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Issue: Crossroads Energy Center

Witness: Daniel I. Beck

Sponsoring Party: MoPSC Staff

Type of Exhibit: Rebuttal Testimony

Case No.: ER-2016-0156

Date Testimony Prepared: August 15, 2016

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF DIVISION

ENGINEERING ANALYSIS SECTION

REBUTTAL TESTIMONY

OF

DANIEL I. BECK

KCP&L GREATER MISSOURI OPERATIONS COMPANY

CASE NO. ER-2016-0156

Jefferson City, Missouri
August 15, 2016

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REBUTTAL TESTIMONY

OF

DANIEL I. BECK

KCP&L GREATER MISSOURI OPERATIONS COMPANY

CASE NO. ER-2016-0156

Q. Please state your name and business address.

A. Daniel I. Beck, P.O. Box 360, Jefferson City, MO 65102.

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

A. I am the Manager of Engineering Analysis with the Missouri Public Service Commission (“Commission”).

Q. Are you the same Daniel I. Beck who filed direct testimony in this proceeding?

A. Yes, I am. I contributed to Staff’s Cost of Service Report filed on July 15, 2016, (“COS Report”) for KCP&L Greater Missouri Operations Company’s (“GMO” or “Company”) rate case filed on February 23, 2016.

Q. What is the purpose of your rebuttal testimony?

A. I address the direct testimony of the following GMO witnesses regarding the Crossroads Energy Center:

John R. Carlson, GMO’s Originator, Supply Resources - direct testimony, pages 6 to 10

Burton L. Crawford- GMO’s Director, Energy Resource Management – direct testimony, pages 15 to 19

EXECUTIVE SUMMARY

Q. Would you please summarize your rebuttal testimony?

A. Staff continues to support the Commission’s decision in the last two GMO general rate increase cases to exclude the transmission costs related to the Crossroads Energy

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1 Center (“Crossroads”). Crossroads is a combustion turbine peaking generating facility built
2 by a non-regulated affiliate of Aquila, Inc. (“Aquila”), Aquila Merchant Services (“Aquila
3 Merchant”). GMO’s customers are located primarily in the metropolitan Kansas City,
4 Missouri, area and surrounding communities and in many areas in western Missouri;
5 Crossroads is located in Clarksdale, Mississippi. Clarksdale is 520 miles¹ from GMO’s
6 headquarters in downtown Kansas City.

7 Q. Does the descriptor “SPP Transmission Fees Forecast” shown on the cover
8 page of GMO’s witness Carlson’s pre-filed direct testimony accurately describe the issues
9 that he addresses in his direct testimony?

10 A. No. The testimony includes a section titled “Crossroads-Related Transmission
11 Charges” that begins on line 8, page 7 and continues to line 10, page 10. In addition, another
12 section of Witness Carlson’s testimony is titled, “Transmission Service Charges In RTOs”
13 which starts on line 4, page 3 and continues to line 7, page 7. These sections discuss the costs
14 that occur due to a generation plant being located outside of a Regional Transmission
15 Organization (“RTO”) in general and the costs associated with the Crossroads Energy Center
16 in particular. The remainder of the testimony discusses the topics of “SPP Base Plan Zonal
17 and Region-Wide Charges”, “SPP’s RTO Administrative Fees”, and “FERC Schedule
18 12 Fees”. I believe the last three topics more directly fit under the “SPP Transmission Fees
19 Forecast” issue while the first two topics are related to the Crossroads Energy Center
20 Transmission Charges.

21 Q. Do you agree with GMO witness Carlson on page 6 of his direct testimony,
22 where in response to the question, “Would it make a difference if the generation source were

¹ According to Google Maps using Great Plains Energy’s headquarters at 1200 Main Street, Kansas City, Missouri to Crossroads Energy Center at 19th West Tallahatchie Street, Clarksdale, Mississippi. In the ER-2012-0175, using Mapquest the mileage was 525 miles which Commission used in its Order.

