

Mark E. Hindley (#7222)
Richard R. Hall (#9856)
STOEL RIVES LLP
201 South Main Street, Suite 1100
Salt Lake City, Utah 84111-4904
Telephone: (801) 328-3131

R. Jeff Richards (#7294)
PACIFICORP
201 South Main, Suite 2200
Salt Lake City, Utah 84111
Telephone: (801) 220-4734

Attorneys for Petitioner

BEFORE THE ELECTRICAL FACILITIES REVIEW BOARD

PACIFICORP, an Oregon corporation,

Petitioner,

vs.

THE CITY OF WEST JORDAN,

Respondent.

**PRE-FILED REBUTTAL
TESTIMONY OF DARRELL T.
GERRARD**

1 **Q: Have you reviewed the Pre-Filed Testimony of Mr. Joseph Beste regarding the**
2 **necessity and potential locations of a new substation in West Jordan, Utah (the**
3 **“Testimony”)?**

4 A: Yes. I have reviewed his testimony in detail.

5 **Q: Are you acquainted with or have you ever worked with Mr. Beste?**

6 A: No. To my knowledge, Mr. Beste has never done any work for PacifiCorp (the
7 “Company”) nor has he been involved in any project involving the Company or its
8 electric systems. His resume states that he has a mechanical engineering background,
9 but it is not clear what specific expertise or experience he has, if any, in transmission
10 and distribution power system design and operations.

11 **Q: What kind of expertise and experience is required for the planning, design, and**
12 **operation of transmission and distribution power systems for the Company?**

13 A: To plan and design power transmission and distribution systems, we incorporate a
14 wide range of electrical and civil engineering expertise. For this project, we used an
15 experienced team of planners, project managers, designers, engineers, environmental,
16 real estate, and community services personnel. I am an electrical engineer with over
17 25 years of experience in electrical power systems and the electrical utility business.
18 A copy of my resume is attached as Exhibit DG-15.

19 **Q: What is the purpose of this testimony?**

20 A: The purpose of my testimony is to help the Board understand that the five potential
21 sites identified by Mr. Beste would not allow the Company to provide its customers
22 in West Jordan with safe, adequate, reliable, and efficient service. My testimony will
23 also show that Mr. Beste’s testimony is based on a very cursory and incomplete

24 analysis and inadequately addressed a number of key aspects, including short-term
25 versus long-term power supply needs, the Company's criteria for substation siting,
26 electric system design, spatial distancing between substations, operational
27 requirements, construction feasibility, and overall cost.

28 **Q: Mr. Beste identified five sites where the Company could locate a substation. Did**
29 **you review those sites?**

30 A: Yes. We reviewed each of these sites. My staff and I personally visited these sites
31 and performed a preliminary assessment of each.

32 **Q: Were you able to determine the basis for Mr. Beste's identification of these sites?**

33 A: No. It is unclear what parameters, criteria, and priorities he considered in making his
34 recommendations.

35 **Q: Did you analyze whether any of these proposed sites would be acceptable?**

36 A: Yes. We performed a preliminary engineering assessment and determined that none
37 of these sites are acceptable to the Company. The proposed sites do not meet our
38 substation siting criteria or fulfill the statutory mandate to provide safe, reliable,
39 adequate, and efficient power to our customers. Siting at any one of these sites would
40 not solve the problems the Company needs to resolve, i.e., providing additional,
41 long-term capacity within the critical load area and areas surrounding the City.
42 Moreover, none of these sites could be constructed by June 2006. His recommended
43 sites would also result in reduced system capacity ("line loss"), decreased reliability,
44 and significantly increased transmission and distribution costs. Viewed in light of the
45 electric system needs in West Jordan and the statutory mandate to provide safe,

46 reliable, adequate, and efficient service, the five sites proposed by Mr. Beste are
47 clearly inferior to a site located within the target area.

