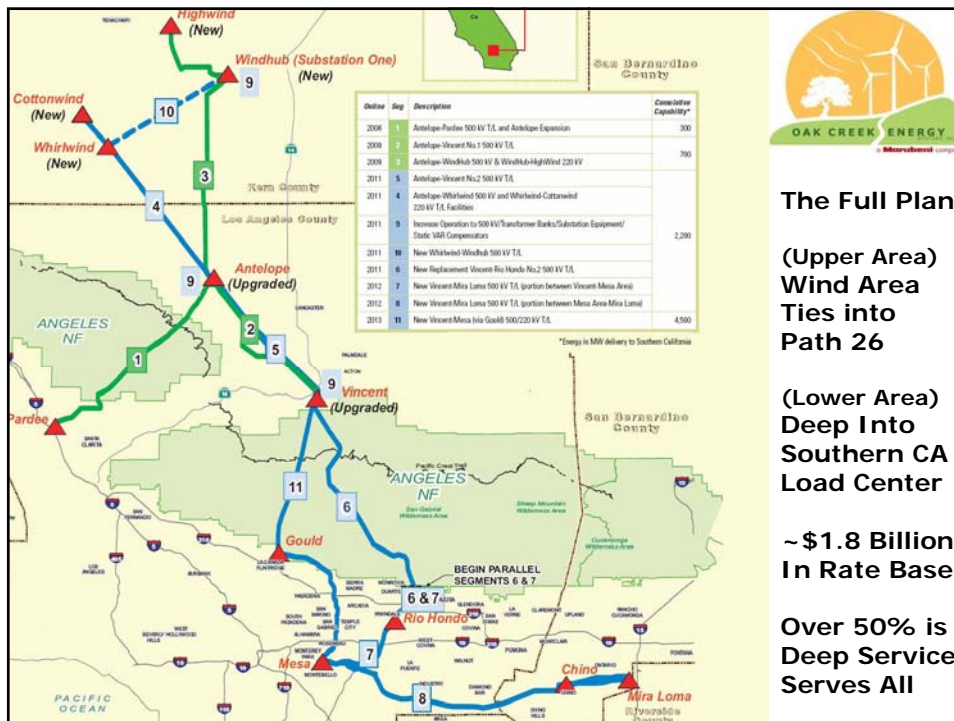




California Trunkline Experience Tehachapi Transmission

Hal Romanowitz, P.E.
Oak Creek Energy Systems, Inc.

