Exhibit No.:
Issue: 2011 Missouri River Flooding
Witness: Wm. Edward Blunk
Type of Exhibit: Supplemental Direct Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2012-0174
Date Testimony Prepared: May 4, 2012

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2012-0174

SUPPLEMENTAL DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
May 2012

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

SUPPLEMENTAL DIRECT TESTIMONY

OF

WM. EDWARD BLUNK

Case No. ER-2012-0174

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: Are you the same Wm. Edward Blunk who prefiled Direct Testimony in this matter on behalf of Kansas City Power & Light Company ("KCP&L" or the "Company")?

A: Yes.

Q: What is the purpose of your Supplemental Direct Testimony?

A: The purpose of my testimony is to discuss the 2011 Missouri River flooding ("2011 flood" or "Missouri River Flooding") and its impact on the Company's operations. I will also discuss how the Company determined the incremental fuel and purchased power expense and lost off-system sales revenues attributable to the 2011 flood.

Q: What caused the 2011 flood?

A: According to the National Weather Service, the combination of an estimated 212% of normal snowpack in the Rocky Mountains and nearly a year's worth of rainfall in the upper basin of the Missouri River in the last half of May 2011 resulted in flooding of epic proportions along that river in the summer of 2011.[1] The May 2011 runoff into the Missouri River Basin above Sioux City, IA was the third highest single monthly runoff since the U.S. Army Corps of Engineers began keeping detailed records in 1898. The

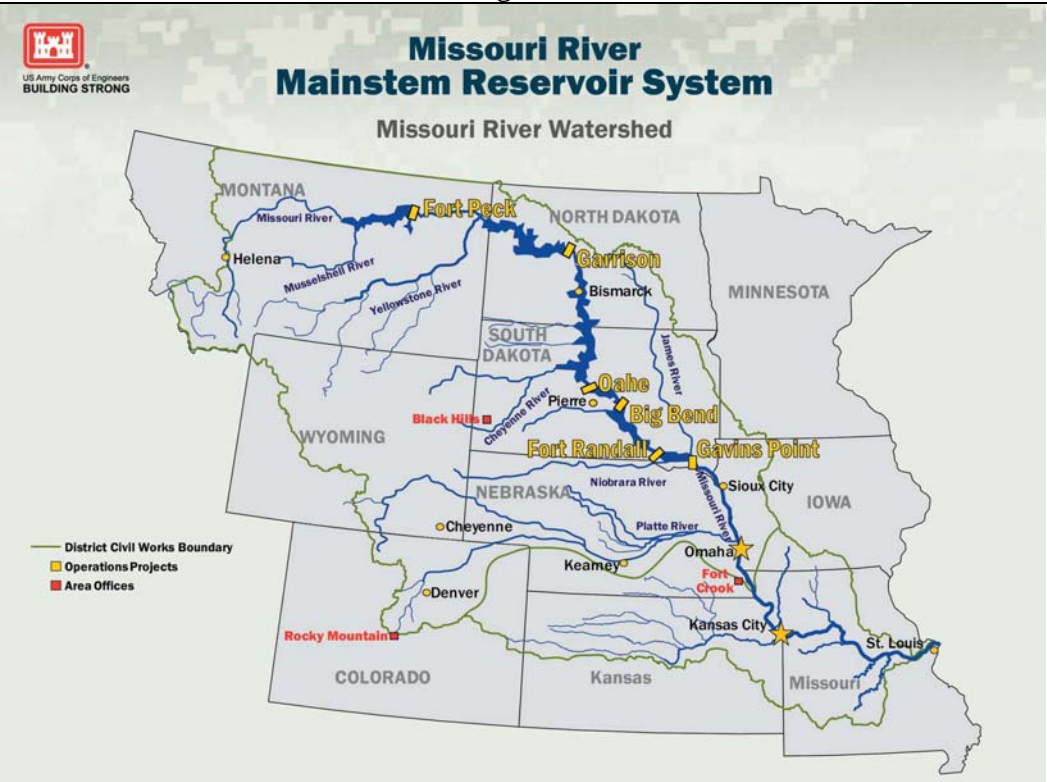
[1] *The Impact of the Fukushima Accident on the U.S. Nuclear Energy Industry*, Nuclear Energy Institute White Paper at 8, Nov. 2011, http://www.nei.org.

