CALIFORNIA ISO

Path 46 (West-of-River) Phase I Upgrades Path Rating Study Status Update

8/9/2005
STEP Meeting

David Le
CAISO

Status Update

- 3/24/2005 – CAISO sent letter to WECC PCC and TSS announcing plans to increase the West of River path rating due to the STEP Short-Term Upgrades (Path 49 Phase I Arizona – California Upgrades).

- 4/22/2005 – Regional Planning Review Group was formed (see next page for participation list).

- 6/20/2005 – First meeting with the members of the Regional Planning Review Group at the WATS meeting in Las Vegas.

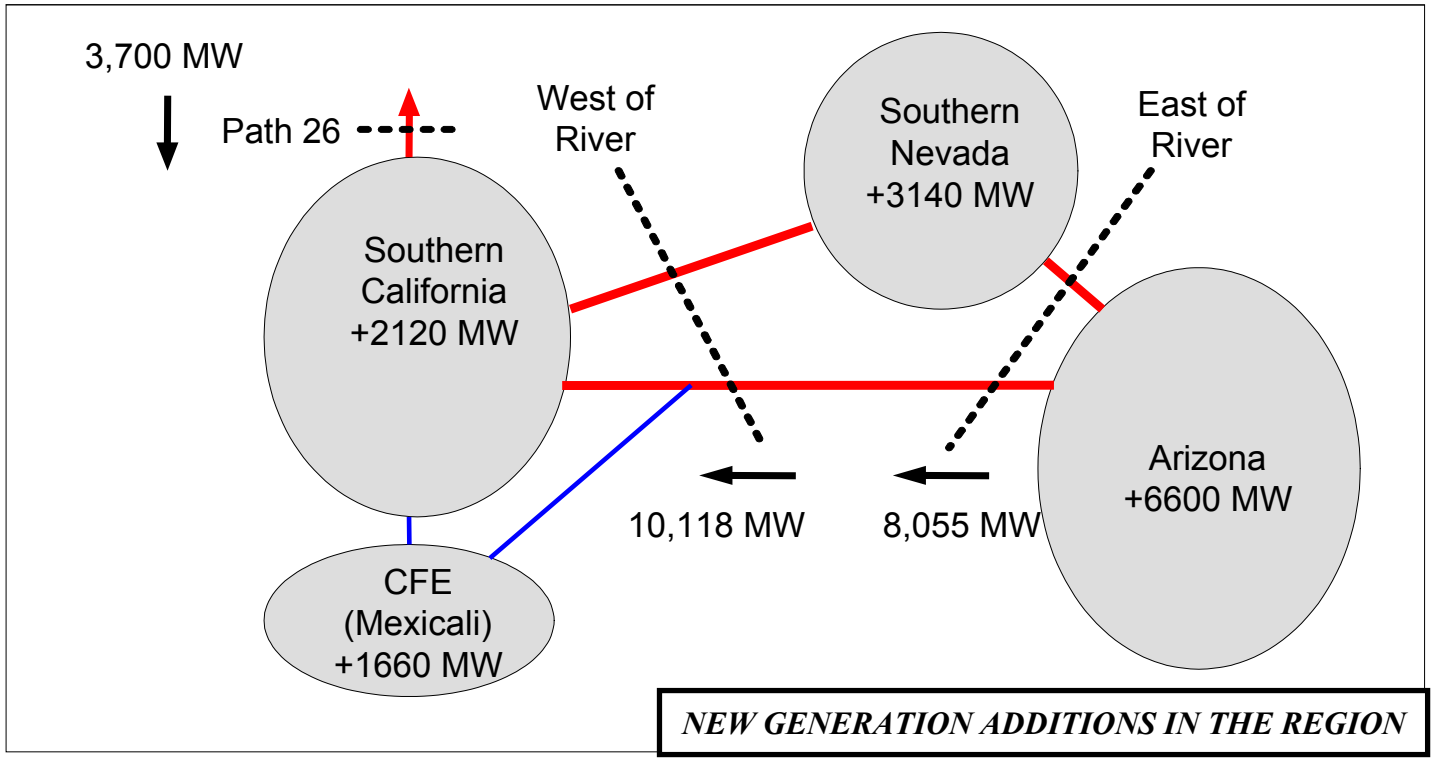
- 8/23/2005 – Next meeting at the WECC/WATS meeting in San Diego (SEMPRA HQ).
  - Final Study Plan
  - Preliminary Study Results ***(Non-Simultaneous Study)***

