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MISSOURI PUBLIC SERVICE COMMISSION

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SURREBUTTAL TESTIMONY

OF

CHRISTOPHER J. WOOD

ON

BEHALF OF

AMEREN TRANSMISSION COMPANY OF ILLINOIS

**Kansas City, Missouri
November, 2015**

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1 **Q. Please state your name and business address.**

2 A. My name is Christopher J. Wood. My business address is P.O. Box 419173,
3 Kansas City, Missouri 64141, and my office headquarters is located at 9400 Ward Parkway in
4 Kansas City, Missouri, 64114.

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

6 A. I am employed by Burns & McDonnell Engineering Company, Inc. (“Burns &
7 McDonnell”) in the Environmental Studies and Permitting Global Practice as a Project Manager
8 and Department Manager.

9 **Q. Are you the same Christopher J. Wood who filed direct testimony in this**
10 **case?**

11 A. Yes, I am.

12 **Q. What is the purpose of your surrebuttal testimony?**

13 A. The purpose of my surrebuttal testimony is to respond to the rebuttal testimony of
14 Jason Haxton regarding the outreach efforts of Ameren Transmission Company of Illinois
15 (ATXI) to the Amish and Mennonite communities during the routing process and the selection of
16 the proposed route in relation to these communities. In addition, I am responding to concerns
17 raised by witnesses at the various local public hearings held on October 19, 26, and 27, 2015,
18 who raised concerns about the routing of the proposed Mark Twain Transmission Project,
19 including the routing of the transmission line across some properties in a diagonal manner, and

1 consideration of the Missouri Department of Conservation’s comments regarding the proposed
2 routes.

3 **Q. In his rebuttal testimony on page 4, Mr. Haxton states that a representative**
4 **of ATXI was “surprised and completely unaware of any Amish or Mennonite populations”**
5 **that would be impacted by the two remaining potential routes for the transmission line. At**
6 **the time that ATXI had narrowed down the potential routes to two, had ATXI taken any**
7 **efforts to determine the identity of the property owners impacted by the routes?**

8 A. I was not present at the meeting Mr. Haxton references; therefore, I cannot
9 comment on his assertion that the representative was “surprised and completely unaware of any
10 Amish or Mennonite populations.” However, I am aware that a number of activities were
11 conducted throughout the routing of the Project that provided information on the identity of
12 property owners within the study area and along the alternative routes.

13 When ATXI had developed the preliminary route network (discussed in my direct
14 testimony at pages 7-10), it identified, through county records, all landowners within 2,500 feet
15 of any alternative route and invited them to public open houses where they could learn about the
16 Project and provide input. When the preliminary route network was narrowed to the reduced
17 route network, all landowners who were mailed letters during the first round of public open
18 houses were again mailed letters informing them of the reduced route network and inviting them
19 to a second round of public open houses in October 2014, which is described in more detail in
20 my direct testimony on pages 14 and 15.

21 The county parcel records we relied upon to identify landowners understandably do not
22 contain information about the religious affiliation of any landowner, so it is not surprising that
23 ATXI personnel at that time may not have had a complete understanding of the location of any

1 particular Amish or Mennonite property unless the landowner expressly informed them of that
2 fact. As I testified in my direct testimony, the routing process involved field verification of the
3 preliminary route network along publicly-accessible roads in which those who worked with me
4 drove the potential routes to physically observe the lands and adjacent resources that they would
5 traverse.

6 **Q. Mr. Haxton states that the presence of Amish and Mennonite communities**
7 **should have been obvious. Please respond.**

8 A. Although Mr. Haxton suggests that a physical drive of the routes would easily
9 disclose the presence of these communities, this was not always the case. My team was able to
10 determine particular Amish and Mennonite properties in some instances, but they were not
11 readily obvious in every instance. As a result of the field work, however, those involved in the
12 routing process were aware of the presence of Amish and Mennonite residents along the
13 proposed routes.

14 **Q. Was ATXI able to identify with more particularity the location of Amish or**
15 **Mennonite properties impacted by the preliminary routes?**

16 A. Yes. The public open houses served their purpose in this regard. At the first
17 round of public open houses, members of the Amish community attending the Kirksville open
18 house identified the locations of two Amish schools. As Mr. Haxton suggests in his rebuttal
19 testimony, members of the Amish community also attended the second round of open houses in
20 October 2014 and identified other properties owned by the Amish. It was at the October 30, 2014
21 open house in Kirksville that Mr. Haxton and Bishop David Schwartz provided information to
22 ATXI. A conservative estimate of the general boundaries of the Amish communities is identified
23 in the diagram attached as **Schedule CJW-SR1**. Although Mr. Haxton refers to the Project as

1 running “over” a Mennonite church and school area and “over” Amish homes and an Amish
2 school, the closest a route alternative was located in relation to the two schools that were
3 identified was 1.85 miles, as shown in **Schedule CJW-SR2**.

