Exhibit No.	
Witness:	Maurice Brubaker
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Explorer Pipeline Company and Praxair, Inc.
Issue:	Cost of Service and Rate Design
Case No.	ER-2004-0570

Before the
Missouri Public Service Commission

In the Matter of the Tariff Filing of The Empire District Electric Company to Implement a General Rate Increase for Retail Electric Service to Customers in its Missouri Service Area.	)))))	**Case No. ER-2004-0570**

Direct Testimony of

Maurice Brubaker

On Behalf of

Explorer Pipeline Company
and Praxair, Inc.

September 27, 2004
Project 8228

BRUBAKER & ASSOCIATES, INC.
ST. LOUIS, MO 63141-2000

BEFORE THE

PUBLIC SERVICE COMMISSION OF MISSOURI

In the Matter of the Tariff Filing of The Empire District Electric Company to Implement a General Rate Increase for Retail Electric Service Provided to Customers in its Missouri Service Area.	)))))	Case No. ER-2004-0570

Affidavit of Maurice Brubaker

STATE OF MISSOURI)
) **SS**
COUNTY OF ST. LOUIS)

Maurice Brubaker, being first duly sworn, on his oath states:

1. My name is Maurice Brubaker. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 1215 Fern Ridge Parkway, Suite 208, St. Louis, MO 63141-2000. We have been retained by Explorer Pipeline Company and Praxair, Inc. in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes is my direct testimony and schedule addressing cost of service and rate design which were prepared in written form for introduction into evidence in the ER-2004-0570 Proceeding.

3. I hereby swear and affirm that my direct testimony and schedule are true and correct and show the matters and things they purport to show.

Maurice Brubaker

Subscribed and sworn before this 24th day of September, 2004.

CAROL SCHULZ
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis County
My Commission Expires: Feb. 26, 2008

Notary Public

My Commission expires on February 26, 2008.

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Direct Testimony of Maurice Brubaker

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Maurice Brubaker. My business address is 1215 Fern Ridge Parkway, Suite 208, St. Louis, Missouri 63141-2000.

Q ARE YOU THE SAME MAURICE BRUBAKER WHO FILED TESTIMONY IN THE REVENUE REQUIREMENT PHASE OF THIS PROCEEDING?

A Yes, I am.

Q WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A The purpose of my testimony is to comment on cost of service and rate design issues addressed in the testimony of The Empire District Electric Company (Empire or Company). In my testimony, I will review the cost of service study presented by Empire and make recommendations for the allocation of any change in revenues which may be found appropriate for Empire in this proceeding. I also will make recommendations with respect to the design of a temporary mechanism to collect fuel

and purchased power costs in excess of what is included in base rates, and will comment on certain rate design issues.

Cost of Service Concepts

Q WHAT IS A CLASS COST OF SERVICE STUDY?

A A class cost of service study is an organized approach to determining the costs associated with supplying service to a utility's various classes of customers. There are three basic steps to preparation of a cost of service study. They are functionalization, classification and allocation of costs.

Q WHAT IS FUNCTIONALIZATION?

A Functionalization is the identification of the different kinds of utility investment and expenses, based on the function which they perform. For an electric utility such as Empire, the basic functions are generation, transmission and distribution.

Q WHAT IS CLASSIFICATION?

A Classification follows the functionalization step. In the classification step, costs are identified as demand-related, energy-related or customer-related.

Q PLEASE GIVE SOME EXAMPLES.

A The most obvious energy-related cost is fuel and the variable component of purchased power. These costs vary in proportion to the amount of kilowatthours required by customers. Of course, there are differences in losses that must be accounted for, but that is a refinement that is made to the basic allocation of fuel and variable purchased power costs – which is on the basis of kilowatthours required.

Demand-related costs are primarily those that are incurred as a function of the peak rate of consumption which the facility in question must accommodate. In the production function the amount of plant capacity required is primarily determined by the peak rate of usage by customers. For example, if a utility anticipates a peak demand of 1,000 megawatts – it must install enough generating capacity (and/or buy enough firm power from other suppliers) to meet that anticipated demand plus an adequate reserve margin to compensate for variations in load and for capacity that is periodically unavailable because of forced outages.

Regardless of how the production plant investment is classified the associated capital costs (which includes return on investment, depreciation, fixed operation and maintenance expenses, taxes and insurance) are fixed. That is, they do not vary with the amount of kilowatthours generated or sold. Similar considerations apply to the amount of transmission plant investment which is required to support customer loads. The investment in transmission system components is demand-related.

Customer-related costs include investment in meters and service drops, accounting, meter reading, billing, and associated costs. Also, a certain portion of the cost of the distribution system (poles, wires and transformers) is required simply to attach customers to the system regardless of their demand or energy requirements. This portion of the distribution system is usually considered to be customer-related.

