Exhibit No.:
Issue: Forecasting and Budgeting, 2009 Results
Witness: Timothy M. Nelson
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: KCP&L Greater Missouri Operations Company
Case No.: HC-2012-0259
Date Testimony Prepared: July 2, 2012

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: HC-2012-0259

REBUTTAL TESTIMONY

OF

TIMOTHY M. NELSON

ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

Kansas City, Missouri
July 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.

REBUTTAL TESTIMONY

OF

TIMOTHY M. NELSON

Case No. HC-2012-0259

Q: Please state your name and business address.

A: My name is Timothy M. Nelson. 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 Resources Operations Analyst – Senior.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of KCP&L Greater Missouri Operations Company ("GMO" or the "Company").

Q: What are your responsibilities as Supply Resources Operations Analyst – Senior?

A: I am responsible for providing analytical, technical, operational, and reporting support related to the operations of the trading and generation operations business. This includes: analyses to support power and transmission related purchase/sale agreements, fuel supply contracts, and deal evaluations; analysis of energy assets and positions and the assessment of portfolio risk; analysis of transmission congestion; and the development of models that assess and price the risks inherent in the transactions initiated by marketers and traders.

Q: Please briefly describe your education and work experience.

A: In 1993 I was awarded a Bachelor of Science degree in Mechanical Engineering from Iowa State University - Ames. Since graduation from Iowa State, the majority of my work has been in the field of electric utility power supply and delivery. In 1994 I joined St. Joseph Light & Power Company as a production engineer at the Lake Road Generating Station ("Lake Road Plant"). In that position I was responsible for engineering projects concerning electric and steam production. In 1996, I was assigned the duties of results engineer. As the results engineer I was responsible for all plant operating and performance data for six boilers, four steam turbines, three combustion turbines, and the external steam customers. I was responsible for, maintained, and reported all plant operating and performance data, including overseeing the metering of steam for the steam customers. It was in this role that I gained extensive knowledge of Lake Road Plant operations, equipment, and the steam system. I continued in this position until December, 2001.

In 2001, St. Joseph Light & Power Company was acquired by Aquila Inc. ("Aquila," formerly UtiliCorp United Inc). In December 2001, I accepted the position of Electric Systems Analyst where I was responsible for developing and running production cost fuel and purchase power models, and for preparing the fuel and purchase power budgets for two electric systems and the Lake Road steam system. The duties also included analytical support for company budgeting, Integrated Resource Planning, and other long range and short term planning needs with respect to energy and capacity purchases and sales. I continued in this position with KCP&L after the acquisition of

Aquila by Great Plains Energy Incorporated in 2008. In November 2009, I accepted the position of Supply Resources Ops Analyst-Senior, which is my current position.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission?

A: Yes. I filed testimony in GMO's 2009 steam rate case, Case No. HR-2009-0092.

Q: What is the purpose of your Rebuttal Testimony?

A: I describe the forecasting and budgeting process used for the Lake Road Plant steam system and rebut portions of the Direct Testimony of Ag Processing Inc. ("AGP") witness Donald E. Johnstone, filed on June 1, 2012, that relate to natural gas as the incremental fuel and the coal performance standard.

I. Forecasting and Budgeting Process

Q: Please describe the forecasting and budgeting process used for the steam system.

A: There are six main steps to the forecasting and budgeting process: (1) gather historical steam customer loads; (2) collect the steam customers' expectations for their future steam loads and use this to create the steam load forecast; (3) develop a forecast of customer loads given both historic and expected customer needs and any other considerations that would impact customer loads; (4) determine the expected coal higher heating value ("HHV") for Boiler 5 and any other plant operational considerations; (5) obtain the natural gas and coal pricing; and (6) use the collected data to calculate the expected fuel burn volumes. Finally, when this process is complete, the forecasted natural gas burn volumes are forwarded to Company witness Gary Gottsch to be used for the natural gas hedging process.

Q: How are the Lake Road Plant steam customers' historical loads obtained?