4 **Q. Following this second round of public open houses, did ATXI take any other**
5 **steps to identify the impact of the proposed routes on Amish and Mennonite communities?**

6 A. ATXI engaged in specific outreach efforts to members of the Amish and
7 Mennonite communities, as described in my response to Staff’s Data Request No. 16, a copy of
8 which is attached as **Schedule CJW-SR3**. In addition, we were provided with surnames
9 common to Amish and Mennonite families; with those surnames, my team prepared maps in
10 November 2014 of the reduced route network in relation to properties owned by persons with
11 those surnames. I have attached those maps as **Schedule CJW-SR4** and **Schedule CJW-SR5**.
12 This provided ATXI with additional information on the Amish and Mennonite community within
13 the project area for consideration during the route selection process.

14 **Q. How was the information ATXI had regarding Amish and Mennonite**
15 **communities considered when determining the final route?**

16 A. While it was not the only consideration, one of the results of selecting Route 4 for
17 the Zachary to State Line portion of the Project¹ was the fact that it impacted far fewer of the
18 potential Amish and Mennonite properties that ATXI had identified. Route 4 (the westernmost
19 route on **Schedule CJW-SR4**, identified on the maps entitled “Reduced Routes-Zachary to State
20 Line”), crossed only one property and ran along the boundary of one other property that we had
21 identified as a potential Amish or Mennonite property. In contrast, the other reduced route for the

¹ My direct testimony mistakenly refers to “Route 1” instead of “Route 4” in the question beginning on line 3 of page 27; however, the answer to the question and surrounding testimony clearly indicate that Route 4 was the final route selected by ATXI for the Zachary to State Line portion of the route.

1 Zachary to State Line section of the Project crossed four properties and ran along the boundary
2 of one other property identified as potential Amish or Mennonite properties. In addition, the
3 route that was not selected as the final route was near several other properties identified as
4 potential Amish or Mennonite-owned properties and crossed a much broader area of an
5 estimated Amish community boundary. It was also much closer to the schools that had been
6 pointed out to us.

7 For the Maywood to Zachary portion of the Project, Route 1 was selected as the final
8 route (the southernmost route on **Schedule CJW-SR5**, identified on the maps entitled “Reduced
9 Routes-Maywood to Zachary”); Route 1 crossed two potential Amish- or Mennonite-owned
10 properties and did not run along the boundary of any properties identified as potential Amish or
11 Mennonite-owned properties. The route that was not selected crossed 11 properties and ran along
12 the boundary of 6 other properties identified as potential Amish- or Mennonite-owned properties.

13 Additionally, contrary to Mr. Haxton’s testimony that ATXI’s final route runs “down the
14 middle of the Amish community,” Cory Anderson, a geography professor who tracks the
15 presence of Amish communities in Missouri and who testified at the Commission’s local public
16 hearing held in Kirksville, is more accurate by concluding that the final route passes near or
17 along, not through, Amish communities.

18 Based upon our current understanding, the proposed route crosses three potential Amish
19 or Mennonite-owned properties and is adjacent to only one potential Amish or Mennonite-owned
20 property, while the route that was not selected crosses 15 potential Amish or Mennonite-owned
21 properties and is adjacent to 7 potential Amish or Mennonite-owned properties. In summary, the
22 proposed route would likely have minimal impacts to potential existing Amish or Mennonite
23 properties, and far less impact than other alternatives.

1 **Q. Witnesses at the local public hearings suggested that the proposed**
2 **transmission line would interfere with pivot irrigation. To your knowledge, does the**
3 **proposed route interfere with any known pivot irrigation systems?**

4 A. No. During the routing process, we sought to determine the existence and location
5 of pivot irrigation systems in the proposed paths. When the final two preliminary routes were
6 being selected, they were specifically routed to avoid known pivot irrigation systems. **Schedule**
7 **CJW-SR5** identifies known pivot irrigation systems in pink that were located on the Maywood
8 to Zachary portion of the Project and demonstrates that the route was designed so as to avoid
9 known pivot irrigation systems. There were no known pivot irrigation systems on the Zachary to
10 State Line portion of the Project.

11 **Q. Several witnesses at the Commission’s local public hearings complained that**
12 **the proposed transmission line diagonally cuts through their properties. Why does the final**
13 **route include segments that cut diagonally across tracts of land rather than running on the**
14 **boundary of those tracts of land?**

15 A. Because the end points of the proposed line are the Maywood substation near
16 Palmyra, Missouri, and the Iowa State line near Lancaster, Missouri, the route generally has to
17 follow a northwesterly (diagonal) direction as it traverses toward Iowa from Palmyra. During the
18 development of route alternatives, attempts were made to follow property lines, field lines, fence
19 lines, and other linear features, as appropriate, but parcels are often irregularly shaped and often
20 use drainages and other irregular features. As a result, property lines don’t necessarily line up
21 from one parcel to the next. In addition, property lines take on all different shapes, sizes, and
22 orientations, making it difficult to completely follow property lines without extra angles and
23 additional length, which typically result in greater overall project impacts. Also, one landowner

1 may desire an easement in a location not conducive to following the property line on adjacent
2 landowners or an obstruction on one property precludes following property lines on adjacent
3 parcels.

4 Overall length is an indicator of potential impacts; a longer route generally has more
5 impacts, whereas a shorter route has fewer impacts. To accommodate property boundaries for
6 that entire distance would require a transmission line route that would likely be longer than 95
7 miles, which would increase its costs. Completely following property boundaries would also
8 increase the base cost because of the additional structures necessary to support the line as it
9 follows property boundaries. This is the case because heavy angles (necessary for following
10 boundary lines) generally require more detailed design and require larger structures and
11 foundations. ATXI witness James Jontry discusses these issues in his surrebuttal testimony.

12 Following property boundaries would, in some instances, place the transmission line
13 nearer to homes, as they are often located near the boundary of rural tracts. Finally, it is my
14 understanding that when ATXI engages in negotiations with individual property owners, it will
15 work with them to make minor adjustments to the line location when it is possible to place the
16 lines in a manner that minimizes impacts on farming operations or other land uses under and
17 adjacent to the line.

18 **Q. Related to the routing of transmission along boundary lines, some witnesses**
19 **at the local public hearings asked why ATXI couldn't use existing transmission line right-**
20 **of-way placement for the line. Are their reasons that an existing transmission line right-of-**
21 **way could not be used?**

22 A. Although I am aware that there can be reasons—for example, the existing
23 transmission line right-of-way is not large enough to accommodate a 345-kV line—that an

1 existing transmission line right-of-way cannot be used, ATXI witness Jeffrey Hackman is
2 providing surrebuttal testimony as to why ATXI generally did not use existing transmission line
3 right-of-way for the Mark Twain Transmission Project.

4 **Q. Some witnesses have suggested that ATXI should have placed the Mark**
5 **Twain transmission line parallel to existing transmission lines. Was placing an extended**
6 **portion of the Mark Twain transmission line parallel to existing transmission lines a viable**
7 **option during the planning process?**

8 A. It is my understanding that it was not. As Mr. Hackman explains in his testimony,
9 placing a new transmission line parallel to an existing transmission line over 100-kV for an
10 extended distance presents reliability concerns, particularly where part of the benefit of the new
11 line is to address reliability concerns and where the line that one might consider paralleling is
12 also needed for reliability, which as I understand Mr. Hackman's testimony is the case here.
13 Consequently, the routing team preliminarily examined whether placement of portions of the
14 Mark Twain transmission line was appropriate along existing 69-kV lines which are part of the
15 area's distribution system. **Schedule CJW-SR6**, for example, shows existing 69-kV lines
16 (depicted in purple) for the Maywood to Zachary portion of the line in relation to possible
17 preliminary routes under consideration (shown in yellow). Most of the existing 69-kV lines did
18 not traverse a direction that would connect the substation endpoints. There was a section of
19 existing 69-kV line located just south of the towns of Brashear and Hurdland that generally
20 traveled the direction we needed to go, but there were various homes and structures near that
21 line; in addition, following the existing line would have placed the Mark Twain transmission line
22 near these two towns and near an airport location. Another existing 69-kV line is located north of
23 Newark between Lewistown and the Novelty Substation. This existing line is located near

1 several homes and structures, is near an airport, crosses the Troublesome Creek watershed
2 easement, and terminates at the location of several other existing transmission lines (Novelty
3 Substation). Consequently, it was determined that there was no suitable 69-kV line that could be
4 paralleled in the Maywood to Zachary portion of the route.

