

**ILLINOIS COMMERCE COMMISSION**

**DOCKET NO. 12-0598**

**SURREBUTTAL TESTIMONY ON REHEARING**

**OF**

**JEFFREY V. HACKMAN, P.E.**

**Submitted On Behalf**

**Of**

**AMEREN TRANSMISSION COMPANY OF ILLINOIS**

**December 10, 2013**

**TABLE OF CONTENTS**

	<b>Page No.</b>
<b>I. INTRODUCTION.....</b>	<b>1</b>
<b>II. PURPOSE AND SCOPE.....</b>	<b>1</b>
<b>III. RESPONSE TO STAFF WITNESS MR. ROCKROHR.....</b>	<b>2</b>
<b>A. Kincaid Connection .....</b>	<b>2</b>
<b>B. Proposed Substation Sites .....</b>	<b>6</b>
<b>C. Meredosia to Pawnee Route.....</b>	<b>7</b>
<b>IV. RESPONSE TO MR. RAMEY AND MS. RAYNOLDS AND MR. SPRAGUE .....</b>	<b>9</b>
<b>V. RESPONSE TO PDM, CHANNON TRUST, AND MT. ZION JOINT WITNESSES .....</b>	<b>11</b>
<b>VI. CONCLUSION .....</b>	<b>12</b>

1 **ILLINOIS COMMERCE COMMISSION**

2 **DOCKET NO. 12-0598**

3 **SURREBUTTAL TESTIMONY ON REHEARING OF**

4 **JEFFREY V. HACKMAN, P.E.**

5 **Submitted On Behalf Of**

6 **Ameren Transmission Company Of Illinois**

7 **I. INTRODUCTION**

8 **Q. Please state your name, business address and present position.**

9 **A.** My name is Jeffrey V. Hackman. My current position is Senior Director of Transmission  
10 Operations and Project Management for Ameren Services Company (Ameren Services), located  
11 at 1901 Chouteau Avenue, St. Louis, Missouri 63103.

12 **Q. Are you the same Jeffrey V. Hackman who previously sponsored testimony in this**  
13 **proceeding?**

14 **A.** Yes, I am.

15 **II. PURPOSE AND SCOPE**

16 **Q. What is the purpose of your surrebuttal testimony on rehearing?**

17 **A.** The purpose of my surrebuttal testimony is to provide additional evidence demonstrating  
18 why: (1) the Illinois Commerce Commission (Commission) should approve in this proceeding a  
19 Transmission Line route between Pawnee and Mt. Zion that connects through Pana; (2) the  
20 Commission should approve installation of the Project's Ipava substation equipment at the  
21 location Ameren Transmission Company of Illinois (ATXI) proposes; and (3) the Commission

22 should approve the route between Meredosia and Pawnee that it approved in its August 2013  
23 Order. In this regard, I respond to the rebuttal testimony on rehearing of Commission Staff  
24 (Staff) witness Mr. Greg Rockrohr (ICC Ex. 3.0). I also address certain concerns raised in the  
25 rebuttal testimonies of Intervenor witnesses Mr. Justin Ramey and Ms. Ann Raynolds  
26 (Raynolds/Ramey Ex. 1.0); Mr. Eric Sprague (Sprague Ex. 1.0); and the Coalition of Property  
27 Owners and Interested Parties in Piatt, Douglas and Moultrie Counties (PDM), the Channon  
28 Trust, and the Village of Mt. Zion (MZ) joint witnesses Ms. Mary Burns (PDM – MZ Ex. 7.0)  
29 and Ms. Julie Miller (PDM–MZ Ex. 4.0).

30 **III. RESPONSE TO STAFF WITNESS MR. ROCKROHR**

31 **A. Kincaid Connection**

32 **Q. Regarding the timing of reliability improvement to the Decatur area, do you expect**  
33 **design and construction of the 138 kV connections to the Project's Mt. Zion substation to**  
34 **delay the planned reliability improvement beyond the expected 2016 in-service date of a**  
35 **Pawnee-Pana-Mt. Zion connection?**

36 **A.** No. I recognize Mr. Rockrohr's concern, but, based on my professional experience, I do  
37 not agree with it. Any such connections should be in service by 2016. ATXI already has  
38 identified potential corridors of integration, and Ameren Services personnel under my  
39 supervision already have engaged in planning for, and the preliminary design of, connections to  
40 the ATXI Mt. Zion substation. Counsel advises that ATXI may be required to get a certificate  
41 from the Commission for the 138 kV connections. But the starting and ending points of the  
42 connections will be known, and the route lengths will be short (approximately 1 mile for the  
43 ATXI substation and only 4 -7 miles for Staff substation site Option 2). I note that uncertainty

