

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

_____)	
AMEREN TRANSMISSION COMPANY OF ILLINOIS)	
)	
Petition for a Certificate of Public Convenience and)	
Necessity, pursuant to Section 8-406.1 of the)	
Illinois Public Utilities Act, and an Order pursuant)	Docket No. 12-0598
to Section 8-503 of the Public Utilities Act, to)	(Rehearing)
Construct, Operate and Maintain a New High)	
Voltage Electric Service Line and Related Facilities)	
in the Counties of Adams, Brown, Cass,)	
Champaign, Christian, Clark, Coles, Edgar, Fulton,)	
Macon, Montgomery, Morgan, Moultrie, Pike,)	
Sangamon, Schuyler, Scott and Shelby, Illinois)	
_____)	

Second Corrected Rebuttal Testimony on Rehearing and Exhibits of

James R. Dauphinais

On behalf of

Moultrie County Property Owners (“MCPO”)

December 16, 2013



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Rebuttal Testimony on Rehearing of James R. Dauphinais

1 I. Introduction

2 Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

3 A James R. Dauphinais. My business address is 16690 Swingley Ridge Road,
4 Suite 140, Chesterfield, MO 63017.

5 Q ON WHOSE BEHALF ARE YOU APPEARING FOR REHEARING IN THIS
6 PROCEEDING?

7 A I am testifying on rehearing on behalf of the Moultrie County Property Owners
8 ("MCPO").

9 **Q ARE YOU THE SAME JAMES R. DAUPHINAIS WHO FILED DIRECT TESTIMONY**
10 **AND REBUTTAL TESTIMONY IN THIS PROCEEDING ON BEHALF OF MCPO?**

11 A Yes. My educational background and experience was summarized in my direct
12 testimony (MCPO Exhibit 1.0 at pages 1 and 2).

13 **Q PLEASE BRIEFLY OUTLINE THE CURRENT STATUS IN THIS PROCEEDING OF**
14 **THE PANA TO MT. ZION TO KANSAS PORTION OF THE ILLINOIS RIVERS**
15 **PROJECT (“IRP”).**

16 A ATXI and MCPO have stipulated to the need for ATXI’s proposed Mt. Zion substation,
17 ATXI’s proposed Sulphur Spring Road location for ATXI’s proposed Mt. Zion
18 substation, ATXI’s proposed primary route from Pana substation to Mt. Zion
19 substation and MCPO’s proposed route from Mt. Zion substation to Kansas
20 substation. In my direct testimony, I referred to this combined route from Pana to Mt.
21 Zion to Kansas as “Route MCPO-P-MZK.” I referred to the Mt. Zion to Kansas portion
22 of the route as “Route Segment MCPO MZK.” MCPO still supports its stipulation with
23 ATXI.

24 The Commission’s August 20, 2013 Order in this proceeding found Mt. Zion
25 substation is needed and approved the Mt. Zion to Kansas portion of IRP route,
26 referred to as Route Segment MCPO MZK, from the Macon County line to Kansas
27 substation. The August 20, 2013 order did not approve ATXI’s proposed Sulphur
28 Spring Road site as the location for the Mt. Zion substation, a route for the proposed
29 transmission line from Pana substation to Mt. Zion substation or a route for the
30 proposed transmission line from Mt. Zion substation to where Route Segment MCPO
31 MZK crosses the Macon County line.

32 On October 2, 2013, I understand the Commission granted rehearing with
33 regard to the selection of a transmission line route from Pana (or, alternatively,
34 Kincaid) substation to Mt. Zion substation, the location of Mt. Zion substation and the
35 selection of a transmission line route from Mt. Zion substation to Kansas substation.

36 **Q WHAT IS THE SUBJECT MATTER OF YOUR REBUTTAL TESTIMONY?**

37 A ATXI, the Illinois Commerce Commission (“ICC” or “Commission”) Staff and various
38 intervenors have put forth direct testimony on rehearing with regard to the location of
39 Mt. Zion substation and transmission line route options between Mt. Zion substation
40 and Kansas substation. My testimony responds to this direct testimony on rehearing.
41 Specifically, my testimony herein addresses proposals made in direct testimony on
42 rehearing regarding (i) the location options for Mt. Zion substation and (ii) the
43 transmission line routing options between Mt. Zion substation and Kansas substation.

44 MCPO witness Mr. Rudolph “Rudi” Reinecke is also presenting rebuttal
45 testimony on rehearing on behalf of MCPO. The environmental and routing factor
46 data I analyze in my testimony herein were compiled by Mr. Reinecke from
47 information provided in discovery by ATXI and other sources available to Mr.
48 Reinecke.

49 Finally, my silence with regard to any other portion of the direct testimonies on
50 rehearing of ATXI, ICC Staff or other intervenors in this proceeding, should not be
51 taken as an endorsement of any position that ATXI, ICC Staff or other intervenors
52 have taken in this proceeding.

53 **Q PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

54 **A** I conclude the following:

- 55 • ATXI's proposed Sulphur Spring Road site is still the best proposed site
56 for Mt. Zion substation.
- 57 • ICC Staff's proposed Option #1 and Option #2 sites may be viable
58 alternatives to ATXI's proposed Sulphur Spring Road site for the proposed
59 Mt. Zion substation.
- 60 • From a reliability standpoint, ICC Staff's proposed Option #3 site is not
61 likely a viable alternative to ATXI's proposed Sulphur Spring Road site for
62 the proposed Mt. Zion substation.
- 63 • Regardless of whether the Mt. Zion substation is located at the ATXI
64 Sulphur Spring Road site, the ICC Staff Option #1 site or the ICC Staff
65 Option #2 site, MCPO's proposed route from Mt. Zion substation to
66 Kansas substation has significantly less adverse impact to the public than
67 either ATXI's Alternate Route or the Channon Family Trust's ("CFT")
68 proposed Route from Mt. Zion substation to Kansas substation.

