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Witness: Bethany Q. King  
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Date Testimony Prepared: January 2017

**Before the Kansas Corporation Commission**

**Direct Testimony**

**Of**

**Bethany Q. King**

**In Support of the  
Annual Energy Cost Adjustment ACA Filing**

**January 2017**

**\*\*Denotes Confidential\*\***

**PUBLIC VERSION**

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OF  
BETHANY Q. KING  
THE EMPIRE DISTRICT ELECTRIC COMPANY  
BEFORE THE  
KANSAS CORPORATION COMMISSION  
DOCKET NO. 17-EPDE-226-ACA

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**DIRECT TESTIMONY  
OF  
BETHANY Q. KING  
THE EMPIRE DISTRICT ELECTRIC COMPANY  
BEFORE THE  
KANSAS CORPORATION COMMISSION  
DOCKET NO. 17-EPDE-226-ACA**

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Bethany Q. King and my business address is 602 South Joplin Avenue,  
3 Joplin, Missouri.

4 **POSITION**

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

6 A. I am presently employed by The Empire District Electric Company (“Empire”) as the  
7 Manager of Strategic Planning where I primarily work with load and revenue  
8 forecasting, energy efficiency and integrated resource planning (“IRP”).

9 **PURPOSE**

10 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

11 A. My testimony will support Empire’s request to the Kansas Corporation Commission  
12 (“Commission”) for an order approving the Annual Cost Adjustment (“ACA”) factor  
13 submitted to the Commission as part of Empire’s approved Energy Cost Adjustment  
14 (“ECA”) tariff.

15 **Q. WHAT IS THE ACA PERIOD THAT IS ADDRESSED IN THIS TESTIMONY?**

16 A. The historical ACA period discussed in this testimony refers to the twelve month period  
17 November 1, 2015 through October 31, 2016 (“ACA period”). This testimony will also  
18 discuss the ECA projection for calendar year 2017.

1 **BACKGROUND**

2 **Q. PLEASE PROVIDE A GENERAL BACKGROUND OF THE FILING AND WHY**  
3 **IT IS BEING MADE AT THIS TIME.**

4 A. On October 4, 2005, Empire and the Staff of the Commission reached a settlement  
5 agreement in Docket No. 05-EPDE-980-RTS ("980 Docket"). One of the specific terms  
6 of the agreement reached with the Staff involved the implementation of an ECA for  
7 Empire's Kansas retail customers. Part of the terms of the ECA tariff approved by the  
8 Commission requires Empire to file an annual "true-up" of its Kansas energy costs. In  
9 this particular instance, Empire and the staff of the Commission ("Staff") reached an  
10 agreement to make this annual ECA true-up as a formal application for approval with the  
11 Commission.

12 **Q. PLEASE DESCRIBE EMPIRE'S ELECTRIC OPERATIONS.**

13 A. Empire operates an integrated electric system that covers portions of four separate states,  
14 Kansas, Missouri, Oklahoma and Arkansas. Empire provides electric service in an area  
15 of approximately 10,000 square miles in the southwest corner of Missouri and the  
16 adjacent corners of Kansas, Oklahoma, and Arkansas. Empire's operations are regulated  
17 by the utility regulatory commissions of these four states as well as the Federal Energy  
18 Regulatory Commission ("FERC"). The service area contains 119 incorporated  
19 communities in 21 counties in the four-state area. Empire was incorporated in 1909 as a  
20 Kansas corporation. On March 16, 2016, Empire, Liberty Sub Corp. ("LSC") and  
21 Liberty Utilities ("LU Central") (collectively referred to herein as "Joint Applicants")  
22 filed a Joint Application and supporting testimony pursuant to K.S.A. 66-101, *et seq.*,

1 and other applicable statutes and orders issued by the Commission, seeking Commission  
2 approval of the acquisition by LU Central of all of the common stock of Empire and for  
3 other related relief (the “Transaction”).<sup>1</sup> On December 22, 2016 the Commission issued  
4 its Order Granting Joint Motion To Approve The Unanimous Settlement Agreement and  
5 Approval Of The Joint Application. On January 1, 2017 Liberty Utilities announced the  
6 completion of the acquisition and merger of Empire.

7 **Q. PLEASE BRIEFLY DESCRIBE THE SOUTHWEST POWER POOL**  
8 **INTEGRATED MARKETPLACE (“SPP IM”).**

9 A. The SPP IM is a full-scale energy market consisting of a day-ahead market, real-time  
10 balancing market and transmission congestion market. The SPP IM was active during  
11 the entire ACA period. Within the SPP IM, SPP not only commits and dispatches  
12 generation to serve load, but also acts as a consolidated balancing authority in order  
13 to effectively operate a market-based reserve market. The expected result of the SPP  
14 IM is a more efficient commitment and dispatch of regional generation and operating  
15 reserves across the SPP footprint, resulting in anticipated shared savings among pool  
16 members.

