

Regional Transmission Planning Initiatives and Projects

2009 Integrated Energy Policy Report Joint IEPR/Siting Committee Workshop

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09-IEP-1D

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RECD. APR 30 2009

Siting, Transmission and Environmental Protection Division
Sacramento, CA May 4, 2009



Presentation Synopsis

I. Overview: Regional Planning

- **Western Electricity Coordinating Council**
- **Stimulus Bill Transmission Provisions**
- **Western Governors' Association Initiatives**
- **U. S. Congress Transmission Proposals**

II. Overview: Regional Projects

- **Western Interconnection Projects Overview**
- **Examples of Major Projects and Issues**
- **Observations/Conclusions**

III. Reference Slides



I. Regional Planning: WECC

Western Electricity Coordinating Council

- Regional Entity under EPAct 2005
- Adopts and enforces reliability standards
- Assigns transmission path ratings
- Conducts transmission “planning”
- Footprint is the geographic area comprising the Western Interconnection (WI)



I. Regional Planning: WECC(cont.)

WECC Transmission Expansion Policy Planning Committee (TEPPC)--Three Functions

- **Maintains data base for modeling**
- **Manages WI planning process (FERC Order 890)**
- **Conducts transmission expansion studies and prepares annual report for WECC (not a “Plan”);**
- **TEPPC task force to seek WI transmission planning Stimulus funding from DOE**



I. Regional Planning: Stimulus \$

American Recovery and Reinvestment Act (ARRA) Transmission-related: \$18 billion

**6.0 B for loan guarantees renewable tech and
transmission tech**

**3. 25 B for WAPA--new borrowing authority:
renewable transmission projects (--Solicitations
closed and award evaluation underway)**

3.25 B increase in BPA borrowing authority

4.5 B for Electricity Delivery and Energy Reliability

Includes \$80 million for regional T- Planning



I. Regional Planning: Stimulus \$ (cont.)

\$80 M for Transmission Assessment and Planning:

- facilitating the *development of regional transmission plans ...*
- conducting a resource assessment and an analysis of future demand and transmission requirements...
- provide technical assistance for the formation of *interconnection-based transmission plans for the Eastern and Western Interconnections...*
- support to regions and *States for the development of coordinated State electricity policies, programs, laws, and regulations...*

Money not yet “authorized” by OMB

Funding Opportunity Announcement (FOA) planned;

Competitive solicitation; 30 day (?) response window

WECC will respond on behalf of WI

(See Slide 26 for statute excerpt)



I. Regional Planning: WGA

Western Governors' Association (WGA)

13 western states plus portions of Midwest

Energy-related initiatives embodied in resolutions, letters and programs

Key current initiatives re regional transmission:

- Western Renewable Energy Zone Project
- Transmission Policy Letter to Obama Administration and Congress



I. Regional Planning: WGA (cont.)

Western Renewable Energy Zone Project

Phase 1: Identification of western renewable zones

May 30: Final Phase 1 Report with final zones

June 13: Presentation to Western Governors

Phase 2: Conceptual transmission from zones

Phase 3: Coordinated procurement for renewables

Phase 4: Institutional options to facilitate interstate transmission for renewables



Western Governors' Association WREZ Initiative

Preliminary WREZs

LEGEND

Qualified resource area

Canadian hydropower resources

Conventional discovered geothermal

Solar thermal resource

Direct normal insolation (kWh/sqmt/day)