A. Lake Road Plant staff oversees the steam metering that measures the customers' steam use and maintains records of the customers' steam load volumes. The steam customers' historical steam load volumes are provided to me by Lake Road staff.

Q: How are the steam customers' expectations of future steam loads gathered?

A: Company witness Joe Fangman maintains active communications with each of the customers both by written communication, such as e-mail, and verbally. Mr. Fangman uses his customer contacts to learn about each customer's business plans, plant outages, maintenance, and planned plant expansions and how that impacts their expected steam use. Each time the budgeting and forecasting process is initiated, Mr. Fangman is contacted to provide up-to-date information on each customer's projected steam load use.

Q: How is this data used to create the steam load forecast?

A: The starting point for the steam customers' steam load forecast is each customer's historical steam load volumes. Mr. Fangman's up-to-date information on planned plant outages and maintenance is then used to make any necessary adjustments to the steam load forecast. However, in the case of a customer's expansion, the historical steam load volumes are not useful and the steam customer must be heavily relied upon to provide an accurate projection of their incremental steam demand. In the case of a new steam customer or plant there is absolutely no historical basis to start with and the customer's projections must be relied upon entirely.

GMO must rely upon the steam customers, who are the experts in their manufacturing process and who have sole access to non-public proprietary information regarding their business plans, products, and customers, to provide accurate guidance as

to their projected steam load volumes. Once the steam forecast has been created, it is forwarded to Mr. Fangman for review.

Q: What information is needed regarding the coal HHV and other plant operational considerations?

A: There are three primary pieces of information that are needed from the Lake Road Plant manager for the preparation of the steam budget. The first piece of information is the expected coal HHV for Boiler 5 (the coal-fired boiler) including the type of coal or coals, and in what ratios, that will be burned in Boiler 5. The second piece of information is Boiler 5's expected availability. And the third piece of information is Boiler 5's maximum capability in mmBtu of steam.

Q: Why is this information about Boiler 5 needed?

A: This information is needed because the average cost of steam is determined by the fuel mix used to produce the steam. Each of the different fuels burned at the Lake Road Plant—gas, coal, and oil—typically widely differ in price. Oil (#2 fuel oil) is normally the most expensive fuel and consequently is used only as the backup fuel. Coal is normally the cheapest fuel, with natural gas typically falling in between. However, there is not enough steam capacity from the coal-fired boiler to serve all the steam customers' demand. Thus a mix of coal and natural gas is needed to provide the necessary steam capacity. The resulting mix of coal and gas determines the average price of fuel used for steam production.

Q: What factors affect the coal to gas fuel mix for the steam system?

A: One thing that impacts the coal to gas fuel mix is the maximum capability of Boiler 5 (in mmBtu of steam).

Boiler 5's maximum steam output capability is impacted by fuel quality. One important aspect of fuel quality is the HHV of the coal, which is commonly expressed in Btu/lb. The limiting factor on Boiler 5 is the throughput capacity of the coal mills. Thus, the higher the HHV of the coal, the more steam Boiler 5 can produce. The lower the HHV, the less steam Boiler 5 can produce. The HHV of the coal burned in Boiler 5 is dependent on both the coal type as well as the coal blend.

Another important aspect of fuel quality is the moisture content of the coal. In addition to the natural variance in moisture as delivered from the coal mine, recent rainfall can have a major impact on the moisture content of the coal, which greatly affects the performance of Boiler 5. Wet coal is more difficult to feed into the boiler and can cause flame stability problems, requiring the need to burn more gas in the boiler for flame stabilization. Wet coal also reduces Boiler 5's coal mill capacity. In addition, the wet coal causes degradation in Boiler 5's heat rate, also limiting its steam output.

As a result of these unpredictable variables, the Lake Road Plant manager is relied upon to provide guidance as to the expected average maximum steaming capability of Boiler 5.

Q: Are there other factors that affect the coal to gas fuel mix for the steam system?

