



2009 CAISO Transmission Plan North Valley and Central Valley Areas

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2009 CAISO Transmission Plan Stakeholder Meeting

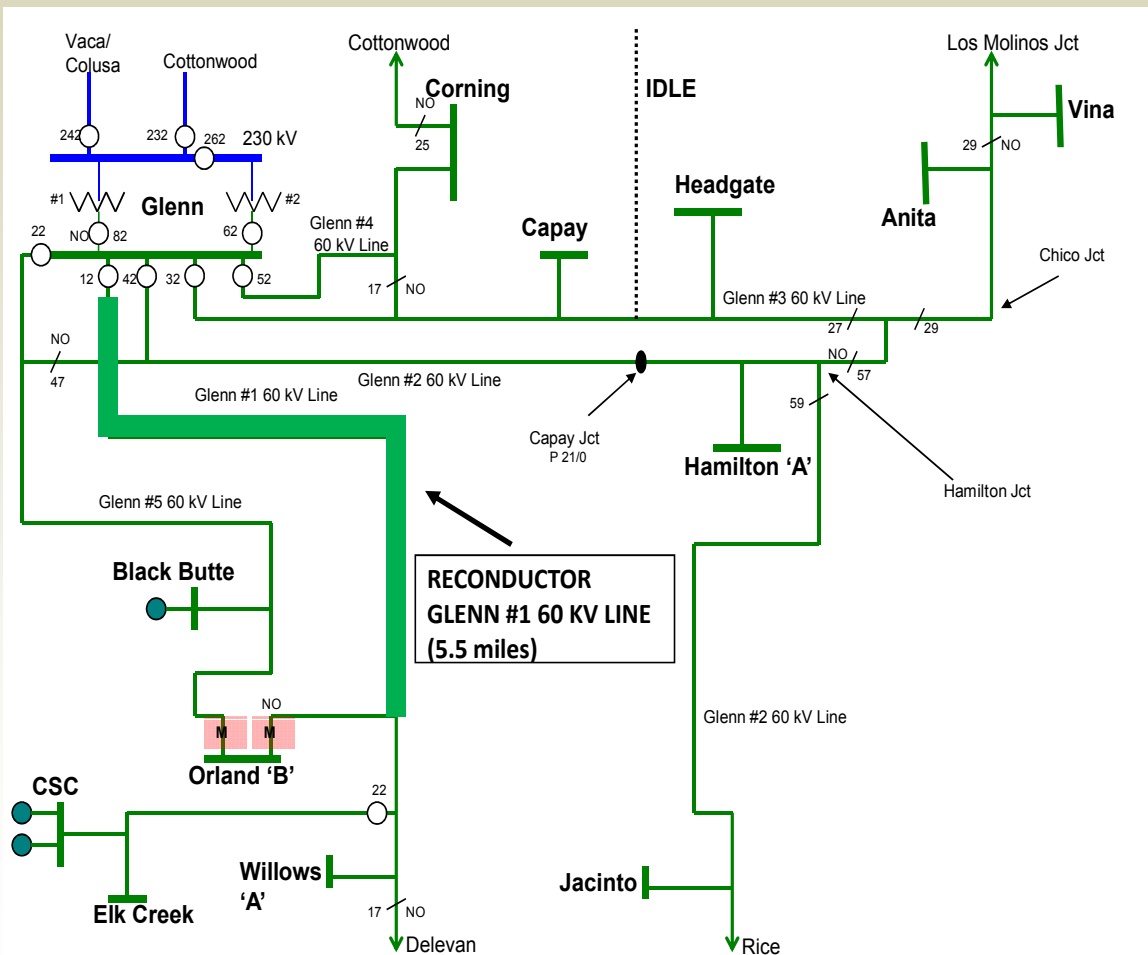
February 27, 2009

Overview of 2008 Request Window

- CAISO has proposed a total of 36 solutions to address the potential problems in the North & Central Valley
- In response to CAISO study results and proposed solutions:
 - 26 project submissions were received through the 2008 Request Window
 - After CAISO initial review
 - 9 submissions (projects) have sufficient information to be considered for approval
 - 2 submissions have been withdrawn
 - 3 submissions have been denied
 - 12 submissions are ongoing projects, may be submitted for CAISO approval in the future
 - 30 additional projects are proposed by CAISO – approval in the future

Projects Recommended for CAISO Management Approval

(1) Glenn No 1 60 kV Line Reconductor



Project proponent: PG&E

Needs:

- NERC Category B (L-1) and (G-1)(L-1)
- NERC Category C (N-1-1)

Project Scope:

Reconductor 5.5 miles of Glenn #1 60 kV Line

Cost: 6-8 \$M

Expected In-Service Date: May 2013

Load:

46 MW of load growing at 1.9% annually

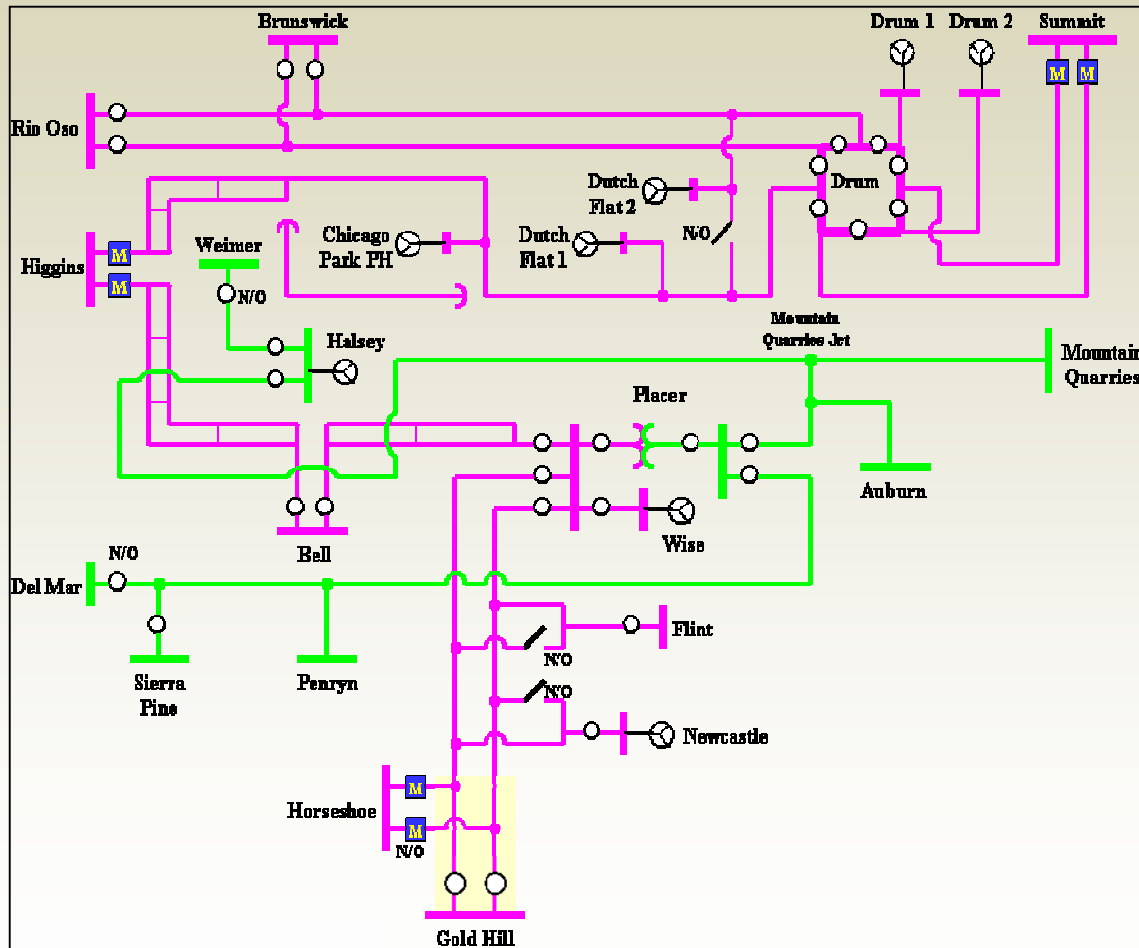
Other Alternatives Considered:

Limited – system is radial after contingency

Recommended Action:

CAISO Approval

(2) Gold Hill-Horseshoe 115 kV Reinforcement



Needs:

- NERC Category B (L-1) and (G-1)(L-1)
- NERC Category C (N-1-1)

Project Scope:

Reconductor 16 miles of the Gold Hill-Horseshoe #1 & #2 115 kV Lines as well as Horseshoe #1 & #2 Taps

