

Air Force Center for Engineering and the Environment

Integrity - Service - Excellence



Western Renewable Energy Zones (WREZ)

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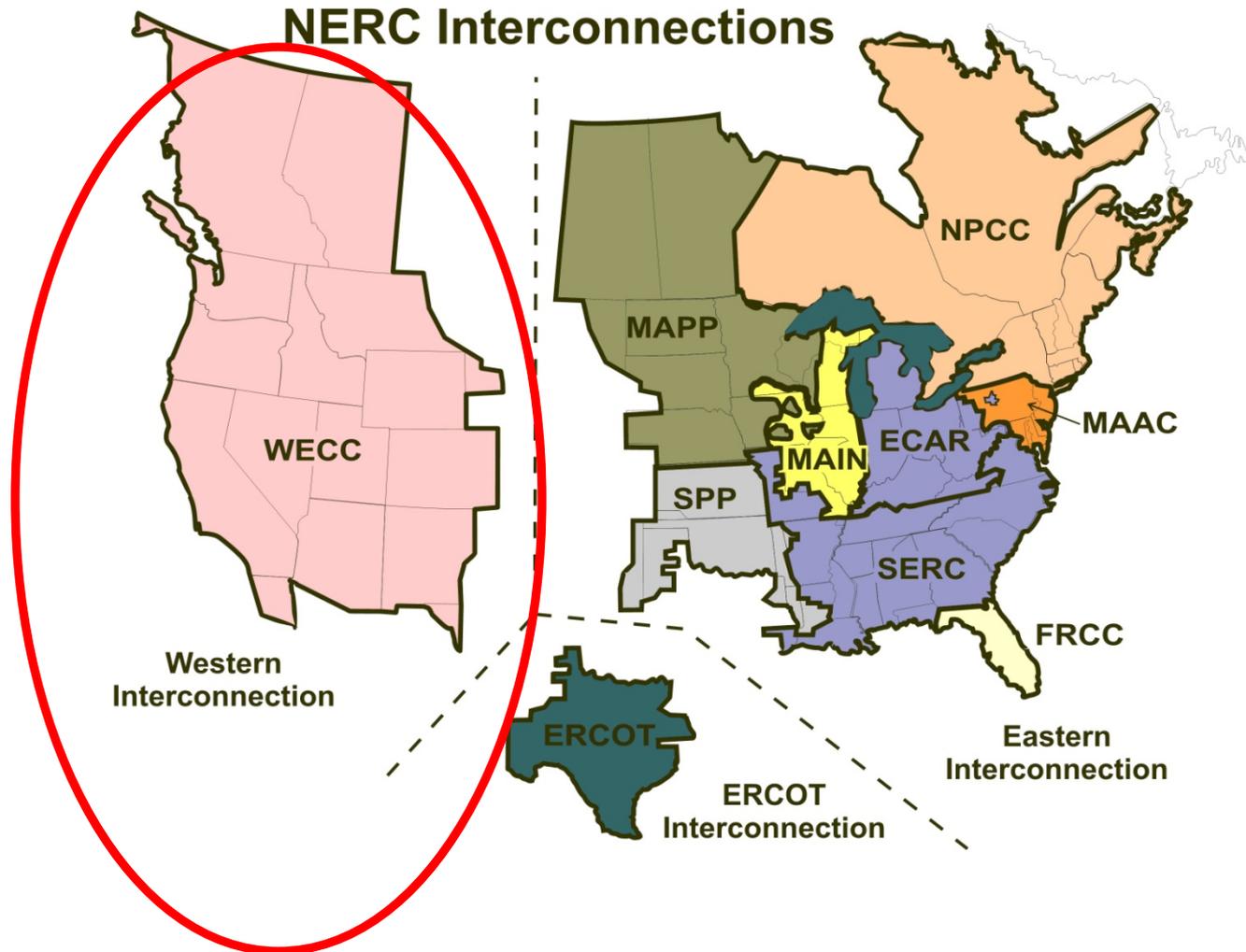


Purpose of the Western Renewable Energy Zones Project

- Purpose to inform decision makers (LSEs, transmission providers, developers, state regulators) about:
 - Costs of renewable power;
 - Transmission to move renewable power to consumers;
 - Potential partners in developing transmission projects;
- Promotes a regional view of renewables development blunting potential balkanization of the renewables markets.
- Paves way for interstate collaboration on:
 - Permitting of multi-state transmission;
 - Allocating and recovering cost of new transmission.