17 **Q. PLEASE DESCRIBE HOW THE SPP IM IMPACTS EMPIRE’S OPERATIONS.**

18 A. As a member of SPP, the SPP IM has changed the way that Empire does business.  
19 Empire now submits its generation into the SPP market on a daily basis and the SPP  
20 market determines the most economical and reliable solution for providing energy to  
21 customers. When the SPP IM went live on March 1, 2014, it created one consolidated

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<sup>1</sup> Docket No. 16-EPDE-410-ACQ, Joint Application (March 16, 2016).

balancing authority in SPP. Prior to the SPP IM; there were several balancing authorities within SPP. In the past Empire functioned as a balancing authority and dispatched its generators to serve its native load, while buying and selling energy when it was economical to do so, mostly through bilateral contracts. Since the SPP IM began, 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.

**Q. PLEASE GENERALLY DESCRIBE EMPIRE'S ELECTRIC SYSTEM OPERATING CHARACTERISTICS.**

A. Empire is somewhat different than many of the other electric utilities in Kansas as it generally has dual (winter/summer) system peaks almost equal to each other. This situation is very unusual in the state of Kansas where most if not all of the other utilities are strongly summer peaking. However due to an extremely mild winter and a warmer-than-normal summer, Empire's system peak was recorded in August at 1,104 megawatts ("Mw") for the ACA year. In the past seven years Empire has logged its annual peak during the winter season three times and the summer season four times. The following table displays the actual Empire peak demands by month for the twelve-months ending October 2016 along with the Native Load in megawatt-hours ("Mwh") for each month.

Month	Peak-Mw	Percent of Annual Peak	Native Load-Mwh
Nov-15	704	64%	387,045
Dec-15	812	74%	439,693
Jan-16	1,022	93%	509,962
Feb-16	899	81%	417,716
Mar-16	750	68%	384,368
Apr-16	648	59%	350,466
May-16	832	75%	376,762

Jun-16	1,081	98%	499,367
Jul-16	1,072	97%	539,118
Aug-16	1,104	100%	522,031
Sep-16	993	90%	441,490
Oct-16	795	72%	379,298
Total			5,247,316

1 This winter/summer peak relationship also affects fuel procurement and power plant  
2 operation because Empire must be able to bid in enough resources into the SPP IM in  
3 order to cover its load.

4 **Q. PLEASE DESCRIBE THE MAKEUP OF EMPIRE'S SUPPLY-SIDE**  
5 **RESOURCES.**

6 A With the advent of the SPP IM, Empire purchases energy from the market to serve  
7 native load, sells generation into the market, and receives revenue from selling its  
8 generation into the market. Therefore, the energy provided to the market from  
9 Empire's generation resources will not necessarily match Empire's native load energy  
10 requirements for the same time period since the native load requirement is now  
11 purchased from the SPP market. Empire's supply-side resources for the ACA true-up  
12 period ending October 2016 are illustrated in the table below.

Unit/Purchase	Rated Capacity	Actual Generation Mwh	**	**	**	Fuel Type
Asbury	194	1,116,488	**	**	**	Coal
Iatan 1-2	191	1,197,029	**	**	**	Coal

Plum Point (own)	50	305,701	**	**	**	**	Coal
Riverton 10-12	278	530,691	**	**	**	**	Natural Gas
Energy Center 1-4	257	85,791	**	**	**	**	Natural Gas
State Line	391	1,304,746	**	**	**	**	Natural Gas
Ozark Beach	16	59,093	**	**	**	**	Hydro
Plum Point PPA	50	303,181	**	**	**	**	Coal
Wind Farm PPAs	36	851,765	**	**	**	**	Wind
Total	1,467	5,754,485	**	**	**	**	

(A) This is the cost of Empire's resource generation for November 2015 through October 2016 and excludes the cost of gas transportation, WR auxiliary charges, purchased power agreement ("PPA") demand charges, environmental costs, the cost of consumables and SPP IM costs and revenues.

1 **Q. PLEASE DESCRIBE THE RATE STRUCTURES EMPIRE OPERATES UNDER**  
2 **IN ARKANSAS, OKLAHOMA AND MISSOURI.**

3 A. All three states use historical test years to establish base electric rates in a manner similar  
4 to the process used in Kansas. In addition, Arkansas, Oklahoma and Missouri use  
5 adjustment mechanisms to pass on changes in fuel and energy costs to retail customers.

