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Witness: H. Edwin Overcast
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Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

H. Edwin Overcast

April 2004

Testimony of

H. Edwin Overcast

On behalf of

The Empire District Electric Company

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.

A. H. Edwin Overcast, Vice President R. J. Rudden Associates, Inc.

Q. WHAT IS YOUR BUSINESS ADDRESS?

A. My business address is 3521 Eagle Landing Drive, Snellville, Georgia 30039.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. A detailed summary of my educational and professional experience is provided in Schedule HEO-1 to this testimony. I have a B. A. degree in economics from King College and a Ph.D. degree in economics from Virginia Polytechnic Institute and State University. I have been employed in the energy industry for almost 30 years in various rate, regulatory and planning positions. In my various positions, I have testified before state and federal regulatory bodies, state and federal legislative bodies and in various courts. My testimony has addressed a variety of issues including cost allocation, rate design, regulatory policy, open access and unbundling, bypass economics, forecasting, gas supply

planning, and a number of other issues. In addition, I have been a lecturer in a number of energy industry sponsored training programs including: the Edison Electric Institute Rate Fundamentals Course and the Advanced Rate Course; the American Gas Association Rate Course and the Advanced Rate School; and the Southern Gas Association Intermediate Rate Course. Specifically, I have lectured on the principles of electric cost of service for both retail and wholesale jurisdictions.

Q. ON WHOSE BEHALF ARE YOU APPEARING?

A. I am appearing on behalf of The Empire District Electric Company ("Empire" or "the Company").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Empire requested that I review their retail rates with respect to rate design and provide recommendations regarding cost recovery. Based on that review, I discuss issues related to appropriate fixed cost recovery, the seasonal differential contained in the rates and make certain recommendations.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that the Missouri Public Service Commission ("the Commission") modify the existing rates as follows:

- Substantially increase the customer charge component, particularly for residential and commercial service rates to reflect fixed costs and to improve the efficiency of the rates;
- Reduce the seasonal rate differential contained in the energy charge of the rates and eliminate the seasonal demand charge as appropriate to

match actual cost differences and send more appropriate price signals to consumers; and

- Approve an alternative for managing the risk of changing fuel and purchased power costs.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. The testimony is organized as follows: Section One summarizes rate design principles that underlie the recommended changes to the rates. Section Two discusses the seasonal differential and the qualitative and quantitative analyses supporting the recommended changes to the differential. Section Three discusses the issues of fixed cost recovery and the appropriate level for the customer charge in residential and commercial rates. Section Four discusses options for the recovery of the volatile fuel and purchased power cost component of the rates. Finally, Section Five provides a summary of my detailed recommendations and conclusions.

SECTION ONE – PRINCIPLES OF RATE DESIGN

Q. PLEASE IDENTIFY THE PRINCIPLES OF RATE DESIGN YOU HAVE RELIED UPON TO ANALYZE THE ISSUES OF FIXED COST RECOVERY AND SEASONAL DIFFERENTIAL.

A. There are a number of tariff design principles or objectives that find broad acceptance in regulatory and policy literature. These include:

1. Efficiency;

2. Cost of Service;
3. Value of Service;
4. Stability;
5. Non-Discrimination;
6. Administrative Simplicity;
7. Comparability; and
8. Balanced Budget.

These rate design principles draw heavily on the "Attributes of a Sound Rate Structure" developed by James Bonbright in Principles of Public Utility Rates. Each of these principles plays an important role in analyzing the proposals developed in my testimony. To understand the role these principles play, each of the principles are discussed below.

Q. PLEASE DISCUSS THE PRINCIPLE OF EFFICIENCY.

A. The principle efficiency broadly incorporates both economic and technical efficiency. As such, this principle has both a pricing dimension and an engineering dimension. Economically efficient pricing promotes good decision-making by electric producers and consumers, fosters efficient expansion of capacity, results in efficient capital investment in customer facilities, and facilitates the efficient use of existing generation, transmission and distribution resources. Efficient prices reflect marginal cost while also recovering the total

authorized cost of service. The efficiency principle benefits stakeholders by creating outcomes for regulation consistent with the long-run benefits of competition while permitting the economies of scale consistent with the best cost for service.

