

**PRUDENCE REVIEW OF COSTS  
RELATED TO THE FUEL ADJUSTMENT CLAUSE  
FOR THE ELECTRIC OPERATIONS  
OF  
THE EMPIRE DISTRICT ELECTRIC COMPANY**

**September 1, 2012 through February 28, 2013**

**MISSOURI PUBLIC SERVICE COMMISSION  
STAFF REPORT**

**FILE NO. EO-2014-0057**

*Jefferson City, Missouri  
February 2014*

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

**NP**

## Table of Contents

I. EXECUTIVE SUMMARY .....	1
II. INTRODUCTION .....	2
A. GENERAL DESCRIPTION OF EMPIRE'S FAC .....	2
B. PRUDENCE STANDARD .....	3
III. FUEL COSTS, COSTS OF PURCHASED POWER AND OFF-SYSTEM SALES REVENUES .....	3
A. UTILIZATION OF GENERATION CAPACITY AND STATION OUTAGES .....	4
B. RISK MANAGEMENT .....	10
C. NATURAL GAS COSTS .....	14
D. COAL AND PET COKE COSTS .....	17
E. FUEL OIL COSTS .....	17
F. AIR QUALITY CONTROL SYSTEMS .....	18
G. PURCHASED POWER AGREEMENTS .....	19
H. PURCHASED POWER ENERGY COSTS .....	20
I. OFF-SYSTEM SALES REVENUE .....	21
J. SO <sub>2</sub> ALLOWANCES .....	23
K. RENEWABLE ENERGY CREDIT REVENUE .....	25
L. INTEREST .....	26

# **Prudence Review of Costs Report**

## **I. Executive Summary**

The Missouri Public Service Commission (“Commission”) first authorized a Fuel Adjustment Clause (“FAC”) for The Empire District Electric Company (“Empire” or “Company”) in the Company’s 2008 general rate case (Case No. ER-2008-0093). The Commission subsequently approved continuation of Empire’s FAC with modifications in the Company’s 2010, 2011 and 2012 general rate cases, File Nos. ER-2010-0130, ER-2011-0004, and ER-2012-0345, respectively.

Missouri statute Section 386.266.4(4) RSMo (Supp. 2009) and Commission Rule 4 CSR 240-20.090(7) require prudence reviews of an electric utility’s FAC no less frequently than at eighteen-month intervals. In this prudence review, Staff reviewed, analyzed and documented items affecting Empire’s fuel and purchased power costs and off-system sales revenues for its FAC’s ninth six-month accumulation period which began September 1, 2012, and ended February 28, 2013.

In evaluating prudence, Staff reviews whether a reasonable person would find both the information the decision-maker relied on and the process the decision-maker employed when making the decision under review was reasonable based on the circumstances at the time the decision was made, i.e., without the benefit of hindsight. The decision actually made is disregarded, and the review is an evaluation of the reasonableness of the information the decision-maker relied on and the decision-making process the decision-maker employed. If either the information relied upon or the decision-making process employed was imprudent, then Staff examines whether the imprudent decision caused any harm to ratepayers. Only if an imprudent decision resulted in harm to ratepayers will Staff recommend a refund.

Staff analyzed a variety of items in examining whether Empire prudently incurred the fuel and purchased power costs and off-system sales revenues associated with its FAC. Based on its review, Staff found no evidence of imprudence by Empire for the items it examined for the period of September 1, 2012 through February 28, 2013.

## II. Introduction

### A. General Description of Empire's FAC

Table 1 identifies Empire's Commission-approved FAC tariff sheets which were applicable for service provided by Empire to its customers during the period of September 1, 2012, through February 28, 2013:

Table 1: FAC Tariff Sheets in Effect September 1, 2012 through February 28, 2013

Section	Sheet No.	Schedule	Designated	Canceling
4	17h	Fuel Adjustment Clause-Schedule FAC	1st Revised	Original
4	17i	Fuel Adjustment Clause-Schedule FAC	1st Revised	Original
4	17j	Fuel Adjustment Clause-Schedule FAC	1st Revised	Original
September 1, 2012 through November 30, 2012:				
4	17k	Fuel Adjustment Clause-Schedule FAC	2nd Revised	1st Revised
December 1, 2012 through February 28, 2013:				
4	17k	Fuel Adjustment Clause-Schedule FAC	3rd Revised	2nd Revised

Empire's Commission-approved FAC in effect during the review period allowed the Company to recover from its ratepayers 95% of its prudently incurred variable fuel and purchased power costs<sup>1</sup> above the base energy cost amount,<sup>2</sup> and to return to ratepayers 95% of any reduction of those costs below the base energy cost amount ("fuel cost recovery amount"). Empire accumulates costs during six-month accumulation periods. Each six-month accumulation period is followed by a six-month recovery period where 95% of the over/under fuel cost recovery amount during the six-month accumulation period relative to the base energy cost amount is recovered from, or returned to, ratepayers by an increase, or decrease, in the Cost Adjustment Factor ("CAF"). Adjustments to the CAF are designed to offset that over/under fuel cost recovery amount by the end of the six-month recovery period.

<sup>1</sup> Variable fuel and purchased power costs are defined on The Empire District Electric Company, P.S.C. Mo. No. 5, Sec. 4, 1<sup>st</sup> revised Sheet No 17i as the costs for fuel including costs associated with the Company's fuel hedging program, purchased power energy charges, including applicable transmission fees, Southwest Power Pool variable costs, Air Quality Control System consumables, such as anhydrous ammonia, limestone, and powder activated carbon, and emission allowance costs, but not purchased power demand cost as off-set by off-system sales revenues, emission allowance revenues, and renewable energy credit revenues in the accumulation period.

<sup>2</sup> The base energy cost amount is defined as factor B on: 1) 1<sup>st</sup> Revised Sheet No 17e for service on and after September 10, 2010 and prior to June 15, 2011, and 2) Original Sheet No 17i for service on and after June 15, 2011.

