Exhibit No.:	
Issue:	Fuel Prices, Fuel Hedging, Fuel Related Commodities, Fuel Inventory, and Emission Allowances
Witness:	Wm. Edward Blunk
Type of Exhibit:	Direct Testimony
Sponsoring Party:	KCP&L Greater Missouri Operations Company
Case No.:	ER-2010-____
Date Testimony Prepared:	June 4, 2010

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2010-____

DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

Kansas City, Missouri
June 2010

"[redacted]**" Designates "Highly Confidential" Information Has Been Removed.**
Certain Schedules Attached To This Testimony Designated "(HC)" Have Been Removed Pursuant To 4 CSR 240-2.135.

TABLE OF CONTENTS

DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

Case No. ER-2010-____

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 fuel and power sales and purchase strategies.

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 in 1977 and through 1981 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.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission or before any other utility regulatory agency?

A: I have previously testified before both the Missouri Public Service Commission ("MPSC") and the Kansas Corporation Commission ("KCC") in multiple cases on multiple issues regarding fuel prices, fuel price forecasts, strategies for managing fuel price risk, fuel-related costs, fuel inventory, and the management of SO_2 emission allowance inventory.

Q: What is the purpose of your Direct Testimony?

A: The purpose of my Direct Testimony is to support the fuel and fuel related costs for GMO. GMO includes the former Missouri Public Service territory ("MPS") and the former St. Joseph Light and Power territory ("L&P").

Q: On what subjects will you be testifying?

A: I will be testifying on changes in the fuel markets, fuel and fuel-related costs, fuel inventory, and emission allowances. I will explain how GMO forecast the fuel prices and fuel related costs used in the Cost of Service ("COS") calculations.

I. CHANGES IN FUEL MARKETS and FUEL COSTS

Q: What is the purpose of this portion of your testimony?

A: The purpose of this portion of my testimony is to discuss historical changes in coal and natural gas fuel markets and the impact of those changes on GMO's COS.

Q: **How do changes in fuel markets affect GMO's COS?**

A: Changes in fuel markets affect GMO's COS in multiple ways. The first and most obvious impact is the effect of changes in fuel prices and their direct effect on fuel expense. Changes in fuel prices also affect off-system purchase and sale prices.

Q: **How have fuel prices changed over the past few years?**

A: Schedule WEB2010-1 shows how fuel prices have changed dramatically over the past few years. While much attention has been focused on oil's dramatic rise natural gas and coal have also been demonstrating significant price movement. Natural gas in December 2004 was about $6.83/MMBtu. In December 2005 it reached a peak of $15.378 then dropped to $4.20 in September 2006. Those moves represented a climb of 125% followed by a decline of 73%. By July 2008 natural gas had returned to $13.58 but then dropped 82% to $2.508 a price level it had not seen since March 2002. By the end of March 2010 natural gas was trading near $4.00.

Coal has generally followed a pattern similar to natural gas until earlier this year. From December 2004 to December 2005 the mine price for Powder River Basin ("PRB") coal increased 258% from $0.34/MMBtu to $1.23/MMBtu. By January 2007 it dropped 72% to $0.34. Over the next 13 months it climbed 192% before dropping 55% to $0.44 in September 2009. By the end of March 2010 it had returned to about $0.71 which represents another 60% run up.

Q: **What changes have you seen in gas price basis differentials over this time period?**

A: Basis differentials are the difference between one pricing point and another. Since Henry Hub is the most liquid natural gas point, basis differentials are often in comparison to it. Natural gas basis differentials from Henry Hub to Mid-Continent for 2005 and 2006 averaged about minus $1.25/MMBtu. It tightened to minus $0.80 in 2007, then more than doubled to minus $1.80 in 2008 before retracting to minus $0.70 in 2009. Now we are expecting basis for 2010 to be about minus $0.20-0.25. This reduction in basis has been primarily driven by three factors.

The foreseen factor was construction of the Rockies Express Pipeline ("REX"). REX is a 1,679 mile long natural gas pipeline system from the Rocky Mountains, Colorado to eastern Ohio. REX began service to Missouri in May 2008. That combined with high natural gas prices in summer 2008 stretched the Mid-Continent basis to its widest sustained spread. The basis narrowed as the price of natural gas declined from $13 to $4/MMBtu. In November 2009, REX extended its service to eastern Ohio and the Rocky Mountain gas that was depressing our regional price is now moving farther east.

