

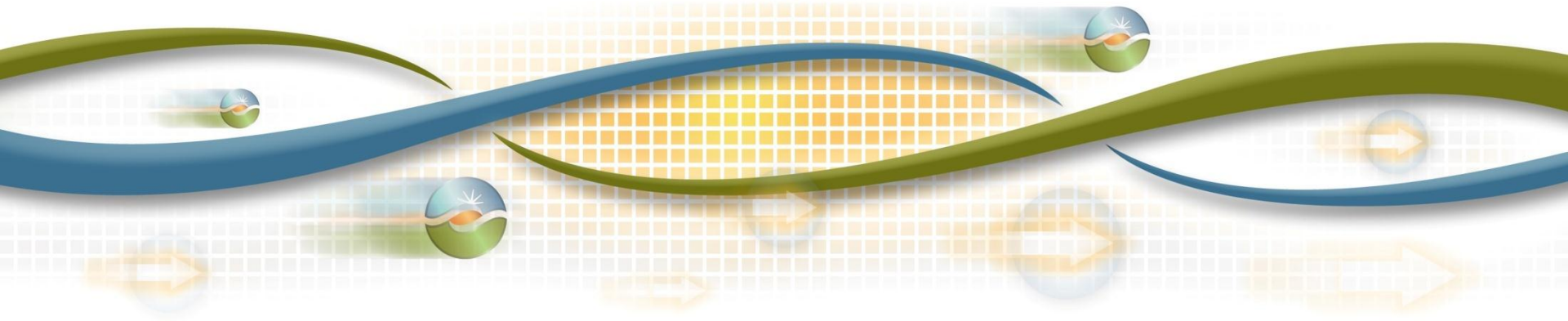


California ISO
Shaping a Renewed Future

North of Lugo (NOL) High Voltage Mitigation Project

Expedited Approval Recommendation

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Sr. Regional Transmission Engineer
June 25, 2015



Expedited Approval Process (BPM 4.11.2.1)

- CAISO executive management may consider approval of a solution with capital costs of less than \$50 million on an expedited basis if the following conditions are met:
 - 1) there is an urgent need for the solution
 - 2) there is a high degree of certainty that the solution will not conflict with other solutions being evaluated in Phase 2 (of Transmission Planning Process)
 - 3) the need to accelerate the solution is being driven by the CAISO's evaluation process or external circumstances

- Such a solution that requires an earlier approval will be presented for a stakeholder review

- CAISO management will brief the governing board

NOL High Voltage Mitigation Project

Submitted by:

Southern California Edison

Need:

