

***Transmission Competitive Solicitation Questions Log
Question / Answer Matrix
Delaney to Colorado River 2014***

No.	Comment Submitted	ISO Response	Date Q&A Posted
1	<p>Can the CAISO provide a line rating methodology (similar to a NERC FAC-008 standard) or include a requirement of using any standard methodology (IEEE Standard 738 or similar) to compute the desired line ratings per the Functional Specification?</p> <p>The following is a minimum set of design parameters that are required in determining the line capacity ratings:</p> <ul style="list-style-type: none"> Wind Speed: Wind Angle: Ambient Temperature: Conductor temperature for three operating conditions; continuous operations, 4 hour operations, and 30 min emergency operations Preloading conditions to determine both 4 hour and 30 min emergency ratings: 	<p>The ISO does not provide engineering details. Rather, the ISO provides functional specifications, in this case, continuous and short term line summer and winter line ampacities. It is up to the applicant project sponsor to select the line rating methodology it thinks best for this circumstance. It should be noted that one of the questions in the application does ask the applicant to provide the assumptions (e.g. wind speed, ambient temperature, etc.) and rating methodology used to determine the proposed line ratings.</p>	9/12/2014
2	<p>It appears that the existing Palo Verde to Colorado River 500-kV line, part of the Palo Verde - Devers line #1 has lower ratings (according to WECC Operating Cases) than the ratings specified for the DCR project. Can the ISO provide a description on the requirement of higher ratings on the DCR project?</p>	<p>The ISO identified the line ratings to roughly match the conductor ratings on the existing Palo Verde to Colorado River and downstream facilities.</p>	9/12/2014
3	<p>The functional specification for the DCR project included a statement in the "Route Requirement" that indicates that multiple circuit towers can be proposed with adequate mitigation to meet system performance</p>	<p>The ISO prefers to have spatial diversity between the existing and proposed new line to avoid the risk of an N-2 based on WECC criteria. The line is expected to have at least a 50 year lifetime, so the ISO will need to consider the potential for</p>	9/12/2014

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	without reduction in overall reliability. Can the ISO clarify on what is meant by “no reduction in overall reliability”?	reducing the overall reliability due to the risk of an N-2 outage over that time frame as much as practicable.	
4	Provide detailed Transmission System Planning study reports and specific load flow base cases that include detailed modelling of the Delaney – Colorado River (DCR) transmission line including series compensation.	The transmission planning studies are in Chapter 5 of the transmission planning report, and in stakeholder presentations which are posted on the ISO’s website. The load flow base case used for the studies is on the ISO secure web-site under Policy Driven Base Cases.	9/26/2014
5	In order to validate the reliable operation of the new proposed DCR transmission line and to validate interaction with the existing Special Protection System (SPS), please provide additional information on the CAISO’s technical assessment of any interaction of the proposed new series compensation for the DCR transmission line with existing SPS and coordination with other protection systems in the area.	The transmission planning studies are in Chapter 5 of the transmission planning report, and in stakeholder presentations which are posted on the ISO’s website. These studies included simulation and consideration of coordination with existing SPS.	9/26/2014
6	In order to properly plan for interconnection of the proposed DCR transmission line, can CAISO provide more guidance on how to locate the terminal structure for DCR transmission line outside the PTO’s substations: a.) Please provide the latitude, longitude and orientation for the terminal structure outside the Delaney Substation; b.) Please provide the latitude, longitude and orientation for the terminal structure outside the Colorado River Substation; c.) Which 500 kV bay position will the DCR transmission line terminate at the Delaney Substation; and d.) Which 500 kV bay position will the DCR transmission line terminate at the Colorado River Substation.	Delaney Substation: Sub to be located at 45550 W Salome Hwy, Tonapah AZ 85354. 33deg 28’ 51.51”N 113deg 2’ 3.68”W Terminal structure should be located at the northeast corner of the station. The new line will terminate in the northern most position, via the East bus. Colorado River Substation: The preferred Point of Interconnection (POI) for Delaney – Colorado River 500 kV would be approximately 900 ft. southeast from the southern fence of Colorado River Substation.	9/26/2014 11/13/2014
7	Can CAISO provide more clarity on whether the existing Palo Verde – Colorado River 500 kV transmission line may need to be looped into the Delaney Substation?	That is not part of the scope of this project.	9/26/2014

