

Exhibit No. _____
Issue: Fuel & Purchased Power
Witness: Greg Sweet
Type of Exhibit: Direct Testimony
Sponsoring Party: Empire District
Case No.: _____
Date Prepared: November 2, 2000

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

Direct Testimony

of

Greg Sweet

Exhibit No. 8
Date 5/29/01 Case No. ER-2001-299
Reporter KRM

November 2000

DIRECT TESTIMONY
OF
GREG SWEET
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
PUBLIC SERVICE COMMISSION
OF THE
STATE OF MISSOURI
CASE NO.

1 **I. Introduction**

2 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

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

5 A. The Empire District Electric Company ("Empire" or "Company"). I am a Planning Analyst
6 in the Strategic Planning department.

7 Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL
8 EXPERIENCE.

9 A. I was graduated from Missouri Southern State College in July of 1985 with a Bachelor of
10 Science degree in Mathematics. After graduation, I accepted a position with Empire in the
11 Corporate Planning Department as a Planning Analyst. From August 1988 through October
12 1995, I worked in the Marketing and Load Management Department in the areas of
13 conservation, demand-side management, resource evaluation, and marketing analysis and
14 planning. In November 1995, I accepted the position of Planning Analyst in the Strategic
15 Planning Department, the position I currently hold. As Planning Analyst, I work primarily
16 with the fuel budget, load forecasting, load research, and preparation of Empire's financial
17 forecast.

1 Q. HAVE YOU PRESENTED TESTIMONY BEFORE THIS OR ANY OTHER
2 REGULATORY BODY?

3 A. No, I have not.

4 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE?

5 A. The purpose of my testimony is to provide support for the level of expense that Empire is
6 requesting for fuel and purchased power for Net System Input ("NSI") energy requirements.
7 Section II of my testimony will describe the test-year level of expense for fuel and
8 purchased power for NSI; Section III contains information about the production costing
9 model that was utilized; and Section IV describes the key cost driving variables and
10 modeling considerations.

11 **II. Test-Year Level of Expense for NSI Energy**

12 Q. HOW WAS THE ENERGY REQUIRMENT THAT WAS USED TO CALCULATE FUEL
13 AND PURCHASED POWER EXPENSE DETERMINED?

14 A. Missouri adjusted kilowatt-hour sales are the basis for the Missouri jurisdictional electric
15 revenue in this case. The derivation of these sales is presented in the Direct Testimony of
16 Empire Witness David W. Gibson. Missouri adjusted sales were divided by 0.814 to ratio
17 up to total company sales. The resulting sales number was then divided by 0.926 to account
18 for transmission and distribution losses of 7.40%. These calculations resulted in an NSI
19 requirement of 4,871,200 MWh's. This NSI requirement represents the input needed from
20 generation and purchases to serve the calculated sales.

21 Q. PLEASE DIRECT YOUR ATTENTION TO SCHEDULE DWG-1 OF THE DIRECT
22 TESTIMONY OF EMPIRE WITNESS, DAVID W. GIBSON. WAS A PART OF THAT
23 SCHEDULE PREPARED BY YOU OR UNDER YOUR SUPERVISION?

1 A. Yes. Section J, Schedule 2, Fuel and Purchased Power Adjustment, line 18, was prepared
2 by me.

3 Q. WHAT LEVEL OF EXPENSE FOR NORMALIZED FUEL AND PURCHASED POWER
4 IS EMPIRE RECOMMENDING IN THIS CASE AS SHOWN ON THAT SCHEDULE?

5 A. Empire recommends \$123,489,520 total company fuel and purchased power expense for the
6 test year for the normalized NSI energy requirements of 4,871,200 MWh's. This amount
7 can be separated into the following components: \$107,296,000 for fuel and purchased
8 power for NSI excluding purchase power demand charges; and \$16,193,520 for purchase
9 capacity demand charges for NSI. These costs do not include Operations and Maintenance
10 ("O&M") costs.