5 The routing team also evaluated existing 69-kV lines in the Zachary to State Line portion
6 of the route. **Schedule CJW-SR7** shows the existing 69-kV line (in purple) and potential
7 preliminary routes (in yellow) in this section of the Mark Twain Project area. This particular
8 route was not suitable because it crossed the Big Creek Conservation Area and Thousand Hills
9 State Park, had residences fairly close to both sides of the route—particularly at the south end,
10 and crossed some difficult topography. Therefore, we determined that paralleling the 69-kV
11 route here was simply not suitable.

12 I should note that the very northern portion of the final route (approximately 2.7 miles)
13 parallels an existing 161-kV line. As I said earlier, ATXI advised that parallel placement of lines
14 greater than 100-kV should generally be avoided and only considered on a case-by-case basis.
15 Here, the parallel placement was necessary as the Mark Twain transmission line had to connect
16 with the transmission line in Iowa at about the same location on the state line. Because of the
17 fairly short distance of the parallel placement, this placement was acceptable to ATXI.

18 **Q. Margaret Wilson testified at a local public hearing that the proposed route**
19 **will destroy over 50,000 acres of farmland in northeast Missouri; other witnesses testified**
20 **similarly. Do the easements that are required for the Mark Twain Project total 50,000**
21 **acres?**

1 A. No. The Project requires a 150-foot wide right-of-way. For the entire line, which
2 is about 95 miles long, a total of approximately 1,727 acres will be needed. I have no idea how
3 Ms. Wilson calculated the 50,000 acres.

4 **Q. Teri Page, a witness at the Commission’s local public hearing in Kirksville,**
5 **testified that she home schooled her children. Did ATXI take any measures to identify non-**
6 **traditional education centers, such as home schools, during the routing process?**

7 A. This would be information that we would only know from public comments or
8 input at the open houses that ATXI held. I am not aware of another way to determine whether a
9 particular home site is being used to home school children.

10 **Q. Assuming that Ms. Page educates her children at her home, were you able to**
11 **determine how far the proposed Mark Twain transmission line is from her home?**

12 A. Attached as **Schedule CJW-SR8** is an aerial map showing the property owned by
13 Ms. Page and Mr. Brian Thomas. The proximity of the closest structure that I can identify on
14 their property to the proposed transmission line is approximately 1,660 feet. As the map
15 demonstrates, the transmission line does not actually cross their property, but is on an adjacent
16 property.

17 **Q. Assuming that structure is used as a school, would you consider the location**
18 **of the proposed transmission line in proximity to the structure an acceptable distance when**
19 **routing a transmission line?**

20 A. Yes. It is located outside the right-of-way, and the transmission line will be
21 designed to meet or exceed the National Electrical Safety code. In addition, ATXI witness Bill
22 Bailey is testifying that the presence of the transmission line would not be detected by
23 measurements of EMF at a distance of 1,660 feet.

1 **Q. Witnesses at the local public hearings questioned why ATXI did not select**
2 **the route recommended by the Missouri Department of Conservation. Are you familiar**
3 **with the Department’s letters?**

4 A. Yes. ATXI received two letters from the Department, one dated October 16, 2014,
5 and a follow-up letter dated November 21, 2014 (both are attached as **Schedule CJW-SR9**).
6 Neither of these letters recommended a particular route for this project. The October 16, 2014
7 letter stated a modified segment of the northern route from Maywood to Zachary (identified as
8 Segment A2) that avoided bisecting the Bringer Conservation Easement would be the least
9 environmentally damaging route segment. The November 21, 2014 letter stated that the northern
10 route between Maywood and Zachary (containing the Bringer easement) appeared to create “the
11 fewest impacts” to forest, fish and wildlife resources, but segments of the other routes (including
12 the proposed route which crosses the Bevill easement) could be modified to mitigate impacts to
13 forest, fish and wildlife resources.

14 **Q. Did ATXI consider the comments of the Department of Conservation in its**
15 **final route selection?**

16 A. Yes. ATXI considered the Department of Conservation’s comments in its final
17 route selection, including impacts to forest, fish, and wildlife resources and conservation
18 easements as part of the route comparison and selection process. Forested lands, federal, state,
19 and local conservation easements, protected species, wetlands, and streams were considered as
20 part of the route selection process, as well as several other engineering and social criteria. In
21 particular, the selected route (Route 1) crossed only 0.8 acre of a privately owned, State-operated
22 Stream Stewardship Agreement Easement, while Route 2 crossed 3.95 acres of a privately
23 owned, State-operated Stream Stewardship Agreement Easement.

1 The final route selected provided a route between the project connection points that
2 avoided or minimized adverse impacts on natural and social resources and provided a cost-
3 effective and technically-feasible alignment.

4 **Q. Does this conclude your surrebuttal testimony?**

5 A. Yes, it does.

