

Exhibit No.

Issue: Fuel and Purchased Power

Expenses: Risks Associated with Expenses;

Fuel Adjustment Clause; In-Service Criteria:

O&M Expense

Witness: Brad P. Beecher

Type of Exhibit: Direct Testimony

Sponsoring Party: Empire District

Case No.

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

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Direct Testimony

of

Brad P. Beecher

Missouri Public
Service Commission

April 2004

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TABLE OF CONTENTS
OF
BRAD P. BEECHER
ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION

INTRODUCTION	1
EMPIRE'S NEED FUEL ADJUSTMENT CLAUSE OR INTERIM ENERGY CHARGE	2
EMPIRE'S MANAGEMENT OF FUEL & PURCHASED POWER EXPENSE	6
PROPOSED LEVEL FOR FUEL & PURCHASED POWER EXPENSE	12
IN SERVICE CRITERIA FOR ENERGY CENTER UNITS 3 & 4	16

DIRECT TESTIMONY
OF
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MISSOURI PUBLIC SERVICE COMMISSION
CASE NO.

1 **I. INTRODUCTION**

2 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

3 A. Brad P. Beecher. 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 Vice President –
6 Energy Supply.

7 Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND FOR THE
8 COMMISSION.

9 A. I graduated from Kansas State University in 1988 with a Bachelor of Science Degree in
10 Chemical Engineering.

11 Q. PLEASE GIVE AN OVERVIEW OF YOUR PROFESSIONAL EXPERIENCE.

12 A. I was employed by Empire immediately following my graduation from Kansas State
13 University in May of 1988. From May of 1988 through August of 1999, I held roles as a
14 staff engineer at Empire's Riverton Power Plant, in budgeting and fuel procurement in our
15 Energy Supply Department, and finally as Director of Strategic Planning. I went to work in
16 August 1999 for Black & Veatch. Between August of 1999 and February of 2001, I held
17 roles as Service Area Leader for the Strategic Planning Group of Black & Veatch's Power
18 Sector Advisory Services and as Associate Director of Marketing and Strategic Planning in
19 their Energy E&C Group. I rejoined Empire as General Manager – Energy Supply in
20 February 2001. I was elected Vice President – Energy Supply in April 2001. Currently,
21 my responsibilities include all of Empire's energy supply functions including power plant
22 construction, operation & maintenance, energy trading, and fuel procurement.

1 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE BEFORE
2 THE MISSOURI PUBLIC SERVICE COMMISSION ("COMMISSION")?

3 A. My direct testimony provides information on several topics. In Section II, I describe
4 Empire's need for either a Fuel and Purchased Power Adjustment Clause ("FAC") and/or
5 an Interim Energy Charge ("IEC") to appropriately address the volatility of natural gas and
6 non contract purchase energy. In Section III, I present information surrounding Empire's
7 successful proactive management of on-system fuel and purchased power costs. In Section
8 IV, I present the proposed level of expenses for fuel and purchased power for the test year
9 in this case and describe some of the challenges in determining the appropriate level of
10 expense. In Section V, I address proposed in-service criteria for Energy Center Units 3 and
11 4 that were declared commercial in April of 2003.

12 **II. EMPIRE'S NEED FOR FUEL ADJUSTMENT CLAUSE OR INTERIM ENERGY**
13 **CHARGE**

14 Q. WHAT IS YOUR UNDERSTANDING OF THE ROLE AND RESPONSIBILITY OF THE
15 COMMISSION WITH REGARD TO SETTING RATES FOR ELECTRIC UTILITIES?

16 A. The Commission is responsible for determining and prescribing just and reasonable rates for
17 the services furnished by electric utilities under its jurisdiction. In accordance with the
18 Commission's own mission statement, such just and reasonable rates should ensure that
19 Missourians receive safe and reliable utility services and that a regulatory process is used that
20 is efficient and responsive to all parties. To me, this means that rates need to be set at a fair
21 level for all parties involved and that risk tradeoffs need to be evaluated in setting those rates.
22 As the cost of capital experts' testimony shows, the returns this Commission has previously
23 allowed have been inadequate and are lower than the rates of return other state Commissions'
24 have allowed for utilities, the vast majority of which also enjoy the benefit of the risk-
25 mitigating fuel adjustment clauses.