At the same time REX was under construction the Marcellus shale field in the Appalachians began producing natural gas. That put significant downward pressure on eastern gas prices.

The third factor which is squeezing Mid-Continent basis is the overall lower price of natural gas which is a function of lower demand due to the decline in the economy and increased production from shale.

Q: **How has shale changed the fundamental outlook for natural gas?**

A: The main change has been the tremendous increase in natural gas reserves that are now perceived as economically recoverable. Natural gas proved reserves increased 12.6% from 2006 to 2007. Since 1950, that is double the next largest year over year increase of 6.3% in 1956. From 2004 to 2007 natural gas proved reserves increased 23.5%. That compares to the next largest 3 year increase since 1950 of only 16.5% set from 1954 to 1957.

As recently as 2002, the United States Geological Survey in its Assessment of Undiscovered Oil and Gas Resources of the Appalachian Basin Province calculated that the Marcellus Shale contained an estimated undiscovered resource of about 1.9 trillion cubic feet of gas. In early 2008, Terry Englander, a geoscience professor at Pennsylvania State University, and Gary Lash, a geology professor at the State University of New York at Fredonia, estimated that the Marcellus might contain more than 500 trillion cubic feet of natural gas. That is 250 times the 2002 estimate!

In June 2009 the Potential Gas Committee, a widely recognized and knowledgeable non-profit organization affiliated with the Colorado School of Mines, released the results of its latest biennial assessment of the nation's natural gas resources, indicating that the United States possesses a total resource base of 1,836 trillion cubic feet. That is a 39% increase over the 2006 assessment and is the highest resource evaluation in the Committee's 44-year history. Most of the increase from the previous assessment arose from re-evaluation of shale-gas plays in the Appalachian basin and in the Mid-Continent, Gulf Coast and Rocky Mountain areas. Shale now accounts for about 33% of the total resource base.

II. HEDGING FUEL MARKET RISK

Q: What is the purpose of this section of your testimony?

A: The purpose of this section is to discuss GMO's use of hedging programs to mitigate fuel price risk.

A. Natural Gas Price Hedging

Q: Does GMO have a program for managing the price risk of natural gas?

A: Yes. In mid-2007 GMO's predecessor Aquila retained Kase and Company, Inc., a risk-management and trading technology firm which provides trading, hedging and analytical solutions for managing market risk, to develop a natural gas price hedging program. GMO has continued that program.

Q: Please describe GMO's natural gas price hedging program.

A: GMO's natural gas hedging program is oriented toward finding a balance between the need to protect against high prices while not unreasonably limiting opportunities to purchase gas at low prices. To do that, GMO splits its total hedge volume between two hedge strategies. Eighty percent of the volume is managed under Kase's HedgeModel and the other twenty percent under Kase's ezHedge program.

The approach of the HedgeModel program is to identify statistically favorable points at which to hedge. The strategy can be thought of as a three-zone strategy comprised of high price, normal price and low price zones. The high price zone identifies prices that are threatening to move upward. In this price zone actions are taken to protect against unfavorable high price levels, mostly through the use of options-related tactics. The normal price zone identifies prices that are in a "normal" range, neither high enough to warrant protecting price, nor low enough to be considered "opportunities." No action is taken whenever prices are deemed to be in the normal price range. The low price zone identifies prices that are statistically low. In this zone, actions are taken to capture favorable forward prices as the market moves into a range where the probability of prices remaining at or below these levels is decreasing. While the main focus in the high price zone is defensive, to set a maximum or ceiling on prices, in the low price zone the focus is on capturing attractive prices.

Kase's ezHedge generates hedging signals based on market cycles and uses a volume averaging approach, similar to dollar cost averaging. The model divides a price range into five zones based on an evaluation of percentile levels over a range of lookback periods. It selects the lookback length based on market behavior relative to the highest and lowest zones. This approach results in hedges being placed under all but the most favorable conditions, in which case volumes are left unhedged. The volume averaging aspect results in more frequent hedges when prices are in the lower priced zones and fewer hedges are in the higher price zones.

