PUBLIC VERSION
Certain Schedules Attached to This Testimony Designated "Confidential" Contain Confidential Information And Have Been Removed.

BEFORE THE STATE CORPORATION COMMISSION OF THE STATE OF KANSAS

DIRECT TESTIMONY OF

WM. EDWARD BLUNK

ON BEHALF OF KANSAS CITY POWER & LIGHT COMPANY

IN THE MATTER OF THE APPLICATION OF KANSAS CITY POWER & LIGHT COMPANY TO MAKE CERTAIN CHANGES IN ITS CHARGES FOR ELECTRIC SERVICE

DOCKET NO. 12-KCPE-764-RTS

I. INTRODUCTION AND OVERVIEW

Q: Please state your name and business address.

A: My name is Wm. Edward Blunk. My business address is 1200 Main Street, Kansas City, Missouri 64105.

Q: By whom and in what capacity are you employed?

A: I am employed by Kansas City Power & Light Company ("KCP&L" or the "Company") as Supply Planning Manager.

Q: What are your responsibilities?

A: My primary responsibilities are to facilitate the development and implementation of purchase and risk management strategies for fuel and power sales.

Q: What is the purpose of your testimony?

A: My testimony addresses KCP&L's fuel inventory management. The goal of fuel inventory management is to balance the cost of purchasing fuel and holding it in inventory against the risk of not having enough fuel available to satisfy demand in real time. The purpose of my testimony is to explain the process by which KCP&L determines the amount of fuel inventory to keep on hand and how the level of fuel inventory impacts KCP&L's cost of service.

Q: Please summarize your conclusions.

A: The coal inventory targets I present for incorporation into rate base are shown in the attached Schedule WEB-1 **(Confidential)** and are the values used to determine adjustment RB-74, Fuel Inventory included in Schedule JPW-2 of the Direct Testimony of KCP&L witness John P. Weisensee. The inventory values for ammonia, limestone and powder activated carbon, and the inventory values for oil are also shown in Schedule WEB-1 **(Confidential)** and were included in the derivation of adjustment RB-74.

II. EDUCATION AND EXPERIENCE

Q: Please describe your education, experience and employment history.

A: In 1978, I was awarded the degree of Bachelor of Science in Agriculture Cum Laude, Honors Scholar in Agricultural Economics by the University of Missouri at Columbia. The University of Missouri awarded the Master of Business Administration degree to me in 1980. I have also completed additional graduate courses in forecasting theory and applications.

Before graduating from the University of Missouri, I joined the John Deere Company from 1977 through 1981 and performed various marketing, marketing research,

and dealer management tasks. In 1981, I joined KCP&L as Transportation/Special Projects Analyst. My responsibilities included fuel price forecasting, fuel planning and other analyses relevant to negotiation and/or litigation with railroads and coal companies. I was promoted to the position of Supervisor, Fuel Planning in 1984. In 2007, my position was upgraded to Manager, Fuel Planning. In 2009 my position was changed to Supply Planning Manager. While in these positions I have been responsible for developing risk management and hedging programs.

Q: Have you previously testified in a proceeding before the Kansas Corporation Commission ("Commission" or "KCC") or before any other utility regulatory agency?

A: I have previously testified before both the KCC and the Missouri Public Service Commission in multiple cases on multiple issues including fuel prices, forecast prices for fuel and emission allowances, strategies for managing fuel price risk, hedging, fuel-related costs, fuel inventory, and the management of emission allowances.

III. KCP&L'S FUEL INVENTORY MANAGEMENT

Q: Please provide an overview of KCP&L's fuel inventory management policy.

A: KCP&L is a vertically integrated regulated electric utility company with an obligation to serve customers within its franchised service territory. Fuel inventory is one of the tools KCP&L uses to ensure reliable service to its customers. KCP&L's fuel inventory management policy deals only with coal and oil. Because of the Company's limited use of natural gas and the relative low likelihood of a material disruption in the supply of natural gas, KCP&L does not maintain an inventory of natural gas. The table below lists the various electric generating resources KCP&L owns and each unit's primary fuel. The

Iatan, La Cygne, and Montrose units also use oil for start-up and flame stability. Wolf Creek uses oil for start-up and emergency generation.