1 Q. WHAT METHOD IS EMPIRE PROPOSING IN THIS CASE TO DETERMINE FUEL
2 AND PURCHASED POWER COST?

3 A. Empire has filed tariffs indicative of three separate methods. Our preferred method would be
4 a Fuel and Purchased Power Adjustment Clause (FAC). Another alternative filed is an
5 Interim Energy Charge. A third, but less desirable alternative would be a traditional forecast
6 which most certainly will be highly contentious among the parties. We believe this third
7 alternative is the most unsatisfactory of the three methods and will produce the least
8 reasonable outcome. In the past, the revenue requirements determined using this method led
9 to significant debates among the parties that we are trying to avoid in this rate proceeding and
10 that, based on current market conditions, would virtually certainly lead to under-recovery of
11 fuel costs.

12 Q. PLEASE PROVIDE SOME BACKGROUND ON THE IEC.

13 A. In Empire's Missouri rate case (Case No. ER-2001-299), the parties acknowledged the
14 volatility of natural gas and unpredictability of spot purchased power and the Commission
15 ultimately implemented a rider termed the IEC. In addition to a fixed amount of fuel and
16 purchased power expense that Empire was allowed to recover through its rates, the IEC
17 allowed a new charge that was subject to true-up and refund to account for the volatility
18 and unpredictability of natural gas and spot purchase power prices. I believe that it was a
19 good method to remove a portion of the volatility that can negatively affect Empire, its
20 customers, and its shareholders. Recently, the Commission approved a similar rider also
21 termed the IEC in Case No. ER-2004-0034 involving Aquila, Inc. The testimony in that
22 case involving the IEC follows much of the same reasoning as was utilized in the 2001
23 Empire case.

24 Q. DOES EMPIRE BELIEVE THE IEC IS AN EFFECTIVE MEANS OF ADDRESSING
25 THE VOLATILITY IN THE NATURAL GAS AND WHOLESALE ELECTRICITY
26 MARKETS?

1 A. Yes. Implementation of an IEC will result in rates that allow Empire to recover at least the
2 level of fuel and purchased power expenses which it has experienced on an historical basis,
3 and at most, costs which were recently prevalent in the market. The IEC would allow
4 Empire to ultimately recover its actual prudently incurred fuel and purchased power costs
5 (as determined through a Staff audit) within a band set during a rate proceeding. Since
6 there is a cap on the IEC, Empire may still be subject to losses due to large swings in the
7 natural gas and wholesale electricity markets. An IEC however, does help to minimize the
8 effects of some of the peaks and valleys that are certain to occur in the natural gas and
9 purchased power markets. Since the IEC contains a floor, an IEC does not prevent
10 Empire's customers from paying more than actual fuel and purchased power costs in the
11 event those costs are below the floor.

12 Q. DO YOU HAVE AN ALTERNATIVE TO THE IEC?

13 A. Yes. The IEC, as its name suggests, is only an "interim" solution. The IEC does not stop
14 natural gas from being volatile or wholesale purchase power prices from changing. By
15 virtue of its past design, it will expire which will nearly automatically necessitate another
16 full blown rate proceeding. Such full blown rate proceedings take time and result in
17 significant expenses for which our customers or shareholders must ultimately pay. Empire
18 is supporting efforts by a broad range of utilities within the State of Missouri to implement
19 fuel adjustment clause legislation. To the extent that legislation is enacted to enable a fuel
20 adjustment clause, we can avoid lags in passing through changes in fuel costs (up and
21 down) which should provide for a more financially sound utility. In total it should further
22 the Commission's mission of providing a process to allow for just and reasonable
23 assurance that Missourians receive safe and reliable utility services and that a regulatory
24 process is used that is efficient and responsive to all parties.

25 Q. WHY IS EMPIRE PROPOSING A FAC OR IEC IN THIS RATE CASE RATHER THAN
26 APPROACHES THE COMPANY HAS SUPPORTED IN THE PAST?