EzHedge usually results, over time, in all of the volumes placed in that program being hedged. Although rare, if prices do not fall low enough, or if prices stay too high, there is a possibility that a few contract months could go unhedged when using HedgeModel. Thus ezHedge is a useful tool to ensure that a portion of volumes will almost always be hedged.

Q: **How does GMO determine the amount of natural gas to hedge under its price risk management program?**

A: GMO uses natural gas derivatives to hedge natural gas price risk and "on peak" purchased power price risk. **[redacted]**

HIGHLY CONFIDENTIAL

Q: How often does GMO use the HedgeModel?

A: GMO monitors the HedgeModel and ezHedge daily. **[redacted]**

Q: How did you evaluate the performance of GMO's natural gas hedge program?

A: Because GMO's hedge program is designed to protect the combination of natural gas purchases and power purchases I evaluated it by looking at that combination. I constructed average $/MWh equivalent values from the sum of purchased power and natural gas expense, including hedge costs, for GMO. The $/MWh equivalent value constructed from budget data represented GMO's market expectations for the period. I compared that value to the $/MWh equivalent value constructed from actual results.

Q: Based on your evaluation how has this program performed for GMO?

A: The $/MWh equivalent value constructed from actual results was slightly less than the budgeted value. In other words, GMO's hedge program met its objective of protecting GMO's customers from large unexpected upward market price fluctuations but it did not significantly lower net fuel costs.

B. <u>Coal Price Hedging</u>

Q: Does GMO have a program for managing the price risk of coal?

A: Yes, it does.

Q: Please describe GMO's coal price hedging program.

A: **[redacted]

HIGHLY CONFIDENTIAL

[redacted]**

Q: How has this strategy performed for GMO?

A: For 2009 the weighted average mine price for PRB coal purchased by GMO for Lake Road and Sibley was **[redacted]**. That compares favorably to the $0.86/MMBtu the "Cal'09" OTC contract for 8800 PRB averaged for all 2008 settlement dates.

III. <u>FUEL IN COST OF SERVICE</u>

Q: What is the purpose of this portion of your testimony?

A: The purpose of this part of my testimony is to explain how prices for fuel and fuel related commodities were forecast to project fuel expense for the COS.

A. <u>Fuel Price Forecast</u>

Q: What fuel prices did GMO use to develop its COS?

A: I provided GMO witness Burton Crawford projected fuel prices that he used to develop the annualized fuel expense included in COS that resulted in adjustment CS-24, "Annualize Fuel Expense at contract prices for net system input normalized for weather and annualized for customer growth" included in Schedule JPW2010-2 of the direct testimony of GMO witness John P. Weisensee. We expect to true-up these projected prices to actual prices during the course of this proceeding.

Q: How did you forecast the natural gas prices?

A: Natural gas prices for the 12 months from January 2010 through December 2010 were used to develop the cost of natural gas in the COS. Natural gas prices for January 2010 through March 2010 were based on the first of the month index price published in Platt's *Inside FERC*. Monthly natural gas prices for April 2010 through December 2010 were based on the average of the six (6) business days from March 9 through March 16, 2010, for the NYMEX closing prices for the April 2010 through December 2010 Henry Hub natural gas futures contracts. These monthly Henry Hub prices were then adjusted for basis using the CME Group's ClearPort Panhandle Basis Swap futures contracts. These basis-adjusted values for April 2010 through December 2010 and the *Inside FERC* first of the month index prices for January 2010 through March 2010 were used to develop the cost of natural gas in the COS. We expect to true-up the 2010 natural gas prices for the COS to actual during the course of this proceeding.

Q: How did you forecast the oil prices?

A: Oil prices were based on the average of the six (6) business days from March 9 through March 16, 2010, for the NYMEX closing prices for the December 2010 heating oil futures contract. The heating oil futures contract price was adjusted for basis and transportation to determine the station specific delivered cost. We expect to true-up oil prices for the COS to actual during the course of this proceeding.

Q: How did you forecast the coal prices?

