

FINAL PROJECT REPORT

TRANSMISSION BENEFIT QUANTIFICATION, COST ALLOCATION AND COST RECOVERY

APPENDIX F

EXISTING PROCESS FOR TRANSMISSION PROJECT APPROVALS AND CASE HISTORIES

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A CIEE Report

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California Market Redesign¹

On June 24, 2004, the CA ISO Board of Governors approved a market redesign and technology upgrade program for the CA ISO in order to gain economic and technical efficiencies. The program will be operational in 2008:

- Market improvements to assure grid reliability and more efficient and cost effective use of resources. The CA ISO to conduct a Day-Ahead Market that combines three services; energy, ancillary services (operating reserves) and congestion management to better match what really happens when the electricity flows. The Day-Ahead Market will determine the best use of resources available and identify the least cost method of procuring required components.
- New Market Rules—the market redesign introduces new market rules and penalties that prevent gaming and manipulation. Through revised tariffs the CA ISO has been granted new authority by the FERC to assess financial penalties on market participants that do not comply with instructions from the ISO control room. The new market design also determines the deliverability of all schedules, rejecting requests that are physically impossible.
- Locational Marginal Prices (LMP)—LMP will identify the cost of producing power as well as the cost of delivery. This information gives the CA ISO and market participants a clearer picture of the true cost of getting power to areas that may not have enough local generation or where transmission capacity is lacking.
- Technology upgrades to strengthen the entire CA ISO computer backbone. The technology upgrades will provide a more precise model of the grid using the latest computer technology to allow the CA ISO to better predict how energy scheduled a day-ahead of time will flow in real-time. The CA ISO will be able to see all potential transmission congestion a day-ahead of time, rather than waiting until real-time.

CPUC - Procurement and Resource Adequacy (RA)²

California's RA policies have been under development for several years, but the first active compliance period commenced in June 2006. The purpose of the program is for the review and approval of:

- Plans for the utilities to purchase energy.
- Policies that address utility cost recovery for energy purchases.

1. Basics of MRTU - <http://www.CA ISO.com/docs/2005/02/22/20050222208442727277.pdf>

2. CPUC - Procurement and Resource Adequacy -
<http://www.cpuc.ca.gov/static/hottopics/1energy/r0404003.htm>

- Programs that ensure that the utilities maintain a set amount of energy above what they estimate they will need to serve their customers (called a reserve margin).
- Implements a long-term energy planning process.

California's Renewable Portfolio Standard (RPS)³

In 2002, Senate Bill 1078 (SB 1078, Sher, Chapter 516) established the RPS program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. The CPUC accelerated the goal, requiring the IOUs to obtain 20% of their power from renewables sources by 2010 (Senate Bill 107 codified this goal in state law). Currently, the Commission is considering ways to achieve 33 percent renewable energy by 2020.

RPS - Actual renewable deliveries in 2005:

- PG&E – 13.5 % (9,801 GWh).
- SCE – 17.7% (13,195 GWh).
- SDG&E - 5.5% (830 GWh).

New Transmission Projects Being Proposed

Recently, there has been much discussion regarding the construction of new EHV transmission lines in the Western Interconnection. The governors of California, Nevada, Utah and Wyoming had proposed a new interstate EHV transmission line across the Western U.S., from Wyoming with terminal connections in Utah, Nevada and California. Some of the Arizona utilities and others are considering an EHV transmission project from Wyoming to the Desert Southwest area, and PG&E has proposed an EHV project from British Columbia to Northern California.

Maturing CA ISO Transmission Planning Process

In a letter, date 8/01/05, from Armie Perez, at that time Director of Transmission Planning, he described the historical CA ISO planning process as follows⁴:

1. The Participating Transmission Owners (PTOs) submitted yearly transmission assessment and expansion plans to the CA ISO covering the next five years in detail plus a tenth year. The CA ISO reviewed the assessment to ensure it was adequate. The expansion plans were reviewed to determine if the proposed projects: (1) solved an identified problem, (2) were the best alternative from a system point of view, and (3) were the most economical alternative.

