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

March 1, 2015 through August 31, 2016

MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT

FILE NO. EO-2017-0065

Jefferson City, Missouri
February 28, 2017

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

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Appendix A

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Prudence Review of Costs Report

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, 2012, 2015, and 2016 general rate cases, Case Nos. ER-2010-0130, ER-2011-0004, ER-2012-0345, ER-2014-0351, and ER-2016-0023 respectively.

Missouri statute Section 386.266.4(4) RSMo (Supp. 2013) 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, net emission allowance costs, and off-system sales and renewable energy credit ("REC") revenues for its FAC's fourteenth, fifteenth, and sixteenth six-month accumulation period which began March 1, 2015, and ended August 31, 2016 ("review period").

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, net emission allowances and off-system sales and REC 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 March 1, 2015, through August 31, 2016.

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 March 1, 2015, through August 31, 2016:

Table 1

March 1, 2015 through July 25, 2015	July 26, 2015 through August 31, 2016
9th Revised Sheet No. 17	1st Revised Sheet No. 17l
3rd Revised Sheet No. 17a	1st Revised Sheet No. 17m
3rd Revised Sheet No. 17b	1st Revised Sheet No. 17n
7th Revised Sheet No. 17c	1st Revised Sheet No. 17o
3rd Revised Sheet No. 17d	1st Revised Sheet No. 17p
	1st Revised Sheet No. 17q
	1st Revised Sheet No. 17r
	1st Revised Sheet No. 17s

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, purchased power and net emission allowance costs less off-system sales revenues and less renewable energy credits[1] revenues above the net base energy cost amount,[2] and to return to ratepayers 95% of any reduction of those costs below the net base energy cost amount. Empire accumulates costs during six-month accumulation periods.[3] Each six-month accumulation period is followed by a six-month recovery period[4] where 95% of the over/under fuel cost recovery amount during the six-month accumulation period relative to the net base energy cost amount is recovered from, or returned to, ratepayers by an increase, or decrease, in the Fuel Adjustment Rate ("FAR"). Adjustments to the FARs are designed to offset that over/under fuel cost recovery amount by the

[1] Variable fuel, purchased power and net emission allowance costs, off-system sales revenues and renewable energy credit revenues are defined on: 1) The Empire District Electric Company, P.S.C. Mo. No. 5, Sec. 4, 3rd Revised Sheet No 17a and 17b for service March 1, 2015 through July 25, 2015, and 2) The Empire District Electric Company, P.S.C. Mo. No. 5, Sec. 4, 1st Revised Sheet Nos. 17m through 17q for service July 26, 2015 through August 31, 2016.

[2] The net base energy cost amount is defined as factor B on: 1) The Empire District Electric Company, P.S.C. Mo. No. 5, Sec. 4, 3rd Revised Sheet No 17b for service on and after March 1, 2015, through July 25, 2015, and 2) The Empire District Electric Company, P.S.C. Mo. No. 5, Sec. 4, 1st Revised Sheet No. 17r for service July 26, 2015 through August 31, 2016.

[3] See The Empire District Electric Company P.S.C.Mo. No. 5, Sec. 4, 1st Revised Sheet No. 17l.

[4] Ibid.

end of the six-month recovery period. 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 refund the Commission orders as a result of prudence reviews shall include interest at the Company's short-term interest rate[5] and will be accounted for as a true-up item in conjunction with a filing for a change to the FAR of the FAC.

B. Prudence Standard

In *State ex rel. Associated Natural Gas Co. v. Public Service Commission of State of Missouri*,[6] 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.[7]

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 fourteenth, fifteenth and sixteenth accumulation periods.

[5] 4 CSR 240-20.090(7)(A).
[6] 954 S.W.2d 520, 528-29 (Mo. App. W.D. 1997).
[7] *Ibid* at 529-30.

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

The Empire FAC includes three major components of costs – fuel costs, costs of purchased power with adjustments for firm transportation costs and capacity charges not allowed in the FAC and net emissions costs - and two components of revenues to offset the costs– off-system sales revenues and REC revenues. Table 2 is a breakdown of Empire's fuel costs, costs of purchased power, off-system sales and REC revenues and net emission allowances for its FAC for the period of March 1, 2015 through August 31, 2016.

