Exhibit No.
Issue: Fuel and Purchased Power
Witness: Todd W. Tarter
Type of Exhibit: Supplemental
Direct Testimony
Sponsoring Party: Empire District
Case No. ER-2006-0315

Before the Public Service Commission
of the State of Missouri

Supplemental Direct Testimony

of

Todd W. Tarter

July 2006

** Denotes Highly Confidential**

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SUPPLEMENTAL DIRECT TESTIMONY
OF
TODD W. TARTER
ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION
CASE NO. ER-2006-0315

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Todd W. Tarter. My business address is 602 Joplin Street, Joplin, Missouri.

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

A. I am employed by The Empire District Electric Company ("Empire" or "Company") as the Manager of Strategic Planning.

Q. ARE YOU THE SAME TODD W. TARTER THAT FILED DIRECT TESTIMONY IN THIS CASE BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. My supplemental direct testimony will address a portion of the additional fuel and purchased power information requested by the Commission by its Order Requiring Additional Information or Supplemental Filing ("Order") issued on June 20, 2006 in this proceeding. Specifically, I will discuss Empire's projections of future usage of natural gas and purchased power for the next three calendar years (2007-2009), and the projection of total on-system fuel and purchased power costs for the next three calendar years if Empire were to hedge 100% of its expected natural gas needs based on natural gas prices as of July 10, 2006 as directed by the Order. I will also explain how these projections were

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determined, provide a detailed breakdown of costs, and provide the assumptions that support the projections. This represents a portion of the information that was requested in questions 2 and 3 of the Order.

II. PROJECTIONS OF NATURAL GAS AND PURCHASED POWER FOR 2007-2009

Q. HOW MUCH NATURAL GAS AND PURCHASED POWER DOES EMPIRE EXPECT TO USE ON AN ANNUAL BASIS FOR EACH OF THE NEXT THREE YEARS?

A. The following table summarizes projections for natural gas and spot market purchased power usage for the next three calendar years, 2007-2009.

	Natural Gas Burn MMBtu	Spot Purchase MWh
2007	**----------**	**---------**
2008	**----------**	**---------**
2009	**----------**	**---------**

Q. HOW WERE THESE USAGE PROJECTIONS DETERMINED?

A. These projections were developed with a production cost model, which is a computer program used to perform an hourly simulation of a utility's generation and purchased power resources. The underlying data used by the model was from the base case in Empire's most current approved Fuel and Purchased Power Budget for 2007-2009. The natural gas prices were based on Empire's current hedged position (July 10, 2006) and the cost to hedge the remainder of Empire's expected natural gas needs based on the hedging strategies described in the testimony of Empire witness Richard McCord.

Q. WHAT PRODUCTION COST MODEL DID EMPIRE USE TO DEVELOP THESE PROJECTIONS?

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A. Empire used the PROSYM production cost model. This is the same model used by Empire to develop the normalized fuel and purchased power cost in this case. Details about this model can be found in my direct testimony filed on February 1, 2006.

Q. EARLIER YOU USED THE TERM "BASE CASE". PLEASE EXPLAIN WHAT IS MEANT BY A "BASE CASE".

A. The model simulations contain assumptions about the future. Since the future contains uncertainties, it is customary to model sensitivity around key variables. An example would be using high, low, and medium weather-normal load forecasts that accounts for varying levels of future customer growth. Aside from the natural gas prices, which were provided by Mr. McCord, the data used in the production cost model for these projections are from the Company's 2007-2009 Budget data sets. This data represents the mid-level or "base case" of the future based on the information that was known at the time this budget cycle was developed in the third and fourth quarter's of 2005.

III. COSTS OF FUEL & PURCHASED POWER 2007-2009

Q. BASED ON THE PRICE OF NATURAL GAS ON JULY 10, 2006 AND ASSUMING NORMAL WEATHER, WHAT IS THE PROJECTED TOTAL ON-SYSTEM FUEL AND PURCHASED POWER COSTS IF EMPIRE HEDGES 100% OF EXPECTED NATURAL GAS USAGE?

A. The following tables summarize the projected cost of total company on-system fuel and purchased power (F&PP) costs for 2007-2009, based on Empire's current hedged positions, and the two different hedging strategies described in the testimony of Mr. Richard McCord. The data is presented in total dollars and on a $/MWh basis.

Total Company
On-System F&PP Costs
Based on Fixed Price
Physical Natural Gas Contracts

	Total FPP $ for NSI	Total NSI $/MWh
2007	**----------**	**-----**
2008	**----------**	**-----**
2009	**----------**	**-----**

Total Company
On-System F&PP Costs
Based on Fixed Price
Financial Natural Gas Contracts

	Total FPP $ for NSI	Total NSI $/MWh
2007	**----------**	**-----**
2008	**----------**	**-----**
2009	**----------**	**-----**

Q. HOW WERE THESE COST PROJECTIONS DETERMINED?

A. They were determined with the same PROSYM production cost computer model runs for 2007-2009, that were used to project the usage information presented in section II of this testimony.