Q. PLEASE DISCUSS THE COST OF SERVICE AND VALUE OF SERVICE PRINCIPLES.

A. These principles each relate to designing rates that recover the total revenue requirement without causing inefficient choices by consumers. The cost of service principle contrasts with the value of service principle when certain transactions do not occur at price levels determined by embedded cost of service. In essence, the value of service acts as a ceiling on prices. Where prices are set at levels higher than the value of service, consumers will not purchase the service. From a market perspective, marginal cost serves as the floor for pricing. Therefore, appropriate prices must lie between the marginal cost floor and the value of service ceiling. The concept of cost of service is only relevant so long as it produces rates that fall within the floor and ceiling. These issues are most significant in relation to system bypass economics. If opportunities exist for economic bypass, the bypass option establishes the value of service ceiling. In the evaluation of a bypass response, rates should only be discounted to the marginal cost floor. Where the marginal cost floor is below the value of service, the bypass is uneconomic from a societal perspective and

discounting benefits all market participants. Further, the calculation of the precise cost of service is not possible where joint and common costs must be allocated to customer classes. For this reason alone, the regulatory process produces multiple cost of service outcomes based on the assumptions regarding the allocation of joint and common costs. Nevertheless, cost of service studies, properly reflecting cost causation, provide a reasonable tool for the allocation of revenue requirements among customer groups.

Q. PLEASE DISCUSS THE PRINCIPLE OF STABILITY.

A. The principle of stability typically applies to customer rates. This principle suggests that reasonably stable and predictable prices are an important market feature. In competitive wholesale electric markets, the fundamental short-run nature of fixed supply and fluctuating demand creates short-term price volatility to clear the market. There will always be occasions where competitive market prices must rise in the short run to equate supply and demand. This volatility is a necessary condition for promoting economically efficient use of utility service. Utility consumers and regulators often desire price stability, and consequently only product and service offerings that feature stability on a seasonal, annual or multi-year basis are authorized. Thus, the risk of real-time market price instability is borne either by the utility or its customers on a prospective basis. Where the utility bears this risk, an appropriate rate of return on investment must be included in rates to compensate for this unique risk

element. The cost for managing market price volatility (as measured by return requirements) is typically quite significant. In general, the preferred solution is to manage the risk through the market and pass those costs to consumers resulting in a lower total cost for most consumers. It is important to note that price signals only work if consumers who respond by reducing demand to alleviate the congestion receive some benefit from doing so. Thus, fixing retail prices denies the signal to consumers and frustrates the rationing efficiency of price signals.

Q. PLEASE DISCUSS THE CONCEPT OF NON-DISCRIMINATION.

A. The concept non-discrimination requires prices designed to promote fairness and avoid undue discrimination. Fairness requires no undue subsidization either between customers in the same class or across different classes of customers. Rates are subsidy free when no customer pays less than marginal cost or more than stand alone costs. Non-discrimination requires that all customers be charged the same price for comparable service. A key point with respect to non-discrimination is comparability of service. There are many factors used to determine comparable service. Among the factors are location, facility ownership, service voltage, demand characteristics, size, type of service and a variety of other considerations. The importance of comparability issues is critical to the development of non-discriminatory pricing. Equally important is the concept that no customer pays less than marginal cost. There are significant

implications for this policy requirement relative to the customer charge component of residential and small commercial rates as discussed more fully below.

Q. PLEASE DISCUSS THE PRINCIPLE OF ADMINISTRATIVE SIMPLICITY.

A. The principle of administrative simplicity as it relates to tariff design requires prices reasonably simple to administer and understand. This concept includes price transparency. Prices are transparent when customers are able to reasonably calculate bill levels and interpret details about the charges resulting from the application of the tariff.

Q. PLEASE DISCUSS THE PRINCIPLE OF COMPARABILITY.

A. The principle of comparable services reflects consideration of the types and prices of services offered in other jurisdictions and by other companies in the same jurisdiction. It recognizes that fundamental service characteristics differ for many reasons and that there is much to gain from comparisons to the best knowledge and innovations reflected in other tariff designs.

Q. PLEASE DISCUSS THE PRINCIPLE OF THE BALANCED BUDGET.

A. Finally, there is the critical principle that rates be designed to recover the allowed revenue requirement based on the cost of service. Rate design becomes a critical element for cost recovery. Improperly designed rates deprive the utility of a reasonable opportunity to recover revenue requirements where actual billing determinants and test year billing determinants differ, as they almost certainly will. If rate elements reflect marginal cost, changes in the billing determinants over time match changes in cost and revenues. Rates calculated at average cost may result in over or under recovery of costs as billing determinants change from those in the test year.