Table 2: FAC Costs and Revenues

		Costs or Revenues	Percent of Component	Percent of CF & CPP
Fuel Cost (FC)				
Coal	$	73,804,760	53%	20%
Less: Labor and Admin Accounts	$	(327,778)	0%	0%
Natural Gas	$	69,301,828	50%	18%
Less: Labor and Admin Accounts	$	(4,463)	0%	0%
Less: Firm Transportation	$	(9,251,842)	-7%	-2%
Fuel Oil	$	1,281,069	1%	0%
Tires	$	118,542	0%	0%
Air Quality Control Systems	$	3,443,848	2%	1%
Total FC	**$**	**138,365,963**	100%	37%
Purchased Power (PP)				
Purchased Power Costs	$	68,767,529	29%	
Less: Capacity Charges	$	(14,233,390)	-6%	
Transmission Costs	$	5,866,463	2%	
Native Load Cost	$	178,972,107	75%	
Total PP	**$**	**239,372,709**	100%	63%
Net Emission Allowances (E)	**$**	**(12)**		0%
Total FC + PP + E	**$**	**377,738,661**		100%
***less* Off-System Sales Revenue/Empire District Electric Sales**	**$**	**183,490,095**		
less REC Revenues	**$**	**617,300**		
Total Energy Cost	**$**	**193,631,266**		

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 response resource, review the process by which generating units are selected to satisfy native load requirements and to present Staff's prudency review of Empire's planned outages during the review period. Empire receives most of its energy for retail sales from its own generating stations, jointly owned generating stations and long term power purchases as indicated in the following Table 3.[8]

Table 3: Supply Side Resources and Capacity Balance

Power Plant Resource	Primary Fuel Type	Typical Use[9]	State	EDE Interest (%)	EDE Available Capacity (MW)	In-Service Date
Asbury 1	Coal	Base	MO	100	194	1970
Iatan 1	Coal	Base	MO	12	84.6[10]	1980
Iatan 2	Coal	Base	MO	12	105.7[11]	2010
Plum Point	Coal	Base	AR	7.52	50.3	2010
Riverton 8[12]	Natural Gas	Base	KS	100	54	1954
Riverton 9 CT[13]	Natural Gas/Oil	Peaking	KS	100	12	1964
Riverton 10 CT[14]	Natural Gas	Peaking	KS	100	16	1988
Riverton 11 CT	Natural Gas	Peaking	KS	100	17	1988
Riverton 12 CT[15]	Natural Gas	Inter/Peaking	KS	100	142	2006
Riverton 12 CC[16]	Natural Gas	Inter/Peaking	KS	100	250	2016
Empire Energy Center 1 CT	Natural Gas/Oil	Peaking	MO	100	82	1978
Empire Energy Center 2 CT	Natural Gas/Oil	Peaking	MO	100	82	1981
Empire Energy Center 3 CT	Natural Gas/Oil	Inter /Peaking	MO	100	49	2003
Empire Energy Center 4 CT	Natural Gas/Oil	Inter/Peaking	MO	100	49	2003
State Line 1	Natural Gas/Oil	Peaking	MO	100	94	1995
State Line CC	Natural Gas	Inter	MO	60	297[17]	2001
Ozark Beach	Hydro	Base	MO	100	16	1931
Total Empire Installed Capacity					*1,386.6*[18]	

[8] Empire response to Staff Data Request No. 0016.
[9] Base, Intermediate (Inter) or Peaking. Inter/Peaking usage is dependent upon the natural gas fuel cost.
[10] Represents Empire's 12 percent share of the 705 MW Iatan unit.
[11] Represents Empire's 12 percent share of the 881 MW Iatan unit.
[12] Riverton Unit 8 was officially retired from service on June 30, 2015.
[13] Riverton Unit 9 was officially retired from service on June 30, 2015.
[14] Riverton 10 and 11 were manufactured in 1967 but were installed at Empire in 1988; they are 43 years old.
[15] Riverton 12 CT conversion to combined cycle (CC) was completed in May of 2016 for commercial operation
[16] Ibid.
[17] Represents Empire's 60 percent share of a 500 MW State Line Combined Cycle (SLCC) unit.
[18] Available capacity does not include Riverton 8, Riverton 9, or Riverton 12 CT.