69 I recommend the Commission select ATXI's proposed Sulphur Spring Road
70 site for Mt. Zion substation. In addition, regardless of the site for Mt. Zion substation
71 chosen by the Commission, I recommend the Commission select MCPO's proposed
72 route from Mt. Zion substation to Kansas substation.

73 **II. Location of Mt. Zion Substation**

74 **Q PLEASE IDENTIFY THE PROPOSED SITES FOR MT. ZION SUBSTATION THAT**
75 **HAVE BEEN PUT FORTH IN DIRECT TESTIMONY ON REHEARING.**

76 **A** Four sites have been proposed. These are as follows:

- 77 • ATXI's original proposed Sulphur Spring Road site;
- 78 • ICC Staff's Option #1 site located southeast of the intersection of E.
79 Andrews Street and Henry Road;
- 80 • ICC Staff's Option #2 site that was suggested as a site by the Village of
81 Mt. Zion and is located north of E. Andrews Street and west of Henry
82 Road; and

- 83 • ICC Staff's Option #3 site located in Macon County north of W. Hilvety
84 Road (CR 2100 N) and east of Rosedale Road.

85 The ICC Staff Option #1 and Option #2 sites are located just north of the
86 intersection of ICC Staff's proposed Kincaid substation to Mt. Zion substation
87 transmission line route and ATXI's proposed Primary transmission line route from
88 ATXI's proposed Mt. Zion substation site to Kansas substation. ICC Staff Option #3
89 site is located near the intersection of ICC Staff's proposed Kincaid substation to
90 Mt. Zion substation transmission line route and ATXI's proposed Primary transmission
91 line route from Pana substation to ATXI's proposed Mt. Zion substation site. MCPO
92 Exhibit 1.1 (RH) provides an overview map of the four substation sites, the Decatur
93 area and the portion of proposed transmission line routes in the vicinity of the
94 substation sites that are at issue in rehearing. It also shows the location of the
95 existing Mt. Zion PPG 138 kV substation. ATXI proposes to ultimately interconnect its
96 proposed Mt. Zion 345/138 kV substation to the existing Mt. Zion PPG 138 kV
97 substation with one or more new 138 kV transmission lines.

98 **Q WHAT IS THE PRIMARY ISSUE BEING ADDRESSED BY THE PROPOSED**
99 **MT. ZION SUBSTATION?**

100 **A** As I discussed in my direct testimony, the primary issue being addressed by Mt. Zion
101 substation is a post-contingency low voltage reliability issue in the Decatur area. My
102 own powerflow analysis of the issue in my direct testimony confirmed that the non-Mt.
103 Zion portions of the IRP cannot address the low voltage issue unless 345 kV and/or
104 138 kV reinforcements are added that are sufficient to adequately address the low
105 voltage problem (MCPO Exhibit 1.0 at pages 50 through 52). Furthermore, my
106 powerflow analysis confirmed the Mt. Zion portion of the IRP, with Mt. Zion substation

107 located at ATXI's proposed site for that substation, is sufficient to address the low
108 voltage issue (*Id.*).

109 I also explained in my direct testimony that post-contingency
110 (a/k/a post-event) voltage drops in the Decatur area are driven by reactive power
111 needs and reactive power cannot be practically transmitted very far from its source
112 (MCPO Exhibit 1.0 at page 55). In addition, I noted that one of the largest reactive
113 power needs is in the substations in northeastern Decatur and that as you move any
114 new 345 kV source added to address the low voltage issue (such as the proposed Mt.
115 Zion 345/138 kV substation) further away from northeastern Decatur, the new source
116 becomes less effective at addressing the low voltage issue (*Id.*). As I reported in my
117 direct testimony, I found adding a new 345 kV source at the existing Latham
118 345/138 kV substation, which is located approximately 17 straight line miles
119 west-northwest of northeastern Decatur (as shown on MCPO Exhibit 1.1 (RH)),
120 instead of at ATXI's proposed Mt. Zion substation was not sufficient to address the
121 low voltage issue in the Decatur area (MCPO Exhibit 1.0 at page 61). ICC Staff
122 Option #3 site is also approximately 17 straight line miles from northeastern Decatur.

123 **Q BASED ON YOUR TRANSMISSION PLANNING EXPERIENCE AND THE**
124 **POWERFLOW ANALYSIS YOU PERFORMED FOR YOUR DIRECT TESTIMONY,**
125 **PLEASE COMMENT ON THE VIABILITY OF THE FOUR SUBSTATION SITE**
126 **ALTERNATIVES FROM A RELIABILITY STANDPOINT.**

127 **A** As discussed above, I found in my direct testimony that the addition of a new Mt. Zion
128 345 kV source at ATXI's proposed site for the Mt. Zion substation is sufficient to
129 resolve the low voltage reliability issue in the Decatur area.

130 In addition, I believe ICC Staff's Option #1 and Option #2 sites for Mt. Zion
131 substation may be electrically close enough to northeastern Decatur such that these
132 two sites could be sufficient to address the low voltage reliability issue in the Decatur
133 area. However, a powerflow analysis has not been performed to verify their
134 sufficiency. In addition, I would note that an additional 4.3 to 4.8 miles of 138 kV
135 transmission lines between the new Mt. Zion 345/138 kV substation and the existing
136 Mt. Zion PPG 138 kV substation would be needed if ICC Staff Option #1 or Option #2
137 is utilized for the new Mt. Zion substation. This would increase the cost of these
138 138 kV lines by approximately \$4.3 million to \$19.2 million (assuming one or two
139 138 kV transmission lines and an estimated cost of \$1 million to \$2 million per mile for
140 138 kV construction with steel single-circuit monopoles) and increase the other
141 adverse impacts to the public from those 138 kV lines. In my opinion, the additional
142 distance and corresponding right-of-way needed for these 138 kV transmission lines
143 will largely offset any reduced cost and impact from reduced 345 kV transmission line
144 length that might be associated with using the ICC Staff Option #1 or Option #2 site
145 for Mt. Zion substation rather than ATXI's Sulphur Spring Road site.