48 **Q: Mr. Beste recommends two sites. What sites did he recommend?**

49 A: Mr. Beste identified two sites in his testimony (West Jordan Annex site and the
50 Welby Annex site) as his recommended sites. However on his maps 7 and 8, he
51 identifies two other sites as “best options.” It is unclear which sites he is
52 recommending and why.

53 **Q: Please explain why the site Mr. Beste proposes at 3400 West and 8800 South**
54 **(referred to by him as the “New South” or the “Welby Annex”) is not**
55 **acceptable?**

56 A. This site is not acceptable for a number reasons, which are detailed in Exhibit DG-16.
57 This site is located outside the target area. It would require significantly longer
58 transmission and distribution lines (11.6 miles of distribution lines and 2 miles of
59 transmission lines) and thus have greater impact to homes and businesses than a site
60 within the target area. Its proximity to the existing Welby Substation would preclude
61 the Company from using the full capacity of both the Welby substation and the
62 proposed substation. The overall cost of locating a substation at this site would be
63 significantly higher (estimated at \$9.1 million) compared to a site within the target
64 area. There are also material constructability issues as described in Exhibit DG-16,
65 including, for example, the difficulty of locating and constructing six distribution
66 circuits routed north to serve the critical load area. The six distribution circuits are
67 necessary to fully utilize the capacity of a new station at this site.

68 **Q: Please explain why the site Mr. Beste proposes at 2500 West and 8400 South**
69 **(referred to by him as the “New West Jordan Substation” or the “West Jordan**
70 **Annex”) is not acceptable?**

71 A: The reasons this site is not acceptable are detailed in Exhibit DG-16. This site is also
72 located outside the target area, as well as outside of the critical load area. It would
73 require significantly longer transmission and distribution lines (12.9 miles of
74 distribution lines and 1.9 miles of transmission lines) and thus have greater impact to
75 homes and businesses than a site within the target area. The overall cost of locating a
76 substation at this site would be significantly higher (estimated to be \$9.3 million)
77 compared to a site within the target area. Its proximity to the existing Welby
78 Substation would preclude the Company from using the full capacity of both the
79 Welby substation and the proposed substation. There are also material
80 constructability issues described in Exhibit DG-16, including, for example the
81 adjacent railroad line and conflicts with existing transmission lines owned by
82 Kennecott. The close proximity to houses also makes this site problematic.

83 **Q: Please explain why the site Mr. Beste proposes at 4300 West and 9100 South**
84 **(referred to by him as the “Old Bingham Highway Site”) is not acceptable?**

85 A: The reasons this site is not acceptable are detailed in Exhibit DG-16. This site is
86 located outside the target area and outside the critical load area. It would require a
87 significantly longer distribution line (15.3 miles) and have greater impact to homes
88 and businesses than a site within the target area. The overall cost of locating a
89 substation at this site would be significantly higher (estimated to be \$7.9 million)
90 compared to a site within the target area. Its proximity to the existing Welby and

91 Oquirrh Substations would preclude the Company from using the full capacity of
92 Welby, Oquirrh, and the proposed substation. There are also material constructability
93 issues described in Exhibit DG-16. For example, existing power line congestion in
94 this area and the problems associated with locating new distribution lines within the
95 Bangerter Highway right-of-way (which is a limited-access highway) would make it
96 difficult to serve the critical load area.

97 **Q: Please explain why the site Mr. Beste proposes at 8800 South 4100 West is not**
98 **acceptable?**

99 A: The reasons this site is not acceptable are detailed in Exhibit DG-16. As with most of
100 the other sites, this site is located outside the target area and outside the critical load
101 area. It would require significantly longer distribution and transmission lines (13
102 miles distribution lines and 1.3 miles transmission lines) and thus have greater
103 impact to homes and businesses than a site within the target area. The overall cost of
104 locating a substation at this site would be significantly higher (estimated to be \$8.5
105 million) compared to a site within the target area. This site is also particularly
106 problematic from a land-acquisition perspective. This is a 53.5 acre site. The
107 Company would have to either purchase the entire property or subdivide the property,
108 which would add to the costs and the time required for approvals. This same concern
109 arises for all of the other sites except the “New South Site.” There are also material
110 constructability issues described in Exhibit DG-16. For example, the Company
111 would have to construct four distribution lines along 4000 West (two double-circuits,
112 one on each side of the street).

