

Exhibit No. _____
Issue: Fuel & Purchased Power
Witness: Greg Sweet
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: Empire District
Case No.: ER-2001-299
Date Prepared: May 3, 2001

**Before the Public Service Commission
of the State of Missouri**

Rebuttal Testimony

of

Greg Sweet

May 3, 2001

Exhibit No. 24
Date 5/29/01 Case No. ER-2001-299
Reporter KRM

1
2 REBUTTAL TESTIMONY
3 OF
4 GREG SWEET
5 CASE NO. ER-2001-299
6

7 **I. Introduction**

8 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

9 A. Greg Sweet. My business address is 602 Joplin Street, Joplin, Missouri.

10 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

11 A. The Empire District Electric Company ("Empire" or "Company"). I am a Planning Analyst in
12 the Planning and Regulatory department.

13 Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL
14 EXPERIENCE.

15 A. I was graduated from Missouri Southern State College in July of 1985 with a Bachelor of
16 Science degree in Mathematics. After graduation, I accepted a position with Empire in the
17 Corporate Planning Department as a Planning Analyst. From August 1988 through October
18 1995, I worked in the Marketing and Load Management Department in the areas of
19 conservation, demand-side management, resource evaluation, and marketing analysis and
20 planning. In November 1995, I accepted the position of Planning Analyst in the Strategic
21 Planning Department (recently became Planning and Regulatory), the position I currently hold.

22 As Planning Analyst, I work primarily with the fuel budget, load forecasting, load research, and
23 preparation of Empire's financial forecast.

24 Q. HAVE YOU PRESENTED TESTIMONY BEFORE THIS OR ANY OTHER REGULATORY
25 BODY?

26 A. Yes, I filed direct testimony in this case.

1 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

2 A. The purpose of my testimony is to rebut the fuel and purchased power expense direct testimony
3 of Staff witnesses Mr. Leon Bender and Mr. William Harris.

4 Q. HOW DOES THE LEVEL OF EXPENSE FOR NORMALIZED FUEL AND PURCHASED
5 POWER THAT STAFF IS RECOMMENDING IN DIRECT TESTIMONY COMPARE TO
6 THE ACTUAL 2000 EXPENSE EXPERIENCED BY EMPIRE?

7 A. Staff's recommendation for fuel and purchased power (without demand charges) is
8 approximately \$10 million less than Empire's actual expense for the year 2000 (\$79.795 million
9 vs. \$89.750 million.)

10 Q. COULD WEATHER ACCOUNT FOR THIS SUBSTANTIAL DIFFERENCE?

11 A. In theory, abnormal weather can have a significant impact on Net System Input (NSI).
12 However, that is not the case in this situation. Staff's weather normalization actually raised NSI
13 by about 7,600 MWh (less than 1%). With nearly normal weather, one would expect the
14 production costing computer model Staff used would produce results much closer to those
15 actually experienced.

16 Q. HOW DOES THE LEVEL OF EXPENSE FOR NORMALIZED FUEL AND PURCHASED
17 POWER THAT EMPIRE IS RECOMMENDING COMPARE TO THE STAFF'S
18 RECOMMENDATION IN THIS CASE?

19 A. Staff's recommendation for fuel and purchased power (without demand charges) is
20 approximately \$30 million less than Empire's normalized test-year level (\$107.296 Mil.) as filed
21 in direct testimony

22 Q. WHAT FACTORS ARE CAUSING THIS SUBSTANTIAL DIFFERENCE?

23 A. There is a major difference between the assumptions used in Staff's computer model and those
24 filed by Empire. In Empire's case, the generating and purchased power resources are those that

1 will be available on June 1, 2001 (see Schedule GS-1 from my direct testimony). Staff's filed
2 case does not include the SLCC unit, but does include Stateline unit 2, which has been out of
3 service since September 2000. Staff's computer run also includes two purchase power contracts
4 that expire in May 2001. These resource assumptions by the Staff, along with a low assumed
5 price of natural gas, appear to be the largest differences between the two computer model
6 results.

