Southern California Edison
2012 LTPP R.12-03-014

DATA REQUEST SET R.12-03-014 DRA-SCE-002

To: DRA
Prepared by: Phillip Leung
Title: Power System Planner
Dated: 07/24/2012

Question 01.a:

1. SCE reply testimony at 17: 21-23:

"SCE recognizes that transmission fixes can reduce some LCR need and is willing to explore possible opportunities with the CAISO to reduce LCR need prior to procurement."

SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

a. Have all opportunities to increase the transfer capacity of the 230 kV circuits between Serrano and Villa Park been exhausted? If so, please provide documentation and explain why there are no additional 230 kV upgrade possibilities for these circuits. If not, please describe the type of upgrade that could be installed, the increase in circuit transfer capacity it could provide, and any estimates SCE may have of the costs and the time horizon for completion of such upgrades.

Response to Question 01.a:

SCE has previously proposed and implemented projects to reduce LCR needs for some of the SCE Local Areas in the Annual RA proceedings. Because of the short period for development and construction, the type of projects that have been investigated and proposed were mostly Remedial Action Schemes. In general, such projects did not require permitting or installation of major transmission facilities. This type of transmission fix can still be explored for the constraint at issue. Other transmission fixes such as constructing new transmission circuits would cost in the order of about fifty to a hundred million dollars. It would take up to ten (10) years to complete the technical studies to verify transmission system performance, determine transfer capacity, obtain necessary approvals, permits and licenses, perform environmental assessments, engineering, procurement, and installation for such fixes.

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Question 01.b:

1. SCE reply testimony at 17: 21-23:

"SCE recognizes that transmission fixes can reduce some LCR need and is willing to explore possible opportunities with the CAISO to reduce LCR need prior to procurement."

SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

b. Have all opportunities to increase the 230 kV system transfer capacity between and among Serrano and Lewis, Lewis and Villa Park, Barre and Villa Park and Barre and Lewis been exhausted? If so, please provide documentation and explain why there are no additional 230 kV upgrade possibilities for these circuits. If not, please describe the type of upgrade that could be installed, the increase in circuit transfer capacity it could provide, and any estimates SCE may have of the costs and the time horizon for

completion of such upgrades.

Response to Question 01.b:

Response: Refer to response to a) above.

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Question 01.c:

1. SCE reply testimony at 17: 21-23:

"SCE recognizes that transmission fixes can reduce some LCR need and is willing to explore possible opportunities with the CAISO to reduce LCR need prior to procurement."

SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

c. Have all opportunities to increase the 230 kV system transfer capacity associated with the 230 circuits between Sylmar, Eagle Rock, and Gould been exhausted? If so, please provide documentation and explain why there are no additional 230 kV upgrade possibilities for these circuits. If not, please describe the type of upgrade that could be installed, the increase in circuit transfer capacity it could provide, and any estimates SCE may have of the costs and the time horizon for completion of such upgrades.

Response to Question 01.c:

Response: Refer to response to a) above.

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Question 01.d:

1. SCE reply testimony at 17: 21-23:

"SCE recognizes that transmission fixes can reduce some LCR need and is willing to explore possible opportunities with the CAISO to reduce LCR need prior to procurement."

SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

d. If applicable, please provide any additional explanation of the extent to which incremental 230 kV upgrades associated with the Serrano/Lewis/Villa Park/Barre and the Sylmar/Eagle Rock/Gould 230 kV systems might be possible.

Response to Question 01.d:

Response: Refer to response to a) above as the upgrade could be a new transmission line.

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Question 01.e:

1. SCE reply testimony at 17: 21-23:

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SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

e. Please explain whether or not SCE believes some combination of increased 230 kV transfer capacity associated with the Serrano/Lewis/Villa Park/Barre and the Sylmar/Eagle Rock/Gould 230 kV systems coupled with additional dynamic reactive support would be a reasonable reinforcement possibility to analyze for the Western LA Basin.

Response to Question 01.e:

Response: SCE believes that such studies need to include reruns of the LCR studies for the Western LA Basin and the LA Basin areas to determine the effects of the upgrades to the LCR needs. The need for voltage support should come from the LCR restudies if there is a reduction in LCR amount.

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Question 01.f:

1. SCE reply testimony at 17: 21-23:

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SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

f. Would it be reasonable for SCE and/or CAISO to analyze the use of synchronous condenser operation at some combination of current fossil-fueled OTC sites (Alamitos, Redondo Beach, El Segundo, Huntington Beach)? Please explain your answer and provide any additional information to assist in understanding how such potential use of the valuable electrical location of these sites might contribute towards lower LCR needs in the Western LA Basin.

Response to Question 01.f:

Response: Since the current generation owners have officially announced plans for repowering or refurbishments of their plants, the use of synchronous condenser operation for the plants should be explored with the owners and CAISO, only if the plant owners decide to cancel their plans. Such official changes in plans would normally be reflected in the technical studies performed by the CAISO and Participating Transmission Owners (PTOs).

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Question 01.g:

1. SCE reply testimony at 17: 21-23:

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SCE reply testimony at 18: 1-13:

"There are challenges to constructing new transmission systems and upgrading the current transmission system to permit the import of power from outside the LA Basin to meet the LCR need identified by CAISO. First, significant construction of new transmission lines or upgrades to current transmission lines to eliminate LCR need may not be viable in the urban Los Angeles area. Community opposition may foreclose the ability of SCE to pursue certain transmission solutions. Second, the construction of new transmission and upgrading current transmission alone is not sufficient. As stated in SCE's opening testimony, in addition to new transmission construction and/or upgrading current transmission, additional voltage support will be needed to transport the additional power through SCE's transmission system. Power cannot be transported through the transmission system without adequate voltage support. New generation facilities providing voltage support must be constructed near areas where the additional power is needed. As a result, additional generation facilities would most likely still be required near load centers."

SCE reply testimony at 19: 7-8:

"The contingency loss of the 230 kV lines on Serrano-Villa Park corridor establishes the LCR need for the Western LA Basin."

g. If SCE contends that the limiting constraints associated with the 230 kV system can only be resolved, or can best be resolved, with 500 kV system expansion such as noted in the 2010/2011 CAISO Transmission Plan (p. 279, "Alternative 1: New Mira Loma – Lighthipe 500 kV line and dynamic reactive support at Santiago, Eagle Rock, Encina and South Bay (500 MVAr at each location)"), please confirm or explain otherwise.

Response to Question 01.g:

Response: The statement in the 2010/2011CAISO Transmission Plan refers to the reduction of generation in the coastal areas to balance loads with resources with various scenarios for integration of renewable resources in the system. The alternatives the CAISO proposed included running up to 6700 MW in the SCE LA Western Basin or the 500 kV alternative. The same section notes that 500 kV alternative does not mitigate the Serrano-Villa Park overload for the N-2 contingency in the corridor. To mitigate this overload, CAISO identified an SPS for dropping load at Lewis Substation. For the specific overload on the Serrano-Villa Park 220 kV line, the SPS would normally be more cost effective than the 500 kV alternative.