BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

CASE NO. ER-81-364

In the matter of Arkansas Power & Light Company of Little Rock, Arkansas, for authority to file tariffs increasing rates for electric service provided to customers in the Missouri service area of the Company.

APPEARANCES: James C. Swearengen and W. R. England, III, Attorneys at Law, Hawkins, Brydon & Swearengen, P.C., P. O. Box 456, Jefferson City, Missouri 65102, Steve L. Riggs, General Counsel and Director of Legal Services, Arkansas Power & Light Company, P. O. Box 551, Little Rock, Arkansas 72203, for Arkansas Power & Light Company.

J. B. Schnapp, Attorney at Law, Schnapp, Graham & Reid, 135 East Main Street, Fredericktown, Missouri 63645, for Amax Lead Company of Missouri.

Richard S. Brownlee, III, Attorney at Law, Hendren and Andrae, P. O. Box 1069, Jefferson City, Missouri 65102, for Ozark Lead Company and Cominco American Company.

Edward J. Bust, Attorney at Law, P. O. Box 500, Viburnum, Missouri 65566, for St. Joe Minerals Corporation.

James M. Fischer, Public Counsel, 1014 Northeast Drive, Jefferson City, Missouri 65101, for the Office of the Public Counsel.

Thomas R. Parker, Deputy General Counsel, and Holly E. Peck, Assistant General Counsel, Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102, for the Staff of the Missouri Public Service Commission.

REPORT AND ORDER

The above-styled case involves the filing by Arkansas Power & Light Company of Little Rock, Arkansas, (AP&L) on June 2, 1981, of revised tariffs reflecting increased rates for electric service provided to customers in the Missouri service area of the Company. Said revised tariffs bear a requested effective date of July 2, 1981, and are designed to increase annual Missouri jurisdictional electric revenues by $9,196,000. By orders dated June 19, 1981, and August 12, 1981, the Commission suspended said revised tariffs for an initial period of 120 days and for a further

period of six months, until April 30, 1982, unless otherwise ordered. By the Commission's order of August 12, 1981, a schedule of proceedings was established in this case, including a prehearing conference commencing on February 1, 1982, and a formal hearing for the presentation of testimony and exhibits commencing on February 16, 1982, and continuing through February 26, 1982, as necesary.

Timely applications to intervene in this case were filed by Amax Lead Company of Missouri (Amax), St. Joe Minerals Corporation (St. Joe Minerals), and jointly on behalf of Ozark Lead Company (Ozark Lead) and Cominco American Company (Cominco American). (Collectively, said Intervenors are sometimes hereinafter referred to as "Mining Intervenors" or "Mines".) All of said applications to intervene were granted.

Additionally, a local public hearing for the purpose of receiving testimony from AP&L's Missouri customers regarding the proposed rate increase and the quality of service being provided by the Company was held on March 6, 1982, in Caruthersville, Missouri. Twenty-eight witnesses testified at said hearing and the record of that proceeding constitutes a portion of the record in this case.

The prehearing conference in this case commenced as scheduled at the Commission's offices in Jefferson City, Missouri, on February 1, 1982. The participants at the prehearing conference were AP&L, the Mining Intervenors, the Office of the Public Counsel (Public Counsel), and the Staff of the Missouri Public Service Commission (Staff), and said entities constitute the parties to this proceeding. As a result of negotiations conducted during the prehearing conference, all parties entered into a Stipulation and Agreement as a proposed negotiated dollar settlement of all revenue requirement issues in this case. On February 17, 1982, the parties presented the Stipulation and Agreement to the Commission for its consideration. The proposed settlement contained in the Stipulation and Agreement does not involve the issue of rate design and the parties presented testimony and exhibits on said issue at formal hearings held on February 23 and 24, 1982, at the Commission's offices in Jefferson City, Missouri.

The provision of Section 536.080, RSMo 1978, regarding the reading of the full record by the Commission has not been waived, and the parties have filed briefs pursuant to a briefing schedule providing for simultaneous initial and reply briefs.

On March 31, 1982, a "Motion of St. Louis Industrial Companies for Leave to File a Position Statement" and an attached "Position Statement of St. Louis Industrial Companies on Rate Design Issues" was filed with the Commission in this case. The Joint Petitioners which caused said Motion and Position Statement to be filed with the Commission include: ACF Industries, Inc., Anheuser-Busch, Inc., Chrysler Corporation, General Motors Corporation, Mallinckrodt, Inc., McDonnell Douglas Corporation, Missouri Portland Cement, Monsanto Company, Nooter Corporation, PPG Industries, Incorporated, Pea Ridge Iron Ore Co., and St. Joe Minerals Corporation (hereinafter referred to collectively as "Industrial Petitioners"). The Motion recites, inter alia, that the Industrial Petitioners have intervened and actively participated in numerous cases before this Commission on rate design issues and that collectively they employ many Missouri citizens and represent a substantial portion of the economic base of this state, and that the purpose of their filing of the Position Statement is to advise the Commission of the position of other industrial customers with regard to the rate design proposals presented by the parties in this proceeding.

On April 8, 1982, counsel for Armco, Inc., of Kansas City, Missouri, (Armco) caused to be filed with the Commission a letter which references the filing of the above-described Motion and Position Statemment by the Industrial Petitioners, and which requests Commission consideration of certain views expressed therein on behalf of Armco should the Commission grant the Motion of the Industrial Petitioners.

On April 12, 1982, the Public Counsel filed a response in opposition to the Motion of the Industrial Petitioners, requesting that the Commission deny said Motion. This matter has not previously been ruled upon by the Commission.

The Commission is of the opinion that the arguments submitted by Public Counsel in its response are well taken and the Motion of the Industrial Petitioners

should be denied. The rate design positions advanced by the Industrial Petitioners and by Armco are in support of the cost-of-service analysis espoused by the Mining Intervenors which are parties to this proceeding. As noted by Public Counsel, said Mining Intervenors made timely application to participate in this case and have done so fully, both through the presentation of evidence and the submission of arguments in briefs.

The filing of the Motion and Position Statement by the Industrial Petitioners and the letter on behalf of Armco, Inc. comes more than a month subsequent to the conclusion of the formal hearing at which time the issue of rate design was tried in this case. Neither the Industrial Petitioners nor Armco have offered any explanation as to the reason for the extreme untimeliness of their filings in this matter. The Commission is of the opinion that a more timely filing of requests to file position statements could have properly been considered by the Commission under its rule 4 CSR 240-2.110(17) regarding participation without intervention. However, no good cause has been shown which would justify Commission consideration of the views of nonparties to a proceeding when the same are offered to the Commission and made known to the parties in the midst of a previously established briefing schedule and in such close proximity to the operation of law date.

Therefore, the above-described Motion filed on behalf of the Industrial Petitioners is hereby denied and neither the Position Statement filed by the Industrial Petitioners nor the letter submitted on behalf of Armco, Inc. in reference thereto shall be considered in the Commission's determination of this case.

Findings of Fact

The Missouri Public Service Commission, having considered all of the competent and substantial evidence upon the whole record, makes the following findings of fact:

I. Revenue Requirement

The Stipulation and Agreement, marked for identification as Joint Exhibit No. 1, has been offered into evidence by the parties, and is attached to this Report and Order as Appendix A, and is hereby incorporated by reference. The Stipulation and Agreement represents a negotiated dollar settlement for the sole purpose of the disposing of all issues in this case with the exception of rate design. Certain exhibits were marked for identification and offered into evidence by the parties in conjunction with the Stipulation and Agreement. Those exhibits include: Exhibit Nos. 3, 5, 6 and 7 on behalf of the Staff, and Exhibit Nos. 14 and 15 on behalf of AP&L. At the hearing the Commission indicated that said exhibits would be received into evidence contingent upon the Commission's adoption of the Stipulation and Agreement in resolution of the revenue requirement issues.

The Commission hereby finds that the Stipulation and Agreement, offered into evidence as Joint Exhibit No. 1 in this case, constitutes a reasonable resolution of the revenue requirement issues presented herein and, therefore, concludes that the Stipulation and Agreement should be adopted. As a result of adoption of the Stipulation and Agreement, AP&L shall be authorized to increase Missouri jurisdictional gross annual electric revenues by $5,645,449, exclusive of applicable gross receipts, franchise and other local taxes. Exhibit Nos. 1, 3, 5, 6, 7, 14 and 15 are hereby received into evidence.

II. Rate Design

A. Cost of Service

An electric utility's cost of providing service can be assigned to its customer classes on the basis of cost causation through the performance of a cost of service study. Allocation factors are utilized to assign the various costs of operations to the customer classes, and each allocation factor is intended to indicate the relative responsibility of each customer class for the incurrence of the particular cost involved. Class revenue requirements can then be determined in reference to the cost of service study results, and a rate design can be constructed

with rate schedules within each customer class structured to recover the approved class revenue requirements. AP&L, the Staff, Public Counsel and the Mining Intervenors have presented various forms of cost of service studies in this case for the purpose of assigning responsibility to the customer classes for the causation of AP&L's costs of providing service.

1. AP&L Cost of Service Study

The Company's cost of service study is based upon an adjusted test year ending December 31, 1980, and was submitted in support of the Company's prefiled case in which a $9.2 million revenue deficiency was alleged. An allocation was made from all of the Company's adjusted test year costs to the Missouri retail jurisdiction. AP&L then made an assignment of the Missouri retail amount of each rate base and operating expense item to the Company's various customer classes (residential, small general service, large general service, large power and miscellaneous).