A: The January 2011 delivered prices of PRB coal were forecast as the sum of mine price and transportation rate. For contracts that are managed by partners such as Westar who is the operating partner of the Jeffery Energy Center, I used the 2011 price estimate provided by the partner. Most of the coal contracts under which GMO expects to purchase PRB coal in 2011 specify a fixed mine price that is only subject to adjustment for quality or government imposition such as changes in laws, regulations, or taxes. Those contracts that are not fixed either specify a base price and allow for an adjustment for diesel fuel or a construct their price from a market index.

The contracts that construct their price from a market index were forecast following the contractually defined mechanism and the average of the six (6) business days from March 9 through March 16, 2010 of Evolution Markets Inc.'s settlement price for 8800 PRB coal for calendar 2011.

For 2011 about ninety (90) percent of GMO's expected coal requirements have been committed. The price for the remaining PRB coal purchases that are not currently under contract was simply forecast to equal the price of the market based contract I described earlier.

The January 2011 price for GMO's bituminous coal was forecast as equal to the 2010 contract price. We expect to true-up all coal prices and freight rates to actual during the course of this proceeding.

Q: **How did you develop projections of the freight rates for moving PRB coal that will replace the existing contracts?**

A: ** [redacted]

[redacted]**

Q: How did you develop projections of the freight rates for moving Utah coal that will replace the existing contracts?

A: **[redacted]**

B. <u>Fuel Adders and Fuel Additives</u>

Q: Are there costs related to fuel and included in adjustment CS-24 that are not included in the price of fuel?

A: Yes. Generally those costs fall into two categories: "fuel adders" and "fuel additives." The fuel adders include unit train lease expense, unit train maintenance, unit train property tax, unit train depreciation, coal dust mitigation, freeze protection, natural gas hedging costs, and costs associated with transporting natural gas. Fuel additives include ammonia, limestone, powder activated carbon ("PAC"), and urea (including urea solution NOxOUT A) which are used to control emissions. We expect to true-up these prices to actual during the course of this proceeding.

Q: Please describe the unit train-related expenses.

A: Unit-train related expenses included in adjustment CS-24 are as follows:

- Unit train lease expense which is disaggregated into two components:

    Long-term unit train lease expense; and

Short-term unit train lease expense.

- Unit train maintenance expense consisting of:

  Foreign car repair;

  Shared expenses; and

  Maintenance and repair of GMO's railcar fleet.

Long-Term Unit Train Lease Expense: The amount presented here for unit train lease expense reflects GMO's share of the long-term lease payments that will be made for unit trains that will be in service in 2010

Short-Term Unit Train Lease Expense: Short-term unit train lease expense is our estimate of railcar capacity that will be acquired through the short-term railcar lease market to move GMO's coal requirements.

Foreign Car Repair: This represents the cost of repairing railcars that are running in service for GMO but are not owned by or under a long-term lease to GMO.

Shared Expenses: These are costs for things like Association of American Railroads publications, Universal Machine Language Equipment Register fees, and railcar management software fees that cannot be assigned to an individual car.

Maintenance and Repair of GMO's Railcar Fleet: These repair values reflect GMO's projection for 2010 given the age and makeup of the railcar fleet.

Q: Are there unit train-related expenses that are not equipment related?

A: Yes. The Union Pacific tariff (UP 6603-C) requires trains to be treated with freeze conditioning agent from November 15 through March 15. In May 2009 BNSF issued new loading rules (Publication 6041-B) to be effective November 1, 2009. Those rules set limits on the volume of coal dust that may come off a coal train over certain units of track. **[redacted]** I used that estimate under the assumption we will replace it with actual prices at true-up.

Q: What is the status of BNSF's coal dust rule?

A: On October 22, 2009, a coal shipper petitioned the STB to open a declaratory order proceeding regarding BNSF's coal dust rules. This request was supported by WCTL, of which KCP&L is a member. On December 1, 2009, the STB granted the request. BNSF suspended the effectiveness of its coal dust tariff until August 1, 2010.

Q: Are there unit train-related expenses that are not included in adjustment CS-24?

A: Yes, unit-train related expenses for ad valorem private car line taxes and railcar depreciation are not included in adjustment CS-24. Ad valorem private car line taxes are included in adjustment CS-126. Depreciation for railcars is included in adjustment CS-120.

Q: How did you determine the natural gas hedging costs?

A: The natural gas hedging costs are the actual premium costs incurred to hedge natural gas for summer 2010.