3. CPUC RPS Program -

<http://www.cpuc.ca.gov/static/energy/electric/renewableenergy/index.htm>

4. A. J. Perez Letter, dated 8/01/05 –

<http://www.CA ISO.com/docs/2005/08/01/2005080111170126493.pdf>

2. CA ISO Management approved projects that met the CA ISO evaluation criteria and had an estimated cost below \$20 million or submitted the project for CA ISO Board approval if they had an estimated cost exceeding \$20 million.
3. Additionally, the CA ISO combined the individual PTOs plans submitted into one and performed an independent and comprehensive analysis to make sure that “nothing fell through the cracks”.
4. Finally, the CA ISO conducted studies to determine Reliability Must Run (RMR) Generation requirements.

CA ISO was always operating in a reactionary mode, based on PTO input, rather than looking over the horizon to determine the long term needs on the state’s grid and how their plans integrated with the direction of both the CPUC and Energy Commission. As a result of the CA ISO’s reassessment of their transmission planning process the following Figure 1 and Figure 2 will show how the new process is more interactive and involved all stakeholders:

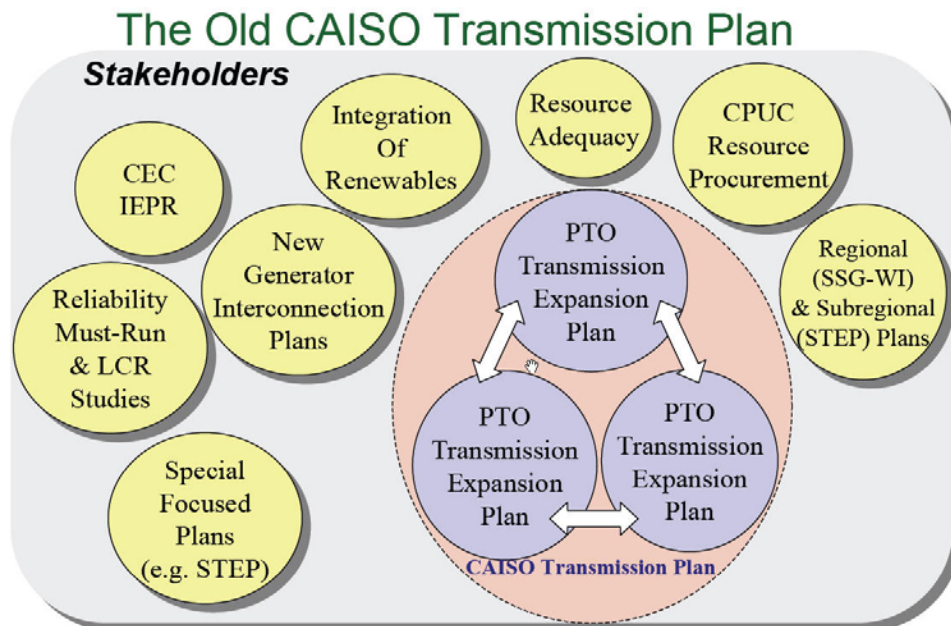


Figure 1. CA ISO’s Old Transmission Planning Process

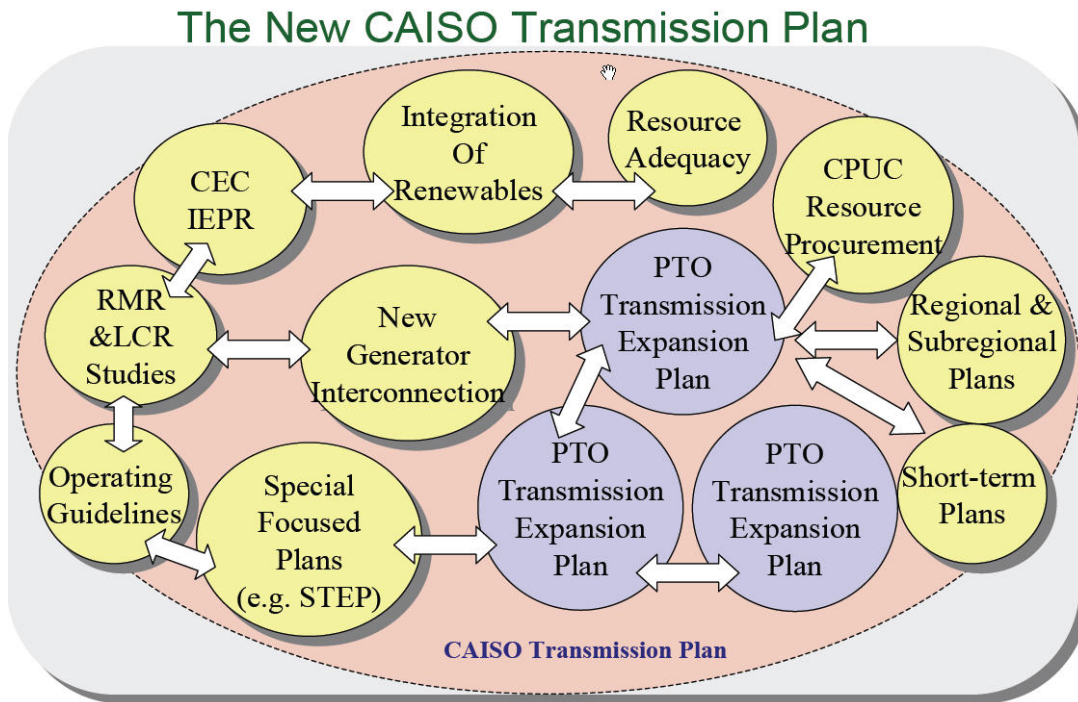


Figure 2. CAISO's New Interactive Transmission Planning Process

1.1.1. **FERC Becomes Project Backstop**

EPAct 2005 granted FERC limited backstop authority to site electric transmission facilities located in national interest electric transmission corridors if states cannot or will not act⁵.

1.1.2. **Regulation and Planning Process for the Investor-Owned Utility 2005 and Beyond**

State of California:

- CPUC – Planning for the future:
 - Long-term Planning—Implemented resource procurement proceedings.
 - Resource Adequacy and Local Area Requirements—Work with the CA ISO to identify zonal and local area resource requirements and LSE's reserve requirements.
 - Work with the Energy Commission to implement renewable procurement standards.

5. FERC Press Release - <http://www.ferc.gov/press-room/statements-speeches/kelly/2006/06-15-06-kelly-C-1.asp>

- Governor’s Office—through the Western Governors Association, establish a vision for EHV transmission projects in the Western Interconnection.
- The California Energy Commission
 - Primary organization for long-term growth forecast.

Federal:

- Federal Energy Regulatory Commission
 - Implement EPCRA 2005 requirements.