6 **Q. WHAT IS THE RELATIONSHIP OF THE SALES LEVELS WITHIN EACH OF**  
7 **THE JURISDICTIONS?**

8 A. Missouri is by far the largest jurisdiction with over 82 percent of total sales made by  
9 Empire during the twelve months ended October 31, 2016. The following table displays  
10 the actual sales levels in the various jurisdictions.

<b>Jurisdiction</b>	<b>Mwh Sales</b>	<b>Ratio</b>
Wholesale	330,878	6.7%
Kansas	221,224	4.6%
Arkansas	169,064	3.3%
Oklahoma	152,123	3.2%
Missouri	4,036,225	82.3%
Total	4,909,514	100.0%



1 **FUEL AND PURCHASED POWER PROCUREMENT PRACTICE SUMMARY**

2 **Q. HOW DOES EMPIRE ACQUIRE THE FUEL AND PURCHASED POWER**  
3 **USED TO SUPPLY ELECTRICITY TO ITS CUSTOMERS?**

4 A. Empire's fuel and purchased power acquisition planning is performed using a three-step  
5 process. The steps in this process are:

- 6 • Long-term Integrated Resource Plan ("IRP")
- 7 • An annual and five-year business plan
- 8 • Updates to the annual and five-year business plans as conditions change

9 **Q. PLEASE DESCRIBE THE IRP PROCESS.**

10 A. Empire utilizes the IRP process to develop a long-term strategy to reliably serve its  
11 customers at the lowest reasonable cost while considering other factors such as risk,  
12 resource diversity, energy policy, legal mandates and rate impacts. This planning  
13 process uses Empire's entire load in all five of its jurisdictions. This formal IRP process  
14 has been in place since the early 1990's when Missouri implemented a formal IRP rule.  
15 Since that time Oklahoma and Arkansas have implemented IRP rules. Empire filed its  
16 most recent triennial IRP in Missouri on April 1, 2016. In accordance with the IRP filing  
17 schedule established in Oklahoma and Arkansas, Empire plans to submit the 2016 IRP  
18 in Arkansas in March 2017 and in Oklahoma in May 2017. Per its agreement with the  
19 Staff, Empire provides a copy of the Executive Summary included in the IRP filed in  
20 Missouri to the Staff for its review and Empire's employees are made available to  
21 answer any questions the Staff may have regarding that Executive Summary. Empire  
22 plans its resources on a system-wide basis. The IRP process Empire uses results in a

1 target list of future resources designed to serve Empire's projected usage and customer  
2 levels in all jurisdictions. The resource plan selected by Empire as a result of this  
3 process includes a diverse set of resources. The fundamental objective of the IRP  
4 process requires the utility to consider demand-side, supply-side and renewable  
5 resources on an equivalent basis and utilize the minimization of long-run utility costs as  
6 a primary criterion while also considering other factors such as risk, legal mandates,  
7 energy policy and rate impacts.

8 **Q. PLEASE DESCRIBE ANY RECENT CAPACITY ADDITIONS TO EMPIRE'S**  
9 **GENERATING FLEET.**

10 A. In general, the timing of capacity additions is driven in large part by future load growth  
11 and the environmental rules enacted by the United States Environmental Protection  
12 Agency (EPA) and how these rules affect the operations at Empire's existing generating  
13 units, especially the coal units. In order to comply with current environmental  
14 regulations, Empire is taking actions to implement its environmental compliance plan  
15 and strategy ("Compliance Plan"). As part of the Compliance Plan, Empire recently  
16 converted the gas-fired Riverton Unit 12 simple cycle combustion turbine to a combined  
17 cycle unit resulting in an additional 100 megawatts ("MW") of capacity. The Riverton  
18 12 Combined Cycle began commercial operations on May 1, 2016. In addition, Empire  
19 had previously retired about 104 MW of capacity at the Riverton site. On June 30, 2014,  
20 Riverton Unit 7 was officially retired from service. At the time of its retirement,  
21 Riverton Unit 7 was 64 years old. The unit was rated at 38 MW of capacity. It had  
22 operated as a small coal unit for many years before being transitioned to full operation

1 on natural gas in September of 2012. Riverton Unit 8 (54 MW), another former coal  
2 unit transitioned to full operation on natural gas in September of 2012, along with  
3 Riverton Unit 9 (12 MW), a small combustion turbine that required steam from either  
4 Unit 7 or Unit 8 for start-up, were officially retired from service on June 30, 2015. At  
5 the time of retirement Unit 8 was 61 years old and Unit 9 was 51 years old. The Riverton  
6 Unit 12 conversion to combined cycle essentially replaced the capacity lost due to the  
7 retirements of Riverton Units 7, 8 and 9. These Riverton unit retirements are directly  
8 related to the enactment of new EPA rules and the age and size of the specific units  
9 involved. Riverton Unit 12 is a natural gas-fired Siemens V84.3A2 combustion turbine  
10 that was installed at the Riverton power plant in Riverton, Kansas in 2007. It was  
11 previously rated at 142 MW for the summer peak season and primarily used as a peaking  
12 unit. The Riverton combined cycle upgrade utilized existing site infrastructure and  
13 incorporated the existing Riverton Unit 12 combustion turbine as part of the combined  
14 cycle unit. A heat recovery steam generator (“HRSG”) was installed along with a new  
15 steam turbine and a cooling tower to provide cooling water for the condenser. A new  
16 control room and control system was also installed to operate the unit. The completion  
17 of the Riverton 12 combined cycle conversion project created Empire’s most efficient  
18 unit.