June runoff was about 30% greater than May and set the new 113 year record. The May and June combined runoff totaled 24.3 million acre feet ("maf") and was just short of the normal annual runoff of 24.8 maf.[2]

Q: How was that record runoff managed?

A: The U.S. Army Corps of Engineers ("USACE" or the "Corps") has jurisdiction over the upper Missouri River Basin. It manages the basin with six dams. Figure 1 shows the locations of those dams within the Missouri River watershed.

Figure 1



In January the USACE believed it was prepared for the 112 percent of normal runoff that it was forecasting for 2011.[3] In April the Corps raised the forecast for runoff to 136% of

[2] U.S. Army Corps of Engineers, *Corps: June 2011 was highest single month of runoff into Missouri River basin*, July 11, 2011, http://www.nwo.usace.army.mil/pa/2011/NR070911.pdf.

[3] U.S. Army Corps of Engineers, News Release No. 010711, Jan. 7, 2011, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=010711.

normal and announced that "The increased releases will result in stages roughly 2 feet above normal in the lower Missouri River basin, but well within the channel."[4] Early May the Corps changed its outlook and was forecasting that 2011 had the potential to be the second highest runoff season in its 113 years of record keeping.[5] Consequently, the Corps increased the releases out of Gavin's Point Dam, located west of Yankton, South Dakota on the Nebraska-South Dakota border, to 57,500 cubic feet per second ("cfs"). Two weeks later, and after repeated rounds of heavy rains, the Corps began to make what it called "major adjustments to water releases" and increased the Gavin's Point release to 60,000 cfs with the expectation that it would slowly ramp Gavin's Point up to 75,000 cfs in June unless conditions improved.[6] Conditions did not improve, and four days later on May 27 the Corps announced it planned to gradually increase the Gavin's Point release rate to 110,000 cfs by the end of June.[7] The next day the Corps pushed that planned release rate up in volume and time by scheduling 150,000 cfs no later than mid-June.[8] Before June ended the Corps raised the Gavin's Point release rate to 160,000 cfs and held it at that level into August. That record rate of release was maintained for 37 days from June 24 through July 30.[9] The previous record release level was 70,000 cfs.[10]

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[4] U.S. Army Corps of Engineers, News Release No. NR040611, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=NR040611.

[5] U.S. Army Corps of Engineers, News Release No. NR050411, 5/6/2011, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=NR050411.

[6] U.S. Army Corps of Engineers, News Release No. NR052311, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=NR052311.

[7] U.S. Army Corps of Engineers, News Release No. NR052611, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=NR052611.

[8] U.S. Army Corps of Engineers, News Release No. NR052811, http://www.nwd.usace.army.mil/pa/news/shownews.asp?rn=NR052811.

[9] *Gavins Point Dam water releases decrease to 155,000 cfs*, U.S. Army Corps of Engineers, News Release, July 30, 2011; *Gavins Point Dam Releases Going Down*, KCAUTV.com, Aug. 19, 2011, http://www.nwo.usace.army.mil/pa/2011/NR073011-01.pdf.

[10], U.S. Army Corps of Engineers Press Release, Press Release #PA-2011-38, June 1, 2011, http://www.nwk.usace.army.mil/pa/pr/PA-2011-38%20Flooding%20imminent%20in%20the%20lowe%20basin%20of%20Missouri%20River.pdf.

Those releases caused massive flows into the lower Missouri River system. During the summer of 2011, Missouri River floodwaters swept into the Iatan power plant, causing nonessential employees to be evacuated from the plant.[11] Boats were purchased to ferry employees to the station.[12] KCP&L personnel installed almost 10 miles of sand bags, added several extra pumps to keep water out of the plant, poured concrete lids on manhole covers to keep water from entering the facilities, and incurred overtime expenses for the extra time that it took for employees to get to work. KCP&L also incurred additional diesel fuel costs to support transportation and pumps used for these purposes, as well as to deliver chemicals to the power plant.

Q: How did the 2011 flood impact the delivery of fuel to KCP&L's power plants?

