

Exhibit No.:

Issue: Jurisdictional Allocations,
Distribution Allocations, Fuel
Inventory Allocations, and
System Energy Losses

Witness: Syed K. Ahmad

Sponsoring Party: MoPSC Staff

Case No.: ER-97-81

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-97-81

DIRECT TESTIMONY

OF

SYED K. AHMAD

*Jefferson City, Missouri
February 1997*

FILED
FEB 13 1997
**MISSOURI
PUBLIC SERVICE COMMISSION**

****Denotes Highly Confidential Information****

NP

Direct Testimony of
Syed K. Ahmad

1 section of the utility. There I was involved in the planning, operation and maintenance of T&D
2 facilities.

3 In June 1993, after receiving my M.S., I worked for a Texas-based corporation,
4 Cartotech. This firm provides computer based services (AM/FM/GIS services) for North American
5 utilities, municipalities, and other industries. I was involved in project implementation for data
6 collection, data conversion and quality control for underground and overhead primary electrical
7 distribution systems. Since August 1994, I have been employed by the Commission.

8 Q. Are you a member of any professional organization?

9 A. Yes, I am an Engineer-in-Training (EIT) under the laws of the State of Missouri
10 and a member of the National and Missouri Society of Professional Engineers.

11 Q. What is the purpose of your testimony in this proceeding?

12 A. The purpose of this testimony is to a) select a jurisdictional allocation
13 methodology, b) use the selected method to develop allocation factors, c) sponsor those allocation
14 factors for use in the allocation of generation & transmission facilities, d) allocate the cost of
15 distribution plant, e) allocate the cost of fuel inventory, and f) allocate the system energy losses.

16 Q. Please define "jurisdictional allocation".

17 A. As recognized in the National Association of Regulatory Utility Commissioners
18 (NARUC) Allocation manual, "A utility that operates in both inter and intra state commerce will
19 be regulated by both federal and state jurisdictions and any lack of consistency between the two
20 regulatory bodies can lead to over-collection or under-collection of revenue by the utility." Thus,
21 a jurisdictional allocation study is used to apportion the cost of generation and transmission assets,
22 included in the Federal Energy Regulatory Commission (FERC) Uniform System of Accounts

Direct Testimony of
Syed K. Ahmad

1 (USOA) 310 - 346 for Generation and 350 - 358 for Transmission, between the jurisdictions served
2 by The Empire District Electric Company (EDE or Company).

3 Q. Please identify the jurisdictions served by the Company.

4 A. EDE provides retail service in the States of Missouri, Kansas, Oklahoma, and
5 Arkansas and wholesale service in Missouri and Kansas.

6 Q. What methodology have you used in performing your jurisdictional allocation?

7 A. I used the four coincident peak (4 CP) hour methodology.

8 Q. What is meant by CP?

9 A. It is the highest one hour demand, in megawatts (MW), occurring in a month.

10 Q. Why use peak demand as the basis for allocations?

11 A. Peak demand is the highest electric requirement occurring in a given period (e.g.
12 a day, month, season, or year). For an electric system, it is equal to the sum of the metered net
13 outputs of all generators within the Company's system plus the metered line flows into the system,
14 less the metered line flows out of the system. Since generating units and transmission lines are
15 designed and planned to meet the peak demand, the individual contribution to peak demand is the
16 appropriate factor for the allocation of facilities costs. EDE monitors and logs the peak demand
17 information for every hour of every day.

18 Q. Please describe the procedure for calculating the jurisdictional allocation factor.

19 A. The jurisdictional allocation factors are calculated by dividing the megawatts
20 (MW) required in each jurisdiction during the CP hour by the MW used throughout the entire
21 system during the same hour.