Q: How did you determine the settlement values for the natural gas hedge program?

A: The natural gas hedge program settlement values were calculated assuming our existing natural gas hedge portfolio had settled in early April. We expect to replace this estimate and the various other projected fuel related expenses with actual data at true-up.

Q: What are the costs associated with transporting natural gas?

A: The costs for transporting natural gas fall into two categories. The first category is those costs which are relatively fixed. That includes reservation or demand charges, meter charges, and access charges. The second category of transportation costs is those costs which are volumetric. They include: commodity costs, commodity balancing fees, transportation charges, mileage charges, fuel and loss reimbursement, Federal Energy Regulatory Commission ("FERC") annual charge adjustment, storage fees, and parking fees.

Q: How did you determine the costs associated with transporting natural gas?

A: I disaggregated the costs of transporting natural gas into its various components. For those items specifically defined by tariff or contract, I used the defined mechanism. I estimated parking fees based on prior period actuals. Those subcomponents were then aggregated and added to the specific tariff costs to determine the total cost of transportation. These costs are included in GMO's COS as fuel adders.

Q: What are fuel additives?

A: Fuel additives, which include pollution control reagents, are commodities that are consumed in addition to the fuel either through combustion or chemical reaction. For example, ammonia is added to a stream of flue gas where it reacts with NOx as the gases pass through a catalyst chamber. Lime (or limestone) is added to the flue gas stream in a flue gas desulfurization ("FGD") module to "scrub" SO_2. Urea is injected into and mixes with hot flue gases and reacts with NOx without a catalyst.

Q: With the addition of new environmental controls at Iatan are there new fuel additives?

A: Yes. The new environmental controls at Iatan use ammonia and limestone as reagents. They also use PAC as a sorbent for controlling mercury emissions. The use of PAC for controlling mercury emissions is new to GMO.

Q: How is PAC used to control mercury?

A: It is injected into the flue gas upstream of the particulate control system to act as a sorbent. The gas phase mercury in the flue gas contacts the activated carbon and attaches to its surface. The activated carbon with the mercury attached is then collected by the particulate control system. While this process has enhances the capture of mercury, the activated carbon that is now mixed with the flyash interferes with chemicals used in making concrete which is the primary market for beneficial reuse of flyash. Consequently the flyash is no longer salable for use in concrete. We have adjusted the test period revenue from flyash sales to zero to reflect this change.

Q: How did you determine the cost of the fuel additives?

A: The cost was determined as the quantity times price where price was the value projected for the true-up and quantity was normalized based on historical usage. For additives that lack historical data we estimated normal usage. We expect to true-up these costs to actual during the course of this proceeding.

C. <u>Rate Volatility Mitigation Features</u>

Q: What rate volatility mitigation features are designed in the proposed FAC?

A: As discussed above, GMO uses hedging programs for coal and natural gas to mitigate the impacts of market price volatility.

D. Environmental Investments And Allowance Purchases

Q: What is the purpose of this portion of your testimony?

A: I will discuss the legal requirements for emission allowances and explain GMO's current strategy for meeting those requirements.

Q: Are emissions allowance costs or sales margins included in the proposed RAM?

A: Yes. GMO has included the cost of emission allowances in its COS calculation and changes in the cost of emission allowances are included in the FAC.

Q: Explain GMO's forecasted allowance purchases and sales?

A: **[redacted]**

Q: What emissions are GMO required to offset with allowances?

A: For 2010 GMO is required to offset sulfur dioxide (SO_2) and nitrogen oxides (NOx) emissions with allowances issued by the Environmental Protection Agency ("EPA").

Q. What rules or regulations established the need for emission allowances?

A: Title IV of the <u>1990 Clean Air Act</u> established the allowance market system known today as the Acid Rain Program. Title IV set a cap on total SO_2 emissions and aimed to reduce overall emissions to 50% of 1980 levels. In 2005 the EPA promulgated the Clean Air Interstate Rule, commonly known as CAIR. The CAIR continued the cap and trade approach to further reduce SO_2 emissions and extended it to nitrogen oxide (NOx) emissions.