7 Q. HAS STAFF MADE A FUEL MODEL COMPUTER RUN WITH EMPIRE'S
8 ASSUMPTIONS FOR COMPARISON PURPOSES?

9 A. Yes. At our request, during the pre-hearing conference, Staff made a model run with resource
10 assumptions that matched Empire's and provided us with the results. The total fuel and
11 purchased power expense of this run is much closer to the results of Empire's computer model,
12 however, it appears that the two models dispatched the various generation and purchased power
13 resources very differently.

14 Q. WHAT DO YOU MEAN BY "DISPATCH"?

15 A. The computer model attempts to model the real world, in which various power plants are
16 brought on line at various times to match the demand being placed on the system by the
17 customers. This generally means the lowest-cost units are "dispatched" first. These are
18 generally coal-fired base-load plants. Higher-cost units or sources of purchased power,
19 generally referred to as intermediate or peaking sources, such as combustion turbines, are
20 brought into use as needed to meet the growing demand. This is generally referred to in the
21 industry as "economic dispatch."

22 Q. WHAT ARE THE MAJOR DIFFERENCES IN THE DISPATCH OF THE MODELS?

23 A. Two areas of obvious concern are:

1 1. Unit Start-ups and Stops. The number of starts for some of Empire's generating units in the
2 Staff's computer model output is unrealistically high. If these units were actually operated as
3 suggested by the model output, they would require some type of major maintenance every year.

4 If indeed there were any fuel expense savings in operating the units in this manner, the savings
5 would be trivialized by the resultant increase in maintenance expense.

6 2. Capacity Factor. The capacity factor on several of the Empire generating units as dispatched
7 by the Staff's model is not logical. The SLCC has a much lower heat rate than any of the
8 combustion turbines on Empire's system, i.e., it is more efficient. However, the Staff's model
9 is dispatching some of the combustion turbines at a higher load factor than the SLCC. In
10 comparison, Staff's model output lists SLCC capacity factor at 17.6% while Empire's model
11 operates the SLCC at approximately a 50% capacity factor. In an economic dispatch model,
12 as in the real world, the more efficient unit should run more than a less efficient one.

13 Q. YOU STATED IN DIRECT TESTIMONY THAT, WITH THE COMPLETION OF THE
14 SLCC UNIT, THE PRICE OF NATURAL GAS IS NOW THE KEY DRIVER IN EMPIRE'S
15 FUEL AND PURCHASED POWER COSTS. WHAT IMPACT DOES THE STAFF'S
16 ASSUMPTIONS FOR FUTURE GAS PRICES HAVE ON EMPIRE'S FUEL EXPENSE IN
17 THE PRODUCTION COST MODELLING?

18 A. The Staff utilized three-year historical average natural gas prices which, unless natural gas
19 prices somehow drop dramatically, virtually guarantees that Empire will not recover its fuel
20 expense. This low-cost gas assumption can also change the way the computer model dispatches
21 the generating units since it assumes they have a much lower cost than we are really
22 experiencing. This is particularly important when the model evaluates the cost of running a gas-
23 fired unit compared to potential purchases of power from other sources.

1 Q. HAVE YOU EXAMINED THE STAFF'S INPUT ASSUMPTIONS FOR NON-CONTRACT
2 PURCHASED POWER?

3 A. Yes. The assumptions of price, quantity, availability, and deliverability of non-contract
4 purchased power in Staff's computer model are suspect when compared to real-world system
5 operations. At the Pre-Hearing Conference, Mr. Bender delivered a copy of A Methodology
6 to Calculate Representative Prices for Purchased Energy in the Spot Market. It was developed
7 by the Energy Department, Missouri Public Service Commission in March of 1996 and
8 describes a very statistical method of developing hourly prices for purchased energy from
9 utility-specific historical data. It either doesn't fit the current energy market or it was not
10 implemented very well in Staff's computer model for this case. The input data is voluminous,
11 but I will note a few of the irregularities I observed from the input files of Mr. Bender's
12 workpapers.

