California ISO
Shaping a Renewed Future

Decision on the 2012/2013 ISO Transmission Plan

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General Session
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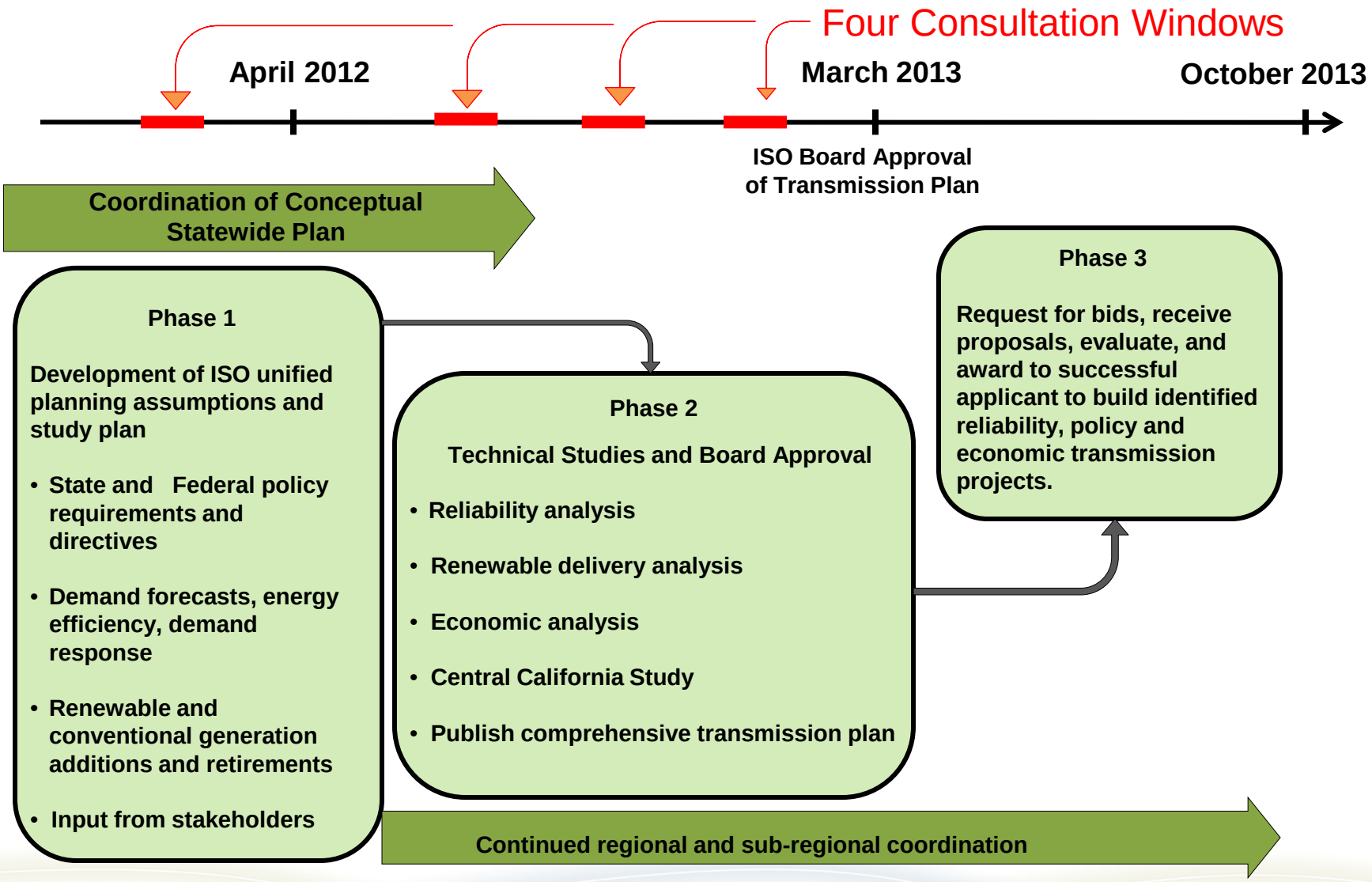
Approving the plan means approving determinations and recommendations contained in the plan, including 8 new transmission reliability projects and 2 policy driven projects, each of which is over $50 million.