Empire's FAC is also designed to true-up the difference between the revenues billed and the revenues authorized for collection during recovery periods, with monthly interest applied. Any disallowance the Commission orders as a result of prudence reviews shall include interest at the Company's short-term interest rate<sup>3</sup> and will be accounted for as a true-up item in conjunction with a filing for a change to the CAF of the FAC.

## **B. Prudence Standard**

In *State ex rel. Associated Natural Gas Co. v. Public Service Commission of State of Missouri*,<sup>4</sup> the Western District Court of Appeals summarized the Commission's prudence standard by quoting the Commission as follows:

[A] utility's costs are presumed to be prudently incurred... . However, the presumption does not survive "a showing of inefficiency or improvidence."...[W]here some other participant in the proceeding creates a serious doubt as to the prudence of an expenditure, then the applicant has the burden of dispelling these doubts and proving the questioned expenditure to have been prudent... .

...[T]he company's conduct should be judged by asking whether the conduct was reasonable at the time, under all the circumstances, considering that the company had to solve its problem prospectively rather than in reliance on hindsight. In effect, our responsibility is to determine how reasonable people would have performed the tasks that confronted the company. (Citations omitted).

The Court did not criticize the Commission's definition of prudence. However, it added that, to disallow a utility's recovery of costs from its ratepayers based on imprudence, the Commission must determine the detrimental impact of that imprudence on the utility's ratepayers.<sup>5</sup>

This is the prudence standard Staff has followed in this prudence review. The Staff reviewed for prudence the areas identified and discussed below for Empire's ninth accumulation period.

## **III. Fuel Costs, Costs of Purchased Power and Off-System Sales Revenues**

The Empire FAC includes two major components of costs – fuel costs and costs of purchased power - and one major component of revenues – off-system sales revenues. Table 2 is a breakdown of Empire's fuel costs, costs of purchased power, off-system sales

---

<sup>3</sup> 4 CSR 240-20.090(7)(A).

<sup>4</sup> 954 S.W.2d 520, 528-29 (Mo. App. W.D. 1997).

<sup>5</sup> *Id.* at 529-30.

revenues and other sources of revenues for its FAC for the period of September 1, 2012, through February 28, 2013:

Table 2

Has Been Deemed

Highly Confidential

In Its Entirety

**A. Utilization of Generation Capacity and Station Outages**

1. Description

The purpose of this section is to provide an overview of Empire's available supply-side and demand-side resources, the process Empire used to determine which generating units it selected to satisfy its load requirements and to present Staff's prudency review of Empire's planned outages during the review period. Empire acquires most of its energy from its own generating stations, jointly owned generating stations and long term power purchases as indicated in the following:

Table 3: Empire Supply-Side Resources

Power Plant Resource	Fuel Type	State	Interest (%)	Capacity (MW)	Start Date	Facility Age (Years)
Asbury 1	Coal	MO	100	189	1970	43
Asbury 2	Coal	MO	100	14	1986	27
Iatan 1	Coal	MO	12	85	1980	33
Iatan 2	Coal	MO	12	102	2010	3
Plum Point	Coal	AR	7.52	50	2010	3
Riverton 7 <sup>6</sup>	Natural Gas	KS	100	38	1950	63
Riverton 8	Natural Gas	KS	100	54	1954	59
Riverton 9 CT	Natural Gas/Oil	KS	100	12	1964	49
Riverton 10 CT <sup>7</sup>	Natural Gas	KS	100	16	1988	25
Riverton 11 CT	Natural Gas	KS	100	17	1988	25
Riverton 12 CT	Natural Gas	KS	100	142	2007	6
Empire Energy Center 1 CT	Natural Gas/Oil	MO	100	82	1978	35
Empire Energy Center 2 CT	Natural Gas/Oil	MO	100	82	1981	32
Empire Energy Center 3 CT	Natural Gas/Oil	MO	100	49	2003	10
Empire Energy Center 4 CT	Natural Gas/Oil	MO	100	49	2003	10
State Line CT	Natural Gas/Oil	MO	100	94	1995	18
State Line CC	Natural Gas	MO	60	297 <sup>8</sup>	1997 & 2001 <sup>9</sup>	16 & 12
Ozark Beach	Hydro	MO	100	16	1913	100
Total Empire Installed Capacity				1,388		
<b>Long Term Power Purchases</b>		<b>Type</b>		<b>Capacity (MW)</b>	<b>End Date</b>	<b>Term</b>
Plum Point		Coal		50 <sup>10</sup>	2015	
Elk River Wind Farm <sup>11</sup> (150 MW PPA)		Wind		7	2025	20 years
Meridian Way Wind Farm (105 MW PPA) <sup>12</sup>		Wind		8	2028	20 years
<b>Capacity Summary</b>						
Total Coal		Coal		532		
Total Gas Turbine		Gas		543		
Total Combined Cycle		Combined Cycle		297		
Total Hydro		Hydro		16		
Total Purchase includes wind		Purchased Power		65		
<b>Total</b>		All		1,453		

<sup>6</sup>Units 7 and 8 last burned coal on September 18, 2012, and will burn natural gas until their retirement planned for 2016 to coincide with the completion of the conversion of Riverside 12 to a combined cycle unit.

<sup>7</sup>Riverton units 10 and 11 were manufactured in 1967, but were installed at Empire in 1988; they are both 46 years old.

<sup>8</sup>Represents Empire's 60 percent share of the 500 MW State Line Combined Cycle (SLCC) unit.

<sup>9</sup>One of the gas turbines at SLCC was installed in 1997, and hence is 16 years old. The other gas turbine and the steam turbine were installed in 2001.

<sup>10</sup>Empire owns an undivided ownership interest of 7.52 percent (approximately 50 MW) in Plum Point.

<sup>11</sup>The Elk River Wind Farm consists of one-hundred (100) 1.5 MW turbines for a total capacity of 150 MW.