Q WHAT IS THE ALLOCATION STEP?

A The allocation step is the process by which costs are allocated from the total (or jurisdictional) system (after functionalization and classification) to customer classes. Different types of allocation factors are used depending upon what is being allocated. As noted above, energy-related costs are typically allocated to customer classes based on energy requirements, adjusted for losses back to the generation level.

Demand-related costs are allocated on some measure of demand, and customer-related costs are typically allocated based on the number of customers, or some "weighted" number of customers factor that reflects the complexity associated with metering and billing the different types and classes of customers.

Q WHAT METHODOLOGY HAS EMPIRE USED IN ITS COST OF SERVICE STUDY TO ALLOCATE DEMAND-RELATED PRODUCTION AND TRANSMISSION COSTS?

A Empire has used the average and excess (A&E) method.

Q WHAT IS THE A&E METHOD?

A Average and excess is one of a family of methods which incorporates a consideration of both the maximum rate of use and the duration of use. As the name implies, A&E makes a conceptual split of the system into an "average" component and an "excess" component. The "average" demand is simply the total kWh usage divided by the total number of hours in the year. This is the amount of capacity that would be needed to produce the required energy at an absolutely level rate of use. The system "excess" demand is the difference between the actual system peak demand and the average demand. The more energy a class uses in proportion to its average demand—that is, the higher the load factor—the more likely that the class peak demand will be coincident with the system peak demand.

At the limit, a class with a 100% load factor would be 100% certain of being at full load at the time of the system peak. Moreover, such a customer would not contribute at all to the diversity of the system because the load is the same in all hours. Thus, the "average" component of the A&E method reflects the greater probability that a high load factor customer will contribute to the system peak. The

"excess" component, on the other hand, is a measure of the "peakiness" or variability in usage.[1]

Q IS THE A&E METHOD WIDELY USED IN THE INDUSTRY?

A Yes. The A&E method is one of the most widely used methods in the industry. The A&E method and the peak responsibility method (which uses demands of customer classes coincident with one or more system peaks) are the most widely accepted and utilized methods for determining class cost of service. Both methods are explained in detail in the NARUC Electric Utility Cost Allocation Manual, and have withstood the test of time as reasonable methods.

Empire's Cost of Service Study

Q HAVE YOU REVIEWED THE CLASS COST OF SERVICE STUDY OFFERED BY EMPIRE?

A Yes, I have. As noted above, Empire has used the A&E method for purposes of allocating generation and transmission costs. I believe the A&E method produces reasonable results for Empire, and recommend that it be used in this proceeding.

Treatment of Interruptible Load

Q DO BOTH EXPLORER AND PRAXAIR TAKE FIRM SERVICE?

A No. While Explorer takes firm service at each of its pumping stations, Praxair takes approximately 95% of its requirements on an interruptible basis, and the remaining 5% is firm power. Praxair has been an interruptible customer of Empire for many years.

[1] NARUC Electric Utility Cost Allocation Manual, 1992, Page 81.

Q IN THE COST OF SERVICE STUDY, HOW DOES EMPIRE TREAT PRAXAIR'S INTERRUPTIBLE DEMANDS?

A In the cost study, Empire allocates generation costs to Praxair as if Praxair is entirely firm. However, it also uses Praxair's revenues without subtraction of the interruptible credit in order to measure Praxair's profitability. The amount of the interruptible credit is spread back across all other customer classes. The result of this study is an indication of the cost of service to Empire of serving Praxair on a firm basis, and the rate of return that Praxair would be providing if it were taking firm service instead of interruptible service.

Q PLEASE EXPLAIN IN MORE DETAIL THE NATURE OF INTERRUPTIBLE POWER AND HOW IT BENEFITS THE UTILITY SYSTEM AND THE OTHER CUSTOMERS?

A Interruptible power is power that is provided to customers on the basis that its availability can be withdrawn for the benefit of service to firm customers, if the power is required to provide reliable service to firm customers. In other words, interruptible power is sold to the interruptible customers when it is not needed to supply firm load customers. The conditions under which the interruptible power may be withdrawn from the interruptible customer are defined in the agreements under which the utility sells power on an interruptible basis.

From a planning perspective, a utility does not need to plan generation resources to serve interruptible load. Rather, the planning process basically focuses on the needs of firm customers. It is the peak loads of the customers which drive the amount of generating resources required to provide firm service to firm customers. (Empire is summer peaking, but also has a very high winter load as well. Loads in other months are much less.)