Long Term Power Purchases	Fuel Type	EDE Available Capacity (MW)	Contract End Date
Plum Point	Coal	50	2040
Elk River Wind Farm (150 MW PPA)	Wind	17[19]	2025
Meridian Way Wind Farm (105 MW PPA)	Wind	19[20]	2028

Capacity Summary	Fuel Type	EDE Available Capacity (MW)
Total Coal	Coal	434
Total Gas Turbine	Gas	389
Total Combined Cycle	Combined Cycle	547
Total Hydro	Hydro	16
Total Purchase includes wind	Purchased Power	86
Total	All	1,472

During the period March 1, 2015 through August 31, 2016, Empire had 8.4 MW of contracted interruptible load during summer and 6.4 MW of contracted interruptible load during the winter.[21] During this prudency review period, no curtailment events were called.[22]

Empire has participated in the Southwest Power Pool Integrated Marketplace ("SPP IM") since its inception on March 1, 2014. The SPP IM is a full-scale energy market consisting of a day-ahead market, real-time balancing market and transmission congestion market. Within the SPP IM, SPP not only commits and dispatches generation to serve load, but also acts as a consolidated balancing authority in order to effectively operate a market-based reserve market. The expected result of the SPP IM is a more efficient commitment and dispatch of regional generation and operating reserves across the SPP footprint, resulting in anticipated shared savings among pool members.[23] In approving SPP's Highway/Byway cost allocation methodology, the Federal Energy Regulatory Commission (FERC) also approved a requirement that SPP review the "reasonableness of the regional allocation methodology and factors (X% and Y%) and the zonal allocation methodology at least once every three years."[24] This review is required to "determine the cost allocation impacts of the Base Plan Upgrades

[19] SPP accredited capacity from File No. EO-2016-0223: Volume 4, Vol. 4-3.
[20] Ibid.
[21] Empire response to Staff Data Request No. 0012.
[22] Ibid.
[23] Direct testimony of Empire witness Todd Tarter, page 19, lines 3-9, Case No. ER-2016-0023.
[24] Attachment J, Section III.D.1 of SPP's Open Access Transmission Tariff (OATT).

approved for construction issued after June 19, 2010 to each pricing Zone within the SPP Region."[25] The review is titled Regional Cost Allocation Review.

The most recent SPP Regional Cost Allocation Review (RCAR II) of Southwest Power Pool, Inc.'s Highway/Byway transmission cost allocation methodology estimated a 40-year benefit/cost ratio equal to 0.81 for Empire.[26]

The Regional Allocation Review Task Force (RARTF) and SPP stakeholder-approved 0.8 benefit to cost ratio threshold continue to be the basis to determine when it is warranted for members to request and for SPP staff to subsequently study possible remedies as stated in Section 4.1 of the RARTF Report. Additionally, the RARTF recommends that if RCAR II shows that a zone is above the 0.8 threshold, but below a 1.0 benefit to cost ratio, that this analysis should be used and considered as a part of SPP's transmission planning process in the future.[27]

Empire now purchases energy from the market to serve native load, sells generation into the market, and receives revenue from selling its generation into the market.

** **[28]

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[25] Attachment J, Section III.D.2 of SPP's OATT.
[26] Figure 7.1 on page 35 of RCARII published July 11, 2016 https://spp.org/documents/46235/rcar%202%20report%20final.pdf.
[27] Page 12 of RCARII published July 11, 2016 https://spp.org/documents/46235/rcar%202%20report%20final.pdf.
[28] Empire response to Staff Data Request No. 0011.