During the review period Empire had a total of 8.4 MW of demand response (“DR”) or load curtailment resources available from four customers, but it did not call upon any DR during the review period.<sup>13</sup>

Empire’s principal electric base-load generating station is its coal-fired Asbury station which has a total of 203 MW of capacity. During the review period Empire made plant retrofit modifications to the Asbury station to comply with the new United States Environmental Protection Agency “(EPA”) Mercury and Air Toxics Standards (“MATS”) requirements. The retrofit modifications consisted of installing a pulse jet fabric filter (bag house), circulating dry scrubber and a powder activated carbon injection system.

Empire participates in the Southwest Power Pool (“SPP”) Energy Imbalance Service (“EIS”) market, which dispatches resources to meet forecasted load and capacity requirements per SPP and National Energy Reliability Council (“NERC”) guidelines. The typical economic dispatch<sup>14</sup> order (most economic listed first) of Empire’s supply-side generation units is Iatan 2 (baseload), Iatan 1 ( baseload), State Line Combined Cycle (intermediate), Plum Point (baseload), Asbury 1 (baseload), Riverside 8 (peaking), Riverside 7 (peaking), Energy Center 3 and 4 (peaking), State Line Combustion Turbine (peaking), Riverside 12 (intermediate/peaking), Energy Center 1 and 2 (peaking), Riverside 10 (peaking), Riverside 9 (peaking) and Riverside 11 (peaking).

The economic dispatch order is primarily determined by selecting the units that produce energy at the lowest overall cost. The order changes depending on the relative costs of fuel—generally gas prices versus coal prices. Thus, lower or higher natural gas prices may move the gas-fired generating units up and down the economic dispatch order.<sup>15</sup>

The actual dispatch order is determined based upon the economic dispatch order and other factors, which include actual plant output (derating,<sup>16</sup> wind farm output, etc.), whether the plant is a baseload or a peaking unit, SPP and NERC guidelines, ancillary services

---

<sup>12</sup> The Meridian Way Wind Farm began commercial operation on December 15, 2008. The facility is rated at 105 MW, of which approximately 8 MW is counted toward the Company’s reserve margin.

<sup>13</sup> This resource is available through The Interruptible Service Rider Program that is intended as a load shedding strategy to be used when system peak demand exceeds available capacity or extremely high energy prices are expected.

<sup>14</sup> Based upon current natural gas prices at the time of this report.

<sup>15</sup> For example, spot prices for natural gas below \$3.00/MMBtu will make Riverton unit 12 and Energy Center units 3 & 4 lower cost energy sources than Riverton units 7 & 8, and spot prices below \$2.50/MMBtu will make these units more economical than Asbury units 1 & 2.

<sup>16</sup> Actions taken by generating station operators to reduce the electrical energy output to a value below the rated nameplate maximum output.



requirements, reliability considerations, environmental conditions, plant ramp rates and outages.

Ozark Beach output is dependent upon water availability, and the wind farms' production is not subject to dispatch except for times of curtailment based upon transmission congestion.

When it is available, Empire's wind energy has proven to be a more economical source of energy than Empire's peaking units. Empire's supply-side generation in 2012, based upon KWh of generation, consisted of 48.0% coal and 0.2% natural gas powered steam units, 24.9% natural gas combustion turbines, 1.0% hydroelectric, 15.0% wind and 10.9% purchased power. The fuel requirements for Empire's generating stations in 2012 consisted of 65.6% coal, 34.3% natural gas and 0.1% fuel oil (primarily used as the start-up fuel in auxiliary boilers to bring the Asbury station up to proper operating temperatures in a controlled manner). Empire supplements its on-system generation capacity with purchases of capacity and energy from other entities to meet native load requirements, SPP capacity margin requirements (12%) and NERC rules. Empire has long-term "must take or pay" purchased power contracts with the 150 MW capacity Elk River wind farm and the 105 MW capacity Meridian Way wind farm. These wind farms typically provide more, but also highly variable, energy than the forecasted aggregate capacity of 15 MW per the SPP capacity rating guidelines.<sup>17</sup> Wind farm MW output is directly dependent on the wind speed, which varies normally from highs during the night time to lows during the day. This supply profile is troublesome, because it is not in alignment with typical electrical load profiles, profiles that typically peak during the day and are at their lowest at night. For electric utilities with a high percentage of baseload "must run" units, this can result in situations of negative energy cost. But on the other hand, during periods of normal load or high load, wind energy is very price-competitive.

Empire has been successful in integrating this wind energy, due to accurate and timely weather forecasts that are used to predict in advance wind farm output and the availability of gas-fired generation that can be quickly brought on line to compensate for any decrease in wind farm energy production.

---

<sup>17</sup> SPP guidelines classify wind power as an intermittent, non-firm resource and, therefore, Empire forecasts 7 MW of capacity for Elk River and 8 MW of capacity for Meridian way.

Empire is a market participant (“MP”) in the SPP and actively participates in the SPP EIS market. This provides Empire an option to meet peak energy demands with the most economical choice of either an Empire peaking unit or purchased power from SPP at Locational Imbalance Prices (“LIP”). SPP requires market participants to have enough capacity to meet their load demands and to maintain a 12% capacity margin over their forecasted peak load.

Market participants can take full control of their generating resources by indicating they are self-scheduled or make these resources available for SPP market dispatch. The SPP performs a security constrained economic dispatch of the units that are online and made available. Empire provides key generating station information that includes current unit performance and conditions to the SPP. The SPP uses all the information from market participant suppliers, and current transmission and distribution congestion, to provide dispatch instructions to Empire every five minutes. If Empire’s generation is more expensive than the LIP, Empire will reduce its dispatched generation, and SPP will deliver the imbalance energy to Empire from lower cost units.

Empire has placed its transmission facilities under the Federal Energy Regulatory Commission (“FERC”) regulated open access tariffs that provide wholesale buyers and sellers of electricity the opportunity to procure transmission services at rates based on the same costs that the utilities use for themselves. Empire’s transmission system consists of approximately 22 miles of 345 kV lines, 441 miles of 161 kV lines, 745 miles of 69 kV lines and 81 miles of 34.5 kV lines. Empire’s distribution system consists of approximately 6,862 miles of 12.47 kV and below lines.

