

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

MIDAMERICAN ENERGY COMPANY)
) **DOCKET NO. 14-_____**
)
)

DIRECT TESTIMONY
OF
K. THOMAS ALBERTSON

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

2 A. K. Thomas Albertson. My business address is 106 E. Second Street, Davenport,
3 Iowa 52808.

4 **Q. By whom are you employed and in what position?**

5 A. I am employed by MidAmerican Energy Company (“MidAmerican”). I am the
6 Manager, High Voltage Engineering.

7 **Q. Please summarize your educational background and business experience.**

8 A. I received a Bachelor of Science degree in Civil Engineering in 1980 from Iowa
9 State University. In 1984, I received a Master of Business Administration
10 degree from St. Ambrose University. I have been employed by MidAmerican
11 and a predecessor company, Iowa-Illinois Gas and Electric Company, since
12 1980. My duties included working as an engineer in the Electric Design
13 Division until 1984 and as Superintendent of the Environmental Services
14 Division until 1995 for Iowa-Illinois. With the merger of Iowa-Illinois into
15 MidAmerican in 1995, I moved into my current position.

16 **Q. Please summarize your duties and responsibilities as Manager, High
17 Voltage Engineering.**

18 A. I manage high voltage engineering activities for MidAmerican, including the
19 design and construction of additions to MidAmerican’s electric transmission
20 system.

21 **Q. Do you belong to any professional associations?**

22 A. I am a registered professional engineer in the States of Illinois and Iowa. I am
23 also a member of the American Society of Civil Engineers.

24 **Q. Are you familiar with MidAmerican’s proposed project to construct, own,**
25 **operate and maintain approximately 32.05 miles of double circuit 345**
26 **kV/161 kV electric transmission line over an existing 161 kV line corridor**
27 **in Rock Island, Mercer, Henry and Knox Counties, Illinois, for**
28 **MidAmerican’s Multi-Value Project-16 (“MVP-16”) electric transmission**
29 **line project?**

30 A. Yes, I am.

31 **Q. What are your responsibilities with regard to this project?**

32 A. I am responsible for overseeing the engineering aspects of MidAmerican’s
33 MVP-16 project.

34 **Q. What is the purpose of your prepared direct testimony in this proceeding?**

35 A. The purpose of my direct testimony is to provide an engineering overview for
36 the project. I will discuss (1) general project information; (2) general structure
37 locations; (3) typical structure type; (4) the construction process; and (5) the
38 proposed construction schedule.

39 **General Project Information**

40 **Q. What is the voltage of the proposed line?**

41 A. The voltage of the proposed line will be 345,000 volts, otherwise known as 345
42 kV. The project consists of double-circuiting the proposed 345 kV line with the
43 161,000 volt, or 161 kV, line along the existing utility corridor.

44 **Q. What is the approximate total length of the line?**

45 A. The total length of the line is approximately 32.05 miles.

46 **Q. Please generally describe the proposed route of the line.**

47 A. The proposed route of the line would start at MidAmerican’s existing Oak
48 Grove Substation in Rock Island County and continue southeasterly along an
49 existing MidAmerican 161 kV line corridor through Rock Island County,
50 Mercer County, Henry County and into Knox County to a proposed Ameren
51 Transmission Company of Illinois (“ATXI”) substation. An overview of the
52 proposed route is attached to MidAmerican’s Petition as Exhibit A.

53 **Q. How was the proposed route of the line determined?**

54 A. MidAmerican reviewed potential line routes between its existing Oak Grove
55 Substation and the proposed ATXI substation. As a part of this review,
56 MidAmerican determined there was an existing 161 kV line owned and
57 operated by MidAmerican. This presented the possibility for utilizing an
58 existing line corridor for the route.

59 **Q. Why was the availability of an existing line corridor MidAmerican’s
60 preferred route for the proposed line?**

61 A. The use of an existing line corridor, compared to a new line corridor, avoids
62 new land-related disturbances in other locations. Use of an existing line
63 corridor typically reduces overall impacts and provides for the location of a new
64 line within areas already affected by an existing line, leaving other potential
65 new line route areas open and available for other land uses.

