Exhibit No.:	
Issue:	Fuel Markets, Fuel and Fuel-Related Costs, Fuel Inventory, Emission Allowances
Witness:	Wm. Edward Blunk
Type of Exhibit:	Direct Testimony
Sponsoring Party:	KCP&L Greater Missouri Operations Company
Case No.:	ER-2012-0175
Date Testimony Prepared:	February 27, 2012

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2012-0175

DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

Kansas City, Missouri
February 2012

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

DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

Case No. ER-2012-0175

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") as Supply Planning Manager.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of KCP&L Greater Missouri Operations Company ("GMO" or the "Company") for the territories served by St. Joseph Light & Power ("L&P") and Missouri Public Services ("MPS").

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 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 at the Missouri Public Service Commission ("MPSC" or "Commission") or before any other utility regulatory agency?

A: I have previously testified before both the MPSC and the Kansas Corporation 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.

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 forecasts the fuel and emission prices, fuel-related costs, and hedge adjustments used in the Cost of Service ("COS") calculations.

Q: How is your testimony organized?

A: My testimony is organized into the following sections:

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 costs.

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

A: Changes in fuel markets affects GMO's costs 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 WEB-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.

Q: How have natural gas prices changed over the past few years?

A: 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 percent followed by a decline of 73 percent. By July 2008 natural gas had returned to $13.58 but over the next 15 months it dropped 82 percent to $2.508, a price level it had not seen since March 2002. In less than 30 days it jumped 93 percent. The price of gas climbed another 23 percent and peaked on the first business day after Christmas 2009 at $5.99. Since then it has followed a downward trend and ended 2011 at the low for the year of $2.989.

Q: How have Powder River Basin ("PRB") coal prices changed over the past few years?

A: From about 2001 through November 2005 PRB coal generally moved coincident with the New York Mercantile Exchange ("NYMEX") natural gas prices. Starting in 2006, PRB coal price moves generally lagged similar moves in natural gas. Starting January 2010, PRB found support and generally remained above its January 2010 price. On the other hand, natural gas found resistance and did not climb above its January 2010 price.

From December 2004 to January 2006 the mine price for PRB coal increased 258 percent from $0.34/MMBtu to $1.23/MMBtu. By January 2007 it dropped 67 percent to $0.40. Over the next 13 months it climbed 146 percent before dropping 55 percent to

$0.44 in September 2009. By the end of March 2010 it rallied 72 percent to $0.76. After a 15 percent dip it climbed 36 percent to $0.88 in August 2010. From August 2010 through December 2011 PRB 8800 Btu/lb coal has risen and fallen but remained in a range between $0.69 and $0.88/MMBtu.

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

A: Basis differentials are the differences between one pricing point and another. Since Henry Hub is the pricing point for the NYMEX natural gas futures contract, basis differentials are typically calculated with it as one of the pricing points. 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. Since 2010, natural gas basis differentials have averaged about minus $0.20. We are expecting it to average about minus $0.20 to minus $0.15 for the near future. This reduction in basis differentials 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 that runs from the Rocky Mountains in Colorado to eastern Ohio. REX began service to Missouri in May 2008. The opening of the REX pipeline combined with high natural gas prices in summer 2008 to stretch 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 the price of Mid-Continent natural gas closer to the price of natural gas at Henry Hub is the overall lower price of natural gas which is a function of increased production from shale and lower demand due to the decline in the economy and mild weather.

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 percent from 2006 to 2007. Since 1950, that is double the next largest year-over-year increase of 6.3 percent in 1956. From 2004 to 2007 natural gas proved reserves increased 23.5 percent. That compares to the next largest 3 year increase since 1950 of only 16.5 percent 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 field 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 field 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 percent 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[1] in the Appalachian basin and in the Mid-Continent, Gulf Coast and Rocky Mountain areas.

Currently six major shale plays (Eagle Ford, Marcellus, Haynesville, Woodford, Fayetteville, and Barnett) account for about 90 percent of total domestic shale production. In 2011, the shales overtook tight sands as the dominant form of unconventional production.[2] Natural gas produced from shale essentially accounted for 100 percent of the net increase in domestic production. Shale now accounts for about one-third of the total resource base.

II. HEDGING ENERGY 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 energy market price risk.

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[1] Plays are large, known sources of gas trapped beneath the earth's surface. Plays can exist over a large areal expanse and/or thick vertical section of land and, in the past, could have been considered uneconomic or technically challenging to develop.

