

California Transmission Problems and the New CAISO Transmission Planning Process

Armando J. Perez
Vice President of Planning &
Infrastructure Development
California ISO

Harvard Electricity Policy Group
Forty-first Plenary Session
The Ritz-Carlton, Buckhead,
Atlanta, Georgia
December 8-9, 2005

Overview

Current Problems

- Congestion
- Reliability Must Run/Locational Capacity
- Generation interconnection and retirement

New Transmission Planning Process

- Proactive
- Coordination with CPUC Resource Adequacy and Market Processes

Congestion

- From 2003 to 2004 congestion costs into Southern California (SP15) zone increased by 182% (\$151 M to \$426 M)
- The primary reason for this increase was the addition of several new generation projects in the Southwest and Mexican Border without needed transmission upgrades to accommodate the delivery of this generation to the Southern California load center
 - Transmission upgrades were installed late in 2004 and these congestion costs have been reduced by 60% (from Jan-Oct 2004 to Jan-Oct 2005)

Reliability Must Run/Locational Capacity Requirements

- Up to 50% of control area generation capacity is required to meet sub-area local capacity requirements.
- CAISO paid \$364 M in RMR fixed costs and \$285 M in operating costs above real-time energy price in 2004.

Generation Interconnection and Retirements

- CAISO currently has 97 projects and about 30,000 MW of generation capacity in its interconnection queue; 5,000 MW is renewable
- There are about 14,000 MW of aging powerplants
- Stating the obvious, which generation projects are built, repowered, or retired is a primary driver in transmission need analysis
- Planning for the interconnection of new generation and the retirement of old generation needs to move from the current reactive process to a more proactive process

Transmission Built

- Over \$4.3B in transmission projects have been approved by the CAISO since 1998 and about \$2B of these projects are in operation
- These projects are designed to ensure that the CAISO system is in compliance with the ISO Planning Standards (which include NERC and WECC Standards). Even with over 10,000 MW of new efficient generation installed recently, congestion problems continue to plague system operators and ratepayers.

A New Resource Adequacy Process and Market Redesign

- The CAISO has been in an interim period (without a resource adequacy requirement, or an effective market design) for the past few years which has hindered its ability to comprehensively plan the transmission system.
- In response to an electricity crisis in 2000-2001, California is implementing a resource adequacy requirement and redesigning its market structure.

Reactive Planning

- Since 1998 the ISO has relied almost exclusively on its PTOs to develop transmission expansion plans and then approved those plans to ensure the reliable and economic operation of its transmission system
- For the most part, this process is reactionary on the part of the CAISO.

Reactive Planning

- Decisions to pay RMR costs that the PTOs are expected to incur or to build facilities to avoid these costs have been left to the PTOs.
- In addition, transmission expansion plans to mitigate congestion have frequently been completed after significant congestion cost have already accrued

Duplicative Approval Process

- Once the CAISO approves a new transmission line or substation, the PTO still requires a certificate of public convenience and necessity (CPCN) permit from the California Public Utilities Commission (CPUC)
- The current CPCN process includes an analysis of need that essentially duplicates the CAISO need analysis.
- In some instances the CPUC and CAISO decisions have been in conflict due to different load and resource forecasts

Proactive Planning

- The CAISO has recently committed to annually prepare its own transmission plan aimed at identifying transmission projects to mitigate congestion and RMR-type costs.
- In the near-term the CAISO will be proposing short-lead time projects to address known congestion problems and to reduce RMR requirements.

Proactive Planning

- Moving beyond the near-term, the CAISO is currently working with the CPUC and CEC on developing a process for developing future resource portfolio scenarios in the mid and long-term time frame
- Conceptual transmission projects will be identified for the different resource scenarios that are agreed upon

Alternative Analysis

- Non-transmission alternatives to the identified transmission projects are expected to be provided by market participants and through the resource adequacy procurement process
- Alternative analysis would be a joint function between the ISO and CPUC

Streamlined Permitting Process

- With full participation of the CPUC, CEC, and CAISO in the transmission planning process,
- and common load and resource forecasts and alternative analysis,
- the CPUC would be able to defer to the CAISO need analysis for CPCN purposes

Project Development

- PTO annual plans would be expected to include the CAISO projects or propose superior transmission alternatives
- PTOs would have the right of first refusal to build the CAISO projects, and third party investors would be used if the PTO declines to build the project

Coordination with Resource Adequacy and Market Processes

- With the implementation of a Resource Adequacy process and a new market in 2006 and 2007 we will soon move beyond the current interim period of uncertainty
- Production simulation models simulating future operation of the system and the market will be a major part of the transmission planning analysis
- Active analysis by the CAISO will enable the best use of confidential LSE resource planning information and market information.

Coordination with Resource Adequacy and Market Processes

- Integration of resource planning, transmission planning and market information and active stakeholder involvement is needed to ensure efficient and timely development of the needed transmission infrastructure
- Proactive CAISO leadership of the process is expected to ensure a regional perspective and mitigate constraints before major economic and reliability problems occur

Continued Partnership With the PTOs

- Continued partnership with the PTOs will ensure that their facility construction and ownership expertise is fully utilized, realistic analysis is performed, and proposed projects are feasible