



# Renewable Energy Transmission Initiative Phase 1A Draft Report Comments

**Black & Veatch**

**Stakeholder Steering Committee**

**April 16, 2008**

# Agenda

- Overview
- Methodology Comments
- General Study Assumptions Comments
- Technology/Resource Comments
- Phase 1B Scope of Work

## Overview

- Over 100 comments received from 40 parties
- Comments on all areas of draft report
- Draft final report modified to reflect changes
  
- Thanks to all who commented!

# Methodology – Base Case Definition

## Comments on:

- Renewable generation resources
- Transmission resources

## Action Items:

- Phase 1B: Include generation projects in base case that meet criteria for inclusion
- Phase 1B: Include transmission projects in base case that meet criteria for inclusion

# 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
- Phase 1B: Treatment of out-of-state resources will be simplified

# 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:

- Out-of-state transmission assumptions
- Coordination with CAISO
- Transmission development timing
- Transmission costs

## Action Items:

- Phase 1B: Simplified transmission assumptions for out-of-state renewable projects and CREZs
- Phase 1B: Use actual transmission development costs and wheeling charges where possible
- Phase 1B: Advance more transmission to Phase 2 than minimum necessary

# Methodology – Resource Valuation

## Comments on:

- Capacity Value
- Energy Value
- Integration Costs

## Action Items:

- Nodal pricing should be considered in future RETI analysis
- Phase 1B: Integration costs used if available and appropriate

# Methodology – CREZ Identification and Ranking

## Comments on:

- CREZ methodology
- CREZ size
- Uncertainty

## Action Items:

- Phase 1B: Consider uncertainty, just uncertain how

# 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: Wet vs. dry cooling guidance from EWG
- 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



## Phase 1B Scope of Work

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## Phase 1B Scope of Work

1. Project identification and characterization
2. Resource valuation / Environmental valuation
3. Supply curves, RPS integration modeling
4. CREZ identification

# 1. Project Identification and Characterization

- Detailed resource assessment

	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 (east)		
Onshore Wind	Project	Class	Class	Class (south)		Class (north)	Third-Party
Geothermal	Project	Class		Class			Third-Party

- 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

- Develop information for additional as-yet-identified projects / resource classes:
  - Location
  - Cost
  - Performance
  - Environmental impacts
  - Transmission interconnection
  - Typical production profiles
  - etc...

# 1. Project Identification and Characterization

## **Deliverable:**

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

## 2. Resource Valuation

- Generation Cost
- Transmission cost
- Capacity value
- Energy value
- Ranking Cost
  - *Uncertainty?*
- Environmental Metrics
  - Need input from EWG / SSC

## 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

- Tiered economic ranking of all projects / resource classes (tiered)
- Aggregate projects into CREZs
- Develop composite characteristics for each sub-CREZ and CREZ
- Tiered economic ranking of sub-CREZs / CREZs
- Environmental ranking criteria developed by EWG and approved by SSC
- Apply environmental criteria to rank CREZs
- Combined ranking (Economics, Environmental, ???)

## 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



# Thank You!

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