Cost: 5-10 \$M

Expected In-Service Date: May 2011

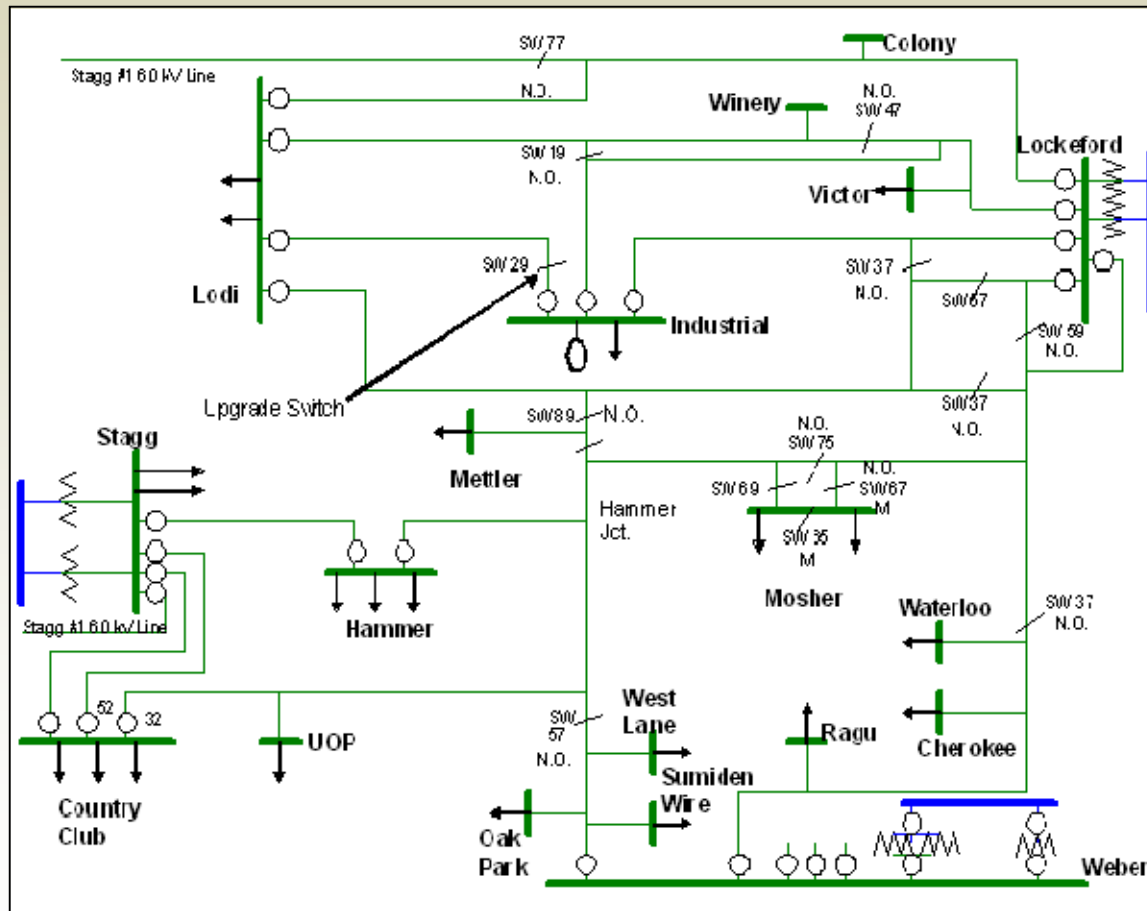
Load: 311 MW of load growing at 2.3% annually

Other Alternatives Considered:

3rd Gold Hill-Placer 115 kV line and Atlantic-Placer voltage conversion

Recommended Action: CAISO Approval

(3) Lodi-Industrial 60 kV Line Switch Upgrade



Needs:

- NERC Category B (G-1)(L-1)

Project Scope:

Replace Switch 29 on the Lodi-Industrial 60 kV line

Cost: < 1 \$M

Expected In-Service Date: May 2010

Load:

188 MW of load growing at 1.2% annually

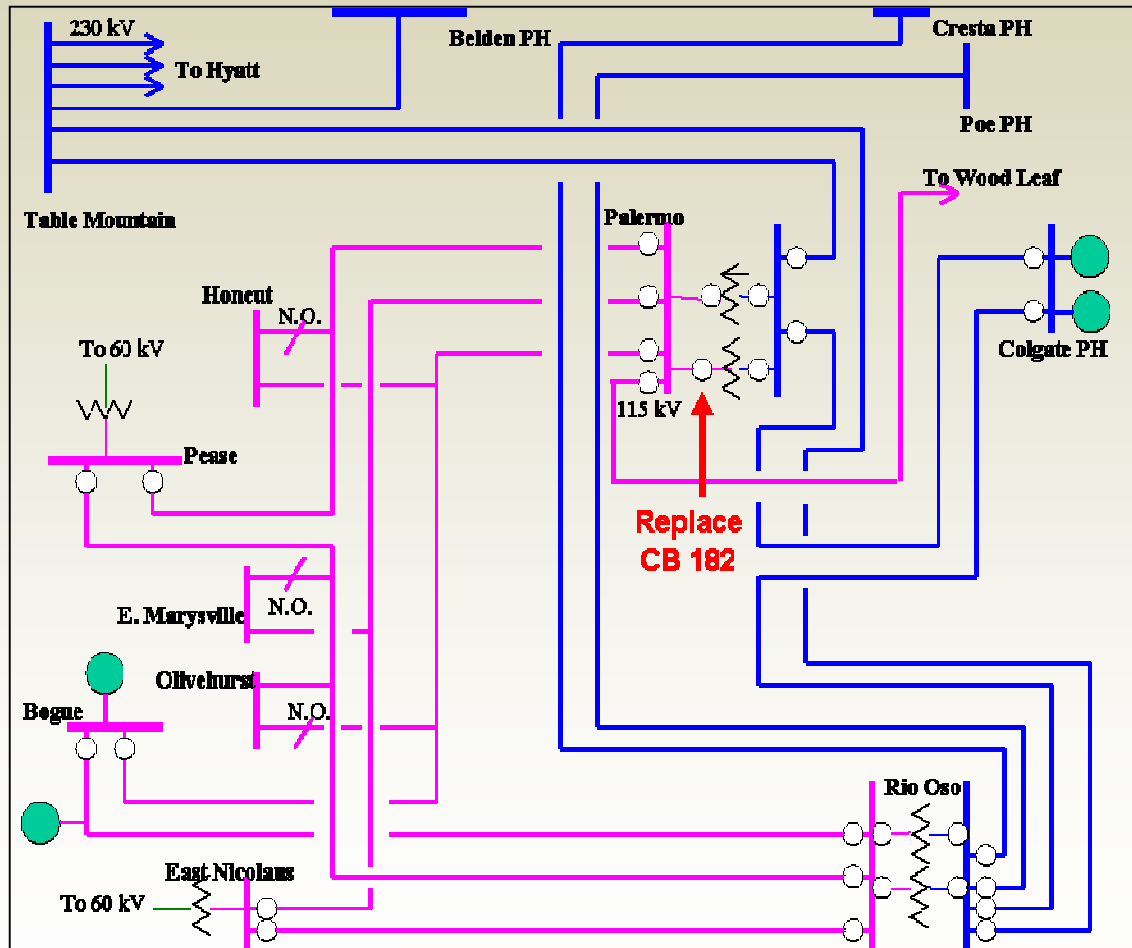
Other Alternatives Considered:

Limited - due to scope

Recommended Action:

CAISO Approval

(4) Palermo 115 kV Circuit Breaker and Switch Replacement



Project proponent: PG&E

Needs:

- NERC Category B (G-1)(L-1)
- LCR decrease

Project Scope:

Replace Palermo circuit breaker (CB) 182 and associated switches

Cost: 1-5 \$M

Expected In-Service Date: May 2010

Load:

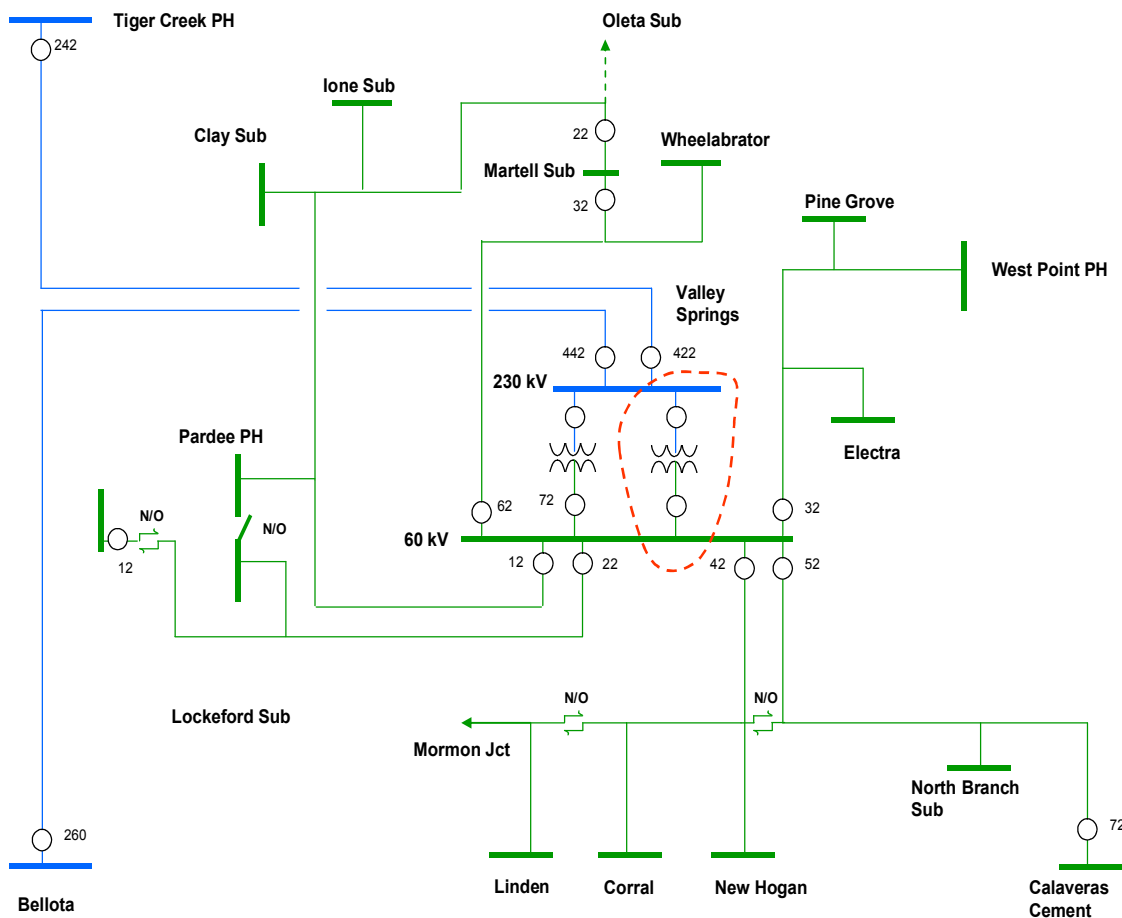
162 MW of load growing at 1.6% annually

Other Alternatives Considered:

Limited - due to scope

Recommended Action: CAISO Approval

(5) Valley Springs 230/60 kV Transformer Addition



Project proponent: PG&E

Needs:

- NERC Category B (G-1)
- No load drop for T-1 (~130 MW)
- Currently maintenance can not be performed, even in off-peak conditions, without load drop because the load can not be transferred

Project Scope:

Add new Valley Springs #2 230/60 kV Transformer

Cost: 8-10 \$M

Expected In-Service Date: May 2012

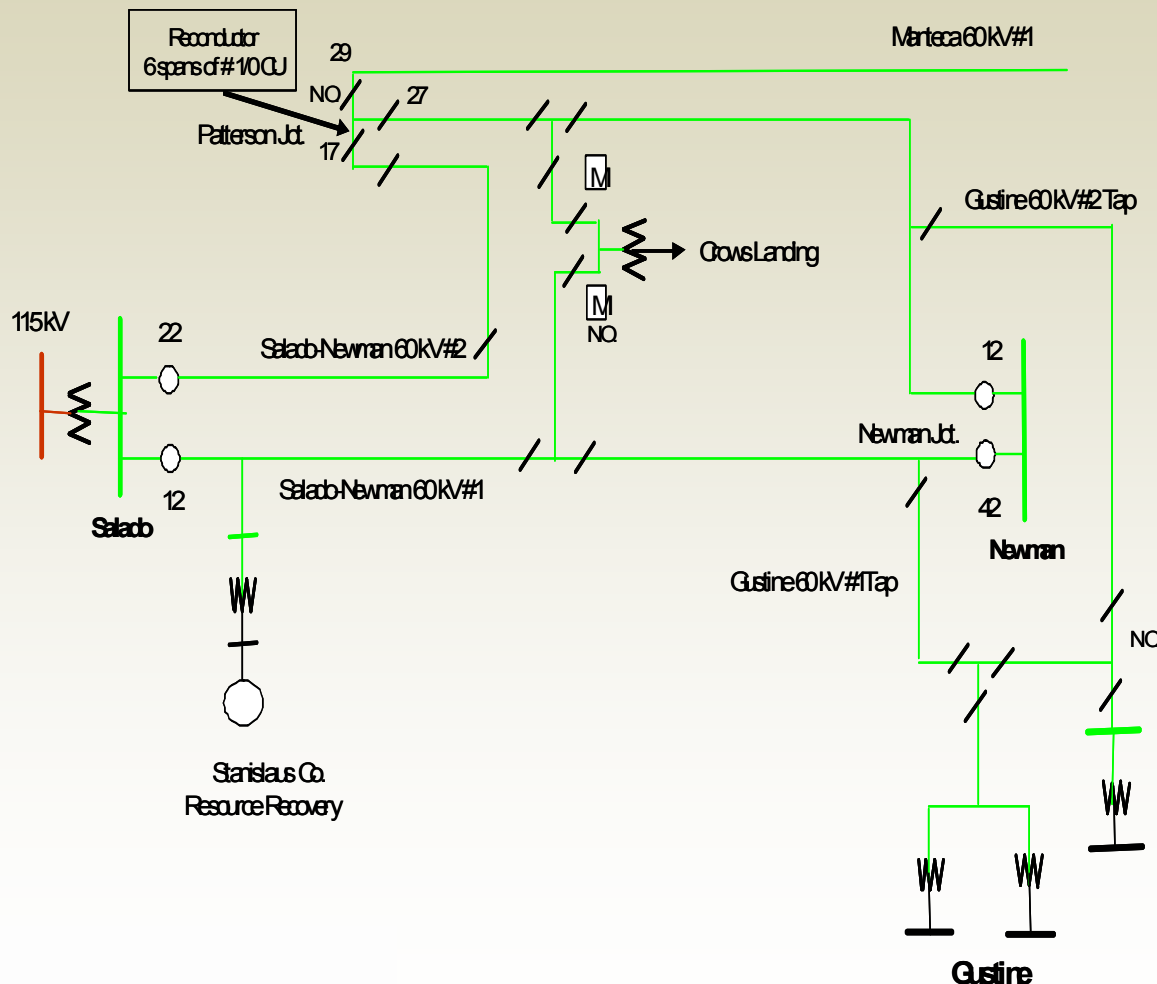
Load: 135 MW of load growing at 1.6% annually

Other Alternatives Considered:

Limited - due to scope

Recommended Action: CAISO Approval

(6) Salado-Newman No 2 60 kV Line Reconductoring



Project proponent: PG&E

Needs:

- NERC Category B (L-1) and/or (G-1)(L-1)

Project Scope:

Reconductor 6 spans of the Salado-Newman #2 60 kV Line

Cost: < 1 \$M

Expected In-Service Date: May 2010

Load:

49 MW of load growing at 2.0% annually

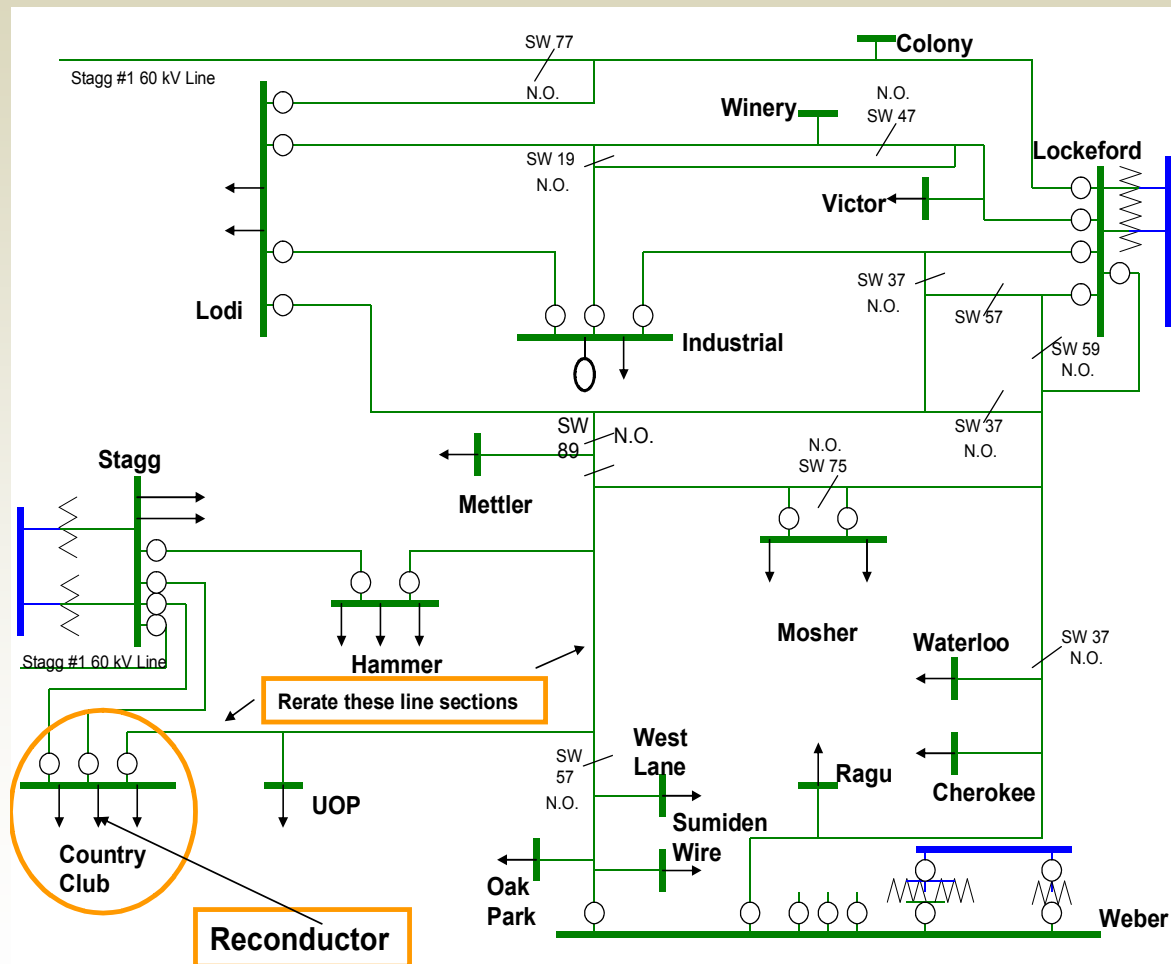
Other Alternatives Considered:

Limited - due to scope

Recommended Action:

CAISO Approval

(7) Country Club 60 kV Bus Upgrade



Project proponent: PG&E

Needs:

- NERC Category B (L-1)

Project Scope:

Reconductor Country 60 kV Bus and re-rate Hammer-County Club 60 kV to 4 feet/sec

Cost: 1-5 \$M

Expected In-Service Date: May 2010

Load:

175 MW of load growing at 1.4% annually

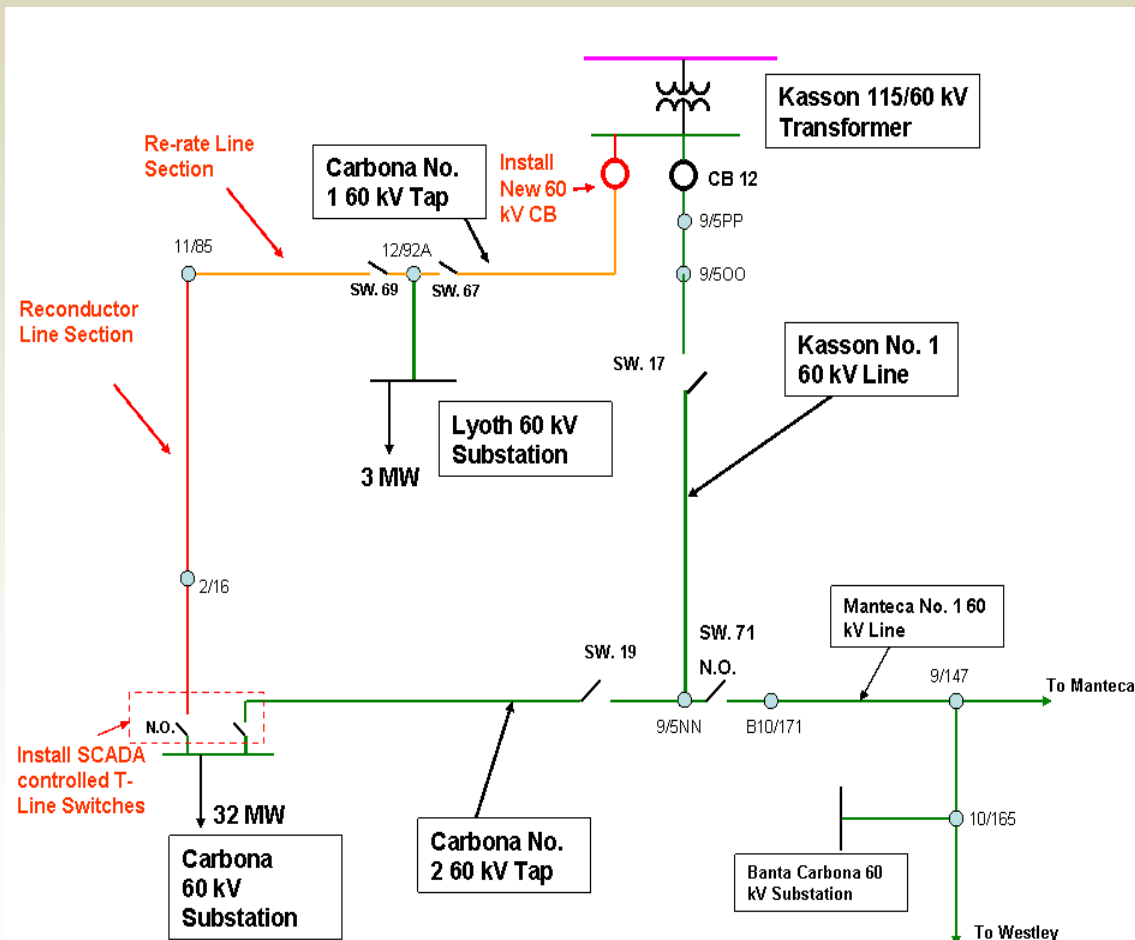
Other Alternatives Considered:

Limited - due to scope

Recommended Action:

CAISO Approval

(8) Carbona Reliability



Project proponent: PG&E

Needs:

- No load drop for L-1 (~ 32 MW)
- Currently maintenance can not be performed, even in off-peak conditions, without load drop because the load can not be transferred

Project Scope:

Install new 60 kV CB at Kasson, reconfigure and rerate Carbona 60 kV No.1 Tap, Upgrade switch 37 and 39 at Carbona with SCADA controls.