22 Q. What methodology has EDE used in this rate case?

Direct Testimony of
Syed K. Ahmad

1 A. They used the 12 CP method.

2 Q. What methodology was used by the Staff and EDE in the last Company's rate
3 Case No. ER-95-279?

4 A. The Staff used 4 CP and EDE used 12 CP.

5 **Load Analysis**

6 Q. How did you decide to recommend the 4 CP method?

7 A. I performed three different analyses before selecting the use of the 4 CP method.

8 *Analysis I:* Schedule 1 shows EDE's historical peak loads from October 1987 to September 1995
9 and the test year (i.e., October 1995 to September 1996) peak loads. The table in Schedule 1
10 represents the peak loads in MW, as a percentage of that year's annual peak (AP) and are averaged
11 over the eight years. The load curve in Schedule 1 represents the comparison between the eight
12 year average and the test year's actual monthly peak. It can be observed from the load curve of
13 Schedule 1 that EDE's load peaks during the months of June, July, August and September and
14 drops to a minimum in April or October.

15 *Analysis II:* Schedule 2 illustrates the relationship between ratios of the Company's lowest monthly
16 peak demand to the Company's highest monthly peak demand. The table in Schedule 2 states the
17 month of lowest peak demand, as a percentage of that year's AP demand, month of highest peak
18 demand, as a percentage of that year's AP demand, and lowest monthly peak to highest monthly
19 peak ratio. It can be seen from Schedule 2 that EDE experienced its lowest peak demand in the
20 months of April, May and October, whereas the highest peak demand occurs in the months of July
21 and August. Schedule 2 also shows that over the last nine years, EDE's minimum monthly demand
22 has an average of ** _____ ** of the maximum peak demand.

1 *Analysis III:* Schedule 3 shows the differential in growth between peak and off peak load. It can be
2 noted from Schedule 3 that the Company's load averaged over the last nine years varies from peak
3 season to off peak season by nearly **____**.

4 Q. How was the load data gathered?

5 A. The load data for historical analysis and test year was taken from the data filed
6 by EDE in compliance with 4 CSR 240-20.080.

7 Q. Please summarize the load analyses.

8 A. All three analyses described above reflect that EDE experienced definite peaks
9 during the summer months of June, July, August and September of the test year, which strongly
10 supports the 4 CP method.

11 Q. What are the allocation factors you have calculated for the jurisdictional
12 allocation of Generation and Transmission (G&T) plant?

13 A. Schedule 4 represents the jurisdictional peak demands and the allocation factor
14 for each jurisdiction. The jurisdictional demand data was provided by the Company and the system
15 peak was verified with the 4 CSR 240-20.080 data. The resultant allocation factors for retail are:
16 Missouri, **____**; Kansas, **____**; Oklahoma, **____**; Arkansas, **____**; and
17 for wholesale they are: Missouri, **____**; Kansas, **____**.

18 **Distribution Allocation**

19 Q. Please describe how the distribution allocation were calculated in the previous
20 EDE rate Case, No. ER-95-279, by the Staff?

21 A. The Staff utilized the "roll-in" method of allocating facilities as adopted by the
22 FERC in transmission plant.

Direct Testimony of
Syed K. Ahmad

1 Q. What is the "roll-in" method?

2 A. The "roll-in" method relies on the functional characteristics of facilities. The
3 "roll-in" procedure involves identifying equipment that is accounted for in FERC's USOA 360 - 369
4 (i.e. for distribution equipment), but serves or is capable of serving a "transmission" function. Once
5 identified, the cost of these components is added or "rolled" into the total transmission accounts
6 (i.e. USOA 350 - 359) and allocated among the jurisdictions based on the previously determined
7 allocation factors.

8 Q. What did the Staff find in the previous EDE rate Case No. ER-95-279?

9 A. After the review and inspection of EDE's transmission and distribution system,
10 Staff found that none of the distribution substations served or were capable of serving a transmission
11 function. Staff, however, found that some of EDE's transmission substations contain distribution
12 components that serve a distribution function, and therefore should be assigned to a local
13 jurisdiction.

14 Q. What recommendation was made by the Staff in the previous rate case?

15 A. Staff recommended that costs should be taken out of USOA 353, added to
16 USOA 362, and assigned to the jurisdiction it serves.