A: Missouri River flooding caused major disruptions in the delivery of coal to KCP&L's power plants. Figure 2 is a picture of the Iatan plant during the 2011 flood, and shows Iatan completely surrounded by flood water. The normal river channel forms an arc in the lower left quadrant between two rows of trees. Figure 3 is a satellite view of essentially the same scene under normal conditions. It shows the railroad track as a white dashed line that runs parallel to Highway 45 and loops around the station.

[11] *KCP&L's Iatan Power Plant Partially Evacuated*, KMBC.com, June 29, 2011, http://www.kmbc.com/news/28396205/detail.html.
[12] Steve Everly, *Floodwaters Continue to Rise Near KCP&L Power Plants*, Kansas City Star, July 5, 2011.

Figure 2 Flood Waters Surround Iatan	Figure 3 Railroad Track Near Iatan
	

Q: How did the 2011 flood impact the delivery of coal to KCP&L's power plants?

A: The 2011 Missouri River flooding caused major disruptions in the delivery of coal to KCP&L's power plants. All three railroads that serve KCP&L declared the 2011 flood a Force Majeure condition under which they were excused from their commitments to deliver coal to KCP&L's plants.

Q: What railroads serve KCP&L?

A: Three railroads serve KCP&L: Burlington Northern Santa Fe Railway ("BNSF"), Kansas City Southern Railway ("KCS"), and Union Pacific Railroad ("Union Pacific").

Q: How did the 2011 flood affect the BNSF?

A: The flooding of the Missouri River prompted the BNSF to declare a Force Majeure commencing June 6, 2011.[13] On June 26, the flooding forced BNSF to close its tracks

[13] BNSF Notification of Force Majeure, Email from Larry C. Meyne, Director of Coal Marketing, BNSF Railway Co. to KCP&L's Eric Peterson, et al. (June 23, 2011) (on file with Company).

from St. Joseph to Kansas City.[14] BNSF crews were forced to build a new 150-foot bridge to raise the rail line used to deliver coal to Iatan by several feet, as the high water covered the rail lines and roads leading into the plant.[15] The BNSF Force Majeure lasted until September 13, 2011[16] and severely disrupted the delivery of coal to the Iatan, LaCygne, and Hawthorn generating stations. After the 2011 flood, BNSF described it as the most severe flood in its recent history because of the length of time significant portions of its network were out of service.[17]

Q: How did the flood affect KCS's efforts to deliver coal to KCP&L?

A: After the BNSF refused to accept empty trains returning from the LaCygne Generating Station as a result of Missouri River floodwaters affecting BNSF rail operations north of Kansas City, the KCS declared a Force Majeure condition on June 19, 2011. KCS provides coal to the LaCygne and Hawthorn generating stations. KCS service was halted, interrupted, or delayed from mid-June until the Force Majeure condition expired on September 14, 2011.[18]

Q: How did the Union Pacific's Force Majeure affect KCP&L?

A: On June 29, 2011, Union Pacific also declared a Force Majeure condition due to Missouri River flooding.[19] Train operations were halted and/or restricted in corridors from the Powder River Basin in Wyoming, where the Company purchases about 98% of its coal.

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[14] *Weather Interruptions and Flood Recovery*, BNSF Railway, June 28, 2011, http://www.bnsf.com/customers/weather-interruptions/archive.html. *See also* Steve Everly, *Floodwaters Continue to Rise Near KCP&L Power Plants*, Kansas City Star (July 5, 2011).

[15] *KCPL Scales Back Iatan's Power Production*, KMBC.com, July 28, 2011, http://www.kmbc.com/news/28697461/detail.html

[16] BNSF Notification of Cessation of Force Majeure, Email from Larry C. Meyne, Director of Coal Marketing, BNSF Railway Co. to KCP&L's Eric Peterson, et al. (Sept. 15, 2011) (on file with Company).

[17] BNSF Railway, *RAILWAY, The Employee Magazine of Team BNSF*, Summer 2011, http://www.bnsf.com/employees/communications/railway-magazine/pdf/summer_2011.pdf.

[18] Letters of Darin Selby, Assistant Vice President - Coal, Kansas City Southern Railway to KCP&L's Abby Herl (June 23 and Sept. 30, 2011) (on file with Company).