1 A. First and foremost, addressing high natural gas and volatile spot purchase power contracts is
2 essential to Empire's continued financial health. Empire burned 6.5 million MMBtu of
3 natural gas in 2003 and we expect to burn nearly 10 million MMBtu in a normalized year.
4 Understating natural gas prices in a rate proceeding by only \$1/MMBtu could cause our
5 shareholders to absorb \$6.4 M in reduction to retained earnings in just 1 year. The \$6.4 M
6 represents nearly 20% of the retained earnings accumulated in our Company since its
7 formation in 1944. The traditional regulatory process simply takes too long for us to absorb a
8 mistake that could easily be twice as large.

9 Empire believes that a contested rate case can protect the interests of both the Company
10 and its customers. However, a rate case result that does not recognize nor provide for the
11 volatility associated with natural gas prices and purchased power prices through either an IEC
12 or FAC does not provide that protection for either its customers or its shareholders.

13 Without an IEC or a FAC, the parties to the case are forced to stake out positions. The
14 Commission Staff runs its computer models and uses a combination of historical data and
15 judgment to determine a number for fuel and purchased power that the Company nearly
16 always considers is too low; Staff then stakes its position on the low number throughout the
17 contested rate case. Empire conversely uses a combination of historical data and judgment to
18 determine a number as the value for fuel and purchased power, that the Staff nearly always
19 considers too high. This tends to force the Commission to decide between what might be
20 extremes, or to pick some random number in the middle when there may be no concrete
21 evidence to support it. All of this seems to be unproductive when history shows that is
22 impossible to accurately predict what the actual prices will be.

23 If the rate case revenues are set by the Commission at a value that is too low, the customers
24 do not cover the operational costs incurred by Empire. Under this scenario, over the long run,
25 both shareholders and customers suffer the consequences. The stock does not hold its value
26 and the cost of capital increases as Empire's ratings fall. If the rate case revenues are set too
27 high, the customers pay more than the operational costs incurred with no mechanism for
28 true-ups or refunds.

1 As stated earlier, in Empire's Case No. ER-2001-299 an IEC was implemented to deal
2 with most of the same issues. At the time of the stipulation gas prices were high from a
3 historical perspective (over \$5.50/MMBtu). However, it wasn't too far back in history when
4 gas prices were low (around \$3.50/MMBtu). The IEC helped to appropriately balance gas
5 prices and non-contract purchase power risks. In the months that followed the implementation
6 of the IEC, natural gas and wholesale power prices fell and our customers subsequently
7 received a refund that they would not have received if gas prices had been set at then-current
8 levels without an IEC in place. We are once again at a time when the price for natural gas is
9 quite high and no one can be certain where it will go from here. I think the fact the
10 Commission and other parties to Case No. ER-2004-0034 (Aquila) recently recognized this
11 and implemented an IEC is evidence that the Commission is attempting to bring a reasonable
12 and practical solution to this problem by balancing the competing interests.

13 **III. EMPIRE'S MANAGEMENT OF FUEL AND PURCHASED POWER EXPENSES**

14 Q. WHAT TRENDS HAVE BEEN DRIVING CHANGES IN EMPIRE'S FUEL COSTS?

15 A. Empire has been adding gas-fired generation since the mid-1990s. The units added
16 included approximately 90 MW in 1995, 150 MW in 1997, 150 MW in 2001 (the 1997 and
17 2001 units became part of State Line Combined Cycle) and 100 MW in 2003. While these
18 units have provided for low capital cost capacity, the variable energy costs are more
19 expensive than the coal-fired energy that made up a majority of our energy mix in the early
20 1990s. Natural gas is currently the primary fuel source for 704 MW of our 1264 MW of
21 generating capacity (56%). A total of 30% of our energy in 2003 was generated from our
22 natural gas fired units or purchased on the spot market.