66 **Q. Are there locations along the corridor where it was necessary to route the
67 proposed double circuit line so as to deviate from the existing corridor?**

68 A. Yes. It was necessary to make deviations at six locations along the existing
69 corridor.

70 **Q. For each such deviation, please describe the location, and the reason why**
71 **the deviation was necessary.**

72 A. In the south half of Section 24, T16N, R2W of the 5th P.M., near proposed
73 Structure No. 17, the proposed centerline of the line was shifted roughly 20 feet
74 to avoid an outbuilding area, per the landowner's request.

75 In the south half of Section 25, T16N, R2W of the 5th P.M., near proposed
76 Structure No. 25, the proposed centerline was shifted roughly 25 feet to avoid
77 an outbuilding area, per the landowner's request.

78 In the north half of Section 17, T15N, R1W of the 5th P.M., near proposed
79 Structure No. 45, the proposed centerline was shifted roughly 25 feet so as to
80 not have the proposed line positioned any closer to a residence than the existing
81 line, per the landowner's request.

82 In the south half of Section 14, T14N, R1W of the 5th P.M., near proposed
83 Structure No. 87, the proposed centerline was shifted roughly 150 feet to avoid
84 an outbuilding area, per the landowner's request.

85 In the north half of Section 15, T12N, R1E of the 5th P.M., near proposed
86 Structure No. 155, the proposed centerline was shifted roughly 25 feet to move
87 a structure location to a property corner location, per the landowner's request.

88 In the north half of Section 1, T11N, R1E of the 5th P.M., near the ATXI
89 substation area at the south end of the proposed line, the proposed centerline
90 was shifted a variable dimension up to roughly 1850 feet to route the proposed
91 line into the proposed substation, per the landowner's request.

92 **Q. Who is responsible for the design of the line?**

93 A. MidAmerican has retained a contractor to design the line. The design of the line
94 is under the supervision of MidAmerican.

95 **Q. Will the proposed line conform to the construction and safety**
96 **requirements of the State of Illinois?**

97 A. Yes, MidAmerican's proposed transmission line will be designed and
98 constructed to conform to the National Electrical Safety Code ("NESC")
99 requirements and Commission rules.

100 **General Structure Locations**

101 **Q. What will be the general locations of the structures?**

102 A. The structures will generally be located along the existing line corridor. To the
103 extent possible, the structures will generally be located on the same properties
104 upon which existing 161 kV line structures are located.

105 **Typical Structure Type**

106 **Q. What type of transmission structures does MidAmerican propose to use**
107 **for this line?**

108 A. MidAmerican proposes to primarily use self-weathering, single pole steel
109 structures. A diagram of a typical tangent structure proposed to be used on the
110 project is attached as MidAmerican Exhibit 2.1.

111 **Q. What will be the range of heights of these structures?**

112 A. The range of heights of these structures will typically be 100 to 160 feet above
113 ground.

114 **Q. Please describe the components of the proposed structures.**

115 A. Each of the proposed structures will consist of a steel pole, steel arms, insulator
116 assemblies, conductor, overhead shield wires, including optical shield wire to
117 be used for line operations communications, and associated grounding. The
118 conductor transports the electricity and the shield wires protect the conductors
119 from lightning strikes. The tangent and angle structures will use V-string
120 insulator assemblies, which are a more compact design when compared to I-
121 string insulators and help to limit conductor displacement and easement width
122 requirements associated with the longer spans proposed for this project.

123 **Q. Why were single pole steel structures selected for this project?**

124 A. Single pole steel structures were selected to reduce the impact on property
125 owners.

126 **Q. Are there benefits to using single pole steel structures?**

127 A. Yes. The use of single pole steel structures provides benefits to landowners.
128 There will be significantly fewer poles installed along the route. This is
129 because the existing transmission line is constructed using multi-pole wood H-
130 frame structures. Also, the spans between the structures will be longer than the
131 spans between structures along the existing 161 kV line.

132 **Q. How does the number of proposed poles compare to the number of poles
133 currently in place along the existing 161 kV lines?**

134 A. MidAmerican estimates that approximately 188 single pole steel structures will
135 be used on the project. That compares to over 480 wood poles on the multi-
136 pole structures that are currently located along the route of the existing 161 kV
137 line.

138 **Q. What other benefits does a single pole steel structure have when compared**
139 **to a multiple pole structure?**

140 A. The use of single pole steel structures also makes it easier to farm around the
141 structures. Since there will no longer be two poles side-by-side at a single
142 location, a landowner will no longer need to farm around the two-pole
143 structure's footprint.

144 **Q. Will there be any guy wires or anchors needed for the new single pole steel**
145 **structures?**

146 A. No, there will not be any guy wires or anchors used for the new single pole
147 steel structures. Instead, drilled shaft reinforced concrete foundations will be
148 used to support the structures. The use of these single pole steel structures will
149 enable MidAmerican to remove the guy wires and anchors that are currently
150 used for the existing 161 kV line on landowners' properties.

151 **Q. You stated these would be self-weathering steel pole structures. Please**
152 **explain what you mean by self-weathering and how that characteristic**
153 **differs from the poles already in place.**

154 A. Self-weathering steel pole structures develop their own protective layer which
155 will naturally change to a deep reddish-brown color. These self-weathering
156 steel pole structures have an advantage in that they do not normally have to be
157 replaced as they age, as is the case with wood poles, or painted, as is the case
158 with painted steel poles. Since they do not have to be replaced or painted, the
159 cost of routine maintenance is lowered. In addition, since they do not have to
160 be replaced or painted, the Company is not required to go onto the easement

161 area to replace or paint these poles. The fewer times that access to the easement
162 area is required, the less the potential inconvenience to landowners due to any
163 associated issues, such as damage to growing crops or compaction to farm
164 fields.

165 **Construction Process**

166 **Q. Who will be responsible for the construction of the line?**

167 A. MidAmerican will retain a contractor to construct the line. The construction
168 will be in accordance with MidAmerican's contract specifications.

169 **Q. What are the major construction activities that will take place within the**
170 **easement areas for this project?**

171 A. Temporary gates will be installed in fences and temporary culverts will be
172 installed to facilitate access to the easement and construction site. Trees which
173 are located in the easement area will be trimmed or removed. However, since
174 the proposed route is primarily along an existing 161 kV line corridor, any tree
175 trimming or tree removal is expected to be less than along a new line corridor.
176 Drilled shaft reinforced concrete foundations will then be installed. Holes will
177 be augured to specified depths, with soil spoil removed from the property, then
178 rebar cages and anchor bolt cages will be properly positioned in the hole.
179 Concrete then will be placed, filling the hole. The single pole steel structures
180 will be assembled on-site and, following the curing of the concrete foundations,
181 will be installed on the foundations. Existing wood pole structures, conductor
182 and shield wire in a section ready for new conductor and shield wire installation
183 will be dismantled, removed, and properly disposed off the property. The new

184 conductor and shield wire will then be installed. Initially, ropes will be placed
185 in pulleys hanging from the structures. Lengths of conductor and shield wire
186 will be pulled through the pulleys using special equipment and cables, then the
187 conductor will be permanently transferred to the insulators on the structures and
188 the shield wire will also be permanently transferred to the structures.

189 Temporary guard structures will be placed at road, railroad, and overhead utility
190 crossings to protect these facilities during the installation of the new conductor
191 and shield wire. After construction has been completed, the site will be cleaned
192 up and restored by smoothing out ruts, chisel plowing, reseeding, removing
193 temporary culverts and removing temporary fence gates.

194 **Agricultural Impact Mitigation Agreement**

195 **Q. Did MidAmerican provide notice of the proposed construction of the**
196 **proposed double circuit line to the Illinois Department of Agriculture?**

197 A. Yes. MidAmerican provided a notice to the Illinois Department of Agriculture
198 on July 11, 2014. A copy of that notice is attached as MidAmerican Exhibit
199 2.2.

200 **Q. MidAmerican is planning to enter into an Agricultural Impact Mitigation**
201 **Agreement. What is the purpose of this Agreement?**

202 A. The purpose of the Agricultural Impact Mitigation Agreement is to specify
203 certain standards and policies that MidAmerican will follow as it constructs the
204 proposed double circuit line on agricultural land, to minimize potentially
205 negative impacts on agricultural land that might otherwise result.

206 **Q. Is it MidAmerican’s position that this Agricultural Impact Mitigation**
207 **Agreement is consistent with the State Of Illinois’ Farmland Preservation**
208 **Act [505 ILCS 75]?**

209 A. Yes, it is.

210 **FAA Notice**

211 **Q. Did MidAmerican provide notice of the proposed construction of the**
212 **proposed double circuit line to the Federal Aviation Administration**
213 **(“FAA”)?**

214 A. Yes, MidAmerican provided a notice to the FAA on June 13, 2014. All
215 proposed structure locations and heights were evaluated and 31 of these were
216 determined to require notice to the FAA. A copy of that notice is attached as
217 MidAmerican Exhibit 2.3.