17 Q. Do you agree with the Staff approach in the previous EDE rate Case No. ER-
18 95-279?

19 A. Yes.

20 Q. Do you recommend the same shifting of costs from USOA 353 to USOA 362
21 in this rate case?

Direct Testimony of
Syed K. Ahmad

1 A. Yes, I recommend the same shifting of costs be updated to the test year for this
2 EDE rate Case, No. ER-97-81.

3 Q. What costs should be taken out of USOA 353, added to USOA 362, and
4 assigned to the jurisdiction it serves?

5 A. An estimated cost of approximately ** _____ ** in distribution equipment
6 is residing in transmission substations and accounted for in USOA 353. My findings are, that of this
7 amount approximately ** _____ ** benefits Missouri retail customers, ** _____ ** benefits
8 Kansas retail customers, and ** _____ ** benefits Arkansas retail customers. These costs are
9 summarized in Schedule 5.

10 Q. Please describe Schedule 5.

11 A. Schedule 5 represents the allocation of distribution plant. The cost data for the
12 distribution plant was provided by the Company and adjustments were made for the above stated
13 costs. The allocation factors were calculated by dividing the cost of distribution equipment for a
14 particular jurisdiction by the cost of distribution equipment for the entire system. The allocation
15 factors calculated for the test year for retail are: Missouri, ** _____ **; Kansas, ** _____ **;
16 Oklahoma, ** _____ **; Arkansas, ** _____ **. For wholesale, they are: Missouri, ** _____ **;
17 Kansas, ** _____ **.

18 Q. What updates have you made to the test year distribution allocation factors?

19 A. At the request of Staff witness Jim Schwieterman of the Accounting
20 Department, I updated the allocation factors to reflect the actual data through December 31, 1996.
21 The updated distribution allocation factors for retail are: Missouri, ** _____ **; Kansas,

Direct Testimony of
Syed K. Ahmad

1 A. System energy losses are calculated by subtracting the test year sales and
2 Company's usage from the Net System Input (NSI). This can be summarized in mathematical form
3 as:

4 System Energy Losses = NSI - Sales - Company's usage

5 Q. What is the result of your calculation?

6 A. My results are stated in Schedule 6. The NSI (MWH), Total Sales (MWH),
7 Company's usage (MWH) and Loss as a percentage of NSI is ** ____ ** of NSI for the test year
8 under consideration (i.e., from October 1995 - September 1996).

9 Q. Please summarize your testimony.

10 A. I am sponsoring the following Missouri retail allocation factors: for G&T plant,
11 ** ____ **, for distribution plant, ** ____ **; and for fuel inventory, ** ____ **. I am also
12 sponsoring an energy loss factor of ** ____ ** as a percentage of NSI. Finally, I am recommending
13 that ** ____ ** be transferred out of USOA 353 before the G&T allocation factor is applied
14 to the total cost of G&T plant and ** ____ ** of this amount be assigned to Missouri retail
15 customers.

16 Q. Does this conclude your testimony?

17 A. Yes, it does.

SCHEDULE 1

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

SCHEDULE 2

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

SCHEDULE 3

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

SCHEDULE 4

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

SCHEDULE 5

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

SCHEDULE 6

**DEEMED TO BE
HIGHLY CONFIDENTIAL
IN ITS ENTIRETY**

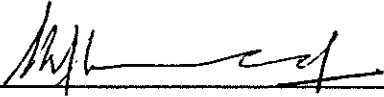
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of The Empire District Electric)
Company of Joplin, Missouri, for authority to file)
tariffs increasing rates for electric service provided) Case No. ER-97-81
to customers in the Missouri service area of the)
Company.)

AFFIDAVIT OF SYED K. AHMAD

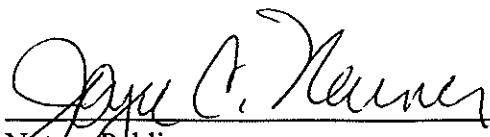
STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

Syed K. Ahmad, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Direct Testimony in question and answer form consisting of 9 pages and 6 schedules to be presented in the above case; that the answers in the foregoing Direct Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.



SYED K. AHMAD

Subscribed and sworn to before me this 11th day of February, 1997.



Notary Public

My Commission Expires: _____
JOYCE C NEUNER
NOTARY PUBLIC STATE OF MISSOURI
OSAGE COUNTY
MY COMMISSION EXP JUNE 18, 1997