Generating station outages are classified as either scheduled, forced or partial (“derating”). Both planned and maintenance outages are scheduled. A planned outage is scheduled well in advance, is of a predetermined duration and occurs only once or twice a year.

A maintenance outage is an outage that could be deferred beyond the end of the next weekend, but which must be taken before the next planned outage. A forced outage is an outage that cannot be deferred beyond the next weekend. A partial outage, or derating, is a condition that exists that requires the station or unit to be limited to an energy output below its maximum capacity.

Outages taken at any of the generating units have an impact on how much Empire will pay for fuel and purchased power and, if planned during peak load demand times, has the potential result of Empire paying more for fuel and purchased power than it would have paid if the outage were planned during times of forecasted low load. Periodic planned outages are required to maintain each generating unit in peak operating condition to minimize forced or maintenance outages that could occur during peak load demand or periods of high replacement energy costs, typically in the summer months of June through August.

As an example, to minimize the amount of replacement power required, the planned outages for the Asbury generating station are scheduled annually for approximately three to four weeks in the spring to coincide with mild or moderate weather conditions and low energy load forecast. Every fifth year, the planned outage is extended to six weeks to allow boiler and turbine inspections. Empire's next extended outage of the Asbury station is planned for the fall of 2014. When the Asbury station is out of service, the Company typically experiences increased purchased power and fuel expenditures associated with the replacement power, and those expenditures flow through its FAC.

Staff examined the planned outages and their timing to determine if they were prudent. An example of an imprudent outage would be scheduling a planned outage of a large baseload coal unit during a time of peak load. Because they are the result of unanticipated events, Empire has little or no control over the timing of maintenance or forced outages of the generating stations it owns and operates. The Company has no control over the timing of outages to generating stations it does not operate, and, therefore, these units are excluded from Staff's review for planned outages, e.g., Iatan 1 and Iatan 2.

## 2. Summary of Cost Implications

An imprudent planned outage could result in Empire purchasing expensive spot power or running its more expensive gas units rather than a lower cost unit. Thus, Empire may purchase more natural gas than necessary and, consequently, have higher fuel costs.

## 3. Conclusion

Staff did not find any evidence of imprudent planned outages by Empire during the time period examined in this review.

#### 4. Documents Reviewed

- a. Empire's responses to Staff Data Requests 3, 4, 5, 6, 10, 11, 12, 13, 15, 16, 20, 21, 22, 23, 24 and 53;
- b. Monthly Outage data submitted by Empire in compliance with Rule 4 CSR 240-3.190;
- c. Empire's 2012 Annual Report;
- d. Empire's SEC Form 10-Q submitted for the periods ending December 31, 2012 and September 30, 2013;
- e. Staff's Report Cost of Service for the Empire rate case, Case No. ER-2012-0345;
- f. Direct Testimony of Todd W. Tarter, July 2012, Empire Rate Case No. ER-2012-0345;
- g. NERC Generating Availability Data System (GADS) Data Reporting Instructions; January 2012; and
- h. The Southwest Power Pool website; <http://www.spp.org/>.

*Staff Expert: Randy S. Gross*

#### **B. Risk Management**

##### 1. Description

Empire's risk management strategies encompass a wide range of activities. The Company's *Energy Risk Management Policy*<sup>18</sup> ("RMP") identifies the following types of risk this policy addresses:

Operations Risk  
Market Risk  
Counterparties/Credit Risk

Empire's risk management strategies are directly controlled by the guidelines contained in its RMP. The policy objectives are given in the RMP as follows:

#### **OBJECTIVES**

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

---

<sup>18</sup> The Empire District Electric Company Energy Risk Management Policy, April 6, 2012.

---

\*\*

\*\*\*

## OBJECTIVE #1

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \*\*

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \*\*

## OBJECTIVE #2

\*\*\*

---

\*\*\*

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \*\*

\*\*

---

---

---

---

\*\*

### **Fuel Adjustment Clause**

[illegible]

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*  
 \*\* \_\_\_\_\_  
 \_\_\_\_\_ \*\*

Empire’s FAC acts as a risk mitigation tool. Although perhaps not intended to be its primary purpose, the FAC does mitigate fuel price volatility for customers, as well as allow Empire a timelier and complete recovery of its fuel costs.

### **Operations Risk**

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*

### **Market Risk**

\*\* \_\_\_\_\_  
 \_\_\_\_\_ \*\*

- \*\* \_\_\_\_\_  
 \_\_\_\_\_ \*\*
- \*\* \_\_\_\_\_  
 \_\_\_\_\_ \*\*
- \*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*
- \*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*
- \*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*

### **Counterparties/Credit Risk**

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ \*\*

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ \*\*

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ \*\*

### **Establishing Credit Responsibilities**

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ \*

Empire employs risk management strategies in an attempt to mediate the market volatility risk of fuel and energy prices. Staff's discussion of hedging strategy employed by

---

<sup>19</sup> Empire District Electric Company's "Risk Management Oversight Committee"

Empire is included in the Natural Gas Costs, Coal and Rail Transportation Costs, and Fuel Oil Costs sections of this report.

## 2. Summary of Cost Implications

If Empire does not manage its risk management strategies prudently fuel costs that are collected from customers through Empire's FAC could be increased.

## 3. Conclusion

Staff did not find Empire acted imprudently in the administration of its risk management strategies.

## 4. Documents Reviewed

- a. Empire's responses to Staff Data Request 47; and
- b. Hedging workshops and individual hedging discussions associated with EW-2013-0101

*Staff Expert: Dana Eaves*

## C. Natural Gas Costs

### 1. Description

A total of \*\* \_\_\_\_\_ \*\* of Empire's fuel costs were associated with natural gas used in Empire's generation of electricity. This amount includes Empire's natural gas fuel costs for all generating stations producing electrical energy for retail sales and off-system sales, and various miscellaneous charges such as firm transportation service charges and other miscellaneous fuel handling expenses.