218 **Q. What was the FAA response to this notice?**

219 A. The FAA reviewed the 31 locations and made a determination of no hazard to
220 air navigation. A copy of a sample response for one of those 31 locations is
221 attached as MidAmerican Exhibit 2.4.

222 **Construction Schedule**

223 **Q. When is line construction scheduled to begin?**

224 A. Line construction will begin following receipt of the Certificate and any other
225 required authorizations have been received by MidAmerican.

226 **Q. When is line construction scheduled to be completed?**

227 A. MidAmerican’s schedule anticipates completion of line construction by
228 December 1, 2016.

229 **Q. Will the line be constructed in accordance with all applicable federal and**
230 **state regulations and the order of the Commission?**

231 A. Yes. The line will be constructed in accordance with all applicable federal and
232 state regulations and orders of the Commission, including 83 Ill. Admin. Code
233 Part 305 and the National Electrical Safety Code.

234 **Q. After construction, who will be responsible for the operation, maintenance,**
235 **and inspection of the line?**

236 A. After construction, MidAmerican will be responsible for the operation,
237 maintenance, and inspection of the line.

238 **Q. The proposed line would be constructed within an existing 161 kV electric**
239 **line corridor for which MidAmerican has easements for the facilities which**
240 **are currently in place. Why is MidAmerican seeking additional easements**
241 **for the proposed line?**

242 A. The existing 161 kV line was constructed in the 1956 time frame and the
243 existing easements do not allow for construction or operation of the 345 kV line
244 second circuit. Also, although the proposed line generally follows the existing
245 161 kV corridor, there are a limited number of slight departures from the
246 existing easement areas to accommodate the proposed double circuit
247 construction, which I previously discussed. In addition, the proposed 345
248 kV/161 kV double circuit line requires an easement width of 150 feet. This is
249 wider than the easement width of the existing 161 kV line.

250 **Q. Why is a 150 foot easement width being requested for the proposed double**
251 **circuit line?**

252 A. This easement width of 150 feet is being requested to accommodate the safe
253 operation of the proposed line. One of the benefits of the proposed line is the
254 reduction of line structures required due to the greater span lengths between
255 structures, as compared to the existing 161 kV line. This increase in span
256 length will reduce the number of structures required on the project and will
257 decrease overall impact on affected landowners when compared to a line with
258 shorter span lengths. A result of reducing the number of structures required for
259 the proposed line is increasing the line span lengths. Increasing the line span
260 lengths results in additional conductor wind-related displacement, requiring a
261 greater easement width. Also, MidAmerican is typically proposing to construct
262 the double circuit line with conductor on both sides of the structure. Adequate
263 separation between the conductors needs to be maintained under all NESC
264 weather conditions to avoid cross-conductor contact. In addition, the taller
265 single pole structures proposed for the line are subject to additional structure
266 deflection that needs to be accounted for in the easement width. Further,
267 MidAmerican is subject to the North American Electric Reliability Corporation
268 requirements associated with vegetation management. These requirements
269 stipulate that transmission owners manage vegetation to prevent encroachments
270 into their lines to avoid vegetation-related line outages. Common tree species
271 in Illinois can grow to be fairly tall, potentially impacting the operation of the
272 line if the easement is too narrow. Also, it is good utility practice to provide
273 some additional easement width buffer to protect against other unknown
274 situations. Providing a level of safety margin beyond the specific clearance

275 requirements is prudent and is proposed for this line. Finally, it is practical to
276 have a standard easement width across an entire line length to the extent
277 possible so as to minimize confusion and mistakes associated with maintenance
278 activities required for the safe operation of the line. Each of these issues are
279 factored into easement width requirements for the line to be able to maintain
280 control over any activity in the easement area that could potentially impact the
281 safe operation of the line.

282 **Q. Is a 150 foot easement width unusual for the construction of a double**
283 **circuit 345 kV/161 kV line?**

284 A. A right-of-way width of 150 feet is not unusual for a double circuit 345 kV/161
285 kV line. In fact, many of MidAmerican's single circuit 345 kV lines are
286 operating on a 150 foot easement width.

287 **Q. Does this conclude your prepared direct testimony for this proceeding?**

288 A. Yes, it does.