146 Finally, I believe it is unlikely the ICC Staff Option #3 site for Mt. Zion
147 substation would be sufficient to address the low voltage reliability issue in the
148 Decatur area. The Option #3 site is approximately 17 transmission line miles from the
149 existing Mt. Zion PPG 138 kV substation (ICC Staff Exhibit 2.0 at page 12) and
150 approximately 17 straight line miles from northeastern Decatur. Based on my
151 experience and the powerflow analysis I previously performed regarding the addition
152 of a new 345 kV source at Latham substation (which is also approximately 17 straight
153 line miles from northeastern Decatur) rather than at ATXI's proposed Sulphur Spring
154 Road Mt. Zion substation site, I believe that the Option #3 site would place the new

155 345 kV source needed for the Decatur area too far away from the area of greatest
156 reactive power need (northeastern Decatur) for it to be sufficient to address the low
157 voltage reliability issue in the Decatur area. Therefore, I believe it is very unlikely,
158 from a reliability perspective, the ICC Staff Option #3 site is a viable location for the
159 proposed Mt. Zion 345/138 kV substation. The ICC Staff Option #3 site should not be
160 considered a viable option for the location of the proposed Mt. Zion substation unless
161 a powerflow analysis is completed that reasonably demonstrates that the Option #3
162 site is a viable option. The ICC Staff has not performed such an analysis (*Id.*).

163 In summary, for the reasons stated above, ATXI's Sulphur Spring Road site is
164 still the best choice for the proposed Mt. Zion 345/138 kV substation.

165 **III. Connections to Mt. Zion**
166 **345/138 kV Substation from Pana or Kincaid**

167 **Q PLEASE OUTLINE HOW THE ATXI SULPHUR SPRING ROAD SITE, THE ICC**
168 **STAFF OPTION #1 SITE AND THE ICC STAFF OPTION #2 SITE COULD EACH**
169 **BE SERVED FROM PANA OR KINCAID AT 345 KV BASED ON THE**
170 **TRANSMISSION LINE ROUTES PROPOSED BY ATXI FROM PANA AND BY ICC**
171 **STAFF FROM KINCAID.**

172 **A** ATXI's proposed Sulphur Spring Road site for Mt. Zion substation could be served
173 from Pana or Kincaid as follows:

- 174
- From Pana using ATXI's Pana to Mt. Zion Primary Route;
 - From Pana using ATXI's Pana to Mt. Zion Alternate Route;
 - From Kincaid using ICC Staff's Kincaid to Mt. Zion route to its junction with ATXI's Pana to Mt. Zion Primary Route and then ATXI's Pana to Mt. Zion Primary Route from the junction to ATXI's Mt. Zion substation site; or
- 176
177
178

- 179 • From Kincaid using ICC Staff's Kincaid to Mt. Zion route to its junction with
180 ATXI Pana to Mt. Zion Alternate Route and then ATXI's Pana to Mt. Zion
181 Alternate Route from the junction to ATXI's Mt. Zion substation site.

182 ICC Staff's Option #1 and Option #2 sites can be served from Pana or Kincaid as
183 follows:

- 184 • From Pana using ATXI's Pana to Mt. Zion Primary Route to its junction
185 with ICC Staff's Kincaid to Mt. Zion route and then ICC Staff's Kincaid to
186 Mt. Zion route from the junction to ICC Staff's Option #1 or Option #2 Mt.
187 Zion substation sites;

- 188 • From Pana using ATXI's Pana to Mt. Zion Primary Route to its junction
189 with ATXI's Pana to Mt. Zion Alternate Route, then south on ATXI's Pana
190 to Mt. Zion Alternate Route to its junction with ICC Staff's Kincaid to Mt.
191 Zion route and then east on ICC Staff's Kincaid to Mt. Zion route to ICC
192 Staff's Option #1 and Option #2 Mt. Zion substation sites;

- 193 • From Pana using ATXI's Pana to Mt. Zion Alternate Route to its junction
194 with ICC Staff's Kincaid to Mt. Zion route and then ICC Staff's Kincaid to
195 Mt. Zion route from the junction to ICC Staff's Option #1 and Option #2 Mt.
196 Zion substation sites; or

- 197 • From Kincaid using ICC Staff's Kincaid to Mt. Zion route.

198 **Q DOES MCPO SUPPORT A PARTICULAR ROUTE FROM PANA (OR,**
199 **ALTERNATIVELY, KINCAID) TO MT. ZION SUBSTATION?**

200 **A**Yes. MCPO has stipulated to the use of ATXI's Pana to Mt. Zion Primary Route and
201 ATXI's Sulphur Spring Road substation site. In addition, as discussed in my direct
202 testimony, ATXI's Pana to Mt. Zion Primary Route has less overall adverse impact to
203 the public than ATXI's Pana to Mt. Zion Alternate Route (MCPO Exhibit 1.0 at pages
204 9 through 10 comparing Route MCPO-P-MZK to Route MCPO-A-MZK). However, the
205 other configurations I have identified above could potentially be used to serve the
206 proposed Mt. Zion substation from Pana or Kincaid, if the Commission, despite ATXI
207 and MCPO recommendations, does not select ATXI's Pana to Mt. Zion Primary route
208 and/or ATXI's Sulphur Spring Road Mt. Zion substation site.