6.5 - 7.0

7.0 - 7.5

7.5+

Wind resource

Wind power class

3

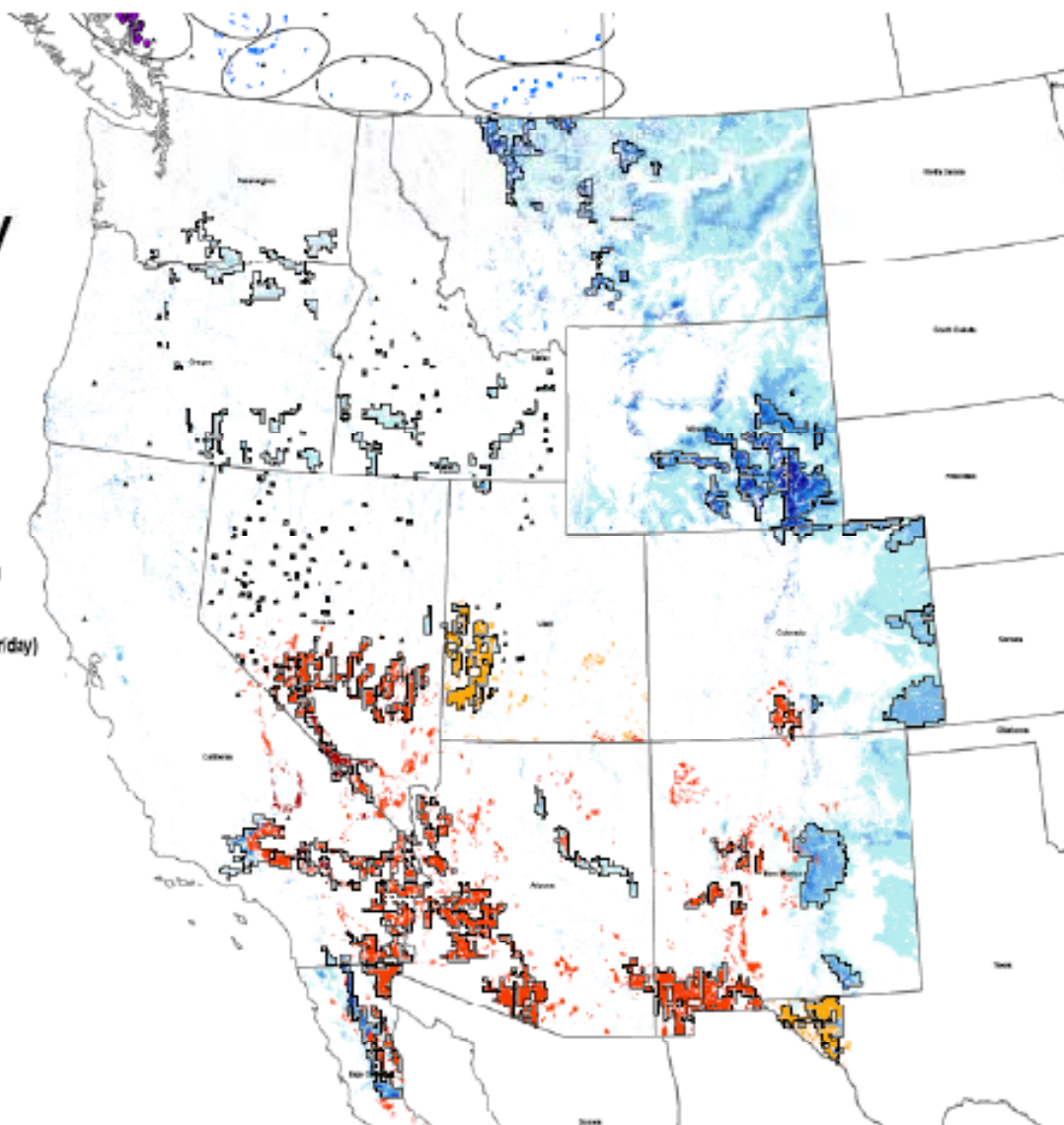
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5

6

7

Canadian wind



I. Regional Planning: WGA (cont.)

Transmission Planning Statement: April, 2009

- “Establish a systematic scenario development effort to supplement the Order 890 study request process
- Have the political leadership in the West take ownership of the alternative scenarios
- Western Governors/Premiers approve scenarios for interconnection-wide transmission studies and plans
- WECC lead the studies of transmission needed under the scenarios and develop a transmission plan or plans
- Governors/premiers approve the plan or plans
- Federal agencies abide by the plan or plans.”



I. Regional Planning: Congress

Transmission Planning/Regulation Bills

	Scope	FERC approves planning entity	FERC approves plan (or does plan)	FERC allocates project cost	Feds pay for transmission	FERC permits project
Bingaman	All tx	X	X	X		X
Reid	RR tx	X	X	X		X
Nelson	Super-highway	X	X		X	X
Dorgan	RR + CCS		X	X		X
Waxman	All tx	X Adopts planning principles	X			



I. Regional Planning: Observations

DOE Stimulus \$ will result in Interconnection-wide Transmission Plan (Winter 2010/11?)

States need to engage and articulate policies; important to increase coordination RETI and WREZ Phase 2

Strong forces in Washington DC urging increase in federal authority; linked to Interconnection-wide T- Plan

Strong forces in WGA support increased federal roles and producer states' export desires (major interstate lines, HV "overlay")

California can affect debates via LSEs, Commissions and Governor
CEC well-positioned to lead in WECC

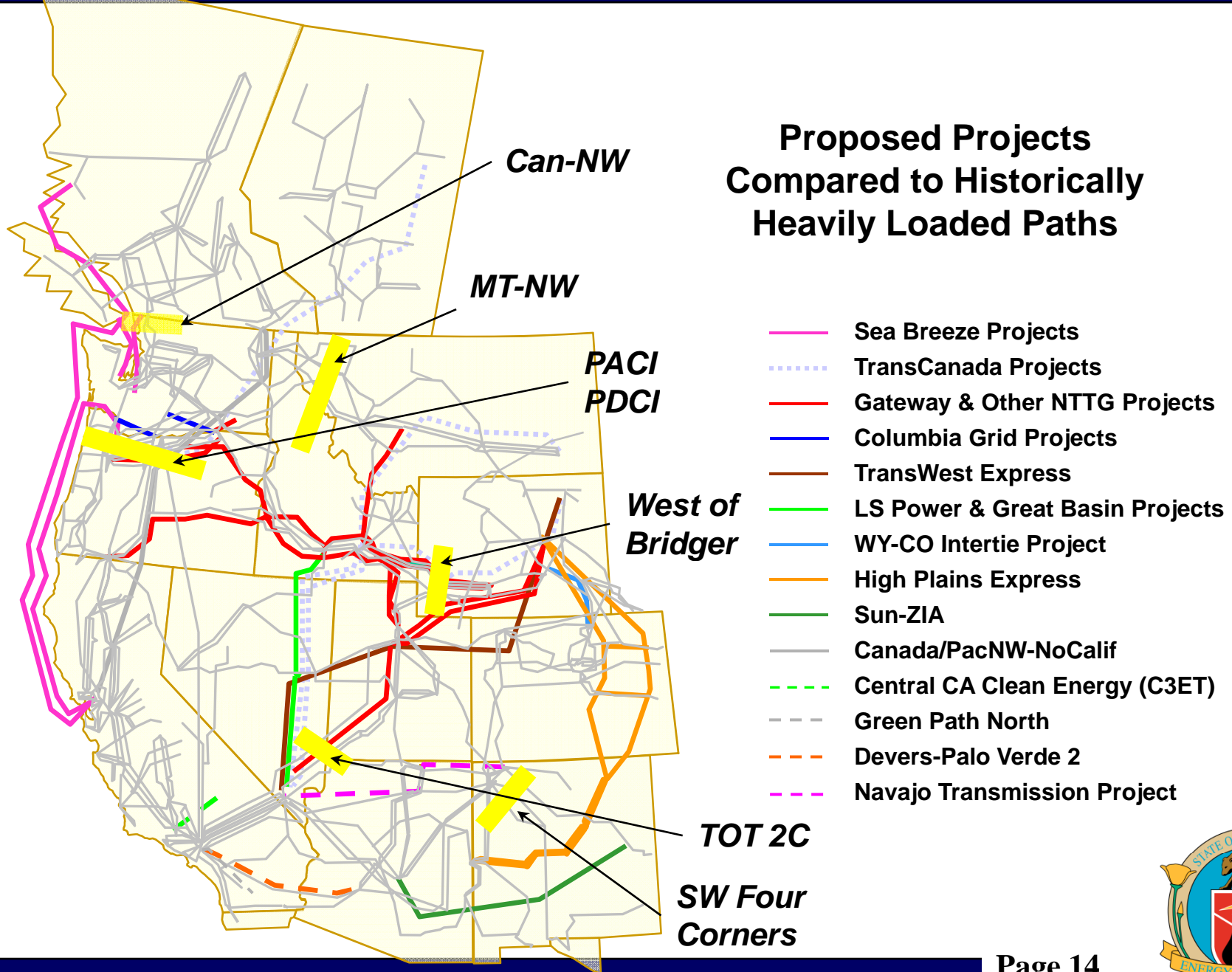
Continued, consistent involvement is critical



II. Proposed Regional Transmission Projects



Proposed Projects Compared to Historically Heavily Loaded Paths



II. Regional Projects: Questions

AC or DC?

Local or regional agenda and which renewables?

Regionalization of renewable markets? Multi-state export lines?

Cost Allocation if multiple balancing authorities?

Sizing lines for economies of scale?

Conservation of right-of-way

Interstate “grid overlay” concept

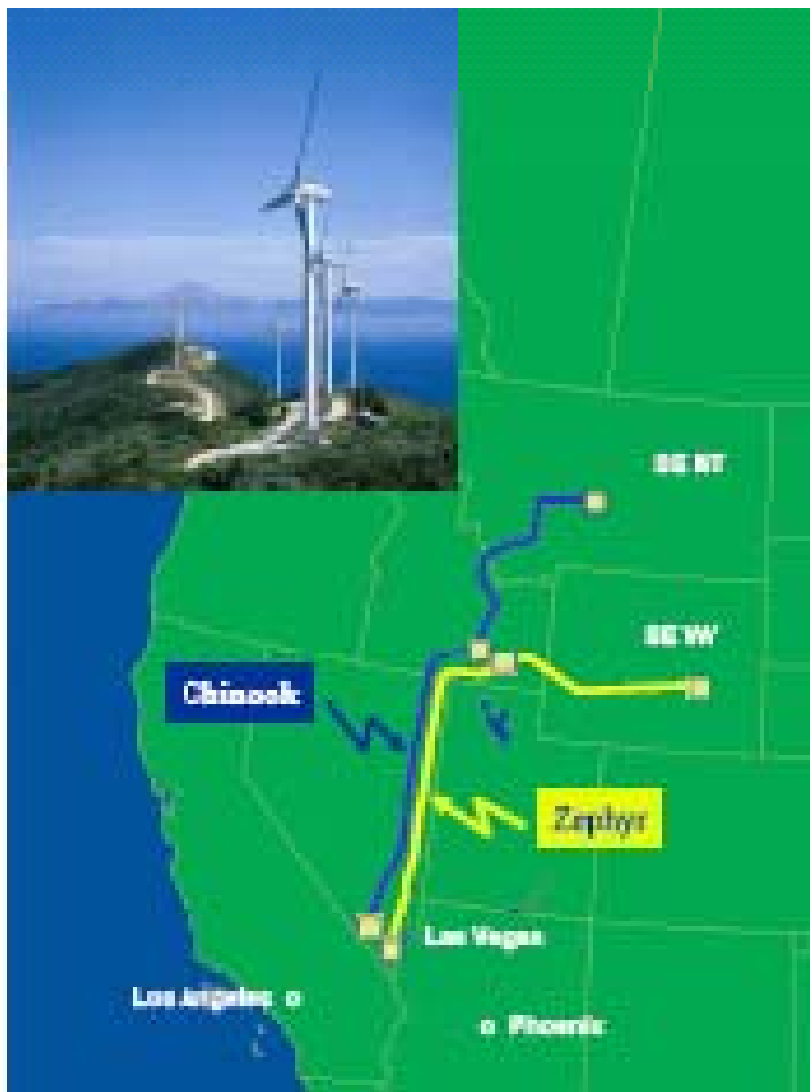
Designing for expansions?

Oversized towers to accommodate future circuits;

Delaying expensive higher-voltage substations for future install

What will get built? Why or why not?



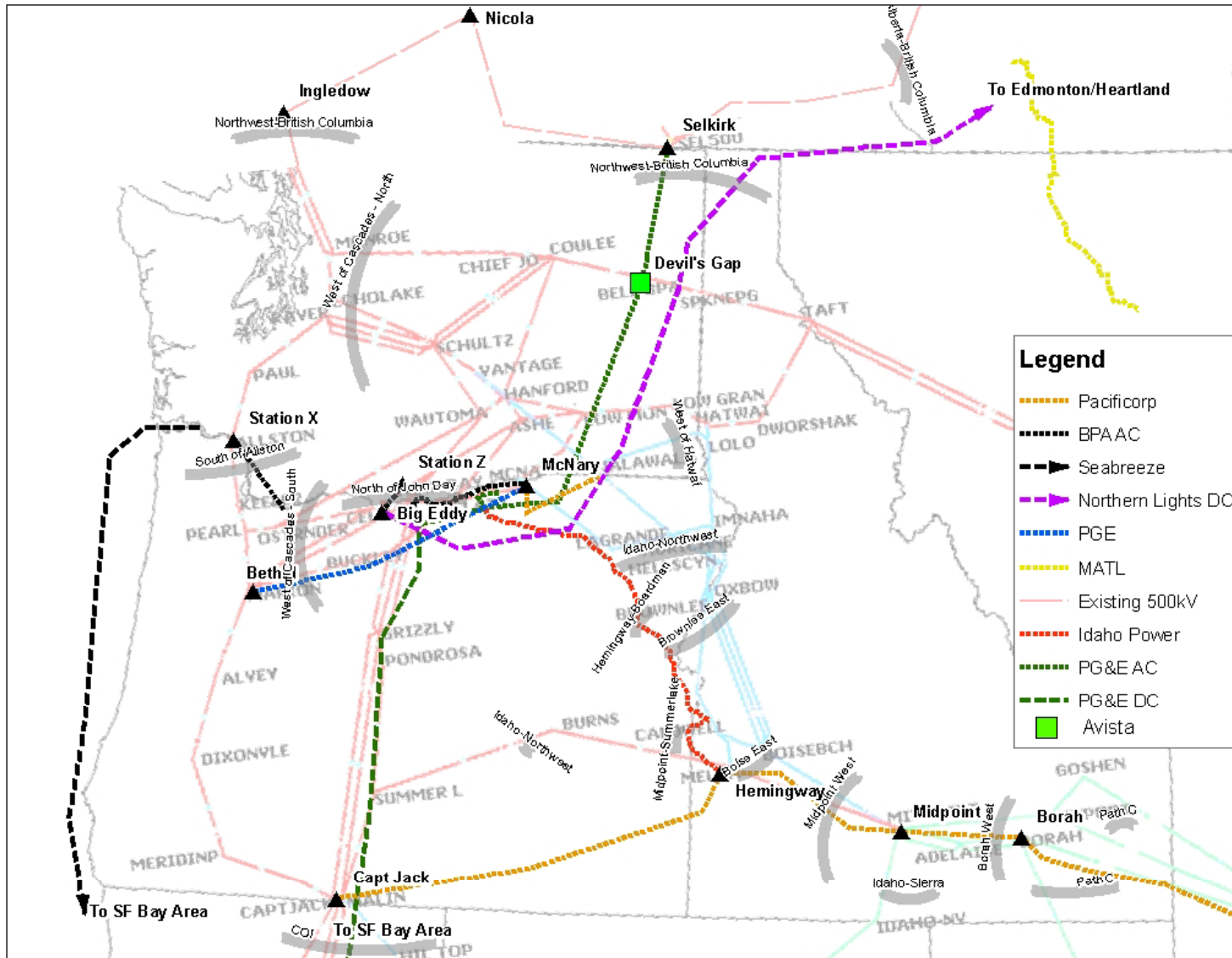


Zephyr and Chinook

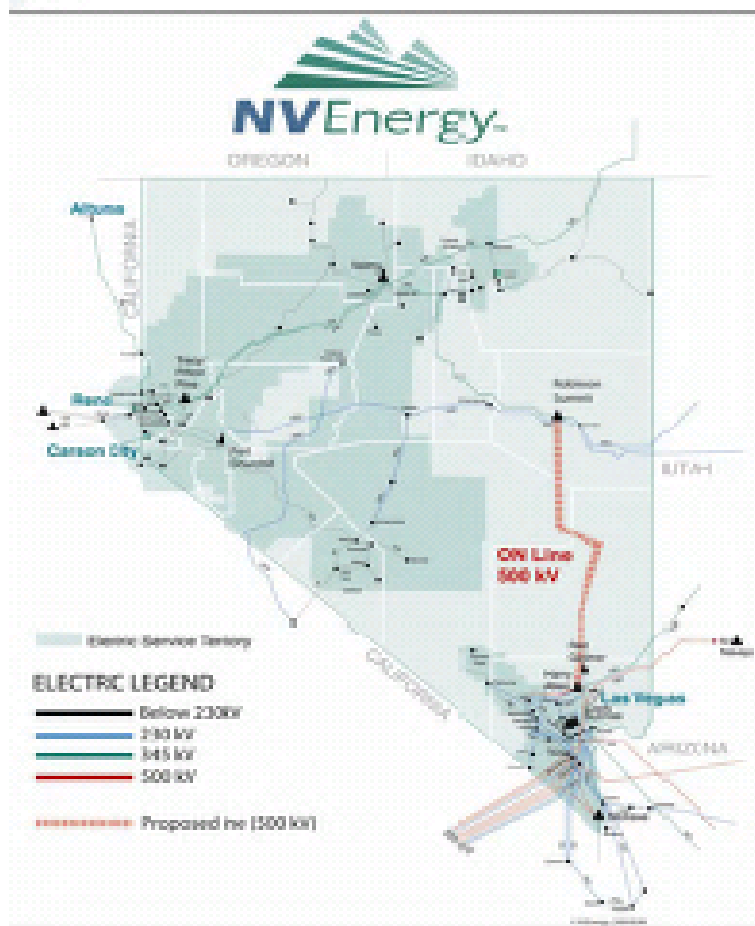
- Two, separate, but complementary lines
- Focus on connecting wind resources in Wyoming and Montana to growing loads in U.S. Southwest
- Converter stations (750 MW) on each line at Borah, Idaho to connect to Pacific NW and Idaho wind resources
- Preliminary BLM application – July 2006
- Cost borne by shippers
- ISD 2014



Northwest US: Projects In Planning



ON Line Transmission Project



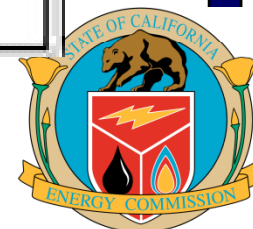
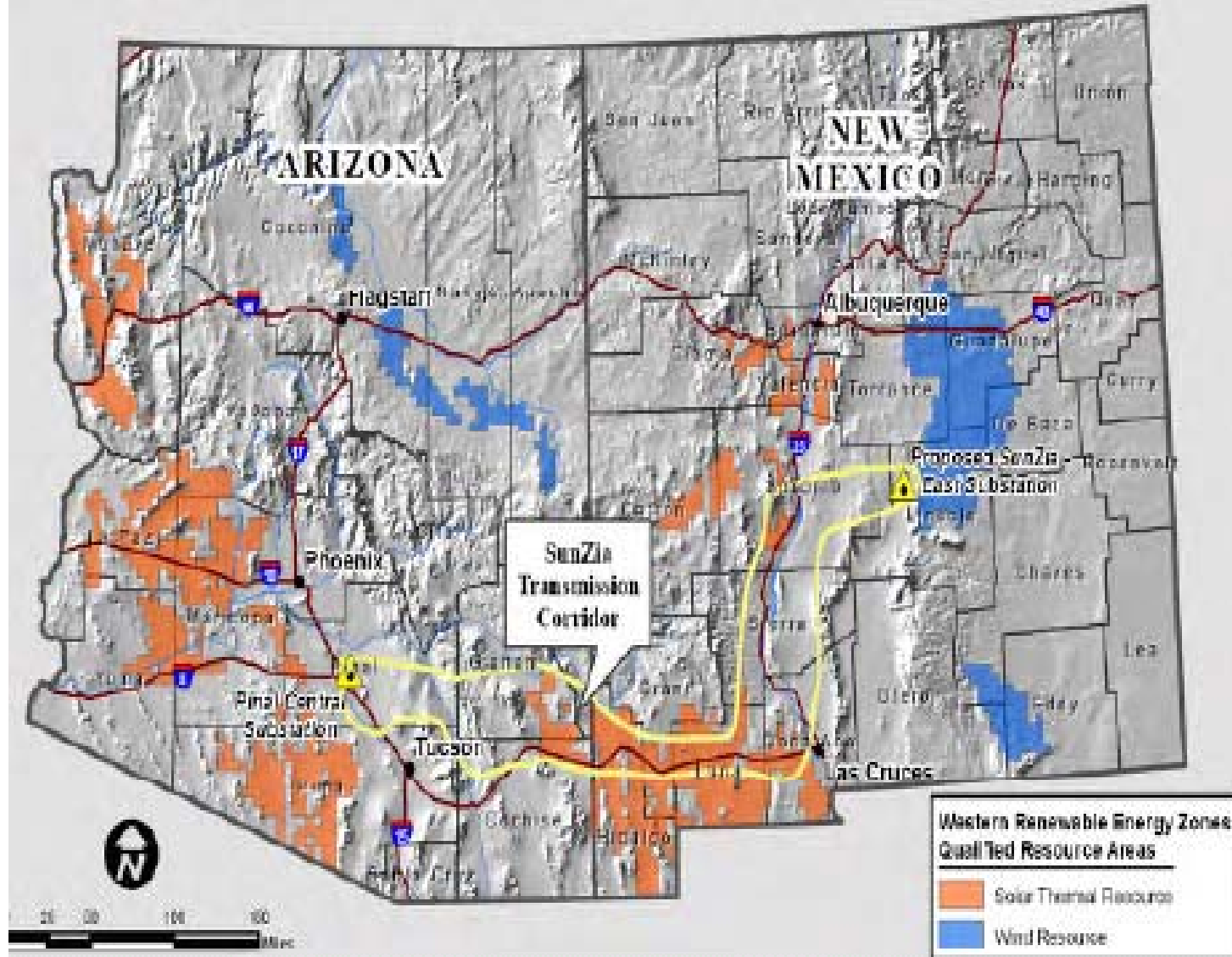
- 235-mile 500 kV transmission line between northern and southern Nevada
- ON Line will deliver geothermal and wind resources from the north and solar resources from the south
- ON Line will facilitate new renewable energy projects
- ON Line will allow the sharing of generating resources
- ON Line will allow the Companies to more cost effectively meet RPS requirements
- ON Line will improve system reliability
- ON Line capability is scalable up to 2,000 MW
- 2012 in-service date



Energy Gateway – Progress







II. Regional Projects: Observations

Multiple and possibly duplicative projects competing for corridor space but few have contracts with LSEs

States need to engage and articulate policies on specific procurement (geographic and timeframe), not scenarios only