11 Q. WHAT PERIOD WAS USED TO DETERMINE THE TEST-YEAR LEVEL OF
12 EXPENSE FOR NSI ENERGY?

13 A. This level of fuel and purchased power expense was based on December 2000 test year data
14 with normalized demand and energy requirements for projected customers as of May 31,
15 2001. The generating and purchased power resources are those that will be available on
16 June 1, 2001. Schedule GS-1, attached to this testimony, gives a list of these resources. The
17 purchased power demand charges are also for contract year beginning June 1, 2001.

18 **III. Production Cost Model**

19 Q. DID EMPIRE UTILIZE A PRODUCTION COST MODEL TO DETERMINE THE
20 LEVEL OF EXPENSE FOR ENERGY?

21 A. Yes. Empire utilized the PROSYM production cost model.

22 Q. PLEASE BRIEFLY DESCRIBE THE PROSYM MODEL.

1 A. The PROSYM model is a chronological dispatch model that dispatches resources to meet
2 demand requirements on an hourly basis. The model commits resources based on fuel costs
3 and variable O&M costs, after accounting for the operational characteristics of a utility
4 system that may override economic dispatch.

5 Q. PLEASE DESCRIBE EMPIRE'S EXPERIENCE OF WORKING WITH THE PROSYM
6 MODEL?

7 A. Empire has been using chronological production costing models for projection purposes
8 since 1991. Empire's last three electric rate case filings in Missouri utilized the ENPRO
9 production-costing model. Subsequent to the last Missouri case, Henwood Energy Services,
10 Inc. in Sacramento, California purchased ENPRO, ended support of the ENPRO model, and
11 requested that all ENPRO customers move to Henwood's production costing model,
12 PROSYM. PROSYM is based on the same conceptual foundation as ENPRO (i.e., a
13 chronological, "Monte Carlo" simulation) and provides output consistent with ENPRO.

14 Q. HAS EMPIRE CHECKED THE PROJECTED PROSYM OUTPUT AGAINST ACTUAL
15 DATA?

16 A. Yes. Empire compared the generation output of the model to historical generation for each
17 unit. The dispatch of Empire's thermal units falls within a reasonable range. Historical
18 generation for Empire's units is attached to my testimony as Schedule GS-2.

19 Q. ARE THERE ANY SIGNIFICANT RESOURCE CHANGES IN THE NORMALIZED
20 JUNE 2001 PERIOD AS COMPARED TO PREVIOUS CASES?

21 A. Yes. Most importantly, the normalized run in this case contains the State Line Combined
22 Cycle (SLCC) unit, which is scheduled to be on-line and fully operational and used for
23 service by June 1, 2001. Additionally, for this time period, the Associated Electric

Cooperative, Inc (AEC), Kansas Gas and Electric (KGE), and Southwestern Public Service Company (SPS) purchased power contracts have expired leaving 162 MW from Western Resources - Jeffrey as Empire's only contract purchase.

IV. Key Cost Driving Variables and Modeling Considerations

Q. WHAT ARE THE VARIABLES WHICH DRIVE THE ENERGY COSTS ON EMPIRE'S SYSTEM?

A. Key variables include fuel prices, purchased power prices, planned and forced outages of thermal units, weather, heat rates, and water availability for the Ozark Beach hydro unit.

Q. WHAT IS THE KEY VARIABLE WHICH DRIVES EMPIRE'S INCREMENTAL COSTS?

A. Purchased energy prices have been the most important variable. Purchased energy costs make up roughly 40% to 50% of Empire's variable fuel and purchased power costs. In recent years, purchased energy has been utilized to serve approximately 35% of Empire's native load. However, with the addition of the SLCC unit, there will be a significant shift in Empire's resource mix as the SLCC will replace substantial power purchases. In the normalized model run for this case, purchased power prices were still important, but the price of natural gas became the key variable.