The Company's hedge strategy for natural gas used for the generation of electricity is described in the Empire's response to Staff's Data Request 0047, which includes Empire's Energy Risk Management Policy, April 6, 2012. Page 9 through page 10 of this document describes Empire's natural gas hedging strategy:

\*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ \*\*



NP

\*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*  
 \*\* \_\_\_\_\_  
 \_\_\_\_\_ \*\*  
 \*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*  
 \*\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ \*\*

During the review period Empire experienced a hedging loss on natural gas derivatives of \*\* \_\_\_\_\_ \*\*. This represents approximately five percent of Empire’s total natural gas cost of \*\* \_\_\_\_\_ \*\* hedged during the review period.

## 2. Summary of Cost Implications

If the Commission found Empire was imprudent in its purchasing decisions relating to natural gas, ratepayer harm could result from increased fuel costs flowing through its FAC to its customers.

## 3. Conclusion

Staff found no indication of imprudence associated with Empire’s purchases of natural gas for the ninth accumulation period.

## 4. Documents Reviewed

- a. Empire’s responses to Staff Data Request Nos. 1, 31, 33, 45 and 47;
- b. Empire’s General Ledger;
- c. Cost adjustment factor calculation (“CAFC”); and
- d. Other work papers from this review to determine the amount that Empire paid for natural gas as compared to the total cost of natural gas that Empire claims it incurred during its ninth accumulation period.

*Staff Expert: Matthew J. Barnes*

**NP**

## **D. Coal and Pet Coke Costs**

### **1. Description**

For the review period \*\* \_\_\_\_\_ \*\* of Empire's fuel costs was associated with the coal and pet coke used in the generation of electricity, including various miscellaneous charges, charges such as rail and other ground transportation service charges, other fuel handling expenses and costs of hedging coal prices. Empire's coal hedging strategy is to buy physical forward contracts for incremental coal purchases at a fixed price that escalates yearly.

### **2. Summary of Cost Implications**

If the Commission found Empire was imprudent in its purchasing decisions relating to coal and pet coke, ratepayer harm could result from increased costs flowing through its FAC to its customers.

### **3. Conclusion**

Staff found no indication of imprudence by Empire for its purchase of coal and pet coke for the ninth accumulation period of Empire's FAC—the period September 1, 2012 to February 28, 2013.

### **4. Documents Reviewed**

- a. Empire's fixed coal contracts in place for the delivery of coal to each of its generating units;
- b. Empire's responses to Staff Data Request Nos. 1 and 56; and
- c. Empire's General Ledger, Fuel Adjustment Rate filing, and other work papers to determine the amount that Empire paid for coal and pet coke as compared to the total cost of coal and pet coke that Empire claims it incurred during its ninth accumulation period.

*Staff Expert: Matthew J. Barnes*

## **E. Fuel Oil Costs**

### **1. Description**

For the review period \*\* \_\_\_\_\_ \*\* of Empire's cost of fuel was associated with fuel oil used in the generation of electricity. Empire's generating facilities use fuel oil for auxiliary boilers to produce steam, mostly during startups to achieve proper operational parameters. In response to Staff Data Request 32, Empire indicated that, for the review

period, it normally purchased fuel oil on the spot market from three different vendors. Empire also indicated that for the review period, the Company did not hedge any fuel oil.

## 2. Summary of Cost Implications

If the Commission found Empire was imprudent in its purchasing decisions relating to fuel oil, ratepayer harm could result from increased costs flowing through its FAC to its customers.

## 3. Conclusion

Staff found no indication of imprudence regarding Empire's decisions associated with fuel oil purchases for the review period.

## 4. Documents Reviewed

- a. Empire's General Ledger;
- b. Empire's responses to Staff Data Request Nos. 1, 32 and 56; and
- c. Cost Adjustment Factor filing and other supporting work papers in this review to determine the amount Empire paid for fuel oil as compared to the total cost of fuel oil Empire claims it incurred during its ninth accumulation period.

*Staff Expert: Matthew J. Barnes*

## **F. Air Quality Control Systems**

### 1. Description

For the review period \*\* \_\_\_\_\_ \*\* of Empire's fuel costs was associated with consumables used in the Company's Air Quality Control Systems (AQCS). Empire incurs expenses for consumables used for its AQCS in its coal plants such as ammonia, lime, limestone, powder activated carbon, urea, sodium bicarbonate and trona.

### 2. Summary of Cost Implications

If the Commission found Empire was imprudent in its purchasing decisions relating to consumables used for its AQCS in its coal plants, ratepayer harm could result from increased costs flowing through its FAC to its customers.

### 3. Conclusion

Staff found no indication of imprudence by Empire for its purchase of consumables used for its AQCS in its coal plants for the ninth accumulation period of Empire's FAC—the period September 1, 2012 to February 28, 2013.

#### 4. Documents Reviewed

- a. Cost Adjustment Factor filing; and
- b. Monthly FAC reports.

*Staff Expert: Matthew J. Barnes*

### **G. Purchased Power Agreements**

#### 1. Description

Empire had three long-term Purchased Power Agreements (“PPAs”) in effect for the accumulation period reviewed. Staff reviewed the following PPAs for prudence:

- a. A 20-year Renewable Resource Energy Purchase Agreement between The Empire District Electric Company and Elk River Windfarm, LLC (Empire began receiving power under this agreement in December 2005);
- b. A 20-year Renewable Resource Power Purchase Agreement between Cloud County Wind Farm, LLC and The Empire District Electric Company (Empire began receiving power under this agreement in December 2008); and
- c. A 30-year Purchased Power Agreement between Plum Point Energy Associates, LLC (coal-fired generating facility) and The Empire District Electric Company (Empire began receiving power under this agreement in September 2010).

#### 2. Summary of Cost Implications

If the Commission found Empire was imprudent in entering into or administering its PPAs or in its purchases of additional power or capacity to meet its energy or demand requirements, ratepayer harm could result from increased costs in the FAC. By entering into the renewable energy wind contracts that exceed the Renewable Energy Resource Standard Requirements<sup>20</sup> Empire is exempted from the renewable energy portfolio requirements regarding solar energy.