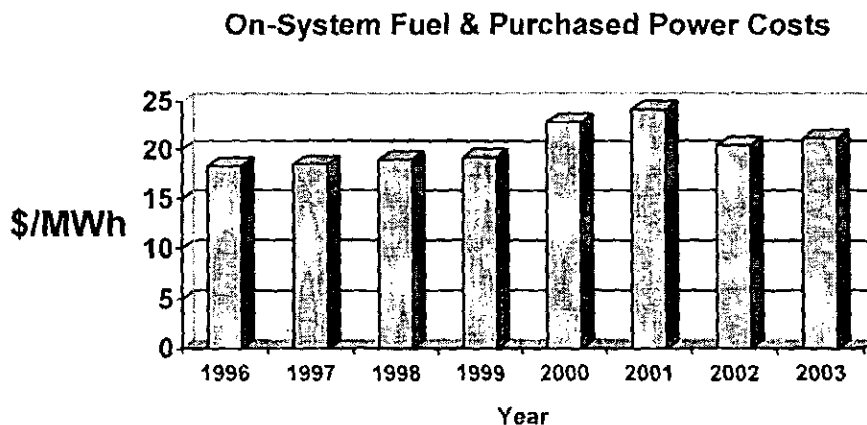
23 Empire's gas-fired capacity additions were in-line with a national trend given that gas-
24 fired capacity additions were viewed as more friendly to the environment than coal and
25 requiring less capital investment in a time of great uncertainty as to the regulatory
26 treatment generation would be afforded. The gas-fired generation trend also affected the
27 wholesale power market. Because so many simple cycle gas turbines and combined cycle
28 units were added throughout the U.S. during the 1990s and early 2000s, the prices for spot
29 market wholesale power now reflect gas-fired generation pricing many hours of the year.

Compounding the effects of the addition of gas-fired generation, natural gas prices have increased from between \$2-3/MMBtu in the mid-1990s to over \$4.50/MMBtu for the majority of 2003.

Q. HOW HAS THE ADDITION OF THE GAS-FIRED GENERATION AND THE INCREASE IN GAS PRICES AFFECTED EMPIRE'S OVERALL ENERGY COSTS?

A. Empire's costs on a \$/MWh basis increased from \$18.33/MWh in 1996 to \$21.15/MWh in 2003. The average annual increase from 1996 through 2003 was just 2.06%. Given the shift in fuel mix from coal to gas and given the dramatic increase in wholesale natural gas prices, I believe this modest increase in costs is a direct result of Empire's active management of prices and risks. Information pertaining to on-system fuel and purchased power costs for 1996 through 2003 is presented in Figure 1 below.

Figure 1



Q. THE COSTS APPEAR TO PEAK IN 2000 AND 2001. WHAT CAUSED THE INCREASE?

A. Our annual costs peaked at \$24.17/MWh in 2001. We actually hit a twelve-month rolling peak of \$24.79 at the end of November 2001. The increase in expenses was driven by many factors. One of the main factors was an increase in natural gas prices. Natural gas prices increased dramatically in 2000 and 2001. We were buying gas on an as needed basis and as the natural gas prices ran up so did our expenses. The increase in expenses affected net income directly. An extended outage on our low-cost Asbury generating

1 station also contributed to this peak in costs. During the outage, we upgraded controls and
2 replaced cyclone burners. We also found we had a damaged main generator step-up
3 transformer and had to operate in a derated condition for a period of time.

4 Q. WHAT HAS EMPIRE DONE TO ALLEVIATE SOME OF THE RISK DUE TO
5 VOLATILE NATURAL GAS PRICES?

6 A. While the 2001 IEC was in effect, Empire implemented an Energy Risk Management
7 Policy and added personnel that specifically focus their efforts on the purchasing and
8 hedging of power and natural gas. The Energy Risk Management Policy sets targets as to
9 how much natural gas Empire must have hedged at any point in time. In general the Risk
10 Management Policy brings more sophistication and consistency to our fuel procurement.
11 Our risk management policy is attached as Schedule BPB-1.

12 Q. YOU MENTION THE TERM "HEDGED". PLEASE EXPLAIN WHAT THE TERM
13 "HEDGED" MEANS.

14 A. Hedging is a strategy used to offset investment or price risk, specifically to protect against
15 price movements. Hedging can be used by individual investors, as well as companies and
16 financial institutions. Empire's Risk Management Policy allows the utilization of
17 traditional physical purchases and the utilization of financial tools such as call options,
18 collars, swaps, and futures contracts to protect against adverse price movements.