Q. HOW WAS THE SLCC UNIT MODELED?

A. Empire owns 300 MW (60%) of the 500 MW SLCC plant. It was modeled as two identical 150 MW units with multi-step heat rates based on the expected performance of the various manufacturers' components and adjusted for the limited historical data that is available for similar units in service on other utility systems. The SLCC's operating costs are higher than the coal plants (baseload) and lower than simple cycle gas combustion turbines (peakload)

1 and is therefore considered to be an "intermediate" resource. In the normalized run for this
2 case the SLCC had a total (300 MW) capacity factor of approximately 50%.

3 Q. HOW WAS THE OZARK BEACH HYDRO UNIT MODELED?

4 A. Ozark Beach was modeled based on the average of the past 5 years' historical capacity
5 factors for the units. Hydro generation accounts for less than 2% of NSI.

6 Q. ARE THERE ANY OPERATING CHARACTERISTICS FOR EMPIRE'S ASBURY
7 FACILITIES WHICH NEED SPECIAL CONSIDERATION?

8 A. Asbury is comprised of one boiler and two turbines. The Asbury Unit 1 turbine is rated at
9 193 MW, while the Asbury Unit 2 turbine is rated at 20 MW. Asbury Unit 2 cannot run
10 while Asbury Unit 1 is off. This configuration combined with costs of operating unit 2,
11 causes Empire to operate Unit 2 as a peaking unit that is normally utilized only during the
12 summer season. Both of these constraints have been modeled in the PROSYM model.

13 Q. DO RIVERTON UNITS 7 AND 8 HAVE ANY OPERATING CHARACTERISTICS
14 WHICH NEED TO BE TAKEN INTO ACCOUNT TO ACCURATELY MODEL THEIR
15 OPERATIONS?

16 A. Yes, Riverton Unit 8 can operate to approximately 45 MW (out of its 53 MW of rated
17 capacity) on coal fuel alone. The remainder of the Riverton Unit 8 capacity can only be
18 obtained by over-firing natural gas. Riverton Unit 7 can operate to approximately 26 MW
19 (out of its 38 MW of rated capacity) on coal fuel alone. The remainder of the Riverton Unit
20 7 capacity can only be obtained by over-firing natural gas. The coal-fired capacity
21 limitation has been modeled in PROSYM. Riverton Units 7 and 9 are operated in a
22 modified combined cycle configuration. The exhaust gas from the Unit 9 combustion
23 turbine is used to heat feedwater for the coal-fired Riverton Unit 7. A modeling credit is

1 given to Unit 9 to simulate this configuration. Riverton Units 8 and 10 are configured and
2 modeled in a similar manner.

3 Q. WHAT IS THE BASIS FOR THE FORCED OUTAGE RATES CONTAINED IN THE
4 NORMALIZED RUN?

5 A. Empire has examined the historical equivalent forced outage rates on its units. These
6 historical rates are attached to my testimony as Schedule GS-3. The historical forced outage
7 rates, as well as the generation history of units, served as a basis for the forced outage rates
8 used in the model.

9 Q. WHAT IS THE BASIS FOR THE PLANNED OUTAGE SCHEDULES CONTAINED IN
10 THE NORMALIZED RUN?

11 A. The planned outage schedules are based on the average of the actual maintenance days from
12 the past five years (1995-1999). The planned outage schedules are attached to my testimony
13 as Schedule GS-4.

14 Q. WHAT COAL BLEND RATES ARE USED IN THE MODEL?

15 A. On a million British thermal unit ("MMBTU") basis, Iatan uses 100% ARCO coal, Riverton
16 Units 7 and 8 use 68% Peabody coal and 32% blend coal, and Asbury uses 87% Peabody
17 coal and 13% blend coal.

18 Q. WHAT IS THE BASIS FOR THE COAL COSTS INCLUDED IN THE NORMALIZED
19 RUN?

20 A. All coal costs are based on current delivered initial and freight ("I&F") prices. Coal handling
21 costs are added to the I&F costs to obtain the appropriate coal cost to include in the model.
22 Costs for unit train operation were added after the model run and are attached as Schedule
23 GS-5.