Any major line addition will affect existing system operation and other projects in planning/permitting/path rating processes

First-in-line federal agency (BLM) siting process could result in first but not most “preferred” projects receiving scarce corridor Right-of-Way allocations

Creating multiple new corridors will increase opposition and potential environmental impacts of new lines

CA/coastal load states are central in project definition and western region planning: **Stay involved!**



II. Regional Projects: Conclusions

- Plethora of transmission projects currently proposed
- Planning Process is backwards – Chicken and the Egg
- Resource Plans are Uncertain
- Project Timing is Inverted
- Project Cost Recovery and Funding Uncertain
- Land Planning, Use, and Permitting Mixed



II. Regional Projects + Planning: Solutions

- Develop long range transmission corridor capacity “plan”
- Clarify Resource Policy as quickly as possible
- Coordinate and add consistency between Sub-Regional Groups, and with WECC
- Identify clear, transparent, “level playing field” planning and permitting procedures to be followed by all
- Build relationships with wildlife representatives and land conservation organizations



III. Reference: Regional Planning Entities

WECC: Western Electricity Coordinating Council

TEPPC-Transmission Expansion Planning Policy Committee

WGA: Western Governors' Association

-WIEB Western Interstate Energy Board

-WREZ Western Renewable Energy Zone Project

CREPC: Committee on Regional Electric Power Cooperation

WIRAB: Western Interconnection Regional Advisory Body



III. Reference: ARRA Transmission

\$80 M - Transmission Assessment and Planning:

“... for the purpose of facilitating the development of regional transmission plans, the Office of Electricity Delivery and Energy Reliability within the Department of Energy is provided \$80,000,000 within the available funds to conduct a resource assessment and an analysis of future demand and transmission requirements after consultation with the Federal Energy Regulatory Commission: Provided further, That the Office of Electricity Delivery and Energy Reliability in coordination with the Federal Energy Regulatory Commission will provide technical assistance to the North American Electric Reliability Corporation, the regional reliability entities, the States, and other transmission owners and operators for the formation of interconnection-based transmission plans for the Eastern and Western Interconnections and ERCOT;.... such assistance may include modeling, support to regions and States for the development of coordinated State electricity policies, programs, laws, and regulations:...”



III. Reference: WREZ

WREZ Requests Four TEPPC 2009 Cases

10 year time horizon: Current RPS Requirements

- LSE renewable resource preferences
- Statutory RPS targets (8.5%) for WI

10 year time horizon: 25 % Renewables and CO2 <

- 25% reduction of CO2 emissions (below 2005)

20 year time horizon: stretch goals

- 33% renewable energy penetration
- 50% reduction of CO2 emissions
- Technology changes

“Superhighway Network Overlay”



III. Regional Transmission Projects

Navajo Transmission Project

Northern Lights-Celilo Project

Palo Verde-North Gila

Southwest Intertie Project (SWIP)

Ely Energy Center

G3 Power Plan

Southwest Transmission Project

Gateway Central (Populus- Mona-Oquirrh)

Gateway South (Aeolus-Mona-Crystal)

Gateway West

Green Path North Project

Hemingway to Captain Jack

High Plains Express

Hughes Transmission Project

Juan de Fuca (Sea Breeze)

Montana-Alberta Intertie

Mountain States Intertie Project

CA Clean Energy Transmission Pro
Chinook

Devers-Palo Verde 2

Boardman to Hemingway

Sunrise Power Link

SunZia

LS Power

TANC Transmission Project (TTP)

Tehachapi

TransWest Express

Triton (Sea Breeze)

Vulcan Proposed Line

Walla Walla to McNary

West Coast Cable (Sea Breeze)

Wyoming-Colorado Intertie

Zephyr

[Note—Illustrative Snapshot Only]



III. Reference: WECC TEPPC Transmission Information Portal

52 Projects Currently Identified

- ☐ About 55% have been reviewed and updated by the project sponsor.
- ☐ The balance of the entries are based on public sources – WECC project logs and websites

All information put into a consistent, standard form

- ☐ Project Overview – name, type project, in-service data and capacity
- ☐ Project Sponsor(s) with contacts and web links
- ☐ Project Characteristics – voltage, length, route, etc.
- ☐ Project Map – web link
- ☐ Project Status – WECC processes
- ☐ Analytic Studies – economics, power flow, stability, etc.