The flooding forced Union Pacific to re-route traffic and to stage trains in Nebraska, Iowa, Kansas, and Missouri.[20] The Union Pacific Force Majeure lasted until September 26, 2011[21] and slowed the delivery of coal to the Montrose power plant. Union Pacific's Force Majeure also affected GMO's Sibley and Lake Road power plants.

Q: What impact did the Force Majeure declarations have on KCP&L's coal inventory?

A: Even with coal conservation in effect, KCP&L consumed almost 70% of its coal inventory during the flood of 2011. At Iatan it consumed over 80% of its inventory. Had the Company not engaged in coal conservation, it would have run out of coal at the Hawthorn, Iatan, and LaCygne generating stations.

Q: How did KCP&L respond to the Force Majeure declarations?

A: In response to the declarations of Force Majeure, KCP&L implemented coal conservation measures to preserve and ration its existing coal resources. Daily coal conservation efforts began at Iatan 1 on July 2, 2011, Iatan 2 on July 3, 2011,[22] LaCygne 1 and 2 on July 2, 2011, and Hawthorn 5 on July 16, 2011.[23] These actions required other more expensive plants in the system to operate more than they normally would, required curtailing generation, and required purchasing power in the market. In essence these actions can be viewed as transferring fuel "by wire" to the plant with low inventory. If KCP&L had not engaged in coal conservation by limiting off-system sales it would have

[19] Union Pacific Railroad Declaration of Force Majeure Condition, Letter of Douglas J. Glass, Vice President & General Manager, Energy, sent to KCP&L and other Shippers (July 7, 2011) (on file with Company).
[20] Id.
[21] Union Pacific Railroad Notification of Cessation of Force Majeure, Letter of Douglas J. Glass, Vice President & General Manager, Energy, sent to KCP&L and other Shippers (Oct. 3, 2011) (on file with Company).
[22] Initiation of conservation efforts were staggered between Iatan Units 1 and 2 due to logistical issues with transporting employees through flooded conditions surrounding the Iatan facility.
[23] There were days when units were allowed to go to higher load because of plant operating requirements, offset for unit outages, and to support fuel unloading operations.

been without coal at Hawthorn, Iatan, and LaCygne for many days. KCP&L officially concluded coal conservation at the end of the day on October 12, 2011.

Throughout the coal conservation, KCP&L was in constant contact with the Staff of the Missouri Public Service Commission, informing Staff of changes to coal deliveries and limitations placed on the coal generating units, and engaging in general discussions concerning the flood.

Q: How did coal conservation impact off-system sales?

A: One of the first steps in coal conservation is to limit or curtail off-system sales ("OSS"). Schedule WEB-3 shows that the constraints imposed by coal conservation reduced total Company OSS revenue by **[redacted]**.

Q: What were the 2011 flood-imposed operating constraints?

A: Beginning July 2, 2011, the Iatan 1, LaCygne 1, and LaCygne 2 units were constrained, put in reserve shutdown, or maintenance outages were accelerated as a direct result of the Missouri River Flooding. Beginning July 3, 2011, Iatan 2 and beginning July 16, 2011 Hawthorn 5 were likewise constrained. Those constraints were managed to take advantage of replacement power cost cycles. For the 2011 flood, that meant the most severely impacted station, Iatan, was the most severely constrained and at times constrained even across peak hours. Less severely impacted units such as LaCygne were not so limited and may have only been constrained across off-peak hours.

Schedule WEB-4 shows how that worked out for Hawthorn, Iatan, and LaCygne. The lower line in each of the graphs shows the actual flood constrained daily generation for the station. The upper line shows the unconstrained daily generation for the station. The upper line for the unconstrained generation shows how even when the units were

allowed to operate up to their cruise ratings there were times when that was not economic. It also shows how we kept the actual forced outages in the LOP Study.

Q: How did the coal conservation constraints impact operating costs?

A: Schedule WEB-3 shows that the conservation constraints related to the 2011 flood reduced total KCP&L fuel expense by **[redacted]** but increased purchased power expense by **[redacted]** and other generation expenses by **[redacted]**.

Q: How did KCP&L calculate the changes in revenue and costs attributable to the coal conservation constraints?