19 Q. WHAT DETERMINES HOW MUCH NATURAL GAS IS HEDGED BY EMPIRE AND
20 WHEN SUCH NATURAL GAS IS HEDGED?

21 A. Empire originally enacted a Risk Management Policy ("RMP") in 2001 that establishes the
22 approach and internal rules that Empire will use to manage specifically its power and
23 natural gas commodity risk. The policy is revised approximately annually to reflect lessons
24 learned and changes in markets and financial instruments. The RMP targets for hedging of
25 natural gas are:

26 A minimum of 10% of year four expected gas burn

27 A minimum of 20% of year three expected gas burn

28 A minimum of 40% of year two expected gas burn

1 A minimum of 60% of year one expected gas burn

2 Up to 80% of any year's expected requirement can be hedged if appropriate, given the
3 associated volume risk.

4 Thus, by the end of 2003, our policy required that we have 60-80 percent of 2004 gas
5 needs hedged, 40-80 percent of 2005 needs, 20-80 percent of 2006 needs, and 10-80
6 percent of 2007 needs. Empire is in effect dollar cost averaging the price of natural gas to
7 remove volatility for both Empire and our customers. Schedule BPB-2, attached to this
8 direct testimony, shows Empire's natural gas positions as of April 16, 2004.

9 Q. HOW WOULD YOU CHARACTERIZE EMPIRE'S HEDGING STRATEGY?

10 A. Empire's hedging strategy has been valuable as it has provided significant stability to our
11 customers rates and shareholder returns. For example, in 2003 since we did not have a rate
12 proceeding, Empire's shareholders would have paid approximately \$13.5 million more for
13 natural gas had Empire not hedged its natural gas purchases. Alternatively, if we had been
14 able to effect a quick rate proceeding, our customers would have paid more. As shown on
15 Schedule BPB-3, Empire paid an average hedged price in 2003 of \$3.02/MMBtu for
16 natural gas. If the natural gas had not been hedged, the weighted average price based on
17 NYMEX close would have been a higher value of \$5.12/MMBtu.

18 Q. WHAT IS NYMEX?

19 A. NYMEX stands for New York Mercantile Exchange. NYMEX provides a standard
20 contract by which to hedge natural gas commodity risk. The standard contract point is at
21 the Henry Hub in Louisiana. It is commonly considered the most liquid price transparent
22 pricing point for natural gas in the U.S.

23 Q. PLEASE COMPARE YOUR 2003 ACTUAL COSTS OF NATURAL GAS TO 2003
24 CLOSING NYMEX PRICES.

Table 1

NYMEX Market Contract Closes

Month of 2003	Price \$/MMBtu
January	4.97
February	5.66
March	9.00
April	5.12
May	5.11
June	5.96
July	5.33
August	4.65
September	4.88
October	4.44
November	4.46
December	4.88

As a comparison, Empire's average cost of natural gas commodity in 2003 was \$3.02/MMBtu, which is lower in every month than the value of NYMEX contracts.

Q. WHAT WAS THE MOST SIGNIFICANT FACTOR IN ALLOWING EMPIRE TO EXPERIENCE GAS COSTS AT THE \$3.02/MMBTU LEVEL?

A. Our hedging program is designed to provide more predictable gas prices that are fair to the customer and shareholder. We began our hedging program in late 2001. At that time, natural gas commodity costs were between \$3/MMBtu and \$4/MMBtu. Pursuant to our RMP, we hedged a portion of our needs. In essence we took low cost positions in 2001 and 2002 relative to the 2004 market. This policy served Empire and its customers very well in 2003.

Q. WHAT WOULD EMPIRE'S AVERAGE PRICE IN 2003 BEEN FOR NATURAL GAS IF THE ACTUAL PRICE OF NATURAL GAS HAD FALLEN TO \$2/MMBTU?

A. Many variables would have changed, including the economy, our customers demand, and spot purchased power prices to name a few. But, ignoring those, our expense for natural gas would have been in the \$3.02/MMBtu range. In other words, we took positions that

BRAD P. BEECHER
DIRECT TESTIMONY

1 hedged against price fluctuations and that we believed protected both customer and
2 shareholder from excessive risks of fuel price volatility.