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1 located 10 miles from the load or 500 miles from the load?" he responds, "No. If they both
2 are located within SPP, there is no difference between the two options from a transmission
3 pricing perspective

4 A. Yes, but only with the qualifier that both are located within the same RTO,
5 which is SPP.

6 Q. Are Crossroads and GMO's service territory located in the footprint of the
7 same RTO?

8 A. No. Crossroads and GMO's service territory are located in different RTOs,
9 and are about 500 mile apart. (Parts of GMO's service territory are both closer or further than
10 500 miles from Crossroads.)

11 Q. If Crossroads was located 10 miles from GMO's service territory instead of
12 500 miles, would that make any difference on the options available to GMO?

13 A. Yes it would make a big difference. If Crossroads was only located 10 miles
14 from GMO's service territory, GMO would have options that would allow it to directly tie the
15 plant into its transmission grid and therefore be directly tied to SPP. However, the fact that
16 Crossroads is approximately 500 miles away leaves no economic options that would allow the
17 plant to be directly tied to GMO and SPP while remaining in its current location.

18 Q. On pages 9-10 of his direct testimony, GMO witness Carlson discusses
19 15 possible options a cross-functional team of GMO employees developed to address
20 Crossroads after the Commission disallowed Crossroads transmission in its January 2013
21 Report and Order in Case No. ER-2012-0175. He relates the team determined that only one
22 of the 15 options was potentially feasible, and that this option "may not be operationally or
23 financially feasible". Why does GMO have a peaking plant in Clarksdale, Mississippi, that

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1 leaves GMO with few or no options to control GMO's transmission costs for delivering
2 energy from that plant, or even which RTO footprint that the plant is in?

3 A. As discussed in more detail in the testimony of Cary G. Featherstone,
4 Crossroads was added to GMO's generation fleet after Great Plains Energy acquired Aquila.
5 The plant was built by GMO's unregulated affiliate, operated by that affiliate from 2002 to
6 2007, and then moved into GMO's generation fleet about the time that Great Plains Energy
7 acquired Aquila.

8 Q. Does GMO have any generation plants, other than Crossroads, that are located
9 outside SPP's footprint?

10 A. No.

11 Q. Does GMO have any peaking plants it owns, other than Crossroads, that are
12 located outside of its service territory?

13 A. No.

14 Q. Does GMO have any generating plants it owns that are located outside of its
15 service territory?

16 A. No. However, it does own a small minority share of 8% of the Jeffrey
17 coal-fired baseload facility that is physically located in Kansas and is outside GMO's service
18 territory but located inside SPP's footprint. GMO also has several wind contracts with wind
19 farms that are located in Kansas. These plants are located in SPP's footprint, but the decision
20 process for locating a wind farm location is much different from the decision process to locate
21 a natural gas-fired, peaking generating plant.

22 Q. How is the decision process for locating a wind farm different than the
23 decision process for locating a natural gas-fired, peaking generating plant?

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1 A. Although certain factors like available fuel sources and location of
2 transmission lines are general criteria for either decision process, the processes are
3 significantly different. For a wind farm, the quality of the wind is often the most important
4 criterion as wind is this type of generating unit's fuel source. In contrast, locating a natural
5 gas-fired peaking plant has as important criteria, including the location of the load, and the
6 locations and capacities of other generating facilities which might improve local reliability,
7 gas transmission lines and electric transmission lines. An example of the process Staff
8 recommended when it reviewed the site determination of the South Harper Generation
9 Facility in Case No. EA-2006-0309 is attached as Schedule DIB-r1. The South Harper
10 Generating Facility is the last peaking facility for which GMO sought a Certificate of
11 Convenience and Necessity ("CCN"). South Harper went into service in June 2005. I believe
12 that the process recommended in Case NO. EA-2006-0309 is a reasonable process for
13 locating a peaking facility like Crossroads.

14 Q. What are the first steps an electric utility should take to decide where to build a
15 peaking plant such as Crossroads?