A: We used Power Costs, Inc.'s ("PCI")[24] "Post Analysis" ("PA") model to replicate how the system operated during the flood and to perform a Lost Opportunity ("LOP") Study. The LOP Study used the base case data from the flood scenario, i.e. what actually happened, along with available market data and generating unit constraints and capabilities, to determine lost revenue if units had not been constrained or put in reserved shutdown. It also determined the increased purchased power expense and the changes in fuel and variable O&M expense. For the LOP Study PA ran a production cost scenario where the flood related constraints were removed and only economical bilateral deals and generating units were utilized to satisfy load, off-system sales, and potential "economic" market sales. The LOP Study calculated the production cost difference between how the system was operated versus how the system would have operated absent the flood. PA's LOP Study report provided the incremental production cost and potential incremental OSS of the system had all units operated at unconstrained levels.

[24] PCI was founded in 1992 to market the unit commitment optimization technology and its portfolio of products are focused on energy based asset optimization.

Q: Are the base costs and model assumptions the same as those used to calculate the Company's off-system sales margin?

A: Yes. The Commission's April 12, 2011 Report and Order in KCP&L's last rate case required that KCP&L track its OSS margins and return to ratepayers any excess margins over a set threshold, with the Company retaining margins up to that threshold amount. The PA model and base inputs are the same the Company uses to calculate its OSS margin pursuant to that April 12, 2011 Report and Order.

Q: How does KCP&L calculate its off-system sales margin?

A: For every hour, the OSS margin is the difference between gross revenues from OSS and costs for those sales. KCP&L retail sales and firm wholesale sales are served by the least cost resources in the Company's generation supply curve. The higher cost resources in KCPL's generation supply curve are allocated to non-firm OSS. Revenues are simply the price per MWh realized multiplied by the quantity sold to a third party.

The PA model maintains base case data of volume and price data for all bilateral deals, SPP Energy Imbalance deals, generating units, and load. PA uses this base case data to calculate the operating sales margin of the Company's portfolio by assigning each sale to a resource or set of resources. As part of the allocations process, PA also assigns resources to retail load.

Q: How much did the OSS margins decrease?

A: The total KCP&L OSS margins were reduced by **[redacted]** from what they would have been absent the coal conservation constraints imposed by the flood.

Q: In its April 12, 2011 Report and Order in KCP&L's last rate case the Commission set a threshold value for OSS margin at the 40th percentile. Where does KCP&L's OSS margin including the flood fall on that distribution?

A: The OSS margin for April 2011 through March 2011 was about **[redacted]** (total Company). In ER-2010-0355 the Commission decided to use the 40th percentile of OSS margins from Mr. Schnitzer's Direct Testimony analysis for setting retail rates. Using that distribution, the **[redacted]** is about the 7th percentile. Mr. Schnitzer's model did not include the risk of a fuel supply disruption such as the 2011 flood. Had he included such risk, his entire curve would have been shifted down and for each specific probability the OSS margin values in his probability distribution would have been lower.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light Company's Request for Authority to Implement A General Rate Increase for Electric Service	)))	Case No. ER-2012-0174

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 Supplemental Direct Testimony on behalf of Kansas City Power & Light Company consisting of eleven (11) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

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

William Edward Blunk

Subscribed and affirmed before me this 4th day of May, 2012.