Q. PLEASE SUMMARIZE THE NATURAL GAS PRICES USED IN EACH OF THE TWO MODEL RUNS.

A. The natural gas price changed in each of the two runs with all other variables remaining constant. They are based on Empire's current hedged position for 2007-2009; and the two natural gas hedging strategies described in Mr. Richard McCord's testimony which are based on spot natural gas prices for 2007-2009 as of July 10, 2006. The two natural gas hedging strategies are:

- Fixed price physical contract
- Fixed price financial contracts commonly called "swaps"

The following tables summarize the natural gas prices used in the model. The first set of prices represents the actual hedged natural gas for 2007-2009 as of July 10, 2006, and the

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second set of prices represents natural gas prices if Empire were to hedge the remaining portion of its expected natural gas needs for 2007-2009 as of July 10, 2006.

2007 Natural Gas Hedged Position As of July 10, 2006

Month	MMBtu	Avg Price $/MMBtu
Jan-07	**_____**	**_____**
Feb-07	**_____**	**_____**
Mar-07	**_____**	**_____**
Apr-07	**_____**	**_____**
May-07	**_____**	**_____**
Jun-07	**_____**	**_____**
Jul-07	**_____**	**_____**
Aug-07	**_____**	**_____**
Sep-07	**_____**	**_____**
Oct-07	**_____**	**_____**
Nov-07	**_____**	**_____**
Dec-07	**_____**	**_____**
	_____	**_____**

2008 Natural Gas Hedged Position As of July 10, 2006

Month	MMBtu	Avg Price $/MMBtu
Jan-08	**_____**	**_____**
Feb-08	**_____**	**_____**
Mar-08	**_____**	**_____**
Apr-08	**_____**	**_____**
May-08	**_____**	**_____**
Jun-08	**_____**	**_____**
Jul-08	**_____**	**_____**
Aug-08	**_____**	**_____**
Sep-08	**_____**	**_____**
Oct-08	**_____**	**_____**
Nov-08	**_____**	**_____**
Dec-08	**_____**	**_____**
	_____	**_____**

2009 Natural Gas Hedged Position As of July 10, 2006

Month	MMBtu	Avg Price $/MMBtu
Jan-09	**_____**	**_____**
Feb-09	**_____**	**_____**
Mar-09	**_____**	**_____**
Apr-09	**_____**	**_____**
May-09	**_____**	**_____**
Jun-09	**_____**	**_____**
Jul-09	**_____**	**_____**
Aug-09	**_____**	**_____**
Sep-09	**_____**	**_____**
Oct-09	**_____**	**_____**
Nov-09	**_____**	**_____**
Dec-09	**_____**	**_____**
	_____	**_____**

Natural Gas Prices for the Remainder of the Natural Gas Consumed in the Model

2007	Physical Fixed Price Contracts $/MMBtu	Financial Fixed Price Contracts $/MMBtu
Jan-07	**_____**	**_____**
Feb-07	**_____**	**_____**

2008	Physical Fixed Price Contracts $/MMBtu	Financial Fixed Price Contracts $/MMBtu
Jan-08	**_____**	**_____**
Feb-08	**_____**	**_____**

2009	Physical Fixed Price Contracts $/MMBtu	Financial Fixed Price Contracts $/MMBtu
Jan-09	**_____**	**_____**
Feb-09	**_____**	**_____**

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Mar-07	**_____**	**_____**	Mar-08	**_____**	**_____**	Mar-09	**_____**	**_____**
Apr-07	**_____**	**_____**	Apr-08	**_____**	**_____**	Apr-09	**_____**	**_____**
May-07	**_____**	**_____**	May-08	**_____**	**_____**	May-09	**_____**	**_____**
Jun-07	**_____**	**_____**	Jun-08	**_____**	**_____**	Jun-09	**_____**	**_____**
Jul-07	**_____**	**_____**	Jul-08	**_____**	**_____**	Jul-09	**_____**	**_____**
Aug-07	**_____**	**_____**	Aug-08	**_____**	**_____**	Aug-09	**_____**	**_____**
Sep-07	**_____**	**_____**	Sep-08	**_____**	**_____**	Sep-09	**_____**	**_____**
Oct-07	**_____**	**_____**	Oct-08	**_____**	**_____**	Oct-09	**_____**	**_____**
Nov-07	**_____**	**_____**	Nov-08	**_____**	**_____**	Nov-09	**_____**	**_____**
Dec-07	**_____**	**_____**	Dec-08	**_____**	**_____**	Dec-09	**_____**	**_____**

Q. WHAT WERE THE WEIGHTED AVERAGE NATURAL GAS PRICES FROM THE MODEL RUNS?

A. In the PROSYM runs, with the model utilizing the natural gas prices described above, the following were the weighted average costs of the natural gas consumed.