HIGHLY CONFIDENTIAL

Q: **What is the status of the Clean Air Interstate Rule?**

A: On July 11, 2008, the D.C. Circuit issued an opinion finding parts of the CAIR unlawful and vacated the rule. About six months later on December 23rd, the D.C. Circuit issued a decision on the petitions for rehearing of its July 11 decision. The court granted EPA's petition for rehearing to the extent that it remanded the cases without vacatur of the CAIR. That ruling allowed the CAIR to remain in place, but EPA was obligated to promulgate another rule under Clean Air Act Section 110(a)(2)(D) consistent with the court's July 11 opinion. April 26, 2010, EPA sent the revised Notice of Proposed Rule Making ("NPRM") which it proposes as the CAIR replacement to the Office of Management and Budget for Regulatory Review. EPA expects the NPRM will be published in the Federal Register in June 2010.

Q: **What is GMO's strategy for meeting the SO_2 reduction requirements of the Acid Rain Program?**

A: GMO has elected to purchase those SO_2 emission allowances it needs beyond those initially allocated to it under the Acid Rain Program.

Q: **Why has GMO adopted this strategy of purchasing SO_2 emission allowances rather than installing control equipment?**

A: Studies performed for GMO have shown that in cost per ton of SO_2 removed, the cost to install SO_2 control equipment would be many times higher than the market price for SO_2 emission allowances. That was confirmed in a study prepared for GMO earlier this year.

Q: What is GMO's strategy for meeting the NOx reduction requirements of the CAIR?

A: GMO has employed a strategy of controlling emissions at Sibley, using surplus allowances to offset emissions at Lake Road. If the Company needs more allowances than are conserved at Sibley, they will be purchased.

Q: Why has GMO adopted this strategy of controlling emissions and purchasing NOx emission allowances?

A: In response to a 2006 Study of Emission Reduction Strategies to Comply with the Clean Air Interstate Rule ("CAIR") and Clean Air Mercury Rule ("CAMR"), performed by Sargent & Lundy ("S&L"), Aquila, Inc. decided it was the most cost effective strategy.

Q: How much does GMO expect to spend on NOx allowances?

A: At current market prices, GMO expects to spend about $0.5-0.6 million per year on CAIR NOx allowances.

Q: Has GMO examined the cost of installing NOx control equipment at Lake Road?

A: Yes. In its March 2010 Study of Environmental Retrofits, Sega determined that the cost to control NOx would range from $1,100 to $3,870 per ton of NOx removed. With allowances trading at $30/ton for ozone seasonal allowances and $415 for annual NOx allowances, the preferred strategy is to buy the incremental allowances.

Q: Do you expect to replace all of these fuel and fuel related price or cost estimates with actual prices or costs as known at true-up?

A: Yes.

IV. FUEL INVENTORY

Q: What is the purpose of this portion of your testimony?

A: The purpose of this portion of my testimony is to explain the process by which GMO determines the amount of fuel inventory to keep on hand and how the level of fuel inventory impacts GMO's COS.

Q: Why does GMO hold fuel inventory?

A: GMO holds fuel inventory because of the uncertainty inherent in both fuel requirements and fuel deliveries. Both fuel requirements and deliveries can be impacted by weather. Fuel requirements can also be impacted by unit availability, both the availability of the unit holding the inventory and the availability of other units in GMO's system. Fuel deliveries can also be impacted by breakdowns at a mine or in the transportation system. Events like the flood of 1993 and the 2005 joint line derailments in the SPRB interrupt the delivery of coal to GMO'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 GMO to continue generating electricity between fuel shipments.

Q: How does GMO manage its fuel inventory?

A: Managing fuel inventory involves ordering fuel, receiving fuel into inventory, and burning fuel out of inventory. GMO controls inventory levels primarily through our 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, GMO 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, GMO 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 GMO must use replacement power instead of operating the plant. If the plant runs out of fuel and replacement power is unavailable, GMO 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 GMO 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 GMO determine the best inventory level, *i.e.*, the level that balances the cost of holding fuel against the expected cost of running out?

A: GMO uses the Electric Power Research Institute's ("EPRI") 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 GMO's inventory target. Generally, and in the rest of my testimony, references to 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 eighteen inches of our coal stockpiles footprint. 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. Eighteen inches was identified in previous GMO cases as being the error range for placement of a dozer blade or scraper on a coal pile and the appropriate depth for basemat. To determine basemat under our compacted stockpiles, we only consider the area of a pile that is thicker than nine 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 except Iatan Unit 2 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 were the basemat values determined for Iatan Unit 2?