AP&L's assignment of rate base and expense items to its customer classes in its cost of service study submitted in this case follows the general methods employed by the Company in its most recent Arkansas rate proceeding, and involves the successive application of three processes: Functionalization, Classification and Allocation.

Functionalization, in the context of AP&L's cost of service study, refers to the assignment of cost according to major utility functions for the purpose of facilitating the determination of cost causation by customer class. AP&L uses the following categories in this regard: Production, Transmission, Distribution and General. Classification involves the identification of functionalized plant and expense items as either demand, energy, customer or revenue related. The Allocation process involves the development of allocation factors (based upon the classification categories listed above) and the application of such factors to the functionalized rate base and expense items. The intent in developing such allocation factors is to describe the relative responsibility of each customer class in the causation of the costs involved.

The results of AP&L's cost of service study for the Missouri retail jurisdiction are set forth in what has been designated by the Company as "AP&L Exhibit (RKG-1)", page 1 of 51, and "AP&L Exhibit (RKG-2)", page 1 of 2.[1] As noted previously, the costs reflected in AP&L's cost of service study are the costs alleged by the Company in its prefiled case supporting a revenue deficiency of approximately $9.2 million. The adoption of the Stipulation and Agreement regarding revenue requirement issues in this case results in a finding of an annual jurisdictional revenue deficiency for AP&L of $5,645,449. Thus, the costs contained in AP&L's cost of service study do not now correspond to the revenue deficiency which has been determined. AP&L did not submit an updated cost of service study consistent with the stipulated revenue deficiency. Thus, there is no evidence in the record which specifically identifies the assignment of costs to customer classes which would result from applying the Company's total cost of service approach to the revenue requirement which is applicable in this case. The Mining Intervenors have submitted, as part of their initial brief, "scaled down" results of both their own cost of service study and AP&L's cost of service study. Since these "scaled down" results do not correspond to a specific set of rate base and expense items, they can only be considered as approximations of the class cost assignments which would be produced through application of said parties' allocation methods to rate base and expense items supporting a smaller revenue deficiency.

2. Staff Cost of Service Study

The Staff performed its own cost of service study for AP&L's Missouri retail jurisdiction utilizing, with certain adjustments, AP&L's load research data for the twelve months ending December 31, 1980. In developing its cost of service study, the Staff constructed its own set of allocation factors to assign costs to the

---

[1] These "exhibits" are actually attachments to the prefiled direct testimony of AP&L Witness Gilbreath, which is contained, along with the testimony and attachments of other AP&L witnesses, in a single volume which has been received into evidence in this record in its entirety as Exhibit 13.

Company's various customer classes. The Staff submitted an original cost of service study in its prefiled direct case and an updated cost of service study reflecting costs consistent with the stipulated annual jurisdictional revenue deficiency of $5,645,449. There are various minor differences between AP&L and the Staff regarding allocation factors chosen in their respective cost of service studies. However, the two most significant issues between the Company and the Staff involve the method of allocating fixed generation and transmission costs, and the method of allocating distribution costs corresponding to line transformers and secondary lines among the customer classes.

a. Allocation of Fixed Generation and Transmission Costs

The category of fixed generation costs refers to those portions of the Company's investment in plant and its operating expenses which are involved in the generation of electricity and which are generally fixed in nature. The Staff includes in this category the Company's production plant and its production operations and load dispatching expenses.

AP&L, in its cost of service study, allocates fixed generation and transmission costs to its customer classes based upon class contribution to system peak demand (also referred to as the "coincidental peak" or "peak responsibility" method). The coincidental peak allocation method measures the percentage demand contribution of each customer class to total demand at the time of system peak demand. These percentages become the basis for allocating fixed generation and transmission costs to the customer classes.

The Staff contends that AP&L's use of the coincidental peak method for allocating these costs results in an inappropriate allocation. The Staff's position is that the use of the coincidental peak method does not allocate these costs in a manner which reasonably tracks the causation of such costs by customer class, and that the resulting assignment of costs is biased in favor of high load factor customers.

With the exception of Public Counsel, all parties have allocated transmission costs through the same method as used for fixed generation costs. Public Counsel has utilized different methods for allocating fixed generation and transmission costs, apparently because its allocation factor for fixed generation costs has specific reference to particular characteristics of various types of electric generation plant, which are not applicable to transmission plant.

The Staff characterizes AP&L's application of the coincidental peak allocation method to fixed generation and transmission costs as being premised on the assumption that peak demand is the single cost causation factor for such costs, and as conceptualizing production plant as a single large plant built for the purpose of meeting peak demand. The Staff argues that the Company's production plant actually consists of a number of generating units having varying cost characteristics, and that while total capacity must be sufficient to meet the system peak demand, the composition of the "generation mix" is intended to meet the Company's load curve which varies from hour to hour throughout the year. In the context of this analysis, the Staff contends that the allocation of these costs solely on the basis of customer class demand contribution to total system demand at the time of system peak results in an assignment of costs at a time when the share of total system demand by high load factor customers is relatively low.

The Staff suggests that the most appropriate manner of allocating fixed generation and transmission costs to customer classes would be on a time-of-use basis, which involves the consideration of customer class contribution to system demand for every hour of the year, rather than solely at the hour of system peak demand. While the sample load research data necessary for a time-of-use cost allocation is available from AP&L, estimates of customer class hourly demands for every hour of the year were not available from the Company in time to be utilized by the Staff in its analysis in this proceeding.

In the absence of information necessary to perform a time-of-use allocation, the Staff, in its cost of service study, allocated fixed generation and transmission costs according to what is referred to as the "average and peak" method. Whereas the coincidental peak method is based solely upon class contribution to peak demand, the average and peak method determines contribution to the average demand on the system and class contribution to the difference between peak demand and the average demand. Each class' contribution to average demand and to the difference between peak demand and average demand is combined to produce the percentage assignment of costs to each customer class. The Staff acknowledges that the average and peak method is not the ideal basis for allocating these costs. However, in light of the lack of sufficient data to perform a time-of-use allocation, the Staff considers the average and peak method to be appropriate for use in this case and to be preferable to the coincidental peak method used by AP&L, since the average and peak method takes some account of off-peak production facility usage in the assignment of these costs, while the coincidental peak method considers only peak usage.

Utilizing costs consistent with the revenue deficiency found pursuant to the Stipulation and Agreement, the Staff has identified the differences in the assignment of costs to customer classes in its cost of service study which result from use of the average and peak method versus the coincidental peak method for allocating fixed generation and transmission costs. Those differences are as follows:

	Cost Assignments		
Class of Customer	Average and Peak	Coincidental Peak	Difference
Residential	$11,534,911	$12,628,070	$1,093,159
Small General Service	4,055,295	4,364,779	309,484
Large General Service	2,971,244	2,931,737	-39,507
Large Power	16,211,721	14,894,264	-1,317,457
Miscellaneous	1,481,858	1,436,180	-45,678

b. Distribution Costs Related to Line Transformers and Secondary Lines

The Staff criticizes the methods used by AP&L to allocate costs associated with line transformers and secondary lines to the customer classes. For each of these cost categories, AP&L uses a minimum plant concept to determine the percentage of costs to be allocated to the customer classes according to the number of customers in each class. Company then uses noncoincidental demand as an allocation factor in assigning the remaining costs. The Staff uses a larger minimum plant to represent the typical line transformer for the residential class and allocates costs associated with its minimum plant on the basis of the number of customers in each class. This leaves certain costs remaining which the Staff allocates on the basis of class demand above minimum demand levels. The Staff utilizes the same allocation factor for line transformer and secondary line costs, and argues that its method eliminates a double allocation of costs to customers who require only the minimum plant, which allegedly occurs as a result of using AP&L's allocation methods. The Staff suggests that it would be more appropriate to allocate secondary line costs through a replacement cost study. However, the type of information necessary for performing such a study was not available in this case, and the Staff acknowledges that such studies are not generally available and are extremely tedious and time consuming to prepare.

3. Public Counsel's Cost-of-Service Study

Public Counsel has performed a cost of service study containing proposals for assigning AP&L's generation, transmission and distribution costs to the various customer classes.

a. Fixed Generation Costs

Public Counsel opposes AP&L's use of the coincidental peak method for allocating fixed generation costs to the customer classes, contending that the use of the coincidental peak method is based upon an arbitrary categorization of costs as being either fixed or variable and fails to recognize that opportunities exist for

substitution between fuel costs and capacity costs. Public Counsel asserts that the utilization of the coincidental peak method for allocating these costs results in an exaggeration of capacity costs associated with meeting peak demand and allocates a disproportionately large share of generation costs to low load factor customers.

Public Counsel proposes two alternative methods for allocating fixed generation costs to the customer classes. The first of these alternative methods will be referred to as the decomposition of baseload investment, and the second of these methods will be referred to as total allocation of fixed generation costs to energy.

The starting point for both of Public Counsel's alternative methods for allocating fixed generation costs is a recognition of certain differences in cost characteristics between various types of electric plant generating units. Baseload units generally have higher capacity costs and lower operating costs than peaking units, and some baseload units have higher capacity costs and lower operating costs than other baseload units. The most appropriate choice from an economic standpoint between generating units having such different cost characteristics is dependent upon the number of hours and energy level at which the new unit will operate during the year. If the Company's load curve is such that the new unit will operate a sufficient number of hours, a unit with relatively high capacity costs and low operating costs may be the most appropriate economic choice where its operating cost advantage is sufficient to offset its capacity cost disadvantage.