1 Q. WHAT IS THE BASIS FOR THE GAS COSTS INCLUDED IN THE NORMALIZED
2 RUN?

3 A. Broadly speaking, delivered natural gas costs consist of two components; gas commodity
4 and transportation. Empire estimated variable costs for gas based on the NYMEX futures
5 prices. Empire also has fixed costs for firm transportation (FT). The variable cost of the
6 commodity as well as the fixed costs for FT is listed by month for the normalized test year
7 in Schedule GS-6. For further information on the use of NYMEX price and the outlook for
8 gas prices, please see the Direct Testimony of Empire witness Stan Kaplan.

9 Q. WHAT IS THE BASIS FOR THE HEAT RATES CONTAINED IN THE NORMALIZED
10 RUN?

11 A. Multi-step heat rates are input for the units such that they generate an output near that of the
12 historical five-year average heat rate for the units. Schedule GS-7 contains the historical heat
13 rates for Empire's units.

14 Q. HOW WAS THE COST OF THE WESTERN RESOURCES - JEFFREY (WRIJ)
15 CONTRACT PURCHASE ENERGY DETERMINED?

16 A. The WRIJ contract energy purchase price is based on the actual cost of the energy out of the
17 three Jeffrey coal units and is very stable. The three Jeffrey units were assigned the same
18 planned and unplanned outages as those modeled for the Iatan plant, which is similar in size
19 and age. The average energy cost in the normalized run is \$13.10/MWh. The average 12-
20 month ended December 1999 actual energy cost is \$12.66/MWh. The price that Empire
21 paid for both contract and non-contract purchase energy for the 12-month period ending
22 December 1999 is attached to my testimony as Schedule GS-8.

1 Q. DOES EMPIRE PARTICIPATE IN THE NON-CONTRACT PURCHASE ENERGY
2 MARKET?

3 A. Empire participates in the non-contract purchase energy market on a continuous basis. In the
4 Company's modeling of purchases with PROSYM, the model does not distinguish between
5 non-contract purchase energy and energy that is available from contracted capacity.
6 Therefore, Empire has been careful in its modeling to make sure that including non-contract
7 purchase energy does not affect the reliability of Empire's system. Modeling purchases, in
8 general, has been one of the more challenging aspects of modeling Empire's system. The
9 advent of a more liquid wholesale power market has magnified this variable. However, with
10 the addition of the SLCC unit, Empire will be less vulnerable to the uncertainties of the
11 purchased power market. From a modeling standpoint, it is important to consider the results
12 as a whole because of the many variables involved.

13 Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY AT THIS TIME?

14 A. Yes, it does.

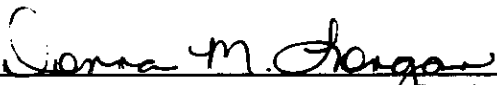
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STATE OF MISSOURI)
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COUNTY OF JASPER)

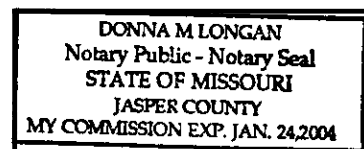
On the 27th day of October, 2000, before me appeared Greg Sweet, to me personally known, who, being by me first duly sworn, states that he is a Planning Analyst for The Empire District Electric Company and acknowledged that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.


Greg Sweet

Subscribed and sworn to before me this 27th day of October, 2000.


Donna M. Longan, Notary Public

My commission expires: January 24, 2004.



