California ISO
Shaping a Renewed Future

Written comments with CAISO reply
Submitted after the
April 12 Stakeholder Meeting regarding the
2013 Local Capacity Requirement (LCR) Results

SDG&E comments regarding CAISO's
2013 Local Capacity Technical Study Results

The CAISO's April 9, 2012 "*2013 Local Capacity Technical Analysis, Draft Report and Study Results*" estimates 2013 Local Capacity Requirements (LCR) for the San Diego area at 2570 MW. The CAISO bases this need on the outage of 500 kV Imperial Valley-Suncrest line followed by the outage of the 500 kV ECO-Miguel line; a Category C event defined by an L-1 contingency, system readjusted, followed by another L-1 (C3). The CAISO assumes no controlled load drop. With 2570 MW of Net Qualifying Capacity available in the San Diego area, post-transient voltage instability is mitigated for this L-1-1 contingency event.

In the CAISO Board-approved 2011-2012 Transmission Plan the CAISO assumed 370 MW of controlled load drop to achieve voltage stability under a G-1/L-2 contingency event where the Otay Mesa combined cycle plant is off-line and there is a simultaneous outage of the 500 kV Imperial Valley-Suncrest and 500 kV Imperial Valley-ECO lines. Post-transient voltage instablility for the L-1-1 outage of the 500 kV Imperial Valley-Suncrest line followed by the outage of the 500 kV Imperial Valley-Miguel line can also be mitigated with controlled load drop. Controlled load drop is acceptable mitigation for reliability criteria violations under CAISO, WECC and NERC reliability criteria and is widely used throughout the WECC. The CAISO's current LCR manual supports the use of controlled load drop. The CAISO's January, 2012 "*Final Manual, 2013 Local Capacity Area Technical Study*" on page 14 states:

> "Category C conditions exist after the second contingency has occurred. At this time, firm load shedding is allowed in a planned and controlled manner."

SDG&E will have a planned and controlled load drop scheme in place when the Sunrise Powerlink goes in service. This scheme will protect against voltage instability for any L-2 or L-1-1 contingency event involving the Sunrise Powerlink and the Southwest Powerlink. See the attached letter documenting the planned implementation of this scheme.

The use of 378 MW of load shedding would reduce the LCR for the San Diego area to 2192 MW; the amount of Net Qualifying Capacity in the San Diego area needed to avoid post-transient voltage instability for the outage of the Otay Mesa combined cycle plant, followed by the outage of the 500 kV Imperial Valley-Miguel line. This is a Category B event defined by a G-1 contingency, system readjusted, followed by an L-1 contingency (G-1/L-1).

With 378 MW of load shedding in place, the LCR for the Greater Imperial Valley-San Diego area would be unchanged at 2939 MW, but the LCR for the San Diego area would be reduced to 2192 MW.

ISO response: The ISO does not consider it acceptable to rely on load shedding to mitigate the Category C outage of N-1-1 at this time because there is no suitable Special Protection System designed or currently in place. The safety net SDG&E has proposed to be in service for the summer of 2012 is not acceptable under existing criteria for mitigating Category C contingencies. Further, the ISO's decision to plan its system to operate available generation to ensure stable operation of the system following the loss of Sunrise and IV-Miguel without reliance on an Special Protection Scheme will minimize the risk of cascading outages due to disturbances on the grid and unreliable system conditions such as those that have occurred in recent years in the San Diego area. The ISO acknowledges that the San Diego-Imperial Valley area 2013 LCR needs would not change at 2939 MW, therefore the LCR allocation to each LSEs would not change.

While controlled load drop will mitigate the identified post-transient voltage instability, other solutions are available. SDG&E recommends that in the CAISO's 2012-2013 Transmission Planning Process (TPP), the CAISO should revisit the conclusion in the

CAISO's 2011-2012 Transmission Plan deferring several synchronous condensers proposed for the San Diego area to later rounds of the TPP process. SDG&E's and the CAISO's own studies indicate that the synchronous condensers would be effective in improving post-transient voltage stability, thereby minimizing the possibility that controlled load drop would ever be used

ISO response: The ISO will continue to comprehensively review the need for San Diego area reliability driven transmission upgrades, including dynamic reactive support, under various resource development scenarios in the Transmission Planning Process (TPP).

SDG&E appreciates the CAISO providing for the first time an analysis of seasonal LCR needs for the San Diego area. These preliminary studies provide valuable information that can be discussed at the CPUC in RA proceedings. Several questions still remain, such as should October be considered a maintenance month, but this study will help focus future discussions. There appears to be indications that further refining maintenance months assumptions could prove beneficial for customers in the San Diego area. SDG&E looks forward to pursuing seasonal LCR needs further.

ISO response: The "non-peak" season 2013 LCR results show a higher need in the off-peak months than the peak months. This supports the ISO's belief that no cost savings to ratepayers would be achieved by implementing seasonal LCR requirements. As stated in the ISO's LCR report, the 'non-peak" season LCR results are for stakeholder information only, and the LSE LCR allocation will be based on the peak system results to conform to the ISO Tariff.

Attached SDG&E letter:

Subject: Planned Installation of a "Safety Net" to Address Severe Category C and D Contingencies in the San Diego Sub-Area

Dear Mr. Sparks:

The purpose of this letter is to confirm San Diego Gas & Electric's planned installation of a "Safety Net", which will shed load to address certain severe Category C and D contingencies that affect the San Diego sub-area. The general parameters of this safety net have been discussed in other forums, including the Sunrise Powerlink CPCN application and the 2011/2012 Transmission Planning Process. The details of this "Safety Net", and a proposed implementation schedule, follow in the body of this letter.

The purpose of the "Safety Net" is to mitigate the effects of the two most severe Category C and D contingencies that will affect the San Diego transmission system following the addition of the Sunrise Powerlink:

1) The simultaneous N-2 contingency of the Imperial Valley-Miguel and Imperial Valley-Suncrest 500 kV lines - Category D
2) The non-simultaneous N-1-1 contingency of the of the Imperial Valley-Miguel and Imperial Valley-Suncrest 500 kV lines – Category C

The first contingency is more severe, in that the contingency assumes no ability to adjust generation dispatch between the loss of the first and second lines. The loss of both lines drastically reduces the ability to import power in the San Diego load center and at sufficiently high levels of load and import places the system at a risk of voltage collapse. This was confirmed by the transmission planning studies underlying the CAISO's 2011/2012 Transmission Plan. The planned load shedding scheme mitigates the risk of voltage collapse by reducing San Diego load and thus import below the maximum level that can be supported by the transmission system. This load reduction would occur immediately in the event of the N-2, but would occur for the N-1-1 only in the event of the second contingency under certain load levels.

The "Safety Net" will be designed to monitor flows on the five 230 kV South of SONGS lines that comprise Path 44. The "Safety Net" will be armed when San Diego load reaches or is forecast to reach levels that would be sufficient to cause the risk of voltage collapse if the events described above occur. When Path 44 flows exceed a level that would indicate that both 500 kV lines from Imperial Valley to the San Diego load center have tripped, the "Safety Net" will shed load in San Diego.

The aggregate amount of load shedding is approximately 800 MW, but will vary by system load level. This would be sufficient to reduce the import from a nominal operating limit for 2013 of 3500 MW to 2700 MW during 90/10 heavy summer conditions. This is below the current acceptable N-1 import level without Sunrise (2850 MW, limited by the N-1 of Imperial Valley-Miguel 500 kV line).

SDG&E plans to have this "Safety Net" in service by **June, 2012**. The schedule is driven by the addition of the Sunrise Powerlink and the risk of an extended outage of the SONGS generation during summer peak 2012; however, the "Safety Net" is planned to remain in service permanently following the return of the SONGS units. The "Safety Net" will be updated periodically to reflect future system changes, which may include adjustments to the SONGS Separation Scheme, addition of dynamic reactive power resources, retirement of generation resources, and so forth.

Please feel free to contact me if you have any further questions.

Sincerely,
Signed
John M. Jontry, P.E.