16 A. The first step that Staff recommended in Case No. EA-2006-0309 is
17 "Identification of areas within a utility's service territory where significant energy usage is
18 occurring and areas where energy usage is expected to increase". Crossroads is nearly 500
19 miles from any location that could meet this step. Although a peaking plant is primarily
20 installed to provide peaking capacity, locating a peaking plant near the load allows a peaking
21 facility to help support voltage within the service territory and this is often referred to as part
22 of the ancillary services on the RTO grid. Peaking facilities can also be used to "follow"
23 system load requirements and are often used to meet emergency situations as these natural

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1 gas-fired units have a relatively short start up time. It is important for peaking units to be
2 located close to where the electric load requirements. As highlighted by the current
3 Crossroads discussion, locating the facility within a utility's service territory has the
4 additional benefit of giving the utility the ability to control other factors like a change in the
5 RTO. In contrast the Crossroads facility cannot provide voltage support to a portion of
6 GMO's service area and GMO has no control over decisions made regarding the RTO that
7 Crossroads is physically located in, since Entergy is the predominant electric utility in that
8 region and Entergy has become a member of MISO with GMO having no say.

9 Q. What is Staff's response to GMO witness Crawford's direct testimony where
10 he states on page 18 that it is not unprecedented that the transmission cost related to an out-of-
11 state generating facility be recovered, and then gives the example of The Empire District
12 Electric Company's ("Empire's") Plum Point generating asset?

13 A. First, I do not believe that in-state vs. out-of-state has any relevance. Several
14 of the investor-owned electric utilities in Missouri have service territories in two or more
15 states. And some utilities like GMO and its affiliate, Kansas Power & Light Company
16 ("KCPL"), have power plants located outside its service area. But these other generating
17 facilities, whether owned by other Missouri utilities or by GMO and KCPL, are located in
18 same RTO.

19 Q. If the intent was not to discuss in-state vs. out-of-state but instead was intended
20 to discuss locating generation in the same RTO as the utility's load vs. out of the RTO where
21 the utility's load is located, what would be your response?

22 A. It is rare that a utility would have generating facilities that are outside the RTO
23 footprint within which a given Missouri investor-owned electric utility serves. For Missouri

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1 investor-owned electric utilities, I am aware of exactly two generating facilities located in the
2 footprint of an RTO that is different from the footprint of the RTO within which the utility
3 serves: Crossroads and Plum Point.

4 This leads me to my second point. Plum Point is located in Arkansas and Empire
5 services customers in Arkansas. (Empire serves customers in Missouri, Arkansas, Kansas,
6 and Oklahoma.) Therefore, Plum Point is serving in-state load and out-of-state load at
7 the same time. Likewise, every Empire generating facility is serving both in-state load and
8 out-of-state load at the same time. Again, I do not believe that in-state vs. out-of-state has
9 any relevance.

10 My third point is that Plum Point is an entirely different generating facility when
11 compared to Crossroads since Plum Point is a baseload coal-fired generating facility. Based
12 on my experience with the Missouri Electric Resource Planning (“ERP”) or more commonly
13 called Integrated Resource Plan (“IRP”) process, which dates back to before the ERP rule was
14 adopted in 1993, the economies of scale for a baseload coal-fired generating facility make it
15 difficult for an electric utility the size of Empire to build and own its own baseload coal-fired
16 facility. Empire is the smallest investor-owned electric utility in the state of Missouri.
17 Therefore, Empire has been unable to build its own coal-fired facility since it built the 198
18 MW Asbury coal-fired facility in 1970. Instead, since that time, Empire has bought several
19 shares of larger baseload coal-fired generating facilities that were constructed and operated by
20 other larger utilities. Specifically, it owns an 85 MW share of Iatan 1, a 106 MW share of
21 Iatan II, and a 50 MW share of Plum Point.² These generating units are 705 MW, 881 MW
22 and 665 MW, respectively. As the numbers show, Empire acquired 12% of the Iatan units

² Empire also has a purchased power agreement (PPA) for 50 MW of Plum Point but does not own that share.

1 and 15.0%³ of Plum Point. Empire's IRP analysis has consistently shown that it is
2 impractical for Empire to build a coal-fired unit that would be dedicated solely to Empire. In
3 addition, the high load factor of a baseload facility allows any transmission costs to be spread
4 over more MWhs and therefore the cost of transmission is relatively small per MWh, while a
5 peaking facility like Crossroads has relatively few MWhs to spread transmission costs over.

