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Renewable Energy Transmission Initiative

Phase 1A Report Phase 1B Work Plan

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Plenary Stakeholder Group Meeting

May 21, 2008

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Phase 1A Final Report and Stakeholder Comments

Phase 1A Report

- RETI Draft Phase 1A Report issued March 14
- Presentation to Plenary Stakeholder Group March 26
 - Over 100 comments received from 40 parties
 - Comments on all areas of report
- Proposed Final Report and comment responses issued April 11
 - Additional comments on resources, uncertainty analysis
- RETI Phase 1A Final Report acceptance to be considered by Stakeholder Steering Committee today

All documents are available on CEC-RETI web site

Thanks to all that provided comments!

Methodology – Resource Assmt. and Project ID

Comments on:

- Environmental screening of resources
- Exclusion of distributed generation, small renewables and energy efficiency

Action Items:

- Phase 1B: Additional environmental screens to be developed by environmental working group
- Phase 1B: Distributed and small renewable generation accounted for in demand forecast and utility resource plans

Methodology – Non-California Resources

Comments on:

- Detail of non-California resource assessment
- Availability of non-California resources
- Transmission cost

Action Items:

- Non-California renewable resources (except geothermal and solar thermal) aggregated by area. Individual resource information provided on project basis will be specifically considered in RETI
- Non-California resource that interconnect directly to California grid will be considered in-state resources
- Limit transmission import capability to California for forecast horizon
- Simplified transmission costing for non-California resources

Methodology – Resource Assessment by Region

	CA	OR	WA	NV	AZ	Baja California, MX	British Columbia, CA
Solid Biomass	Project	Class	Class				Third-Party
Solar Photovoltaic	Project						
Solar Thermal	Project			Project (south)	Project (west)		
Onshore Wind	Project	Class	Class	Class (south)		Class (north)	Third-Party
Geothermal	Project	Class		Class			Third-Party

Note: Non-California geothermal resources will be identified at a project level given the nature of the resources

Methodology – Environmental Considerations

Comments on:

- Environmental screens in resource identification and project selection
- Environmental impacts of technologies
- Methodology for including environmental issues in CREZ ranking

Action Items:

- Environmental Working Group (EWG) to develop screening criteria and proposed methodology for incorporating environmental criteria in RETI
- Phase 1B: Quantify environmental characteristics of resources: land, water, air, other

Methodology – Transmission Methodology

Comments on:

- Coordination with CAISO
- Transmission development timing
- Transmission costs

Action Items:

- Phase 1B: Coordinate transmission plans with CAISO
- Phase 1B: Use actual transmission development costs and wheeling charges where possible
- Phase 1B: Advance more CREZs to Phase 2 than minimum necessary

Methodology – Resource Valuation

Comments on:

- Capacity value determination
- Energy value determination
- Integration costs

Action Items:

- Nodal pricing should be considered in future RETI analysis
- Phase 1B: CREZ uncertainty analysis will consider range of capacity and energy values

Methodology – CREZ Identification and Ranking

Comments on:

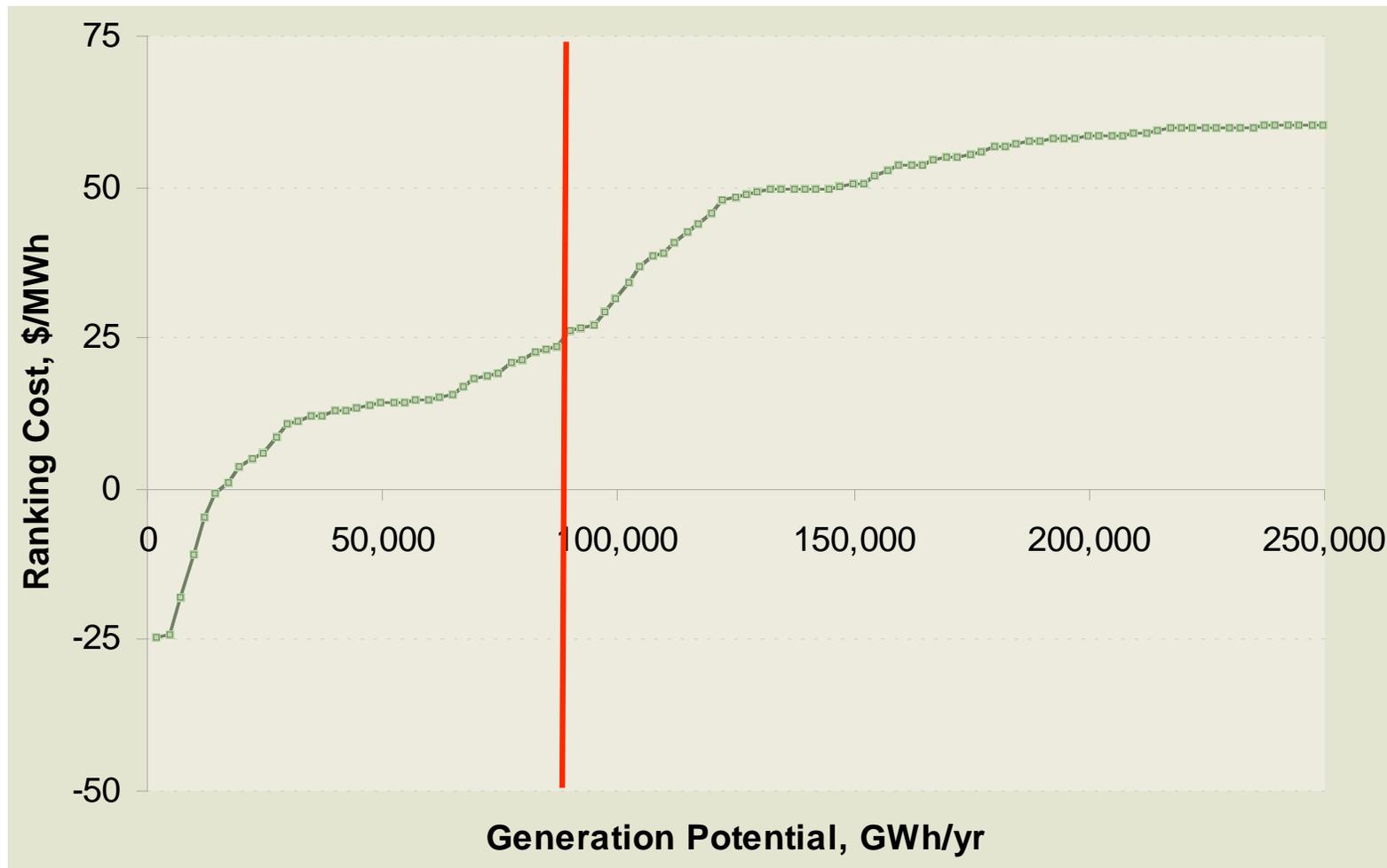
- CREZ methodology
- CREZ size
- Uncertainty

Action Items:

- Phase 1B: CREZs will be developed based on physical and electrical interconnections
- In recommending CREZs for Phase 2 analysis, resource uncertainty will be considered

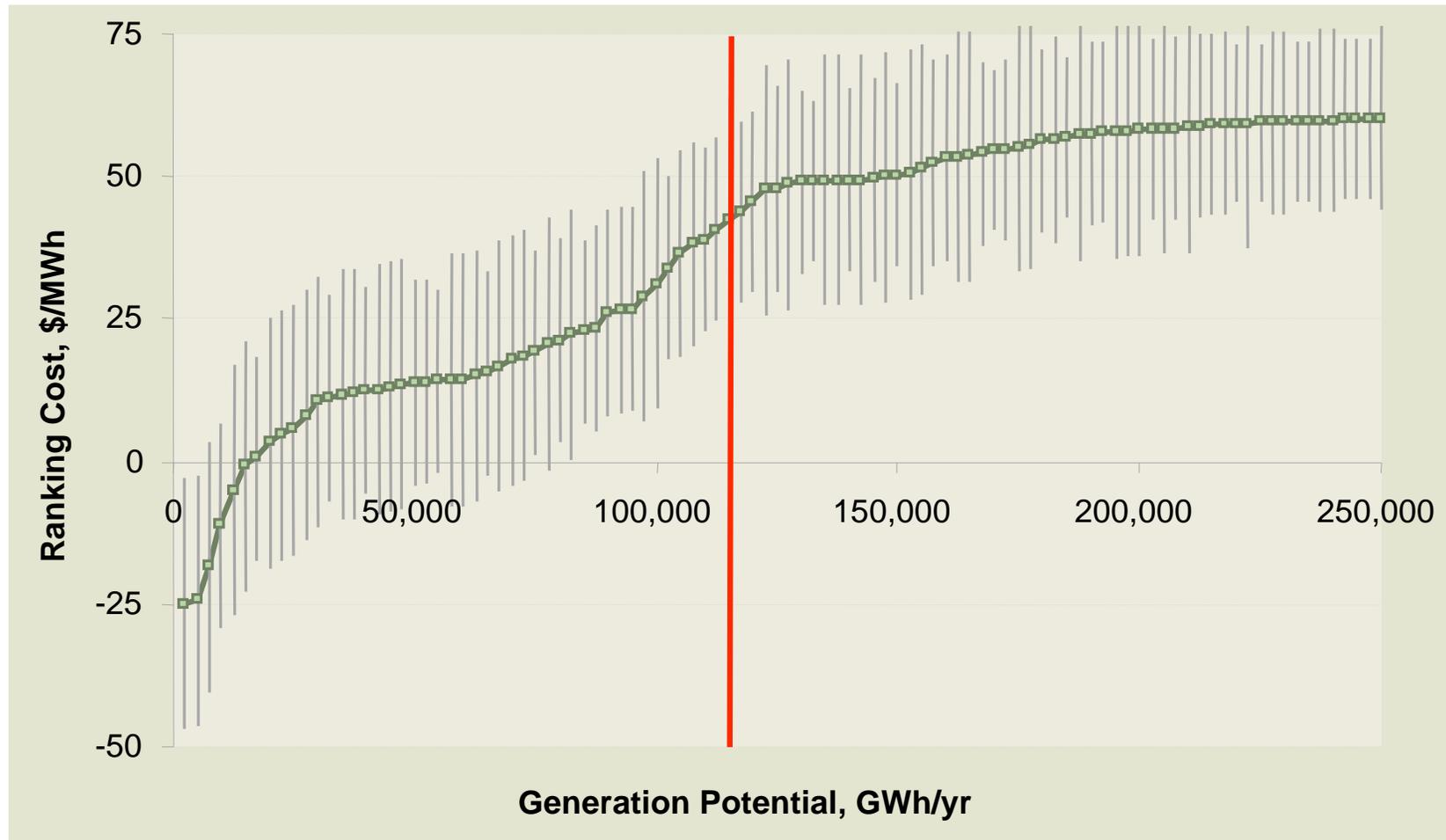
Final Phase 1A Report Changes - Methodology

- Resource Valuation - Uncertainty Analysis



Final Phase 1A Report Changes - Methodology

- Resource Valuation - Uncertainty Analysis



General Study Assumptions

Comments on:

- Economic assumptions – financing
- Financial incentives
- Competing demand for out-of-state resources

Action Items:

- Phase 1B: Toggle in model for users to select tax credit applicability
- Phase 1B: Limit transmission import capability to California for forecast horizon

Technology/Resource – Biomass

Comments on:

- Technical and economic assumptions
- California Biomass Collaborative resource assessment
 - Forest thinnings
- Environmental impacts

Action Items:

- Adjusted assumptions in draft report
- Phase 1B: closer scrutiny of biomass resource assessment (environmental, technical, and economic)
- Phase 1B: Environmental impacts quantified for each project / resource class

Technology/Resource – Hydroelectric

Comments on:

- Environmental impacts

Action Items:

- Black & Veatch re-did Phase 1A analysis focusing on upgrades and generation additions at existing sites only
- Hydroelectric will not be considered in Phase 1B

Technology/Resource – Wind

Comments on:

- Hub height
- Storage with wind
- British Columbia wind
- Environmental impacts and more detailed resource screening

Action Items:

- Storage considered for promising CREZs on case-by-case basis
- British Columbia wind analysis updated
- Phase 1B: Environmental impacts will be quantified for each project / resource class

Technology/Resource – Geothermal

Comments on:

- Technology – dry steam
- Technical and economic assumptions
- Environmental impacts and more detailed resource screening

Action Items:

- Dry steam technology added
- Phase 1B: Environmental impacts will be quantified for each project / resource class

Technology/Resource – Solar Thermal

Comments on:

- Trough as proxy technology
- Storage
- Wet vs. dry cooling
- Land requirements
- Technical and economic assumptions
- Environmental impacts and more detailed resource screening

Action Items:

- Land use assumption clarified
- Included water use information for wet and dry plants
- Phase 1B: Environmental impacts quantified for each project / resource class

Technology/Resource – Solar Photovoltaic

Comments on:

- Tracking crystalline as proxy technology
- Technical and economic assumptions
- Plant size
- Land requirements

Action Items:

- Land use assumption clarified
- Water use clarified
- Alternative scenario with thin film costs \$2,700/kWe to \$3,500/kWe

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Phase 1B Scope of Work

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 Project identification and characterization

 Resource valuation / Environmental valuation

 Supply curves, RPS integration modeling

 CREZ identification

1. Project Identification and Characterization

- Detailed resource assessment

Resource Recommendations for Phase 1B .

	CA	OR	WA	NV	AZ	Baja California	British Columbia
Solid Biomass							
Solar Photovoltaic							
Solar Thermal				 (south)	 (west)		
Onshore Wind				 (south)		 (north)	
Geothermal							

- Includes additional environmental screens compared to Phase 1A

1. Project Identification and Characterization

- Collect data on planned and proposed projects:
 - Technology type
 - Location
 - Project status
 - Expected online date
 - Capacity
 - Annual generation
 - Generation profile
 - Relevant site-specific cost information that should be considered
 - Status of transmission studies

1. Project Identification and Characterization

Deliverable:

- Preliminary resource supply tables (in Microsoft Excel format) detailing all information discussed

2. Resource Valuation

- Generation cost with uncertainty
- Transmission cost
- Integration cost (to be determined in future)
- Capacity value
- Energy value
- Ranking Cost
- Environmental Metrics

2. Resource Valuation

Deliverables:

- Documented resource valuation model for stakeholder review
- Table of cost metrics for all identified projects / resource classes
- Table of environmental metrics for all identified projects / resource classes

3. Develop Supply Curves and RPS Integration Modeling

- Demand forecast
- Economic supply curves
- Identification of hypothetical least-cost portfolios in different timeframes
- Model output

3. Develop Supply Curves and RPS Integration Modeling

Deliverables:

- Draft documented supply curve model
- Draft supply curves
- Draft RPS development model results summary

4. Identification of High Priority CREZs

- Economic and environmental ranking of all projects / resource classes
- Aggregate projects into CREZs based on physical and electrical interconnection potential
- Develop composite characteristics for each CREZ
- Tiered ranking of sub-CREZs / CREZs applying
 - Economic criteria
 - Environmental criteria developed by EWG and approved by SSC in ranking CREZs

4. Identification of High Priority CREZs

Deliverables

- Draft list of CREZ rankings including composite CREZ characteristics
- Draft final report summarizing and documenting all project activities
- Final Report incorporating relevant comments to the Draft Report
- Final spreadsheet model

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Thank You!

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