19 **Q. DOES EMPIRE HAVE PLANS FOR ANY CAPACITY ADDITIONS IN THE**  
20 **NEAR FUTURE?**

21 A. The 2016 IRP analysis did not identify any capacity needs in the near future. Slow load  
22 growth, continued development of energy efficiency technologies, completion of the

1 Riverton 12 combined cycle conversion, and lower reserve margin requirements in SPP  
2 all contributed to an appropriate portfolio of supply side resources to meet expected  
3 capacity and environmental requirements until 2029.

4 **Q. HOW DOES THE SECOND STEP OF THE PLANNING PROCESS WORK?**

5 A. In addition to the long range planning, Empire conducts annual financial and operational  
6 planning, which is used to develop a five-year business forecast. This planning process  
7 includes detailed load forecast, detailed generation unit modeling, detailed O&M and  
8 capital budget planning, and revenue forecast. This plan is used to assess many things  
9 including the ability to raise capital, debt and equity, and the near term impact on the  
10 overall cost of service. The detailed generation unit modeling developed in this phase of  
11 the planning process is used as the primary source of information for the development of  
12 the fuel and purchased power procurement plan.

13 **Q. ARE THE ANNUAL AND FIVE-YEAR BUSINESS PLANS ADJUSTED TO**  
14 **REFLECT CHANGES IN THE BUSINESS ENVIRONMENT?**

15 A. Yes. The annual and five-year business plans are periodically refined to take into  
16 account changes since the plans were initially developed. Empire considers changes in  
17 such things as weather, number of customers, fuel prices, purchased power prices, plant  
18 outages, rail transportation delays, and coal availability. As these refinements are made  
19 to the near term forecasts, Empire adjusts its fuel procurement plans as necessary.

20 **EXISTING SUPPLY-SIDE RESOURCES**

21 **Q. PLEASE DESCRIBE EMPIRE'S SUPPLY-SIDE RESOURCES IN GREATER**  
22 **DETAIL.**

**BASE LOAD FACILITIES**

A. During the ACA period Empire owned coal-fired generation resources at three locations: (1) the Asbury generating station located near Asbury, Missouri; (2) the jointly-owned Iatan generating station located near Weston, Missouri (12 percent share) and (3) the jointly-owned Plum Point generating station located near Osceola, Arkansas (7.52 percent share).

Empire's Asbury unit is a 198 Megawatt ("MW") primarily coal-fired plant which became operational in 1970. A second small 14 MW unit was added in 1986, but it was retired from service as planned at the end of 2013, during the recent environmental retrofit project. During this environmental retrofit, Empire installed a scrubber, fabric filter, and powder activated carbon injection system at the Asbury plant (collectively referred to as the Asbury air-quality control system or AQCS). The Asbury AQCS entered service on December 15, 2014. Additionally, during Asbury's fall 2014 outage, during which the tie-in of the new AQCS was performed, the Asbury Unit turbine's inner cylinders and rotors were replaced. These components utilize a newer design, increasing efficiency and capacity. A Selective Catalytic Reduction (SCR) system went into service on this unit in early 2008. Originally, Asbury was designed as a mine-mouth plant that burned a high Btu coal from a mine located near the unit. In 1990, in response to the Clean Air Act of 1990, Asbury began burning a blend of approximately 90 to 95 percent lower Btu western coal from Wyoming and 5 to 10 percent of a higher Btu bituminous coal. The coal for the Asbury coal unit is purchased under a mixture of coal contracts of varying terms and conditions. In the last few years Empire has been

1 burning Tire Derived Fuel (“TDF”) at Asbury to take advantage of a NOx exemption for  
2 units burning TDF in Missouri.

3 Iatan 1 is a large 708 MW coal unit operated by Kansas City Power & Light  
4 (“KCPL”). Empire owns 12 percent or 85 MW of this unit. On a variable cost basis,  
5 this unit is one of Empire’s lowest cost fossil fueled energy resources along with Iatan 2  
6 and Plum Point the newest coal units added to Empire’s portfolio. The Iatan 1 unit is a  
7 base load resource, and Empire does not have the primary responsibility for fuel  
8 procurement for this generating unit. Iatan 2, which KCPL declared to be in commercial  
9 service at the end of December 2010, is an 850 MW coal unit. Empire owns 12 percent  
10 or around 105 MW of this unit. Like Iatan 1, Empire is not directly responsible for fuel  
11 procurement for this unit.