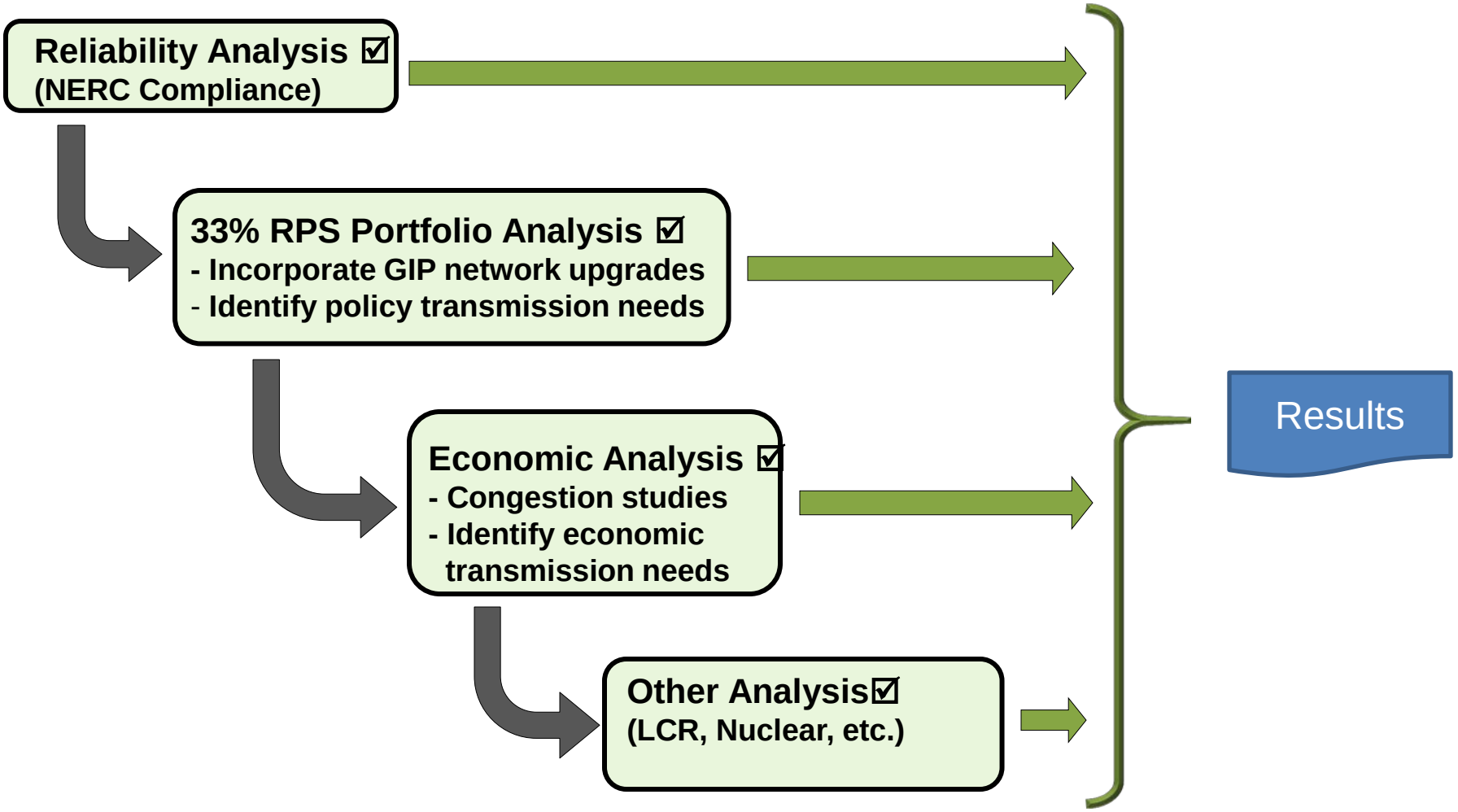
2012/2013 Transmission Planning Process



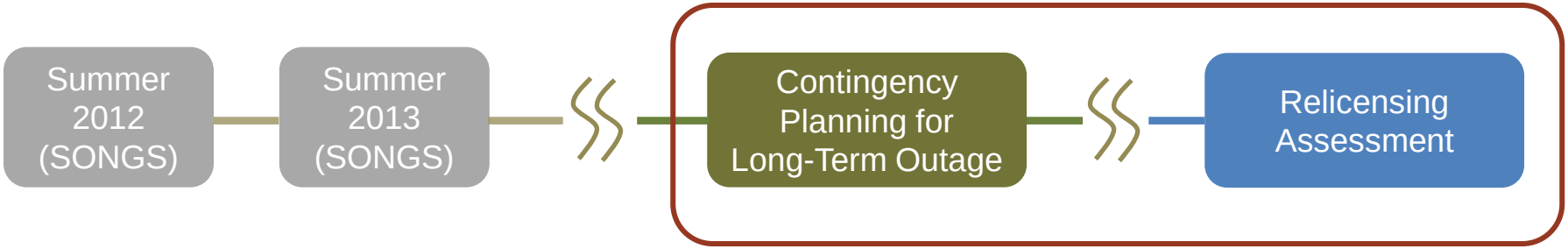
Developing planning assumptions (Phase 1)

- Incorporates state and federal policy requirements and directives
  - Renewables Portfolio Standard
  - Once-through cooling generation requirements
  - AB 32, supporting AB 1318 requirements
- Demand forecasts, energy efficiency, demand response
  - CEC IEPR Forecasts
- Renewable and conventional generation additions and retirements
  - Generation portfolios developed through CPUC-led process
- Consultation with stakeholders and input from stakeholders at the start of the cycle

Analysis conducted in preparing the plan (Phase 2)



Nuclear Generation studies were also performed.