A: Much like the Iatan Unit 2 plant still under construction, the coal inventory designated for the unit is being accumulated to bring it up to the target level. The Iatan Unit 2 basemat values were calculated from the available target identified by UFIM and applying the ratio of basemat to available target for Iatan Unit 1.

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 that 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: GMO based the holding costs it used to develop fuel inventory levels for this case on the cost of capital proposed and described in the direct testimony of GMO 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 PRB 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 were the January 1, 2011 delivered fuel prices used to develop the Company's cost of service for this filing.

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

A: There are several components to the cost of running out of fuel. The first cost is the opportunity cost of forgone non-firm off-system power sales. I developed that cost by constructing a price duration curve derived from the distribution of monthly non-firm off-system megawatt-hour ("MWh") transactions for January 2006 through December 2009. I 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 I used GMO'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 units except Iatan Unit 2, I used distributions based on historical fuel requirements from January 2006 through December 2009. The Iatan Unit 2 requirements were based on projected requirements for 2011 through 2014. All of these 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, I 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 GMO use in developing its inventory targets?

A: GMO recognized three types of disruptions in development of its 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: GMO 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: This disruption was modeled after the 1993 flood which affected the entire Missouri River Valley. Such a large flood can lengthen railroad cycle times and curtail the deliveries of coal to generating stations. For example, at Iatan Station the average standard deviation in cycle time for the flood year is nearly double the standard deviation for the year before or after the flood, and during the months most affected by flooding, the differences are even more substantial.

Q: How does GMO manage disruptions?

A: The target inventory levels presented here assume GMO 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 native load. If GMO runs low on fuel, it might choose to curtail generation and reduce burn. GMO 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 WEB2010-2 **(Highly Confidential)** and are the values used to determine adjustment RB-74, "Adjust Fossil Fuel Inventories to required levels" included in the Summary of Adjustments in Schedule JPW2010-2 of the direct testimony of GMO witness John P. Weisensee. Since these coal inventory targets are a function of fuel prices, cost of capital and other factors that may be adjusted in the course of this proceeding, we would expect to adjust the coal inventory targets as necessary.

Q: Does that mean it would be appropriate to update coal inventory levels included in rate base to reflect information known at true-up?

A: Yes. It would be appropriate to update the coal inventory levels for changes in fuel prices and cost of capital. A change in either the delivered cost of coal or cost of capital may result in different coal inventory levels. For example, lower fuel prices or a lower rate of return than the Company has requested would result in higher inventory requirements.

Q: How were the inventory values for activated carbon, ammonia, biofuel, limestone, propane, TDF, and urea determined?

A: With the exception of activated carbon for Iatan Units 1 and 2, inventory values for ammonia, limestone and urea were calculated as the average month-end quantity on hand for the 13-month period March 2009 through March 2010 multiplied by the projected January 2011 per unit value. November 2009 was the first month activated carbon was used at Iatan so I used the average month-end quantity on hand from November 2009 through March 2010 multiplied by the projected January 2011 per unit value to determine its value. The inventory values for activated carbon, ammonia, biofuel, limestone, propane, TDF, and urea are shown in Schedule WEB2010-2 **(Highly Confidential)** and were included in the derivation of adjustment RB-74.

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 March 2009 through March 2010 multiplied by the projected December 2010 per unit value. The inventory values for oil are shown in Schedule

WEB2010-2 **(Highly Confidential)** and were included in the derivation of adjustment RB-74.

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 January 2011. Typically GMO purchases oil on the spot market.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of KCP&L Greater Missouri Operations Company to Modify Its Electric Tariffs to Effectuate a Rate Increase	)))	Docket No. ER-2010-____

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 KCP&L Greater Missouri Operations Company consisting of twenty-nine (29) 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.

W E Blunk
William Edward Blunk

Subscribed and affirmed before me this 28th day of May, 2010.