12 Plum Point is a large 665 MW base load coal unit located in Northeastern  
13 Arkansas. Empire owns 7.52 percent or around 50 MW of Plum Point. In addition,  
14 Empire has entered into a long-term purchased power contract for 50 MW from this unit.  
15 This unit went into commercial operation in August 2010. Empire is not directly  
16 responsible for the coal procurement at Plum Point.

17 **INTERMEDIATE AND PEAKING RESOURCES**

18 Empire owns natural gas-fired resources at three locations: (1) the Riverton generating  
19 station located in Riverton, Kansas; (2) the Energy Center facility located near La  
20 Russell, Missouri; and (3) the State Line generating plant facility located in Jasper  
21 County, Missouri near the Kansas state line.

1 By the end of the ACA period, with the previously mentioned Riverton unit  
2 retirements, there were two gas turbines and a combined cycle unit at Riverton with a  
3 total capacity of about 283 MW. As mentioned earlier, Riverton 12 was converted to a  
4 combined cycle unit and began commercial operation May 1, 2016, with a capacity of  
5 250 MW, but it operated as a simple cycle unit during the first half of the ACA period  
6 with a capacity of 142 MW. The other two gas units at the Riverton plant are small  
7 units, approximately 16.5 MW each, and typically only run during extreme peak  
8 conditions.

9 Empire has four gas-fired turbines at the Energy Center generation facility. Two  
10 of these units have capacity ratings in excess of 80 MW each, and are approximately  
11 13,000 Btu/Kwh machines that were completed in 1978 and 1981. They also tend to  
12 operate only during the summer on-peak hours, but due to their ability to burn fuel oil as  
13 a back-up fuel, they can also operate during extreme winter conditions for economic or  
14 gas transportation curtailment reasons. Empire also has two 49 MW FT8 twin pack  
15 aero-derivative units at the Energy Center. The FT8 units have full load heat rates of  
16 around 10,500 Btu/Kwh. The FT8 units also have quick start capability and are typically  
17 on line at full load in less than 10 minutes. These units are used primarily for two  
18 purposes, peaking and load balancing.

19 The State Line facility consists of State Line unit 1 and the jointly-owned State  
20 Line combined cycle. State Line 1 is a 94 MW 1995 vintage combustion turbine with a  
21 full load heat rate of approximately 12,000 to 13,000 Btu/Kwh. Empire operates the 499  
22 MW State Line combined cycle unit which is jointly owned with Westar Generation Inc.

1 Empire has a 60 percent ownership share in the combined cycle unit, or about 297 MW,  
2 while Westar's ownership share is 40 percent. It is a 2X1 (two by one) unit consisting of  
3 two gas turbines and one steam turbine. The unit has the ability to operate in 1X1 mode  
4 (one gas turbine and the steam turbine) or 2X1 mode (two gas turbines and the steam  
5 turbine).

### 6 **OTHER RESOURCES**

7 Empire also owns and operates the Ozark Beach hydro facility located near Forsyth,  
8 Missouri. It has a capacity of about 16 MW and has averaged about 53,780 MWh's of  
9 annual output over the past three years. The output of this unit is limited by the water  
10 released upstream from Table Rock Lake by the Corp of Engineers and the level of  
11 water maintained by the Corp of Engineers on Bull Shoals Lake, which is downstream  
12 from the Ozark Beach facility.

13 At the end of 2005, Empire began receiving output from the 150 MW Elk River  
14 Wind Project located in Butler County, Kansas via a purchased power agreement  
15 ("PPA"). Empire has a contractual commitment to purchase 100 percent of the output  
16 from this project for 20 years. Near the end of 2008, Empire began receiving output  
17 from 105 MWs of the Meridian Way Wind Project located in Cloud County, Kansas.  
18 This is also a 20-year PPA. The energy from both of these wind farms are purchased at  
19 a fixed annual cost per Mwh established by contract.

### 20 **SPOT ENERGY PURCHASES**

21  
22 As mentioned earlier, the SPP IM began on March 1, 2014. Prior to the advent of the  
23 SPP IM, Empire participated in the Energy Imbalance Service ("EIS") market to identify



1 energy purchase and sale opportunities to lower energy costs. An Empire energy trader  
2 would contact potential counterparties, compare opportunities and develop alternatives.  
3 When determining spot market purchase or sale opportunities, Empire energy traders  
4 accounted for generation and transmission constraints. Since Empire is a member of the  
5 SPP and is a network transmission service customer of SPP, this enabled opportunities  
6 for network purchases and sales.