Public Counsel asserts that AP&L's construction of new generating units is not primarily the result of a growing peak demand. In this regard, Public Counsel notes that the Company is planning less than a 200 megawatt net increase in generating capacity through the year 1989. Rather, to a large extent, AP&L's planned additional generating units during the 1980's will be offsetting retirement of oil and gas-fired units with relatively high operating costs.

Approximately 91 percent of AP&L's power production plant net of accumulated depreciation is associated with the Company's Arkansas Nuclear One (ANO) units and White Bluff Unit No. 1, which are baseload plants. Thus, the vast majority of AP&L's fixed generation costs are associated with baseload units. Based upon the premise that these costs associated with AP&L's baseload units are attributable to meeting the energy needs of the Company's customers rather than upon meeting system peak demand, Public Counsel recommends that, at a minimum, the difference in capacity costs of the Company's White Bluff and ANO units, on the one hand, and those of peaking capacity, on the other, should be treated as quasi-fuel costs and allocated among customer classes on an energy basis. This is the allocation method referred to previously as the decomposition of baseload investment.

Public Counsel further contends that, in light of the high operating costs associated with AP&L's existing oil and gas-fired capacity, substantial fuel cost savings can be expected for the Company as coal-fired units are brought on line. Therefore, as its second alternative allocation method, Public Counsel proposes that all fixed generation costs could be treated as quasi-fuel costs and allocated to the customer classes on an energy basis.

b. Transmission and Distribution Costs

Public Counsel's position regarding the allocation of transmission and distribution costs to customer classes is that use of the principle of peak responsibility (either coincidental or noncoincidental peak) results in an improper assignment of cost. Public Counsel suggests that a time-of-use analysis would constitute a proper method for allocating these costs, but that sufficient information regarding customer loads is not available to permit such an allocation. However, Public Counsel recommends that the average and peak allocation method be utilized as an approximation for a time-of-use analysis.

The class cost assignments which result from utilizing each of Public Counsel's alternative allocation methods for fixed generation costs and the

stipulated annual jurisdictional revenue deficiency are described below. These results also assume use of the average and peak method for the allocation of transmission and distribution costs as suggested by Public Counsel.

PUBLIC COUNSEL CLASS COST ASSIGNMENTS
(In Thousands of Dollars)

		Decomposition of Baseload Investment Allocation		Total Allocation of Fixed Generation Costs to Energy	
	Current Revenues	Cost of Service	Percent Increase	Cost of Service	Percent Increas
Residential	$ 8,998	$11,056	22.87%	$10,400	15.58%
Small General Service	3,943	3,972	.73	3,786	-3.98
Large General Service	2,560	3,122	21.98	3,146	22.91
Large Power	14,011	16,625	18.66	17,416	24.30
Miscellaneous	1,099	1,481	34.78	1,508	37.27
TOTAL	$30,610	$36,255	18.44%	$36,255	18.44%

4. Mining Intervenors' Position Regarding AP&L Cost of Service

While Amax and St. Joe Minerals filed separate individual interventions in this case, and a separate joint intervention was filed by Ozark Lead and Cominco American, these Mining Intervenors have participated in this case as if all of said parties were joint intervenors, and have presented a uniform position on cost of service and rate design. The position of the Mining Intervenors regarding the appropriate cost of service study and resulting cost assignments to customer classes is best described in reference to the Company's cost of service study, since the Mining Intervenors adopt, by reference, the methods contained in AP&L's study with the exception of the Company's application of risk multipliers to class rates of return.

The Mining Intervenors agree with AP&L's use of the coincident peak method for allocating fixed generation and transmission costs to the customer classes, contending that the use of the coincident peak method is appropriate for summer peaking utilities such as AP&L. The Mining Intervenors have not constructed allocation factors of their own for the various elements of AP&L's rate base and operating expenses. Rather, said Intervenors adopt the results of AP&L's cost of

service study and, necessarily, the allocation methods contained therein, except for the Company's use of risk multipliers to class rates of return in establishing customer class cost assignments.

a. AP&L's Use of Risk Multipliers

In arriving at the operating income required from each customer class and, therefore, the ultimate class revenue requirement, AP&L does not utilize a uniform rate of return for each customer class. Instead, the Company applies rates of return to the individual customer classes which vary above and below the system average rate of return resulting from the cost of service study. For example, in its prefiled cost of service study which supported a $9.2 million annual jurisdictional revenue deficiency, AP&L sought a 12.38 percent rate of return on the total Missouri jurisdictional rate base alleged therein. However, in the class revenue requirements in its rate design proposal, AP&L did not build into each class revenue requirement a 12.38 percent rate of return. Instead, the individual class rates of return varied from a low of 8.04 percent for the residential class to a high of 18.57 percent for the large power class, producing a 12.38 percent system average rate of return.

These variations among rates of return for the individual customer classes in AP&L's cost of service study result from the Company's use of what it terms "risk multipliers". The risk multipliers utilized by the Company in this case are as follows:

Residential	0.65
Small General Service	1.15
Large General Service	1.25
Large Power	1.50
Miscellaneous	0.65

These risk multipliers indicate the percentage of the system average rate of return which is utilized in determining the class revenue requirement for each customer class. Under the Company's proposal, for example, the class revenue requirement for the residential class is based upon a class rate of return which is only 65 percent of the system average rate of return, while the class revenue requirement for the large power class would be based upon a class rate of return

which is one and one-half times the system average rate of return from the cost of service study.

AP&L's use of the risk multipliers is intended to identify differing levels of risk associated with serving the various customer classes. The Company has historically developed its class revenue requirements based upon a cost of service analysis recognizing risk differentials among its customer classes.

The values for the risk multipliers for each customer class are apparently based solely on judgment since no quantitative analysis is presented by the Company in support of any specific value.

In its prefiled testimony submitted in this case, AP&L specifically addresses the issue of the risk multiplier assigned to the large power class, which is 1.50. It is the Company's contention that certain additional risks arise from the provision of utility service to its mining customers in Missouri which justify use of a 1.50 risk multiplier. The Mining Intervenors in this case account for approximately 91 percent of the Missouri retail sales to the large power class. In support of its position that additional risk is involved in serving the large power customers, AP&L points out that a substantial capital investment in transmission and distribution facilities is necessary in order to serve its Missouri mine customers, but that, pursuant to specific contract provisions, the mines may cancel service from AP&L upon twelve months' notice. Additionally, during periods when a mine may be shut down for economic or operating reasons, AP&L is obligated to provide electric service to the mine at reduced levels of load under alternative rate schedules which allow for a lower rate during periods of curtailed operations. AP&L argues that the provision of service under such alternative rate schedules precludes the Company from recovering its fixed costs associated with providing service to meet normal customer load requirements, thus producing an above normal level of risk in the provision of service to the large power class.

The Mining Intervenors disagree with the concept of using risk multipliers, taking the position that an appropriate cost of service study should include uniform

rates of return in the class revenue requirements of each customer class. Specifically in regard to the large power class, the Mining Intervenors allege that there is no greater risk in serving such industrial customers as compared with the serving of other customer classes, and even if additional risks are involved in serving such industrial customers, requiring a class rate of return greater than the system average would still be inappropriate and detrimental to the Company.

The Mining Intervenors allege that the structure of large power rates, with separately stated demand charges and energy charges, mitigates any possible additional risks which could be associated with serving large power customers. The basis of this argument is that demand charges are designed to recover fixed costs while energy charges are designed to recover variable costs, and that increases or decreases in the level of kilowatt hour sales to large power customers will produce increases or decreases in revenues that are substantially linked with increases or decreases in variable costs. Thus, it is alleged, that AP&L's earnings from sales to the large power customers will remain relatively unaffected by increases or decreases in the level of such sales. The Mining Intervenors further argue that even if AP&L faces more risks in supplying service to the large power class as compared to other customer classes, use of a higher than system average rate of return for the large power class revenue requirement would only aggravate AP&L's earnings stability.

b. Mining Intervenors' Criticisms of Staff and Public Counsel Allocation Methods

The Mining Intervenors criticize the use of certain allocation methods by the Staff and Public Counsel in the assignment of various types of costs among the customer classes. The main emphasis of the Mining Intervenors' criticism is directed toward the allocation methods utilized by the Staff and Public Counsel in assigning fixed generation and transmission costs.