113 Q: **Please explain why the site Mr. Beste proposes at 4100 West and 7800 South is**
114 **not acceptable?**

115 A: The reasons this site is not acceptable are detailed in Exhibit DG-16. This site is
116 located outside the target area and outside the critical load area. It would require
117 significantly longer transmission and distribution lines (6.2 miles of distribution lines
118 and 3.7 miles of transmission lines) and have greater impact to homes and businesses
119 than a site within the target area. The overall cost of locating a substation at this site
120 would be significantly higher (estimated to be \$9.8 million) compared to a site within
121 the target area. There are also material constructability issues described in Exhibit
122 DG-16, the most problematic of which is that this site is within the fenced property of
123 Airport No. 2. Mr. Beste has not verified that applicable FAA requirements could be
124 met or identified what FAA permits would have to be obtained. Because of its
125 location, all six distribution circuits (and possibly 2 transmission circuits) would have
126 to go east along a single road, resulting in significant line congestion. There are also
127 potential jurisdictional wetlands on that site. Mr. Beste did not adequately assess the
128 Clean Water Act implications and what wetland mitigation might be required, or the
129 time needed to obtain the necessary federal permits.

130 Q: **What are your summary conclusions of the five sites recommended by Mr.**
131 **Beste?**

132 A: All of the proposed sites are outside of the target area and four are outside the critical
133 load area. All require extensive distribution and/or transmission line construction,
134 and thus have a greater impact on residences and businesses. Moreover, each have
135 significant constructability issues and land-acquisition and/or permitting problems.

136 Several sites would also limit the Company's ability to fully utilize the capacity of a
137 new substation due to proximity to existing substations. Finally, all of the sites are
138 significantly more expensive than a site located within the target area.

139 Several of these points are visually self-evident. Maps of the transmission and
140 distribution lines for each of Mr. Beste's proposed sites are attached as Exhibits
141 DG-17.1 to 17.5. For comparison purposes, a map of the transmission and
142 distribution lines for the 3200 West Site is attached as Exhibit DG-18. These maps
143 clearly show that each of Mr. Beste's proposed sites require significantly more
144 distribution and/or transmission lines, demonstrating some of the reasons why the
145 3200 West site is superior. Indeed, as Mr. Beste correctly testified, shorter
146 distribution distances reduce costs. (Beste Test. at 13 line 292.) Shorter distances to
147 transmission lines also reduce costs. In addition, shorter power line distances reduce
148 impact to local residents and increase the reliability and electrical efficiency of the
149 power system.

150 **Q: Did Mr. Beste recommend or identify a potential site at Jordan Landing?**

151 A: No. Apparently even Mr. Beste does not believe that an acceptable site is available at
152 Jordan Landing. Nevertheless, he testified that it is possible to locate a substation at
153 the Jordan Landing site without diminishing the "electrical, safety, reliability or
154 operational effectiveness" of the Company's system. This is simply not correct as
155 explained in my previous testimony.

156 **Q: Mr. Beste suggests that the Company ignored new potential development or**
157 **"load" when selecting a site within the target area. Did you consider this new**
158 **load in your projections when determining where to locate a new substation?**

159 R: Yes. In fact, one of the criteria we looked at when we defined the critical load area
160 was estimated load growth. The Company is aware of the new loads Mr. Beste
161 identified and has already planned to accommodate them. I will address each:

162 1) South Station Development: This load is projected to be about 10 MW and
163 will be served by the Welby Substation.

164 2) TRAX Station: This is a relatively small area consisting largely of a parking
165 lot with limited new load. This load will be served by the Welby Substation.

166 3) Sugar Factory Site: This area is currently served by the 90th South substation.
167 Any new load at this site will continue to be adequately served by that substation.