[2] Unconventional natural gas is gas that is more difficult or less economical to extract, usually because the technology to reach it has not been developed fully, or is too expensive. What is considered unconventional natural gas changes over time and from deposit to deposit. There are six main categories of unconventional natural gas. These are: deep gas, tight gas, gas-containing shales, coalbed methane, geopressurized zones, and Arctic and sub-sea hydrates. (See http://www.naturalgas.org/overview/unconvent_ng_resource.asp)

Q: What is the purpose of GMO's hedging programs?

A: The purpose of GMO's hedging programs is to reduce the impact of market price volatility for natural gas, purchased power, and coal. Reducing volatility does not necessarily mean reducing cost. When prices are rising, the hedge program will reduce costs by producing offsetting gains, thereby mitigating the effect of rising prices. On the other hand, when prices are falling, the hedge program will produce offsetting costs, thereby mitigating the benefit of falling prices.

A. Natural Gas and Purchased Power Price Hedging

Q: What risk is GMO managing through its hedge programs?

A: GMO is hedging to mitigate adverse upward price volatility in natural gas and power. In brief, GMO is concerned about increasing natural gas and power prices.

Q: How does market price uncertainty for natural gas affect GMO?

A: Natural gas market price uncertainty primarily affects GMO in two ways. The first way is the direct impact on the price the Company pays for natural gas it consumes. The second impact is the effect of natural gas price on the market price for electricity.

Q: Does GMO use the same program to manage both the impact of natural gas market uncertainty on the price the Company will pay for the natural gas it consumes and the market price for electricity the Company will purchase?

A: Yes.

Q: What strategy does a company that is concerned about increasing commodity prices employ?

A: It is to hedge its "short" physical position, by going "long" in a financial position through buying call options or buying futures contracts.

Q: How do companies use futures contracts and options in their hedging strategies?

A: A hedger, such as GMO, with a short position would buy futures contracts to "lock in" a future price. Alternatively to "cap" a future price, a hedger with a short position might: (1) buy calls, (2) buy calls and sell puts to create a collar, (3) buy calls, sell puts, and sell calls to create a 3-way collar, or (4) buy futures and buy puts to create a synthetic call. All four scenarios can protect against the risk of prices moving upward and offer some degree of allowing the hedger to follow market prices down but with different premium costs and risk profiles.

Q: How is a hedging strategy developed?

A: The first step in developing a hedging strategy is to identify the hedger's purpose. What is the risk that causes concern and how does the hedger want to change that risk? There are a number of strategies that may be employed, depending on the objectives of the program. As a hedger the goal of these strategies is to reduce risk. By contrast, a speculator assumes risk in the pursuit of profit.

Q: What is the objective of GMO's hedging program?

A: The objective of GMO's hedging program is to reduce energy price risk inherent with floating with the market without substantively degrading the Company's overall competitiveness. The program's goals are to 1) protect the Company and its customers from large upward fluctuations in the price of natural gas and 2) assure a reasonable probability that budgets are met in a cost-effective manner.

Q: Briefly describe GMO's hedging strategy.

A: GMO's natural gas hedging program is oriented toward finding a balance between the need to protect against high prices and the opportunity to purchase gas at low prices.

GMO's hedging program first divides the hedge volume into two parts. One-third of the volume is not hedged but is left to primarily absorb the risk of requirements being less than projected and secondarily float with the market. The remaining two-thirds are hedged under two hedging programs, Kase and Company, Inc.'s HedgeModel and ezHedge.

Q: How did GMO develop its program for managing the price risk for natural gas and purchased power?

A: 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. In 2010, KCP&L combined its natural gas hedge program with GMO's hedge program. The merged hedge program retains the volume drivers that are unique to each utility. **[redacted]** The other parameters for the HedgeModel were similar for both the KCP&L and GMO plans, so the merged parameters are not substantially different than either of the original plans.

Q: How does the HedgeModel program work?

A: 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.

Q: How does the ezHedge model work?

A: 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 look-back periods. It selects the look-back 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 when prices are in the higher price zones.

Q: What distinguishes these two hedging models?

A: ezHedge usually results, over time, in all of the volumes placed in that program being hedged. On the other hand, if prices do not fall low enough, or if prices stay too high, there is a possibility that certain contract months could go unhedged when using

HedgeModel. Combining ezHedge with HedgeModel helps ensure that a modest portion of the exposure has a high probability of being 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 to cross hedge "on peak" purchased power price risk. The natural gas component is GMO's projected natural gas usage. The natural gas equivalent usage for projected purchased power is determined using the market implied heat rate from the Company's market model. "On peak" is defined as the Monday-Friday 5x16 block, excluding North American Electric Reliability Corporation holidays. GMO may hedge up to 67 percent of the sum of projected natural gas usage and projected "on peak" natural gas equivalent for purchased power.