The Mining Intervernors concur in AP&L's use of the coincidental peak method of allocating fixed generation and transmission costs. Since the allocation methods used by both the Staff and Public Counsel for assigning these costs are at

least partially based upon customer class contribution to total energy consumption rather than specifically tied to class contribution to system peak demand, the Mining Intervenors allege that the allocation methods utilized by the Staff and Public Counsel result in high load factor customers, such as the mines, being assigned a disproportionately large share of costs. While disagreeing with the Staff's use of the average and peak method of allocating fixed generation and transmission costs, the Mining Intervenors contend that if the average and peak method is to be used for allocating such costs, consistency requires that energy costs also be allocated pursuant to an average and peak method rather than on the traditional basis of each customer class' contribution to annual energy consumption. To be consistent with the capital cost treatment in the average and peak allocation method, the Mining Intervenors argue that fuel costs allocated to high load factor customers must be explicitly lower than the fuel costs allocated to the low load factor customers. Said Intervenors have prepared an alternate assignment of costs to customer classes based upon a use of the average and peak method for allocating fixed generation and transmission costs and energy costs to the customer classes. In making this analysis, the Mining Intervenors allocated 61.2 percent of AP&L's fuel costs on the basis of class contribution to peak demand and the remaining 38.8 percent of fuel costs on the basis of class contribution to total energy consumption. The Intervenors contend that this adjustment is necessary in order to make the Staff's use of the average and peak method internally consistent. The assignment of costs to customer classes which results from use of the Mining Intervenors' alternate version of the average and peak method (applying it to fixed generation and transmission costs and to energy costs) in conjunction with the stipulated revenue deficiency is as follows:

(In Thousands of Dollars)

Customer Class	Present Revenues	Mining Intervenors Adjustment to Staff Cost of Service	Percent Increase
Residential	$ 8,998	$12,560	39.6%
Small General Service	3,943	4,345	10.2%
Large General Service	2,560	2,935	14.6%
Large Power	14,010	14,976	6.9%
Miscellaneous	1,099	1,439	30.9%

5. Conclusions regarding AP&L's Cost of Service

While there is some disagreement between the parties as to the extent to which class revenue requirements should be permitted to deviate from the cost of serving each class, all parties agree that the cost of service should be the general standard for establishing class revenue requirements. Various alternative cost of service studies have been presented to the Commission in this case, with each being promoted as a reasonable description of customer class responsibility for the incurrence of AP&L's cost of providing service. Both AP&L and the Staff have constructed full sets of allocation factors for the purpose of assigning all of the Company's costs to the customer classes. The Mining Intervenors and Public Counsel have adopted by reference portions of the cost-of-service studies submitted by the Company and the Staff, respectively, and have offered their own proposals regarding certain crucial aspects of those studies.

The preponderance of the evidence and the arguments submitted in this case revolve around the issue of the appropriate method for allocating fixed generation and transmission costs. AP&L and the Mining Intervenors recommend use of the coincidental peak method for allocating these costs, while the Staff and Public Counsel suggest various approaches designed as proxy methods for time-of-use allocations. Additional issues raised regarding cost of service include the objection of the Mining Intervenors to AP&L's use of risk multipliers in establishing rates of return for each customer class revenue requirement, and certain objections

by the Staff to methods used by AP&L to allocate distribution costs, specifically line transformer and secondary line costs. As will be discussed further, infra, based upon the Commission's decision regarding the use of the coincidental peak method for the allocation of fixed generation and transmission costs, the propriety of AP&L's use of risk multipliers in arriving at class rates of return need not be addressed.

The record reflects six cost-of-service studies, using six different methods for allocating fixed generation and transmission costs, which are properly before the Commission in its choice of the most reasonable cost-of-service approach in this case. These six cost-of-service studies include: AP&L's study; the Mines' recommended cost-of-service study (including use of coincidental peak with no risk multipliers) and the Mines' alternative study (using the average and peak methodology for both fixed costs and fuel costs); the Staff's cost-of-service study using the average and peak method for fixed generation and transmission costs; and Public Counsel's two alternative studies, the first allocating 66 percent of fixed generation costs on the basis of class contribution to energy usage and the second allocating all fixed generation costs on the basis of class contribution to energy usage. The various class cost assignments which result from each of these studies is set forth below:

Customer Class	AP&L Percent Increase	Mines Percent Increase	Staff Percent Increase	Mines Adjusted Staff Study Percent Increase	Public Counsel "66% Case" Percent Increase	Publi Couns "100% C Perce Increa
Residential	24.5%	44.9%	28.2%	39.6%	22.9%	15.6
Small General Service	22.7%	16.5%	2.8%	10.2%	0.7%	4.0
Large General Service	17.5%	9.4%	16.1%	14.6%	22.0%	22.9
Large Power	13.5%	2.5%	15.7%	6.9%	18.7%	24.3
Miscellaneous	18.5%	34.1%	34.8%	30.9%	34.8%	37.2

It should be noted that the Mines, both in their initial and reply briefs, have submitted tables purporting to show all of the cost-of-service study results available to the Commission for its consideration in this case. Those tables include three "studies" in addition to the six specified above. These additional cost

allocations are designated as "fuel/nonfuel revenue"; "cost of service 66 percent case (adjusted) revenue"; and "cost of service 100 percent case (adjusted) revenue". None of the cost assignments contained in these three approaches is appropriate for consideration in the Commission's determination as to the most reasonable cost-of-service study presented herein.

The "fuel/nonfuel approach" merely allocates to the customer classes AP&L's $3.3 million reduction in fuel costs according to class energy usage and allocates AP&L's $8.9 million increase in nonfuel costs to the customer classes according to the existing proportion of nonfuel revenues collected from each class. In effect, this "fuel/nonfuel approach" assumes that AP&L's existing allocation of all nonfuel costs to the customer classes is proper. There is nothing in the record to support such an assumption.

The other two "studies" identified by the Mines are adjustments to Public Counsel's two alternative cost-of-service methods for fixed generation costs. These studies apparently are based upon an application of the average and peak allocation method to fuel costs in the same manner as the Mines have presented in reference to the Staff's use of the average and peak method for fixed generation and transmission costs. These proposed adjustments by the Mines to Public Counsel's alternative allocation methods do not appear in the evidence and, therefore, should not be considered in the Commission's determination. Since the Commission rejects the Mines' argument that use of the average and peak method for fixed generation and transmission costs requires its use also for fuel costs, as will be discussed further, infra, these proposed adjustments by the Mines to Public Counsel's proposed methods would be rejected on the same basis.

Based upon the evidence and arguments presented in this case, the Commission cannot conclude that the coincidental peak method, as advocated by AP&L and the Mining Intervenors, represents a reasonable method for allocating fixed generation and transmission costs. The arguments of these parties are not persuasive in support of the use of the coincidental peak method. The fact that the

Company's total generating capacity must be sufficient to meet peak demand does not, of itself, indicate that class contribution to demand at the time of system peak is an appropriate method for explaining class causation of fixed generation and transmission costs.

In evaluating application of the coincidental peak method to the allocation of fixed generation and transmission costs, consideration of several points is of prime importance. First, no matter which allocation method is used, each customer class will be assigned a percentage of AP&L's total jurisdictional fixed generation and transmission costs. It is the percentage share of the total of these costs which each customer class will be assigned that varies depending upon the allocation method chosen. Secondly, these costs consist primarily of the investment for electric generating capacity. These generating facilities can be broadly divided into the categories of baseload, intermediate and peaking units. As discussed previously, these units have different cost characteristics, with baseload units having relatively high capital costs and relatively low operating costs, and, conversely, peaking units having relatively low capital costs and relatively high operating costs.

The coincidental peak method determines the share of the fixed generation and transmission costs to be assigned to each customer class based solely upon the contribution of each class to system demand at the single hour of system peak demand. Thus, according to this method, the allocation is made at a time when the contribution of low load factor customers (which typically includes the residential class) to system demand is relatively high. A rationale for the use of the coincidental peak method apparently is that it is the low load factor customers which are responsible for creating peak demand. However, the costs assigned by the use of the coincidental peak method are not restricted to that portion of the capacity costs which can be attributed to peaking units, or even to peaking and intermediate units combined. Instead, the percentage assignment flowing from class contribution

to peak demand is applied to all jurisdictional fixed generation and transmission costs, including fixed costs associated with baseload units.

AP&L's baseload units account for most of the Company's capacity costs as demonstrated by evidence submitted by Public Counsel indicating that approximately 91 percent of the Company's power production plant net of accumulated depreciation is associated with its ANO and White Bluff Unit No. 1 baseload facilities. Baseload units generally operate throughout the year with intermediate and peaking units being added as system demand grows toward its peak. Thus, while most of the costs which are being allocated relate to plants which generally are in operation throughout the year, the coincidental peak method assigns responsibility for the causation of the total of these costs only on the basis of class contribution to the hour of peak demand, when the relative contribution of low load factor customers (such as residential customers) is high and the relative contribution of high load factor customers (such as customers of the large power class) is relatively low. This result appears to be inherent in the use of the coincidental peak method of allocating fixed generation and transmission costs, and the Commission cannot find, based upon the evidence presented, that such use of the coincidental peak method produces a reasonable assignment of the costs involved to the customer classes. Since the cost-of-service studies submitted by AP&L and the Mining Intervenors in this case utilize the coincidental peak method for allocating fixed generation and transmission costs, the results of those cost-of-service studies must be rejected for rate design purposes in this proceeding. Further, since each of said studies is rejected on the basis of their use of the coincidental peak method, the issue raised by the Mining Intervenors regarding AP&L's use of risk multipliers need not be addressed.

As discussed previously, the Staff has used the average and peak method in its cost-of-service study for allocating fixed generation and transmission costs to the customer classes, while Public Counsel has suggested two alternative methods for allocating fixed generation costs (premised on the basis of treating certain baseload

capacity costs as if energy costs) and recommends the average and peak method for allocating transmission costs. Both Staff and Public Counsel readily admit that the methods which they have proposed in this case for the allocation of fixed generation and transmission costs do not constitute what they consider to be the most theoretically correct procedure for allocating such costs. The methods recommended by said parties in this case are considered by them to be proxies for a time-of-use allocation method. The Staff has generally described the time-of-use allocation approach as including an analysis of the cost characteristics of the Company's specific plants as they are operated throughout the year and an analysis of customer class demands upon the system for each hour of the year. The Staff and Public Counsel did not perform time-of-use allocations for fixed generation and transmission costs in this case as the result of the unavailability of load research data from the Company in a form which would permit such allocations. Because of their inability to submit time-of-use allocations, both the Staff and Public Counsel recommend the methods which they have utilized on the basis that such methods constitute reasonable proxies.