	Unit	Location	Year Completed	Estimated 2012 MW Capacity	Primary Fuel
Base Load	Iatan No. 2	Missouri	2010	482 [a]	Coal
	Wolf Creek	Kansas	1985	547 [a]	Nuclear
	Iatan No. 1	Missouri	1980	493 [a]	Coal
	La Cygne No. 2	Kansas	1977	343 [a]	Coal
	La Cygne No. 1	Kansas	1973	368 [a]	Coal
	Hawthorn No. 5 [b]	Missouri	1969	564	Coal
	Montrose No. 3	Missouri	1964	176	Coal
	Montrose No. 2	Missouri	1960	164	Coal
	Montrose No. 1	Missouri	1958	170	Coal
Peak Load	West Gardner Nos. 1, 2, 3 and 4	Kansas	2003	310	Natural Gas
	Osawatomie	Kansas	2003	75	Natural Gas
	Hawthorn Nos. 6 and 9	Missouri	2000	232	Natural Gas
	Hawthorn No. 8	Missouri	2000	77	Natural Gas
	Hawthorn No. 7	Missouri	2000	77	Natural Gas
	Northeast Black Start Unit	Missouri	1985	2	Oil
	Northeast Nos. 17 and 18	Missouri	1977	110	Oil
	Northeast Nos. 13 and 14	Missouri	1976	105	Oil
	Northeast Nos. 15 and 16	Missouri	1975	94	Oil
	Northeast Nos. 11 and 12	Missouri	1972	99	Oil
Wind	Spearville 2 Wind Energy Facility [c]	Kansas	2010	4	Wind
	Spearville Wind Energy Facility [d]	Kansas	2006	8	Wind
Total KCP&L				4,500	

As stated above, the goal of fuel inventory management is to balance the cost of purchasing fuel and holding it in inventory against the risk of not having enough fuel available to satisfy demand in real time. KCP&L holds a certain level of fuel inventory to mitigate the uncertainty inherent in both the amount of fuel the Company expects to burn and fuel deliveries. Both fuel burn and deliveries can be impacted by weather. Fuel burn can also be impacted by unit availability, both the availability of the unit holding the inventory and the availability of other units in KCP&L's system. Fuel deliveries can also be impacted by breakdowns at a mine or in the transportation system. Events like the Missouri River floods of 1993 and 2011, and the 2005 joint line derailments in the Southern Powder River Basin ("SPRB") have caused severe interruptions in the delivery of coal to KCP&L's plants. Fuel inventories are insurance against events that interrupt

the delivery of fuel or unexpectedly increase the demand for fuel. All of these factors vary randomly. Fuel inventories act like a "shock absorber" when fuel deliveries do not exactly match fuel requirements. They are the working stock that enables KCP&L to continue generating electricity reliably between fuel shipments.

Q: How does KCP&L manage its fuel inventory?

A: Managing fuel inventory involves ordering fuel, receiving fuel into inventory, and burning fuel out of inventory. KCP&L controls inventory levels primarily through its fuel ordering policy. That is, we set fuel inventory targets and then order fuel to achieve those targets. We define inventory targets as the inventory level that we aim to maintain on average during "normal" times. In addition to fuel ordering policy, plant dispatch policy can be used to control inventories. For example, KCP&L might reduce the operation of a plant that is low on fuel to conserve inventory. Of course, this might require other plants in the system to operate more and to use more fuel than they normally would, or it might require either curtailing generation or purchasing power in the market. One can view this as a transfer of fuel "by wire" to the plant with low inventory. To determine the best inventory level, KCP&L balances the cost of holding fuel against the expected cost of running out of fuel.

Q: What are the costs associated with holding fuel inventory?

A: Holding costs reflect cost of capital and operating costs. Holding inventories requires an investment in working capital, which requires providing investors and lenders those returns that meet their expectations. It also includes the income taxes associated with providing the cost of capital. The operating costs of holding inventory include costs

other than the cost of the capital tied up in the inventories. For example, we treat property tax as an operating cost.

Q: Please explain what you mean by the expected cost of running out of fuel?

A: The cost of running out of fuel at a power plant is the additional cost incurred when KCP&L must use replacement power instead of operating the plant. If the plant runs out of fuel and replacement power is unavailable, KCP&L could fail to meet customer demand for electricity. The cost of replacement power depends on the circumstances under which the power is obtained. We would expect replacement power (and the opportunity cost of forgone sales) to cost less at night than during the day and less on weekends than during the week. In other words, replacement power costs (and opportunity costs of forgone sales) are cyclical. A varying replacement power cost (or opportunity cost of forgone sales) translates directly into a varying shortage cost. As a result, if KCP&L was running low on fuel, it could mitigate the shortage cost by selectively reducing burn when the cost of replacement power is lowest. During any significant period of disruption, we would expect many replacement power cost cycles.