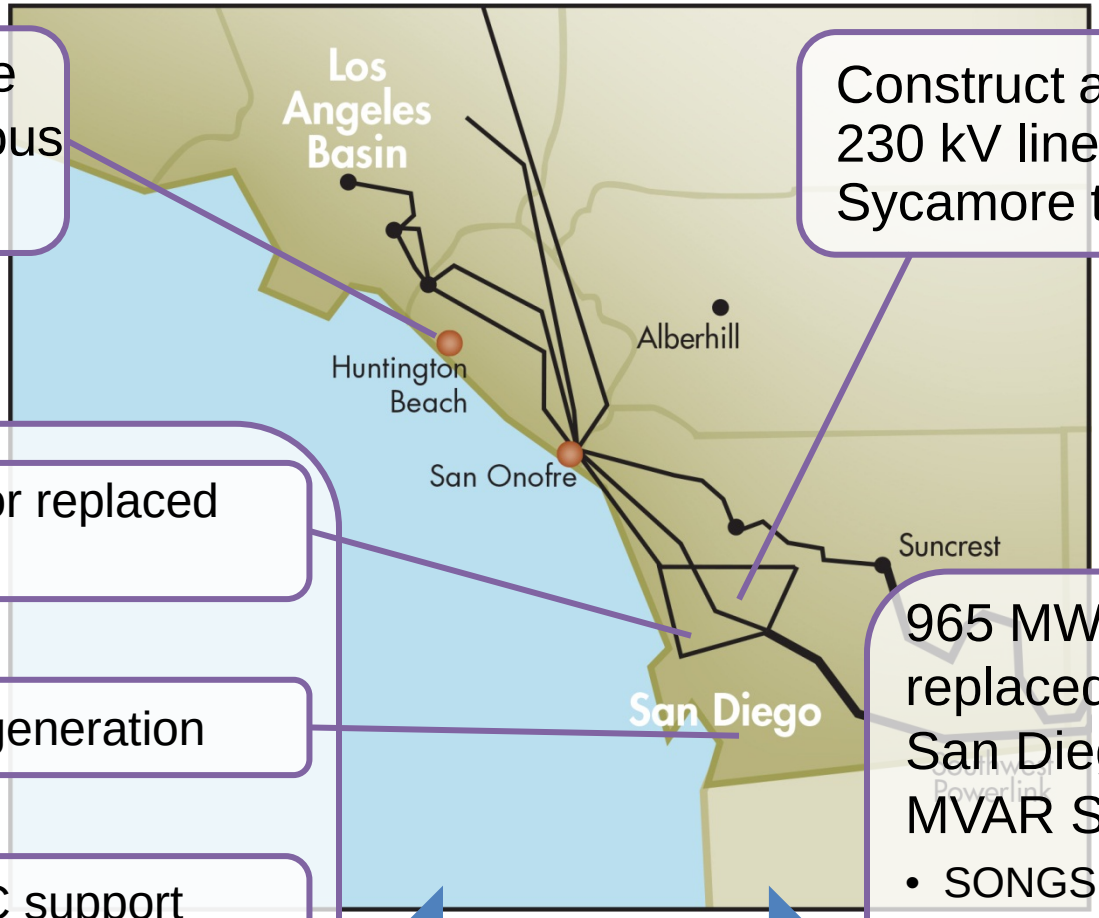
- Mid-Term Study – Contingency Planning (2018)
  - Considers what elements of the long term plan should be initiated immediately to help mitigate future unplanned extended outages
- Long-Term Study – Information Purposes (2022)
  - Studies focus on transmission system implications of loss of SONGS and DCPP
  - Resource requirements, such as planning reserve criteria and flexible resource needs, require further study

Key findings from preliminary nuclear generation studies:

- No material mid-term or long-term transmission system impacts associated with Diablo Canyon
- Loss of SONGS creates transmission impacts (thermal overloading, voltage stability) in LA Basin and San Diego
- Mid-term potential mitigations were developed for SONGS and presented on the next slide
- A range of long-term (2022) mitigations were developed
  - resources in San Diego and/or LA Basin, and major transmission reinforcements
  - the mid-term mitigations continued to be needed and provide value

Consideration was given to the mid-term mitigation alternatives developed for loss of SONGS:

Continue use of synchronous condensers



Construct an 11-mile 230 kV line from Sycamore to Penasquitos

820 MW new or replaced generation

+

300 MW new generation

+

650 MVAR SVC support
- SONGS and Talega

OR

965 MW new or replaced in northwest San Diego, and 1460 MVAR SVC support
- SONGS, Talega, Penasquitos, San Luis Rey, Mission

Dynamic reactive support and Sycamore to Penasquitos line provide value beyond mid-term mitigations.

- Dynamic reactive support can provide a backup if Huntington Beach synchronous condensers do not materialize
- Sycamore to Penasquitos 230 kV line replaces a large number of smaller policy-driven requirements that do not address the absence of SONGS
- Therefore, we are seeking Board approval today for the mid-term transmission mitigations
  - South Orange County Dynamic Reactive Support (reliability-driven)
  - Talega area Dynamic Reactive Support (reliability-driven)
  - Sycamore – Penasquitos 230 kV transmission line (policy-driven)

Summary of needed reliability-driven transmission projects:

Service Territory	Number of Projects	Cost (millions)
Pacific Gas & Electric (PG&E)	31	$1,168
Southern California Edison Co. (SCE)	0	0
San Diego Gas & Electric Co. (SDG&E)	5 *	$175 *
Valley Electric Association (VEA)	0	0
Total	36	$1,343

* Includes two reliability-driven projects totaling $147 million that are associated with preparedness for loss of SONGS and other reliability benefits.