Q: What is cross hedging?

A: Cross hedging is a risk management strategy that involves offsetting a position in one commodity with an equal position in a different commodity with similar price movements. Cross hedging is often used in markets where there is no active futures trading for the commodity of concern.

Q: In the time GMO has been using natural gas futures to cross hedge future purchases of electricity has there been reason to believe there was a direct link between these two markets sufficient upon which to base such "hedging?"

A: Yes. GMO is a member of the Southwest Power Pool ("SPP"). Since 2004 all but one of the annual "State of the Market Reports" prepared by the Market Monitoring Unit ("MMU") for the SPP have discussed "...the link between natural gas prices and SPP's electricity prices…"[3] Below I list key phrases from some of SPP's annual "State of the Market Reports"[4] which illustrate that SPP has believed for years there is a strong link between natural gas and electricity markets:

- 2004: Rising natural gas prices are a driving force in the increase of on-peak electricity prices in the current bilateral electricity market in the SPP footprint. This is to be expected given the region's heavy dependence on natural gas for power generation, and a range of statistical tests confirms this result. At 3.
- 2005: Rising natural gas prices are a driving force in the increase of on-peak electricity prices in the current bilateral electricity market in the SPP footprint. This is to be expected given the region's heavy dependence on natural gas for power generation, and a range of statistical tests confirms this result. At 4.
- 2008: This is important because, in SPP, natural gas-fired resources are at the margin (and therefore setting the price) more during on-peak periods than during off-peak periods. In 2008 in SPP, natural gas was at the margin about 89% of the time during on-peak periods, while only 54% of the time during off-peak periods. At 5.
- 2010: Gas prices are very closely associated with average system prices in the SPP region. This is logical, because the marginal resources that set overall prices are most often gas units. At 36.

Q: What are the benefits of using NYMEX natural gas futures contracts and options to cross hedge electricity price risk?

A: Perhaps the three most significant benefits of using NYMEX natural gas futures contracts and options to hedge electricity price risk are:

1) Liquidity – the NYMEX natural gas market is very liquid. That is NYMEX natural gas contracts can easily be bought or sold quickly. There are large numbers of buyers and sellers ready and willing to trade at any time during market hours. Because of high trading volumes there tend to be low spreads between asking and selling prices which results in little to no premium when entering or exiting a position.

[3] Southwest Power Pool, Inc., *2009 State of the Market Report*, May 26, 2010, p. 5, available at: http://www.spp.org/publications/SPP_MSOM_Report_200905.pdf.

While the Company could probably hedge its purchased power risk with electricity bilateral forward contracts, it would be at a price. There is not a liquid secondary market where the Company could sell out of a position should its requirements change. Even if it could sell out it would likely be at a significant discount.

2) Minimal counterparty credit risk – the NYMEX uses a central counterparty clearing model. All trades are cleared through the Exchange clearinghouse which becomes the ultimate counterparty, acting as the "buyer to every seller" and the "seller to every buyer." Counterparty credit risk is shared among clearing members, who represent some of the largest names in financial services. Consequently, the NYMEX has received and maintains an AA+ long-term counterparty credit rating from Standard & Poor's.

3) Contract size – one (1) NYMEX natural gas contract represents 10,000 mmBtus of natural gas. That is roughly equivalent to one (1) megawatt hour (MWh) of electricity. Given the liquidity of the NYMEX there is essentially no premium for entering or exiting a position as small as one MWh. That liquidity gives GMO the ability to fine tune its hedge position as expectations change.

4) Besides the benefits of using the NYMEX there is another benefit of combining GMO's projected natural gas usage with natural gas equivalent volumes for it projected purchased power requirements. It manages the risk that while the total load served might equal the projection, the supply mix between GMO's natural gas-fired generation and purchased power might be different than projected.

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[4] Southwest Power Pool's annual *State of the Market Reports* are available at: http://www.spp.org/section.asp?group=642&pageID=27.

Q: Has this Commission allowed GMO to use natural gas derivatives to cross hedge electricity price risk?

A: Yes. In ER-2005-0436 on pages 5-6 of its Order Approving Stipulation and Agreement, this Commission authorized Aquila [GMO] "to record in FERC Account 547 or Account 555, as part of fuel cost and purchased power costs, hedge settlements, both positive and negative, and related costs (e.g. option premiums, interest on margin accounts, and carrying cost on option premiums) directly related to natural gas generation and on-peak purchases power transactions…."

Q: How does GMO's hedge program manage the risk of volume uncertainty?

