



## **RETI Phase 2 Update Workgroup**

### **Status Update to SSC**

**November 3, 2009**

**Ryan Pletka**

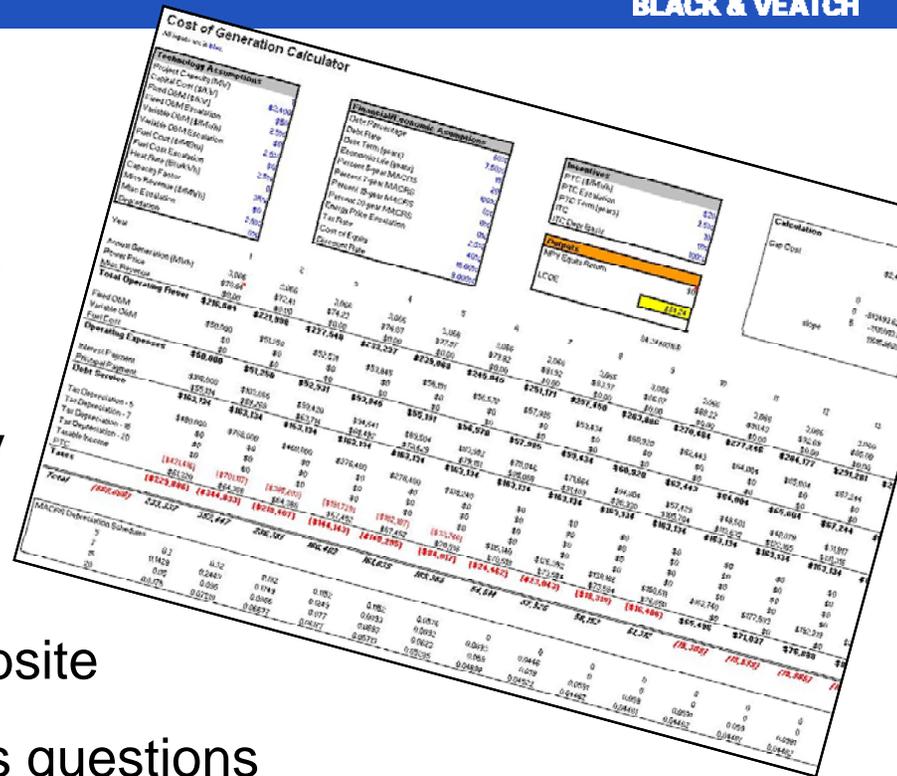
## RETI Phase 2 Update Workgroup Issues

- Economic Model Update
  - Model review
  - Incentives Assumptions
- Extended Analysis of Out-of-State Resources
  - Screening
  - Transmission Approach
- CREZ and Technology Updates
- Net Short Update
- RPS Implementation Timelines



# Economic Model

- Updated levelized cost of energy model
  - Changes made mostly to accommodate new incentives
  - Available on RETI website
  - Couple of clarifications questions answered
  - No material comments
  - Will assume to be good working model unless substantive issues arise