Study Group

1) SCE
2) LADWP
3) APS
4) SDG&E
5) Sierra Pacific
6) PG&E
7) SMUD
8) Reliant Energy
9) CAISO

Back-Up Documents

New WECC-Approved Path Rating



- Path 49 Arizona – California Upgrades: 8,055 MW (Phase 3 Status 1/10/2005)
- Path 26 Upgrade II Project: 3,700 MW (Phase 3 Status 5/2/2005)

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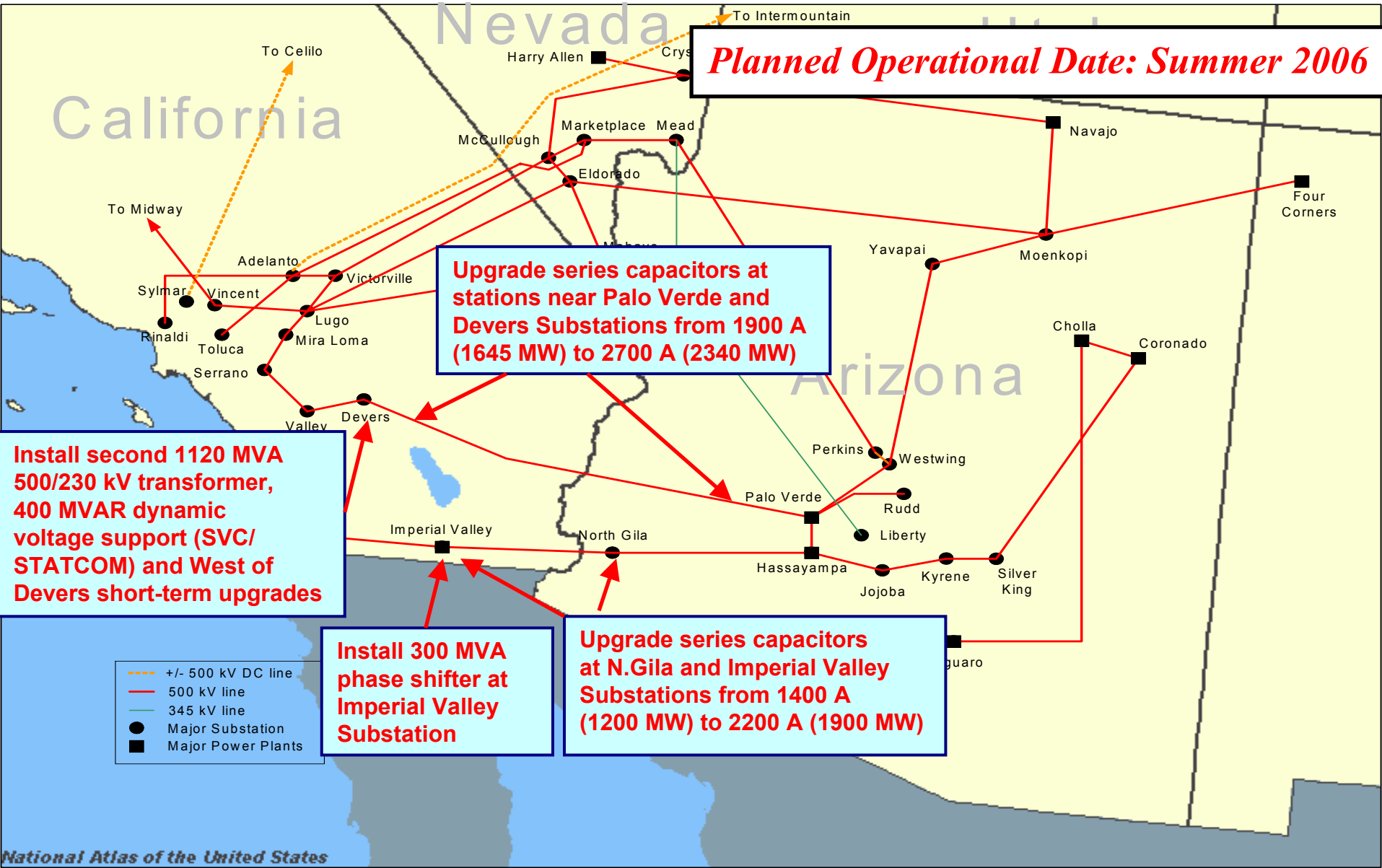
Phase 1. AZ-CA Short-Term Transmission Upgrades