168 4) New Industrial Site: This is a light industrial area located approximately one
169 mile from the Kearns substation, which will serve this new load.

170 5) Jordan Landing Site: This is a mostly a commercial area with a database
171 warehouse. We anticipate that this site will be served by the Company's proposed
172 substation within the target area.

173 6) Kraftmaid (erroneously listed as an Industrial Park by Mr. Beste): Kraftmaid
174 will be served from its own private substation.

175 7) Industrial Park (erroneously listed as Kraftmaid by Mr. Beste): A new
176 proposed substation in West Jordan ("Copper Hills") will serve the industrial park.

177 **Q: Mr. Beste testified that a substation can be sited two or three miles outside of the**
178 **critical load area or the target area. Is that true?**

179 A: Perhaps, but it is certainly not the best practice. Substations are designed to serve
180 areas where the electricity is used and are spatially located with respect to existing
181 transmission lines. To use an analogy, fire stations are typically located within the

182 area they serve and are given enough separation between them to make them
183 efficient. They are also located on or near roads that will allow them easy access and
184 expedient travel. While it is certainly possible to locate a fire station outside of the
185 area it is intended to serve, or next to another fire station, clearly this is not optimal
186 and will diminish the operational effectiveness of the individual fire station as well as
187 the larger fire response system.

188 In the same way, we design substations to be spatially distant from existing
189 substations and within the areas where they are intended to serve. They are also
190 located on or near interconnecting transmission and distribution lines to allow for
191 easier connections. This increases the effectiveness of the substation individually and
192 the system overall, and decreases costs.

193 **Q: Mr. Beste implies that the Company does not have a criteria for siting**
194 **substations. Is this true?**

195 A: No. I identified the Company's siting criteria in my previous testimony. Mr. Beste's
196 own testimony recognizes this criteria, and in fact attempts to apply it for his five
197 proposed sites. In addition, the Company also has design standards that are used in
198 constructing substations, including feeder loading guidelines, transformer guidelines
199 and substation design.

200 **Q: Mr. Beste asserts that the only reason the 3200 West Site is important to you is**
201 **because you purchased the property. Is this correct?**

202 A: No. The Company is interested in the 3200 West Site because it is in the target area
203 and it meets our criteria. We are interested in any site within the target area meeting

204 the siting criteria. The Company would sell the 3200 West property if the City were
205 to approve a suitable alternate location within the target area.

206 **Q: Mr. Beste also testified that this site is important to you because there are**
207 **existing distribution circuits in the area. Is this correct?**

208 A: Yes, absolutely. Mr. Beste is correct that the proximity of existing distribution
209 circuits played a significant role in our selection of a site. This is one of the criteria
210 stated in my testimony. It has become an even more important site considering the
211 sunk costs in the distribution circuits the Company had to install in siting the
212 temporary substation. The capacity of these newly constructed circuits would not be
213 fully utilized if the substation is sited outside of the target area.

214 **Q: Mr. Beste asserts that the Company could adequately locate a substation three to**
215 **six miles from the load center. Is that correct?**

216 A: Mr. Beste's assertion that siting a substation three to six miles from the load center is
217 "electrically acceptable" ignores the concept of load density and cost. To put this in
218 perspective, Mr. Beste is suggesting that it would "electrically acceptable" for the
219 Company to serve the critical load area in West Jordan with a substation located in
220 the Fort Union area in Midvale, approximately six miles directly east. This is not
221 feasible nor practical considering the load density in West Jordan and surrounding
222 areas.

223 **Q: Mr. Beste claims that the five sites he identified would be acceptable to the City.**
224 **Aside from an unidentified area at Jordan Landing and the 2700 West site that**
225 **was later withdrawn by the City, did the City ever recommend any other sites to**
226 **the Company?**

227 A: No. And neither Mr. Lubbers nor Mr. Beste could possibly know what the West
228 Jordan City Council would or would not approve until after public input and a final
229 vote.