3 Q. DO YOU EXPECT YOUR HEDGING PROGRAM TO PRODUCE RESULTS IN THE
4 \$3/MMBtu PRICE RANGE IN 2005?

5 A. No. We have only about 60% of our anticipated 2004 needs and 40% of our 2005 needs
6 hedged at an average price of \$4.15/MMBtu. As of the market close on April 21, 2004, the
7 futures market for natural gas contracts were priced as shown in Table 2. In order for
8 Empire to achieve average gas prices of \$3/MMBtu in 2004 or 2005, the price for natural
9 gas would have to fall well below \$3/MMBtu to offset the \$4.15/MMBtu contractual
10 obligations that we already have in place. With current prices for 2004 and 2005
11 consistently above \$5/MMBtu, Empire cannot possibly expect its hedging program to
12 result in gas prices in 2004 or 2005 as low as \$3/MMBtu. Rather, average prices will have
13 to be expected to increase above the \$4.15 level. In fact, based on current forecasts,
14 Empire expects natural gas costs to increase to \$4.50 MMBtu for 2004.

15 **Table 2**

16 **Future Market Prices as of Market Close March 2, 2004**

Month	2004	2005
January		6.26
February		6.21
March		6.02
April		5.41
May	5.59	5.28
June	5.66	5.28
July	5.74	5.33
August	5.78	5.34
September	5.75	5.29
October	5.77	5.31
November	5.94	5.47
December	6.12	5.62

IV. PROPOSED LEVEL FOR FUEL AND PURCHASED POWER EXPENSES

Q. WHAT LEVEL OF EXPENSE FOR ON-SYSTEM FUEL AND PURCHASED POWER IS EMPIRE RECOMMENDING IN THIS CASE?

A. As stated earlier, Empire's first preference is a FAC. Empire recommends a FAC that has charges based on an expense of \$121,665,153 total Company for on-system fuel and purchased power for the projected energy requirements of 5,042,800 MWh. On a unitized basis, this value of revenue requirements reflects expenses at a level of \$24.13/MWh. Adjustments would be made on a periodic basis conforming to law or the terms of a stipulation.

Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?

A. I utilized actual twelve-month ending cost and tried to make just and reasonable adjustments for a minimal number of variables. I made five adjustments from actual cost; they are 1) normalized energy, 2) natural gas costs, 3) new natural gas transportation, 4) escalation of delivered coal prices, and 5) the replacement of the American Electric Power ("AEP") short-term contract energy. Table 3 summarizes the adjustments.

Table 3

Adjustments to Twelve Month Ending December 31, 2003

	MWh	\$	\$/MWh
Actual TME 12/31/03	4,950,161	104,714,009	21.15
Weather/Growth Adjustment	92,639	2,130,697	29.24
New Gas Transport		2,250,000	
Delivered Coal Price Escalation (2%)		523,893	
Natural Gas Prices (3.02 to 4.60 for 6.45M MMBtu)		10,190,379	
Replace AEP Short-term Contract Energy		1,278,108	
Total	5,042,800	121,665,153	24.13

Q. WILL YOU PLEASE PROVIDE THE RATIONALE BEHIND EACH ADJUSTMENT?

A. Yes.

1 **Actual TME 12/31/03**

2 This row in the table represents actual MWh, \$, and \$/MWh for calendar year 2003. As
3 presented in Figure 1 above, 2003 results are in line with 2002 results. There were no
4 major or abnormal outages on our generating plants. I would not expect the wholesale spot
5 market to dramatically change year over year.

6 **Weather/Growth Adjustment**

7 This adjustment was made to match requested expenses with the normalized revenues and
8 kWh in this case. The MWh were priced at Empire's average incremental power cost for
9 2003 of \$29.24/MWh.

10 **New Gas Transport**

11 Empire entered into a gas transportation agreement with Southern Star to help serve the
12 new combustion turbines at Empire's Energy Center. The pipeline upgrade was expected
13 to be in service during the fall of 2003. However, due to construction difficulties, the
14 pipeline was not placed in service at that time. We now expect the pipeline to be in service
15 by June 2004 and for Empire to begin making its contractually obligated payment at that
16 time. This amounts to an annualized expenditure of \$2,250,000.

17 **Delivered Coal Price Escalation**

18 This adjustment was made to account for the escalation of coal commodity and freight
19 prices that Empire experiences on an annual basis under current contract terms. Empire
20 has contracts with various coal and freight providers that have differing terms of escalation.
21 When all of these terms are taken into consideration, Empire's commodity plus freight
22 price of coal stands to increase approximately 2% (on a \$/MMBtu basis) in 2004 when
23 compared to 2003 prices.