Both Public Counsel's proxy methods for allocating fixed generation costs treat a portion of said costs as energy costs. The decomposition of baseload investment approach treats the difference between AP&L's baseload capacity costs and peaking capacity costs as energy related, while Pubic Counsel's alternative method would treat all of the Company's capacity costs as energy related. Under the first method, 66 percent of the Company's capacity costs would be allocated to customer classes on the basis of class contribution to energy, while under the second approach all of such capacity costs would be allocated to the customer classes on that basis. Each of these methods is recommended by Public Counsel on the basis that the treatment of capacity costs (or a portion thereof) as energy related costs recognizes that one of the purposes of constructing baseload plants is to achieve fuel cost savings in comparison to the fuel costs involved in the operation of peaking units.

While there is no argument over the general proposition that baseload units have lower running costs and higher capacity costs than peaking units, the Commission is not persuaded by the arguments presented in this case that this fact should justify the treatment of baseload capacity costs as energy costs. The general goal of electric utility system planning is to maintain sufficient capacity to meet the demands placed upon the system at the lowest total cost. The "generation mix" of plants which will provide sufficient capacity at the lowest total cost is dependent upon the shape of the particular company's load duration curve. The fixed generation and transmission costs involved generally will not vary as the result of fluctuations in energy output, but, rather, will be incurred by the utility regardless of output. Thus, the Commission cannot agree with Public Counsel's position that certain baseload capacity costs are not "fixed" in nature and are not related to system demand. However, while the evidence in this case suggests that these fixed generation and transmission costs are related to system demand, this does not necessarily mean that these costs are solely related to system peak demand as is assumed through use of the coincidental peak method.

Thus, the Commission cannot conclude as a result of the evidence presented in this case that either of the substituted fuel cost approaches suggested by Public Counsel in this case provides a sound theoretical basis for the allocation of the costs involved to the customer classes. To the extent that the decomposition of baseload investment approach allocates a portion of the Company's capacity costs on the basis of energy, this, in effect, gives some weight to off-peak usage of the Company's generating facilities and, therefore, would appear preferable to the coincidental peak method. However, based on the record presented, the Commission is of the opinion that the Staff has established that the average and peak method provides a more sound theoretical basis for the allocation of fixed generation and transmission costs in this case.

The average and peak method allocates costs partially on the basis of class contribution to average demand (which is identical to class contribution to energy)

and partially on class contribution to peak demand. Average demand is established by use of the system load factor. Admittedly, the average and peak method does not track the use of the Company's generating and transmission facilities by customer class throughout the year. However, by allocating a portion of these costs on the basis of class contribution to average demand, consideration is given to off-peak usage of these facilities. As previously noted, baseload capacity generally operates not only at the time of system peak, but, instead, operates throughout the year, and AP&L's investment in baseload capacity represents the bulk of the Company's fixed generation costs. As a result, the Commission concludes that the record demonstrates the importance of giving consideration to such off-peak usage when allocating these costs to the customer classes. Since the average and peak method proposed by the Staff, while being an approximation, has as its theoretical base the use of the Company's generating and transmission facilities by customer class, the Commission is of the opinion that the average and peak method represents a more appropriate method for allocating fixed generation and transmission costs then the substituted fuel approaches suggested by Public Counsel.

While the Mining Intervenors do not agree with Staff's use of the average and peak method for allocating fixed generation and transmission costs, they argue that if this method is to be utilized for allocating such costs, then the average and peak method must also be utilized for the allocation of energy costs in order to present an internally consistent cost-of-service analysis. Each of the other cost-of-service analyses submitted in this case, including the recommended approach of the Mining Intervenors, allocates energy costs on the basis of class kilowatt-hour sales. It is apparent, however, that the Mines' argument in support of adjusting the Staff's cost-of-service analysis by applying the average and peak method to energy costs merely assumes the propriety of using the coincidental peak method for allocating fixed generation and transmission costs. The Mines' rationale is that use of the average and peak method for allocating fixed generation and transmission costs results in high load factor customers (such as those customers in the large

power class) bearing a disproportionately large share of such costs, and because of this alleged disproportionate burden, such high load factor customers should be allocated a reduced portion of energy costs. The Commission, by rejecting the presentation in support of the coincidental peak method in this case, rejects the Mining Intervenors' underlying premise for their application of the average and peak method to energy costs.

Based upon all of the reasons set forth herein, the Commission concludes that the evidence in this case supports a finding that the average and peak method for allocating fixed generation and transmission costs is the most reasonable method of those methods suggested in this record for allocating such costs. There appears to be no disagreement concerning the fact that the question of the most appropriate method for allocating fixed generation and transmission costs is by far the most significant issue in terms of cost-of-service results in this case. Each party's cost-of-service study consists of an integrated application of various allocation methods. Thus, it is not feasible from the record presented to make a cost-of-service determination by interchanging various allocation methods between the various studies presented by the parties.

The Commission finds that the method advocated by the Staff for the allocation of line transformer and secondary line distribution costs represents a reasonable basis for allocating such costs. However, the Commission is of the opinion that the evidence and arguments presented by AP&L and the Staff are not conclusive that either of said parties proposed allocations represent the most appropriate treatment of such costs. Because of the integrated nature of the cost-of-service studies presented in this record and the predominant influence which the choice of allocation method for fixed generation and transmission costs has upon the cost-of-service study results, it is the allocation of these fixed generation and transmission costs which should be the controlling issue in determining which party's cost-of-service study best describes customer class responsibility for the incurrence of AP&L's cost of operations. Since the Commission has determined that Staff's use

of the average and peak method represents the most appropriate allocation of fixed generation and transmission costs of those methods recommended in this proceeding, the Commission concludes that the Staff's cost-of-service study results best describe overall class responsibility for the incurrence of AP&L's costs, and it is the Staff's cost-of-service study which shall be utilized by the Commission in the establishment of a rate design in this case. The Staff's cost-of-service study results are restated below:

(In Thousands of Dollars)

Customer Class	Present Revenues	Cost of Service According to Staff's Study	Percent Increase
Residential	$ 8,998	$11,535	28.20%
Small General Service	3,943	4,055	2.58%
Large General Service	2,560	2,972	16.08%
Large Power	14,010	16,211	15.71%
Miscellaneous	1,099	1,482	34.89%

B. Class Revenue Requirements

The Staff recommends that the Commission establish class revenue requirements which deviate to a certain extent from the class cost assignments produced by Staff's own cost-of-service study. A comparison of Staff's class cost assignments and class revenue requirement recommendations is as follows:

(In Thousands of Dollars)

Customer Class	Staff Cost of Service Results	Percent Increase	Staff Class Revenue Requirement Recommendations	Percent Increase
Residential	$11,535	28.2%	$10,940	21.6%
Small General Service	4,055	2.8%	4,353	10.4%
Large General Service	2,972	16.1%	3,032	18.4%
Large Power	16,211	15.7%	16,594	18.4%
Miscellaneous	1,482	34.8%	1,336	21.6%

The Staff has stated two basic reasons for its recommended class revenue requirement deviations from cost of service. The first reason involves a consideration of the impact on customers resulting from immediate substantial increases in rate levels. The Staff takes the position that when cost-of-service study results indicate the need to substantially increase the revenue requirements of

particular classes relative to other customer classes, such movement toward strict cost-of-service based rates should be accomplished gradually, apparently over a period of several years.

The second reason offered by the Staff in support of its class revenue requirement recommendations involves certain factors specific to this case which, the Staff contends, inevitably inject an increased level of imprecision into any cost-of-service results. These factors, cited by the Staff, include: The fact that AP&L's load research data, which provides a basis for all of the cost-of-service studies presented in this case, was taken from the unusually hot summer of 1980, and while the Company made a weather adjustment to the data, the Staff has some hesitancy in basing class revenue requirements which result in extreme relative increases to any particular class on such data; the fact that the average and peak method is, admittedly, a proxy for time-of-use allocations of fixed generation and transmission costs; the fact that Staff believes improved methods of allocating distribution costs can be developed as compared to those methods submitted both by AP&L and the Staff in this case; and the fact that AP&L did not have the ability to separately meter Missouri retail demand as a verification on the reliability of its estimate of class load profiles for Missouri retail customers in this case. As will be discussed in more detail below, the Staff also has specific concerns regarding the class cost assignment indicated for the miscellaneous class in the context of what Staff considers to be the heterogeneous nature of the individual tariff groups which constitute the miscellaneous class.

Public Counsel also advocated establishment of class revenue requirements which deviate somewhat from its alternative cost-of-service study results on the basis of impact and rate continuity considerations.

The deviations which the Staff has recommended in its class revenue requirements from its cost-of-service study class cost assignments are not based on any form of quantitative analysis but, instead, are based on judgmental analysis of Dr. Proctor, who developed Staff's cost of service study and class revenue

requirements. The judgments involved in making these deviations can best be understood by first reviewing Staff's analysis of the miscellaneous class.