**THE EMPIRE DISTRICT ELECTRIC COMPANY
SUMMARY OF RESOURCES IN NORMALIZED RUN**

| RESOURCE | FUEL TYPE | NET CAPACITY (MWS) | ANNUAL CAPACITY CHARGES |
|-----------------|--------------|--------------------------|-------------------------------|
| ASBURY | COAL | 213 | |
| RIVERTON 7 | COAL/GAS | 38 | |
| RIVERTON 8 | COAL/GAS | 53 | |
| RIVERTON 9 | GAS/OIL | 12 | |
| RIVERTON 10 | GAS/OIL | 16.5 | |
| RIVERTON 11 | GAS/OIL | 16.5 | |
| ENERGY CENTER 1 | GAS/OIL | 90 | |
| ENERGY CENTER 2 | GAS/OIL | 90 | |
| OZARK BEACH | HYDRO | 16 | |
| IATAN | COAL | 80 | |
| STATE LINE 1 | GAS/OIL | 101 | |
| STATE LINE 2 | GAS/OIL | 0 | |
| STATE LINE CC | GAS/OIL | 300 | |
| WRI JEFFREY | PURCHASE | 162 | \$ 16,193,520 |
| TOTAL | | 1188 | \$ 16,193,520 |

GENERATION HISTORY

| | 1991 - 1999 ACTUALS | | | | | | | | | 5 YR AVG 1995-99 | NORMALIZED RUN FOR NSI |
|-----------------------|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|------------------------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | | |
| ASBURY 1 NSO | 1,079,491 | 1,251,235 | 1,301,016 | 1,280,956 | 1,268,597 | 1,077,246 | 1,318,692 | 1,168,703 | 1,303,051 | 1,222,839 | 1,320,500 |
| ASBURY 2 NSO | 84,132 | 94,478 | 81,591 | 86,814 | 48,573 | 12,611 | 4,352 | 14,804 | 3,661 | 33,431 | 300 |
| TOTAL ASBURY NSO | 1,163,623 | 1,345,713 | 1,382,607 | 1,367,770 | 1,317,170 | 1,089,857 | 1,323,044 | 1,183,507 | 1,306,712 | 1,256,270 | 1,320,800 |
| IATAN NSO | 586,805 | 555,326 | 483,378 | 644,571 | 622,498 | 651,533 | 598,343 | 596,356 | 607,672 | 615,280 | 493,200 |
| RIVERTON 7 NSO | 189,183 | 141,635 | 167,388 | 185,307 | 136,046 | 181,724 | 156,838 | 173,649 | 167,577 | 163,167 | 147,700 |
| RIVERTON 8 NSO | 304,544 | 265,768 | 281,353 | 294,735 | 298,731 | 307,948 | 294,689 | 274,591 | 296,169 | 294,426 | 279,800 |
| RIVERTON PEAK NSO | 61,606 | 4,684 | 38,041 | 50,989 | 71,097 | 70,671 | 25,000 | 20,467 | 36,077 | 44,662 | 9,000 |
| TOTAL RIVERTON NSO | 555,333 | 412,087 | 486,782 | 531,031 | 505,874 | 560,343 | 476,527 | 468,707 | 499,823 | 502,255 | 436,500 |
| TOT ENERGY CENTER NSO | 709 | (224) | 9,514 | 3,041 | 52,132 | 59,517 | 66,204 | 141,026 | 77,854 | 79,347 | 90,700 |
| STATE LINE 1 NSO | | | | | 46,826 | 32,491 | 43,729 | 115,004 | 118,302 | 71,270 | 131,100 |
| STATE LINE 2 NSO | | | | | | | 76,939 | 163,020 | 288,107 | 176,022 | - |
| STATE LINE CC NSO | | | | | | | | | | | 1,331,500 |
| TOTAL STATE LINE NSO | | | | | 46,826 | 32,491 | 120,668 | 278,024 | 406,409 | 247,292 | 1,462,600 |
| TOTAL THERMAL NSO | 2,306,470 | 2,312,902 | 2,362,281 | 2,546,413 | 2,544,500 | 2,393,741 | 2,584,786 | 2,667,620 | 2,898,470 | 2,617,823 | 3,803,800 |
| OZARK BEACH NSO | 79,865 | 77,644 | 102,673 | 83,556 | 71,302 | 62,860 | 77,578 | 70,631 | 86,349 | 73,744 | 78,000 |
| TOTAL EDE NSO | 2,386,335 | 2,390,546 | 2,464,954 | 2,629,969 | 2,615,802 | 2,456,601 | 2,662,364 | 2,738,251 | 2,984,819 | 2,691,567 | 3,881,800 |
| PURCHASES NSI NET | 841,188 | 767,572 | 1,094,643 | 1,092,858 | 1,324,173 | 1,763,827 | 1,642,642 | 1,764,294 | 1,517,368 | 1,602,461 | 989,400 |
| INADVERTANT | (25) | 19 | (44) | 130 | 651 | (507) | 998 | (1,474) | 307 | (5) | - |
| NSI REQUIREMENT | 3,208,554 | 3,151,977 | 3,552,901 | 3,720,515 | 3,937,177 | 4,204,598 | 4,250,155 | 4,471,314 | 4,473,229 | 4,267,295 | 4,871,200 |
| GENERATION SALES | 18,944 | 6,160 | 6,652 | 2,442 | 3,449 | 15,323 | 55,849 | 29,757 | 29,265 | 26,729 | - |