44 regarding the substation site locations ultimately approved by the Commission - - four different  
45 Mt. Zion substation site proposals being a good example - - is a reason why ATXI is seeking  
46 approval of the Transmission Line and substations, but not the connections, in this proceeding.  
47 But once the final substation sites are determined, based on my professional experience,  
48 identifying, designing, and constructing the 138 kV connections, including obtaining certificates  
49 from the Commission for them where necessary, will be a straightforward process. Thus, the  
50 construction of 138 kV connections should not delay the benefits of the Project or its connection  
51 to the bulk electric system.

52 **Q. Regarding the relative cost impacts of the Kincaid vs. Pana connections, Mr.**  
53 **Rockrohr questions whether Ameren Illinois Company would need to relocate its Pana**  
54 **substation facilities due to mine subsidence. Can you address that?**

55 **A.** Yes. Ameren Illinois Company (AIC) will need to relocate its substation facilities at  
56 Pana. As Senior Director of Transmission Operations and Project Management for Ameren  
57 Services, I lead the department that, among other things, maintains, and is the “asset manager”  
58 for, Ameren’s transmission systems, including its substations and the AIC Pana site. Significant  
59 mine subsidence is occurring in a subsidence basin 1000' northwest of the Pana substation, and at  
60 another location 2000' east. Therefore, as I explained in my rehearing direct testimony, AIC  
61 needs to relocate its facilities at Pana before mine subsidence jeopardizes their reliability or the  
62 substation sinks into the ground.

63 To elaborate, as a part of the design and engineering of the Project, Ameren Services civil  
64 engineers, working on behalf of ATXI, became aware of the potential mine subsidence activity  
65 in the area of the existing AIC Pana substation. Subsequent evaluation with mining experts from

66 the Illinois Department of Natural Resources (IDNR) determined that mine subsidence has been  
67 occurring in the area. As the result of Ameren Services' discussions with the IDNR, Ameren  
68 Services determined that (1) the new site for the ATXI facilities should be located outside the  
69 mine area, and (2) the current AIC facilities would require relocation.

70 While mine subsidence at AIC's Pana substation site is not yet occurring, due to its  
71 location and the proximity of subsidence northwest and east of the substation, there is a high  
72 probability that significant subsidence will occur. Such subsidence would produce soil  
73 displacement that would displace foundations of electric equipment, leading to failure. Mine  
74 subsidence could also occur suddenly and without warning, leading to dramatic consequences  
75 such as the substation sinking into the ground. Either of these equipment failure scenarios would  
76 lead to customer outages of undetermined magnitude and duration. Options to stabilize the AIC  
77 substation were considered by Ameren Services personnel on behalf of AIC. Based on the  
78 uncertainty of the costs and the inability to forecast the effectiveness of any stabilization plans,  
79 the decision was made to relocate the existing AIC Pana substation to an area that has not been  
80 mined. The new ATXI facilities for the Project would also be located at the new location.

81 **Q. Will the relocation occur even without an Illinois Rivers Project connection at**  
82 **Pana?**

83 **A.** Yes. The relocation of the Pana substation will occur with or without a Project  
84 connection at Pana. If the Commission approves a Pawnee to Mt. Zion route through Pana, the  
85 cost of that relocation will be included in the Project cost, and Ameren Illinois area customers  
86 will pay only about 9% of the estimated \$32.9 million cost. If, however, the Commission  
87 approves a Kincaid connection, the entire \$32.9 million cost of the Pana substation relocation

88 will be borne by Ameren Illinois area customers. While this cost differential is not the only  
89 reason that the Project route should go through Pana, it is certainly a significant determinant and,  
90 on a stand alone basis, as ATXI witness Ms. Maureen Borkowski testifies, is sufficient to justify  
91 the Pawnee-Pana-Mt. Zion route as least cost when compared to the Kincaid connection.