 - Backstop authority for transmission projects.
 - Enforcement agency for mandatory reliability.
 - Expanded authority over jurisdictional and non-jurisdictional entities.
- Nuclear Regulatory Commission
 - Continue oversight of nuclear plant operations.
 - Review request for proposed new nuclear plant construction.

Transmission Planning:

- Maturing CA ISO transmission planning process that is highly dependent on stakeholder input and interactions.
- Greater interaction and coordination with California agencies (e.g., CPUC and Energy Commission).
- Significant interaction with WECC sponsored regional transmission planning groups.

Recent Transmission Projects

1. **Path 15 – Completed.** Path 15 is an 84-mile stretch of electrical transmission lines in the Central Valley connecting Southern California with the northern part of the state. The existing transmission system in this area was insufficient to transmit the necessary energy in a south-to-north direction. Building a third 500 kilovolt (kV) transmission line and other upgrades provided an additional 1,500 megawatts of transfer capability (s-to-n) for a cost of approximately \$250 million



Figure 3. Path 15 (source CA ISO)

- Tehachapi – Several phases approved.** The purpose of the project is to interconnect and integrate forecast development of renewable energy projects totaling 4,500 MW. The project will be built in eleven (11) phases with a total cost of approximately \$1.8 billion.



Figure 4. Tehachapi Renewable Project (source SCE)

3. **Palo Verde Devers No. 2 – Approved.** A second 500 kV transmission line that extends 230 miles along the existing right-of-way between SCE's Devers Substation near Palm Springs and the Palo Verde Generating Station switchyard west of Phoenix, Ariz. This project would facilitate the delivery of new merchant generation from the Palo Verde area to California. The project is expected to add an additional 1,200 MW of transfer capability between Arizona and Southern California, for a cost of approximately \$680 million.



Figure 5. Devers-Palo Verde #2 500 kV line (source CA ISO)

4. Major System Reliability Upgrades on IOU Systems - Implemented
5. Trans Bay Cable – Final Stages of Licensing - The project is being developed to supports the energy import requirements into the San Francisco peninsula. The line consists of a HVDC cable (+- 500 kV) with a transfer capability of approximately 400 MW, at a cost of \$300 million.