A: The primary purpose for leaving one-third of the forecast volume requirements unhedged is to provide a cushion for the possibility that actual requirements may turn out to be less than projected.

Q: Does GMO adjust its hedges for changes in projected usage?

A: Yes. GMO updates its projected requirements monthly. If the projected requirements are determined to be significantly different than prior projections, hedge volumes may be adjusted. If the volumes increase, the increases are added to the volume available to hedge. If the volumes decrease but the decrease is not material and we already have the two-thirds hedged, those hedges that exceed the two-thirds are liquidated. If the decrease were material, we would develop a remediation strategy.

Q: **What percentage of the hedges have been adjusted for reductions in requirements projections?**

A: There were no liquidations due to volume adjustments for calendar year 2009. For 2010, less than five (5) percent of the hedges were liquidated because of a decrease in projected requirements.

Q: **How often does GMO use the HedgeModel and ezHedge?**

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 volume represents the sum of natural gas for generation and natural gas equivalent for purchased power, I evaluated it by looking at the total volume. I constructed GMO's average $/megawatt-hour ("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: For the period 2008 through 2011, 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 while holding the cost of natural gas and purchased power below budget.

B. Coal Price Hedging

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: In the PRB coal market, the primary means of managing price risk is through a portfolio of forward contracts with producers. Generally, GMO has been following a modified strategy of laddering into a portfolio of forward contracts for PRB coal. Laddering is an investment technique of purchasing multiple products with different maturity dates. GMO's "laddered" portfolio consists of forward contracts with staggered terms so that a portion of the portfolio will roll over each year. When burn projections increase or actual burns prove to be higher than anticipated, supplemental purchases are made on the spot market. **[redacted]**

Q: How has this strategy performed for GMO?

A: For 2011, the weighted average mine price for PRB coal purchased by GMO for Lake Road and Sibley was **[redacted]**. That compares favorably to the $0.78/MMBtu CME ClearPort's 2011 strip for 8800 Btu/lb PRB coal averaged for all 2010 settlement dates.

III. FUEL IN COST OF SERVICE

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 L. 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 JPW-3 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 September 2011 through August 2012 were used to develop the cost of natural gas in the COS. Natural gas prices for September 2011 through January 2012 were based on the first of the month index price published in Platt's *Inside FERC*. Monthly natural gas prices for February 2012 through August 2012 were based on the average of the six (6) business days from January 10 through January 19, 2012, for the NYMEX closing prices for the February through August 2012 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 to construct future Panhandle prices. These basis-adjusted values for February through August 2012 and the *Inside FERC* first of the month index prices for September 2011 through January 2012 were used to develop the cost of natural gas in the COS. We expect to true-up the 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 are handled differently than natural gas because GMO uses oil differently. Oil is used primarily for flame stability and start-up at the Iatan and Jeffrey coal units. Oil can also be used at the Lake Road, Nevada, and Greenwood units as a primary fuel, but because of the relative price of oil, oil-generated electricity is seldom dispatched. The production cost model used to develop the COS did not dispatch oil at those plants.

The price of oil was based on NYMEX closing prices for the August 2012 heating oil futures contract. The August 2012 projected oil prices were adjusted for basis and transportation to determine the station specific delivered cost. We expect to true-up oil prices during the course of this proceeding.

Q: How did you forecast the coal prices?

A: The August 2012 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 Energy who is the operating partner of the Jeffery Energy Center, we used the 2012 price estimate provided by the partner. Most of the coal contracts under which GMO expects to purchase PRB coal in 2012 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 some form of inflation, or 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 our composite market price forecast for that quality of coal.

The August 2012 price for GMO's bituminous coal was forecast as equal to the 2012 contract price.

For 2012, 95 percent of GMO's expected PRB coal requirements have been committed. Essentially all of GMO's expected bituminous coal requirements are under contract.

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: We developed the freight rate projections based on the contractually defined escalation mechanisms. Where those contracts called for an index, we constructed the index from data forecast by Moody's Analytics.

Q: How did you forecast emission allowance prices?

A: As I discuss later, the emission allowance market was thrust into a state of limbo at the close of business for 2011 when the U.S. Court of Appeals for the D.C. Circuit stayed the implementation of the U.S. Environmental Protection Agency's ("EPA") Cross-State Air Pollution Rule ("CSAPR"). When we developed our price projections in early 2012 the markets had not had time to fully digest the impact of the Court's staying CSAPR. Therefore, we used a one week average of the forward curve for the Clean Air Interstate Rules ("CAIR") allowances from mid-June 2011 before the EPA released CSAPR. We used our current book value for Acid Rain Program ("ARP") sulfur dioxide ("SO_2") allowances. We expect to true-up emission allowance costs to actual.