Q: How does KCP&L determine the best inventory level, *i.e.*, the level that balances the cost of holding fuel against the expected cost of running out?

A: KCP&L uses the Electric Power Research Institute's Utility Fuel Inventory Model ("UFIM") to identify those inventory levels with the lowest expected cost. UFIM identifies an inventory target as a concise way to express the following fuel ordering rule:

Current Month Order = (Inventory Target – Current Inventory)
+ Expected Burn this Month
+ Expected Supply Shortfall.

That is, UFIM's target assumes all fuel on hand is available to meet expected burn. "Basemat" is added to the available target developed with UFIM to determine KCP&L's coal inventory target. Generally, and in the rest of my testimony, references to coal inventory targets mean the sum of fuel readily available to meet burn plus basemat.

Q: What is basemat?

A: Basemat is the quantity of coal occupying the bottom 18 inches of our coal stockpiles' footprints. It may or may not be useable due to contamination from water, soil, clay, or fill material on which the coal is placed. Because of this uncertainty about the quality of the coal, basemat is not considered readily available. However, because it is dynamic and it can be burned (although with difficulty), it is not written off or considered sunk.

To determine basemat under our stockpiles, we only consider the area of a pile that is thicker than nine (9) inches. The area of the coal piles that covers either a hopper or concrete slab is not included in the calculation of basemat. The basemat values presented here for all inventory locations are premised on work performed by MIKON Corporation, a consulting engineering firm that specializes in coal stockpile inventories and related services for utilities nationwide.

Q: How does the UFIM model work?

A: The fundamental purpose of UFIM is to develop least-cost ordering policies (*i.e.*, targets for fuel inventory). UFIM does this by dividing time into "normal" periods and "disruption" periods where a disruption is an event of limited duration with an uncertain

occurrence. It develops inventory targets for normal times and disruption management policies. The inventory target that UFIM develops is the level of inventory that balances the cost of holding inventory with the cost of running out of fuel.

Q: What are the primary inputs to UFIM?

A: The key inputs are: holding costs, fuel supply cost curves, costs of running out of fuel, fuel requirement distributions, "normal" supply uncertainty distributions, and disruption characteristics.

Q: What are the holding costs you used to develop coal inventory levels for this case?

A: KCP&L based the holding costs it used to develop coal inventory levels for this case on the cost of capital proposed and described in the Direct Testimony of KCP&L witness Dr. Samuel C. Hadaway.

Q: What do you mean by "fuel supply cost curves"?

A: A fuel supply cost curve recognizes that the delivered cost of fuel may vary depending on the quantity of fuel purchased in a given month. For example, our fuel supply cost curves for SPRB coal recognize that when monthly purchases exceed normal levels, we may need to lease additional train sets. Those lease costs cause the marginal cost of fuel above normal levels to be slightly higher than the normal cost of fuel.

Q: What was the normal cost of fuel?

A: The normal fuel prices underlying all of the fuel supply cost curves used to develop the Company's cost of service for this filing are based on projected June 2012 delivered fuel prices.

Q: What did you use for the costs of running out of coal?

A: There are several components to the cost of running out of coal. The first cost is the opportunity cost of forgone non-firm off-system power sales. We developed that cost by constructing a price duration curve derived from a distribution of historical monthly non-firm off-system megawatt-hour transactions. We supplemented those points with estimates for purchasing additional energy and using oil-fired generation. The last point on the price duration curve is the socio-economic cost of failing to meet load for which we used KCP&L's assumed cost for unserved load. These price duration curves are referred to in UFIM as burn reduction cost curves. These burn reduction cost curves can vary by inventory, location and disruption.

Q: What fuel requirement distributions did you use?

A: For all of KCP&L's coal-fired units we used distributions based on projected fuel requirements from January 2012 through December 2016. All of those distributions included fuel to serve off-system sales.

Q: What do you mean by "normal" supply uncertainty?

A: We normally experience random variations between fuel burned and fuel received in any given month. These supply shortfalls or overages are assumed to be independent from period to period and are not expected to significantly affect inventory policy. To determine these normal variations, we developed probability distributions of receipt uncertainty based on the difference between historical burn and receipts.

Q: What are disruptions?

A: A disruption is any change in circumstances that persists for a finite duration and significantly affects inventory policy. A supply disruption might entail a complete cut-

off of fuel deliveries, a reduction in deliveries, or an increase in the variability of receipts. A demand disruption might consist of an increase in expected burn or an increase in the variability of burn. Other disruptions might involve temporary increases in the cost of fuel or the cost of replacement power. Different disruptions have different probabilities of occurring and different expected durations.