Having arranged for that amount of generation resources (installed generation capacity and/or firm purchased power) necessary to provide firm service, a utility is able to sell power on an interruptible basis to customers willing to accept less than firm service. The power is sold to the interruptible customers when it is not needed to supply the needs of the firm customers. This obviously allows the utility to operate with a smaller amount of generation capacity than would be the case if all load were served on a firm basis.

Cost of Service Results

Q BASED ON EMPIRE'S A&E COST OF SERVICE STUDY HAVE YOU DETERMINED THE INCREASES REQUIRED TO PRODUCE RATES TO EQUAL COST OF SERVICE AT THE COMPANY'S CLAIMED REVENUE REQUIREMENT?

A Yes. Schedule 2[2] summarizes this data from the cost of service studies. This study treats Praxair's interruptible load the same way that Empire treats it – i.e., as firm load with a revenue credit. The present rate revenues shown in Column 1 are from Line 27 on Page 1 of Empire's Schedule 1 in Section N. The total cost of service (Column 2) is from Line 19, and the increase required to equalize rates of return (Columns 3 and 4) is from Lines 30 and 31.

Q WHAT IS THE SIGNIFICANCE OF THE DOLLARS AND PERCENTAGES SHOWN IN COLUMNS 3 AND 4?

A These numbers represent the increases over current rates that would be required if Empire were granted the full amount of revenue increase that it claims to have justified, and if all classes were moved to cost of service as measured by Empire's A&E cost of service study.

[2] Schedule 1 is attached to my September 20, 2004 direct testimony on revenue requirements.

Q WHAT IS YOUR RECOMMENDATION FOR DISTRIBUTING ANY RATE INCREASE FOUND APPROPRIATE IN THIS PROCEEDING?

A I am recommending the equal percentage approach proposed by Empire. However, if the Commission determines that it is prepared to move classes closer to cost of service, then it should vary from the across-the-board increase in the directions indicated by the numbers in Column 4 on Schedule 2.

Fuel and Purchased Power Cost Recovery

Q WHAT AMOUNT OF FUEL AND PURCHASED POWER COST IS INCLUDED IN EMPIRE'S PROPOSED REVENUE REQUIREMENT AND IN ITS CLASS COST OF SERVICE STUDY?

A Empire has included $123 million of fuel and purchased power cost (total company basis) in deriving its proposed revenue requirement and in performing its class cost of service study. On a Missouri jurisdictional basis this converts to approximately $101 million. This demonstrates that the class cost of service results are valid at the maximum level of fuel cost recovery being considered.

Q HOW SHOULD THE AMOUNT OF ANY ALLOWED REFUNDABLE COST RECOVERY MECHANISM BE RECOVERED AND IDENTIFIED IN THE RATE SCHEDULES?

A Let me respond by using round numbers and a straightforward example. Empire's current rate revenue is approximately $238 million. For purposes of illustration assume that the Commission grants Empire an increase of $22 million in base rates, and in addition allows $10 million to be recovered through a refundable mechanism. The total base rate revenues after the increase would then be $260 million. The $10

million of refundable charges would be 3.85% of $260 million. For purposes of constructing the mechanism and for determining refund entitlements, 3.85% would be used as an adder to the base rate revenues of each rate schedule.

To the extent that a refund entitlement is determined at the end of the two-year period, that amount would be divided by base rate revenues and refunded to each rate schedule and each customer within each schedule a uniform percentage of base rate revenues.

Q COULD THIS BE DONE ANY OTHER WAY?

A Yes. Alternatively, after having first allocated the surcharge amounts to each rate schedule as an equal percentage of base rate revenues, the dollar amounts so determined could be divided by the kilowatthour sales to each schedule and the recoveries tracked as an amount per kilowatthour – which would be different for each schedule.

Rate Design

Q ARE THERE ANY SPECIFIC RATE DESIGN ISSUES THAT YOU WISH TO RAISE?

A Yes. Explorer Pipeline Company recently has added two points of service on the Empire system. There are pumping stations at Joplin, Missouri and at Springfield, Missouri. They currently take service on the LP rate.

Q IS THERE ANYTHING UNIQUE ABOUT THESE LOCATIONS?

A Yes. At both locations Explorer owns the step-down substation and takes service from Empire at 69,000 volts. To my knowledge, only one other customer on the LP rate takes service at this high voltage and furnishes its own step-down substation.

Q DOES THIS METHOD OF TAKING SERVICE REDUCE THE COSTS THAT EMPIRE INCURS IN SUPPLYING IT?

A Yes. As distinguished from other customers on the LP rate, Empire does not need to make any investment in the distribution system (except for metering) in order to provide service to these two Explorer Pipeline Company accounts because they take service at 69,000 volts, and allow Empire to avoid the investment in step-down substations and in the entire distribution system network.