230 **Q: With respect to the 17 sites you identified as possible sites for the substation, Mr.**
231 **Beste testified that you failed to consider overloaded circuits and future loads in**
232 **the area. Is this true?**

233 A: No. Evaluating overloaded circuits and future loading requirements is the initial step
234 in identifying the critical load area and target area. Once the target area and critical
235 load area are identified, potential sites within these areas are evaluated against the
236 siting criteria. Potential substation sites are evaluated with respect to the target area.
237 Exhibits DG-19 demonstrates the circuits and transformers that we considered in the
238 analysis.

239 **Q: Mr. Beste testified that you failed to take into account certain physical**
240 **conditions of the potential sites you identified. Is this true?**

241 A: No. As stated in Mr. Gerrard's testimony, the physical characteristics of the site also
242 included a review of vacant land, parcel size, apparent environmental conditions,
243 preliminary title reports, etc.

244 **Q: Mr. Beste's testimony states that the Company failed to take into consideration**
245 **certain key physical characteristics of potential sites, such as "soil resistance"**
246 **and "soil characteristics." Why did the Company not consider those**
247 **characteristics when reviewing potential substation sites?**

248 A: This is not the first substation that the Company has sited and constructed. The
249 Company has designed and constructed facilities across 7 states with varying soil

250 conditions, earthquake zones and soil resistivity. The Company has standards in place
251 to address these issues in the design and construction of its facilities. As a result,
252 these particular issues typically do not impact the siting of facilities but are used to
253 assure that proper design standards and construction techniques are applied. In
254 addition, the Company has environmental staff that reviews each of the sites on a
255 preliminary basis and undertakes more in depth analysis if needed.

256 **Q: Mr. Beste testified that one of his five sites was within the target area and that**
257 **the other four were within 300 yards (Beste Test. at 15, line 332). Is this**
258 **correct?**

259 A: No. Even Mr. Beste's maps demonstrate that this is not the case. In fact, the closest
260 of Mr. Beste's proposed sites is 1.25 miles outside the target area (the 4100 West and
261 7800 South Site).

262 **Q: Similarly, Mr. Beste purported to identify certain areas on his map as the**
263 **critical load area and the target area. Did Mr. Beste identify these areas**
264 **correctly?**

265 A: Not always. Mr. Beste confused these areas throughout his testimony. For example,
266 Mr. Beste erroneously claims that one of his proposed sites is within the target area.

267 **Q: Carol Hunter indicated that you were present at a meeting with her, Rich Walje**
268 **(President of Utah Power), Mayor Holladay, Mr. Luebbers, and Councilmember**
269 **Richardson in mid-August 2004. Is that true?**

270 A: Yes. During that meeting, we were told by the City officials that the City was unable
271 to identify any substation sites acceptable to the Council.

272 **Q: Please summarize your testimony.**

273 A: Mr. Beste does not dispute that a new substation is necessary in West Jordan.
274 However, Mr. Beste's five locations are not acceptable because they do not satisfy the
275 Company's need for providing safe, reliable, adequate and efficient power to our
276 customers. Constructing a substation at any one of Mr. Beste's sites would not solve
277 the problem the Company needs to resolve: providing long term additional capacity
278 within the critical load area and areas surrounding the City. Moreover, none of these
279 sites could be constructed by June 2006. The recommended sites would also result in
280 reduced system capabilities, line exposures resulting in decreased reliability,
281 increased impact on residences and businesses, and significantly increased costs
282 compared to a site within the target area.

CERTIFICATE OF SERVICE

I hereby certify that on this 31st day of October 2005, I caused to be sent by US mail, postage prepaid, a true and correct copy of the foregoing **PRE-FILED REBUTTAL**

TESTIMONY OF DARRELL T. GERRARD to the following:

Jody K. Burnett
WILLIAMS & HUNT
257 East 200 South
Suite 500
Salt Lake City, Utah 84111



A handwritten signature in black ink, appearing to read "D. T. Gerrard", is written above a horizontal line.