A: Yes. Boiler 5's availability also affects the coal to gas fuel mix. Boiler 5's availability depends on the number of hours of planned outages and unplanned outages (also known as forced outages). Boiler 5's planned outages are usually scheduled for 1-3 weeks in the fall depending on the scope of work needed. Boiler 5's forced outage rate is typically very low and thus does not have a large impact on coal to gas fuel mix. Both planned and

forced outages are accounted for in steam budget projections. The planned outage schedule is approved by the Lake Road Plant manager.

Q: Do any of the Lake Road Plant electric turbines affect the coal to gas mix for the steam system?

A: Yes. There are three electric turbines (Lake Road Turbines 1, 2, & 3) that are supplied from this common steam system that also supplies the steam customers. Since Boiler 5 is normally operating near its maximum output already, the operation of the electric turbines does not increase its output of steam. However, when these electric turbines operate they are allocated a portion of the coal mmBtu's pursuant to a methodology established in a prior case.

II. Steam Customers' Demand Projections

Q: Of these factors discussed above, which has the greatest impact on the forecast of natural gas volumes?

A: There are many variables that impact the forecast of natural gas volumes. However, the steam customers' load projections have the greatest impact on the forecast of natural gas volumes. Since Boiler 5 already operates near its maximum capability, every additional mmBtu of steam must be sourced fully from natural gas.

Q: Should GMO have foreseen that the steam customers' projected steam demand was too high in 2009?

A: No. GMO did not have the necessary information to do so. Without access to the detailed confidential information about the steam customers' business plans, products, or their customers, it would be impossible to make such projections or for GMO to second guess the judgments of its steam customers.

Q: Were there ever any updates or adjustments to the budget?

A: Yes. Updates to the budget occurred in February 2006, April 2006, June 2007, and April 2008. Following each update, the updated natural gas volumes were forwarded to Mr. Gottsch to be used for the natural gas hedging process.

Q: On page 7 (beginning at line 18) of his testimony, Mr. Johnstone asserts, "Sadly, there is no evidence that GMO was paying attention, and there has been no indication that GMO ever made the periodic reviews that were part of the initial program design." Is this accurate?

A: No. As I already have stated, there were in fact updates to the budget, including two in 2006. Furthermore, the customers' steam loads were a common topic of informal conversation with Mr. Fangman and others throughout the Company. As Mr. Fangman describes in his Rebuttal Testimony, the Lake Road Plant steam customers stood behind their projections and continued to assure him that they would need the load that they were projecting. See Fangman Rebuttal at 6. **[redacted]**

Q: Did the steam customers' steam demand projections of their new loads materialize?

A: No. As you can see in Schedule TMN-2, in the three years prior to 2009, the steam customers' projections of their 2009 steam loads were significantly higher than actual burn. The steam load projection for 2009 in 2006 was 3,661,397 mmBtu, in 2007 was 2,994,058, and in 2008 was 2,978,959 mmBtu. Actual steam loads in 2009 were 2,538,610 mmBtu.

Q: Did AGP's projected loads materialize?

A: No. AGP's projections also did not materialize. **[redacted]**

Q: How did AGP's projected steam load affect GMO's steam budget in 2009?

A: Schedule TMN-3 compares the budget total steam sales to actual for 2005 through 2009. To show how AGP's estimates affected the overall variance, AGP's budget variance appears on top of the actual steam sales bar. This shows that, in 2008 and 2009, had AGP's steam load projection been correct there would not have been a significant volume variance.

Q: Mr. Johnstone uses the term "swing fuel." What does the term "swing fuel" mean?

A: Mr. Johnstone is referring to the fact that natural gas is the incremental fuel. This means that natural gas is used to supply the incremental unit of steam demand. It also indicates that it is the gas fired boilers that must be turned on and off to meet the fluctuating demand for steam.

Q: What was the consequence of the actual steam demand at Lake Road being lower than customer and GMO projections?

A: The result was lower steam rates. Since the actual steam loads were lower than the projections, the volumes of natural gas required were also lower. This resulted in a lower average cost of steam for the customers, saving them money.

III. Natural Gas as the Incremental Fuel

Q: Mr. Johnstone states that gas is the "swing fuel" for the steam operations. Is that correct?

A: A better characterization of natural gas at the Lake Road Plant is the "incremental fuel." For the most part, natural gas is indeed the incremental fuel. The notable exception would be for the 850-psi steam customer. Most of the time, Boiler 5 must be available to absorb any upward swings in steam load from the 850-psi steam customer. Boiler 4 is the only other boiler that can at times regulate steam flow for the 850-psi customer. To accomplish this purpose Boiler 5 must operate a little below its maximum capacity to facilitate these swings in steam demand.

Q: What is the impact of gas as the incremental fuel?

A: It means that for every 1 mmBtu increase (decrease) in steam demand, there must be a proportional 1 mmBtu increase (decrease) in steam production supplied by natural gas.

Q: How much gas fuel does it take to produce one mmBtu of steam?

A: On average it takes 1.22 mmBtu's of gas to produce 1 mmBtu of steam for the steam system at the Lake Road Plant.

Q: Has Mr. Johnstone accurately portrayed the impact of gas as the incremental fuel?

A. No. Mr. Johnstone makes several statements that exaggerate the impact of gas as the incremental fuel.

On page 3 of his testimony (beginning at line 22), Mr. Johnstone states, "As a swing fuel, variations in steam load would have a disproportionate impact on gas usage." To the contrary, variations in steam load do not have a disproportionate impact on gas usage. The increase (or decrease) in gas use is in fact proportional to the increase (or decrease) in steam demand.

On page 3 of his testimony (beginning at line 38), Mr. Johnstone states, "With the role of natural gas usage as a swing fuel, the uncertainty in gas usage was necessarily and unavoidably magnified." Again, natural gas being used as the incremental fuel does not magnify the gas usage. As the incremental fuel, gas usage increases (or decreases) proportionally with the increase (or decrease) in steam demand.

On page 31 of his testimony (beginning at line 16), Mr. Johnstone states, "As a consequence of gas being a swing fuel, a small change in load would result in a relatively larger impact on gas usage" [emphasis in the original]. Again, the change in natural gas usage is proportionate to the change in steam demand.

Also on page 31 of his testimony (beginning at line 22), Mr. Johnstone states, "...GMO's forecast of gas volumes that had been amplified because of the use of gas as the swing fuel, took a huge hit." Once more, changes in natural gas usage are not amplified by gas being the incremental fuel.

Natural gas being used as the incremental fuel does not "amplify," "magnify," or cause a "relatively larger impact" or a "disproportionate impact" to natural gas usage. To

the contrary, it simply means that natural gas is used to supply the incremental unit of steam demand and that a 1 mmBtu change in steam demand requires a proportionate change in gas-fired steam production.

Q: In the discussion of natural gas as the incremental fuel, you referred to "swings in steam demand". What do you mean by "swings in steam demand"?

A: What I am referring to are the actual swings in demand that are observed in the day-to-day and month-to-month operation of the steam system.

Q: What are the swings in demand that are observed in the operation of the steam system?

A: The swings in demand are the variation in the day-to-day and month-to-month volumes of steam demand observed. Schedule TMN-4A shows the standard deviation of the monthly steam demand volumes for each of the Lake Road Plant customers as well as the all of the customers combined. **[redacted]**

Schedule TMN-4B also shows this with a different measurement. This chart shows the range of monthly steam demand volumes. (The range is defined as the maximum monthly volume minus the minimum monthly volume.) **[redacted]**

Q: Is there a difference in the values for 2009 compared to 2005?

A: Yes. The important difference is that the monthly variation in steam demand has risen dramatically; in fact, it has nearly tripled (2.8 times as measured by the increase in range and 2.9 times as measured by the standard deviation). **[redacted]**

Q: Given this significant month-to-month variation, what do you conclude from this information?

A: These charts lead to the conclusion that AGP is the swing load. **[redacted]** On page 31 of his testimony (beginning at line 15), Mr. Johnstone states, "The projections were also uncertain because gas is the swing fuel, not the base load fuel." Mr. Johnstone believes that the problems existed because gas is the incremental fuel at the Lake Road Plant. This is incorrect. The real cause of the uncertainty is the swings in steam demand. As I have demonstrated, AGP is the primary contributor to these swings in steam demand.