92 **Q. Mr. Rockrohr states he does not understand why, when he asked ATXI in discovery**  
93 **about AIC's Pana facilities, ATXI responded that it had no knowledge of AIC's assets or**  
94 **problems AIC has experienced at Pana due to mine subsidence, but now is concerned about**  
95 **relocation of AIC's equipment and is positive it will be required. Can you address his**  
96 **concern?**

97 **A.** ATXI did not intend to cause confusion with its response. I also believe Mr. Rockrohr  
98 may have overlooked ATXI's response to Staff Data Request ENG 4.07. That data request  
99 asked, in follow-up to the discovery cited by Mr. Rockrohr in his rehearing rebuttal testimony,  
100 "whether ATXI has made AIC aware of the potential for mine subsidence at Pawnee and Pana  
101 Substations," and, if so, "whether ATXI and AIC have considered an option of relocating the  
102 functions of AIC's existing substations at Pawnee and Pana to a location adjacent to or within the  
103 new substations that ATXI proposes." In response, ATXI explained that "Ameren Services  
104 personnel, on behalf of ATXI, have made AIC aware of the mine subsidence. ATXI and AIC  
105 have considered, and are still considering, an option of relocating some, or all, of the functions of  
106 the AIC existing substations at those locations." However, I can see how ATXI's response to  
107 Staff Data Request ENG 2.14 was confusing, and have issued an updated response (dated  
108 December 10, 2013).

109 **B. Proposed Substation Sites**

110 **Q. Does Mr. Rockrohr agree with your testimony that ATXI needs additional space at**  
111 **Ipava, Kansas, Sidney, and Rising to install the Project's substation equipment?**

112 **A.** For the most part. He does not object to ATXI's plans to expand AIC's existing  
113 substations at Kansas, Sidney, and Rising to accommodate the Project equipment at those  
114 locations. Regarding Ipava, he agrees that the physical area required for a 6-position 345 kV  
115 breaker-and-a-half ring bus likely would exceed the available buildable area at the existing AIC  
116 Ipava substation. However, he finds it "wholly unnecessary for ATXI to design for a 6-position  
117 breaker-and-a-half bus configuration at Ipava." Instead, he believes, ATXI could position a 4-  
118 position ring bus in the available buildable space in and adjacent to AIC's Ipava Substation.

119 **Q. Is physical space available at AIC's existing Ipava substation site to accommodate a**  
120 **4-position single ring bus, as Mr. Rockrohr suggests?**

121 **A.** It appears so, but only if there are no environmental set back restrictions (*e.g.*, 25' from  
122 bank), and drainage studies and designs verify that the space is sufficient to accommodate a 4-  
123 position single ring bus. The substation property has dimensions that would accommodate the  
124 314' x 488' ring bus development. However, the 345 kV section of the yard is approximately  
125 490', east to west. And there is only 325' between the vegetated areas north and south of the  
126 existing facilities, which define the secondary watercourse. These dimensions are scaled from  
127 drawings, and they do not reflect any environmental setback restrictions that might be present.  
128 However, regardless of whether the existing space may or may not accommodate a 4-position  
129 single ring bus, Mr. Kramer states in his testimony that a 4-position ring bus will not be  
130 sufficient for the future. He anticipates that the ultimate configuration will require six positions

131 and a breaker-and-a-half configuration. As Mr. Rockrohr agrees, this configuration will require  
132 more space than available at the existing Ipava substation.

133 **C. Meredosia to Pawnee Route**

134 **Q. Mr. Rockrohr continues to support the Morgan and Sangamon Counties Land**  
135 **Owners and Tenant Farmers Alternate Route that the Morgan, Sangamon, and Scott**  
136 **Counties Land Preservation Group proposes on rehearing, and he says that ATXI's**  
137 **opposition to that route because it parallels, for its entire length, an existing 138 kV**  
138 **transmission line appears to be inconsistent with ATXI's support for parallel transmission**  
139 **lines on other segments of the Project. Why is ATXI's opposition here not inconsistent**  
140 **with its position regarding parallel transmission lines?**

141 **A.** Mr. Rockrohr agrees that the routing factors that I discussed in my testimony should be  
142 balanced prior to finalizing transmission line routing. Again, ATXI must consider electrical and  
143 engineering factors, such as potential reliability, operations, and maintenance issues, in addition  
144 to societal, environmental, and land use issues when it evaluates transmission line routes. As I  
145 explained in my rebuttal testimony and rehearing rebuttal testimony, absent sufficient separation  
146 between the lines, paralleling the Project's Transmission Line with the entire length of an  
147 existing 138 kV line (for 55 miles) between Meredosia and Pawnee poses a threat to the  
148 reliability of both lines that can be avoided by re-approval of the route that the Commission  
149 approved in its August 2013 Order. No other route segment for the Project has near the amount  
150 of paralleling that the Morgan Sangamon Scott Counties Land Preservation Group (MSSCLPG)  
151 proposes between Meredosia and Pawnee. By comparison, ATXI witness Ms. Doni Murphy  
152 testified that approximately 19% of the Project was subject to paralleling, or nearly 80 miles.

