Exhibit No.:	_____
Issue(s):	Hedging Expenses
Witness/Type of Exhibit:	Riley/Direct
Sponsoring Party:	Public Counsel
Case No.:	ER-2016-0156

DIRECT TESTIMONY

OF

JOHN S. RILEY

Submitted on Behalf of the Office of the Public Counsel

KCP&L GREATER MISSOURI OPERATIONS COMPANY

CASE NO. ER-2016-0156

** **

Denotes Highly Confidential Information that has been Redacted

July 15, 2016

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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 a General Rate Increase for Electric Service	)))))	File No. ER-2016-0156

AFFIDAVIT OF JOHN S. RILEY

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

John S. Riley, of lawful age and being first duly sworn, deposes and states:

1. My name is John S. Riley. I am a Public Utility Accountant III for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my direct testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

John S. Riley, C.P.A.
Public Utility Accountant III

Subscribed and sworn to me this 15th day of July 2016.

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

JERENE A. BUCKMAN
My Commission Expires
August 23, 2017
Cole County
Commission #13754037

Jerene A. Buckman
Notary Public

My Commission expires August 23, 2017.

DIRECT TESTIMONY
OF
JOHN S. RILEY

KCP&L GREATER MISSOURI OPERATIONS COMPANY

CASE NO. ER-2016-0156

Q. Please state your name and business address.

A. John S. Riley, PO Box 2230, Jefferson City, Missouri 65102

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

A. I am employed by the Missouri Office of the Public Counsel ("OPC") as a Public Utility Accountant.

Q. Please describe your educational background.

A. I earned a B.S. in Business Administration with a major in Accounting from Missouri State University.

Q. Please describe your professional work experience.

A. I was employed by the OPC from 1987 to 1990 as a Public Utility Accountant. In this capacity I participated in rate cases and other regulatory proceedings before the Public Service Commission ("Commission"). From 1994 to 2000 I was employed as an auditor with the Missouri Department of Revenue. I was employed as an Accounting Specialist with the Office of the State Court Administrator until 2013. In 2013, I accepted a position as the Court Administrator for the 19th Judicial Circuit until April of this year when I joined the OPC.

Q. Are you a Certified Public Accountant ("CPA") licensed in the State of Missouri?

A. Yes. I am also a member of the Institute of Internal Auditors ("IIA").

Q. Have you previously filed testimony before the Commission?

A. Yes I have.

Q. What is the purpose of your direct testimony?

A. In this testimony, I provide support for OPC's adjustment to GMO's test year hedging costs. I will also provide support for OPC's position that, given the recent changes in GMO's regulatory environment, primarily the development of the Southwest Power Pool's ("SPP") Integrated Marketplace in 2014, it is imprudent for GMO to continue what it refers to as cross-hedging.

GMO refers to cross hedging as its purchase of natural gas financial futures contracts in an attempt to mitigate the volatility in its purchase power costs. The purchase power market has changed greatly due to the SPP's Integrated Marketplace and GMO needs to adjust its hedging policies to reflect this change.

Q. What is hedging?

A. Hedging is a form of insurance and, like common forms of insurance, a premium is paid to an insurer willing to accept the risk that the insuree is not willing to take. In the event of an auto accident or a fire, or significant increases in costs as in utility hedging, the insuree is covered from absorbing catastrophic cost increases.

For a utility, there are several forms of hedging. Utilities sometimes engage in physical hedges, such as entering into long-term coal or natural gas purchase contracts to hedge against future price increases. Utilities, especially GMO, also engage in financial hedges like such as purchasing natural gas futures contracts in a commodity exchange market as an example.

With financial hedges (such as the purchase of natural gas futures contracts on the NYMEX commodity exchange), financial gains or losses are recognized in each purchase transaction.

The hedging gains or losses are then, in theory, applied to the price of the natural gas purchased as fuel for utility operations.

This type of financial hedging transactions should result with financial gains in rising fuel price markets. This hedging gain is applied to the higher priced fuel to offset, or hedge, against the higher prices. Likewise, in this type of hedge, losses are often incurred in a falling natural gas price market. These losses are then added to the price of natural gas purchased by the utility as fuel to generate power. Just as a premium is paid on an insurance policy, the incurrence of hedging losses do increase costs of purchased fuel but also provide a benefit against a significant rise in natural gas prices.

Q. What is cross-hedging?

A. Yes. On pages 26 and 27 of his direct testimony, Mr. Blunk explains cross-hedging is a strategy where a position taken in one commodity is offset with an equal position in a different commodity with similar price movements. In GMO's circumstances this would be a natural gas futures position against future purchases of power.

Q. What is OPC's position regarding GMO's cross hedging?

A. OPC is opposed to this practice as it results in unnecessary, unreasonable, and excessive costs that are ultimately passed onto GMO's ratepayers.

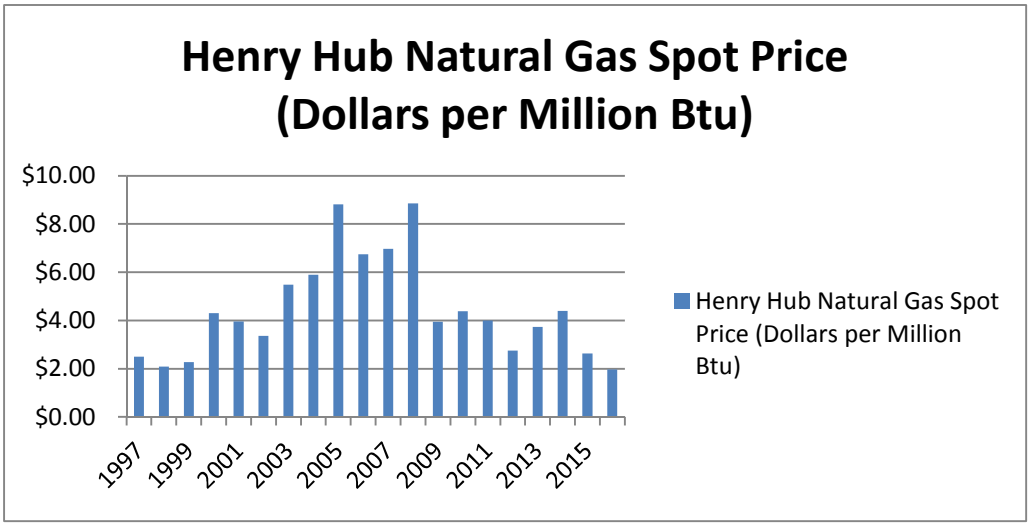
Q. Does the Commission currently allow hedging costs to be included in a company's cost of service?

A. Yes. The Commission has allowed, prudently incurred hedging costs in the company's cost of service. The key words here are "**prudently incurred"**. OPC has performed a detailed review of GMO's hedging policies including meetings with GMO personnel, review of GMO's history of hedging activities, and GMO's responses to of several OPC and the Public Service Commission Staff ("Staff") data requests. Based on this review, OPC

concludes GMO's hedging policies results in costs not prudently incurred, especially given GMO's current regulatory market structure and the continued low-cost and non-volatile natural gas market.

Q. Describe the current market for natural gas.

A. The natural gas commodity market has enjoyed a low, relatively stable price environment for more than five years. Since 2010, the average natural gas price for this period has only exceeded $4 per MMBtu in one year. This is found in the below table. In 2014, the average natural gas price as reflected on the Henry Hub[1] price index was $4.39 per MMBtu. For 2015, natural gas prices averaged $2.63 per MMBtu and for the five months ended May 2016, natural gas prices are averaging $1.97 per MMBtu.



Q. Are there any indications that natural gas prices will return to the levels experienced from 2003 through 2008?

[1] The settlement prices at the Henry Hub are used as benchmarks for the entire North American gas market.

A. No. The U.S. Energy Information Administration ("EIA") collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy. EIA keeps track of commodity levels, prices, demand, etc. and they still point out that supply has exceeded demand for quite some time. The EIA has been expressing its opinion that gas prices will stay low for at least the foreseeable future. JSR Schedule D- 1.

Q. Has GMO indicated that it believes natural gas prices will increase to previously high levels?

A. No. GMO has employed its own forecasting agencies and it too has predicted natural gas prices to remain between ** ** and ** ** at least through 2017. (Staff DR 70.3, Natural Gas Prices Forecasts)

Q. Given the information you provided above – the consistent low natural gas price levels, the lack of significant volatility, the lack of concern about potential significant natural gas prices, and the implementation of the SPP's Integrated Marketplace, do you believe it is prudent for GMO to continue, without change, its natural gas hedging policies?

A. No. GMO's hedging practices should adapt to the current natural gas and purchased power pricing environment. GMO should have made changes to its natural gas and purchased power hedging practices that are prudent and reasonable. It has not done that. Despite major changes in the natural gas price market and major changes in GMO's purchased power regulatory environment, GMO continues with the same hedging practices developed in a volatile natural gas market and prior to the SPP's implementation of major changes in how GMO incurs purchased power expenses.

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Q. Why do you believe GMO is hedging in this current natural gas market?

A. It appears GMO continues to employ its old hedging practices in a completely new environment simply to comply with outdated policies. Despite major changes in the natural gas fuel and purchased power market, GMO is resistant to make any changes to its old and outdated hedging policies.

According to GMO witness Wm. Edward Blunk's explanation of the company's hedging policy, two thirds of the expected natural gas and purchase power needs of the Company are hedged while one third is left unhedged to allow for unexpected gas/power requirements.[2] Given these parameters, the company has to hedge nearly 67% of its near-term natural gas fuel and purchased power requirements regardless of the market conditions. Having such an overall rigid, inflexible hedging policy in this market has led to millions of dollars in unnecessary and imprudent natural gas and purchased power hedging costs charged to GMO's MPS ratepayers.

Q. Is there another reason why it is likely GMO has not changed its natural gas hedging policies despite the drastic changes in GMO's purchased power market and natural gas prices?

A. Yes. Over the past approximately ten years, GMO has incurred -millions of dollars in hedging losses that it has been allowed to charge to rate payers through base fuel costs and its FAC. GMO appears unconcerned about its massive hedging losses because the Company is allowed to recovery its hedging losses under its FAC. GMO has little concern about the size of its hedging losses as its ratepayers, not its shareholders, pay this cost.

[2] Blunk direct testimony, Pg 24 line 17 – 22, Pg.25 line 1,2, Pg. 26 line 9-18

Q. Does GMO engage in natural gas fuel and purchased power hedging activities for its SJLP service territory?

A. No. In past rate cases, GMO agreed not to hedge for its SJLP district. OPC understands SJLP's major industrial customers requested GMO not engage in hedging activities and GMO agreed. GMO's SJLP service territory, including its residential ratepayers, have not had to bear any of GMO's hedging losses for several years. All GMO's hedging losses are charged only to MPS ratepayers.

Q. Does OPC recommend GMO treat its MPS customers on the same level as it treats its SJLP customers?

A. Yes. GMO agreed with representatives of SJLP's customers it should not engage in hedging activities. SJLP customers were willing to "pay at the pump" so to speak and not incur hedging losses and agreed not to be allocated any potential benefit from hedging gains.

OPC is requesting GMO treat all its customers the same: that it not engage in hedging activities for its MPS customers in this current non-volatile fuel market.

Q. If GMO were to cease its purchased power and natural gas hedging in this low-cost, non-volatile purchased power and natural gas market, could it reinstate its hedging policies if the market returned to its previous high-price and volatile state?

A. Yes. While there would be some exposure to GMO's ratepayers for a period of time until the hedges were in place, GMO's MPS customers would save millions of dollars in hedging losses in this current market and would be much better off if GMO discontinued all of its natural gas and fuel hedging.

Q. Why does OPC believe that GMO's hedging for purchased power (cross hedging) is unnecessary?

A. GMO routinely incurs millions of dollars in hedging losses each year in its attempt to mitigate purchased power price volatility. In calendar year 2016 alone this amounts to approximately $3.5 million. OPC is not aware of any other Missouri electric utility that engages in this type purchased power hedging or incurs the massive amount of hedging losses incurred by GMO over the past ten years. If GMO's practice of hedging purchased power price volatility was a reasonable and prudent utility practice, it would be a business practice employed by other Missouri electric utilities.

Q. Are there additional reasons why OPC opposes hedging losses associated with purchased power price volatility mitigation being charged to ratepayers?

A. Yes. GMO's purchased power market changed completely with the creation of SPP's integrated marketplace in March 2014. Attached as Schedule JSR-D-2 to this testimony is a Highly Confidential document titled "*MPS and SJLP Generation Overview*" dated June 15, 2016. At page 9 of this document is a list of SPP Real-Time Energy Market Prices showing the monthly prices from January 2015 through May 2016 of SPP On-Peak power prices as well as Henry Hub natural gas prices. A review of these prices reveals an overall downward trend in purchased power and natural gas prices but, more importantly, these also show a lack of significant upward price volatility in energy prices charged to GMO from the SPP and natural gas prices.

Q. Is OPC in the process of researching whether or not any other electric utility in the SPP engages in purchased power hedging?

A Yes, OPC is attempting to determine whether any other electric utility in the SPP engages in purchased power hedging at all and, if they do, whether they incur the significant level of hedging losses incurred by GMO for its MPS service territory.

Q. Please provide an overview of the SPP.

A. A good summary of the history of the SPP can be found on the Federal Energy Regulatory Commission's ("FERC") website: The FERC's summary of the SPP is below:

> Founded as an 11-member tight power pool in 1941, Southwest Power Pool (SPP) achieved RTO status in 2004, ensuring reliable power supplies, adequate transmission infrastructure, and competitive wholesale electricity prices for its members. Based in Little Rock, Ark., SPP manages transmission in fourteen states: Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming. Its membership is comprised of investor-owned utilities, municipal systems, generation and transmission cooperatives, state authorities, independent power producers, power marketers and independent transmission companies.
>
> In 2007, SPP began operating its real-time Energy Imbalance Service (EIS) market. In the same year, SPP became a FERC-approved Regional Entity. The SPP Regional Entity serves as the reliability coordinator for the NERC region, overseeing compliance with reliability standards.
>
> In March 2014, SPP implemented its Integrated Marketplace that includes a day-ahead energy market, a real-time energy market, and an operating reserve market. SPP's Integrated Marketplace also includes a market for Transmission Congestion Rights. The SPP Integrated Marketplace co-optimizes the deployment of energy and operating reserves to dispatch resources on a least-cost basis.
>
> In 2015, SPP expanded its footprint incorporating the Western Area Power Administration – Upper Great Plains (WAPA-UGP) region, the Basin Electric Power Cooperative, and the Heartlands Consumer Power District. The expansion nearly doubled SPP's service territory by square miles, adding more the 5,000 MW of peak demand and over 7,000 MW of generating capacity. WAPA-UGP is the first federal power marketing administration to join an RTO.

Q. What is the SPP's Integrated Marketplace?

A. SPP's Integrated Marketplace became effective on March 1, 2014. According to the SPP, the Integrated Marketplace coordinates "next-day generation across the region to maximize cost-effectiveness, provide participants with greater access to reserve energy improve regional balancing of electricity supply and demand and facilitate the integration of renewable resources."[3]

Q. Is GMO a member of the SPP?

A. Yes. As a member of the SPP, GMO benefits from the organizations coordinated efforts to market competitive, reliable wholesale electricity prices.

On pages 7 and 8 of in Great Plains Energy's 2015 10-K it states:

> KCP&L and GMO are members of the Southwest Power Pool, Inc. (SPP). The SPP is an RTO mandated by FERC to ensure reliable supply of power, adequate transmission infrastructure and competitive wholesale prices of electricity. As members of the SPP, KCP&L and GMO are required to maintain a capacity margin of at least 12% of their projected peak summer demand. This net positive supply of capacity and energy is maintained through their generation assets, capacity agreements, power purchases agreements and peak demand reduction programs. The capacity margin is designed to ensure the reliability of electric energy in the SPP region in the event of operational failure of power generating units utilized by the members of the SPP."

This paragraph points out SPP creates competitive priced yet reliable supply of energy to meet its members peak needs. It is not clear to OPC why the company incurs millions of dollars in hedging losses year after year to mitigate purchased power prices when the SPP can sell electricity to them cheaper than their peak generators can produce it. This practice of cross- hedging purchase power does not appear to be a reasonable business practice and is a significant cost detriment to GMO's MPS customers.