---

<sup>20</sup> Notwithstanding any other provision of law, any electrical corporation as defined by subdivision 15 of section 386.020, RSMo, which, by January 20, 2009, achieves an amount of eligible renewable energy technology nameplate capacity equal to or greater than fifteen percent of such corporation's total owned fossil-fired generating capacity, shall be exempt thereafter from a requirement to pay any installation subsidy, fee, or rebate to its customers that install their own solar electric energy system and shall be exempt from meeting any mandated solar renewable energy standard requirements. Any disputes or denial of exemptions under this section may be reviewable by the circuit court of Cole County as prescribed by law. § 393.1050, RSMo. Supp. 2013.

### 3. Conclusion

Staff found no evidence of imprudence related to Empire's long-term purchased power agreements.

### 4. Documents Reviewed

- a. Empire's Responses to Staff Data Request Nos. 18, 20, 21, and 57 in File No. EO-2014-0057;
- b. Empire's Responses to Staff Data Request No. 253 in File No. ER-2010-0130;
- c. Staff Cost of Service Report in File No. ER-2012-0345; and
- d. Empire Quarterly Report Form 10-Q September 30, 2012.

*Staff Expert: David Roos*

## **H. Purchased Power Energy Costs**

### 1. Description

For the review period, Staff reviewed both the prices and the amounts Empire paid for purchased power under the PPAs listed in Section F and the prices and amounts of the energy purchases Empire made in SPP's EIS market. Over accumulation period nine, from September 1, 2012 to February 28, 2012, Empire's purchased power costs totaled \*\* \_\_\_\_\_ \*\*, which includes \*\* \_\_\_\_\_ \*\* for the cost of power purchased through PPA's and \*\* \_\_\_\_\_ \*\* for the cost of power purchased through the SPP EIS market

The two 20-year wind energy PPAs mentioned in the preceding section are "take-or-pay" contracts, (i.e., Empire has to pay for the energy whether it needs it or not), which is a standard component for wind PPAs and, in addition to the electricity, include the associated renewable energy credits ("RECs"). The RECs can be "retired" (i.e., used to comply with Commission Rule 4 CSR 240-20.100 Electric Utility Renewable Energy Resource Standard Requirements) any time within a three-year period after generation. Empire did not retire any of its wind RECs to meet the RES requirements during the review period. Instead, some RECs were sold and some were carried forward for future compliance. Empire's management of its RECs is further discussed in the Renewable Energy Credit Section of this report.

The wind PPAs are long-term contracts, and must be viewed in light of the long-term needs of the Company and the fact that generation resources can only be added in amounts

greater than what is needed in the short-term to minimize the costs and risks over the long-run. Empire's 30-year PPA with Plum Point Energy Associates, LLC is not a "take-or-pay" contract, so Empire pays only for the energy it buys. Plum Point is a coal-fired generating facility, and coal-fired generating facilities have been shown to provide low-cost baseload energy over the long term.

In addition to the long-term PPAs discussed above, Empire also purchases hourly energy from the SPP EIS market to meet its short-term energy needs.

## 2. Summary of Cost Implications

If the Commission found Empire was imprudent in its long-term PPAs or by purchasing additional energy to meet its demand at a rate above which Empire could generate energy itself, ratepayer harm could result from increased costs flowing through its FAC to its customers.

## 3. Conclusion

Staff found no evidence Empire acted imprudently with regard to its PPAs and purchases of hourly energy from the SPP EIS during the period of this review.

## 4. Documents Reviewed:

- a. Empire's responses to Staff Data Request Nos. 1, 2, 4, 10, 11, 12, 16, 17, 18, 21, 24, and 57 in File No. EO-2014-0057; and
- b. Purchased power data submitted by Empire in compliance with Rule 4 CSR 240-3.190.

*Staff Expert: David Roos*

## I. Off-System Sales Revenue

### 1. Description

Off-system sales revenue is a component of Empire's FAC, and is reflected as the "Actual total system off-system sales revenue," or "O," listed on Empire's FAC Original Sheet No. 17i. For the accumulation period reviewed, Empire's had off-system sales revenues of \*\* \_\_\_\_\_ \*\*.

### 2. Summary of Cost Implications

Empire's pursuit of off-system sales at a profit offsets total fuel and purchased power costs, although serving native load is a higher priority. During the review period Empire was unable to generate a profit from off-system sales. For this review period Empire incurred a

loss on off-system sales<sup>21</sup> of \*\*\_\_\_\_\_\*\*. Empire has experienced losses in prior periods related to off-system sales. Staff has met with Empire on several occasions to discuss this issue. During these discussions Empire gave several reasons for why it was incurring net off-system sales losses. A major factor appears to be the economic downturn that started in 2008, which has decreased overall demand and has contributed to lower market prices for electricity. An abundance of natural gas supply has kept natural gas costs low, which is another factor keeping energy prices low. Also, Empire has two take-or-pay wind contracts and one of the characteristics of wind energy is that it is generated at night when energy prices are generally at their lowest level for the day. Staff recognizes that these factors impact Empire's ability to make profitable off-system sales, but encourages Empire to make profitable off-system sales, when the opportunity arises. Empire's ability to make profitable off-system sales is a critical component in the FAC calculation, as off-system sales profit directly off-sets Empire's fuel and purchased power costs. Southwest Power Pool<sup>22</sup> (SPP) is scheduled to go live March 1, 2014, with the SPP Integrated Marketplace,<sup>23</sup> and Empire is both a member and market participant of SPP. Even after this change to open an integrated marketplace, Empire will still be responsible for (1) economically offering its generation in SPP's day-ahead and real-time markets, (2) prudently controlling its fuel costs, (3) prudently managing its long-term resource planning and (4) prudently making bilateral off-system sales. Staff will continue to monitor this issue. If Empire is imprudent in making off-system sales, ratepayer harm could result from a decrease in off-system sales revenues flowing through its FAC, which would result in higher FAC charges to its customers.