153 (Tr. 930). The MSSCLPG recommendation, however, would increase the amount of paralleling  
154 by 70%.

155 I recognize, as Mr. Rockrohr notes, that more parties would accept the MSSCLPG route,  
156 and that factor certainly weighs in favor of that route. However, the capability of the existing  
157 138 kV circuits in any given area is quite different. And while the North American Electric  
158 Reliability Corporation (NERC) Standard planning study criteria that Mr. Rockrohr and Mr.  
159 Kramer discuss treat parallel lines (not on common structures) the same, in operational practice,  
160 common mode failures occur, and when they occur in areas where the system is less robust, more  
161 customers are outaged or at risk. For this reason, I continue to support a non-parallel route from  
162 Meredosia to Pawnee. But this is not inconsistent with ATXI's position on parallel routes for  
163 other portions of the Project. Kansas, for example, has other 345 kV sources and good 138 kV  
164 circuits connecting it to other relatively strong sources. Thus, the same reliability concern is not  
165 present for the portion of the Mt. Zion to Kansas stipulated route (15 of 70 miles) that parallels  
166 going into the Kansas substation.

167 **Q. Mr. Rockrohr states that the MSSCLPG supported route would comply with NERC**  
168 **Reliability Rules. Do you agree?**

169 **A.** Yes, the MSSCLPG route meets the planning criteria found in the NERC Reliability  
170 Rules. My concern for adjoining parallel routes, however, relates to the likelihood of common  
171 mode failures and the consequence when both are out. Any two circuits can be out at the same  
172 time as a matter of general probability. But when they are close to each other and a tornado  
173 touches down at that spot, or a tree is blown through the area, or pieces of a metal roof or grain  
174 bin fly, the odds of those two neighboring circuits having an outage are greatly increased. While

175 normal planning criteria do not address these events, it is good practice to mitigate them when  
176 possible. This is true when considering adjacent circuits, and for Pawnee and Pana where a  
177 known risk exists for the entire substations.

178 **IV. RESPONSE TO MR. RAMEY, MS. RAYNOLDS AND MR. SPRAGUE**

179 **Q. Mr. Ramey and Ms. Raynolds propose a modification to ATXI's Alternate Route 2**  
180 **between Pawnee and Pana. Mr. Sprague proposes three alternative modifications to**  
181 **ATXI's Primary (Stipulated) Route between Pana and Mt. Zion. Do you have any**  
182 **comments regarding their proposed route modifications?**

183 **A.** Yes. It seems to me that at the heart of these landowners' proposals is their desire to  
184 move the Project's structures away from their homes and property, which is not unlike the  
185 concern of many landowners, and we understand their perspective. (For instance, Mr. Ramey  
186 and Ms. Raynolds request that the transmission line not pass within 400 feet of the property line  
187 for their residence.) In response to their concerns, I reiterate what ATXI has explained  
188 throughout the course of this proceeding—that, when it negotiates the property rights it needs for  
189 the Transmission Line, ATXI will coordinate with each landowner on the placement of the poles,  
190 and it will adjust pole placement to address specific landowner concerns where it is feasible and  
191 appropriate to do so.

192 I also note that Mr. Sprague's proposed modification "alternative 1" parallels an existing  
193 AIC 138 kV transmission line that runs within 200' feet of several structures, as Sprague Exhibit  
194 1.4 shows. The structure identified on that exhibit as Billy Adams's residence is approximately  
195 60' to the west of the centerline of the existing line. There is a red structure to the east of the  
196 structure identified on the exhibit as H. Adams's residence that is approximately 160' also to the

197 west of the existing line. Using Google Earth, that structure appears to be a barn. The white  
198 structure just above the number "300" on the exhibit is approximately 100' feet to the east of the  
199 existing line and, again using Google Earth, it appears to be a residence. ATXI witness Mr.  
200 Jerry Murbarger explained in his direct testimony (ATXI Ex. 7.0) that the new 345 kV  
201 Transmission Line requires a minimum 150' right-of-way to provide adequate National Electrical  
202 Safety Code (NESC) clearances from the conductor to a building on the edge of the right-of-way.  
203 Thus, if the new right-of-way is immediately adjacent to the 100' right-of-way for the existing  
204 138 kV line, there cannot be any structures within 200' feet of the centerline of the existing line.  
205 Therefore, unless a residence or other structure is displaced, which I understand the Commission  
206 would want to avoid if possible, Mr. Sprague's "alternate 1" proposal is not workable.