209 **IV. Analysis of Route Alternatives for the**
210 **Mt. Zion to Kansas Portion of the Illinois Rivers Project**

211 **Q BASED ON WHAT WAS OFFERED BY ATXI, ICC STAFF AND INTERVENORS IN**
212 **THEIR DIRECT TESTIMONY ON REHEARING, WHAT ROUTES HAVE YOU**
213 **ANALYZED FROM MT. ZION SUBSTATION TO KANSAS?**

214 **A** I have analyzed three transmission line routes from Mt. Zion to Kansas for each of the
215 three Mt. Zion substation sites that are, or might be, viable. The routes are as
216 follows:

- 217 • Using ATXI's Sulphur Spring Road Mt. Zion substation location:
- 218 – Route MZK – MCPO's Mt. Zion to Kansas route.
- 219 – Route CFT – ATXI's Mt. Zion to Kansas route from ATXI's Sulphur
220 Spring Road Mt. Zion substation site to the junction with ATXI's Mt.
221 Zion to Kansas Alternate Route in East Nelson Township and then
222 ATXI's Mt. Zion to Kansas Alternate Route from the junction to Kansas
223 substation.
- 224 – Route ATXIA – ATXI's Mt. Zion to Kansas Alternate Route.
- 225 • Using ICC Staff's Option #1 Mt. Zion substation location:
- 226 – Route MZK-1 – ATXI's Mt. Zion to Kansas Primary Route from ICC
227 Staff's Option #1 Mt. Zion substation site north to the junction with
228 MCPO's Mt. Zion to Kansas route and then MCPO's Mt. Zion to
229 Kansas route from the junction east to Kansas substation.
- 230 – Route CFT-1 – ATXI's Mt. Zion to Kansas Primary Route from ICC
231 Staff's Option #1 Mt. Zion substation site to the junction with ATXI's Mt.
232 Zion to Kansas Alternate Route in East Nelson Township and then
233 ATXI's Mt. Zion to Kansas Alternate Route from the junction to Kansas
234 substation.
- 235 – Route ATXIA-1 – ATXI's Mt. Zion to Kansas Primary Route from ICC
236 Staff's Option #1 Mt. Zion substation site north to its junction with
237 ATXI's Mt. Zion to Kansas Alternate Route and then ATXI's Mt. Zion to
238 Kansas Alternate Route from the junction east to Kansas substation.
- 239 • Using ICC Staff's Option #2 Mt. Zion substation location:

240 – Route MZK-2 – ATXI's Mt. Zion to Kansas Primary Route from ICC
241 Staff's Option #2 Mt. Zion substation site north to the junction with
242 MCPO's Mt. Zion to Kansas route and then MCPO's Mt. Zion to
243 Kansas route from the junction east to Kansas substation.

244 – Route CFT-2 – ATXI's Mt. Zion to Kansas Primary Route from ICC
245 Staff's Option #2 Mt. Zion substation site to the junction with ATXI's Mt.
246 Zion to Kansas Alternate Route in East Nelson Township and then
247 ATXI's Mt. Zion to Kansas Alternate Route from the junction to Kansas
248 substation.

249 – Route ATXIA-2 – ATXI's Mt. Zion to Kansas Primary Route from ICC
250 Staff's Option #2 Mt. Zion substation site north to its junction with
251 ATXI's Mt. Zion to Kansas Alternate Route and then ATXI's Mt. Zion to
252 Kansas Alternate Route from the junction east to Kansas substation.

253 Maps for each of these nine route options from Mt. Zion to Kansas are
254 provided in Mr. Reinecke's Exhibit 2.1 (RH). Routing factors and paralleling
255 information for all nine routes are provided in Mr. Reinecke's MCPO Exhibits 2.2 (RH)
256 and 2.3 (RH).

257 **Q PLEASE EXPLAIN HOW YOU HAVE ANALYZED THESE NINE ROUTE OPTIONS**
258 **FOR THE MT. ZION TO KANSAS PORTION OF THE IRP.**

259 A I have analyzed them with respect to the ATXI Phase I public meeting high sensitivity
260 routing factors, the ATXI Phase II public meeting high sensitivity routing factors, cost
261 and paralleling of existing linear features using the same methodology I used in my
262 direct testimony (MCPO Exhibit 1.0 at pages 25 through 44). In doing so, I applied
263 route selection principles I outlined in my direct testimony (MCPO Exhibit 1.0 at pages
264 18 through 22).

265 **Q PLEASE EXPLAIN WHAT YOUR ATXI PHASE I HIGH SENSITIVITY ROUTING**
266 **FACTOR ANALYSIS ENTAILS.**

267 A As discussed in detail in my direct testimony (MCPO Exhibit 1.0 at pages 25 through
268 28), it entails scoring the six environmental factors that a majority of the attendees to
269 the ATXI Phase I public meetings identified as highly sensitive. The factors include
270 cemeteries, churches, existing drainage features, prime farmland,¹ residential use
271 areas and schools. As I noted in my direct testimony, while I do not believe route
272 analysis can be reduced to a mathematical exercise, scoring or other mathematical
273 techniques can be useful for initial screening and evaluation.

274 MCPO Exhibit 1.2 (RH) presents the results of my scoring for the six Phase I
275 high sensitivity routing factors along with the estimated baseline cost of the nine route
276 options. The routing factor data was drawn from Mr. Reinecke's MCPO Exhibit
277 2.2 (RH). The cost information was provided by ATXI in ATXI Exhibit 5.1 (RH) and
278 in response to Data Request MCPO-ATXI 17.01R. A copy of ATXI's response to
279 Data Request MCPO-ATXI 17.01R is provided in MCPO Exhibit 1.5 (RH).