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**[29]

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**[30]

Empire's definition of a scheduled outage is an outage that conforms to the NERC GADS definition of either a Planned Outage or a Maintenance Outage. A Planned Outage is described as being scheduled well in advance, being of a predetermined duration and occurring only once or twice a year. A Maintenance Outage is an outage that can be deferred beyond the end of the next weekend, but requires that the unit be removed from service before its next Planned Outage. Empire's definition of a forced outage is an outage that cannot be deferred beyond the end of the next weekend. Empire's definition of a partial outage (derating) is a condition that exists when a unit is limited to a power level below its maximum capacity.[31]

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 cost than it would have paid if the outage were planned during forecasted low load times. 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.

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 base loaded

[29] Ibid.
[30] Ibid.
[31] Empire response to Staff Data Request No. 0006.

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coal unit during a time of peak load. Empire has little or no control over the timing of maintenance or forced outages of the generating stations it owns and operates when such outages are the result of unforeseen events causing fuel and/or purchase power costs that are collected from customers through Empire's FAC to increase. The Company has no control over the timing of planned outages for generating stations it does not operate, and, therefore, these units are excluded from Staff's review for planned outages.

2. Summary of Cost Implications

An imprudent planned outage could result in Empire unnecessarily purchasing expensive spot power or running its more expensive gas units to meet demand and having to 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 Request Nos. 0003, 0004, 0006, 0008, 0010, 0011, 0012, 0014, 0016, 18, 0020, 0022, and 0054;

b) Monthly Outage data submitted by Empire in compliance with Rule 4 CSR 240-3.190;

c) Direct Testimonies of Todd W. Tarter, October 2015, Empire Rate Case No. ER-2016-0023; and

d) The Southwest Power Pool website: http://www.spp.org.

Staff Expert/Witness: J Luebbert

B. Risk Management

1. Description

Empire's risk management strategies encompass a wide range of activities. The Company's *Energy Risk Management Policy*[32] ("RMP") identifies the following types of risk this policy addresses:

[32] The Empire District Electric Company Energy Risk Management Policy, April 29, 2016.

- Operations risk;
- Market risk; and
- 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

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OBJECTIVE #1

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OBJECTIVE #2

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OBJECTIVE #3

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Fuel Adjustment Clause

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

OPERATIONS RISK

** ____ **

MARKET RISK

** ____

- ____
- ____
- ____
- ____
- ____ **

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COUNTERPARTIES/CREDIT RISK

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**[33]. **

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[33] Appendix X, Article 7, SPP Credit Policy.

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 during the review period.

4. **Documents Reviewed**

a) Empire's response to Staff Data Request No. 0047.

Staff Expert/Witness: Ashley Sarver

C. Natural Gas Costs

1. **Description**

For the review period, $69,301,828 of Empire's fuel costs was associated with natural gas used in generating 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.

Per Case No. ER-2014-0351, Order and Report, effective July 24, 2015, the FAC excludes Southwest Power Pool ("SPP") Schedule 1A and 12 charges and also excludes Empire's labor, administrative, and convention and seminar costs from account 501. For the review period, these costs totaled $4,463. Firm transportation service charges are not allowed in Empire's FAC. Empire's firm transportation service charges for the review period were $9,251,842. For the review period, Empire's net natural gas costs were $60,045,523.

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 No. 0047, which includes Empire's Energy Risk Management Policy, April 29, 2016. Page 10 through page 11 of this document describes Empire's natural gas hedging strategy:

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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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During the review period, Empire experienced a hedging loss on natural gas derivatives of $10,712,168. This represents approximately fifteen percent of Empire's total natural gas cost of $69,301,828 for 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 including the hedging loss on natural gas derivatives for the prudence review period.

4. **Documents Reviewed**

a) Empire's responses to Staff Data Request Nos. 0001, 0029 and 0047; and

b) Empire's General Ledger.

Staff Expert/Witness: Ashley Sarver

D. Coal and Pet Coke Costs

1. **Description**

For the review period $73,804,760 of Empire's fuel costs was associated with the coal and pet coke used in the generation of electricity, including various miscellaneous charges such as rail and other ground transportation service charges, other fuel handling expenses.

Per Case No. ER-2014-0351, Order and Report, effective July 24, 2015, the FAC excludes Southwest Power Pool ("SPP") Schedule 1A and 12 charges and also excludes $327,778 for labor, administrative, convention and seminar costs from account 501 for the review period. For the review period, Empire's total net coal costs were $73,476,982.