	Physical Fixed Price Case $/MMBtu	Financial Fixed Price Case $/MMBtu
2007	**____**	**____**
2008	**____**	**____**
2009	**____**	**____**

Q. ARE THERE ANY ADDITIONAL COMMENTS YOU WOULD LIKE TO MAKE ABOUT THE COST PROJECTIONS IN THIS TESTIMONY?

A. Yes. It is important to emphasize that the cost projections in this testimony for 2007-2009 are greatly contingent on the assumptions about the future. The cost projections are based on hedging 100% of expected natural gas usage based on natural gas prices as of July 10, 2006. Due to the volatility of the natural gas market, if a different date were selected, the

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cost projections could be different than those presented, and potentially significantly different. For example, if these same cost projections were made with natural gas prices in mid-June 2006, when natural gas prices were only about 4% higher for the 36-month average for 2007-2009, then the projected fuel and purchased power costs would have been over $5 million higher for the three year period. This price differential would apply to about 56% of the expected natural gas usage since about 44% of the expected natural gas usage is already hedged for 2007-2009.

Q. WERE THERE ANY NEW GENERATING UNITS INCLUDED IN THE MODEL RUNS FOR 2007-2009?

A. Yes. The model runs for 2007-2009 contain all of the existing generating resources and contract purchases that were included in Empire's normalized fuel & purchased power run for this case, and the new 155 megawatt ("MW") V84 combustion turbine that is under construction at the Riverton Kansas power station. The model runs have the new unit available for production in April 2007.

Q. COULD YOU PLEASE PROVIDE THE ASSUMPTIONS AND A DETAILED BREAKDOWN IN SUPPORT OF YOUR PROJECTIONS?

A. Yes. A summary of each of the production cost model runs are provided as a detailed cost and usage breakdown in Schedule TWT-1. The generating unit assumptions are provided as Schedule TWT-2, and the outage schedules are provided as Schedule TWT-3.

Q. HOW DOES THE ENERGY COST INFORMATION YOU ARE PROVIDING IN THIS SUPPLEMENTAL TESTIMONY COMPARE TO THE ENERGY COST INCLUDED IN THE ORIGINAL EMPIRE RATE CASE FILING OF FEBRUARY 1, 2006?

A. Empire's original filing included a total Company fuel and energy cost of $162,888,204 or an average cost of $30.76 per MWh before losses, and was based on a load forecast with expected customers for calendar year 2006. Of this total, approximately $137 million was associated with fuel and energy and $25.8 million was associated with capacity charges, fuel transportation charges, and other fuel related expenses. The following table displays the fuel and energy costs included in Empire's February 1, 2006 filing and the updated fuel and energy costs requested by the Commission in its order of June 20, 2006.

Alternatives	Feb-01-06 Filing	2007	2008	2009
Rate Case Filing				
Total Cost ($000)	$162,888			
Average Cost $/MWh	$30.76			
Physical Hedging				
Total Cost ($000)		**_____**	**_____**	**_____**
Average Cost $/MWh		**_____**	**_____**	**_____**
Financial Hedging				
Total Cost ($000)		**_____**	**_____**	**_____**
Average Cost $/MWh		**_____**	**_____**	**_____**

As indicated, fuel and energy costs are expected to increase over the level originally included in the rate case over the next three years under each of the scenarios we analyzed. Part of this increase in cost is due to our forecast of increasing sales volumes, but as indicated the average cost per MWh also increases under each alternative. For example, the average cost per MWh included in the Company's February 1 filing was $30.76 while those expected from the projections for 2007-2009 could climb to the range of **--------** in 2007 to **----------** by the end of 2009. Based upon the sales volumes in the test year of this case (at 2006 levels), this average increase in cost per MWh in the range of

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----- to **------** would produce an increase in overall fuel and purchased power costs from about **----------** to about **----------**.

Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. Yes.