280 **Q WHAT ARE YOUR CONCLUSIONS WITH REGARD TO YOUR REVIEW OF THE**
281 **NINE ROUTE OPTIONS FROM MT. ZION TO KANSAS IN RELATION TO THE SIX**
282 **PHASE I HIGH SENSITIVITY ROUTING FACTORS AND COST?**

283 A Routes MZK, MZK-1, MZK-2, CFT-1 and CFT-2 scored better than the other four route options with
284 respect to these six routing factors. Routes MZK, MZK-1 and MZK-2 place
285 approximately 90 (5.3%) to 108 (6.4%) more acres of Prime Farmland within the

¹I continue to use the Prime Farmland definition utilized by ATXI. Mr. Reinecke in his rebuttal testimony in rehearing (MCPO Exhibit 2.0 (RH)) addresses why the ATXI Prime Farmland definition should continue to be used.

286 500 foot analysis corridor than the best performing route for this one factor -- Route
287 CFT-1. However, Routes MZK, MZK-1 and MZK-2 place:

- 288 • 15 (48.4%) to 19 (61.3%) fewer residences within 500 feet of the
289 centerline of the route than Route CFT-1;
- 290 • 14 (66.7%) to 16 (76.2%) fewer residences within 300 feet of the
291 centerline of the route than Route CFT-1; and
- 292 • 7 (77.8%) fewer residences within 150 feet of the centerline of the route
293 than Route CFT-1.

294 Thus, while the scores in MCPO Exhibit 1.2 (RH) for Routes MZK, MZK-1 and MZK-2
295 are the same as that of Route CFT-1, a closer examination of the six routing factors
296 shows a significant degree of superior performance by Routes MZK, MZK-1 and MZK-2
297 over Route CFT-1.

298 **Q PLEASE EXPLAIN WHAT YOUR ATXI PHASE II HIGH SENSITIVITY ROUTING**
299 **FACTOR ANALYSIS ENTAILS.**

300 A As discussed in detail in my direct testimony (MCPO Exhibit 1.0 at pages 31 through
301 33), it entails scoring the environmental factors that the attendees to the ATXI Phase
302 II public meetings identified as most sensitive. Unlike with the Phase I high sensitivity
303 routing factors, percentage ratings were identified for these routing factors. The
304 factors include Agricultural Use Areas (rated by 47% as most sensitive), Existing
305 Residences (rated by 35% as most sensitive), Wooded Areas (rated by 6% as most
306 sensitive), Protected Species Habitat/Location (rated by 3% as most sensitive),
307 Wetlands and Waterways (rated by 2% as most sensitive), Cultural Resources (rated
308 by 2% as most sensitive), Recreational Use Areas (rated by 1% as most sensitive),
309 Sensitive Management Areas (rated by 1% as most sensitive) and Other Areas (rated
310 by 3% as most sensitive) (ATXI Exhibit 4.3 (Part 1 of 5), Page 8 of 12 and ATXI

311 Exhibit 4.3, Appendix C (Part 8 of 9) at Page 5 of 6). MCPO Exhibit 1.3 (RH)
312 presents the results of my scoring for the Phase II high sensitivity routing factors
313 along with the estimated baseline cost of the nine route options.

314 **Q WHAT ARE YOUR CONCLUSIONS WITH REGARD TO YOUR REVIEW OF THE**
315 **NINE ROUTE OPTIONS FROM MT. ZION TO KANSAS IN RELATION TO THE**
316 **PHASE II HIGH SENSITIVITY ROUTING FACTORS AND COST?**

317 A Routes MZK, MZK-1 and
318 MZK-2 scored better than the other six route options with respect to Phase II high
319 sensitivity routing factor scoring using the same scoring methodology I used in my
320 direct testimony.

321 **Q IN MCPO EXHIBITS 1.2 (RH) AND 1.3 (RH) YOU PROVIDED THE BASELINE**
322 **ESTIMATED COSTS FOR EACH OF THE NINE ROUTE OPTIONS FOR MT. ZION**
323 **TO KANSAS. HOW DO THESE ESTIMATED COSTS COMPARE?**

324 With respect to cost, Routes MZK, MZK-1 and MZK-2 have an estimated cost that is
325 \$14.4 million (12.2%) to \$17.8 million (15.0%) greater than the lowest estimated cost
326 route of the nine -- Route CFT-1.

327 **Q WHAT DOES YOUR ANALYSIS OF OPPORTUNITIES FOR PARALLELING**
328 **EXISTING LINEAR FEATURES ENTAIL?**

329 A Using the same methodology I discussed in my direct testimony (MCPO Exhibit 1.0 at
330 pages 36 through 39), I analyzed the length of each of the nine route options for Mt.
331 Zion to Kansas that does not closely parallel existing linear features and by working
332 from the most significant type of existing linear features to the least significant type of

333 existing linear features. MCPO Exhibit 1.4 (RH) presents the results of my paralleling
334 analysis of the nine route options.

335 **Q PLEASE EXPLAIN WHY YOU USE THE LENGTH OF A ROUTE NOT CLOSELY**
336 **PARALLELING EXISTING LINEAR FEATURES TO MEASURE PERFORMANCE**
337 **IN REGARD TO THE USE OF SUCH PARALLELING OPPORTUNITIES.**

338 A As I previously explained in my direct testimony, using the length of a route closely
339 paralleling a particular type of linear feature or the percentage of the total length of a
340 route closely paralleling a particular type of linear feature can be misleading because
341 the alternative routes under consideration may be significantly different in regard to
342 total length. For example, if we had a route of 200 miles that closely paralleled
343 existing transmission lines for 50% of its length and another alternative route of
344 100 miles that closely paralleled existing transmission lines for only 25% of its length,
345 it would not be appropriate to say the 200 mile line outperforms the 100 mile line in
346 regard to paralleling existing transmission lines because the 200 mile route would
347 have 100 miles of length that does not parallel existing transmission lines while the
348 100 mile route would only have 75 miles of length that does not parallel existing
349 transmission lines. By measuring existing linear feature paralleling performance by
350 miles that do not parallel that particular type of linear feature, total line length is
351 removed from the measure and, instead, the focus is appropriately placed on
352 minimizing the total amount of new transmission line route miles that do not parallel
353 the particular type of linear feature in question.