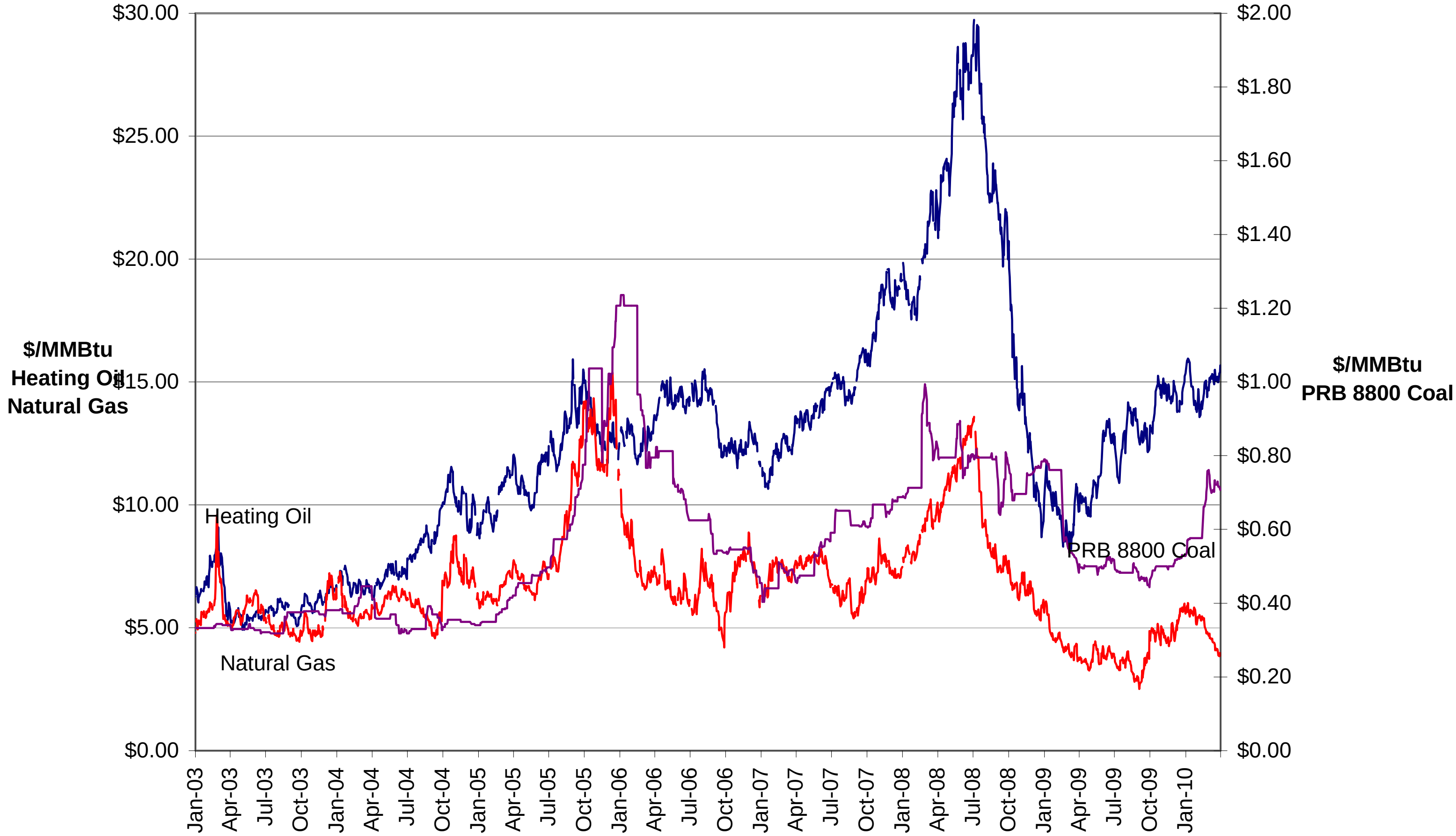
Nicole A. Wehry
Notary Public

My commission expires: Feb. 4, 2011

" NOTARY SEAL "
Nicole A. Wehry, Notary Public
Jackson County, State of Missouri
My Commission Expires 2/4/2011
Commission Number 07391200

Schedule WEB2010-1
shows how fuel prices have changed over the past years

Market Price of Fossil Fuels



Sources: ProphetX, *Evolution Markets*

SCHEDULE WEB2010-2

THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC