

CALIFORNIA'S

RENEWABLES PORTFOLIO STANDARD



33% RPS by 2020 Implementation Analysis

January 27, 2009

California Public Utilities Commission



Study Objectives

- To inform decision makers on 33% RPS by 2020:
 - Feasibility
 - Cost
 - GHG impacts
 - Key barriers
 - Candidate solutions



How is the 33% RPS Implementation Analysis different from RETI?

- Portfolio approach
 - Fossil-fueled resources in addition to renewables
- Plausible portfolios
 - Barriers
 - Timeline
- Implementation solutions
- Operability
 - CAISO analysis of integration requirements
- New transmission vs. distributed generation
- WECC-wide perspective
- Part of CPUC's Long-Term Procurement Plan proceeding – will inform IOUs' 2010 plans



Use of RETI Data and Methodology

- Used RETI data/approach wherever possible
 - Supplemented as needed
 - Used confidential data on projects under negotiation at IOUs
- Scheduling restrictions
 - Phase 2 Results



Timeline

- Initial portfolios: December 15, 2008
- Working group meeting: December 16
- Final portfolios, working group meeting: January 15, 2009
- Barrier assessment, costs, GHGs: February 6
- Interim report: March 30
- CAISO transmission and intermittent resource integration analysis: October 30
- Final report: November 25



Interim Results: Statewide Portfolios

- Scenarios
 - 20% RPS
 - Reference
 - 33% RPS
 - Reference
 - Transmission-constrained
 - High central station solar
 - High wind
 - High out of state case



Incremental Projects Required by 33% RPS Reference Case

- Blue: Projects needed for both 20% and 33% RPS
- Green: Projects needed for 33% RPS

Zones Selected	MW	GWh
Total	23,798	74,650
Tehachapi	3,000	8,862
Distributed Bid List	525	3,118
Out-of-State Early	2,062	6,617
Solano	1,000	3,197
Imperial North	1,500	9,634
Riverside East	3,000	7,022
Mountain Pass	1,650	4,041
Carrizo North	1,500	3,306
Distributed Biogas	249	1,855
Out-of-State Late	1,934	5,295
Needles	1,200	3,078
Kramer	1,650	4,226
Distributed Geothermal	175	1,344
Fairmont	1,650	5,003
San Bernardino - Lucerne	1,800	5,020
Palm Springs	806	2,711
Baja	97	321



Approach to transmission “build-out”

- Original plan: use RETI Phase 2 conceptual plan for transmission pieces of “plausible build-outs”
- RETI Phase 2 was pushed out to March 2009, so...
- E3 designed a fixed-size transmission line configuration and filled it with the best resources in the zone
 - CREZs in reference case, based on modeling results: Tehachapi, Solano, Imperial N, Riverside E, Mountain Pass, Carrizo N, Needles, Kramer, Fairmont, SB-Lucerne, Palm Springs, Baja
 - Assumed line capacity, configuration, cost based on ranking of CREZ resources and distance to B&V-identified load center
 - Result is high-level, schematic interconnection plan – need for South-North transfers, for example, not considered



Implementation Analysis

- Aspen is now considering the implementation barriers to both the generation and transmission infrastructure assumed in the reference case build-out.
 - **GOAL**: Information about possible timeframe, costs, agency work loads associated with a 33% RPS
- Transmission piece:
 - About how many CPCNs might E3's schematic plan represent?
 - How long would it take to plan, permit and construct the lines?



Tx “plan” is consistent with RETI Phase 2

- Schematic plan is generally consistent with early Phase 2 plan, despite differences in resource assumptions
- Main differences
 - Access to Northern CA resources
 - South-North transfers



Opportunities for coordination/information flow

- Can implementation analysis help inform Phase 2 prioritization of lines?
 - Timing, barriers associated with generation development
 - Timing, barriers associated with transmission development
- Other opportunities for coordination / information sharing?