2. **Summary of Cost Implications**

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

3. **Conclusion**

Staff found no indication of imprudence by Empire for its purchase of coal and pet coke.

4. **Documents Reviewed**

a) Empire's responses to Staff Data Request Nos. 0001, 0025, 0029, 0037 and 0038; and

b) 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 the review period.

Staff Expert/Witness: Ashley Sarver

E. Fuel Oil Costs

1. **Description**

For the review period, $1,281,069 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 No. 0032, Empire indicated that, for the review period, it normally purchased fuel oil on the spot market from two different vendors. Empire also indicated that for the review period, the Company did not hedge any fuel oil.

2. Summary of Cost Implications

If 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. 0001, 0029 and 0032; and
c) Fuel Adjustment Rate 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 fourteenth, fifteenth, and sixteenth accumulation period.

Staff Expert/Witness: Ashley Sarver

F. Tire Derived Fuel (TDF)

1. Description

For the review period, the Staff concluded that approximately $118,542 of the cost of fuel was associated with Tire Derived Fuel ("TDF") used in the generation of electricity. Asbury generating facility uses a blended coal mix (coal and TDF) in order to achieve proper operational parameters. The cost of TDF does include various miscellaneous charges such as rail and other ground transportation service charges and other miscellaneous fuel handling expenses.

2. Summary of Cost Implications

If Empire was imprudent in its purchasing decisions relating to TDF, ratepayer harm could result from an increase in FARs.

3. Conclusion

Staff found no instances of imprudence for the purchase of TDF for the review period.

4. Documents Reviewed

a) Empire's response to Staff Data Request No. 0001; and

b) Fuel Adjustment Rate Filings.

Staff Expert/Witness: Ashley Sarver

G. Air Quality Control Systems

1. Description

For the review period $3,443,848 of Empire's fuel costs was associated with consumables used in the Company's 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 Empire was imprudent in its purchasing decisions relating to consumables used for its AQCS in its coal plants, customer 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 prudence review period.

4. Documents Reviewed

a) Fuel Adjustment Rate filing; and

b) Monthly FAC reports.

Staff Expert/Witness: Ashley Sarver

H. 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 prudency:

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 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 increases costs in the FAC. By entering into the renewable energy wind contracts that exceed the Renewable Energy Resource Standard Requirements,[34] Empire believed it was exempt from the renewable energy portfolio requirements regarding solar energy. This issue was challenged, and the section of law supporting EDE's exemption was repealed by the Missouri Supreme Court. The case has been remanded back to the Commission for further examination, and EDE has agreed to comply with the decisions of the court and the Commission on this issue.[35]

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. 0001, 0007, 0017, 0018, 0020, 0023, and 0024 in File No. EO-2017-0065; and

b) Missouri Public Service Commission Staff Report Revenue Requirement Report in Case No. ER-2016-0023.

Staff Expert/Witness: David C. Roos

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[34] 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.

[35] Page 4, "Empire District Electric Company 2015 Annual Renewable Energy Standard Compliance Plan," April 15, 2015.

I. Purchased Power Costs

1. Description

Purchased Power Costs is a component of Empire's FAC, and is reflected as the "Purchased Power Costs," or "PP," listed on Empire's FAC 3rd Revised Sheet No. 17m. As described in Section III. A. above, the SPP IM went live March 1, 2014.[36] Empire is both member and market participant of SPP. The revenue from the energy that Empire sells into the IM is referred to as "Off-System Sales Revenue/Empire" and is discussed in Section J, Off-System Sales Revenue. The amount of energy that Empire buys from the SPP IM to meet native load is referred to as "Native Load Cost" and is a component of purchased power costs. As shown on Table 2, Native Load Costs ($178,972,107) and Off-System Sales Revenue/Empire ($183,490,095) tend to off- set each other. This off-set is a result of Empire serving its native load through the IM.