## Incentives

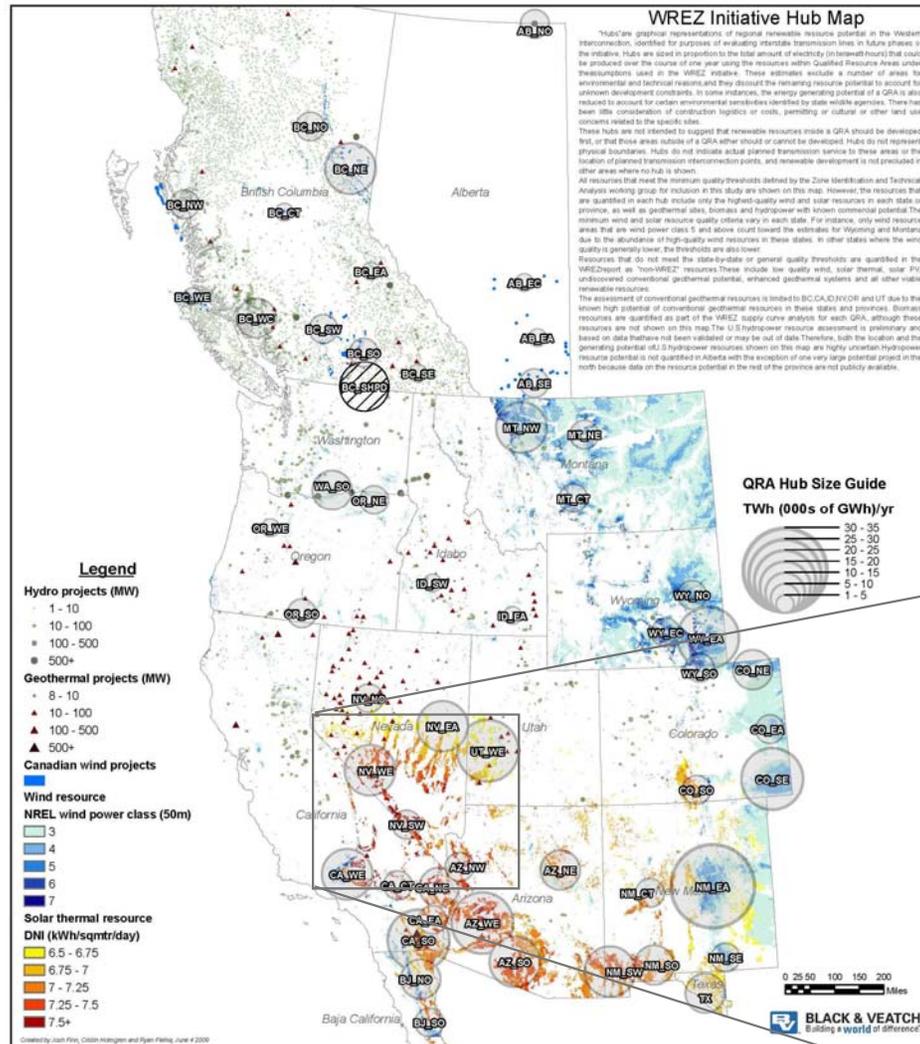
- US: Assume Current Programs Continue
  - 30% Grant / Investment Tax Credit for Wind, Biomass, Geothermal, Solar
  - \$10-21/MWh Production Tax Credit for Wind, Biomass, Geothermal
  - Determination will be made on a project-by-project basis which is more advantageous (almost always the 30% grant)
- Include Canadian (50% 10-year depreciation) and Mexican (95% 1-year depreciation) incentives

## Out-of-state (OOS) Update

1. Update estimates for current RETI OOS regions
2. Screen resources from additional OOS areas
3. Calculate delivered cost to California

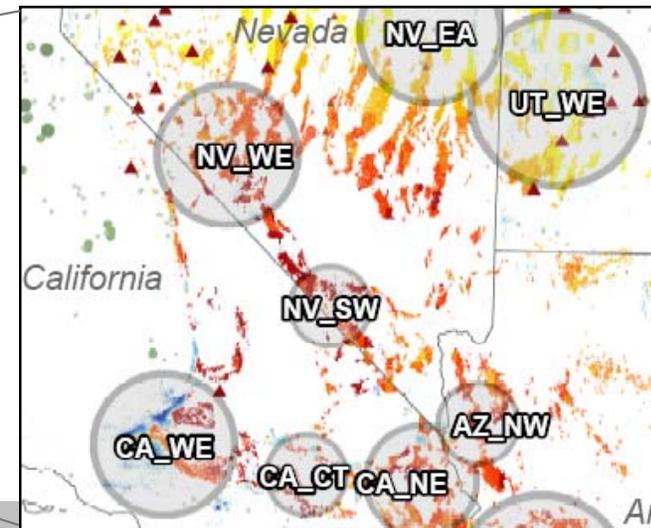


*Use WREZ data to facilitate this*



## WREZ Resource Assessment

- Estimates resource potential at a particular price point in each “hub”



## Original Phase 1 RETI MW Estimates

		CA	OR	WA	NV	AZ	Baja	BC
<b>Bio</b>		1,725	454	449				1,520
<b>PV</b>		27,460						
<b>ST</b>		65,200			7,429	7,129		
<b>Wind</b>		16,208	4,688	3,762	1,475		5,000	2,405
<b>Geo</b>		1,918	520		1,283			244

## WREZ MW Estimates (in RED)

		CA	OR	WA	NV	AZ	Baja	BC
Bio 		1,725	454	449				1,520
		145	652	101	299	329		939
PV 		27,460						
					18,960	20,178		
ST 		65,200			7,429	7,129		
		16,931			18,960	20,178		
Wind 		16,208	4,688	3,762	1,475		5,000	2,405
		6,042	2,913	3,262	432	3,714	2,963	13,942
Geo 		1,918	520		1,283			244
		1,434	832		1,408			340

Notes: PV and ST not differentiated in WREZ, assumed all ST

## Summary of Recommended Resource Assessments to Use (RETI vs. WREZ) MW Estimates

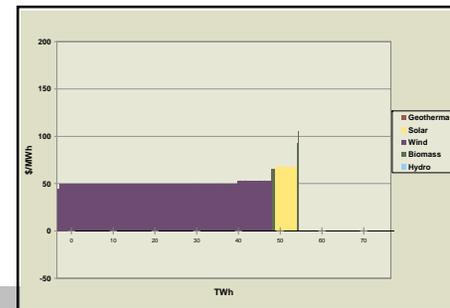
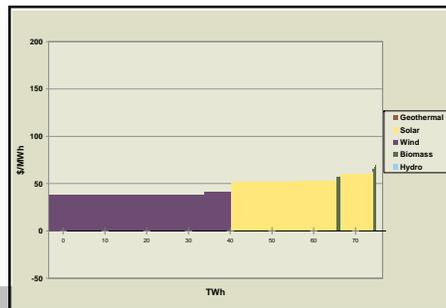
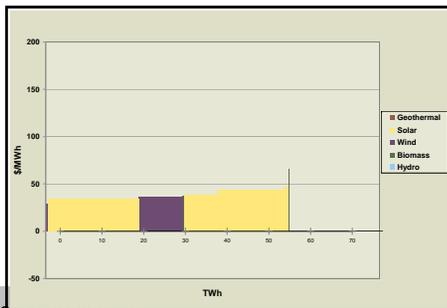
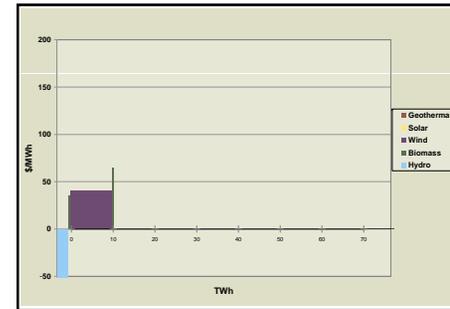
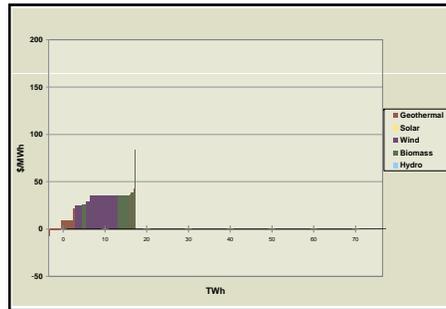
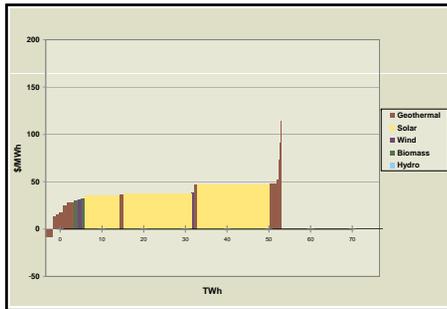
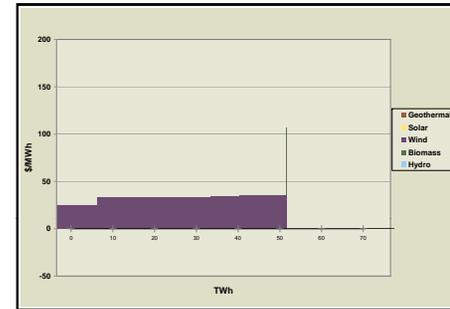
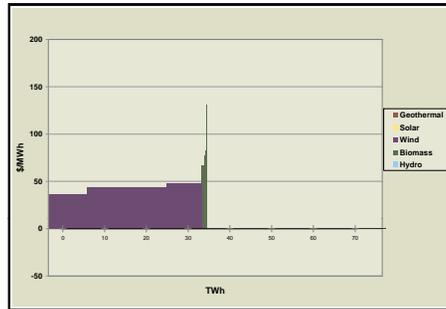
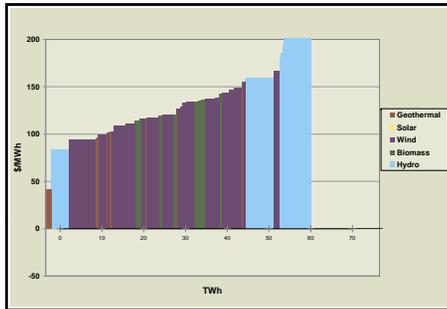
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Geo 		1,918	520		<del>1,283</del>			244
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New assessments to be performed