THE EMPIRE DISTRICT ELECTRIC COMPANY

EQUIVALENT FORCED OUTAGE RATES

1995-1999

| | ASBURY 1 | ASBURY 2 | RIVERTON 8 | RIVERTON 7 | IATAN |
|-------------------|----------|----------|------------|------------|--------|
| 1995 | 7.10% | 24.03% | 1.99% | 0.72% | 1.58% |
| 1996 | 8.18% | 34.53% | 0.24% | 1.85% | 5.60% |
| 1997 | 7.07% | 27.40% | 0.77% | 0.71% | 6.23% |
| 1998 | 13.95% | 30.05% | 2.09% | 0.57% | 11.56% |
| 1999 | 1.49% | 3.82% | 0.03% | 1.48% | 14.79% |
| 5 Year Average | 7.60% | 23.60% | 1.02% | 1.09% | 8.15% |
| Normalized Run | 5.00% | 24.46% | 1.10% | 0.78% | 11.56% |

THE EMPIRE DISTRICT ELECTRIC COMPANY

MAINTENANCE DAYS

| UNIT | Days in normalized Run | Average # of Days 1995-1999 | Average # of Days 1999 | Average # of Days 1998 | Average # of Days 1997 | Average # of Days 1996 | Average # of Days 1995 |
|-----------------|------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| ASBURY 1 | 30 | 43.52 | 34.86 | 35.83 | 34.54 | 75.71 | 36.65 |
| ASBURY 2 | 30 | 52.19 | 48.80 | 35.83 | 57.09 | 75.75 | 43.48 |
| RIVERTON 7 | 52 | 31.44 | 14.90 | 8.34 | 19.79 | 5.53 | 108.63 |
| RIVERTON 8 | 30 | 23.18 | 17.63 | 49.44 | 21.00 | 10.10 | 17.75 |
| RIVERTON 9 | 8 | 57.84 | 0.32 | 150.66 | 128.20 | 1.67 | 8.38 |
| RIVERTON 10 | 44 | 7.43 | 11.45 | 0.00 | 9.02 | 1.25 | 15.42 |
| RIVERTON 11 | 8 | 13.77 | 11.63 | 0.00 | 38.37 | 0.19 | 18.68 |
| IATAN | 64 | 11.19 | 2.18 | 0.06 | 26.41 | 2.22 | 25.10 |
| ENERGY CENTER 1 | 14 | 66.87 | 33.49 | 112.67 | 27.32 | 7.05 | 153.84 |
| ENERGY CENTER 2 | 14 | 60.43 | 147.49 | 56.01 | 3.16 | 47.33 | 48.16 |
| STATE LINE 1 | 14 | 32.07 | 7.48 | 52.61 | 33.27 | 34.68 | 32.32 |
| STATE LINE 2 | NA | 90.94 | 157.23 | 83.00 | 32.61 | NA | NA |
| STATE LINE CC | 30 | NA | NA | NA | NA | NA | NA |