For the review period, Staff reviewed both the prices and the amounts Empire paid for purchased power under the PPAs listed in Section H and the prices and amounts of the energy purchases Empire made in SPP's IM. Empire had purchased power costs of ** _______ ** less capacity charges of ** _______ ** that are not allowed in Empire's FAC, transmission cost of $5,866,463and a native load cost ** __________ ** for total purchased power costs of ** __________ ** during the review period.

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 is needed or not), which is a standard component for wind PPAs and, in addition to the electricity; include the associated 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 each REC is generated. 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.

[36] 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.

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 base load energy over the long term.

In addition to the long-term PPAs discussed above, Empire has met its short term energy needs by purchasing hourly energy from the SPP IM.

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 IM during the period of this review.

4. Documents Reviewed

a) Empire's responses to Staff Data Request Nos. 0001, 0002, 0004, 0010, 0011, 0016, 0017, 0018, 0021, 0024, and 0054 in File No. EO-2017-0065; and

b) Purchased power data submitted by Empire in compliance with Rule 4 CSR240-3.190.

Staff Expert/Witness: David C. Roos

J. Transmission Costs

1. Description

For the period March 1, 2015 through August 31, 2016, $5,866,463 of Empire's FAC costs were for transmission costs associated with purchased power costs. As a result of Empire's general rate case, Case No. ER-2014-0351, Empire's transmission costs to be included in the FAC are: 1) costs to transmit electric power it did not generate to its own load (true purchased power); and, 2) costs to transmit excess electric power it is selling to third parties to locations outside of SPP (off-system sales).[37]

Empire's FAC 3rd Revised Sheet No. 17m – 17o, effective for services on and after July 26, 2015 and prior to September 14, 2016, defines the transmission costs as a component of the purchased power costs (PP):

1. Costs and revenues for purchased power reflected in FERC Accounts 555, excluding all charges under Southwest Power Pool ("SPP") Schedules 1a and 12. Such costs and revenues include: purchased power costs, purchased power demand costs associated with purchased power contracts with a duration of one year or less, settlements, insurance recoveries, and subrogation recoveries for purchased power expenses, virtual energy charges, generating unit price adjustments, load/export charges, energy position charges, ancillary services including penalty and distribution charges, broker commissions, fees and margins and SPP energy market charges including:

    A. SPP costs or revenues for SPP's energy and operating market settlement charge types and market settlement clearing costs or revenues including:
        i. Energy;
        ii. Ancillary Services;
            a. Regulating Reserve Service
            b. Energy Imbalance Service
            c. Spinning Reserve Service
            d. Supplemental Reserve Service
        iii. Revenue Sufficiency;
        iv. Losses;
        v. Revenue Neutrality;
        vi. Congestion Management including;
            a. Congestion
            b. Transmission Congestion Rights
            c. Financial Transmission Rights
        vii. Demand Reduction;
        viii. Grandfathered Agreements;
        ix. Virtual Transaction Fee;
        x. Pseudo-tie;
        xi. Miscellaneous;

    B. Non-SPP costs or revenue as follows:
        i. If received from a centrally administered market (e.g. PJM / MISO), costs or revenues of an equivalent nature to those identified for the SPP costs or revenues specified in sub part A of part 1 above;

[37] *In the Matter of The Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.* Effective Date: July 24, 2015, Report and Order.

ii. If not received from a centrally administered market:

a. Costs for purchases of energy; and
b. Costs for purchases of generation capacity, provided such capacity is acquired for a term of one (1) year or less; and
c. Realized losses and costs (including broker commissions and fees) minus realized gains for financial swap transactions for electrical energy that are entered into for the purpose of mitigating price volatility associated with anticipated purchases of electrical energy for those specific time periods when the Company does not have sufficient economic energy resources to meet its native load obligations, so long as such swaps are for up to a quantity of electrical energy equal to the expected energy short fall and for a duration up to the expected length of the period during which the shortfall is expected to exist;

1. Costs of purchased power will be reduced by expected replacement power insurance recoveries qualifying as assets under Generally Accepted Accounting Principles; and
2. Thirty-four percent of SPP transmission service costs reflected in FERC Account 565, excluding SPP Schedule 1a and Schedule 12 and 50% of Non-SPP transmission service costs reflected in Account 565. Such transmission service costs include:

A. SPP costs associated with Net Integration Transmission Service:
i. SPP Schedule 11 – Base Plan Zonal Charge and Region-wide Charge;
ii. SPP Schedule 7 – Long-Term Firm and Short-Term Firm Point-To-Point Transmission Service:
iii. SPP Schedule 8 – Non-Firm Point-To-Point Transmission Service;
iv. SPP Schedule 2 – Reactive Supply and Voltage Control from Generation or Other Sources Service; and
v. SPP Schedule 3 – Regulation and Frequency Response Service.