Thermal Unit Model Inputs

	Rated Capacity (MW)	Modeld Max Capacity (MW)	Modeld Min Capacity (MW)	Heat Rate Curve Capacity (MW)	Heat Rate Curve Heat Rate (Btu/kWh)	Ramp Rate (MW/hr)	Forced Outage Rate (%)	Mean Repair Time (Hours)	Min Down Time (Hours)	Min Up Time (Hours)	Fuel Ratio (MMBtu)	Start Fuel (MMBtu)	Start Cost ($)	Variable O&M ($/MWh)
Asbury 1	193	183	105	110 140 162 188 191	11485 11230 11135 11180 11210	90	7%	60	90		80% / 20%	1200 (oil)	2500	0.60
Asbury 2	17	16	4	4 20	18300 18200	8	20%	60	60		80% / 20%	0	0	5.00
Iatan	80	80	48	70 80	10100 10025	90	8%	60	60		100%	1200 (oil)	2500	0.60
Riverton 7	38	23	20	20 27 38	12700 12500 17000	40	6%	48	90		65% / 35%	600 (gas)	1000	1.00
Riverton 8	54	42	32	30 46 54	12080 11980 21610	40	6%	72	90		70% / 30%	600 (gas)	1000	1.00
Riverton 9	12	12	4	4 12	18500 17500	6	10%	60	24	8		50 (gas)	1500	3.75
Riverton 10	16	16	6	6 16	18500 17500	8	10%	60	24	8		50 (gas)	1500	3.75
Riverton 11	16	16	10	10 16	18500 18000	8	10%	60	24	8		50 (gas)	1500	3.75
Riverton 12	155	155	118	118 151 168	10000 9211 8943	60	10%	72	10	14		150 (gas)	11,000	3.62
Energy Center 1	86	76	30	30 50 70 85 90	17850 15800 14750 14200 14000	60	10%	72	24	12		150 (gas)	5000	3.00
Energy Center 2	85	75	30	30 50 70 85 90	17850 15800 14750 14200 14000	60	10%	72	24	12		150 (gas)	5000	3.00
Energy Center 3	50	50	25	25 38 50	12400 11200 10600	40	10%	60	2	2		0	300	3.00
Energy Center 4	50	50	25	25 38 50	12400 11200 10600	40	10%	60	2	2		0	300	3.00
State Line 1	89	86	80	60 85	14750 13425	60	10%	120	24	24		150 (gas)	5000	3.00
SLCC 1x1	250	250	150	150 175 200 225 250	8000 7700 7400 7100 6850	90	7%	72	36	48		300 (gas)	13,000	3.50
SLCC 2x1	50	50	10	10 20 30 40 50	7600 7250 6900 6750 6850	20	14%	72	36	72		300 (gas)	2500	3.00

SCHEDULED OUTAGES FOR MODEL SIMULATIONS

Unit Name	2007			2008			2009		
	Days	Start	End	Days	Start	End	Days	Start	End
Asbury	9	28-Apr	6-May	9	12-Apr	20-Apr	30	11-Apr	10-May
	56	24-Sep	18-Nov						
Iatan 1	30	15-Mar	13-Apr	56	20-Sep	14-Nov	0		
Riverton 7	9	14-Apr	22-Apr	9	29-Mar	6-Apr	9	28-Mar	5-Apr
Riverton 8	9	12-May	20-May	35	26-Apr	30-May	16	16-May	31-May
Riverton 9	7	28-Mar	3-Apr	7	5-Apr	11-Apr	7	12-Apr	18-Apr
Riverton 10	7	21-May	27-May	7	12-Apr	18-Apr	7	26-Apr	2-May
Riverton 11	7	27-Oct	2-Nov	7	19-Apr	25-Apr	7	9-May	15-May
Riverton 12	0			7	22-Mar	28-Mar	7	25-Oct	31-Oct
Energy Center 1	47	12-Feb	30-Mar	5	7-Apr	11-Apr	5	9-Mar	13-Mar
	5	8-Oct	12-Oct	5	6-Oct	10-Oct	5	28-Sep	2-Oct
Energy Center 2	47	12-Feb	30-Mar	5	14-Apr	18-Apr	5	16-Mar	20-Mar
	26	4-Sep	29-Sep	5	13-Oct	17-Oct	5	5-Oct	9-Oct
	5	15-Oct	19-Oct						
Energy Center 3	5	1-Apr	5-Apr	5	21-Apr	25-Apr	5	6-Apr	10-Apr
Energy Center 4	5	1-Apr	5-Apr	5	21-Apr	25-Apr	5	6-Apr	10-Apr
State Line 1	5	26-Mar	30-Mar	19	17-Mar	4-Apr	5	23-Mar	27-Mar
	26	7-Sep	2-Oct	5	28-Apr	2-May	5	19-Oct	23-Oct
				5	20-Oct	24-Oct			
SLCC 1 x 1	24	24-Nov	17-Dec	56	1-Oct	25-Nov	16	3-Oct	18-Oct
SLCC 2 x 1	0			56	1-Oct	25-Nov	0		
WRI JEC 1	21	11-Mar	31-Mar	21	26-Oct	15-Nov	0		
WRI JEC 2	0			21	2-Mar	22-Mar	42	1-Nov	12-Dec
WRI JEC 3	21	7-Oct	27-Oct	0			21	8-Mar	28-Mar