354 Q PLEASE EXPLAIN WHY YOU WORKED FROM THE MOST SIGNIFICANT TYPE
355 OF EXISTING LINEAR FEATURE PARALLELING OPPORTUNITY TO THE LEAST
356 SIGNIFICANT LINEAR FEATURE PARALLELING OPPORTUNITY.

357 A As I previously explained in my direct testimony, the primary purpose of routing
358 closely parallel to existing linear features is to take advantage of existing significant
359 visual impact, noise impact, environmental fragmentation and/or agricultural
360 fragmentation in order to avoid the introduction of new such impacts where they do
361 not already exist. A secondary purpose is to take advantage of collocation of the
362 proposed transmission line with existing significant linear infrastructure, such as
363 existing transmission lines, in order to mitigate the visual impact of the proposed
364 transmission line.

365 Not all existing linear features are the same with regard to their degree of
366 visual impact, noise impact, environmental fragmentation and/or agricultural
367 fragmentation. For example, a section line may potentially reflect a cultivation
368 boundary. While there is existing agricultural fragmentation present if the section line
369 in fact reflects a cultivation boundary, that section line does not necessarily have any
370 significant existing visual impact, noise impact or environmental fragmentation unless
371 there are other linear features also present where the section line is located. On the
372 other hand, an existing transmission line of the same size or greater than the
373 proposed transmission line provides very significant existing amount of visual impact
374 (from the vertical size and horizontal length of the existing transmission line), noise
375 impact (from corona) and environmental fragmentation (from vegetation management
376 within the existing transmission line's easement). This makes it an ideal opportunity
377 for close paralleling provided it does not introduce a valid reliability issue.
378 Furthermore, in the right circumstances, an existing transmission line may also

379 provide an opportunity to collocate the transmission circuits of the new transmission
380 line on the structures of the existing transmission line, or vice-versa, to further
381 mitigate the visual impact of the proposed transmission line by eliminating the need
382 for two separate transmission lines.

383 For these reasons, not all linear feature paralleling provides the same
384 benefits, and it is important to work from examining the most significant linear
385 features to examining the least significant linear features when examining how well a
386 proposed transmission line route takes advantage of opportunities to closely parallel
387 existing linear features.

388 **Q WHAT ARE YOUR CONCLUSIONS WITH REGARD TO YOUR REVIEW OF THE**
389 **NINE ROUTE OPTIONS FROM MT. ZION TO KANSAS IN RELATION TO THE**
390 **PARALLELING OF EXISTING LINEAR FEATURES?**

391 A Routes MZK, MZK-1 and MZK-2 have better paralleling performance. As shown in
392 MCPO Exhibit 1.4 (RH), of the nine route options for Mt. Zion to Kansas, only Routes
393 MZK, MZK-1 and MZK-2 exhibit relatively superior performance with regard to:
394 (i) minimizing the portion of their length that does not parallel existing transmission
395 lines and (ii) minimizing the portion of their length that does not parallel existing
396 transmission lines, Major Roads or Railroads. When paralleling of Minor Roads and
397 other utility right-of-way is added in, Routes MZK, MZK-1 and MZK-2 perform similar
398 to Routes CFT, CFT-1, and CFT-2, but underperform Routes AXIA, AXIA-1 and
399 AXIA-2. When paralleling of Section Lines is added in, Routes MZK, MZK-1 and
400 MZK-2 underperform the remaining six routes. However, given that existing
401 transmission lines, Major Road and Railroads represent existing linear infrastructure
402 with much more significant visual impact, noise impact, environmental fragmentation

403 than Minor Roads, other utility right-of-way or Section Lines, the clear winners with
404 regard to paralleling performance among the nine route options for Mt. Zion to
405 Kansas are Routes MZK, MZK-1 and MZK-2.

406 **Q IN HER DIRECT TESTIMONY ON REHEARING, MS. BURNS INTRODUCES NEW**
407 **DATA ON THE PARALLELING OF “1/2-SECTION LINES” AND “PROPERTY**
408 **LINES” (PDM EXHIBIT 6.0 AT PAGES 13 THROUGH 15). PLEASE EXPLAIN**
409 **WHY YOUR PARALLELING OPPORTUNITIES ANALYSIS DOES NOT CONSIDER**
410 **THIS ADDITIONAL DATA.**

411 A I have not included them for the reasons detailed in Mr. Reinecke’s rebuttal testimony
412 on rehearing (MCPO Exhibit 2.0 (RH)). These items are even less likely than Section
413 Lines to be indicative of existing visual impact, noise impact, environmental
414 fragmentation and agricultural fragmentation.

415 **Q PLEASE SUMMARIZE THE COMBINED RESULTS OF YOUR ANALYSIS OF**
416 **PHASE I HIGH SENSITIVITY ROUTING FACTORS, PHASE II HIGH SENSITIVITY**
417 **ROUTING FACTORS, COST ESTIMATES AND PARALLELING OPPORTUNITIES.**

418 A The combined results of these analyses show that Routes MZK, MZK-1 and MZK-2
419 are the least adverse impact route alternatives available for the Mt. Zion to Kansas
420 portion of the IRP. They have the best performance with regard to the Phase I high
421 sensitivity factor routing factors, Phase II high sensitivity routing factors and
422 opportunities to parallel existing linear features. While these three routes have a
423 \$14.4 million (12.2%) to \$17.8 million (15.0%) greater baseline estimated cost than the
424 Route CFT-1, they place 15 (48.4%) to 19 (61.3%) fewer residences within 500 feet
425 of the centerline of the route than Route CFT-1. As discussed in my direct testimony

426 (MCPO Exhibit 1.0 at page 21), the Commission in the past has selected a route for a
427 proposed transmission line that has a greater estimated dollar cost when it places
428 fewer residences within 500 feet of the centerline of that transmission line
429 (e.g., Commission's May 16, 2007 order in Docket No. 06-0179).