THE EMPIRE DISTRICT ELECTRIC COMPANY

Schedule GS-5

| <u>Unit Train and Other Fuel Related Costs</u> | |
|--|-----------|
| Lease Train Cost Iatan | 172,070 |
| Iatan Diversion | (28,128) |
| Lease Train Cost EDE | 598,125 |
| EDE Train Sublease credit | (675,000) |
| | |
| EDE Train Depreciation | 316,403 |
| | |
| Iatan Train Property Tax | 6,768 |
| EDE Train Property Tax | 40,000 |
| | |
| Iatan Train Maintenance | 30,000 |
| EDE Train Maintenance | 280,000 |
| | |
| EDE Railroad Maintenance | 31,240 |
| | |
| Total Fuel Related Costs | 771,478 |

THE EMPIRE DISTRICT ELECTRIC COMPANY

Natural Gas Prices in the Normalized Run

| <u>Month</u> | <u>NYMEX Futures \$/mmbtu *</u> | <u>Firm Transportation Fixed \$</u> |
|--------------|---|---|
| Jan | 5.210 | 482,586 |
| Feb | 5.005 | 482,586 |
| Mar | 4.770 | 482,586 |
| Apr | 4.535 | 482,586 |
| May | 4.455 | 482,586 |
| Jun | 4.430 | 482,586 |
| Jul | 4.425 | 482,586 |
| Aug | 4.425 | 482,586 |
| Sep | 4.415 | 482,586 |
| Oct | 4.420 | 482,586 |
| Nov | 4.555 | 482,586 |
| <u>Dec</u> | <u>4.650</u> | <u>482,586</u> |
| Year | avg. 4.608 | sum \$ 5,791,036 |

Notes

* Settle futures prices for Henry Hub Natural Gas as of October 11, 2000, www.NYMEX.com

THE EMPIRE DISTRICT ELECTRIC COMPANY

[illegible]

**THE EMPIRE DISTRICT ELECTRIC COMPANY
1999 PURCHASE DATA FOR NSI**

| AEC SP | | | | KGE SP | | | | SPS SP | | | |
|---|--------|---------|--------|--------------|--------|-----------|--------|---|---------|-----------|--------|
| | MWH | COST | \$/MWH | | MWH | COST | \$/MWH | | MWH | COST | \$/MWH |
| Jan-99 | 35,315 | 760,040 | 21.52 | Jan-99 | 31,700 | 411,547 | 12.98 | Jan-99 | 16,843 | 249,120 | 14.79 |
| Feb-99 | 24,328 | 437,025 | 17.96 | Feb-99 | 28,842 | 327,955 | 11.37 | Feb-99 | 7,041 | 91,448 | 12.99 |
| Mar-99 | 26,746 | 533,022 | 19.93 | Mar-99 | 32,830 | 410,663 | 12.51 | Mar-99 | 18,206 | 323,969 | 17.79 |
| Apr-99 | 23,704 | 451,524 | 19.05 | Apr-99 | 30,124 | 443,076 | 14.71 | Apr-99 | 18,233 | 311,614 | 17.09 |
| May-99 | 26,674 | 506,784 | 19.00 | May-99 | 31,510 | 625,184 | 19.84 | May-99 | 20,090 | 387,825 | 19.30 |
| Jun-99 | 23,945 | 523,617 | 21.87 | Jun-99 | 40,532 | 504,528 | 12.45 | Jun-99 | 18,510 | 407,240 | 22.00 |
| Jul-99 | 918 | 74,170 | 80.80 | Jul-99 | 51,228 | 801,368 | 15.64 | Jul-99 | 22,630 | 390,960 | 17.28 |
| Aug-99 | 1,359 | 226,495 | 166.66 | Aug-99 | 53,911 | 812,922 | 15.08 | Aug-99 | 24,175 | 479,617 | 19.84 |
| Sep-99 | 2,005 | 44,015 | 21.95 | Sep-99 | 39,453 | 641,675 | 16.26 | Sep-99 | 9,780 | 264,418 | 27.04 |
| Oct-99 | 5,940 | 157,210 | 26.47 | Oct-99 | 34,010 | 410,962 | 12.08 | Oct-99 | 11,360 | 210,060 | 18.49 |
| Nov-99 | 4,705 | 123,099 | 26.16 | Nov-99 | 33,057 | 417,497 | 12.63 | Nov-99 | 7,155 | 125,779 | 17.58 |
| Dec-99 | 27,858 | 649,780 | 23.32 | Dec-99 | 49,892 | 573,250 | 11.49 | Dec-99 | 18,135 | 286,384 | 15.79 |
| Total 1999 | | | | Total 1999 | | | | Total 1999 | | | |
| 203,497 | | | | 457,089 | | | | 192,158 | | | |
| 4,486,781 | | | | 6,380,627 | | | | 3,528,434 | | | |
| 22.05 | | | | 13.96 | | | | 18.36 | | | |
| WESTERN RESOURCES - JEFFREY (Began June, 1998) | | | | NON CONTRACT | | | | TOTAL for NSI (Excluding SWPA Exchange) | | | |
| | MWH | COST | \$/MWH | | MWH | COST | \$/MWH | | MWH | COST | \$/MWH |
| Jan-99 | 21,840 | 257,952 | 11.81 | Jan-99 | 60,448 | 1,093,044 | 18.08 | Jan-99 | 166,146 | 2,771,703 | 16.68 |
| Feb-99 | 16,030 | 194,045 | 12.11 | Feb-99 | 46,909 | 826,648 | 17.62 | Feb-99 | 123,150 | 1,877,121 | 15.24 |
| Mar-99 | 13,919 | 165,687 | 11.90 | Mar-99 | 38,407 | 743,702 | 19.36 | Mar-99 | 130,108 | 2,177,043 | 16.73 |
| Apr-99 | 13,084 | 158,915 | 12.15 | Apr-99 | 66,123 | 1,439,252 | 21.77 | Apr-99 | 151,268 | 2,804,381 | 18.54 |
| May-99 | 19,224 | 239,061 | 12.44 | May-99 | 30,274 | 646,019 | 21.34 | May-99 | 127,772 | 2,404,873 | 18.82 |
| Jun-99 | 21,426 | 268,868 | 12.55 | Jun-99 | 2,691 | 64,482 | 23.96 | Jun-99 | 107,104 | 1,768,735 | 16.51 |
| Jul-99 | 21,890 | 270,314 | 12.35 | Jul-99 | 1,133 | 283,802 | 250.49 | Jul-99 | 97,799 | 1,820,614 | 18.62 |
| Aug-99 | 21,360 | 263,823 | 12.35 | Aug-99 | 578 | 32,718 | 56.61 | Aug-99 | 101,383 | 1,815,575 | 17.91 |
| Sep-99 | 16,660 | 208,105 | 12.49 | Sep-99 | 38,712 | 656,183 | 16.95 | Sep-99 | 106,610 | 1,814,396 | 17.02 |
| Oct-99 | 13,530 | 171,956 | 12.71 | Oct-99 | 47,504 | 862,649 | 18.16 | Oct-99 | 112,344 | 1,812,837 | 16.14 |
| Nov-99 | 18,330 | 236,662 | 12.91 | Nov-99 | 52,646 | 957,267 | 18.18 | Nov-99 | 115,893 | 1,860,304 | 16.05 |
| Dec-99 | 21,620 | 336,674 | 15.57 | Dec-99 | 60,731 | 1,230,292 | 20.26 | Dec-99 | 178,236 | 3,076,380 | 17.26 |
| Total 1999 | | | | Total 1999 | | | | Total 1999 | | | |
| 218,913 | | | | 446,156 | | | | 1,517,813 | | | |
| 2,772,062 | | | | 8,836,058 | | | | 26,003,962 | | | |
| 12.66 | | | | 19.80 | | | | 17.13 | | | |