IV. Coal Performance Standard

Q: On page 15 of his testimony (beginning at line 5), Mr. Johnstone states, "During 2006 and 2007 GMO's coal-fired boiler used for steam service frequently did not meet the performance standards of the QCA." Do you have any comments about this statement?

A: Mr. Johnstone is attempting to paint the picture that GMO was deficient in its operation of the coal boiler. As I demonstrate, Boiler 5's performance was, in fact, exceptional.

Schedule TMN-5 shows the mmBtu's of coal fuel allocated to the steam system. During this 6-year period Boiler 5's performance was very consistent, dependable, and reliable. Note that while Boiler 5's performance was excellent, its mmBtu output was lower in 2008.

Q: Why was Boiler 5's mmBtu output lower in 2008?

A: Boiler 5's mmBtu output in 2008 was lower due to an extended planned outage to upgrade the boiler controls and perform coal feeder work. This type of outage occurs as part of a normal maintenance cycle to keep the boiler in its optimal condition. The new boiler controls were a necessary and important upgrade to maintain the high reliability required of the steam system.

Q: What was Boiler 5's performance in these years?

Boiler 5's performance was consistently good. For the years 2006 to 2011, excluding 2008, there was only an 8,400 mmBtu standard deviation of the mmBtu's of coal fuel, which is only 0.42% of the annual output. Except for the year 2008 when additional maintenance was being performed, there was consistently over 2,000,000 mmBtu of coal fuel allocated to the steam system each year.

Q: What about Boiler 5's performance in 2008?

A: Boiler 5's performance in 2008 was also very good. While its mmBtu output was lower due to the controls upgrade, its performance during the remainder of 2008 was on par with the other years. Absent the additional outage time required for controls upgrade, Boiler 5's output would have also supplied over 2,000,000 mmBtu of coal fuel to the steam system.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

Ag Processing, Inc., Complainant,	)	
v.	)	Case No. HC-2012-0259
KCP&L Greater Missouri Operations Company, Respondent.	)	

AFFIDAVIT OF TIMOTHY M. NELSON

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

Timothy M. Nelson, being first duly sworn on his oath, states:

1. My name is Timothy M. Nelson. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Supply Resources Operations Analyst – Senior.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of KC&PL Greater Missouri Operations Company consisting of fifteen (15) 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 swear and affirm 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.

Timothy M. Nelson

Subscribed and sworn before me this 2nd day of July, 2012.