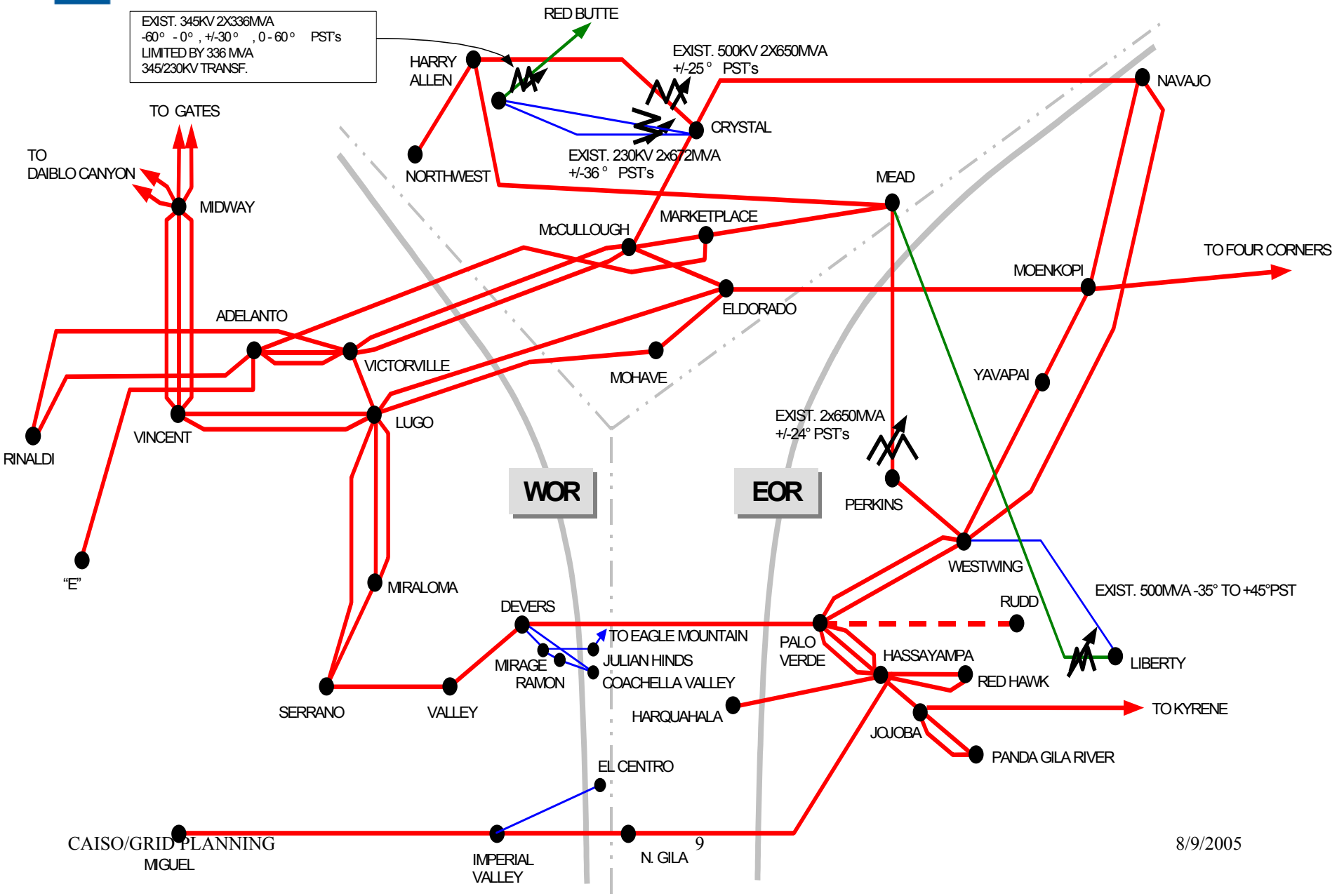
Series of Transmission Upgrades in the AZ-NV-CA Area

