

SDG&E Comments on the proposed “California ISO Planning Standards (draft revision 5)”

Combined Line and Generator Outage Standard

SDG&E proposes including a “Critical T-1/N-1” standard to the existing G-1/N-1 standard. The “critical T-1” definition should include all transformers with 500 kV primary voltages and all transformers with 230 kV primary voltages that are part of WECC paths. The rationale behind this standard is that while transformer outages are less likely than line outages, they can be of an extended nature.

SDG&E recommends that the CAISO consider a similar treatment for potential long-term outages of 230 kV circuits with significant sections of underground cable (i.e. cables with underground sections whose cumulative length exceeds one (1) circuit-mile). This is due to the fact that cable failures can be of a long-term nature and it may be necessary to operate the system at or near peak with a 230 kV circuit out of service due to cable failure.

Voltage Standard

A set minimum voltage at a bus does not protect the system from voltage collapse, therefore SDG&E proposes including the following standards in addition to the listed criteria:

- 1) Identification of critical system busses for each area by QV- or PV-curve analysis
- 2) Minimum reactive margin criteria for critical system buses:
 - a. 75 MVAR for Category C and C.5
 - b. 150 MVAR for Category B
 - c. 250 MVAR for Category A

Category C.5 Contingencies

SDG&E proposes including transmission lines with underground sections in a common duct line, sharing more than four (4) common vaults, as credible double line outages (similar to a common-structure Category C.5). The common vault situation represents a common-mode failure due to a vault fire or similar situation. This would not apply to transmission lines that share a common duct bank but not common vaults.

SPS definition

SDG&E recommends expanding the definition of an allowable SPS to include the insertion or removal of reactive devices (series or shunt capacitors and reactors).

Involuntary Load Shedding Standard

SDG&E recommends establishing the following fixed MW load shedding limits:

- 1) Category A – 0 MW
- 2) Category B (non-radial load, i.e. load served by two or more transmission lines) – 0 MW

- 3) Category B (radial or tapped load) – 100 MW
- 4) Category C (230 kV and below) – 250 MW
- 5) Category C (greater than 230 kV) – 500 MW

SDG&E recognizes the appropriateness of performing VOS-type studies for determining the impact of load shedding; however, all studies of this type tend to have a subjective component and thus represent a bit of a moving target. The advantage of fixed load shedding limits is that it gives a clear performance target and greatly simplifies the planning process.

Treatment of Distributed Generation and Demand Response Programs

SDG&E recommends developing criteria for integrating Distributed Generation and Demand Response Programs into the CAISO's load forecast assumptions. Possible criteria:

- 1) A minimum MW requirement for including a given DG or DR program into the load forecast.
- 2) A fixed percentage assumed available at time of peak

LCR/Generator Deliverability Assumptions

SDG&E recommends integrating LCR and Generator Deliverability criteria into the Planning Standards. The benefits of a given transmission upgrade should include whatever positive impacts it has on LCR and Deliverability performance. Under the current criteria any ancillary benefits are ignored when comparing transmission alternatives.

Generator Pmins

SDG&E recommends including generator Pmin values in the PSLF powerflow cases. This data is, for the most part, not included or respected in developing load flow cases. Considering generator limits will become more important with the integration of intermittent renewable and the need to keep fossil generation on line for spinning reserve, regulation, and reactive margin.

Emergency Rating Criteria

The CAISO should consider developing a planning criteria for emergency limits. Currently, most lines have a normal continuous rating and a 30 minute emergency rating. This is acceptable for operations purposes, but planning should use ratings which have a larger margin of safety to allow for future unknowns. Each transmission line should have three ratings for each season; Summer normal, emergency and extreme emergency and Winter normal, emergency and extreme emergency. The ratings would be based on time.

- 1) Normal = 8760 hour continuous rating.
- 2) Emergency = 4 hour rating.
- 3) Extreme emergency = 30 minute rating.

The purpose of the four-hour rating is to allow flexibility for operations to ride through a system peak without shedding load, at the risk of loss of service life to system components. This is a significant change from current practice and would need to be phased in over a period of time.