Eight reliability-driven projects over $50 Million

1. ***Orange County Dynamic Reactive Support (400 MVAR)*** – to provide voltage support to the transmission system in the vicinity of SONGS. ($50 - 75 million)

2. ***Talega Area Dynamic Reactive Support (250MVAR)*** – to provide voltage support to the transmission system in the Orange County area. ($58 - 72 million)

3. ***Atlantic-Placer 115 kV Line –*** Additions and upgrades within the Central Valley area for potential overload and voltage conditions. ($55 - 85 million)

4. ***Midway-Andrew 230 kV Project –*** A new 230/115 kV substation and 115 kV additions and upgrades within the Central Coast and Los Padre area for potential overload and voltage. ($120 - 150 million)

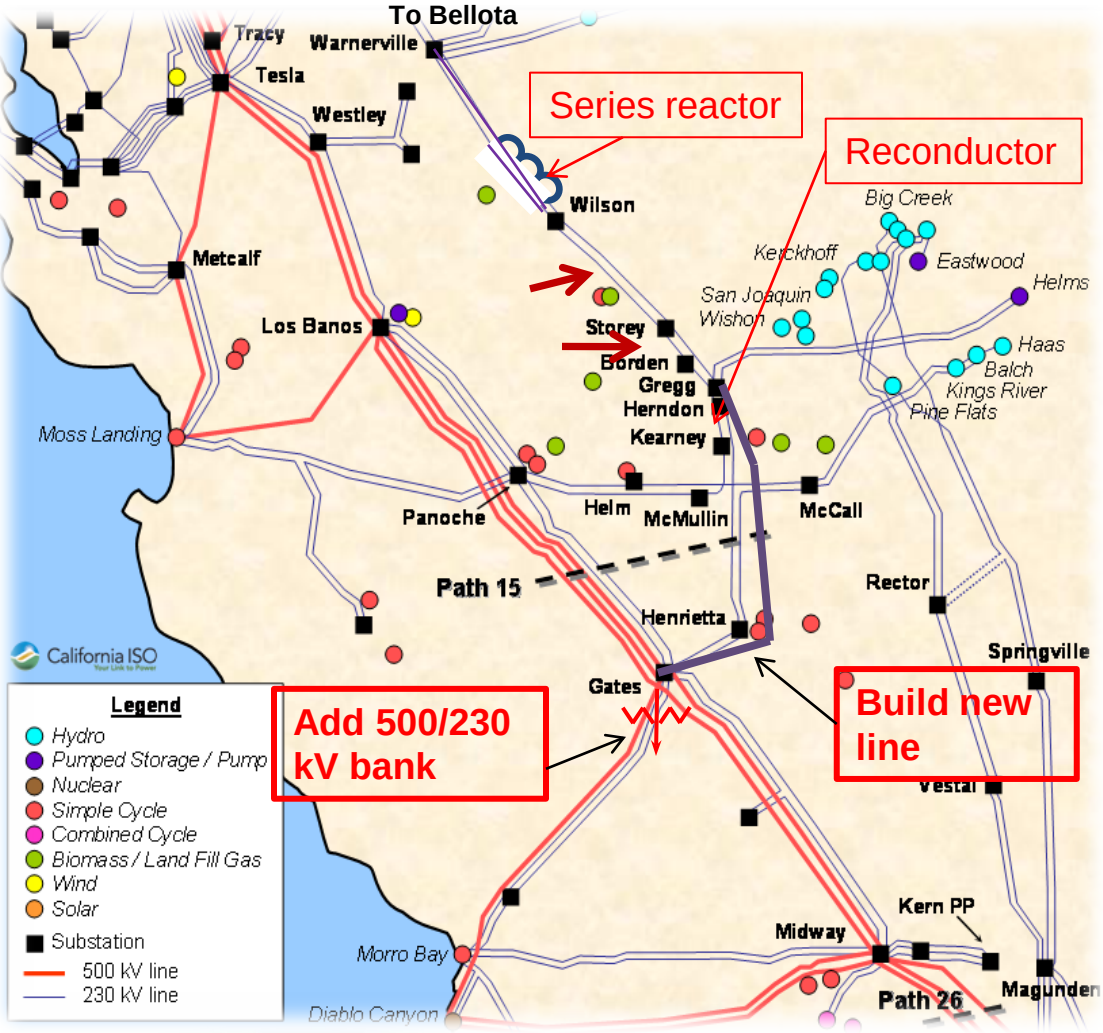
5. ***Northern Fresno 115 kV Reinforcement –*** A new 230/115 kV substation and 115 kV additions and upgrades within the Greater Fresno area for potential overload and voltage conditions. ($110 - 190 million)

6. ***Lockeford-Lodi Area 230 kV Development –*** A 230 kV reinforcement and substation to supply the Lodi area within the Central Valley area for a potential overload and voltage conditions. ($80 - 105 million)

Reliability-driven projects over $50 million (continued) - Central California Development

7. ***Gates #2 500/230 kV Transformer Addition –*** a 500/230 kV transformer to support load in the Greater Fresno area for potential overload conditions. ($75 - 85 million)

8. ***Gates-Gregg 230 kV Line –*** a new line into the Greater Fresno area for overload and voltage conditions and expanded utilization of HELMS pump storage facility. ($115 - 145 million)



PG&E has identified a reliability risk for supply to the San Francisco Peninsula.

