalent of over 7 million kWh per day are distributed by truck in North America.

(4) Use of alternative customer production technologies which minimize the cost of the product.

(5) Large-scale cogeneration plants have been installed by us in California and Texas. Small-scale options are becoming more economical.

(6) Use of real-time pricing; further development of our operating responsiveness, implementation of real-

time metering and communications, centralized operations management and optimization.

(7) Load aggregation and the use of umbrella agreements which cover multiple facilities.

(8) Participation in direct access and market pricing pilot projects. Development of alternative suppliers, including marketers, developers and other utilities.

Q. Please elaborate on the use of direct access and market pricing options by Praxair in its electricity sourcing.

A. The evolution in the retail electricity marketplace to competition and choice is unquestionable as even the majority of utility leaders will now attest. Regulatory studies, legislative initiatives and direct access programs are now progressing or under consideration in most states. Whatever one calls it, be it "direct access," "retail wheeling," or "market pricing," the ability of customers to source generation competitively is resulting in increased options and more favorable pricing.

Praxair is an advocate of a competitive retail marketplace in electricity and is or will be participating in a variety of "retail wheeling" and "market priced" programs. In Sterling, Texas, Texas-New Mexico Power will source our incremental usage from the competitive marketplace according to our specifications. In Alberta, Canada, we have been buying electricity under unbundled rates and an hourly generation price based on power pool pricing. We are also served under a variety of real-time pricing programs in North America including Economy Surplus Power from TVA for our plant in Memphis and Economy Power Service from the South Carolina Public Service Authority for our plant in Camden. Appropriately designed real time pricing (RTP) programs without so-called access charges or guaranteed revenue levels are often a good proxy for market prices.

At our Fife, Washington facility we have issued a request for proposals for "non-portfolio" power. We are one of several customers who will be negotiating with generation suppliers for sale-for-resale arrangements through the local utility, Tacoma Public Utilities. The use of non-portfolio power by these retail customers will have the effect of displacing some of TPU's wholesale electricity purchases. Also in Washington, we expect to take service at Ferndale, Washington under Puget

Sound Power & Light's Optional Large Power Sales Rate. This rate will provide power pricing that is indexed to the Mid-Columbia power delivery point. We are also talking to suppliers of risk management services to evaluate appropriate hedging mechanisms for such market pricing.

For several of our facilities in Pennsylvania, we are currently talking with potential suppliers and plan to take service under Pennsylvania Power and Light's Retail Competition Pilot Rider (Experimental). This program is scheduled to commence on April 1, 1997. If approved, we also expect to utilize interruptible buy-through tariffs in Ohio which will enable customers to buy this service from third-party suppliers. The availability of direct access and market pricing options is growing rapidly, and we expect this trend to continue.

Q. In addition to your experience, can you comment on the experiences of others customers in direct access programs?

A. Yes, my counterparts in industrial user groups who are also participating in pilot projects such as the ones in Illinois (Illinois Power and Central Illinois Light Company) have expressed their enthusiastic support of and satisfaction with the programs. Administration of the programs is manageable,

there is a great deal of interest on the part of potential suppliers in participating, and the terms, options and pricing received by customers have been competitive.

Q. What would Praxair like to see happen with regard to its electricity supply at Neosho?

A. The regional industrial gas marketplace demands that Praxair's cost of electricity at Neosho be as low as possible. We need to price power to be consistent with what we would find in a competitive market for our business. This can best be achieved through a "retail wheeling" or "market priced" option through Empire which would provide us the opportunity to source generation competitively while paying appropriate and fair prices for transmission, distribution, and ancillary services. A sale-for-resale arrangement in which Empire takes title to the power would be acceptable. Such a program would also have the benefit of enabling Empire to reduce its substantial off-system purchases at often-times relatively high marginal costs, and would give Empire valuable experience with a competitive retail marketplace. Our consultant, Don Johnstone, is preparing testimony which generally outlines a proposal for a direct access pilot program for Empire.

Q. Does this conclude your testimony?

A. Yes it does at this time.

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