7 The start of the SPP IM ended the EIS market. Bilateral deals may still be made  
8 with counterparties and imports and exports with counterparties outside of SPP may still  
9 take place; but the SPP IM has fundamentally changed the amount of traditional non-  
10 contract purchases Empire formerly referred to as “spot energy purchases.” With the  
11 SPP IM in place, native load energy is purchased from the SPP market. Empire energy  
12 traders now submit hourly demand bids and generation offers to SPP on a day-ahead  
13 basis, analyze opportunities for the most efficient procurement of energy for load,  
14 monitor the Real time balancing market, hedge transmission congestion on a market  
15 based approach (via the Transmission Congestion Rights or TCR market) and make  
16 operating reserve offers to the market.

17 **Q. HOW ARE THE NEAR TERM, ONE AND FIVE-YEAR FUEL**  
18 **REQUIREMENTS DETERMINED?**

19 A. Empire utilizes a chronological dispatch model known as PROSYM to develop a least  
20 cost hourly dispatch to serve its customers. Empire utilizes this model under a license  
21 agreement it has with the model’s owner ABB. The PROSYM model takes into account  
22 coal prices, natural gas prices, market power prices, generating plant efficiencies,

1 generating plant outages and many of the other characteristics of the Empire's  
2 generation resources and develops a least cost dispatch using price curves to simulate the  
3 SPP IM. The model output includes the projected Mwh generation from each generating  
4 resource, projected fuel usage, revenues from sales into the SPP IM, and the cost to  
5 purchase Empire's native load requirements. Monthly reports are generated from this  
6 output and are used to develop plans for the acquisition of the fuel required to operate  
7 the generating units.

8 **COAL AND FREIGHT**

9 **Q. WHAT APPROACH DOES EMPIRE USE TO PURCHASE ITS COAL**  
10 **REQUIREMENTS?**

11 A. Empire conducted a competitive coal acquisition process and selected several suppliers  
12 to meet the majority of its western coal requirements for multiple years going forward.  
13 Empire's western coal is delivered under transportation contracts with Burlington  
14 Northern and Kansas City Southern. Empire also has a train lease to supplement  
15 deliveries and additional lease trains can be obtained as needed. Empire also has a train  
16 lease to supply its portion of the Plum Point railcars. All of the western coal used at the  
17 Asbury site is delivered to Empire's Asbury facility. Empire procures a majority of its  
18 bituminous coal (higher Btu) requirements on a competitive basis.

19 **NATURAL GAS AND RELATED TRANSPORTATION**

20 **Q. PLEASE DESCRIBE HOW EMPIRE ACQUIRES ITS NATURAL GAS**  
21 **REQUIREMENTS.**

1 A. All of Empire's natural gas-fired generation resources are located on the Southern Star  
2 Central Gas Pipeline ("SSCGP"). Empire currently has over 75,000 MMBtu/day firm  
3 production zone capacity and more than 85,000 MMBtu/day market zone capacity. If  
4 natural gas transportation is not available, most of Empire's simple cycle gas turbines  
5 have the ability to operate on fuel oil. Empire acquires physical natural gas on both a  
6 long-term monthly basis and daily basis. Typically these physical purchases are  
7 competitively bid when possible. If a particular physical gas contract request is very  
8 limited in terms of responding suppliers, the price quoted by the supplier is compared to  
9 the prices available on the NYMEX as adjusted for delivery on SSCGP to ensure that the  
10 price quoted by the physical supplier is competitive with other alternatives.

11 Prior to the current ACA period, Empire secured storage rights on SSCGP through  
12 a five year contract. These storage arrangements began in April of 2011 and expired in  
13 March of 2016.

14 **MANAGING PRICE VOLATILITY OF NATURAL GAS**

15 **Q. HOW HAS EMPIRE'S MANAGEMENT CHOSEN TO MANAGE NATURAL**  
16 **GAS PRICE VOLATILITY?**

17 A. Empire works diligently to mitigate the price volatility associated with changes in  
18 natural gas pricing. Empire developed and implemented a Risk Management Policy  
19 (RMP) during 2001 to manage this volatility. The RMP outlines the instruments  
20 available for use to help manage volatility. In general terms, Empire's RMP allows the  
21 use of NYMEX Futures, Swaps, and Physical purchases to help manage price volatility.  
22 The RMP includes a minimum annual quantity of natural gas whose price must be

established in advance through either a financial instrument and/or physical gas contract. For example, Empire has currently established the price on the following quantities of natural gas for the upcoming calendar years (as of October 31, 2016).