The miscellaneous class includes the five distinct tariff groups of municipal lighting, athletic field lighting, outdoor lighting, municipal pumping and cotton ginning customers. It is the Staff's position that these five tariff groups are not sufficiently similar such that it is appropriate to place all of said groups within a single class for rate design purposes. AP&L submitted no cost-of-service support for the varying rate increases originally proposed for the tariff groups within the miscellaneous class. Rather, if approved, the rates as origially proposed by AP&L for the individual tariff groups within the miscellaneous class would have resulted in rate levels similar to those in effect for the same tariff groups under AP&L's Arkansas operations. The Staff's cost-of-service study indicates a 34.89 percent increase for the miscellaneous class as a whole. However, the Staff, in its class revenue requirement recommendations, takes the position that it would not be proper to institute an approximate 35 percent increase for each of the tariff groups within the miscellaneous class without having cost information which would permit a determination as to the various levels of cost causation by each tariff group within the class.

The Staff contends that it is reasonable to assume that it is the cotton ginning customers and the athletic field lighting customers which are primarily responsible for the relatively large cost increase indicated in Staff's cost-of-service study for the miscellaneous class. Based on this assumption and the other qualifications which the Staff has regarding the precision of cost-of-service study results in this case, the Staff recommends that the rates for the cotton ginning and athletic field lighting tariff groups be increased by the amount of 34.89 percent, which is the level indicated for the entire miscellaneous class by the Staff's cost-of-service study. The Staff then recommends that the rates of each of the other three tariff groups within the miscellaneous class (municipal lighting, outdoor lighting and municipal pumping) be increased only by the system average

increase of 18.44 percent. By holding the rate increases for these three last-named tariff groups to the system average increase, the miscellaneous class, as a whole, would receive a 21.58 percent increase rather than the 34.89 percent increase indicated in Staff's cost-of-service study.

The Staff then made the judgment that the percentage increase in class revenue requirement for the residential class should not exceed the level of increase to the miscellaneous class which, as adjusted, is 21.58 percent. Thus, the Staff recommends that the residential class revenue requirement be increased by 21.58 percent when the Staff's cost-of-service results indicated a 28.2 percent increase. The effect of implementing these reductions in class revenue requirements from the Staff's cost-of-service study results for the miscellaneous and residential classes is to require one or more of the remaining classes (small general service, large general service and large power) to be given a class revenue requirement which exceeds the class cost assignments indicated by Staff's cost-of-service study. In order to account for these reductions in class revenue requirements for the residential and miscellaneous classes, the Staff made the following judgments: Since the cost-of-service study increases indicated for both the large general service and large power classes were relatively close to the system average increase of 18.44 percent (the Staff's cost-of-service assignments to the large general service and large power classes are 16.1 and 15.7 percent, respectively), the Staff recommends increasing the class revenue requirements for each of these classes to the system average level of 18.44 percent. The Staff's class revenue requirement treatment of the small general service class is then a result of the dollar difference between the class revenue requirement reductions provided to the residential and miscellaneous classes minus the class revenue requirement increases produced by increasing the class revenue requirements for the large general service and large power classes to the system average increase of 18.44 percent. The result for the small general service class is an increase in class revenue requirement of 10.41 percent, as

compared to the class cost assignment increase indicated by the Staff's cost-of-service study of 2.6 percent.

The Mining Intervenors are critical of Staff's deviations in class revenue requirements as compared to the class cost assignment results from the Staff cost-of-service study. The Mines argue that Staff's recommended increase in class revenue requirement for the large power class above the cost assignment indicated by Staff's cost-of-service study would produce an arbitrary and unwarranted subsidy from the large power class to other customer classes, specifically, the residential and miscellaneous classes. The Staff's response is that these deviations from the cost-of-service study results are not arbitrary and represent a gradual movement of class revenue requirements toward the indicated cost of service of each class.

The Commission bases this decision on the principle that the class revenue requirements of AP&L's various classes of customers should generally be based upon the cost of serving each class. However, the Commission finds in this case that strict application of cost-of-service study results may not always present the most reasonable basis for establishing class revenue requirements. In the instance where a cost-of-service study deemed by the Commission to be appropriate for use in establishing an electric utility's rate design indicates the need for significant relative increases in rates for particular customer classes in order to establish rates based on cost of service, the Commission concludes that gradual movement of class revenue requirements toward the cost of serving each class is a valid and reasonable approach in establishing a rate design. Furthermore, the Commission agrees with the position presented by the Staff that certain factors associated with the cost-of-service data and methods involved in this case provide an additional reason in support of a "gradual movement" approach in establishing class revenue requirements based on cost of service.

These considerations support the establishment of class revenue requirements for the residential and miscellaneous classes which are greater than the system average increase but are less than the respective class cost assignments

indicated in Staff's cost-of-service study. However, the Commission does not agree with the specific levels of increases and supporting rationales recommended by the Staff in regard to the miscellaneous and residential class revenue requirements.

As discussed above, the Staff advocates a 34.89 percent increase in revenue requirements for the cotton ginning and athletic field lighting tariff groups within the miscellaneous class, while holding the other three tariff group revenue requirement increases to the system average increase of 18.44 percent. This is based upon the assumption that it is the cotton ginning and athletic field lighting customers within the miscellaneous class which are causing the relatively significant increase in costs reflected in the Staff's cost-of-service study. The Commission finds no support in the record for this assumption, and therefore concludes that it would be more appropriate to assign a uniform level of increases to each of the five tariff groups within the miscellaneous class. At the same time, however, the Commission is of the opinion that the considerations discussed previously regarding gradual implementation of cost based rates and certain qualifications to the cost data and methods available for consideration in this case warrant the implementation of a revenue requirement for the miscellaneous class below that level indicated by the cost-of-service study results.

In addition to the miscellaneous class, the Staff's cost-of-service study results also indicate a relatively significant increase in the revenue requirement of the residential class (28.2 percent). Based on the considerations previously discussed and the magnitude of the relative increases indicated for the residential and miscellaneous classes in the Staff's cost-of-service study (28.2 percent and 34.9 percent, respectively), the Commission concludes that increases in class revenue requirements in this case for any class should not exceed a maximum level of five percent above the system average increase of 18.44 percent. Thus, the class revenue requirement increases for the residential and miscellaneous classes will be limited to 23.44 percent, and each tariff group within the miscellaneous class will receive a uniform 23.44 percent increase in revenue requirement. By establishing this "cap" on

class revenue requirements above the system average level, a gradual but significant movement toward cost based rates will result.

By establishing a five percent above system average maximum for increases in class revenue requirements, one or more of the three remaining classes will necessarily have class revenue requirements above the level indicated by the Staff's cost-of-service study. Limiting the class revenue requirements for the residential and miscellaneous classes to a 23.44 percent increase will result in those classes recovering in revenue requirements a total of approximately $553,000 less than would be the case if the revenue requirements for those classes were based strictly on the Staff's cost-of-service study results. This difference of $553,000 in revenue requirement must necessarily be recovered from the other three customer classes. The Commission is of the opinion that a reasonable basis for assigning this difference to the other three classes is the proportional relationship each of these classes (small general service, large general service and large power) bears to each other in terms of the class cost assignments produced by the Staff's cost-of-service study. This proportional relationship is as follows: Large power - 69.8 percent, small general service - 17.4 percent, and large general service - 12.8 percent. Thus, the class revenue requirements for these three customer classes will include the following amounts in addition to the class cost assignments indicated by the Staff's cost-of-service study: Large power - $386,000, small general service - $96,000, and large general service - $71,000.

The class revenue requirements adopted by the Commission in this case resulting from the methods described above, are as follows:

(In Thousands of Dollars)

Customer Class	Present Revenues	Class Revenue Requirement	Percent Increase
Residential	$ 8,998	$11,107	23.44%
Small General Service	3,943	4,151	5.27%
Large General Service	2,560	3,043	18.86%
Large Power	14,010	16,597	18.47%
Miscellaneous	1,099	1,357	23.44%
TOTAL	$30,610	$36,255	18.44%

C. Rate Structures and Rate Level Differentials Within Customer Classes

Neither the Staff nor Public Counsel are opposing the internal rate structures for any of the customer classes as proposed by AP&L in this case. However, the Staff believes that further investigation of rate level differentials within the various customer classes is warranted and should be the subject of a separate Commission docket, and Public Counsel has joined in Staff's request for this separate docket. The only contested issue in this case involving the internal rate structure of any of the customer classes has been raised by the Mining Intervenors regarding AP&L's proposed demand/energy rate level differentials for large power customer rates.

AP&L's proposed rate structure for the large power class includes certain modifications from the existing rate structures. Specifically, large power customers would move from an hour's use rate to a rate containing explicit demand and energy charges. This demand/energy rate form would be applicable to both a seasonal rate and an optional time-of-use rate based upon embedded costs. Additionally, the existing declining block energy rate for the large power class would be eliminated.

The issue raised by the Mining Intervenors involves the amount of costs which should be included in determining the level of the energy charge in the demand/energy rates for both the seasonal and optional time-of-use rates for large power customers. The Company has explicitly included certain nonenergy costs (in addition to the embedded cost of energy) in establishing the energy charge in the demand/energy rate level differentials for these large power rates. The Mines argue

that a lower amount of costs should be considered in determining the proper energy charge in these rates, contending that the energy charge should be based strictly upon the embedded cost of energy. The Mining Intervenors' position is that the recovery of any fixed costs through energy charges in a demand/energy rate results in overcharging the high load factor member of the large power class and lends instability to AP&L's earnings.