[3] SPP.org, Integrated Marketplace

Q. Is the appropriateness of GMO's accounting for its hedging activities an issue in this rate case?

A. Yes. This issue is addressed in the direct testimony of OPC witness Charles Hyneman.

Q. What is the dollar amount of GMO hedging losses for its MPS service territory in calendar year 2015?

A. According to GMO's response to Staff Data Request No. 13, GMO incurred approximately $4 million in hedging losses. All of these hedging losses were charged to a GMO-MPS fuel account, No. 547.

Q. Is all of the $4 million in 2015 hedging losses related to fuel?

A. No. Approximately ** ** percent of this amount, or approximately $** **, is related to GMO-MPS purchased power hedging activities. This leaves approximately ** ** of hedging losses allocated GMO-MPS' natural gas fuel purchases. The basis for this allocation is based on our office's review of the document "Q1314S_HC_hedgeallocation" attached to GMO's response to OPC Data Request No. 1314.

Q. How did GMO account for its hedging activities prior to 2005?

A. It is OPC's understanding that, prior to 2004; GMO (then Aquila, Inc.) recorded its hedging activities below-the-line and did not reflect any hedging gains or losses in its cost of service for ratemaking purposes.

Q. Would OPC support GMO returning to its pre-2005 method of accounting for hedging activities?

A. Yes, it would. Such a change in GMO's accounting for hedging activities would protect MPS' ratepayers from excessive hedging costs.

Q. If GMO is not receptive to OPC's recommendations that it cease hedging for its MPS customers or it revert to its pre-2005 accounting for hedging activities, does OPC have a third proposal?

A. Yes. OPC maintains GMO's purchased power hedging is imprudent and results in unreasonable, excessive, and unnecessary hedging costs passed onto GMO-MPS customers. In this case, OPC proposes an adjustment to remove 100 percent of GMO's purchased power hedging costs. This will result in equitable treatment between GMO's MPS and SJLP customers.

If the Commission allows GMO to continue to hedge its natural gas fuel purchases, OPC proposing an order where GMO is required to adopt a mandatory hedging budget. This is a method similar to the method adopted by the Kansas Corporation Commission ("KCC") for electric utilities operating in the state of Kansas. For example, the KCC does not allow KCPL to engage in hedging activities in Kansas. However, prior to being acquired by Great Plains Energy ("GPE"), GMO (then Aquila, Inc.) was allowed to engage in natural gas hedging activities in Kansas. The KCC set up a budget for GMO for hedging activities. Any hedging losses in excess of the budgeted amount would be excluded from the cost of service.

OPC believes a reasonable level of hedging costs is approximately 10 percent of the cost of the expense being hedged. In 2015, GMO-MPS' natural gas fuel expense was approximately $3 million (Staff Data Request No. 13).

Establishing a natural gas hedging budget of 10% is similar to determining a reasonable insurance premium. Given GMO-MPS' low natural gas purchase needs and the continued low price and low volatility natural gas market, a 10% insurance premium on the volatility of natural gas purchase is reasonable.

Q. Please describe OPC's adjustment to GMO-MPS's test year per books level of hedging losses.

A. Part 1 of OPC's adjustment removes the total test year level of hedging costs in the amount of $1,865,190 from GMO-MPS' fuel expense Account 547. Part 2 of OPC's adjustment includes a budgeted level of hedging costs of $300,000. This amount is based on 10 percent of the cost of natural gas reflected in account 547 as reflected in GMO-MPS' calendar year 2015 general ledger .

The $300,000 budget for hedging losses applies only to GMO's natural gas hedging for fuel, not purchased power. In this rate case, OPC urges the Commission to find GMO's purchased power cross-hedging is not a reasonable hedging mechanism in today's market and not allow any cost of GMO's cross-hedging to be included in GMO's cost of service.