- 13 1. The highest price found in Staff's input is \$139.97/MWh. Empire actually paid prices higher
14 than that: 31 hours in 1998 (maximum was \$3,850.00/MWh),
15 52 hours in 1999 (maximum was \$1,710.39/MWh),
16 and 47 hours in 2000 (maximum was \$275.00/MWh).

17 In 2001 Empire has already paid as high as \$135/MWh for spot market energy. While the
18 maximum price paid may appear to be trending downward, real world experience suggests
19 that is not the case and that the actual prices listed above are a result of specific market
20 conditions in each year. Factors such as extreme weather, unit outages and transmission
21 congestion all influence the spot market price at any given time.

- 22 2. There are numerous occurrences of the hourly price increasing by \$30 or more for one or two
23 hours and then decreasing the same amount. This occurs at various times of the day, month
24 and year for no apparent reason. This type of price behavior, while not impossible, is far

1 from normal in Empire's experience. Prices tend to increase/decrease more predictably and
2 in smaller increments from hour to hour. Additionally, in the Staff's model inputs the
3 highest hourly price in July occurs at 9 p.m. In July, air conditioning drives our system
4 demands and Empire typically reaches peak load at 4 or 5 p.m. Spot market energy prices
5 tend to peak during those afternoon hours, not at night when the load is declining.

6 3. Similar hourly fluctuations exist in the available capacity with as much as 400 MW available
7 on an August afternoon. Again from Empire's experience, spot market energy in that
8 quantity is not likely to be available during a normal summer afternoon when every utility
9 in the region is approaching peak demand at roughly the same time. What capacity is
10 available tends not to increase/decrease so dramatically from hour to hour.

11 4. Aside from the price, quantity and availability issues, in discussions with Mr. Bender and
12 other Staff members it became clear that they were ignoring the deliverability issue.
13 Transmission congestion has become an important consideration as the wholesale power
14 market evolves and Empire is not immune to its effects. Even if Empire could purchase
15 energy in the spot market in the quantities and at the prices that Staff has assumed, there is
16 no guarantee that we could get it delivered to our system. In the Southwest Power Pool,
17 Transmission Loading Relief incidents have increased from just a handful in 1998 to over
18 100 incidents in 2000. The transmission congestion problem will almost certainly get worse
19 before it gets better as any long-term solution will require significant capital investments.

20 Q. WAS THERE DISCUSSION AT THE PRE-HEARING CONFERENCE CONCERNING A
21 POSSIBLE APPROACH FOR SETTING FUEL AND PURCHASED POWER COSTS THAT
22 WOULD RESOLVE MOST OF THESE ISSUES AND BE ACCEPTABLE TO EMPIRE?

1 A. Yes. There was general agreement in concept between Staff and Empire for a two-part tariff
2 for a 24-month term with a true-up feature at the end. Please see Mr. Beecher's rebuttal
3 testimony for further discussion of the suggested approach.

4 Q. DOES THIS CONCLUDE YOUR PREPARED REBUTTAL TESTIMONY?

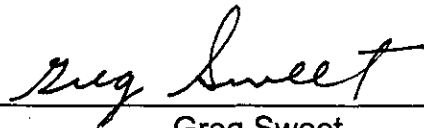
5 A. Yes, at this time.

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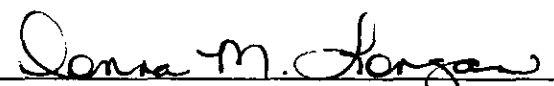
STATE OF MISSOURI)
) ss
COUNTY OF JASPER)

On the 2nd day of May, 2001, before me appeared Greg Sweet, to me personally known, who, being by me first duly sworn, states that he is a Planning Analyst for The Empire District Electric Company and acknowledged that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.



Greg Sweet

Subscribed and sworn to before me this 2nd day of May, 2001.



Donna M. Longan, Notary Public

My commission expires: January 24, 2004.