B. Non-SPP costs associated with:
i. Network transmission service;
ii. Point-to-point transmission service;
iii. System control and dispatch; and
iv. Reactive supply and voltage control.

2. Summary of Cost Implications

If Empire imprudently included transmission costs in the FAC, ratepayer harm could result from increase FAC charges.

3. Conclusion

Staff found no indication Empire's transmission costs were imprudent during the review period.

4. Documents Reviewed

a) Empire's General Ledger;

b) Empire's responses to Staff Data Request Nos. 0001 and 0002; and

c) FAR and other supporting work papers in this case.

Staff Experts/Witnesses: David C. Roos and Ashley Sarver

K. Off-System Sales Revenue

1. Description

Off-system sales revenue is a component of Empire's FAC, and is reflected as the "Revenue from Off-System Sales," or "OSSR," listed on Empire's FAC. As described in Section III A above, the SPP went live March 1, 2014, with the SPP Integrated Marketplace,[38] and Empire is both a member and market participant of SPP. Empire is still 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. Empire had off-system sales revenues of $183,490,095 during the review period.

2. Summary of Cost Implications

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 its off-system sales.

4. Documents Reviewed

a) Monthly reports submitted in compliance with Rule 4 CSR 240-3.161(5);

[38] 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.

b) Empire's response to Staff Data Request Nos. 0001 and 0002; and

c) Monthly outage data submitted by Empire in compliance with Rule 4 CSR 240-3.190.

Staff Experts/Witnesses: David C. Roos and Ashley Sarver

L. Emission Allowances

1. Description

In general, Empire used Emission allowances it had on hand to meet emission standards during the review period, and only a minimal amount of net emission costs flowed through the FAC during the review period, the following discussion is provided for background on this item. There were ($12) of net emission allowance costs during the review period.

Empire receives its emission 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_2 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_2 allowances during the prudence review period.

Empire's Asbury, Riverton and Iatan I and II coal generating units collectively receive 11,723 SO_2 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:

a. Plum Point's allowances are now purchased/retired collectively by the Owner,[39] and Empire is billed its portion;

b. Fuel transition from coal to natural gas in September 2012 of Riverton Units 7 and,

[39] 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.

c. 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.

2. Summary of Cost Implications

If Empire was imprudent in its purchases and sales of allowances, ratepayer harm could result from an increase in rates.

3. Conclusion

Staff found no imprudence related to Empire's purchases and sales of emission allowances during the review period.

4. Documents Reviewed

a) Empire response to Staff Data Request Nos. 0042, 0043, 0044, 0046, and 0048.

Staff Expert/Witness: David C. Roos

M. Renewable Energy Credit Revenue

1. Description

The Missouri Renewable Energy Standard ("RES")[40] was adopted through a voters' ballot initiative (Proposition C) on November 4, 2008,[41] and requires all investor-owned electric utilities in Missouri to provide at least two percent (2%) of their retail electricity sales using renewable energy resources in each calendar year 2011 through 2013, and to increase that percentage over time to at least fifteen percent (15%) by 2021.[42] Commission rule 4 CSR 240-20.100, which first became effective September 30, 2010, contains the definitions, structure, operations, and procedures for implementing the RES.