The Staff takes the position that the question of whether any nonenergy costs should be included in establishing the energy charge level in large power rates is a matter more appropriate for determination in the separate docket requested by the Staff for consideration of rate level differentials. For purposes of this case, however, the Staff supports the rate level differential inherent in the large power rate structure proposed by AP&L, thus opposing the Mining Intervenors' recommendation that only the embedded cost of energy be considered in calculating the energy charge. The main argument offered by the Staff in support of AP&L's proposed rate level differential is that adoption of the Mining Intervenors' position on this issue could result in certain members of the large power class receiving rate increases exceeding 100 percent.

The Staff points out that the Missouri large power customers presently served by AP&L and previously served by the Arkansas-Missouri Power Company have historically been served under an hour's use rate, with the rate falling as the number of hours of use increases. The Staff states that this rate form provides customers with a relatively low load factor for the large power class with a lower embedded demand charge than relatively high load factor customers for the large power class. The Staff contends that the inclusion of only the embedded cost of energy within the energy charge in a demand/energy rate form will result in relatively high load factor large power class customers (such as the Mines) receiving a substantial decrease in total electric costs while relatively low load factor large power customers could incur substantial increases in their total electric costs.

The record indicates that movement from the existing large power customer

rate form to a demand/energy rate in which the energy charge includes only the embedded cost of energy (as advocated by the Mining Intervenors) has the potential for causing substantial shifts in cost for customers within that class. This is especially true when it is recognized that the Mines which are parties to this proceeding account for approximately 90 percent of the kilowatt-hour usage of the Missouri large power class. The record in this case does not disclose the identity of the members of the large power class other than the Mines, nor can it be determined as to the specific cost impact on these other large power customers which would result from adoption of the Mines' position on the demand/energy rate level differential for large power rates. Since the Mines constitute relatively high load factor customers within the large power class and account for such a large amount of total energy usage within that class, the relatively low load factor customers within the large power class could be faced with substantial rate increases in order to offset the dollar amount of the cost savings provided to the higher load factor customers. Because of the potential for significant rate impacts within the large power class which are associated with the position on this issue submitted by the Mining Intervenors, and the lack of information in this record which would specifically identify the extent of these impacts, the Commission concludes that the proposal of the Mining Intervenors on this issue should be rejected and the rate level differentials inherent in AP&L's proposed rate structure for the large power class should be approved.

D. Summary

Based upon the determinations made previously herein, the revised tariffs filed by AP&L which are subject matter of this proceeding should be disapproved, and the Company shall be authorized to file new revised tariffs designed to increase Missouri jurisdictional gross annual electric revenues by $5,645,449, exclusive of applicable gross receipts, franchise and other local taxes. The new revised tariffs which AP&L was authorized to file pursuant to this Report and Order shall include the same rate forms and proportional rate level differential relationships inherent in

the Company's original filing in this case, but the specific value of the rates approved by the Commission in this case shall conform to the class revenue requirements established in Section II-B, supra.

As provided for in the Stipulation and Agreement in this case (Joint Exhibit No. 1), a separate Commission docket shall be instituted for the purpose of an investigation of AP&L's generation expansion program. Said investigation shall be considered in Docket No. EO-82-251. Also, the Commission is of the opinion that a separate rate design docket should be established for the purpose of an investigation regarding the rate level differentials in AP&L's rates for all customer classes. Said investigation shall be considered in Case No. EO-82-252.

The Commission concludes that AP&L should submit a cost-of-service study in conjunction with its next Missouri filing for a general increase in rates, and the Company should collect and prepare load research data in a manner which would permit other parties to prepare time-of-use allocations for fixed generation and transmission costs for Commission consideration in the Company's next Missouri rate case. This directive regarding the collection and preparation of load research data shall apply unless the Company petitions the Commission within 60 days of the effective date of this Report and Order and clearly demonstrates that said requirement is unduly burdensome. This directive shall be applicable unless specifically waived by order of the Commission.

The evidence in this case suggests that AP&L's inclusion of the five separate tariff groups within the miscellaneous customer class may not be appropriate for rate design purposes. The Commission is of the opinion that in future Missouri rate proceedings AP&L should treat the five separate tariff groups within the miscellaneous class as individual customer classes and should provide cost support for proposed rate increases for any of these individual tariff groups. This directive shall also be applicable unless a waiver is granted by Commission order under the same procedure as set forth regarding the Company's collection and preparation of load research data described above.

Conclusions of Law

The Missouri Public Service Commission has arrived at the following conclusions of law:

Arkansas Power & Light Company is a public utility subject to the jurisdiction of this Commission pursuant to Chapters 386 and 393, RSMo 1978. The revised tariffs filed by the Company which are the subject matter of this case have been suspended pursuant to authority vested in this Commission by Section 393.150, RSMo 1978. The burden of proof to establish that the proposed revised tariffs and rate increases associated therewith are just and reasonable is upon the Company.

The Commission, after notice and hearing, may order a change in any rate, charge, or rental, or any regulation or practice affecting any rate, charge or rental, and may determine and prescribe the lawful rate, charge, or rental, and the lawful regulation or practice affecting same, thereafter to be observed.

The Commission may consider all facts which, in its judgment, have any bearing upon a proper determination of the price to be charged, with due regard to, among other things, a reasonable average return upon the capital actually expended, and to the necessity of making reservations out of income for surplus and contingencies.

Pursuant to Section 536.060, RSMo 1978, the Commission may accept a stipulation in disposition of issues in a contested case where the Commission finds that the proposed settlement is just and reasonable.

Based upon the Findings of Fact and Conclusions of Law reached herein, the revised tariffs filed by Arkansas Power & Light Company which constitute the subject matter of this proceeding should be disallowed and the Company shall be authorized to file, in lieu thereof, new revised tariffs designed to increase Missouri jurisdictional gross annual electric revenues by $5,645,449, exclusive of applicable gross receipts, franchise and other local taxes, in accordance with the rate design as prescribed by the Commission in this Report and Order.

All motions not heretofore ruled upon are denied and all objections not heretofore ruled upon are overruled.

It is, therefore,

ORDERED: 1. That the revised tariffs filed by Arkansas Power & Light Company of Little Rock, Arkansas, on June 2, 1981, in Case No. ER-81-364 be, and the same are, hereby disallowed, and the Company is hereby authorized to file, in lieu thereof, new revised tariffs designed to increase Missouri jurisdictional gross annual electric revenues by $5,645,449, exclusive of applicable gross receipts, franchise and other local taxes.

ORDERED: 2. That Arkansas Power & Light Company's rate design for Missouri retail customers shall be consistent with the rate design determinations made in this Report and Order.

ORDERED: 3. That Arkansas Power & Light Company be, and the same is, hereby authorized to use "the Accelerated Cost Recovery System" for calculating depreciation for income tax deduction purposes and is further authorized to use a normalization method of accounting, as defined and prescibed in the Economic Recovery Tax Act of 1981, and as defined and prescribed in any rulings or regulations which might be promulgated to further explain or define the provisions of that Act.

ORDERED: 4. That Arkansas Power & Light Company be, and the same is, hereby directed to install channel meter recorders on its four transmission lines which cross into the State of Missouri from the State of Arkansas. Said channel meter recorders shall be operational no later than July 1, 1982.

ORDERED: 5. That Case No. EO-82-251 be, and the same is, hereby instituted for the purpose of an investigation into the generation expansion program of Arkansas Power & Light Company.

ORDERED: 6. That Case No. EO-82-252 be, and the same is, hereby instituted for the purpose of an investigation regarding rate level differentials contained within Arkansas Power & Light Company's rate design for Missouri retail customers.

ORDERED: 7. That Arkansas Power & Light Company be, and the same is, hereby ordered to comply with the Commission's directives contained in Section II-D of this Report and Order.

ORDERED: 8. That the rates contained in any new revised tariffs filed by Arkansas Power & Light Company pursuant to this Report and Order may be effective for service rendered on and after the effective date of this Report and Order.

ORDERED: 9. That any new revised tariffs filed by Arkansas Power & Light Company pursuant to authority granted in this Report and Order shall be filed with the Commission for review on or before April 27, 1982.

ORDERED: 10. That this Report and Order shall become effective on the 30th day of April, 1982.

BY THE COMMISSION

Harvey D. Hubbs

Harvey G. Hubbs
Secretary

(S E A L)

Fraas, Chm., McCartney, Dority, Shapleigh and Musgrave, CC., Concur and certify compliance with Section 536.080, RSMo 1978.

Dated at Jefferson City, Missouri, on the 20th day of April, 1982.

Appendix A

BEFORE THE PUBLIC SERVICE COMMISSION

STATE OF MISSOURI

In the matter of Arkansas Power & Light Company of Little Rock, Arkansas, for authority to file tariffs increasing rates for electric service provided to customers in the Missouri service area of the Company.	)))))))	Case No. ER-81-364

STIPULATION AND AGREEMENT

On June 2, 1981, Arkansas Power & Light Company of Little Rock, Arkansas (hereinafter "Company"), filed certain revised tariffs with the Missouri Public Service Commission (hereinafter "Commission"). The revised tariffs proposed increased rates for electric service provided to the Company's customers in its Missouri service area and had a requested effective date of July 2, 1981. By order dated and effective June 19, 1981, the Commission suspended said tariffs for a period of one hundred twenty (120) days beyond July 2, 1981, to October 30, 1981. Also, by said order, the Company was directed to file its minimum filing requirements, testimony and exhibits within sixty (60) days of June 19, 1981.