207 **Q. Mr. Ramey and Ms. Raynolds suggest that the 345 kV Transmission Line could run**  
208 **between the Pawnee and Mt. Zion substations without connecting to a substation in-**  
209 **between. Why is this suggestion problematic?**

210 **A.** Mr. Kramer addresses the system need and benefits of the connection at Pana. From an  
211 operational perspective, as I explained in my rehearing direct testimony, substations are  
212 necessary to, among other things, sectionalize the Transmission Line. Sectionalizing is  
213 important in operations and maintenance because it allows a utility to limit the length of a circuit  
214 that will be taken out of service, through automatic means during fault conditions, as well as  
215 through manual switching during maintenance or repair. Sectionalizing permits fault detection  
216 and isolation along the line, and promotes improved reliability.

217 **V. RESPONSE TO PDM, CHANNON TRUST AND MT. ZION JOINT WITNESSES**

218 **Q. When addressing the Mt. Zion to Kansas route, Ms. Mary Burns places significant**  
219 **emphasis on the baseline construction cost of the PDM hybrid route, which she testifies is**  
220 **approximately \$10 million less than ATXI's Stipulated Route. Do you agree?**

221 **A.** No. To begin with, Ms. Burns' analysis assumes that the Transmission Line terminates at  
222 either of the locations proposed by Staff in its October 2013 "Identification of Alternate Route"  
223 filing (substation site Options 1 and 2). The difference between route costs would be less if  
224 ATXI's proposed substation location were used. As to the calculations in Ms. Burns' rebuttal  
225 testimony, starting at line 85, she asserts that a high cost for the Channon Hybrid Route would be  
226 \$1,934,239/mile. However, in ATXI Exhibit 3.4 of the original case, the primary route high cost  
227 was \$2,541,675/mile. If we apply this value to her mileage for the Channon Hybrid Route of  
228 61.2 miles, the total cost comes to \$155,550,523, which is much greater than the Moultrie  
229 County Property Owners (MCPO) costs she calculates. Admittedly, and Ms. Burns notes, we are  
230 comparing a high cost for the Channon Hybrid Route and an average cost for MCPO. However,  
231 given the unknown conditions (soil, actual pole placement) that might affect the per-mile costs,  
232 any calculated difference in cost is inexact and may be indistinguishable.

233 **Q. Ms. Miller references a Village of Mt. Zion ordinance that she says would preclude**  
234 **ATXI from constructing utility structures greater than 50-feet in height within Mt. Zion's**  
235 **jurisdiction. Does that preclude construction of the Transmission Line in the vicinity of the**  
236 **Village?**

237 **A.** I am not an attorney, but, my experience is, no. The Commission's orders preempt  
238 municipal ordinances that would otherwise prohibit construction of utility facilities. Moreover,

239 Ms. Miller attaches the ordinance she references as an exhibit to her testimony. The ordinance  
240 itself plainly states in Section 150.44 that utility towers over 50 feet may be permitted. It also is  
241 worth noting that while the pole structures for the Project will be at least 80 feet high, and  
242 routinely will be 140-foot high, ATXI *can* use 50-foot high poles as long as they are placed close  
243 together. Where 120-foot towers might span a distance of 800 feet from each other, towers that  
244 are 50-foot high need to be about 200 to 300 feet apart. But I can't imagine that the Village  
245 would want that sort of construction.

246 **Q. Ms. Miller also testifies that Mt. Zion constructed a water main 100 feet from where**  
247 **ATXI proposes to construct the Mt. Zion substation. What bearing would construction of**  
248 **the substation have on the water main or vice versa?**

249 **A.** None. The construction, operation, and maintenance of the substation at ATXI's  
250 proposed location would have no bearing on the operation or maintenance of the water main  
251 because the Project facilities will be located away from the water main.

252 **VI. CONCLUSION**

253 **Q. Does this conclude your surrebuttal testimony on rehearing?**

254 **A.** Yes, it does.