Notary Public

My commission expires: Feb. 4 2015

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

SCHEDULE TMN-1

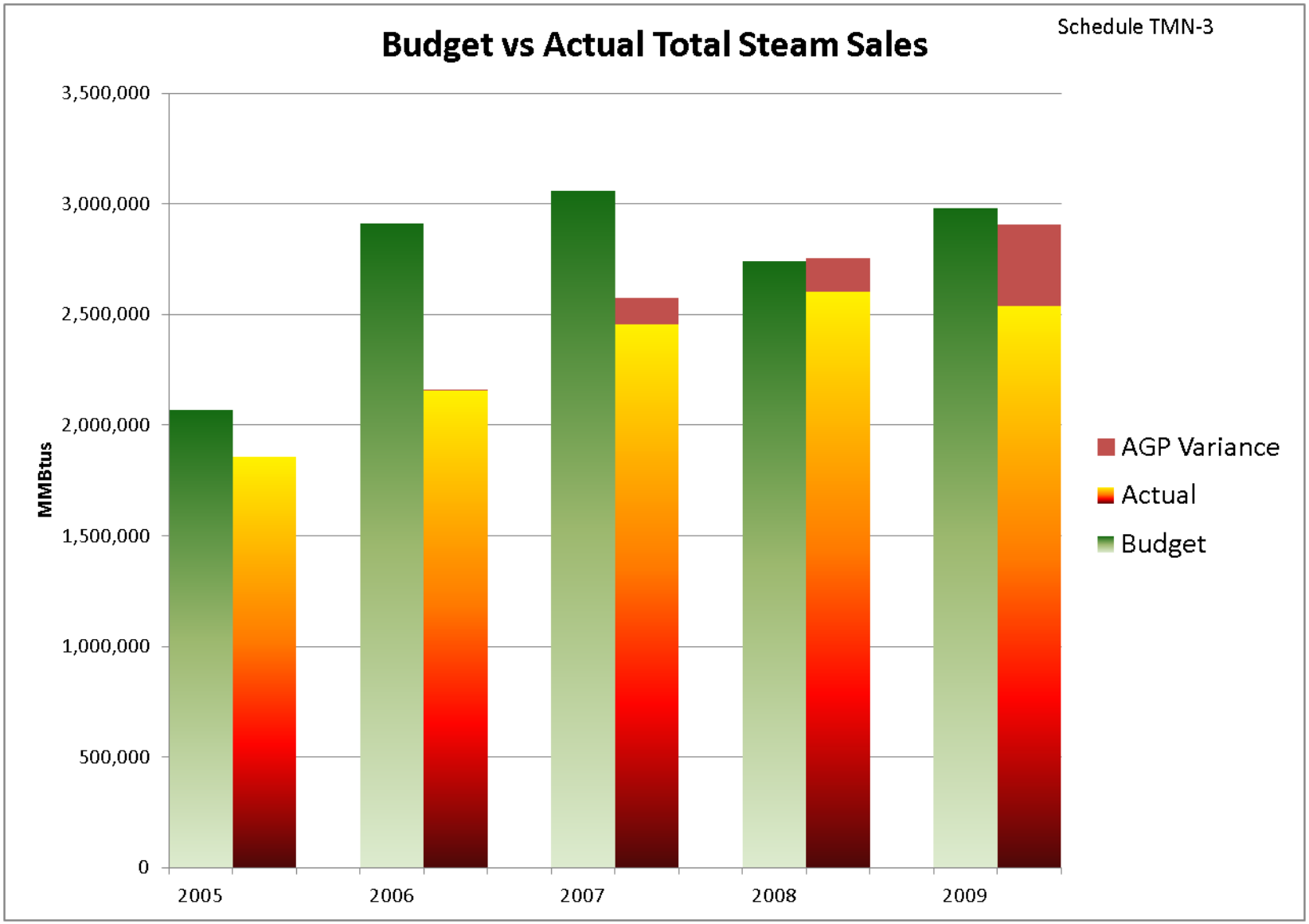
THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC

Schedule TMN-2

Annual Steam Demand Projections/Actual (mmBtu)

	2006 Projection for 2009	2007 Projection for 2009	2008 Projection for 2009	2009 Actual
Jan	315,672	277,237	271,935	238,762
Feb	284,677	240,877	249,186	223,168
Mar	320,155	274,352	262,303	228,267
Apr	300,666	255,090	253,384	205,054
May	304,049	256,910	232,828	190,919
Jun	284,234	225,794	238,961	184,834
Jul	292,501	229,558	237,699	188,131
Aug	307,222	235,645	231,031	190,690
Sep	299,795	231,717	238,260	163,957
Oct	319,220	246,295	253,942	237,773
Nov	308,679	251,050	252,273	233,442
Dec	324,528	269,533	257,157	253,614
Total	3,661,397	2,994,058	2,978,959	2,538,610

Schedule TMN-3



SCHEDULE TMN-4A

THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC

SCHEDULE TMN-4B

THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC

Schedule TMN-5

	Steam coal
	mmBtu
2006	2,013,181
2007	2,032,663
2008	1,778,687
2009	2,013,074
2010	2,026,209
2011	2,012,201

For the years 2006-2007 & 2009-2011

Max	2,032,663
Min	2,012,201
Avg	2,019,466
Range	20,462
Std Dev	8,400
Std Dev % of Avg	0.42%