Figure 6. Trans Bay Cable Project (Source Babcock and Brown)

Projects Proposed and Under Discussion

6. **Sunrise Powerlink and the Green Path.** The project consists of approximately 100 miles of 500 kV as well as some new 230 kV lines. The projects would achieve three objectives, 1) ensure in-area reliability, 2) ability to import renewable resources and 3) reduce fuel cost from increased energy imports. The cost of the project ranges from \$1 billion to \$1.5 billion.

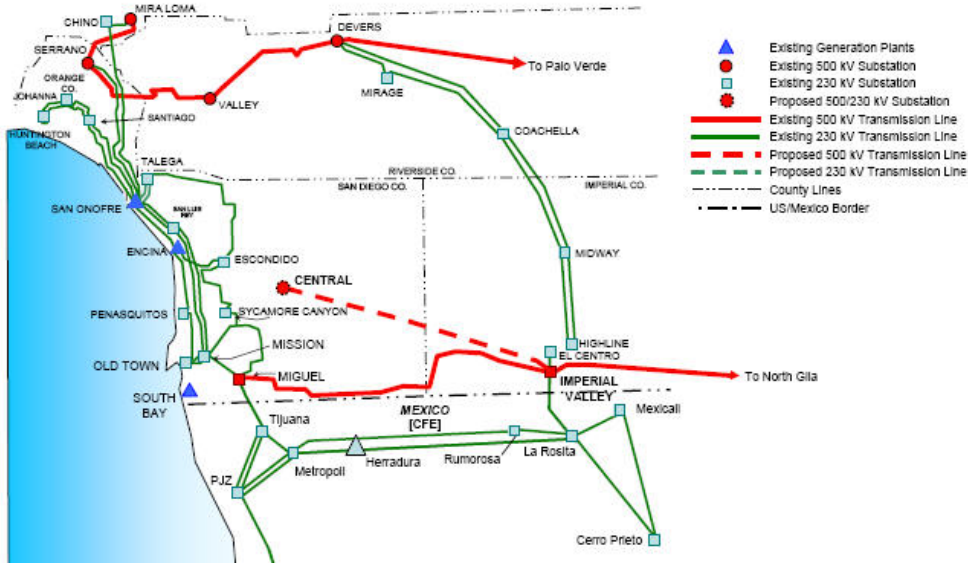


Figure 7. Sunrise Powerlink (source SDG&E)

7. **Green Path.** The Green Path Project will improve the grid reliability within the IID service area and facilitate exporting the geothermal energy from the Imperial Valley to

the rest of the state. Cost of the project is approximately \$430 million. The project participants have agreed to link the Green Path Project with SDG&E's Sunrise Powerlink at Imperial Substation.