### 3. Conclusion

Staff found no evidence Empire was imprudent with regard to off-system sales.

---

<sup>21</sup> Net off-system sales are equal to off-system sales revenue minus the cost to produce the sales.

<sup>22</sup>“SPP is a Regional Transmission Organization, mandated by the Federal Energy Regulatory Commission to ensure reliable supplies of power, adequate transmission infrastructure, and competitive wholesale prices of electricity. As a North American Electric Reliability Corporation [Regional Entity](#), SPP oversees compliance enforcement and reliability standards development. SPP has [members](#) in nine states.” As quoted from <http://www.SPP.org>, Welcome Page.

<sup>23</sup> The Integrated Marketplace will determine which generating units should run the next day for maximum cost-effectiveness, provide participants with greater access to reserve electricity, improve regional balancing of supply and demand, and facilitate the integration of renewable resources. The Integrated Marketplace will include: A Day-Ahead Market with transmission Congestion Rights, a Reliability Unit Commitment process, a Real-Time Balancing Market (replacing the current Energy Imbalance Service Market), the incorporation of price-based Operating Reserves procurement, and in addition, the current Balancing Authorities (16) within the SPP footprint will combine to form a Consolidated Balancing Authority. <http://www.spp.org/section.asp?pageID=143>



#### 4. Documents Reviewed

- a. Monthly reports submitted in compliance with Rule 4 CSR 240-3.161(5);
- b. Empire's response to Staff Data Request Nos. 1 and 2; and
- c. Monthly Outage data submitted by Empire in compliance with Rule 4 CSR 240-3.190

*Staff Expert: Dana Eaves*

#### **J. SO<sub>2</sub> Allowances**

##### 1. Description

Empire used SO<sub>2</sub> allowances it had on hand to meet emission standards during the review period, and while Empire neither purchased nor sold SO<sub>2</sub> allowances during the review period, the following discussion is provided for background on this item.

The U.S sulfur dioxide ("SO<sub>2</sub>") emission allowance trading program was established by Title IV of the 1990 Clean Air Act Amendments ("CAAA"). The program is intended to reduce environmental and human health impacts associated with the release of sulfur emissions from coal-fired electric power plants. It requires electric utilities to reduce their SO<sub>2</sub> emissions by about fifty percent (50%) from 1980 levels or purchase allowances to meet this standard.

Under CAAA, power plants are allocated a 30-year stream of tradable allowances, each worth one ton of SO<sub>2</sub>. The allocations are based on an average capacity factor from the period 1985 to 1987. Allowances are awarded by the United States Environmental Protection Agency ("EPA") every year and are designated by vintage year. The vintage year denotes the first year the allowances are usable for compliance. Unused allowances can be sold or kept for use in subsequent years.

The EPA's Clean Air Interstate Rule ("CAIR"), issued in 2005, was developed to address the transport of pollutants from upwind to downwind states. States in the eastern half of the country are required, over a six-year compliance period (2009-2015), to participate in a federal program intended to reduce emissions of SO<sub>2</sub> by 57 percent (57%) from 2003 levels and Nitrogen Oxides ("NO<sub>x</sub>") by 61 percent (61%) from 2003 levels.

The primary mechanism of the rule is a cap-and-trade program that allows major sources of NO<sub>x</sub> and/or SO<sub>2</sub> to trade excess allowances when its emissions of a specific pollutant fall below its cap for that pollutant. EPA issued a model cap-and-trade program for

power plants, which could have been used by states as the primary control mechanism under the CAIR. Under the CAIR, starting in 2010, the power plants are required to submit two SO<sub>2</sub> allowances for each ton of SO<sub>2</sub> emitted. This ratio is further tightened in 2015 to 2.86 allowances for each ton of SO<sub>2</sub> emitted.

However, a number of petitions for judicial review of the CAIR were filed in the D.C. Circuit Court, and on July 11, 2008, the D.C. Circuit Court of Appeals vacated the CAIR, but later reversed the vacature. The CAIR was in effect during the prudence review period, and this report assumes that the CAIR will remain in effect in the future.

Empire receives its SO<sub>2</sub> allowances from the EPA on a yearly basis. These allowances have no cost, and, therefore, they are booked at zero cost. Gains from disposition of SO<sub>2</sub> allowances are credited to FERC account 254, with subsequent recognition of income in FERC 411. Since they are recorded at zero cost, there is no subsequent charge to expense, FERC account 509, as they are used. In addition, Empire did not purchase SO<sub>2</sub> allowances during the prudence review period.

Empire's Asbury, Riverton and Iatan I and II coal generating units collectively receive 11,723 SO<sub>2</sub> allowances per year. These units burn a blend of low sulfur Western coal (Powder River Basin), higher sulfur blend coal and/or petroleum coke and sometimes TDF at the Asbury unit. At the time of its last FAC prudence review, Empire found itself in a position where, although Empire receives allowances and continues to carry a surplus of allowances, that surplus had rapidly decreased in the previous five years and was projected to continue to decrease to exhaustion sometime in mid-2012; however, this did not occur, due to the following:

- Plum Point's allowances are now purchased/retired collectively by the Owner,<sup>24</sup> and Empire is billed its portion; and
- Fuel transition from coal to natural gas in September 2012 of Riverton Units 7 and 8. The variations of the number of allowances used during the accumulation periods are a function of the tons of coal burned during the accumulation periods and the sulfur content of the coal.

---

<sup>24</sup> Owners: Plum Point Energy Associates, Missouri Joint Municipal Electric Utility Commission, The Empire District Electric Co., East Texas Electric Cooperative, and Municipal Energy Agency of Mississippi Operator: NAES Corp.

## 2. Summary of Cost Implications:

There were no purchases of SO<sub>2</sub> allowances during the review period. If the Commission found Empire was imprudent in its purchases of allowances, ratepayer harm could result from an increase in rates.

## 3. Conclusion

Based on the documents reviewed, Staff found no indication of imprudence.