Q DOES THE LP RATE HAVE A MEANS TO RECOGNIZE THIS LOWER COST?

A No, it does not. The LP rate essentially assumes customers take service at the primary voltage level.

Q DO YOU HAVE A RECOMMENDATION AS TO HOW TO RECOGNIZE THIS BENEFICIAL SERVICE CHARACTERISTIC OF EXPLORER PIPELINE COMPANY AT THESE TWO LOCATIONS BY REFLECTING A LOWER COST IN THE RATE?

A Yes. It would be appropriate to include a high voltage credit in the rate that would allow Explorer Pipeline Company to benefit from the fact that it allows Empire to avoid distribution system costs.

Q DO YOU HAVE A SPECIFIC RECOMMENDATION?

A Yes.

Q PLEASE EXPLAIN.

A As previously noted, Empire does not incur any distribution costs, except for metering, because of the fact that Explorer receives service at the 69,000

transmission level at these two facilities. It would be appropriate to calculate a credit equal to the amount of distribution cost that is included in the LP rate.

Q HAVE YOU MADE THIS CALCULATION?

A Yes. This appears on Schedule 3 attached to this testimony. I calculated the amount of return on investment, income taxes, depreciation and O&M expense associated with the primary system investment (excluding meters) that is associated with service on the LP rate schedule.

Q WHAT IS YOUR RECOMMENDATION?

A The calculations on Schedule 3 are based on Empire's claimed return, depreciation expense and other matters. It is unlikely that Empire will prevail in the entirety on these matters. Therefore, I recommend that a more conservative credit equal to $1.50 per KW-month be included in the LP tariff to accommodate any customer taking service at the transmission voltage level. Note that this does not affect the allocation of any increase between the LP rate and other classes. It is strictly a cost-based rearrangement of cost collection within the LP tariff.

Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY ON COST OF SERVICE AND RATE DESIGN?

A Yes, it does

MEB:cs/8228/49708

THE EMPIRE DISTRICT ELECTRIC COMPANY

Results of Class Cost of Service Study
Twelve Months Ended December 31, 2003
(Dollars in Thousands)

Line	Class	Present Rate Revenue (1)	Cost of Service at Proposed Revenue Requirement (2)	Increase to Cost of Service Amount (3)	Increase to Cost of Service Percent (4)	Increase Proposed[1] Amount (5)	Increase Proposed[1] Percent (6)
1	Residential	$ 108,355	$ 146,534	$ 38,179	35.23%	$ 23,831	21.99%
2	Commercial Service	24,627	27,988	3,361	13.65%	5,416	21.99%
3	Com. Small Heat	5,825	6,718	893	15.33%	1,281	21.99%
4	General Power	43,599	46,360	2,761	6.33%	9,589	21.99%
5	Praxair	2,421	2,611	190	7.85%	533	21.99%
6	Total Electric Building	19,095	20,649	1,554	8.14%	4,200	21.99%
7	Feed Mill	97	90	(6)	-6.60%	21	21.99%
8	Large Power	29,855	33,869	4,015	13.45%	6,566	21.99%
9	Misc. Services	45	36	(9)	-20.00%	10	21.99%
10	Lighting	4,271	5,721	1,449	33.93%	939	21.99%
11	Total Missouri Retail	$ 238,191	$ 290,576	$ 52,386	21.99%	$ 52,386	21.99%

[1]Empire has restricted its request to $38 million, or about 16%, allocated as an equal percent to all classes.

THE EMPIRE DISTRICT ELECTRIC COMPANY

Calculation of Transmission Voltage Service Credits for Rate LP

Line	Description	Total Rate LP Amount[1] (000) (1)	Credit per kW per Month (2)
1	Distribution Plant in Service	$ 19,415	
2	Less Account 370 (Metering)	(275)	
3	Distribution Plant Excluding Metering	19,139	
4	Distribution Plant Reserve for Depreciation	6,895	
5	Less Account 370 (Metering)	(99)	
6	Distribution Plant Reserve Excl Metering	6,796	
7	Net Distribution Plant Other than Metering	$ 12,343	
8	Return and Income Tax as a Percent of Rate Base[2]	13%	
9	Return and Income Tax	$ 1,605	$ 1.20
10	Depreciation Expense - Distribution	1,086	0.81
11	Total Return, Income Tax and Depreciation	2,691	2.02
12	Distribution O&M Expenses - Demand Related	496	0.37
13	Total	$ 3,187	$ 2.39
14	Total Rate LP Billing Demand in kW	1,333,000	

[1] Information is from Section N, Schedule 1 of Empire's rate filing.
[2] ($1,582 - $508 + $21,110 + $58,327) ÷ $611,396 = 13%