Q. Does this conclude your direct testimony?

A. Yes, it does.

Short-Term Energy Outlook (STEO)

Highlights

- Benchmark North Sea Brent crude oil spot prices averaged $47/barrel (b) in May, a $5/b increase from April and the fourth consecutive monthly increase since reaching a 12-year low of $31/b in January. Growing global oil supply disruptions, rising oil demand, and falling U.S. crude oil production contributed to the price increase.

- Brent crude oil prices are forecast to average $43/b in 2016 and $52/b in 2017, $3/b and $1/b higher than forecast in last month's STEO, respectively. West Texas Intermediate (WTI) crude oil prices are forecast to be slightly lower than Brent in 2016 and to be the same as Brent in 2017. However, the current values of futures and options contracts suggest high uncertainty in the price outlook. For example, EIA's forecast for the average WTI price in September 2016 of $46/b should be considered in the context of Nymex contract values for September 2016 delivery. These contracts traded during the five-day period ending June 2 (*Market Prices and Uncertainty Report*) suggest the market expects WTI prices could range from $36/b to $69/b (at the 95% confidence interval) in September 2016.

- During the April-through-September summer driving season of 2016, U.S. regular gasoline retail prices are forecast to average $2.27/gallon (gal), 6 cents/gal higher than forecast in last month's STEO but 36 cents/gal lower than last summer. U.S. regular gasoline retail prices are forecast to average $2.13/gal in 2016 and $2.27/gal in 2017, which are 5 cents/gal higher and 3 cents/gal higher than forecast in last month's STEO, respectively.

- U.S. crude oil production averaged 9.4 million barrels per day (b/d) in 2015. Production is forecast to average 8.6 million b/d in 2016 and 8.2 million b/d in 2017, both unchanged from last month's STEO. EIA estimates that crude oil production for May 2016 averaged 8.7 million b/d, which is more than 0.2 million b/d below the April 2016 level, and approximately 1 million b/d below the 9.7 million b/d level reached in April 2015.

- Natural gas working inventories were 2,907 billion cubic feet (Bcf) on May 27. This level is 32% higher than a year earlier, and 35% higher than the previous five-year (2011–15) average for that week. The natural gas storage injection season typically runs from April through October. EIA projects that natural gas inventories will be 4,161 Bcf at the end of October 2016, which would be the highest end-of-October level on record. Henry Hub spot prices are forecast to average $2.22/million British thermal units (MMBtu) in 2016 and $2.96/MMBtu in 2017, compared with an average of $2.63/MMBtu in 2015.

summer 2015, which should contribute to wholesale gasoline margins that are lower than last summer. However, EIA forecasts gasoline margins will still be higher than the five-year average level. Any unplanned refinery outages or unexpected growth in demand could result in margins above forecast levels.

The diesel fuel retail price averaged $2.71/gal in 2015. Diesel prices are forecast to average $2.34/gal in 2016 and $2.69/gal in 2017, which are 7 cents/gal and 5 cents/gal higher than in last month's STEO, respectively, reflecting higher forecast crude oil prices.

Natural Gas

Marketed natural gas production was 79.1 billion cubic feet per day (Bcf/d) in March 2016, a 1.0 Bcf/d decline from its record high in February, according to the latest *Natural Gas Monthly*. Average daily production in Texas, the largest natural gas-producing state, declined, and Marcellus Shale production declined in Pennsylvania, Ohio, and West Virginia. One of the factors contributing to the decline in production was low prices, which fell to an average of $1.73/million British thermal units (MMBtu) in March before rising slightly in April and May. Preliminary data indicate production has risen slightly since March, but it remains lower than previous record highs.

Natural Gas Consumption. EIA's forecast of U.S. total natural gas consumption averages 76.6 Bcf/d in 2016 and 77.8 Bcf/d in 2017, compared with 75.3 Bcf/d in 2015. In 2016, increases in total natural gas consumption are mainly attributable to increases in electric power sector use. Forecast electric power sector use of natural gas increases by 5.1% in 2016, then declines by 1.5% in 2017, as natural gas prices rise and contribute to increasing coal generation. Forecast industrial sector consumption of natural gas increases by 2.7% in 2016 and by 1.7% in 2017, as new fertilizer and chemical projects come online.

Natural Gas Production and Trade. EIA's most recent survey data indicate a decline in natural gas production in March. EIA expects production to rise only slightly through the rest of 2016 because of low natural gas prices and declining rig activity. In 2017, production is expected to rise in response to forecast price increases and increases in liquefied natural gas (LNG) exports. Overall, EIA expects production to rise by 1.0% in 2016 and by 2.3% in 2017.

EIA expects natural gas exports by pipeline to Mexico will increase because of growing demand from Mexico's electric power sector and flat natural gas production in Mexico. EIA projects LNG gross exports will rise to an average of 0.5 Bcf/d in 2016, with the startup of Cheniere's Sabine Pass LNG liquefaction plant in Louisiana, which sent out its first cargo in February 2016. EIA projects gross LNG exports will average 1.3 Bcf/d in 2017, as Sabine Pass ramps up its capacity.

Natural Gas Inventories. Natural gas inventories in March ended at 2,492 Bcf, the highest end-of-withdrawal-season level on record. The first significant inventory increase of the injection season occurred the week ending April 22, with a 73 Bcf build. For the past several weeks, injections have been somewhat lower than the previous five-year (2011–15) average. Looking to the start of next winter, EIA forecasts natural gas inventories to be 4,161 Bcf at the end of

JSR Schedule D-1
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October 2016, which would be the highest level on record to begin the heating season. Although EIA projects lower-than-average injections, the record-high starting point of the injection season allows for a projected end-of-October record high.

Natural Gas Prices. The Henry Hub natural gas spot price averaged $1.92/MMBtu in May, unchanged from the average price in April. Through the 2015–16 winter, prices remained relatively low because of lower demand as a result of warmer-than-normal temperatures, record inventory levels, and production growth. EIA expects natural gas prices will gradually rise through the summer, as demand from the electric power sector increases, but forecast prices remain lower than they were last summer. Monthly average Henry Hub spot prices are forecast to remain lower than $3.00/MMBtu through the end of 2016. Forecast Henry Hub natural gas prices average $2.22/MMBtu in 2016 and $2.96/MMBtu in 2017.

Natural gas futures contracts for September 2016 delivery that were traded during the five-day period ending June 2 averaged $2.42/MMBtu. Current options and futures prices imply that market participants place the lower and upper bounds for the 95% confidence interval for September 2016 contracts at $1.64/MMBtu and $3.58/MMBtu, respectively. In early June 2015, the natural gas futures contract for September 2015 delivery averaged $2.69/MMBtu, and the corresponding lower and upper limits of the 95% confidence interval were $1.79/MMBtu and $4.03/MMBtu.

Coal

Coal Supply. U.S. coal production in May was 50 million short tons (MMst), a 4 MMst (10%) increase from the previous month but 19 MMst (28%) lower than in May 2015. Forecast coal production is expected to decrease by 155 MMst (17%) in 2016, which would be the largest decline in terms of both tons and percentage since data collection began in 1949. In 2016, forecast coal production in the Appalachian region and in the Western region declines by 18% and by 19%, respectively, while Interior region production declines by 11%. In 2017, total U.S. coal production is expected to increase by 27 MMst (4%).

According to the most recent data, electric power sector coal stockpiles were 194 MMst in March, a 5 MMst (3%) increase from February. This March stock build deviates from the normal seasonal pattern where stocks decrease during the winter months, and end-of-March coal stocks were at high levels. Warmer-than-normal temperatures experienced throughout the United States in March 2016 (and the winter as a whole) and coal's continuing loss of market share to natural gas for electric power generation contributed to the increase in coal stockpiles. March stocks were 25% (39 MMst) higher than the March 2015 level.

Coal Consumption. Coal consumption in the electric power sector, which accounts for more than 90% of total U.S. coal consumption, is forecast to decline by 72 MMst (10%) in 2016. The decline is a result of competition with low-priced natural gas and from warmer-than-normal winter weather in the first quarter of the year that reduced overall electricity generation. Coal consumption in the electric power sector is forecast to increase by 27 MMst (4%) in 2017, mostly because of rising natural gas prices coupled with increases in electricity generation.

ER-2016-0156

Direct Testimony of
John S. Riley

JSR Schedule D-2 has been deemed
__Highly Confidential__
in its entirety