Q. ARE THERE CONFLICTS THAT OCCUR BETWEEN THESE PRINCIPLES?

A. Yes. These principles often result in conflicting guidance. Detailed discussion of tariff principles recognizes the potential and actual conflicts imposed by these principles. Indeed, Bonbright discusses these conflicts in detail. Tariff design recommendations must deal effectively with such conflicts. For example, as noted above, there are potential conflicts related to cost and value of service principles. There are direct conflicts between the use of embedded cost of service for determining revenue requirements, using average cost to price services and marginal cost pricing to promote efficiency.

Q. PLEASE DESCRIBE THE CONFLICT BETWEEN MARGINAL COST PRICE SIGNALS AND RECOVERY OF THE REVENUE REQUIREMENT.

A. The conflict between good price signals based on marginal cost and a balanced budget or revenue recovery principle arises because marginal cost is below average cost due to economies of scale. Marginal cost tends to be either above or below average cost in both the short run and the long run. This means that marginal cost based pricing will produce either too much or too little revenue to support the revenue requirement. This suggests that efficient price signals require a multi-part tariff designed to meet the revenue requirements while sending marginal cost price signals related to consumption decisions. Properly designed, a multi-part tariff includes elements such as access charges, facilities charges, demand charges, consumption charges and the potential for revenue credits. Taken together, these elements permit good price signals and revenue recovery; however, the tariff design becomes more difficult to structure and likely will no longer meet the requirements of simplicity. Therefore, some economic efficiency may be sacrificed for certain customer classes in order to maintain simplicity. For example, it is not common to include demand charges in residential rates. From the view of economically efficient price signals, some efficiency is sacrificed. However, from an overall cost efficiency, the sacrifice is small because of the added costs to meter customer demand compared to the ability of customers to manage demand on their own.

Q. ARE THERE OTHER POTENTIAL CONFLICTS?

A. Yes. There are potential conflicts between simplicity and non-discrimination and between value of service and non-discrimination. Other potential conflicts arise when companies face unique circumstances that must be considered as part of the tariff design process.

Q. HOW ARE THESE PRINCIPLES TRANSLATED INTO THE DESIGN OF A RETAIL TARIFF?

A. The process of developing rates within the context of these principles requires a detailed understanding of all the factors that impact rate design. These factors include:

1. System cost characteristics such as the embedded customer, demand and energy costs as well as marginal costs by season, time-of-day, voltage level of service and type of service;
2. Customer load characteristics such as peak demand, load factor, seasonality of loads, and quality of service;
3. Market considerations such as elasticity of demand, competitive fuel prices, end-use load characteristics and bypass alternatives; and

4. Other considerations such as the value of service ceiling/marginal cost floor, unique customer requirements, areas of under-utilized facilities, opportunities to offer new services and the status of competitive market development.

Q. PLEASE CONTINUE.

A. In addition, the development of rates must consider the existing rates and how modifications of those rates impact consumers. Where rates have not been regularly reviewed and adjusted to reflect current cost and operating realities, any plan to change rate design should consider a process to migrate gradually from old rates to new, to avoid significant potential adverse impact on customer total bills.

Translation of objectives into rate design must also consider the anatomy of potential rates. The basic structure of a typical rate schedule consists of a customer charge and/or other fixed charges, demand charges, energy charges and automatic adjustment charges. There are numerous variations of rate designs using these basic components. In each case, a rate design seeks to recover the authorized level of revenue based on the actual billing determinants occurring during the test period used to develop the rates.

SECTION TWO- THE SEASONAL DIFFERENTIAL

Q. PLEASE DISCUSS THE BASIS FOR A SEASONAL DIFFERENTIAL IN ELECTRIC RATES.

A. A seasonal differential is appropriate where costs differ significantly by season of the year. The seasonal differential recognizes that system operating conditions and therefore costs may differ in a predictable pattern. There are a number of reasons for costs differences to arise based on seasons of the year. The existence of seasonal cost differences is most often driven by the mix of fuels used to produce energy to meet the peak demands of the system and the intensity of those peak demands. Where the maximum demand on capacity of the system differs significantly, there may also be seasonal capacity cost differentials. It is important in analyzing seasonal cost differences to understand the total demand on the resources of the system. Customer load does not represent the total demand on the capacity resources of the system. The demand on system resources also includes scheduled outages, unit de-ratings and unit forced outages. These latter three demands generally represent a smaller total impact than load but must also be considered in evaluating seasonal differentials related to a capacity cost component.