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8	<p>In order to support proper sizing of the proposed DCR transmission line, it would be helpful to obtain more guidance around phasing of the DCR transmission line. Specifically,</p> <p>a. Provide information on maximum operating phase to phase voltage of the system.</p> <p>b. What are maximum fault clearing times required for multi-phase or single phase to ground faults on near-end, far-end, substation bus or breaker failure fault locations?</p> <p>Provide maximum fault current levels at the Delaney and Colorado River 500 kV buses without the proposed DCR transmission line?</p>	<p>a. Maximum continuous operating voltage is 1.1 pu</p> <p>b. System protection is not included in the scope of this competitive solicitation. System protection requirements and associated fault clearing times shall be coordinated with the interconnecting substation owners.</p> <p>c. Delaney Substation: Preliminary studies indicate the three phase fault current in year 2020 at Delaney sub is 29.3 kA. This calculation assumes the DCR line is not in service. The approved project sponsor will be required to request an interconnection study from the substation owner.</p> <p>Colorado River Substation: The ISO has requested this information from SCE. This response will be updated when the ISO receives this information.</p>	10/02/2014
9	<p>Can CAISO provide more information on the specific steps that the project sponsor must initiate with respect to WECC path ratings (and interaction with existing PTO's and CAISO). Furthermore, can CAISO provide more information on how the proposed DCR transmission line impacts important path ratings (i.e., WECC Path 46 and WECC Path 49)?</p>	<p>The project sponsor will be expected to follow the WECC procedures regarding the path rating process. The ISO will cooperate and participate in the necessary processes as the planning coordinator and transmission operator. The ISO does not assume that the WECC Path 46 or Path 49 ratings will be increased, nor do we expect the project to adversely impact these path ratings.</p>	9/26/2014
10	<p>Has CAISO performed or is CAISO aware of any subsynchronous resonance (SSR) and subsynchronous torque interaction (SSTI) studies to determine potential impacts of the proposed DCR transmission line on interconnected generators and if so could CAISO provide the reports?</p>	<p>The ISO has not performed these studies. There may be a need for the project sponsor to perform these studies.</p>	9/26/2014
11	<p>Will a tower for microwave communication be provided at the Delaney Substation?</p>	<p>The ISO does not have this information.</p>	9/26/2014
12	<p>Please provide one line and general arrangement drawings for the Colorado River 500 kV Substation.</p>	<p>This information is confidential and may not be released by the ISO.</p>	9/26/2014

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13	Please provide one line and general arrangement drawings for the Delaney 500 kV Substation.	This information is confidential and may not be released by the ISO.	9/26/2014
14	For the proposed DCR transmission line, what are the proposed line reclosing criteria, circuit breaker clearing times, and reclosing logic including time delays and reactive switching?	System protection is not included within the scope of this competitive solicitation. System protection shall be coordinated with the substation owners.	9/26/2014
15	For the existing series compensated 500 kV lines nearby the proposed DCR transmission line, what are the proposed line reclosing criteria, circuit breaker clearing times, and reclosing logic including time delays and reactive switching?	The ISO does not have this information.	9/26/2014
16	Does CAISO have a set of line rating assumptions for ambient temperature, maximum conductor temperature, wind speed, emissivity and absorptivity that should be used for conductor selection?	Please see response to Question 1 above.	9/26/2014
17	Did CAISO set the line ampacity and impedance criteria for the DCR transmission line to match the conductor used for the Devers – Colorado River #2 (part of DPV #2) transmission line?	The ISO identified the line ratings to roughly match the conductor ratings on the existing Palo Verde to Colorado River and downstream facilities.	9/26/2014
18	Why are the ampacity rating requirements for the Series Capacitor lower than the transmission line ampacity requirements?	The ISO identified the series capacitors to match the series capacitor ratings on the existing Palo Verde to Colorado River and downstream facilities.	9/26/2014
19	As there are no substations that are part of this project, will Section S – Substations be evaluated if filled out? Thanks,	The facilities to be located within the terminal substations are not included in the scope of this solicitation.	9/26/2014
20	Application identifier P-1 requests a list of <u>all</u> transmission lines constructed, owned, operated, maintained within the last 5 years. As written, it would appear a list of every one of a project sponsor's transmission lines would be required to answer item P-1 if the sponsor continues to own, operate and maintain a transmission system. For certain sponsors, this would result in an extremely voluminous list which would include facilities with voltage levels and construction types very dissimilar from the Delaney-Colorado River project. Could the ISO provide guidance on the pertinent information requested, such that the	The applicant should provide a list of all bulk electric transmission lines. Bulk electric is defined as transmission facilities operating above 100 kV.	10/02/2014

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	applicant(s) may provide a more limited set of data? For instance, would it be adequate to list information relating to voltages above 200kV?		
21	Please provide details about the build-up of the ISO's \$300M planning cost estimate? For example, assumptions on materials, contingency, etc.	This estimate was based on cost information available from a recently developed similar project in the vicinity.	10/02/2014
22	The ampacity rating on the proposed series compensation is significantly lower than the ampacity rating on the proposed transmission line. Based on the Q&A log, this was proposed in order to match the existing Palo Verde to Colorado River and downstream facilities. Since the series compensation limits the rating on the transmission line, can a participant propose a transmission line that has a minimum summer line continuous ampacity less than 3,800 Amps but more than 2,700 Amps? This will minimize any excess transmission capacity that will remain unused.	Please follow the published project functional specifications. The ISO will not consider applications that do not conform to the published functional specifications.	10/02/2014
23	The series compensation needs a source of power, possibly from distribution lines in the area, in order to operate. Are the facilities associated with interconnecting the series compensation to a power source included as part of cost for the overall project? a. If yes, is the underground source of the existing series cap on DPV1 available?	The project sponsor is required to provide its own station service for the series compensation facilities.	10/02/2014
24	Is it possible to extend the submission date deadline to late December?	The ISO will not extend the deadline.	10/09/2014
25	As you are able, I would request clarification, via the Transmission Planning web page, of the following portion of the Delaney-Colorado	The series compensation is included within the scope of work for this competitive solicitation. The approved project sponsor will	10/09/2014

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	River functional specification. As I read the selection noted below, I am unsure whether the Delaney-Colorado River project includes series compensation as part of the scope of the competitive solicitation. Please clarify if the series compensation will be installed by another party or if the project sponsor is responsible for both the installation and the cost?	be responsible to engineer, install, own, operate and maintain the series capacitors, along with the transmission line facilities.	
26	Per T-13e, CAISO requests a description of the approach the Project Sponsor's will use to determine the cost to implement changes at the substation or other locations that are associated with the interconnection of the proposed project at the substation and of those costs which will be paid for by the Project Sponsor. It is understood that substation interconnection is not within project scope, does CAISO expect a response to this question?	The applicant project sponsor may answer this particular question with NA.	10/23/2014
27	Does the depreciation expense included in CAISO's cost/benefit analysis for Delaney-Colorado include the cost recovery of the final removal and disposal of the transmission line at the end of its 50 year life? If so, what amount is CAISO assuming for the removal and disposal cost?	The ISO does not see that the question pertains to the Phase III competitive solicitation process. However, the ISO can confirm that no net salvage costs were assumed at the end of the 50. Year life in the economic evaluation. Further discussion of phase I and Phase II transmission planning issues should take place in the TPP process.	10/30/2014
28	The functional specification for the DCR project included a statement in the "Location of Series Compensation" that indicates the compensation should be located approximately in the middle of the Colorado River – Delaney 500 kV line. Can the ISO clarify on what is meant by "approximately"?	The series compensation can be located at either end of the line or anywhere along the line. The location of the series compensation for the parallel Devers-Colorado River 500 kV line is approximately in the middle of that line, so the ISO's preference is to locate the series compensation on the Delaney-Colorado River line a similar electrical distance from Colorado River substation as the series capacitors on the parallel line.	10/30/2014

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