IEEE T&D Conference Chicago
April 23, 2008



The Full Plan

(Upper Area)
Wind Area
Ties into
Path 26

(Lower Area)
Deep Into
Southern CA
Load Center

~\$1.8 Billion
In Rate Base

Over 50% is
Deep Service
Serves All



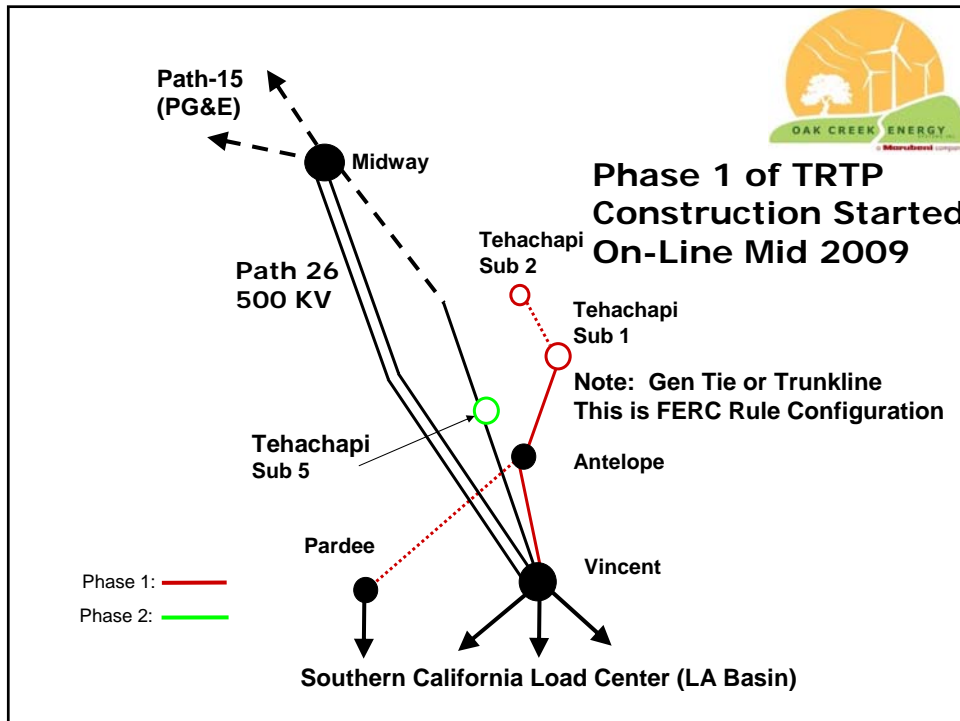
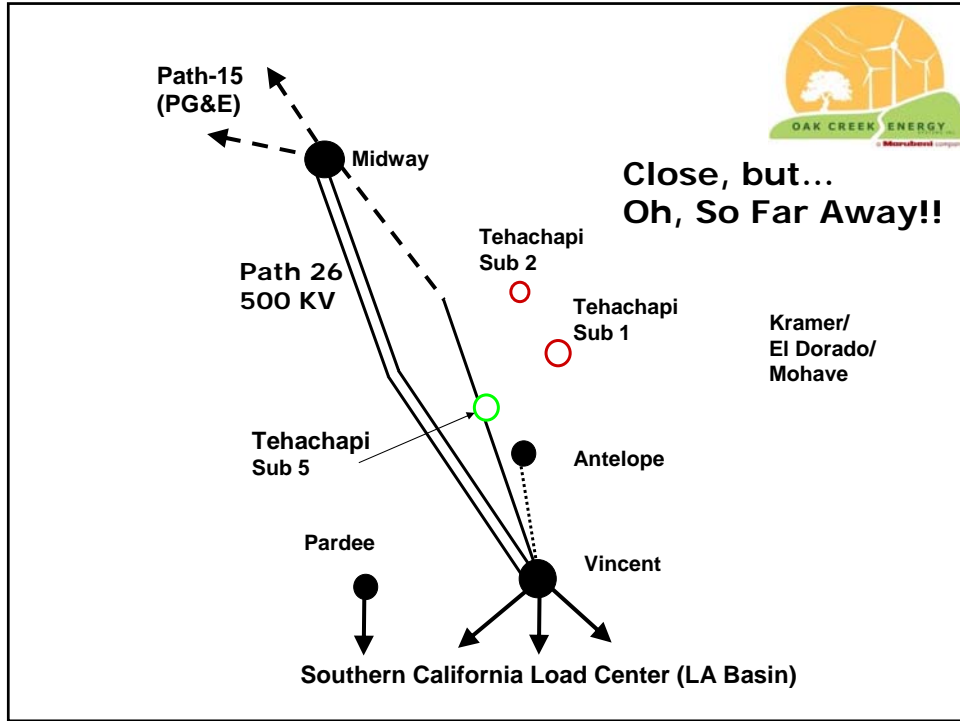
Tehachapi Transmission Need & Timeline