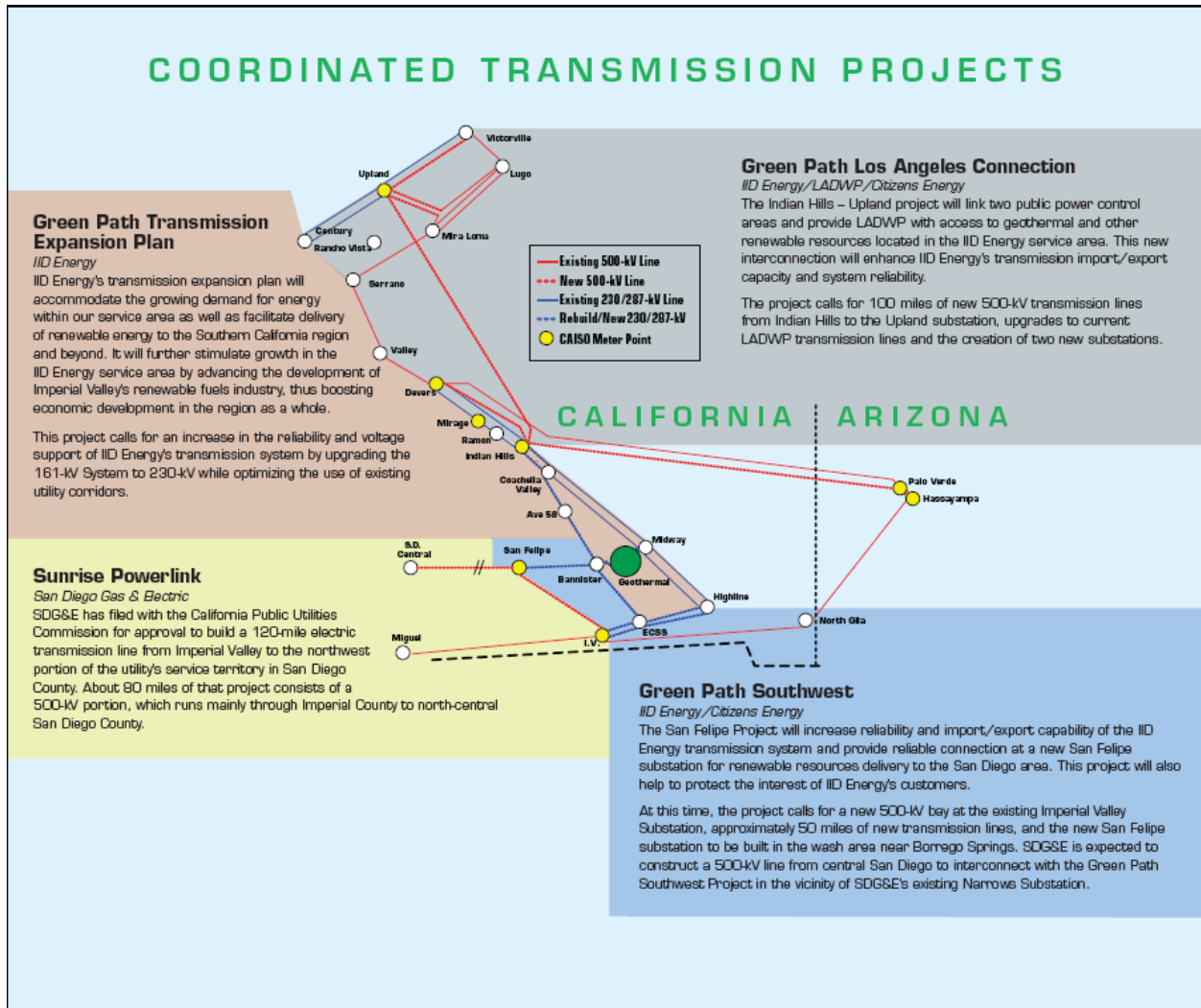


Figure 8. Green Path Project (Source Imperial Irrigation District)

8. **Frontier Line.** The Governors of California, Nevada, Utah and Wyoming agreed to support developers seeking to build the \$5 billion Frontier Line transmission project, which will allow access to the State of Wyoming's vast coal resources and potential development of renewable resources.

9. **British Columbia to Northern California.** Pacific Gas & Electric Company (PG&E) has initiated the WECC Regional Planning Project Review of electric transmission alternatives to connect Canada and the Pacific Northwest to Northern California. Potential project alternatives would include both 500 and 765 kilovolt (kV) alternating current (AC) and high voltage direct current (HVDC) lines, via overhead or undersea routes.

The proposed line is intended to provide three main benefits:

- Access to significant incremental renewable resources in Canada and the Pacific Northwest.
- Improved regional transmission reliability.
- The potential capacity for a line(s) is up to 3000 MW (1600 – 2000 MW for the DC submarine cable option).

10. **Central California Clean Energy Transmission Project**⁶. Pacific Gas & Electric Company has proposed a new 150-170 mile 500 kV line between Midway Substation and the Fresno area on new R/W. The project would increase the Path 15 transfer capability by approximately 1,250 MW. The project has an operating date of 2013 at a cost of \$0.7 to 1 billion. Benefits of the project are:
- Helps integrate southern California renewables with northern California.
 - Increase utilization of the Helms PSP to enhance the value of off-peak generation.
 - Increase reliability to Yosemite/Fresno area.
 - Reduce Fresno Area local capacity requirement.