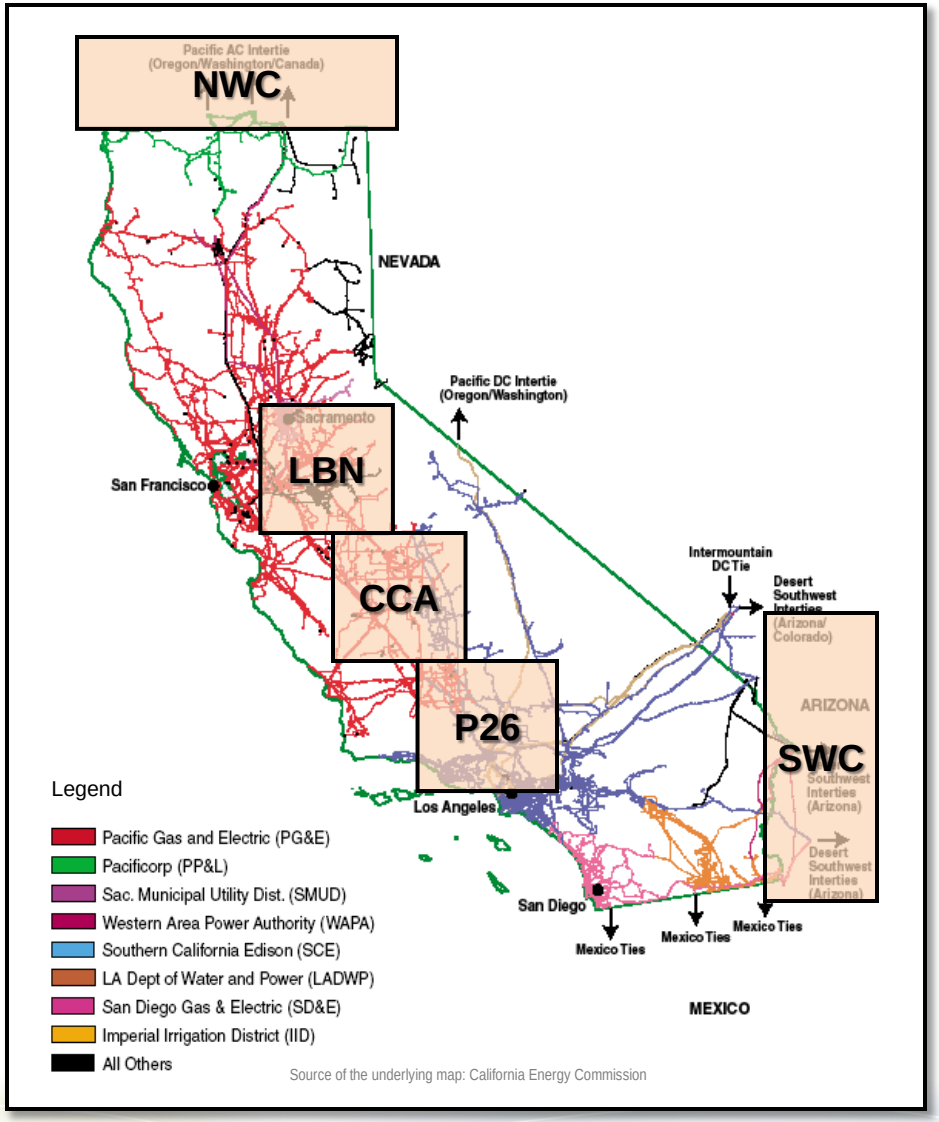
- The loss of a major substation impacting supply to the entire San Francisco peninsula
- The ISO is expediting a risk analysis with PG&E to establish the need for reinforcement
- A stakeholder process will be conducted to review the need and identify alternatives
- Depending on outcome of analysis and stakeholder process Management may pursue an amendment to the plan at a later Board meeting
- Upgrades identified in this plan to the TransBay Cable will provide partial relief in the interim

The policy analysis led to identifying five* policy-driven elements

- Sycamore-Penasquitos 230 kV transmission line ($111 - 211 million)
- Lugo-Eldorado series capacitor and terminal equipment upgrade ($121 million)
- Lugo-Eldorado 500 kV line re-route ($36 million)
- Warnerville-Bellota 230 kV line reconductoring ($28 million)
- Wilson-Le Grand 115 kV line reconductoring ($15 million)

* A potential need with the “West of the River” import path from the desert southwest was identified and also requires further study.

Five economic studies were performed in this plan.