6 Q. During the period of 1970 to present, did Empire buy shares of peaking units?

7 A. No. During the period from 1970 to present, Empire added 4 peaking units at
8 its Energy Center, one peaking at its State Line Facility, and 3 peaking units at its Riverton
9 Facility. (One of the Riverton units was recently converted to a combined cycle unit, which is
10 typically considered an intermediate unit, but it was a combustion turbine peaking unit for
11 approximately 7 years before it was converted.) All of the peaking units added by Empire
12 during the period from 1970 to present are fully owned by Empire.

13 Q. Do you think GMO should try to mitigate its Crossroads transmission costs, by
14 making efforts such as those GMO witness Crawford testifies to on line 13, page 18 of his
15 direct testimony—the evaluation of the 15 possible options developed by the cross-functional
16 team, and pursuing relief in various FERC and court proceedings?

17 A. Yes. However, the mitigation of risk should have been an important part of the
18 decision to transfer Crossroads to GMO. Risk Analysis is an important part of the IRP
19 process. At the time of the transfer, Entergy was exploring several options regarding its RTO
20 status and that included the option of joining MISO. This is discussed further in the Rebuttal
21 Testimony of Michael Stahlman. By acquiring a peaking plant that was outside GMO's
22 service territory instead of building within GMO's service territory, GMO was exposed to

³ 15% assumes both the 50 MW of ownership and the 50 MW PPA. If only the ownership is considered, the share is 7.5%.

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1 risks that could have been avoided. The increased Crossroads transmission charges are the
2 result of those risks. While risks are often not easily quantifiable, risks should have been
3 considered before the transaction was made.

4 Q. Does this conclude your rebuttal testimony?

5 A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of KCP&L Greater Missouri)
Operations Company's Request for Authority) Case No. ER-2016-0156
to Implement A General Rate Increase for)
Electric Service)

AFFIDAVIT OF DANIEL I. BECK, PE

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW DANIEL I. BECK, PE and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Rebuttal Testimony and that the same is true and correct according to his best knowledge and belief.

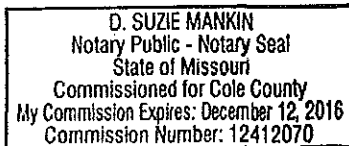
Further the Affiant sayeth not.

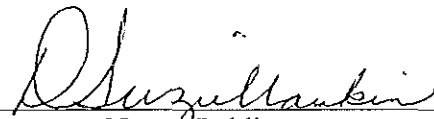


DANIEL I. BECK, PE

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 15th day of August, 2016.





Notary Public

Exhibit No.:

Issues: Site Determination &
Certificate of
Convenience and
Necessity (CCN)

Witness: Warren T. Wood

Sponsoring Party: MO PSC Staff

Type of Exhibit: Rebuttal Testimony

Case No.: EA-2006-0309

Date Testimony Prepared: April 4, 2006

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

REBUTTAL TESTIMONY

OF

WARREN T. WOOD

AQUILA, INC.

D/B/A AQUILA NETWORKS - MPS

CASE NO. EA-2006-0309

**Jefferson City, Missouri
April 2006**

Rebuttal Testimony
of Warren T. Wood

1 witnesses in the recent local public hearing on March 20, 2006 and were made
2 elsewhere by some of the parties to this case. I will provide a Staff response to
3 some of these statements regarding substations and power generation facilities
4 (Substations, starting on page 25).

5 Q. Are other Commission Staff filing testimony in this case and if so, who are
6 they and what issues are they addressing?

7 A. Yes. Lena Mantle and Leon Bender are also filing testimony in this case.
8 Mrs. Mantle is the Commission's Energy Department Manager and will address the need
9 for the type of power generation facilities at South Harper. Mr. Bender is an Engineer in
10 the Commission's Energy Department and will address visual screening, sound
11 attenuation and emission control efforts at the South Harper plant site.

12

13 **Site Determination**

14 Q. What is a reasonable process for a utility to determine a site to build a
15 natural gas-fired simple-cycle power generation facility?