Q: What disruptions did KCP&L use in developing its coal inventory targets?

A: KCP&L recognized three types of disruptions in development of its coal inventory targets:

- PRB capacity constraints;
- Fuel yard failures; and
- Major floods.

Q: Please explain what you mean by disruptions related to PRB capacity constraints.

A: Supply capacity is the ultimate quantity of coal that can be produced, loaded, and shipped out of the PRB in a given time period. Constraints to supply capacity can come from either the railroads or from the mines, but regardless of which of these is the constraint source, the quantity of coal that can be delivered is restricted. A constrained supply caused by railroad capacity constraints can come from an inability of the railroad to ship a greater volume of coal from the PRB. A scenario such as this can arise from not having enough slack capacity to place more trains in service. It can also come from an infrastructure failure such as the May 2005 derailments on the joint line in the SPRB. A variety of mine issues can constrain supply, such as there not being enough available load-outs, not enough space to stage empty trains, reaching the productive limits of

equipment such as shovels, draglines, conveyors, and trucks, or the mine reaching the production limits specified in its environmental quality permits.

Q: Please explain what you mean by disruptions related to fuel yard failures.

A: KCP&L and other utilities have experienced major failures in the equipment used to receive fuel. As used here, "disruption" is designed to cover a variety of circumstances that could result in a significant constraint on a plant's ability to receive fuel.

Q: Please explain what you mean by "major flood" disruptions.

A: The Missouri River has had two major floods in the last twenty years. This disruption was modeled based on those floods. Floods can lengthen railroad cycle times as the railroads reroute trains and curtail the deliveries of coal to affected generating stations.

Q: How does KCP&L manage disruptions?

A: The target inventory levels presented in Schedule WEB-1 **(Confidential)** assume KCP&L will actively manage its fuel inventory. That is, the Company would take whatever actions were deemed appropriate to ensure an adequate supply of fuel was kept on hand for generating energy necessary to serve its native load. If KCP&L runs low on fuel, it could choose to curtail generation and reduce burn. KCP&L would manage the cost of any such disruption to take advantage of replacement power cost cycles. This assumption allows us to operate with lower inventory targets.

Q: What are the coal inventory targets used in this case?

A: The coal inventory targets resulting from application of UFIM and their associated value for incorporation into rate base are shown in the attached Schedule WEB-1 **(Confidential)** and are the values used to determine adjustment RB-74 Fuel Inventory included in Schedule JPW-2 of the Direct Testimony of KCP&L witness John P.

Weisensee. Coal inventory targets are a function of fuel prices, cost of capital and other factors that are interdependent and must be considered together. A change in any one of those factors may increase or decrease coal inventory targets.

Q: How were the inventory values for ammonia, limestone, and powder activated carbon determined?

A: Inventory values for ammonia, limestone, and powder activated carbon were calculated as the average month-end quantity on hand for the 13-month period December 2010 through December 2011 multiplied by the projected June 2012 per unit value. The inventory values for ammonia, limestone and powder activated carbon are shown in Schedule WEB-1 **(Confidential)** and were included in the derivation of adjustment RB-74. *See* Schedule JPW-2.

Q: How were the inventory values for oil determined?

A: Inventory values for oil were calculated as the average month-end quantity on hand for the 13-month period December 2010 through December 2011 multiplied by the projected June 2012 per unit value. The inventory values for oil are shown in Schedule WEB-1 **(Confidential)** and were included in the derivation of adjustment RB-74. *See* Schedule JPW-2.

Q: Why were the inventory values for oil treated differently than the other fuel adders?

A: We do not expect to have a contract that establishes the price for oil for June 2012. Typically, KCP&L purchases oil in the spot market.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Kansas City Power & Light Company to Make Certain Changes in Its Charges for Electric Service	))))	Docket No.: 12-KCPE- -RTS

AFFIDAVIT OF WILLIAM EDWARD BLUNK

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

William Edward Blunk, appearing before me, affirms and states:

1. My name is William Edward Blunk. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Supply Planning Manager.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of twelve (12) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby affirm and state that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

William Edward Blunk

Subscribed and affirmed before me this 18th day of April, 2012.

Nicole A. Wehry
Notary Public

My commission expires: Feb. 4, 2015

NICOLE A. WEHRY
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: February 04, 2015
Commission Number: 11391200

SCHEDULE WEB-1
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