430 While Routes MZK, MZK-1 and MZK-2 place approximately 90 (5.3%) to
431 108 (6.4%) more acres of Prime Farmland within the 500 foot analysis corridor than
432 the best performing route for this factor -- Route CFT-1, it is important to recognize
433 the limited nature of such impact. Specifically, the placement of a new transmission
434 line in cultivated lands or pasture land (even where there is Prime Farmland) only
435 removes from production the land at, and very close to, the foundation of the
436 structures. The foundation of the structures proposed for this transmission line will be
437 no more than 10 feet wide (ATXI Exhibits 7.1 and 7.2) and each foundation will be
438 typically placed 700 to 1,000 feet apart from each other. The overhead wires
439 between the structures neither remove land from production nor introduce any
440 significant agricultural fragmentation. This fact is further substantiated by ATXI
441 witness Rick D. Trelz. In his direct testimony (ATXI Exhibit 5.0 lines 198-204), in
442 discussing the impact of the entire IRP (using ATXI's proposed Primary route) on
443 agricultural land taken out of production, he states:

444 "Of the proposed Primary Route easement area at approximately
445 4,489 agricultural acres, 1.55 acres of actual farmland will be taken out
446 of production. This total represents the agriculture acres within the
447 required 150-foot wide easements. The construction of single shaft
448 steel poles with no down guys and anchors will help reduce the
449 amount of land removed from cultivation. The majority of the
450 easement area will only have overhanging wires."

451 For all of these reasons, I conclude from my routing analysis, using the same
452 methodology that I used in my direct testimony, that Routes MZK, MZK-1 and MZK-2

453 have the least adverse impact to the public of the nine route options for the Mt. Zion
454 to Kansas portion of the IRP.

455 **Q HAVE YOU REVIEWED ALL OF THE ROUTING FACTORS PRESENTED IN MCPO**
456 **EXHIBIT 2.2 (RH) FOR THE NINE ROUTE ALTERNATIVE AVAILABLE FOR THE**
457 **PANA TO KANSAS PORTION OF THE IRP?**

458 A Yes.

459 **Q DOES YOUR REVIEW OF THOSE ROUTING FACTORS GIVE YOU ANY REASON**
460 **TO CHANGE THE CONCLUSIONS YOU HAVE JUST GIVEN?**

461 A No. My review of all of the MCPO Exhibit 2.2 (RH) routing factors does not lead me
462 to any different conclusions than the ones I have just given.

463 **V. Response to Specific Direct Testimony**
464 **on Rehearing Comments of PDM/CFT Witness Mary Burns**

465 **Q PDM/CFT WITNESS MS. BURNS TAKES ISSUE WITH THE EXTRA ROUTE**
466 **LENGTH ASSOCIATED WITH ROUTES MZK, MZK-1 AND MZK-2 DUE TO WHAT**
467 **SHE REFERS TO AS “OFF-COURSE” ROUTING (PDM EXHIBIT 6.0 AT PAGE 6).**
468 **HOW DO YOU RESPOND?**

469 A Deviation from a straight line course is a common practice in transmission line routing
470 when the adverse impacts to the public that are avoided by that deviation outweigh the
471 incremental adverse impacts associated with that deviation. With regard to the
472 “off-course” routing that Ms. Burns is specifically decrying, significant residence and
473 non-residential structure impacts are being avoided by Routes MZK, MZK-1 and
474 MZK-2 compared to any of the other six route options for Mt. Zion to Kansas in

475 exchange for a limited addition of length, estimated dollar cost and adverse
476 agricultural impact. The principal incremental adverse impacts of Routes MZK,
477 MZK-1 and MZK-2 compared to Route CFT-1 (the best performing of the six CFT and
478 ATXIA route options) are as follows:

- 479 • 8.2 miles (13.4%) to 9.7 miles (15.9%) of additional route length (MCPO
480 Exhibit 2.2 (RH) at page 1);
- 481 • \$14.4 million (12.2%) to \$17.8 million (15.0%) of greater estimated
482 baseline construction cost (MCPO Exhibit 1.2 (RH)); and
- 483 • 90 (5.3%) to 108 (6.4%) more acres of Prime Farmland within the 500 foot
484 analysis corridor (*Id.*).

485 In exchange, versus Route CFT-1, Routes MZK, MZK-1 and MZK-2 have:

- 486 • 15 (48.4%) to 19 (61.3%) fewer residences within 500 feet of the
487 centerline of the route (MCPO Exhibit 1.2 (RH));
- 488 • 14 (66.7%) to 16 (76.2%) fewer residences within 300 feet of the
489 centerline of the route (*Id.*);
- 490 • 7 (77.8%) fewer residences within 150 feet of the centerline of the route
491 (*Id.*);
- 492
- 493
- 494 • 77 (60.0%) to 78 (60.5%) fewer non-residential structures within 500 feet
495 of the centerline of the route (MCPO Exhibit 2.2 (RH) at page 4);
- 496 • 46 (71.9%) to 54 (84.4%) fewer non-residential structures within 300 feet
497 of the centerline of the route (*Id.*);
- 498 • 19 (79.2%) to 22 (91.7%) fewer non-residential structures within 150 feet
499 of the centerline of the route (*Id.*);
- 500 • 6 fewer non-residential structures within the 150 foot easement of the
501 route that might have to be removed (*Id.*);² and
- 502 • 11.7 (8.2%) to 32.6 (22.8%) fewer acres of wooded areas within the
503 500 foot analysis corridor (MCPO Exhibit 1.3 (RH)).