Q. HAVE YOU REVIEWED THE SEASONAL COST DIFFERENTIAL FOR THE COMPANY?

A. Yes. I have analyzed the seasonal energy and capacity cost differences and have determined that the current seasonal cost differential is too large and does not reflect the actual cost differences for the test year.

Q. PLEASE EXPLAIN THE ANALYSIS USED TO DETERMINE THE SEASONAL COST DIFFERENTIAL.

A. The fundamental consideration of the seasonal differential is to minimize the cost variance within a season and to maximize the variance of costs between seasons. The seasonal energy costs differential calculation uses an analysis of the average of the hourly marginal costs for the test year. The analysis begins by establishing certain practical constraints on the development of the differential. The practical constraints include the following: a season must consist of at least two consecutive months; a maximum number of four seasons is permitted; all days within a calendar month are treated equally; and seasons must begin at the beginning of a calendar month and end at the end of a calendar month. The second step of the analysis determined the variance of costs within a group of possible seasons and the variance between the seasonal options. The ratio of the cost variance between seasons and the cost variance within seasons that is the largest determines the best seasonal combination. This ratio is designated as the F-statistic. (One use of the F-statistic is to compare the variances of populations, hence the use of the term in this context.)

Q. Please describe the results of the analysis.

A. Summary results are illustrated in Schedule HEO-2. As the schedule illustrates, the most appropriate seasonal combination based on energy costs consists of a peak season made up of the months of July and August and an off-peak season for the remainder of the year. This combination of months produces the largest value for the F-statistic. Under the current tariff, the summer season consists largely of the billing months of June through September. This option results in a substantially lower F-statistic and therefore does not represent the most appropriate costing period for seasonal rates. The difference in marginal cost between the seasons represents the maximum seasonal differential in the energy cost component of the rate.

Q. PLEASE DESCRIBE THE APPROPRIATE DIFFERENTIAL IN THE SEASONAL COMPONENT OF THE ENERGY CHARGE.

A. The energy charge differential should reflect the difference in marginal costs between the seasons adjusted for the losses associated with the voltage level of service. The differential between the peak season (defined as the calendar months of July and August) and the off-peak season (the other ten months of the year) at the generation bus is $ 0.01215 per kilowatt-hour. This value is divided by one minus the loss factor applicable to the particular service schedule produces the maximum seasonal differential. If rates are not based on marginal

cost but on average cost, there is almost no seasonal differential. In that case, the differential is $ 0.00418 per kilowatt-hour adjusted upward for the losses as noted above. In any event, there is no justification for the current differential of over two and one-half cents.

Q. WHAT IS THE IMPLICATION OF THIS ANALYSIS FOR THE SEASONAL DIFFERENTIAL IF THE CURRENT PEAK SEASON IS MAINTAINED?

A. The continuation of the current season for purposes of rate stability would produce an even lower season differential based on either marginal or average cost. On the basis of marginal cost the resulting differential is $0.00683 divided by the loss adjustment factor or less than one cent per kilowatt-hour. The average cost differential is well below this figure at $0.00219 divided by the loss adjustment factor. At these levels, the seasonal differential becomes inconsequential to consumers. Further, the implicit intra-class subsidy resulting from the collection of a disproportionate share of fixed costs from customers using more energy becomes larger than the seasonal differential. This implies the need for a declining block rate in both the peak and off-peak season.

Q. HOW DOES THE ISSUE OF MARGINAL CAPACITY COST IMPACT THE SEASONAL DIFFERENTIAL?

A. Given the current capacity situation and the annual demands on that capacity, there does not appear to be a seasonal capacity cost differential. The maximum winter and summer peak loads are nearly equal. When the total demand on capacity is considered, there is no justification for a seasonal allocation of marginal capacity costs. Further, short-run marginal capacity costs associated with generation are zero. That is, the Company has no immediate plans to expand capacity. With respect to the distribution peaks, or the class non-coincident peaks, residential customers are winter peaking, as are the total electric and space-heating commercial classes. These same classes also experience their maximum coincident peak in the winter as well. It is reasonable to conclude that the only basis for the seasonal differential is the marginal energy cost differences.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS RELATED TO THE SEASONAL DIFFERENTIAL.