Notes: PV and ST not differentiated in WREZ, assumed all ST



# Supply Curves Compared Across Regions

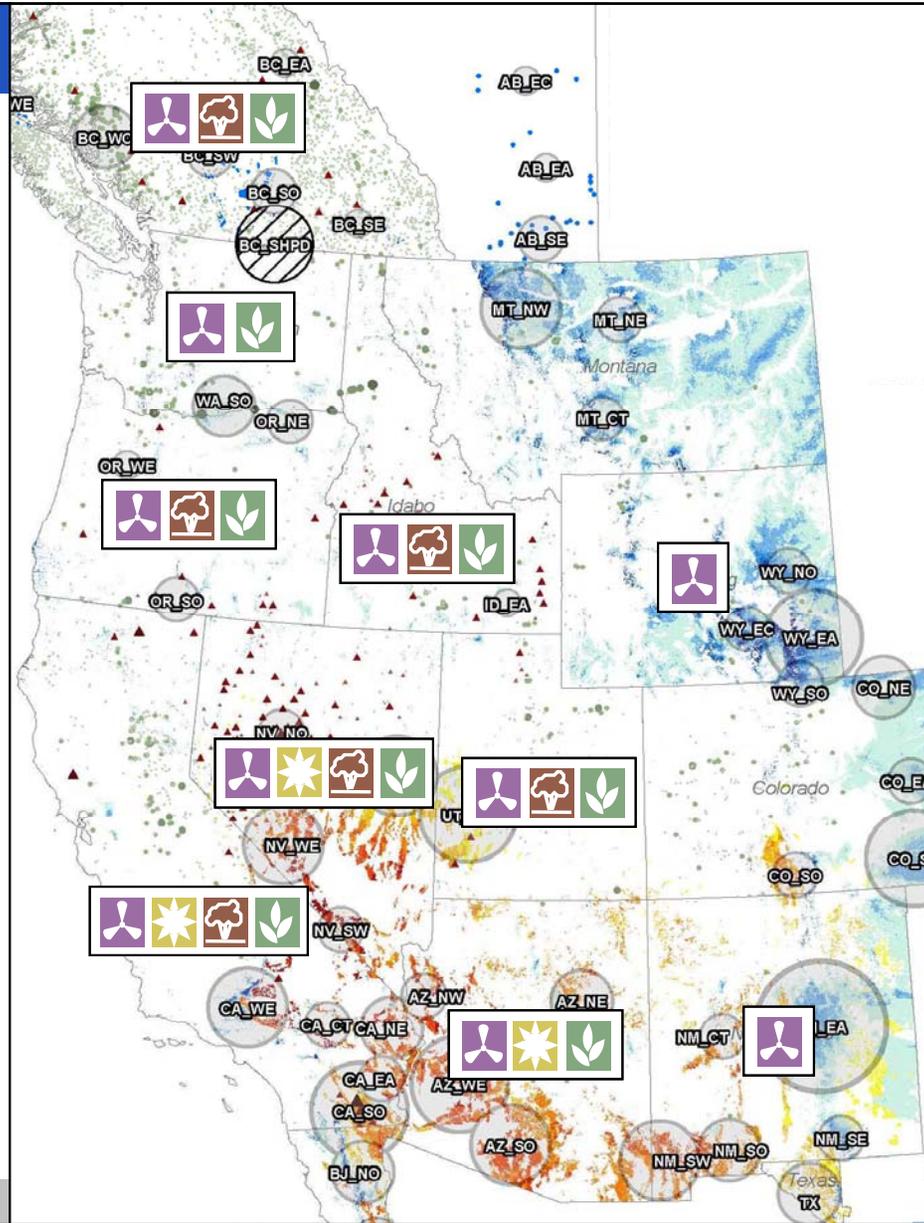


## Recommended Out-of-State Resource Additions

	Included in 1B	Recommended Additions
Arizona		 
Nevada	  	 
Wyoming		
Idaho		  
Utah		  
New Mexico		

**OR, WA, BC, and Baja already included – no proposed changes**

# Resources to be Considered in RETI Phase 2A Update



## Transmission Cost Approach

- Out-of-state resources
  - 500 kV single-circuit ac transmission, 1500 MW capacity, \$1.8 million/mile, federally financed, delivered to “gateway CREZs” (e.g., Mountain Pass)
    - From WREZ Transmission Characteristics Working Group
  - Open issue: Line utilization
- In-state transmission costs:
  - Include all costs for 2A Collector Lines; allocation based on 2A shift factors
  - Include 50% of the 2A Foundation and Delivery Line costs; allocation based on 2A shift factors
  - Open issue: Cost basis

## Technology Updates

- All technologies:
  - Update base technology cost and performance information
- Solar
  - Revisit solar technology assumptions (include pre-identified solar thermal with storage projects, thin film for PV)
  - Re-evaluate the assumptions for wet/dry cooling at solar thermal projects (consider wet-cooling only when permitted)
  - Consider additional solar thermal technologies as sensitivity?
  - Update solar profiles
- Geothermal
  - Consider dry-cooling impacts on geothermal output profiles (current assumption is flat)

**Accepting comments on these issues now...**

## CREZ Updates

- Wind
    - Update Palm Springs wind resources
    - Update Fairmount wind resources
    - Update Baja wind resources
  - Update site-specific solar project characteristics for large solar projects that have been moved
  - Reassess need / definitions for sub-CREZs
  - Update pre-ID project information
  - Re-rank projects
- Accepting comments on these issues now...**