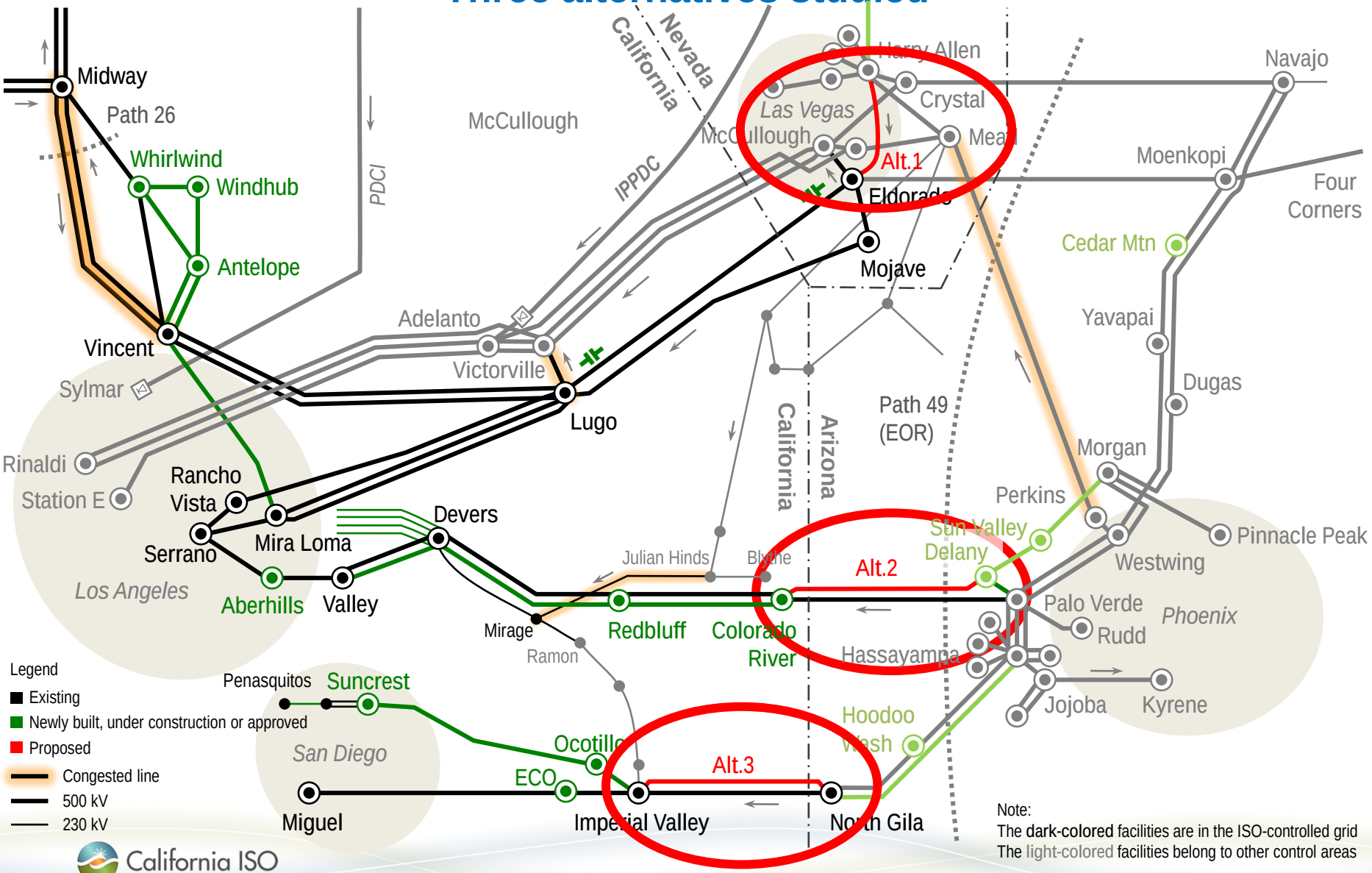


Source of the underlying map: California Energy Commission

Study ID	Study subject
P26	Path 26 Northern - Southern CA
LBN	Los Banos North
CCA	Central California Area
NWC	Pacific Northwest - California
SWC	Desert Southwest - California

Desert Southwest showed the highest potential:

Three alternatives studied



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Economic study conclusions:

- Preliminary analysis in February indicated high benefits for two projects
  - Delaney – Colorado River
  - Eldorado – Harry Allen
- Problem identified with initial benefit estimates for Delaney–Colorado River associated with greenhouse gas modeling
- Management recommendation is therefore to further evaluate
  - The Delaney-Colorado River transmission project, and, depending on the results, bring forward to the Board later this year
  - The Eldorado to Harry Allen transmission line as it as part of an ongoing joint study with NV Energy

Competitive solicitation eligibility review (Phase 3)

- Eligible policy-driven or economic-driven projects:
  - Sycamore-Penasquitos 230 kV transmission line
  - Possible future procurement of Delaney-Colorado River depending on future analysis
- Eligible reliability-driven project elements with additional policy or economic benefits:
  - Gregg-Gates 230 kV transmission line

All reliability project elements were screened and reviewed for potentially eligible elements

- Gregg-Gates 230 kV line – **Policy related benefits**

- Lockford-Lodi Area 230 kV development
- Altantic Placer 115 kV transmission line
- Rippon 115 kV transmission line
- Midway-Andrew 230 kV project
- North Fresno 115 kV upgrade
- Cressey-Gallo 115 kV transmission line

Detailed economic evaluation necessary.

- Diablo Canyon dynamic reactive support
- South OC dynamic reactive support
- Talega area dynamic reactive support

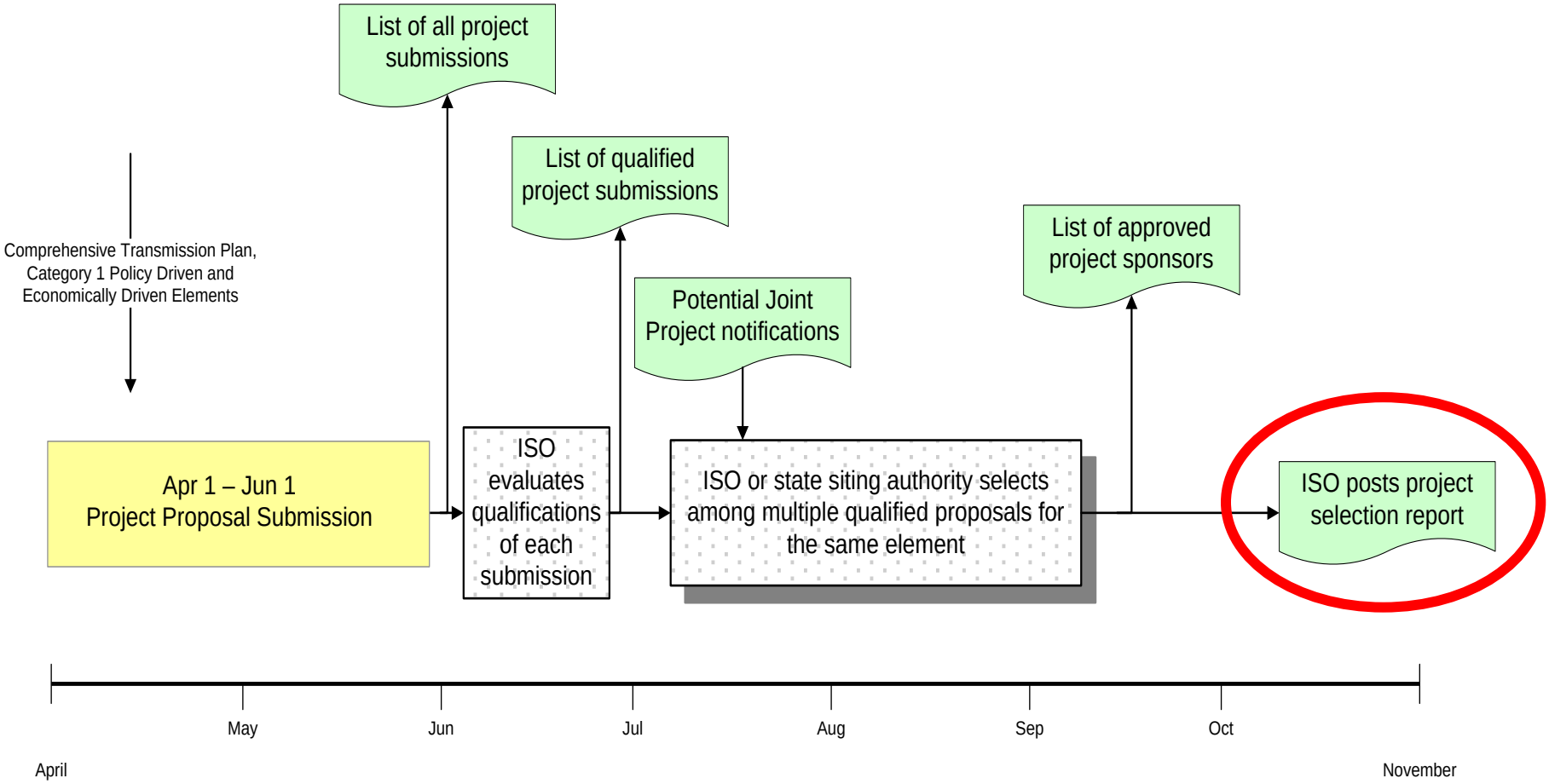
Operational requirements negate economic benefits.

Detailed economic benefits assessment

No.	Project	Capital Cost $ millions	Total Cost	Congestion Benefit	Year 1 Loss Saving MWh	Loss Savings $ Millions	Cost Benefit Ratio
1	Lockeford-Lodi Area 230 kV Development	$80 - 105	$116 - 152	0	12,557	$11.71	8.7%
2	Atlantic Placer 115 kV Line	$55 - 85	$80 - 123	0	3,000	$2.63	2.6%
3	Rippon 115 kV Line	$10 - 15	$15 - 22	0	841	$0.78	4.3%
4	Midway-Andrew 230 kV Project	$120 - $150	$174 – 217.5	0	20,140.33	$18.78	9.6%
5	Cressey-Gallo 115kV	$15 - 20	$22 - 29	0	399	$0.32	1.27%
6	North Fresno 115kV Reinforcement	$110 - 190	$160 - 275	0	23,654	$19.12	8.79%
7	*New Gates-Gregg 230 kV line **	*$115 - 145*	*$167 - 210*	*0*	*113,816*	*$103.73*	*55%*

* *Economic benefits test was unnecessary – competitive procurement established through previously identified policy benefits.*

2013 Competitive Solicitation Schedule



For the sole purpose of informing the CPUC's CPCN proceeding, the ISO performed a special study comparing the AV Clearview project as an alternative to the LGIA-driven Coolwater-Lugo Project:

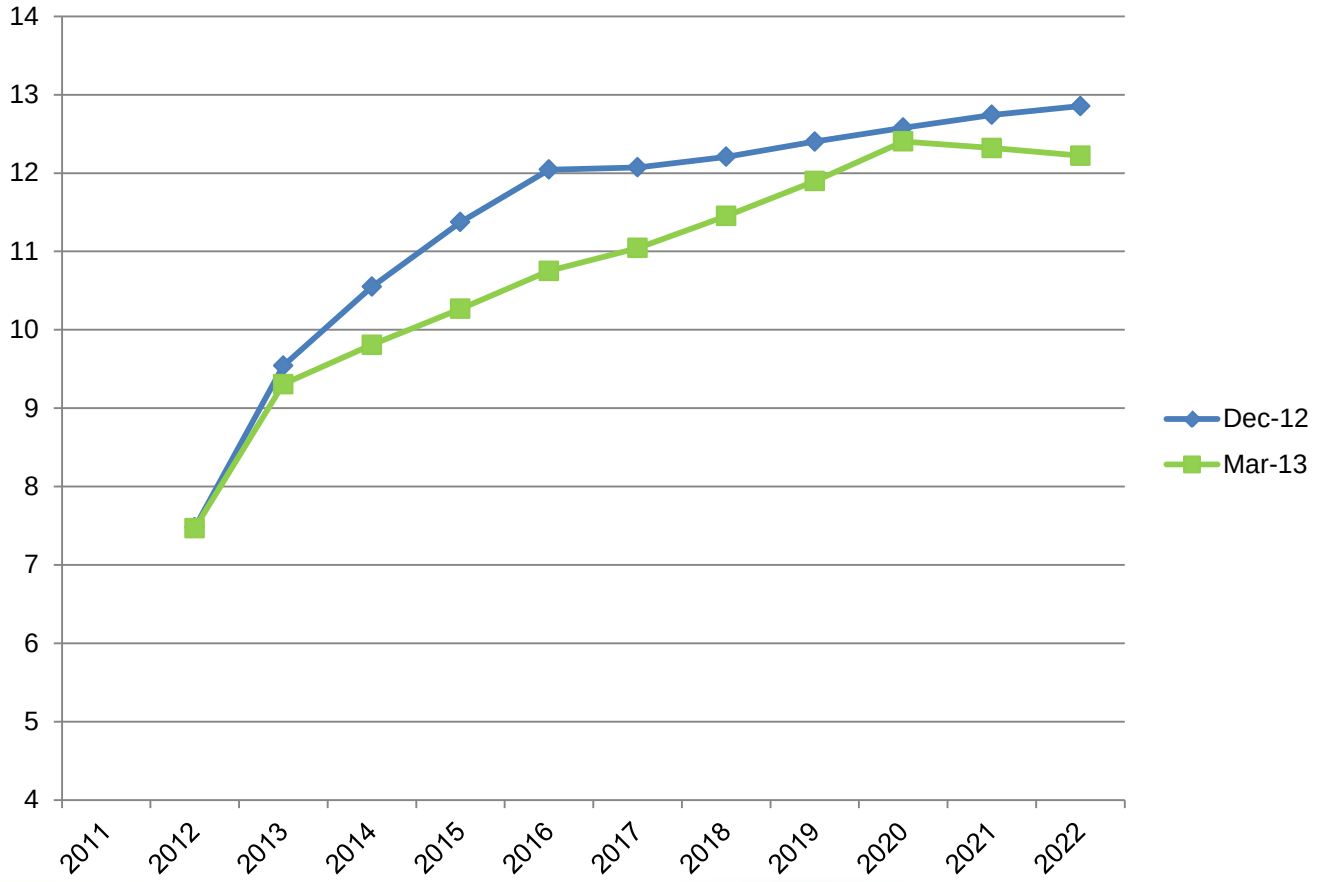
- Coolwater-Lugo is reflected in an executed LGIA that was accepted by FERC in January 2011
- Coolwater-Lugo models and cost estimates were provided by Southern California Edison.
- AV Clearview models and cost estimates were provided by High Desert Power Authority (represented by Critical Path Transmission)
- Critical Path Transmission also submitted a benefits analysis as a stakeholder comment on February 12 for ISO consideration
- Stakeholder comments were received throughout the review on both projects

At this point, the ISO does not see significant benefits to the AV Clearview project as an alternative to Coolwater-Lugo in the CPCN proceeding

- Both projects enable the interconnection of the CPUC-established portfolios that meet the 33 percent RPS
- The AV Clearview project provides access to generation beyond the portfolio amounts north of Kramer
- Viability questions for both projects have been raised
- Our analysis does not support the financial benefits identified in the report provided by Critical Path Transmission

- Next steps
  - ISO will review the Critical Path Transmission revised project proposal, provided on February 25, 2013.

The high voltage transmission access charge estimating model has been updated, indicating a steady increase over the study period.



Stakeholder Feedback

- Varying levels of support for individual projects
- Load forecast and other assumptions
- Range of alternatives and level of detail
- Distinction between role of generator interconnection process upgrades and transmission planning process upgrades

Stakeholder Feedback (continued)

- Consistent treatment of load shedding for multiple-contingency events
- Deliverability requirements being considered in policy needs assessments
- Forecast increase in high voltage transmission access charge
- Role of independent transmission companies and projects eligible for competitive solicitation

Management recommends the Board approve the 2012/13 ISO Transmission Plan

- The 2012/2013 ISO Transmission Plan
  - Addresses reliability needs of the ISO controlled grid
  - Enables the state's 33% RPS goals
  - Provides for prudent and economic development of the transmission system
- Next steps
  - Initiate implementation of ISO competitive solicitation process
  - Continue analysis of items requiring further study