A. The current differential is too large and needs to be reduced for all classes of customers where a seasonal differential is part of the rate schedule. The current peak season is not optimal on an analytic basis. While an alternate definition of the peak season is attractive from a technical perspective, the practical aspects of altering the peak season probably do not warrant the change currently. These practical aspects include the necessity to provide consumers with the information required to respond to a changing set of price signals and to analyze

the customer impacts of such a change. Since even the optimum peak season has a relatively small differential, changing the definition does not seem warranted. It is much more important, in my view, to redesign the rates with a smaller differential and to increase fixed charges, as discussed below, to reflect the significant fixed cost component of the rates. I recommend the following:

- The maximum differential for each class be set at the loss-adjusted level using the generation cost of $0.0068 per kilowatt-hour.
- Where the Company uses energy only rates, the rate structure adopted by the Company be a declining block rate in both seasons with the peak season last block of the rate being higher than the off-peak season as discussed above.

SECTION THREE – FIXED COST RECOVERY AND CUSTOMER CHARGES

Q. PLEASE DISCUSS THE IMPORTANCE OF RECOVERING FIXED COSTS IN FIXED CHAGES.

A. The typical electric utility has both fixed and variable costs. On average about 60% of electric costs are fixed. Sound rate design permits recovery of fixed costs in fixed charges. Importantly, the economic circumstances for the Company require higher customer charges to promote economic efficiency.

Q. PLEASE DESCRIBE THE ROLE OF CUSTOMER CHARGES IN SOUND RATE DESIGN.

A. The customer charge is an important element of an economically efficient and sound rate design. At a minimum, the customer charge recovers the out of pocket cost of serving a customer (the marginal customer costs). At the maximum, an efficient customer charge recovers all of the fixed costs of service to customers. The marginal customer cost includes the carrying cost of the capital invested in facilities at the customer's location, the cost of meter reading, billing, customer service and any other costs associated with the facilities at the customer's premises. The customer charge is also the element of rate design that is the appropriate element to recover average costs above marginal costs in an efficient rate design. To provide context for the role of the customer charge in rate design and to guide the choice of an efficient customer charge from within the theoretical range, the appropriate basis for analysis relies on the principles of rate design discussed in Section One above. The principles of rate design provide important guidance for the appropriate level of the customer charge as discussed below. Importantly, these principles support significant increases to the customer charge component of the electric rates proposed in this case.

Q. PLEASE DESCRIBE THE ROLE OF THE CUSTOMER CHARGE AS IT RELATES TO THE PRINCIPLES OF STABILITY AND A BALANCED BUDGET.

A. With respect to the balanced budget or revenue related attributes, increased customer charges result in a better opportunity for the Company to recover the approved revenue requirement. The obvious reason is that the normal weather used to design rates is unlikely to occur. Higher customer charges lessen the impact of weather variation on the revenues from higher or lower kilowatt-hour sales. For the delivery or distribution service portion of revenue requirements at issue in this case, the costs are fixed and do not vary with the weather or even with the level of energy consumed. As a corollary, the higher customer charges reduce the adverse impact on customer bills associated with colder than normal winter weather and warmer than normal summer weather. Customer bills are lower than normal with warmer winter weather because of lower kilowatt-hour charges and lower than normal with cooler summer weather for the same reason. There are tangible policy benefits for customers from this rate design change. For example, the customers most affected by warmer than normal weather- low-income customers- benefit from the bill mitigation under warmer than normal weather. These customers typically demonstrate relatively greater weather sensitivity than do customers as a whole because of the relative efficiency of their available stock of capital. By collecting more revenues in the customer charge and less in weather sensitive kilowatt-hour rates, these customers experience lower overall bill increases and without bearing a disproportionate share of fixed costs. Further, customers experience greater bill predictability from this proposal. In the future, it is reasonable to expect that

both cost and efficiency will require further increases in the customer charge. Implementing the increased customer charges proposed by the Company now in conjunction with the proposed rate increase takes the first step toward significantly improved rates. The rate design proposed by the Company enhances its financial flexibility by creating a more stable and predictable stream of revenues thus satisfying the principles of stability and a balanced budget.

Q. PLEASE EXPLAIN THE ROLE OF CUSTOMER CHARGES IN SATISFYING THE EFFICIENCY PRINCIPLE.

A. Economic efficiency requires that price (rates) equal short-run marginal cost. Nearly all of the costs for electric distribution are fixed. For this reason alone, the short-run marginal cost of the electric distribution or delivery system is close to zero. The short-run marginal cost of generation and transmission is the variable cost of production. The long-run marginal cost for electric distribution tends to be relatively low as well because most of the cost for new customers is related to extending the delivery system to attach new customers. This simply means that minimizing the kilowatt-hour charges for electric rates and increasing the customer-based charges produces more economically efficient rates.

Q. PLEASE DISCUSS THE ROLE OF THE CUSTOMER CHARGE IN SATISFYING THE VARIOUS COST PRINCIPLES.

A. By recovering fixed costs in fixed charges, rate design satisfies the various cost related principles discussed above. Among the important benefits of the proposed customer charge increase is the elimination of subsidies related to the distribution component of Company rates. The cost of service principle and the value of service principle require an understanding of the importance of the allocation of common costs. The argument related to the allocation of common costs among customer classes and within customer classes supports an increase in the customer charge. The test for subsidy free rates (in the economic context as opposed to the regulatory return analysis) requires that each rate element exceed marginal cost and that no customer pay more than the stand-alone cost of service. Failure to approve subsidy free rates causes economic distortions that harm all market participants. Subsidy free rates result in a sharing of common costs among customers and improve the economics for all customers. Where rates seek recovery of common costs above marginal cost in commodity related charges, there is a predictable result. Namely, customers make uneconomic decisions about their use of energy. Higher customer charges permit lower kilowatt-hour charges and move rates for consumption closer to the economically efficient level of marginal cost.

Q. PLEASE DESCRIBE THE ROLE OF THE CUSTOMER CHARGE IN SATISFYING THE PRACTICAL ASPECTS OF ADMINISTRATIVE SIMPLICITY AND NON-DISCRIMINATION.

A. Customer charge increases also satisfy the practical attributes of rate design. By adopting the proposed customer charges regardless of the final approved revenue level, the Commission continues the process of simplifying the rates while also providing the other benefits discussed above. Customers currently pay for other services with fixed costs through fixed charges. For example, network service providers use customer charges to recover costs and in some cases customers pay the entire network cost as a fixed charge. For example, telephone and cell phone users pay for the fixed cost network with customer charges. Movement to more efficient rate designs is a critical element in the process of improving the market for utility services.

Q. WHAT IS THE LEVEL OF AVERAGE CUSTOMER COSTS FOR RESIDENTIAL CUSTOMERS?

A. Based on the cost of service study filed by the Company, the average residential customer cost is about $24.00 per month.

Q. WHAT IS THE LEVEL OF THE MARGINAL CUSTOMER COST FOR RESIDENTIAL CUSTOMERTS?

A. The marginal customer cost consists of the sum of the economic carrying cost of the investment in facilities at the customer premise plus the fully loaded expenses for meter reading, billing and customer service. This represents the minimum level of the customer charge. Customer related facilities include the electric meter, the service drop and the distribution transformer. The capital cost of these three local facilities is almost $550 for a new customer. The carrying charge based on a levelized cost using the composite depreciation rate of 20 years, the proposed capital structure and the proposed return results in a carrying charge for the financial aspect of this plant at over 13.5 percent. Adding a two percent adjustment for operation and maintenance (O&M) expense (the ratio of actual O&M to gross plant) results in a total plant cost of about $85 per year. The fully loaded billing expense is over $60 per year. As a result, a reasonable estimate of marginal customer cost is over $12 per month. Thus, the customer charge should not be less than $12 per month for residential customers.

Q. ARE THERE OTHER CONSIDERATIONS BEYOND EMBEDDED AND MARGINAL COST WHEN SETTING THE CUSTOMER CHARGE?

A. Yes. The design of economically efficient block rates suggests that the kilowatt-hour price be set at marginal cost and the remainder of the revenue requirement be recovered in the fixed charge. By adopting a declining block rate for both

seasons, some of the costs that would otherwise apply to the customer component may be recovered in the initial rate block. Nevertheless, a substantial increase in the customer charge component of the rate is warranted.