Year	Hedge Percentage	Dekatherms	Average Price
2017	64%	10,662,900	\$3.12
2018	38%	6,025,000	\$3.15
2019	21%	3,700,000	\$2.78
2020	8%	1,240,000	\$2.65

Source: October 31, 2016 Natural Gas Position Report

**2015 PROCUREMENT PLAN FOR 2016**

**Q. PLEASE DESCRIBE THE STATUS OF THE NATURAL GAS PROCUREMENT PROCESS AT THE BEGINNING OF THE CURRENT ACA PERIOD.**

A. Empire's RMP called for the price of a minimum of 60% of its expected 2016 natural gas usage to be established by December 31, 2015. As of December 31, 2015, Empire had \*\*\_\_\_\_\_\*\* MMBtu of its 2016 calendar year natural gas requirements either physically purchased at a fixed price or financially hedged out of a total expected natural gas requirement of \*\*\_\_\_\_\_\*\* MMBtu. The \*\*\_\_\_\_\_\*\* MMBtu represented about 61% of Empire's anticipated 2016 natural gas requirement, and carried an average cost of \$\*\*\_\_\_\_\_/MMBtu. Of the \*\*\_\_\_\_\_\*\* MMBtu, a total of \*\*\_\_\_\_\_\*\* MMBtu was to be purchased under physical contracts and \*\*\_\_\_\_\_\*\* MMBtu was hedged using financial instruments. The financial instruments used were a combination of NYMEX contracts and associated basis swaps or swap transactions with Over the Counter ("OTC") counterparties. After burning the natural gas it has physically purchased, Empire will buy its additional physical gas requirements on an intra-month

1 daily or weekly basis on a competitive basis to balance the system natural gas  
2 requirements.

3 **Q. ARE THE BENEFITS AND COSTS OF EMPIRE'S ENERGY RISK**  
4 **MANAGEMENT POLICY RECORDED ON THE GENERAL LEDGER?**

5 A. Yes. The results of Empire's risk management policies, including the settlement of  
6 financial hedges, are reflected in the fuel expense accounts on the general ledger, namely  
7 accounts 501 and 547 in accordance with Generally Accepted Accounting Principles  
8 ("GAAP"). The gains/losses arising from the periodic settlement of the financial  
9 instruments have been eliminated from the Kansas ECA filing as have the gains/losses  
10 that arose from the periodic sale of excess natural gas during the ACA period. This is in  
11 accordance with an agreement reached with the staff of the Kansas Corporation  
12 Commission ("KCC") and approved by the KCC in Docket No. 07-EPDE-712-ACA.

13 **Q. WERE THE ATTACHMENTS TO THE ACA APPLICATION PREPARED BY**  
14 **YOU OR PREPARED UNDER YOUR DIRECT SUPERVISION?**

15 A. Yes. These attachments were prepared under my direct supervision.

16 **Q. PLEASE DESCRIBE THE ATTCHAMENTS?**

17 A. The main attachments to the ACA application, which supports the ACA, as filed, consist  
18 of 18 schedules which display the actual energy costs incurred by Empire during the  
19 ACA period beginning November 1, 2015 through October 31, 2016. In addition, these  
20 attachments display the actual ECA revenue billed to the Kansas retail customers during  
21 the ACA true-up period to arrive at the (over)/under ACA recovery balance. Also  
22 included in the attached schedules is an analysis of the off-system sales profits, which

1 have been fundamentally changed due to the introduction of the SPP IM, and have  
2 previously flowed through the ECA to the Kansas retail customers during the ACA  
3 period. The attached schedules also display a monthly energy cost forecast for calendar  
4 year 2016 as required by Empire's ECA tariff. This monthly forecast of 2016 energy  
5 costs was developed using the PROSYM model that was discussed earlier. This forecast  
6 included the exclusion of the effect of the financial instruments Empire had in place to  
7 hedge the price of natural gas for calendar year 2016.

8 **Q. DID EMPIRE CONSIDER THE SPP IM IN ITS 2016 ECA FORECAST?**

9 A. Yes. Empire utilized the PROSYM model to simulate a market approach for this Kansas  
10 ECA forecast. PROSYM yields a forecast of the monthly resource generation and fuel  
11 requirements at each of the Company's power plants. It also provides a forecast of the  
12 monthly resource generation and costs associated with purchased power agreements.  
13 This generation from Empire resources is sold into the SPP IM. Monthly revenue from  
14 those sales and native load costs from market purchases are also products of the  
15 PROSYM model in order to arrive at a monthly net fuel and purchase power figure.

16 **Q. PLEASE EXPLAIN HOW THE SPP IM HAS CHANGED THE OFF-SYSTEM**  
17 **PROFIT FACTOR IN THE CALCUALTION OF THE KANSAS ECA?**

18 A. As mentioned earlier, the start of the SPP IM has changed the way Empire does  
19 business. Due to this fundamental change where Empire now purchases its native load  
20 requirement from the market and sells energy from its generating resources into the  
21 market, Empire has determined the off-system gross profit factor has become obsolete  
22 going forward.