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

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

A: Yes. Generally those costs fall into two categories: "fuel additives" and "fuel adders." Fuel additives include ammonia, limestone, powder activated carbon ("PAC"), and urea which are used to control emissions. 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. We expect to true-up these prices to actual during the course of this proceeding.

Q: Why does GMO need 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 nitrogen oxides ("NO_x") as the gases pass through a catalyst chamber. Lime (or limestone) is added to the flue gas stream in a flue gas desulfurization module to "scrub" SO_2. Urea is injected into and mixes with hot flue gases and reacts with NO_x without a catalyst. Iatan uses ammonia and limestone as reagents. Iatan also uses PAC as a sorbent for controlling mercury emissions.

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 August 2012 true-up and quantity was normalized based on historical usage. We expect to true-up these costs 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 separated 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 2012.

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 items 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. They are "shared" or distributed across the fleet.

Maintenance and Repair of GMO's Railcar Fleet: These repair values reflect GMO's projection for 2012 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 July 2011 the Burlington Northern Santa Fe Railway ("BNSF") issued a new tariff intended to limit the amount of coal dust that blows off of rail cars during transit. Those rules set limits on the volume of coal dust that may come off a coal train over certain units of track. The Western Coal Traffic League ("WCTL")[5] estimates that the cost of spraying rail cars with chemical topper agents in an effort to limit the volume of coal dust coming off coal trains could cost **[redacted]** of coal shipped. 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: In response to a complaint by WCTL (of which GMO is a member) that the BNSF tariff was an unreasonable practice, the Surface Transportation Board ("STB") decided in November 2011 to institute a proceeding to consider the reasonableness of the tariff's "safe harbor" provision. We expect the STB will issue a declaratory order by the time of the true-up in this case.

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

A: Yes, 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. These adjustments are included in Mr. Weisensee's Schedule JPW-4.

[5] The WCTL is a voluntary association of consumers of coal produced from United States mines located west of the Mississippi River. WCTL was founded in 1977 to advocate the interests of consumers of western coal. WCTL members include publicly traded companies, local governments, cooperatives, and government authorities. Collectively they purchase, transport, and consume over 200 million tons of western coal each year.

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

A: The natural gas hedging costs are the costs incurred to hedge natural gas for use as fuel and the natural gas equivalent for purchased power for September 2011 through August 2012.

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 mid-January 2012. 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 annual charge adjustment, storage fees, and parking fees.

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

A: I separated the cost 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.

C. Emission Allowance Cost

Q: Are costs for emission allowances included in the COS calculation?

A: Yes.

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

A: Yes.

D. Other Transportation Costs

Q: Is the transportation of fuel to the power plant the only "transportation" cost incurred in the process of supplying electrical energy to a consumer?

A: No. There are two major transportation components in getting the energy from a fuel to a customer's meter as electricity. In evaluating any alternative for generating and delivering electricity the costs for both components must be considered.

Q: What are the two pieces of "transportation" required to deliver electrical energy to a consumer's meter?

A: The first piece is transporting fuel from its point of origin to the power plant. The second piece is the cost of transporting or transmitting the energy generated at the power plant to the consumer's meter. You need both. You cannot generate electricity if you do not transport the fuel to the plant. On the other hand, the consumer is not served if you do not transport or transmit the electricity from the power plant to their point of use.

Q: Are transportation costs equal for all plants?

A: No. Transportation costs are typically a function of distance between the point of origin and the destination. For example, the Company's 300 MW gas-fueled Crossroads unit in Clarksdale, Mississippi is much closer to major natural gas production infrastructure than is the gas-fueled 315 MW South Harper unit in Peculiar, Missouri. Consequently, the natural gas transportation costs of Crossroads are significantly lower than those for South Harper. On the other hand, Crossroads is more distant from GMO's customers than South Harper and, as Company witness Burton L. Crawford explains in his Direct Testimony, Crossroads has higher electricity transportation or transmission costs.

Q: Is transportation of fuel and electricity always available for all plants?

A: No. For example, there is no assurance that natural gas could be transported to South Harper without firm transportation. Both the Southern Star Central Gas Pipeline ("Southern Star") and the Panhandle Eastern Pipeline ("Panhandle") are fully subscribed and do not have forward haul (from well to consumer) capacity available to serve any additional units at South Harper. Consequently, natural gas transportation is not readily available. Since released capacity (when a shipper with firm transportation rights on a pipeline temporarily releases those capacity rights to another shipper) is limited, there is no assurance that the requirements of additional units at South Harper could be shipped using those resources.