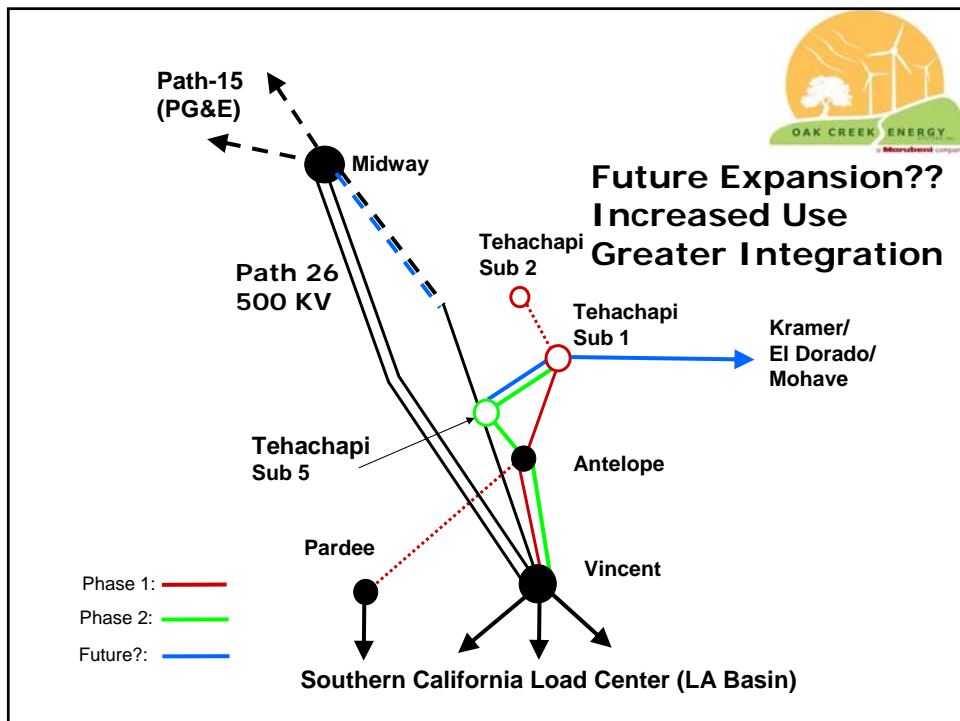
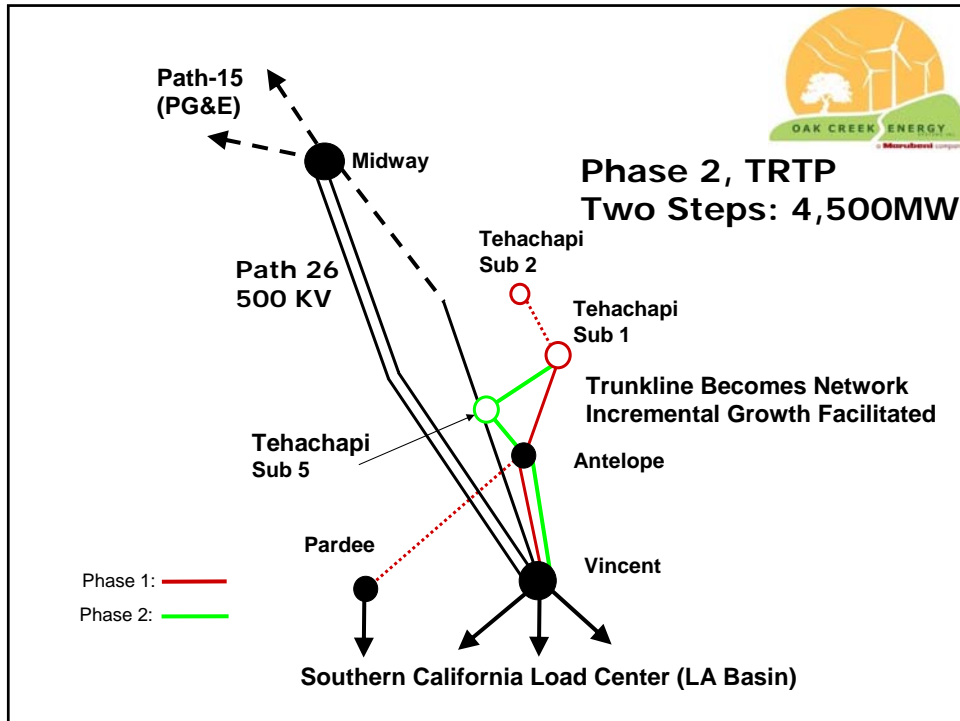
Original Need 1986 – Transmission Overcommitted
Sagebrush Line 1989 – Wind Developers @ 230 KV
Wind Industry & SCE Start to Work Together - 1998
Cooperative Studies – 2001, 2002, 2003, 2005
CAISO into Process – 2006, Adopts 4,500 MW Plan
Ground Breaking – March 7, 2008