16 A. A reasonable process for determining a site for a natural gas-fired simple-
17 cycle power generation facility should generally include the following major steps:

18 1) Identification of areas within a utility's service territory where
19 significant energy usage is occurring and areas where energy usage is expected to
20 increase;

21 2) Identification of areas noted in step (1) that are not in close proximity to
22 existing generation facilities, are near an existing generation facility that will
23 likely be retired in the near future, are near an existing generation facility that has

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1 room for additional generation units, or are near an area where required energy
2 needs are expected to significantly exceed an existing generating facility's
3 capabilities;

4 3) Identification of major natural gas transmission pipelines that have
5 sufficient available capacity, adequate pressure and access to natural gas supplies
6 to serve such a prospective generation facility and pass through the areas
7 identified in step (2);

8 4) Identification of electric transmission lines that have sufficient available
9 capacity, or can be reasonably upgraded, to serve such a prospective generation
10 facility, provide transmission to the areas that need to be served by the planned
11 generation facility and pass through the areas identified in step (2);

12 5) Identification of areas where the natural gas transmission pipelines in
13 step (3) and the electric transmission lines in step (4) come within a reasonable
14 distance of each other;

15 6) Review county plat books for the areas identified in step (5) to
16 determine if there are properties in the areas identified in step (5) that appear
17 suitable for such a prospective generation facility and begin visiting with
18 landowners to determine ability to purchase potential parcels of land for such a
19 prospective facility;

20 7) Carefully evaluate each of the potential sites identified in step (6) for
21 line-of-site population density, natural buffers between the generation facility and
22 nearby residents or the ability to construct buffers, natural gas pipeline extension
23 cost, transmission line upgrade and extension costs, land acquisition cost,

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1 suitability of geology for construction of generation facility foundations,
2 emissions compliance cost, possible air or land permitting problems, access to
3 other needed infrastructure such as water and other potential costs to address
4 potential concerns of the nearby communities and residents;

5 8) Communicate with any nearby communities and residents to receive
6 feedback on concerns with construction of the planned generation facility in the
7 area;

8 9) Address concerns of the nearby communities and residents to the
9 greatest extent possible associated with the "optimal site"; and

10 10) If the concerns of the nearby communities and residents cannot be
11 addressed at the "optimal site", go back to step (6) to determine if another site is
12 reasonable and repeat the steps after step (6), unless there are reasons why going
13 back to step (6) is not reasonable.

14 Q. Is this the only reasonable process for determining a site to locate a power
15 plant?

16 A. No. Steps (3) through (10) may be skipped if an existing generation
17 facility site has available space for the needed additional unit or units and new or
18 upgraded transmission facilities are not prohibitively expensive to serve the areas
19 identified in step (2). Also, the steps noted above can be significantly altered if a
20 community has an interest in attracting a generation facility and proposes conditions that
21 ameliorate limitations that may have earlier prevented a community from being
22 considered for siting of the generation facility. If any of the steps identified above
23 eliminate all potential areas from further consideration, it will be necessary to broaden the

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1 site selection criteria in order to identify possible areas for further consideration even
2 though the areas may be less than "optimal". Timeliness of the resolution of this process
3 must also be considered. Recognizing that there may be no site free of local opposition,
4 the utility attempting to site generation to reliably and cost-effectively serve its customers
5 cannot continuously cycle from step (10) back to step (6). At some point the utility will
6 have to actually move ahead with construction of the generation facility if it is committed
7 to meeting its capacity needs by construction of generation.

8 Q. How might this process be different for other types of generation
9 facilities?

10 A. While some of the steps might not change for a different type of
11 generation facility, others would. For example, a coal-fired power plant is typically much
12 larger than a natural gas-fired power plant and requires access to large quantities of coal
13 so a much larger land area, with much larger buffer zones and access to an on-site mine
14 or to rail transportation becomes very important.

15

16

Aquila's Process

17 Q. How did Aquila's process for choosing South Harper for a natural gas-
18 fired simple-cycle generation plant compare to the process you have described?

19 A. Many aspects of Aquila's process for determining the site for the
20 generation units at South Harper compare favorably to the process I have described.
21 However, some of the steps taken by Aquila are different than the process I have
22 described. Aquila's process initially yielded a site I will refer to as the "Camp Branch"
23 site near Harrisonville. In response to local opposition at the Camp Branch site, Aquila