24 **Natural Gas Prices**

25 Our hedging program resulted in average natural gas commodity prices of \$3.02/MMBtu in
26 2003 for the 6,450,000 MMBtu of natural gas that we burned. In 2005, when rates will be
27 in effect from this case, we have about 4,200,000 MMBtu of gas hedged at \$4.15/MMBtu
28 and the remainder is unhedged. As you can see in Table 2, 2005 gas prices currently
29 average \$5.44/MMBtu. Applying \$5.44/MMBtu to 2,250,000 MMBtu and \$4.15/MMBtu
30 to 4,200,000 MMBtu gives a weighted average price of \$4.60/MMBtu. Applying the

1 difference between \$4.60/MMBtu and \$3.02/MMBtu to the actual burn of 6,450,000
2 MMBtu gives an adjustment of \$10,190,379.

3 **Replace AEP Short-term Contract Energy**

4 In 2002 and for the first half of 2003, Empire was able to procure a favorable short-term
5 purchase power contract with AEP. In 2003 this contract contributed 201,428 MWh to
6 Empire's on-system energy needs at an average price of \$29.55 (average price includes
7 capacity demand charges). This power is no longer available from AEP. An adjustment
8 has been made to replace this energy with energy from Empire's State Line Combined
9 Cycle ("SLCC") unit at a price of \$35.90/MWh, the average price found in Run 1 for
10 SLCC generation presented in Ms. Tietjen's testimony.

11 Q. HOW DOES THIS METHOD OF CALCULATING FUEL AND PURCHASED POWER
12 COSTS COMPARE TO THE METHOD USED IN PREVIOUS RATE CASES?

13 A. In previous rate cases in which I have been involved in Missouri, fuel and purchased power
14 expenses have generally been estimated by both Company and Staff utilizing their
15 respective hourly computer models. In almost every circumstance, we ended up with a
16 very sophisticated "battle of the models." I believe that the models themselves will
17 generally provide the same answer given the same input data. The arguments that Empire
18 and the Staff typically have had revolved around just a couple of input variables. The
19 variables of contention have been natural gas prices and the price as well as the availability
20 of non-contract purchase energy. I reviewed the Fuel and Purchased Power testimony in
21 the recent Aquila electric rate Case No. (ER-2004-0034) and the large fuel and purchased
22 power issues in that case were also natural gas pricing and non-contract purchased power
23 costs and availability.

24 Q. WHY HAVE NATURAL GAS COSTS BEEN AN ISSUE?

25 A. In my opinion, they have been an issue because natural gas prices are so volatile. The Staff
26 wants to make sure the consumers get the benefit of low gas prices and selects a method or
27 data that will yield a low gas price forecast. The Company wanted to make sure the
28 shareholders do not shoulder the weight for high gas prices and selects a method or data
29 that results in a higher gas price forecast. Neither the Staff, nor the Company can
30 accurately forecast the natural gas prices however. This is why the Company is now
31 strongly advocating the use of an FAC or an IEC. I, as well as future witnesses for Staff,

1 The Office of Public Counsel, and other intervenors, could write pages of testimony
2 showing forecast of prices, why the futures market is not a good indicator of future prices,
3 and why the past prices are not a perfect predictor of future prices. However, at this time I
4 am hopeful that all parties to the case will see the necessity of either the FAC or IEC and
5 we can focus our efforts on appropriate measures and conditions around the FAC or IEC.

6 Q. WHAT ABOUT NON CONTRACT PURCHASE ENERGY?

7 A. Non-contract purchase energy is even more difficult to forecast. The price and availability
8 of non-contract energy is based upon conditions in the market resulting from utilities other
9 than Empire both inside and outside of the State of Missouri. Factors that will affect the
10 price and availability of that energy include transmission cost, transmission availability,
11 coal prices, natural gas prices, planned and forced outage rates, weather, heat rates, water
12 availability, and market perception to name just a few -- all from organizations other than
13 Empire. In addition, non-contract energy generally directly competes with the natural gas-
14 fired generation and hence the quantity of gas the model projects will be utilized in test
15 year. If too much non-contract energy at a cheap price is made available in the model, then
16 the natural gas-fired resources in the model will not be utilized. Therefore, it is possible to
17 agree on a gas price and still significantly disagree on fuel and purchased power expense.
18 Again, a review of the issues in the recent Aquila case read like a review of the Empire
19 cases in 2001 and 2002. Without the implementation of a FAC or IEC, this issue is sure to
20 result in "battling of the models" in this case.

