

Southern California Edison
WODUP A.13-10-020

DATA REQUEST SET A.13-10-020 WODUP ED-SCE-07

To: ENERGY DIVISION
Prepared by: Scott Lacy, P.E.
Title: Project Engineer
Dated: 09/05/2014

Question ALT-14:

Previous WOD Corridor Proposal. In the 2005 proposal by SCE for DPV2, the WOD portion of the DPV2 project would have included the following:

West of Devers (as defined in 2005 CPCN Application)

- Removal of two existing 40-mile 220 kV single-circuit transmission lines.
- Construction of one new 40-mile double-circuit 220 kV transmission line.
- Upgrade of 40 miles of double-circuit 220 kV transmission line between Devers Substation and San Bernardino Junction (accomplished by reconductoring the existing double-circuit 220 kV line only).
- Upgrade of 4.8 miles of double-circuit 220 kV transmission line between San Bernardino Junction and Vista Substation (reconductoring only).
- Upgrade of 6.8 miles of 220 kV transmission line between San Bernardino Junction and San Bernardino Substation (reconductoring only, one circuit on each of two existing double-circuit transmission lines)

Considering the previously proposed project, please answer the following:

- a. Please define the transfer capacity (in MW) that would result from implementing the following design, similar to the 2005 proposal for the WOD corridor:
- Re-use the existing double-circuit towers (as proposed in 2005), and reconductor those two circuits using the highest capacity conductor that could be supported by the existing towers.
 - Remove the two existing single-circuit 220 kV tower lines (as proposed in 2005) and replace them with a single set of new double-circuit towers (as proposed in 2005), but now using the currently-proposed conductors (double-bundled 1,590 kcmil ACSR).

Response to Question ALT-14:

It is infeasible to design a project as specified in the question from both a physical construction perspective as well as an ultimate capacity rating perspective. The physical construction would result in potential safety & operational hazards related primarily to the swing & sway of the conductor, while the conductor that could be supported by the existing structures would not achieve a rating that would satisfy the Project Objectives.

Physically, as shown in PEA Figure 3.1-1, p. 3-3, the current topology of the four circuits in relation to each other across the length of the corridor is not consistent (i.e., the existing double-circuit towers are located on the northern part of the ROW east of the Banning Junction, but in the center part of the ROW between the Banning Junction and the San Bernardino Junction). As was proposed in the 2005 project, the existing double-circuit towers as they are currently located in the field would only be able to support double-bundled 1033.5 kcmil ACSR as the maximum conductor size. Due to the increased weight of double-bundled 1590 kcmil ACSR, as well as updated wind-loading criteria that is more strict than what was required in 2005, the new double-circuit towers that would be installed to replace the existing single-circuit towers would likely have significantly different (i.e., shorter) span lengths than the existing double-circuit towers do. The use of the existing structures would therefore result in differential structure spotting (visual impacts) and would also result in a design concern related to the potential for the adjacent conductors to swing and sway at different frequencies, thus requiring either increased distances between the two tower lines or additional structures to be installed along the existing tower line in order to hold the conductors to limit conductor sway at those locations. For these reasons, it is physically infeasible to design and construct the project as specified in this question.

From an electrical perspective, this alternative is also not feasible. The design in the 2005 project resulted in all four lines consisting of the same conductor (double-bundled 1033.5 kcmil ACSR) which would maintain a constant rating across the entire length of the corridor. This alternative would result in one of two options: (1) either two complete circuits would consist of double-bundled 1033.5 kcmil ACSR for their entire length, while the other circuits would consist of double-bundled 1590 ACSR, or (2) as a result of the topology issues referenced above, all circuits would consist of a portion of their length consisting of both conductor sizes. Because ultimate circuit ratings upon project completion would be based on the smallest conductor size, the result of this alternative would be the same as reconductoring the entire length of all circuits to only double-bundled 1033.5 kcmil ACSR. As discussed in SCE's responses to Questions No. ALT-11 and ALT-12, the use of this smaller conductor size as an alternative approach would not satisfy Project Objectives 1, 2, or 5 as described in PEA Section 1.3, p. 1-19.

As explained above, the 2005 proposal for the WOD corridor was based on both a different wind loading criteria and a different load forecast, thus both physically and electrically the adaption of the design from 2005, as specified in this question, is not applicable to the current needs of the corridor.