Q: Why is South Harper the appropriate plant for this comparison?

A: South Harper is a fully operational single-cycle gas turbine facility that is in the Company's MPS rate base. It is located adjacent to a Southern Star compression station and about 5 miles north of Panhandle's main line. The plant is connected to both Southern Star and Panhandle pipelines which increases the probability of being able to transport natural gas to the facility.

Q: If Crossroads could be relocated to the South Harper site, what would you expect its natural gas transportation costs to be?

A: The options for firm transportation are to expand Southern Star or backhaul[6] on Panhandle. Southern Star has informally estimated the expansion costs to provide additional capacity on its pipeline at **[redacted]**. If such an expansion occurred, monthly capacity charges on the Southern Star would be about **[redacted]**. Since those charges would be assed every month, the annual cost would be about **[redacted]**. Southern Star is a two zone pipeline where it is divided into a "production area" and a "market area." Such monthly capacity charges would only increase the market area capacity which is upstream of the production area. There would also be charges for using production area capacity.

If backhaul capacity were available on Panhandle, annual costs for comparable capacity would be **[redacted]**. In addition there would be basis differentials, commodity based charges and fuel loss reimbursement that would add to the annual cost.

Q: Why is there a range of **[redacted] in pipeline capacity charges for South Harper?**

[6] Backhaul refers to the delivery by a pipeline of gas upstream from its point of receipt. When a downstream seller sells gas to an upstream end-user, the interstate pipeline (whose system flows from south to north) would pick up the end-user's gas from the downstream or northern receipt point. Equivalent quantities from other sources would then be delivered to the upstream or southern end-user. While all of the gas physically flows south to north, the effect of the transaction is to bring the downstream seller's gas south or upstream.

A: Neither pipeline serving the area currently has forward haul capacity available for reservation. There is a possibility that backhaul capacity might be available on Panhandle. Since that would not require construction of pipeline facilities it would be significantly less expensive than the Southern Star option which would require constructing new pipeline facilities. On the other hand, capacity would be available if Southern Star was expanded. If we assumed there was an 80 percent chance that backhaul capacity was available on Panhandle, the expected cost of pipeline reservation charges would be **[redacted]**.

Q: What is the basis differential for using Panhandle backhaul capacity to ship natural gas to the South Harper site?

A: The basis differential is the difference in the price of natural gas between different physical locations and/or different points in time. Texas Gas Transmission Corp.-Zone SL (TXGT-SL) is the typical pricing point for natural gas shipped to Crossroads in Mississippi. Those prices are usually lower than the Upper Midwest-Chicago City-Gates (CCG) which is the typical pricing point for gas shipped to western Missouri via Panhandle backhaul.

Q: Why is Chicago City-Gate a typical pricing point for natural gas shipped via a Panhandle backhaul to the South Harper site?

A: Half of the capacity for such a backhaul would originate the natural gas on Trunkline Gas Co. at East Louisiana, move it via Trunkline to Panhandle's Bourbon delivery point near Chicago, and from there move the gas backward or upstream (south) on Panhandle's mainline to South Harper. (As explained in the prior footnote, the natural gas does not really move backward. Instead, it displaces natural gas that would have otherwise flowed downstream (north) towards Chicago.) East Louisiana gas is about the same price as TXGT-SL gas shipped to Crossroads in Mississippi. However, to move the East Louisiana gas to Missouri, there is an additional 2.3 percent for fuel retention which makes natural gas shipped from East Louisiana to Missouri more expensive than natural gas shipped to Crossroads in Mississippi. The other half of the capacity would originate the natural gas at Natural Gas Pipeline Company's (NGPL) Moultrie County delivery point, which while located in the Midcontinent zone is priced at Chicago City-Gate because of its proximity to Chicago. Typically, Chicago City-Gate gas is more expensive than East Louisiana gas but less than East Louisiana when the additional 2.3 percent fuel retention is added on.

Q: How much does GMO currently pay as reservation or demand charges for natural gas service to Crossroads in Mississippi?

A: We pay about **[redacted]**.

Q: Given that Crossroads would be paying much more for natural gas transportation if it were located at the South Harper site than it does being located in Mississippi, what is the difference in cost for electric transmission services?

A: The **[redacted]** annual cost for electric transmission identified by Company witness Burton L. Crawford is significantly less than the estimated charges for natural gas transportation reservation on Southern Star. Consequently it is much less expensive to ship "gas by wire" from Crossroads in Mississippi to GMO's service territory than to reserve new pipeline capacity serving the South Harper site. If backhaul capacity were available on Panhandle, the charges would be roughly comparable. The Direct

Testimony of Company witness Burton L. Crawford addresses the cost of transporting electricity from Crossroads to GMO's service territory.