Notary Public

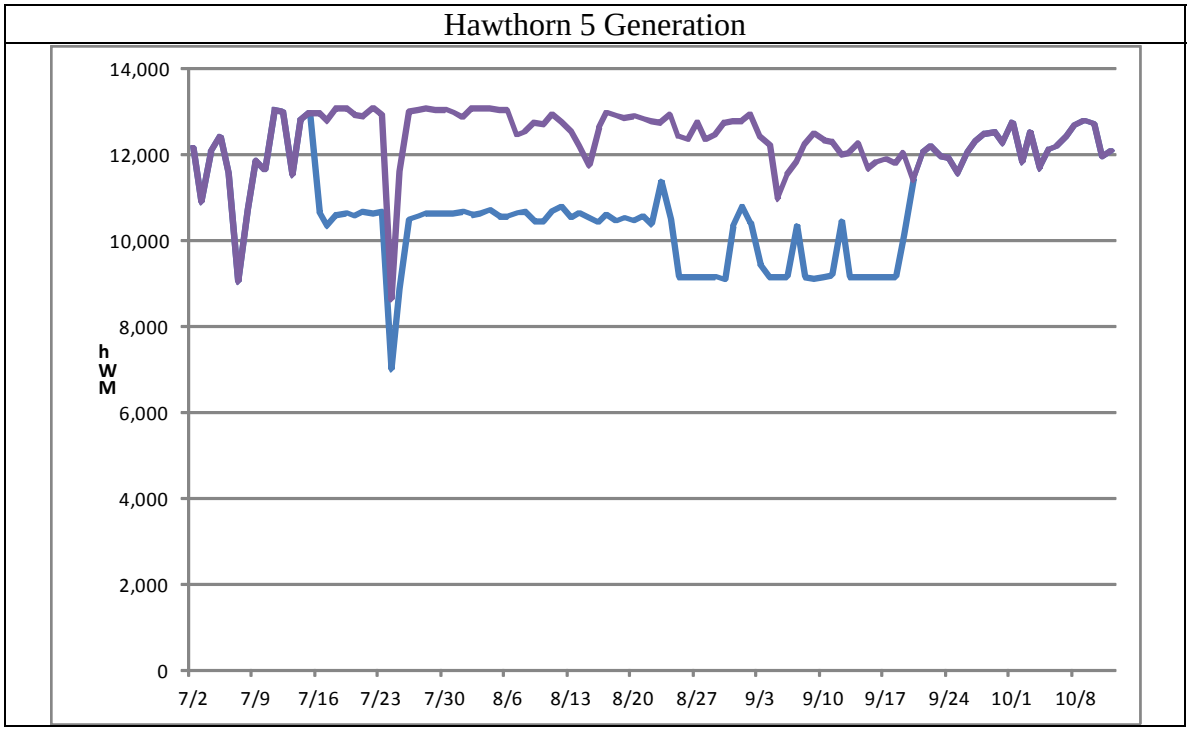
My commission expires: Feb. 4 2015

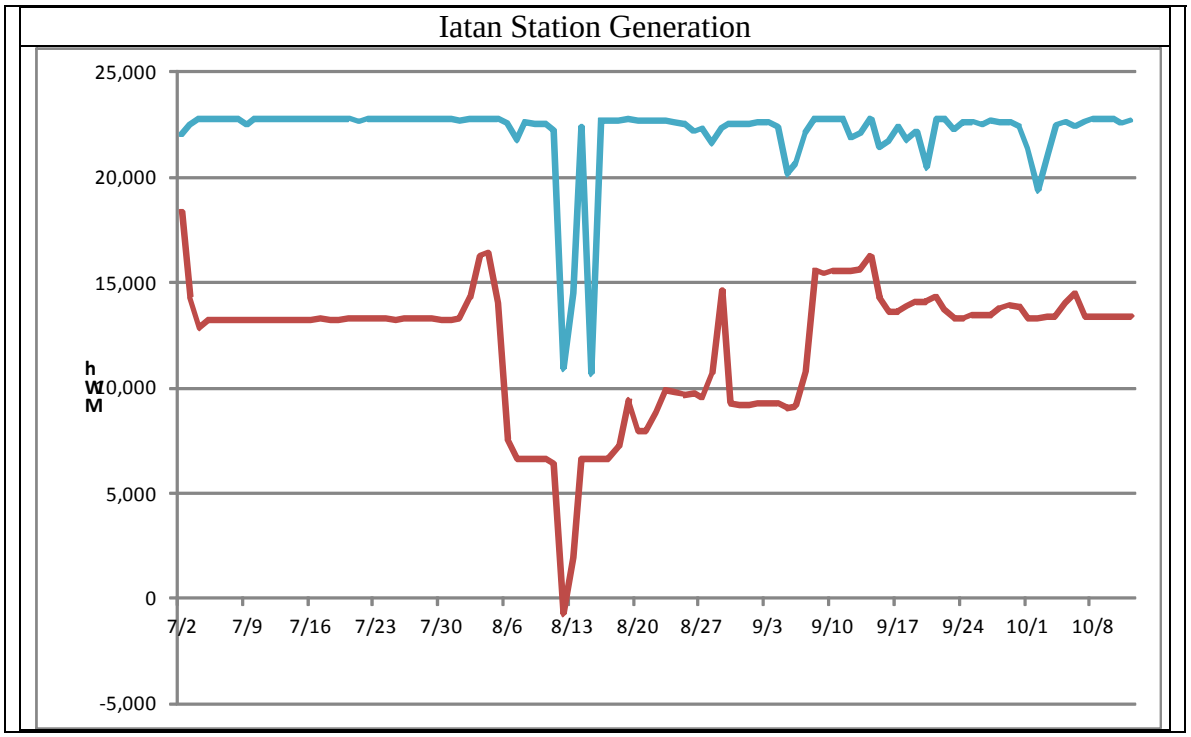
NICOLE A. WEHRY
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: February 04, 2015
Commission Number: 11391200