## 4. Documents Reviewed:

- a. Empire response to Staff Data Request Nos. 42, 43, 44, 46, and 48.

*Staff Expert: David Roos*

## **K. Renewable Energy Credit Revenue**

### 1. Description

Empire receives renewable energy from three sources—its ownership of the Ozark Beach Hydroelectric Project and contractually from the Elk River Windfarm and the Meridian Way Cloud County Windfarm. For 2012, Empire used eligible Ozark Beach RECs generated in 2009 and 2010 to meet the Company's 2012 RES requirements. In 2012, Empire also sold 2011 vintage RECs associated with Elk River that it will not use for RES compliance.

Empire began receiving wind energy from the Elk River Windfarm in 2005. Additionally, Empire contracted to begin receiving wind energy from the Meridian Way Cloud County Windfarm in 2008. As part of these contracts, Empire receives RECs, which are credits issued under the Center for Resource Solutions' "green-e" program that certify that one MWh of electricity has been generated by a facility engaged in the production of renewable energy, such as wind, solar or biomass. Empire did not retire any of these wind RECs to meet the RES requirements during the review period. Instead, it sold some of these RECs and kept some of them for future use for compliance or sale. Empire is certified to sell its RECs through the Center for Resource Solutions. The Stipulation and Agreement in File No. ER-2010-0130 requires Empire to use revenues from selling RECs as an offset to its fuel and purchased power costs that flow through its FAC. From the time period September 1, 2012 through February 28, 2013, Empire used \*\* \_\_\_\_\_ \*\* of REC revenue to offset its fuel and purchased power costs that flow through its FAC.

## 2. Summary of Cost Implications:

If the Commission found Empire was imprudent by not selling RECs when it had the opportunity to do so, ratepayer harm could result from decreased revenues in the FAC.

## 3. Conclusion

Staff did not find evidence of imprudence in Empire's management of its RECs during the review period

## 4. Documents Reviewed:

- a. Staff COS Report from Case No. ER-2012-0345;
- b. Empire FAC work papers;
- c. Empire's response to Staff Data Request Nos. 1 and 53; and
- d. Empire District Electric Company 2012 Annual Renewable Energy Standard Compliance Report.

*Staff Expert: David Roos*

## **L. Interest**

### 1. Description

For its FAC, based on Empire's short-term debt borrowing rate Empire is required to calculate the monthly interest rate that is applied to the monthly amount of its under-recovered, or over-recovered, fuel and purchased power costs. This short-term debt borrowing rate for the review period is the interest rate for Empire's \$150 million revolving credit facility that had a Commercial Paper credit rating of A-2 by Standard and Poor's<sup>25</sup> during the period September 1, 2012 to February 28, 2013. For the period September 1, 2012 to February 28, 2013, Empire's short-term borrowing rate averaged \*\* \_\_\_\_\_

\_\_\_\_\_. \*\*. The interest amount is component "I" of the FAC.

### 2. Summary of Interest Implications

If the Commission found Empire imprudently calculated the monthly interest amounts or imprudently used a short-term debt borrowing rate that did not fairly represent the actual cost of Empire's short-term debt, ratepayer harm could result from understated or overstated monthly interest amounts.

---

<sup>25</sup> Standard and Poor's Ratings Direct, Empire District Electric Co., March 7, 2013.

### 3. Conclusion

Staff found no evidence Empire acted imprudently with regard to its monthly interest rates and calculation of monthly interest amounts during the review period.

### 4. Documents Reviewed

- a. Empire's response to Staff Data Request Nos. 51 and 52;
- b. Empire's interest calculation work papers in support of the interest calculation amount on the under-recovered or over-recovered balance; and
- c. Empire's Standard and Poor's credit rating report.

*Staff Expert: Matthew J. Barnes*

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

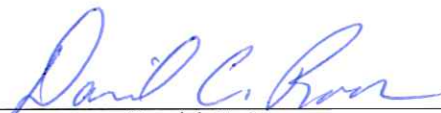
In the Matter of the Fourth Prudence       )  
Review of Costs Subject to the       )  
Commission-Approved Fuel Adjustment       )  
Clause of the Empire District Electric       )  
Company       )

Case No. EO-2014-0057

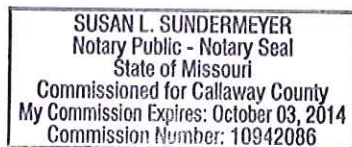
**AFFIDAVIT OF DAVID C. ROOS**

STATE OF MISSOURI       )  
  ) ss  
COUNTY OF COLE       )

David C. Roos, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Staff Report in pages 1-3, 19-21 & 23-26; that he has knowledge of the matters set forth in such Report; and that such matters are true to the best of his knowledge and belief.

  
\_\_\_\_\_  
David C. Roos

Subscribed and sworn to before me this 28<sup>th</sup> day of February, 2014.



  
\_\_\_\_\_  
Notary Public



  
Notary Public



**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

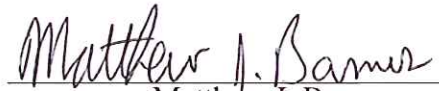
In the Matter of the Fourth Prudence )  
Review of Costs Subject to the )  
Commission-Approved Fuel Adjustment )  
Clause of the Empire District Electric )  
Company )

Case No. EO-2014-0057

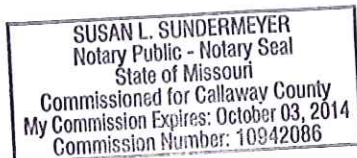
**AFFIDAVIT OF MATTHEW J. BARNES**

STATE OF MISSOURI     )  
                                  ) ss  
COUNTY OF COLE     )

Matthew J. Barnes, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Staff Report in pages 14-19 + 26-27; that he has knowledge of the matters set forth in such Report; and that such matters are true to the best of his knowledge and belief.

  
Matthew J. Barnes

Subscribed and sworn to before me this 28<sup>th</sup> day of February, 2014.



  
Notary Public