IV. <u>FUEL INVENTORY</u>

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 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 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 reliably 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 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, 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 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 18 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 (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 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 August 2012 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. We developed that cost by constructing a price duration curve derived from the distribution of monthly non-firm off-system MWh transactions for January 2008 through December 2010. 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 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 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 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: The Missouri River has had two major floods in the last twenty years. This disruption was modeled after those floods. Floods can lengthen railroad cycle times as the railroads reroute trains and curtail the deliveries of coal to generating stations.

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 WEB-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 JPW-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: Inventory values for ammonia, limestone, powder activated carbon, and urea were calculated as the average month-end quantity on hand for the 13-month period December 2010 through December 2011 multiplied by the projected August 2012 per unit value. The inventory values for activated carbon, ammonia, biofuel, limestone, propane, TDF, and urea are shown in Schedule WEB-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 December 2010 through December 2011 multiplied by the projected August 2012 per unit value. The inventory values for oil are shown in Schedule WEB-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 August 2012. Typically GMO purchases oil on the spot market.

V. RAM REQUIRED ELEMENTS

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

A: The purpose is to describe how GMO has complied with certain requirements of 4 CSR 240-20.090(2) regarding a rate adjustment mechanism ("RAM") or fuel adjustment clause ("FAC").

A. Rate Volatility Mitigation Features

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

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

B. 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: What emissions are GMO required to offset with allowances?

A: For 2012, GMO is required to offset SO_2 and NO_x emissions with allowances issued by the EPA.

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

A: Title IV of the 1990 Clean Air Act established the allowance market system known today as the Acid Rain Program ("ARP"). Title IV set a cap on total SO_2 emissions and aimed to reduce overall emissions to 50 percent of 1980 levels. In 2005, the EPA promulgated CAIR. The CAIR continued the cap and trade approach to further reduce SO_2 emissions and extended it to NO_x emissions.

Q: What is the status of the CAIR?

A: On July 11, 2008, the U.S. Court of Appeals for the D.C. Circuit issued an opinion finding parts of the CAIR unlawful and vacated the rule. About six months later on December 23, the D.C. Circuit issued a decision on the petitions for rehearing of its July 2008 decision. The Court granted EPA's petition for rehearing to the extent that it remanded the case without vacatur of the CAIR. That ruling allowed the CAIR to remain in place, but EPA was obligated to promulgate another rule under the Clean Air Act's Section 110(a)(2)(D) consistent with the Court's July 2008 opinion.

On July 6, 2011, the EPA finalized the Cross-State Air Pollution Rule ("CSAPR"). CSAPR responded to the Court's concerns and replaced EPA's 2005 CAIR. On December 30, 2011, the D.C. Circuit Court stayed the implementation of the CSAPR pending the Court's resolution of the petitions filed by Texas and six other states including Kansas. CSAPR was scheduled to begin on January 1, 2012, and would have placed a cap on SO_2 and NO_x emissions from electricity generators in 28 states. With the stay, the CAIR, the rule that preceded CSAPR, will remain in effect pending resolution by the Court of the CSAPR issues. Oral arguments are expected to be heard by April 2012, although a final decision on the merits of the case could be delayed for several months following that date.

Q: What is GMO's strategy for meeting the SO_2 reduction requirements of the ARP and CAIR?

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

Q: Why did GMO adopt this strategy of purchasing SO_2 emission allowances rather than installing control equipment?

A: Studies performed for GMO showed that in cost per ton of SO_2 removed, the cost to install SO_2 control equipment would have been significantly higher than then expected market price for SO_2 emission allowances.

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

A: GMO has employed a strategy of controlling NO_x emissions at Sibley and using allowances conserved at Sibley 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 NO_x emission allowances?

A: In response to a 2006 Study of Emission Reduction Strategies to Comply with the 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 NO_x allowances?

A: At current market prices, GMO expects to spend less than $1 million per year on CAIR NO_x allowances.

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

A: Yes. In its March 2010 Study of Environmental Retrofits, Sega Inc. determined that the cost to control NO_x would range from $1,100 to $3,870 per ton of NO_x removed. With CAIR allowances trading at a fraction of those costs, the preferred strategy is to buy the incremental allowances.

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: What are GMO's forecasted allowance purchases and sales in this regard?

A: **[redacted]** Because GMO has sufficient ARP SO_2 allowances to meet its immediate needs under CAIR, the current market price for ARP SO_2 allowances is negligible, and the return to CAIR is temporary, an allowance procurement strategy will be developed after it is clear what the new rule will require.