Q. DO OTHER ELECTRIC UTILITIES, NOT SUBJECT TO REGULATION, USE HIGHER CUSTOMER CHARGES?

A. Yes. Cooperative utilities are not subject to rate regulation. A review of their minimum service charges demonstrates that the Company's current charge is well below those of other electric companies whose members determine the customer charge (Availability charge or minimum bill). Based on a review of the monthly fixed charge for residential rates among the Missouri cooperatives that provided information in response to my request or from their rates available on the internet only one has a fixed charge lower than the Company approved rate of $8.75. Many of these cooperatives have fixed charges in excess of $12.00 per month. The maximum charge is $25.00 per month. The important point is that the customer-owners of these utilities accept the importance of the customer charge as a tool of sound rate design.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATION REGARDING THE CUSTOMER CHARGE.

A. The residential customer charge needs to be increased to at least $12.00 per month. For reasons of economic efficiency and maintaining appropriate rates for energy, I recommend a customer charge of $15 per month. The commercial customer charge needs to be increased to at least $20.00 per month. These increases should occur regardless of the final level of revenue requirement authorized in this case in order to improve the efficiency of the rates.

SECTION FOUR- RECOVERING FUEL AND PURCHASED POWER COSTS

Q. PLEASE DISCUSS THE REGULATORY TREATMENT FOR HIGHLY VARIABLE COSTS.

A. In many jurisdictions the cost of fuel and purchased power expense is recovered through an adjustment mechanism designed to permit periodic changes in this cost component to reflect the actual, prudently incurred cost of fuel and purchased power. In most cases, the cost of fuel and purchased power is based on competitive market transactions where the utility has no market power with respect to the price it pays for fuel purchases or to purchase power in the market. The market for fuels, in particular natural gas and oil, and the market for purchased power exhibit substantial price volatility in the short-run. To protect both consumers and investors from unfavorable outcomes as result of power cost variability, commissions employ a variety of cost adjustment options. In addition to cost adjustment options, there are other regulatory

alternatives designed to produce efficient outcomes for all stakeholders where costs are volatile and unpredictable.

Q. PLEASE DESCRIBE ALTERNATIVES TO ADJUSTMENT CLAUSES THAT MAY BE USED TO MINIMIZE THE RISK OF COST VOLATILITY.

A. There are several types of alternatives to adjustment clauses that have been approved by regulatory agencies. One such option is the use of a formula rate. A formula rate establishes the charge for service based on a specific formula approved in advance by the regulatory authority. The formula charge is calculated on a known frequency such as annual or quarterly. Charges resulting from the formula are applied during the formulaic period. A second option is for the utility to acquire its service from a third party using a competitive bidding process. Under this option, the price risk for the cost volatility is borne by the third party. The market determines the appropriate level of risk compensation and includes that cost as part of the bid price. Customers benefit from the fixed price of energy based on the winning competitive market bid. A third option is to insure against the risk of energy price volatility through a financial hedge. In this case, the cost of the hedge becomes a part of the utilities cost of service. The common element in any of the alternatives to cost volatility (and thereby earnings volatility) is to also develop an appropriate level of compensation for the risk borne by the utility under alternative solutions.

Q. DOES THE ABSENCE OF A FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE IMPOSE UNIQUE RISKS ON THE COMPANY?

A. Yes. There is a substantial increase in risk under the circumstances faced by the Company. These risks are unique because most of the comparable companies used to estimate the required return typically operate under a different regulatory model. As a practical matter, a reasonable regulatory process must compensate the Company for such risks or must find an alternative that eliminates the risk. In all likelihood, the risk of fuel and purchased power costs is an asymmetric risk. That is, the outcome is more likely to reduce earning than to increase earnings. Standard rate of return does not compensate the Company for such asymmetric risks. Further, the cost of the risk compensation required tends to be large relative to the standard return component even for a fully integrated utility.

SECTION FIVE- CONCLUSIONS

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that the Company rates be designed with a substantially higher customer charge. I suggest that $15.00 is appropriate for residential customers. I also recommend that the seasonal differential be reduced to reflect the actual cost differential based on the mix of generation and purchased power used by

the Company. The resulting residential rate exhibits a declining block energy charge for both summer and winter. I also recommend that the Company institute a full tracking fuel adjustment clause, providing that legislation permits such a clause. If the fuel clause cannot be implemented, I recommend that the Company establish an Interim Energy Charge (IEC). The IEC should permit the Company to recover a reasonable level of fuel costs under extreme weather and operating conditions. In addition, if the Company is permitted an IEC the inherent risk of this procedure should be recognized by allowing the Company to keep a portion of any excess revenue resulting from the IEC as compensation for the unique risks resulting from the application of the IEC.