21 Q. WHAT IS EMPIRE RECOMMENDING FOR AN IEC?

22 A. Empire witness Jill Tietjen concurrently files testimony in the more traditional "model"
23 fashion. The model provides the basis for the base charge of \$105,000,000 (\$20.82/MWh)
24 and the IEC of \$20,000,000 for a total of \$125,000,000 (\$24.79/MWh). The base and the
25 IEC were derived by reflecting forecast natural gas pricing and spot purchase power price
26 assumptions in our hourly dispatch model. The assumptions surrounding the model are
27 also provided by Ms. Tietjen.

28 Q. IF EMPIRE IS NOT ABLE TO UTILIZE ONE OF ITS PREFERRED METHODS TO
29 DETERMINE FUEL AND PURCHASED POWER COSTS (AN IEC OR FAC). WHAT
30 WOULD EMPIRE RECOMMEND FOR BASE ON-SYSTEM FUEL AND PURCHASED
31 POWER COSTS?

1 A. Under this circumstance, Empire would revert to the more traditional production forecast
2 modeling of on-system fuel and purchased power costs. Empire's base run (Run 1)
3 forecasts on-system fuel and purchased power costs of \$123,017,327 (\$24.39/MWh) for
4 5,042,800 MWh of energy, which Empire's rate filing is based on. Again, the assumptions
5 surrounding the model are presented in Ms. Tietjen's testimony. It should be noted that
6 this modeled value for on-system fuel and purchased power costs compares very favorably
7 to the simple, straight-forward method I presented above. By making only five adjustments
8 to twelve-month-ending 2003 on-system fuel and purchased power costs, I arrived at a cost
9 of \$121,665,153 (\$24.13/MWh), a difference of only \$1.35 million or 1.1 percent.

10 **V. IN-SERVICE CRITERIA FOR ENERGY CENTER UNITS 3 AND 4**

11 Q. DO YOU HAVE PROPOSED IN-SERVICE CRITERIA FOR ENERGY CENTER
12 UNITS 3 AND 4?

13 A. Yes I do. Energy Center Units 3 and 4 were declared commercial by the Company in late
14 April 2003. Through February 2004, these units have provided 52,724 MWh to the system
15 and have run for a total of 2,587 hours. Under any criteria, these units have performed very
16 well for the Company and its customers. During the fall of 2002, Empire worked with
17 Staff to attempt to ascertain the in-service criteria that would be utilized on Energy Center
18 3 and 4. Empire proposes the following criteria:

- 19 1. All major construction is completed.
- 20 2. All pre-operational tests have been successfully completed.
- 21 3. Unit will successfully demonstrate its ability to initiate the proper start sequence
22 resulting in the unit operating from zero rpm (or turning gear) to full load when prompted
23 at a location (or locations) from which it will be normally operated.
- 24 4. If unit has fast start capability, unit will demonstrate its ability to meet fast start criteria.
- 25 5. Unit will successfully demonstrate its ability to initiate the proper shutdown sequence
26 from full load resulting in zero rpm (or turning gear) when prompted at a location (or
27 locations) from which it will be normally operated.
- 28 6. Unit will successfully demonstrate its ability to operate at minimum load for one hour.
- 29 7. Unit will successfully demonstrate its ability to operate at or above 98% of full load for
30 four continuous hours.
- 31 8. Unit will successfully meet all operational guarantees.

- 1 9. Transmission facilities shall be capable of exporting the entire plant net capacity.
- 2 10. Units shall demonstrate the ability to start on distillate fuel.
- 3 11. Units shall demonstrate the ability to transfer from natural gas to distillate fuel.
- 4 Q. HAVE THE ENERGY CENTER UNITS 3 AND 4 MET EACH OF THE PROPOSED IN-
- 5 SERVICE CRITERION?
- 6 A. Yes they have. Schedule BPB-4 contains a report completed by plant management detailing
- 7 and documenting the performance for each of the criteria.
- 8 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?
- 9 A. Yes, it does.