Q: Does that conclude your testimony?

A: Yes, it does.

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

In the Matter of KCP&L Greater Missouri Operations Company's Request for Authority to Implement General Rate Increase for Electric Service	)))	Case No. ER-2012-0175

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 KC&PL Greater Missouri Operations Company consisting of forty - two (42) 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.

[signature]
William Edward Blunk

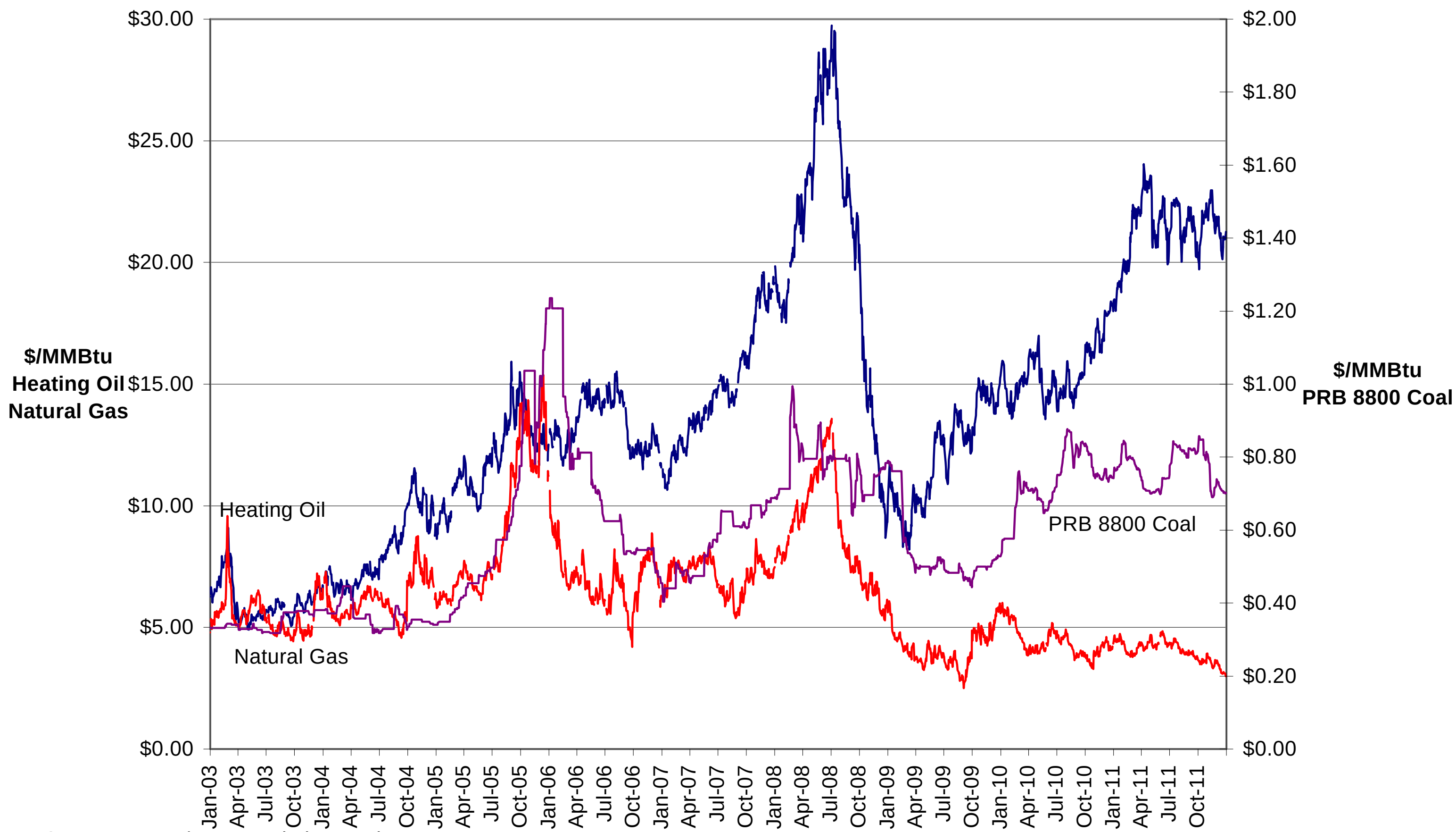
Subscribed and affirmed before me this 27th day of February, 2012.

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

Market Price of Fossil Fuels



, VewSources: ProphetX, *Evolution Markets,* Ventyx

SCHEDULE WEB-2

THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC