

SDG&E comments on 2015/2016 draft plan

- SDG&E submitted a project to eliminate the Miramar LCR sub-area (Miramar 230/69 kV substation). We recommend approval of this project, as it has immediate reliability, economic and operational flexibility benefits at a modest cost. This project also has the benefits of connecting the 230 kV system to a possible energy storage site at Miramar and can shorten the black start path from the Miramar Energy Facility (MEF) to major San Diego-area generation.
- SDG&E submitted a comprehensive project to address the long-term need for a double-circuit 230 kV loop around the San Diego downtown area. This area serves contains multiple commercial, civic, and national security resources (Qualcomm Stadium, Petco Park, North Island NAS, Marine Corp Recruit Depot San Diego (MCRD), Lindbergh Field, Stone Brewing at Liberty Station, and “King” Stahlman Bail Bonds). We strongly recommend that the CAISO consider approving the project as a whole and avoid a piecemeal approach, as this will make the CPUC permitting process simpler.
- SDG&E submitted a project to accommodate a new substation with an initial 60MVA capacity, ultimate 120MVA (Ocean Ranch Substation). Together with the new San Luis Rey to Monserate line (submitted in 2012/2013 TPP cycle, CAISO deferred) and a the TL694A Reconductored (submitted in 2013/2014 cycle, CAISO deferred) will not only accommodate Ocean Ranch Substation but will also eliminate the LCR need in the Pala sub area. We recommend approval of this project.
- SDG&E submitted a third 500/230 bank installation at Miguel. This project will mitigate the T-1 thermal violation at Miguel and it will eliminate the existing SPS. In addition a third bank at Miguel will eliminate the voltage deviation violation at the Miguel 500kV bus when TL50001 is tripped and keep the Synchronous Condensers from tripping under the same contingency. We recommend approval of this project.
- SDG&E recommends the CAISO modeling of the south to north flow on the retired Path 44 conform with recent actual historical flows under peak load conditions. In addition, we recommend against assuming the 500 kV series capacitors at Miguel, Suncrest and North Gila are bypassed in studies assuming peak load conditions. Switching of the series capacitors is an appropriate short-term operating measure, but is not an appropriate long-term mitigation, as it reduces the scope of operator action during extreme system conditions. Grid Operations generally prefers to maintain the flexibility to switch the series capacitors depending on system conditions.
- Throughout multiple TPP cycles, including the current plan, the CAISO has approved multiple capital projects to address the congestion issues at northern part of the West of River (WOR) path, including the Lugo-Victorville 500 kV Upgrade currently recommended for approval. Assuming that the CAISO's current set of studies included bypassing of the series capacitors in the southern part of WOR path (specifically SRPL and SWPL) as one of the basecase assumptions, and also assuming the series caps in the northern part of the WOR path are all switched in, it appears to artificially push the flow from south to the north, thereby artificially increasing congestion in the northern part of the WOR path. It certainly would raise the question of why bypassing the series capacitors is acceptable in one portion of the CAISO-

controlled system, but not elsewhere. SDG&E would urge the CAISO to apply the study assumptions uniformly across the system footprint by studying the congestion in the southern part of WOR with all northern part of series cap bypassed.

- In the draft plan at pg. 135, there are multiple instances where SDG&E's 500kV system is referred to as a "525Kv system". SDG&E's 500 kV system is operated at 1.05PU, which is the same way as PG&E and SCE's 500kv systems are operated. Throughout the draft report, however, PG&E and SCE's system all labeled as 500 kV, with SDG&E being the only exception. SDG&E would urge the CAISO to apply the definition of bus nominal voltage uniformly across the system footprint.
- In the draft plan at pg. 136, CAISO states, "The studies performed for the heavy summer conditions assumed all available internal generation was being dispatched with targeted San Diego import level in a range of 2400 to 3500 MW". SDG&E would be very interested if CAISO can share with SDG&E the 3500MW import power flow cases and study results.
- In the draft plan at pg. 199, Table 3.3-3, Reliability Assessment Results, lists the reliability concerns under the Winter Gas Curtailment Reliability Assessment. The CAISO suggest for the N-1 contingency of Miguel 500/230KV bank, tripping the 2nd parallel bank as the mitigation. This will result in loss of entire SWPL import path. This appears to be counter-productive, as in the event of gas curtailment, in-basin thermal generations will be curtailed therefore it's crucial to maintain an import path that brings in the renewable energy from the east into San Diego load center. Installation of a 3rd 500/230Kv bank at Miguel will effectively mitigate this violation, **in addition to aforementioned other benefits.**
- In the draft plan at pg. 197 the CAISO indicates: "The second most critical reliability concern was the potential post-transient voltage instability concern due to overlapping outage of the ECO-Miguel 500 kV line, system readjusted, followed by the Ocotillo – Suncrest 500 kV line. The post-transient voltage instability concern is mitigated with re-scheduling of voltage control of the synchronous condensers that are being installed in northern San Diego and southern Orange County." Then on pg. 199, Table 3.3-3, the CAISO suggests "Reschedule voltage regulation at terminal voltage with 1.05 – 1.1 p.u. for synchronous condensers located in northern San Diego and southern Orange County". Assuming the CAISO intends to reschedule the voltage at pre-contingency base, SDG&E has these concerns: 1) the precontingency voltage of 1.05 – 1.1 p.u. would force all the synchronous condensers to be at or near their MVAR output limits; therefore when a contingency occurs, there will not be any marginal dynamic VAR support available; 2) the gas curtailment can be a long duration event. To operate the equipment long term at or near their short term design limits of 1.1 PU, could result in damage to the synchronous condensers, as well as other system elements.
- In the draft plan at pg. 197-198 the CAISO indicates: "Another reliability concern associated with this overlapping contingency is the potential overloading on the La Rosita – Rumorosa 230 kV and the Otay Mesa – Tijuana 230 kV line, which can be mitigated by bypassing the series capacitors under pre-contingency basis on the ECO-Miguel 500 kV or Ocotillo – Suncrest 500 kV line (depending on which line had the outage first) and reducing imports via Path 45 to ISO balancing authority area from 300 to 200 MW." Then on pg. 199, Table 3.3-3, the CAISO

suggests “Bypass series capacitors on the ECO-Miguel 500kV line and Ocotillo-Suncrest 500kV line pre-contingency” as mitigation. Similar to the tripping of the ML transformer bank, SDG&E considers bypassing of the series capacitors on the two major 500kV import gateways pre-contingency to be counter-productive. In the event of the gas curtailment, in-basin generation will be tripped therefore it’s crucial to maintain the import paths for renewable energy from east into the San Diego load center, instead of bypassing the series cap to “choke down” the natural flows.