By order issued and effective on August 12, 1981, the Commission suspended the Company's tariffs for an additional six (6) months to April 30, 1982, unless otherwise ordered. Also, by said order, the Commission established a schedule of proceedings to orderly resolve this matter including dates for interventions, for the filing of direct testimony and exhibits and for rebuttal testimony and exhibits. Also, by said order, the Commission directed that a prehearing conference commence on February 1, 1982, to continue through February 5, 1982, and directed that a hearing begin on February 16, 1982, to continue through February 28, 1982, as necessary.

Timely applications to intervene in this proceeding were filed by Amax Lead Company of Missouri, St. Joe Minerals Corporation, Cominco American Company and Ozark

Lead Company. (These parties are sometimes hereinafter collectively referred to as "Intervenors.")

On August 14, 1981, the Company timely filed with the Commission and served all parties with its minimum filing requirements and the prepared direct testimony and exhibits of J. R. Maulden, J. J. Harton, N. E. Langston, A. C. Hardy, H. E. Lubow, R. K. Gilbreath and J. P. Herden. On that date, the Company also filed with the Commission and served all parties with the prepared direct testimony of J. H. Aikman. On August 31, 1981, the Company filed with the Commission and served all parties with an exhibit sponsored by J. H. Aikman.

On October 9, 1981, the Company submitted its proposed notice to customers for Commission approval.

On October 16, 1981, the Office of Public Counsel requested that the Commission schedule local public hearings in Caruthersville, Missouri, and other localities as the Commission deemed proper. This request was denied.

On November 20, 1981, the Company withdrew from this proceeding certain tariff sheets concerning the subject matter of cogeneration.

Also on November 20, 1981, the Office of Public Counsel submitted to the Company certain interrogatories which were answered. Certain of the Company's answers to these interrogatories were also furnished to intervenors Ozark Lead Company and Cominco American Company.

By Order dated December 10, 1981, the Commission granted the applications to intervene and approved, with certain revisions, the Company's proposed notice to customers.

On January 13, 1982, the Public Counsel filed with the Commission a motion for extension of time to file its testimony on the issue of rate design which motion was granted by order issued and effective January 15, 1982.

On January 14, 1982, the testimony and exhibit of Maurice Brubaker on behalf of Amax Lead Company of Missouri, St. Joe Minerals Corporation, Cominco American Company and Ozark Lead Company was filed with the Commission and served on

all parties. On January 15, 1982, the prepared testimony of Daniel R. Schmidt on behalf of St. Joe Minerals Corporation was filed with the Commission and served on all parties.

Also, on January 15, 1982, the Staff of the Commission (hereinafter "Staff") filed with the Commission and served on all parties the prepared testimony and exhibits of W. A. Meyer, R. M. Boltz, Jr., R. L. Shackelford, R. M. Fluegge, C. J. Renken, D. Winter, J. Wertz, M. S. Proctor, J. O. Richey, W. J. Cochran, and J. C. Ketter.

On January 20, 1982, the Office of Public Counsel filed with the Commission and served all parties with the prepared testimony and exhibits of Steven Anderson.

On February 1, 1982, the prehearing conference commenced with Company, Staff, Amax Lead Company of Missouri, St. Joe Minerals Corporation, Cominco American Company, Ozark Lead Company and Public Counsel in attendance. No other parties intervened in this case or appeared and participated in the prehearing conference.

As a result of the prehearing conference, the undersigned parties stipulate and agree as follows:

1. That Company be authorized to file revised tariffs designed to increase Missouri jurisdictional gross electric revenues by $5,645,449, exclusive of applicable gross receipts, franchise and other local taxes. That the Office of Public Counsel and Intervenors do not endorse or oppose this amount.

2. That the increase in gross annual revenues mentioned in paragraph 1 above shall be distributed to and within the various rate schedules in accordance with a Report and Order which will be issued by the Commission in this docket after a hearing on the issue of rate design.

3. That the Report and Order of the Commission issued in this docket shall contain the following specific provision:

> ORDERED: Company is authorized to use "the Accelerated Cost Recovery System" for calculating depreciation for income tax deduction purposes and is further authorized to use a normalization method of accounting, as defined and prescribed in the Economic Recovery Tax Act of 1981, and as

defin(and prescribed in any rulings or regulations whi(might be promulgated to further explain or define the provisions of that Act.

4. That Company agrees to install channel meter recorders on its four transmission lines which cross into the State of Missouri from the State of Arkansas. Such channel meter recorders shall be operational no later than July 1, 1982.

5. That the Company agrees to an ORDERED section in the Report and Order approving this Stipulation and Agreement instituting a separate docket for a generation expansion investigation.

6. That this Stipulation and Agreement represents a negotiated dollar settlement for the sole purpose of disposing of all issues in this case with the exception of the issue of rate design. None of the parties to this Stipulation and Agreement shall be prejudiced by or bound by the terms of this Stipulation and Agreement in any future proceeding or in this proceeding, in the event that the Commission does not approve this Stipulation and Agreement in its entirety.

7. That none of the parties to this Stipulation and Agreement shall be deemed to have approved or acquiesced in any ratemaking principle or any method of cost of service determination, or cost allocation underlying any of the rates provided for in this Stipulation and Agreement.

8. That this Stipulation and Agreement is intentionally silent respecting rate of return.

9. That the prefiled testimony and exhibits sponsored by Company witnesses J. R. Maulden, J. J. Harton, N. E. Langston, J. P. Herden and J. H. Aikman, shall be received in evidence without the necessity of these witnesses taking the stand.

10. That the prefiled testimony and exhibits sponsored by Staff witnesses, W. A. Meyer, R. M. Boltz, Jr., R. L. Shackelford, R. M. Fluegge, C. J. Renken, D. Winter, J. Wertz, J. L. Richey, and W. J. Cochran shall be received in evidence without the necessity of these witnesses taking the stand.

11. That in the event the Commission accepts the specific terms of this Stipulation and Agreement, the parties waive their rights to cross-examination of the witnesses named in paragraphs 9 and 10 with respect to their testimony and exhibits.

12. That Company witnesses A. Hardy, R. K. Gilbreath and H. E. Lubow; Staff witnesses J. C. Ketter and M. Proctor; Intervenors witnesses M. Brubaker and D. Schmidt; and Public Counsel witness S. Anderson will take the witness stand and undergo cross-examination. Any cross-examination or other examination of said witnesses shall have no effect on the amount of revenue deficiency mentioned in paragraph 1 above.

13. That in the event the Commission accepts the specific terms of this Stipulation and Agreement, the parties waive

(1) their rights to present oral argument and written briefs pursuant to Section 536.010(1) with respect to all issues except rate design,

(2) their rights pertaining to the reading of the transcript by the Commission pursuant to Section 536.080(3) with respect to all issues except rate design, and

(3) their rights to judicial review to [sic] pursuant to Section 536.510, RSMo 1978 with respect to all issues except rate design.

14. That the Staff shall have the right to submit to the Commission, in memorandum form, an explanation of its rationale for entering into this Stipulation and Agreement and to provide to the Commission whatever further explanation the Commission requests and that such memorandum shall not become a part of the record of this proceeding and shall not bind or prejudice the Staff in any future proceeding or in this proceeding in the event the Commission does not approve the Stipulation and Agreement. It is understood by the parties hereto that any rationales advanced by Staff in such a memorandum are its own and not acquiesced in or otherwise, adopted by such other parties.

15. That the agreements in this Stipulation and Agreement have resulted from extensive negotiations among the signatory parties and are interdependent. In

the event that the Commission does not approve and adopt this stipulation and agreement in total, the parties agree that this Stipulation and Agreement shall be void and no party shall be bound by any of the agreements or provisions hereof.

Respectfully submitted,

/s/ Steve L. Riggs
Steve L. Riggs
General Counsel and
Director of Legal Services
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

/s/ James C. Swearengen
James C. Swearengen No. 21510
W. R. England, III No. 23975
HAWKINS, BRYDON & SWEARENGEN
Professional Corporation
P. O. Box 456
Jefferson City, Missouri 65102
Attorneys for Arkansas Power & Light Company

J. B. Schnapp
SCHNAPP, GRAHAM & REID
135 East Main Street
Fredericktown, Missouri 63645
Attorneys for Amax Lead Company of Missouri

/s/ August L. Griesedieck by JCS
August L. Griesedieck
SCHLAFLY, GRIESEDIECK, FERRELL & TOFT
Room 1330, 314 North Broadway
St. Louis, Missouri 63102
Attorneys for Arkansas Power & Light Company

John H. Hendren
Richard Brownlee, III
HENDREN & ANDRAE
P. O. Box 1069
Jefferson City, Missouri 65101
Attorneys for Ozark Lead Company and Cominco American Company

James M. Fischer
Office of Public Counsel
1014 Northeast Drive
Jefferson City, Missouri 65101

Edward J. Bust
Richard J. Ashby
P. O. Box 500
Viburnum, Missouri 65566
Attorneys for St. Joe Minerals Corporation

/s/ Thomas R. Parker
Thomas Parker
Deputy General Counsel
Holly Peck
Assistant General Counsel
Missouri Public Service Commission
P. O. Box 360
Jefferson City, Missouri 65102
Attorneys for the Staff of Missouri Public Service Commission