1. AZ-CA Short Term Upgrades (aka Path 49 Short-Term Upgrades):
   - Proposed completion date: June 2006
   - Increase ampacity of the series capacitors for the Palo Verde – Devers, Hassayampa – N. Gila and N.Gila – Valley 500kV lines.
   - Install 400 MVAR SVC and a second 500/230kV 1,120 MVA transformer at Devers Substation.
   - Install a 230-kV phase-shifter at Imperial Valley Substation.

Series of Transmission Upgrades in the AZ-NV-CA Area (cont'd)

2. AZ-NV Short Term Upgrades (aka EOR 9000+ Upgrades):
   - Proposed completion date: 2008
   - Increase ampacity of the series capacitors for the Navajo - Crystal, Moenkopi - Eldorado and Perkins - Mead 500kV lines.
   - Install additional reactive support (SVC) at Devers Substation.

3. Palo Verde – Devers 500kV #2 Project
   - Proposed completion date: 2009
   - Construct a second Palo Verde – Devers 500kV line.
   - Rebuild four 230kV lines West of Devers.
   - Add voltage support in the Devers area.


EXIST. 345KV 2X336MVA
-60° - 0° , +/-30° , 0 - 60° PST's
LIMITED BY 336 MVA
345/230KV TRANSF.
RED BUTTE
HARRY ALLEN
EXIST. 500KV 2X650MVA
+/-25° PST's
NAVAJO
CRYSTAL
EXIST. 230KV 2x672MVA
+/-36° PST's
NORTHWEST
MEAD
TO GATES
TO DAIBLO CANYON
MIDWAY
McCULLOUGH
MARKETPLACE
TO FOUR CORNERS
MOENKOPI
ELDORADO
ADELANTO
VICTORVILLE
MOHAVE
YAVAPAI
EXIST. 2x650MVA
+/-24° PST's
RINALDI
VINCENT
LUGO
WOR
EOR
PERKINS
"E"
WESTWING
MIRALOMA
EXIST. 500MVA -35° TO +45°PST
RUDD
DEVERS
TO EAGLE MOUNTAIN
PALO VERDE
MIRAGE
JULIAN HINDS
RAMON
COACHELLA VALLEY
HASSAYAMPA
LIBERTY
RED HAWK
SERRANO
VALLEY
HARQUAHALA
TO KYRENE
JOJOBA
PANDA GILA RIVER
EL CENTRO
MIGUEL
IMPERIAL VALLEY
N. GILA

Transmission Lines of Path 46 (WOR)

1. Eldorado – Lugo 500 kV
2. Mohave – Lugo 500 kV
3. McCullough – Victorville 500 kV lines 1 & 2
4. Marketplace – Adelanto 500 kV
5. North Gila – Imperial Valley 500 kV
6. Palo Verde – Devers 500 kV (metered at Devers)
7. Eldorado – Lugo 230 kV lines 1 & 2
8. Julian Hinds – Mirage 230 kV (metered at Mirage)
9. Hoover (Mead) – Victorville 287 kV
10. El Centro – Imperial Valley 230 kV (metered at Imperial Valley)
11. Ramon – Mirage 230 kV
12. Coachella Valley – Devers 230 kV