Cost: 1-5 \$M

Expected In-Service Date: May 2010

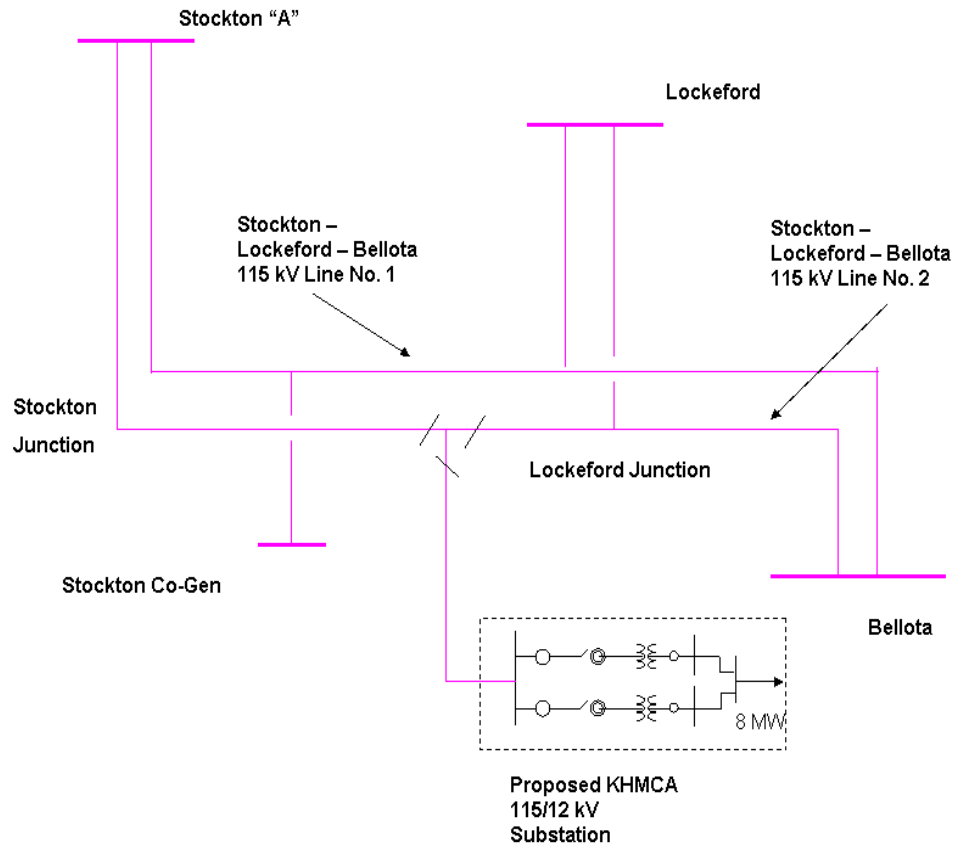
Load: 32 MW of load growing at 1.5% annually

Other Alternatives Considered:

New CB or MOAS at Carbone are infeasible.

Recommended Action: CAISO Approval

(9) Kyoho Manufacturing California 115 kV Interconnection



Project proponent: PG&E

Needs:

- Tariff and Compliance (Obligation to Serve)
- New customer request for interconnection
- No criteria violations

Project Scope:

New 2 mile Tap line on to the Stockton "A" - Lockeford - Bellota #2 115 kV line (near tower 11/80)

Cost: 1-5 \$M

Expected In-Service Date: June 2010

Load: New 8 MW of load

Other Alternatives Considered:

Limited - due to scope

Recommended Action: CAISO Approval

Projects denied and/or withdrawn

- North Valley Area:
 - Caribou 60 kV Line No.2 Reconductor Project (withdrawn)
 - Cottonwood Interim Solution (denied)

- Central Valley Area:
 - Missouri Flat Expansion (denied)
 - Rio Oso Reactive (denied)
 - Higgins 115 kV Circuit Breaker Installation (withdrawn)

On-going Projects

- North Valley Area:
 - Cascade Area Reinforcement
 - Table Mountain- Vaca Dixon 230 kV Reinforcement
 - Burney 60 kV Line
 - Wyandotte 115 kV Tap-Line
 - Plumas-Sierra Low Voltage
 - Chico Area Reinforcement
 - Trinity Area Reconfiguration
 - Deschutes Area Reconfiguration and Voltage Support
 - Red Bluff Long-Term Reinforcement

On-going Projects

- Central Valley Area:
 - Mosher Transmission
 - Drum-Grass Valley-Weimar 60 kV Line
 - South of Palermo 115 kV Reinforcement
 - Vaca Dixon-Davis 115 kV Conversion
 - Atlantic-Placer Voltage Conversion
 - Brighton-Davis 115 kV Reconductoring
 - Lockeford-Lodi 60 kV Reinforcement
 - Eight Mile-Tesla 230 kV Lines Reconductor
 - Carbona Reliability

On-going Projects

- Central Valley Area (cont):
 - Valley Springs #1 60 kV Line Reinforcement
 - Atlantic-Rio Oso-Gold Hill 230 kV Lines
 - Cortina Voltage Support
 - Suisun-Jameson Back-up
 - Woodland-Davis-West Sacramento Long-Term
 - Rio Oso-Atlantic 230 kV Reconductoring
 - Yuba City Area Reinforcement
 - Palermo-Pease-Rio Oso 115 kV Lines Reconductoring

On-going Projects

- Central Valley Area (cont):
 - Bogue-Rio Oso 115 kV Line Reconductoring
 - Clarksville Area Reinforcement
 - Gold Hill #3 230/115 kV Transformer
 - New Rio Oso-Pleasant Grove 115 kV Line
 - SPI Lincoln Voltage Support
 - Weber-Mormon 60 kV Line Reconductoring
 - Linden Area Reinforcement
 - Mosher Area Reinforcement
 - Industrial Area Reinforcement

On-going Projects

- Central Valley Area (cont):
 - Hummer Area Reliability
 - Stagg 230 kV Area Reinforcement
 - Tesla-Bellota 115 kV Area Reinforcement
 - Curtis UVLS
 - Stockton "A" Reinforcement
 - Weber #2 230/60 kV Transformer Replacement
 - Stockton "A"-Weber #1 60 kV Line Reconductoring
 - Kasson-Manteca 60 kV System Rearrangement