Tehachapi Transmission Major Issues

What is the Need: 1,500 MW grows to 4,500 MW+
Who Pays: Huge Gen Tie vs Network Transmission
Who Funds: Generators vs Utilities vs Independent
Who Has Say: CPUC vs FERC & CAISO
How Do We All Work Together To Get This Done
Ongoing Issue: Is There A Cheaper Way







Tehachapi Transmission Major Lessons

Perseverance: Transmission is a Long Process

Create Network Facilities to Max Extent Rational

Trunkline is a Critical Tool for Phased Planning

Orderly, Rational, Incremental Plan Ending Network

Create Alliances, Combine Facilities, Work Together

Rational, Orderly, Cost Effective: Critical, Keep Real



Tehachapi Transmission Coming Issues

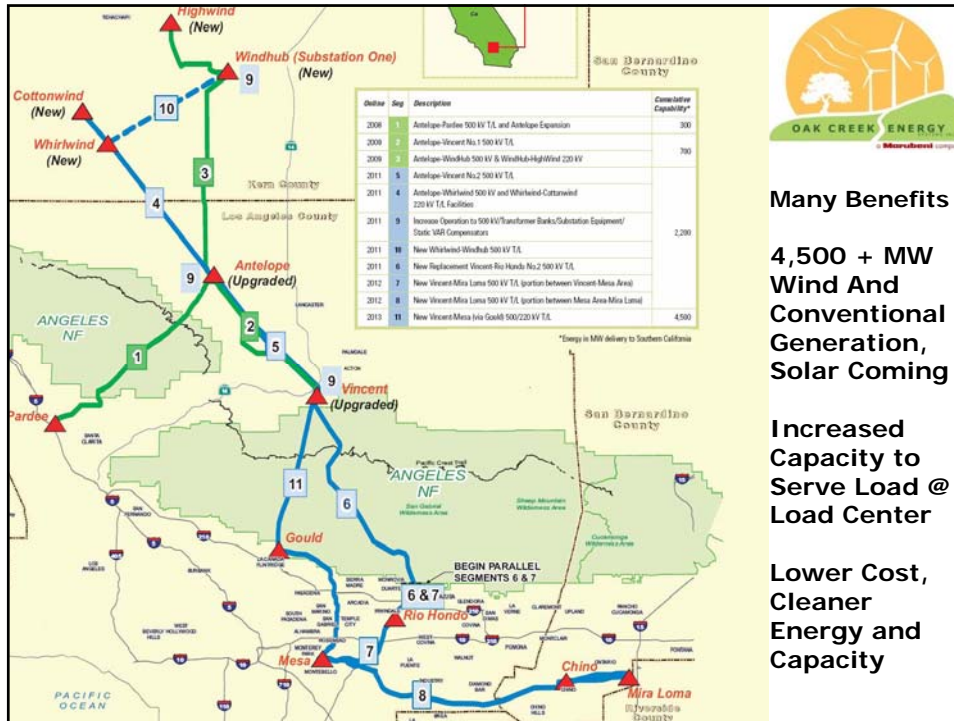
Reliability & Integration, we have only started

NERC Regulations: Will Carry a Bite, Get Involved

LVRT or VRT is Only the Start, Rules Increasing

Integration Clearly Possible, But Now Make Happen

See: "Wind Power in Power Systems", Ch 12, Wiley, 2005, more on Tehachapi



Many Benefits

4,500 + MW
Wind And
Conventional
Generation,
Solar Coming

Increased
Capacity to
Serve Load @
Load Center

Lower Cost,
Cleaner
Energy and
Capacity