1 With the SPP IM, any bilateral deals or import/export deals with counterparties will  
2 flow through the annual cost adjustment (“ACA”) calculation rather than the off-system  
3 profit factor. Attachment A, Schedule 4, displays an analysis of the actual pass through  
4 of the Kansas share of actual off-system sales gross profit. As indicated, Empire passed  
5 through to its Kansas retail customers approximately \$7,174 of off-system sales gross  
6 profit during the ACA period ending October 31, 2016. Thus, there is a balance of  
7 about \$7,174 of off-system sales gross profit that needs to be incorporated into the ACA  
8 factor for calendar year 2016. This has been done on Attachment A, Schedule 2. As  
9 indicated the energy cost over recovery of \$427,617 and the excess recovery of off-  
10 system sales gross profit of \$7,174 have been combined to arrive at an ACA factor of  
11  $\$(0.00188)/\text{Kwh}$  for calendar year 2016 as filed. This ACA factor is designed to remain  
12 constant for each month of calendar year 2016.

13 **Q. WHAT WAS THE (OVER)/UNDER RECOVERY BALANCE AT THE END OF**  
14 **OCTOBER 2016 AS FILED?**

15 A. As displayed on Attachment A, Schedule 2, there was an over recovery at October 31,  
16 2016 of \$420,443. The overall ACA balance has been adjusted to reflect the exclusion  
17 of the gains/losses associated with the financial instruments used to hedge natural gas  
18 purchases during the ACA period and the gains/losses associated with any sale of excess  
19 natural gas.

20 **Q. HOW DOES THE INITIAL 2016 FORECAST OF KANSAS ECA ENERGY**  
21 **COSTS COMPARE TO THE ACTUAL KANSAS ECA ENERGY COSTS FOR**  
22 **THE CURRENT ACA PERIOD?**

1 A. The actual Kansas ECA average energy cost, including the natural gas transportation, for  
2 the twelve-months ending October 31, 2016 were lower than those originally forecast in  
3 the last ACA filing prepared roughly a year ago. The average energy cost was originally  
4 forecast as \$27.51 per Mwh. The actual energy costs came in at \$24.71 per Mwh, nearly  
5 \$3.00 per Mwh, or about 10.2% lower than the original forecast. In terms of overall  
6 eligible energy costs for Empire's Kansas jurisdiction, the ACA period energy costs  
7 were \$5.5 million versus a budget of \$6.7 million. The primary reasons for this  
8 differential in cost were due to lower than forecasted natural gas and market prices and a  
9 significantly warmer than normal winter.

10 **Q. PLEASE DESCRIBE THE FORECAST OF ECA FACTORS FOR THE**  
11 **UPCOMING CALENDAR YEAR OF 2017.**

12 A. Attachment A, Schedule 1, displays the forecast of the ECA factor for each month for  
13 calendar year 2017. This forecast combines the results of the (over)/under recovery of  
14 eligible energy costs and the Kansas ECA forecast of 2017 fuel and energy costs to  
15 arrive at a monthly forecast of 2017 Kansas ECA factors. As indicated, these factors  
16 range from a high of \$0.02798 in April of 2017 to a low of \$0.024200 in August of  
17 2017. The forecast of energy costs for 2017 also incorporates Empire's current estimate  
18 of fuel prices excluding the impact of the financial instruments used to hedge Empire's  
19 natural gas requirements for calendar year 2017 and the inclusion of the cost of air  
20 quality control consumables.

21 **CONCLUSION**



1   **Q. DO THE ENERGY COSTS REFLECTED IN THE EMPIRE ACA,**  
2       **CONSTITUTE A FAIR, REASONABLE AND EFFECTIVE METHOD OF**  
3       **PROCURING THE FUEL AND ENERGY REQUIREMENTS FOR THE**  
4       **COMPANY AND EMPIRE’S KANSAS ELECTRIC CUSTOMERS?**

5   A. Yes, I believe it does, and the calculation of the ACA has been made in accordance with  
6       the Empire ECA tariff authorized by the Commission. It also reflects the actual results  
7       of a reasonable and effective management policy related to the operation of Empire’s  
8       generating units and a structured approach to the acquisition of fuel for the generating  
9       units that has been in place for a number of years. The fuel acquired for the units was  
10      acquired in the competitive marketplace under competitive conditions. I believe  
11      approval of the ACA factor proposed by Empire for calendar year 2017 in its entirety is  
12      reasonable, prudent and in the public interest and would urge such action by the  
13      Commission.

14   **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

15   A. Yes it does.