²There are no non-residential structures within the 150 foot easement of Routes MZK, MZK-1 and MZK-2.

504 In addition, while 8.1 to 9.6 miles of additional length is needed for Routes
505 MZK, MZK-1 and MZK-2 versus Route CFT-1, all of that additional length, plus an
506 additional 4.1 to 5.6 miles of existing length is closely parallel to existing electric
507 transmission lines, which helps to mitigate the visual, noise and environmental
508 fragmentation of the new transmission line by placing it where similar such visual,
509 noise and environmental fragmentation already exists.

510 Finally, as I noted earlier, it is important to recognize the limited adverse
511 nature of Prime Farmland being placed within the 500 foot analysis corridor.
512 Specifically, as I noted earlier, the placement of a new transmission line in cultivated
513 lands or pasture land (even where there is Prime Farmland) only removes from
514 production the land at, and very close to, the foundation of the structures. In addition,
515 the overhead wires between the structures neither remove land from production nor
516 introduce any significant agricultural fragmentation.

517 In sum, the adverse impacts avoided by the “off-course” routing by Routes
518 MZK, MZK-1 and MZK-2 that Mr. Burns decries far exceed the incremental adverse
519 impacts incurred by that “off-course” routing.

520 **Q MS. BURNS TAKES ISSUE WITH THE CLAIMED BENEFITS OF PARALLELING**
521 **EXISTING TRANSMISSION LINES VERSUS THE ADDITIONAL FARMLAND AND**
522 **LENGTH IMPACTS OF ROUTES MZK, MZK-1 AND MZK-2 (PDM EXHIBIT 6.0 AT**
523 **PAGES 7 THROUGH 9). HOW DO YOU RESPOND?**

524 **A** Ms. Burns fails to consider the issue from a holistic standpoint. As outlined above,
525 the benefits provided by the additional length, baseline estimated cost and farmland
526 impacts incurred by Routes MZK, MZK-1 and MZK-2 versus Route CFT-1 are far
527 beyond visual impact mitigation. In particular, Ms. Burns is completely ignoring the

528 very significant residential and non-residential structure impacts that are also
529 avoided. Furthermore, she continues to overemphasize the severity of the farmland
530 impacts.

531 **Q MS. BURNS RAISES AN ISSUE WITH REGARD TO “SEVERE TURNS”**
532 **NEGATIVELY AFFECTING FARMLAND (PDM EXHIBIT 6.0 AT PAGES**
533 **16 THROUGH 17). HOW DO YOU RESPOND?**

534 **A** This is essentially the same issue she raised in her direct testimony affidavit in this
535 proceeding with regard to the subject of “short spans” (PDM Exhibit 1.0 at pages
536 3 through 4). Specifically, she is claiming that the use of “severe turns,” which would
537 include the use of right angle turns, increases the number of structures utilized on a
538 transmission route such that it would place more structures within the boundaries of a
539 single tract. As I discussed in detail in my rebuttal testimony (MCPO Exhibit 3.0 at
540 pages 2 through 3), only one of the eight route segments on Routes MZK, MKZK-1
541 and MZK-2 where she identified alleged issues due to right angle turns creating “short
542 spans” would require an additional structure beyond that which would be required
543 without the right angle turns. Thus, the concern is overstated and not sufficiently
544 significant for it to be a factor in selecting one Mt. Zion to Kansas route versus
545 another.

546 Q MS. BURNS CONCLUDES THE CFT ROUTES (ROUTES CFT, CFT-1 AND CFT-2)
547 PROVIDE A “NET REDUCTION” IN IMPACT WHILE THE MCPO ROUTES
548 (ROUTES MZK, MZK-1 AND MZK-2) RESULT IN AN INCREASE IN IMPACT (PDM
549 EXHIBIT 6.0 AT PAGES 19 THROUGH 20). HOW DO YOU RESPOND?

550 A This is simply inaccurate. She does not perform a “net reduction” analysis at all
551 because she overemphasizes the severity of farmland impacts and completely
552 ignores the very significant adverse impacts on residences and nonresidential
553 structures that are avoided by Routes MZK, MZK-1 and MZK-2 versus Routes CFT,
554 CFT-1 and CFT-2. As I have illustrated above, when a holistic view is taken, it is
555 clear the adverse impacts avoided by the MCPO routes versus the CFT routes
556 outweigh adverse impacts incurred by the MCPO routes versus the CFT routes.

557 **VI. Conclusions and Recommendations**

558 Q PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.

559 A I conclude the following:

- 560 • ATXI’s proposed Sulphur Spring Road site is still the best proposed site
561 for Mt. Zion substation.
- 562 • ICC Staff’s proposed Option #1 and Option #2 sites may be viable
563 alternatives to ATXI’s proposed Sulphur Spring Road site for the proposed
564 Mt. Zion substation.
- 565 • From a reliability standpoint, ICC Staff’s proposed Option #3 site is not
566 likely a viable alternative to ATXI’s proposed Sulphur Spring Road site for
567 the proposed Mt. Zion substation.
- 568 • Regardless of whether the Mt. Zion substation is located at the ATXI
569 Sulphur Spring Road site, the ICC Staff Option #1 site or the ICC Staff
570 Option #2 site, MCPO’s proposed route from Mt. Zion substation to
571 Kansas substation has significantly less adverse impact to the public than
572 either ATXI’s Alternate Route or Channon Family Trust’s (“CFT”) proposed
573 Route from Mt. Zion substation to Kansas substation.

574 I recommend the Commission select ATXI's proposed Sulphur Spring Road
575 site for Mt. Zion substation. In addition, regardless of the site for Mt. Zion substation
576 chosen by the Commission, I recommend the Commission select MCPO's proposed
577 route from Mt. Zion substation to Kansas substation.

578 **Q DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

579 **A** Yes, it does.

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