6. Central California Clean Energy Transmission Project - http://www.energy.ca.gov/2007_energypolicy/documents/2007-05-14_workshop/public_comments/PG+Es_2007-05-14.PDF



Central California Clean Energy Transmission Project

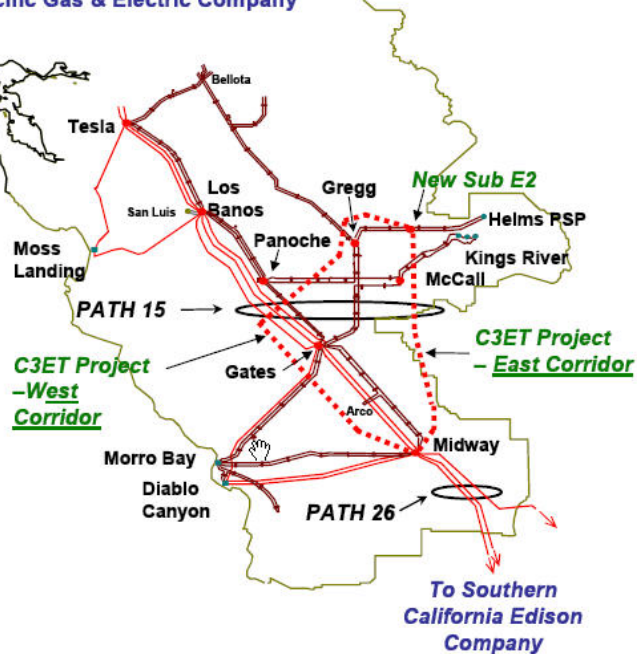
- **Project Scope**

- Construct new 500 kV Double Circuit Tower Line from Midway to a new Substation east of Fresno on new R/W

- **Project Objectives:**

- Enhance reliability to Yosemite/Fresno area
- Increase utilization of the Helms PSP to enhance the value of off-peak generation
- Facilitate efficient management of renewables
- Increase Path 15 transfer capability by ~1,250 MW
- Provide opportunity for future expansion

Pacific Gas & Electric Company



Potential Corridors shown are for illustrative purposes only.

Figure 9. PG&E's Proposed Central California Clean Energy Transmission Project (source PG&E)

1.2. Current Transmission Planning in California

For the three investor-owned utilities in California, the focus of transmission planning has shifted to CA ISO. The CA ISO transmission planning process is maturing. The key issues are:

- Renewables integration.
- Stakeholder participation.
- Transmission project economic evaluation methodology.
- Market information on new generation for use in transmission planning.
- Coordination and collaboration with CPUC, Energy Commission, and other state agencies.

To the extent that new transmission is within the CA ISO footprint and transmission costs are rolled into the CA ISO TAC, the issue of cost allocation and cost recovery is moot. However, for transmission projects involving multiple jurisdictions or where the project does not receive rolled in rate treatment, the issue of cost allocation among jurisdictions and participating utilities and associated tariff-based cost recovery becomes critical.

1.3. Research Findings and Conclusions

As the research team reviewed the many industry changes over the past five decades they found the changes have impacted the transmission planning process in the following five (5) key areas:

1. The traditional utility planning process transitioned from vertically integrated to disaggregated planning for transmission and generation.
2. Utility-led to ISO-led transmission planning with stakeholder participation.
3. Utility footprint planning to regional planning with stakeholder participation.
4. Utility transmission usage rights to open access policy.
5. Separation between the generation and transmission functions—no information sharing or planning coordination, making transmission planning more difficult.

Table provides a recap of the changes that have occurred in the various phases of the California transmission planning process.

Table 1. Recap of Changes and the Impacts on Transmission Planning for the California IOUs

Function	Historical	Current
Planning - Local	Utilities	CA ISO with stakeholder participation
Planning – Regional	Footprint Utilities	WECC utilities with regional stakeholder participation
Industry	Vertically Integrated	Separation of Generation & Transmission Functions
Generation Siting	Utility	IPP or Utility
Project Sponsorship and Ownership	Utility	Utility, ITC, Stakeholders
Project Purpose	Integrate New Generation and Access to Resources	Meet market needs and policy mandates – renewables, generation, reliability, congestion
Usage Rights	Owners	Open Access
Cost Recovery	CPUC Approved Rates	FERC approved rates – rolled into CA ISO TAC
Transmission Siting	CPUC	CPUC or other lead environmental review agency
Project Approval	CPUC	CA ISO, CPUC, FERC (Backstop Authority)
Rate Recovery	FERC – Transmission CPUC – Retail Rates	FERC – Transmission; CPUC – retail & backstop authority for renewable transmission
Reliability Requirements	Good Utility Practices	National and WECC Mandatory Standards