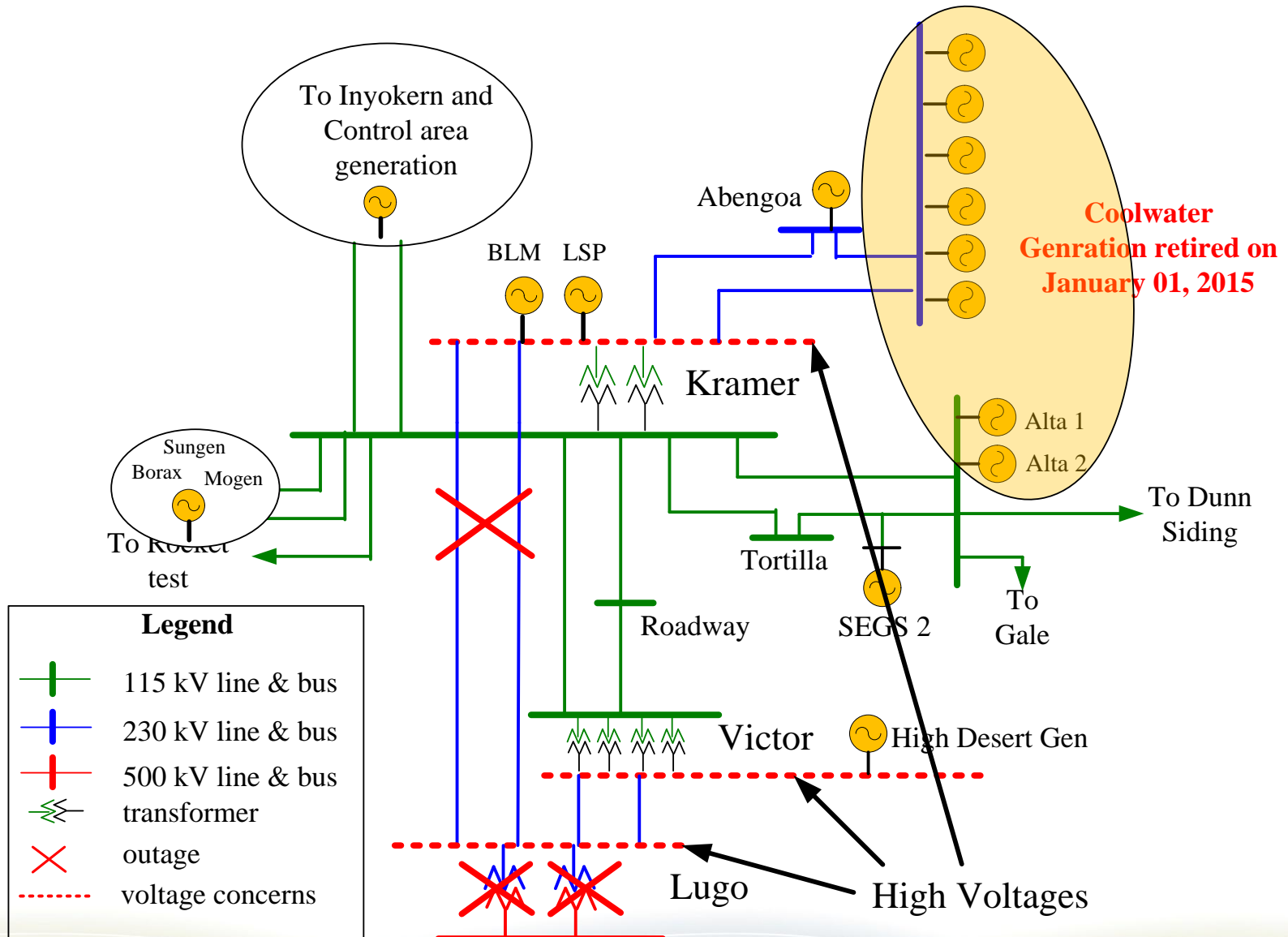
To mitigate NERC Category C voltage issues under normal conditions and category B issues under scheduled outage conditions.

- Generation retirement in NOL area
 - Coolwater generation retired on January 1, 2015
 - In addition, 3 smaller Qualifying Facilities (QFs) in the NOL area recently retired
 - These units were effective at controlling voltages in the area

- Category B (under a scheduled outage of Lugo 500/230 kV bank):
 - Loss of the remaining Lugo 500/230 kV bank would result in extreme high voltages (259 kV, 252 kV and 253 kV at Kramer, Victor and Lugo 220kV substations respectively)

- Category C:
 - T-1-1 of Lugo 500/230 kV banks 1 & 2 result in extreme high voltages (259 kV, 252 kV and 253 kV at Kramer, Victor and Lugo 220kV substations respectively)
 - N-2 of Lugo-Kramer 220 kV lines would results in 259 kV voltage at Kramer 220 kV substation.

NOL High Voltage Mitigation Project (Continued)



NOL High Voltage Mitigation Project (Continued)

Project Scope:

- Two (2) 45 MVAR (rated at 13.8 kV) tertiary bank reactors to the 220/115 kV No. 1 and No. 2 transformer banks at Kramer Substation
- One (1) 45 MVAR 220 kV shunt reactor at Kramer Substation

Cost:

less than \$7.5 million

Other Considered Alternatives

- Status Quo: Would result in high voltage problems under normal and scheduled outage conditions over a wide range of operating scenarios

Expected In-Service:

- Tertiary reactors – June 2016
- 220 kV shunt reactor - June 2017

Potential Issues:

None

Recommended Action:

Approval by the CAISO Executive Management

Next Steps

Date	Milestone
July 2	Stakeholder comments to be submitted to regionaltransmission@caiso.com
July 16-17	CAISO management will brief the Board of Governors