The RES rule creates two categories of energy-generating resources: non-renewable energy resources (including purchased power from non-renewable energy sources) and

[40] § 393.1020 RSMo. Supp. 2013 and § 393.1030.1(1), RSMo. Supp. 2013.
[41] § 393.1030, RSMo. Supp. 2013.
[42] However, the annual level of required renewable energy resources may be considered due to 4 CSR 240-20.100(5)(A) Retail Rate Impact. (A) The retail rate impact, as calculated in subsection (5)(B), may not exceed one percent (1%) for prudent costs of renewable energy resources directly attributable to RES compliance. The retail rate impact shall be calculated on an incremental basis for each planning year that includes the addition of renewable generation directly attributable to RES compliance through procurement or development of renewable energy resources, averaged over the succeeding ten (10)-year period, and shall exclude renewable energy resources owned or under contract prior to the effective date of this rule.

renewable energy resources (including purchased power from renewable energy sources).[43] Renewable energy resources produce electrical energy and are wind, solar sources, thermal sources, hydroelectric sources, photovoltaic cells and panels, fuel cells using hydrogen produced by one (1) of the above named electrical energy sources, and other sources of energy that become available after August 28, 2007. Renewable energy resources are certified as renewable by the Missouri Division of Energy (MODED). Once an energy resource is certified, it begins producing RECs, with one (1) REC representing one (1) megawatt-hour of electricity that has been generated from the renewable energy resource. These credits can be sold and/or traded in the market place bundled with or without the energy that generated the REC.[44] The cost of a REC (as a RES compliance cost) cannot be recovered through the FAC.[45] Revenues from the sale of RECs are recovered through the FAC as an off-set to fuel costs.

Empire receives renewable energy from three sources: ownership of the Ozark Beach Hydroelectric Project and two purchased power agreements, one from Elk River Wind farm and one from Meridian Way Cloud County Wind farm. During the review period, Empire also sold RECs that will not be used for RES compliance. These sales generated $617,300 of REC revenue during the revue period.

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 March 1, 2015 through August 31, 2016,

[43] 4 CSR 240-20.100(5)(B).
[44] 4 CSR 240-20.100(6)(B)(5)(J).
[45] 4 CSR 240-20.100(6)(A)(16).

Empire used $617,300 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-2014-0351;

b) Staff COS Report from Case No. ER-2016-0023;

c) Empire FAC work papers;

d) Empire's response to Staff Data Request Nos. 0001 and 0053; and

e) Empire District Electric Company 2015 Annual Renewable Energy Standard Compliance Report.

Staff Expert/Witness: David C. Roos

N. 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, net base energy costs. The monthly short-term debt borrowing rate for the review period is the interest rate for Empire's $200 million revolving credit facility that had a Commercial Paper credit rating of A-2 by Standard and Poor's[46] during the review period. Empire's short-term borrowing rate averaged for the review period was 0.68 percent (0.68%) for the review period. The interest amount is component "I" of the FAC.

2. Summary of Interest Implications

If 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.

[46] Standard and Poor's Research, Empire District Electric Co., April 29, 2016.

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 No. 0056;

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/Witness: Ashley Sarver

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Sixth Prudence Review of Costs Subject to the Commission-Approved Fuel Adjustment Clause of The Empire District Electric Company	))))	File No. EO-2017-0065

AFFIDAVIT OF ASHLEY SARVER

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW ASHLEY SARVER and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing **SIXTH PRUDENCE REVIEW Report**; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Ashley Sarver

ASHLEY SARVER

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 27th day of February, 2017.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070

D Suzie Mankin

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Sixth Prudence Review of Costs Subject to the Commission-Approved Fuel Adjustment Clause of The Empire District Electric Company	))))	File No. EO-2017-0065

AFFIDAVIT OF DAVID C. ROOS

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW DAVID C. ROOS and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing **SIXTH PRUDENCE REVIEW Report**; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

David C. Roos

DAVID C. ROOS

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 27th day of February, 2017.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070

D Suzie Mankin

Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Sixth Prudence Review of Costs Subject to the Commission-Approved Fuel Adjustment Clause of The Empire District Electric Company	))))	File No. EO-2017-0065

AFFIDAVIT OF J LUEBBERT

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW J LUEBBERT and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing **SIXTH PRUDENCE REVIEW Report**; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

J Luebbert

J LUEBBERT

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 27th day of February, 2017.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070

D Suzie Mankin

Notary Public