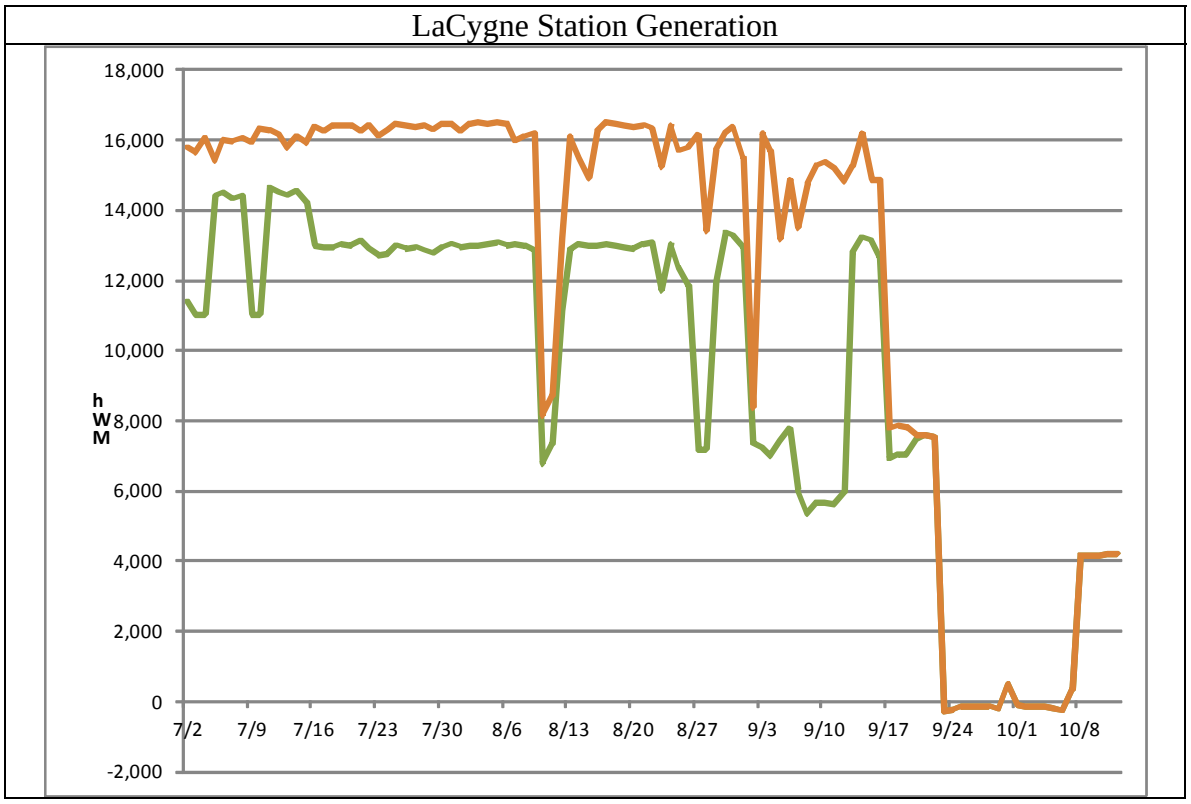
SCHEDULE WEB-3

THIS DOCUMENT CONTAINS HIGHLY CONFIDENTIAL INFORMATION NOT AVAILABLE TO THE PUBLIC

Comparison of Actual Daily Generation vs. LOP Study Generation






LaCygne Station Generation
18,000
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9/3
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9/24
10/1
10/8