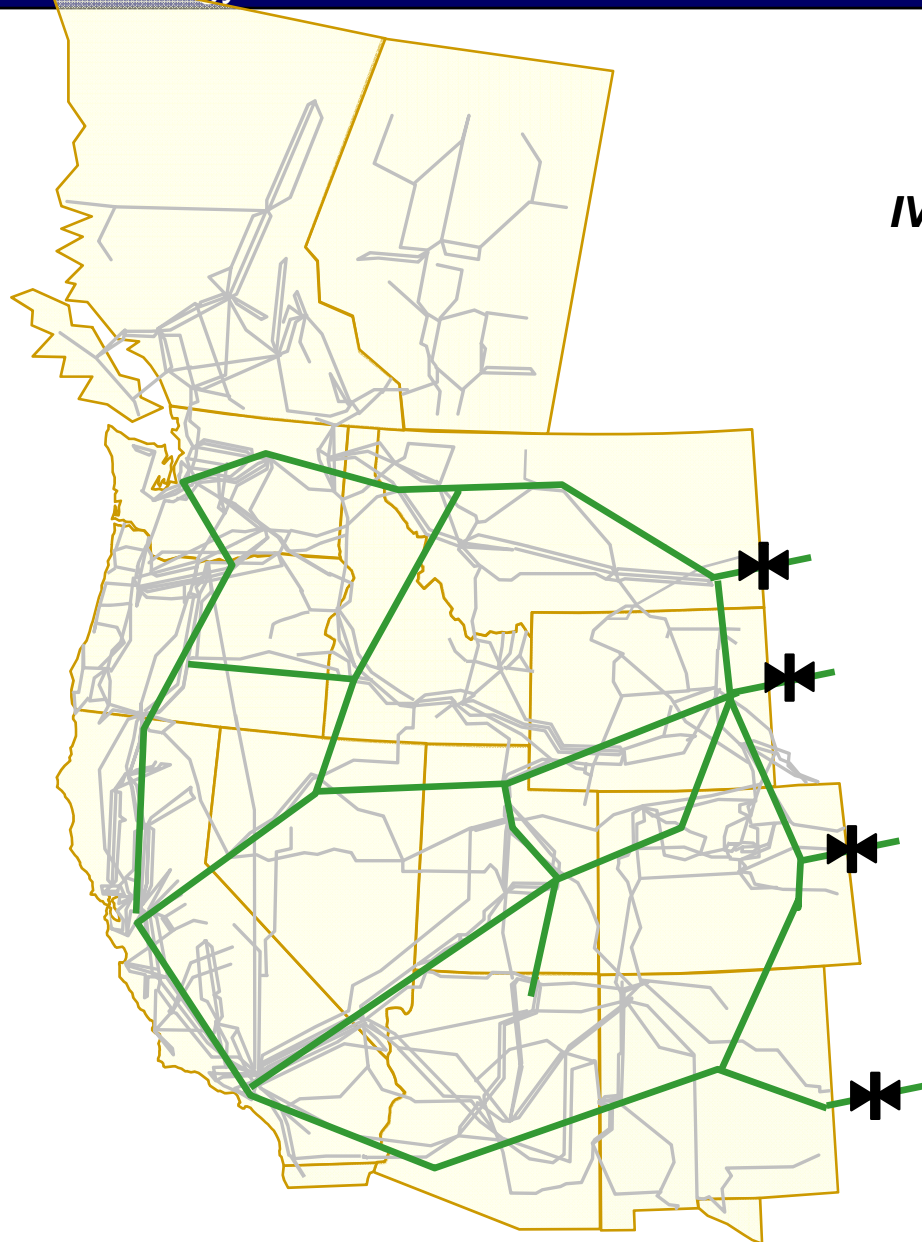




WECC/TEPPC Information Portal Template for Proposed Regional Transmission Projects

Project name: (#24)	Canada/Pacific Northwest-Northern California
Project overview:	<ol style="list-style-type: none"> 1. Provide access to significant incremental renewable/GHG-free resources in Canada and the northwestern United States. 2. Improve regional transmission reliability. 3. Provide other market participants with beneficial opportunities to use the facilities.
• Purpose (renewable delivery, etc.)	
• New or upgrade	New
• Estimated in-service date	2015
• Estimated transfer capability rating (MW)	3000 MW
Project sponsor(s):	Pacific Gas and Electric Company, Avista, PacifiCorp, Portland General
• Organization name(s)	
• Project website (hyperlink)	www.pge.com/canada
• Project information contact for updates (name, phone and e-mail)	Jason Yan, (415) 973-4004, JAY2@ pge.com
• Date of last information update	
Other project participant(s):	British Columbia Transmission Corporation



***IV. Reference: Illustrative 765 kV
Overlay Proposal***



-  765 kV HVAC
-  Back-to-Back
DC Tie