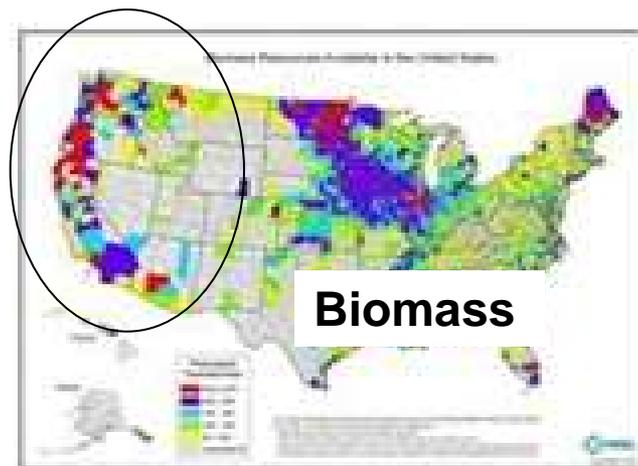
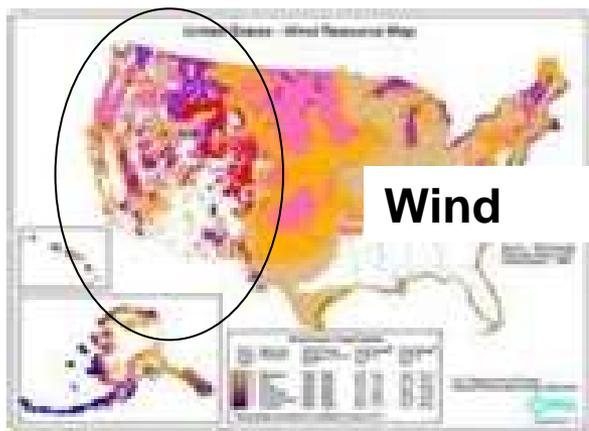
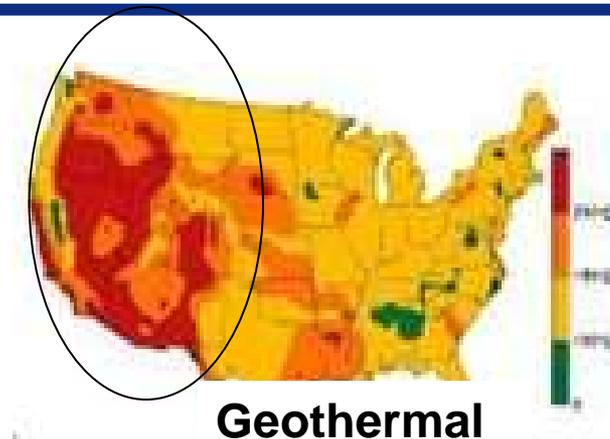
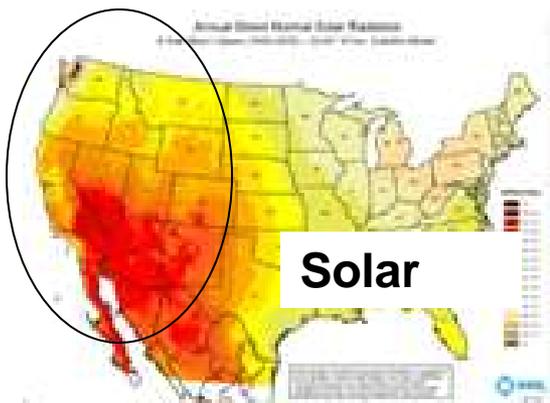


Western Interconnection Context





Excellent and Diverse Renewable Resources

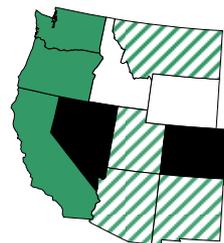


Hydrokinetic



Current state/provincial policies

- **Renewable portfolio standards (RPS):**
 - 9 states with RPS
 - BC and AB renewable policies
- **Western Climate Initiative:**
 - 7 Governors, 1 Premier working on regional carbon cap and trade system
- **State-by-state renewable energy zone (REZ) efforts**
 - Texas CREZ
 - CO S 91
 - CA Renewable Energy Transmission Initiative
 - AZ ACC order and Black & Vetch study
 - NV Governor's renewable and transmission task force
 - NM RETA
 - Other
- ***State-only work misses regional opportunities and could balkanize the renewable energy market***



Existing CO2 power purchase or power plant siting limitations



Overview of WREZ Phases

- 1. Identification of WREZs**
- 2. Transmission for WREZs**
- 3. Coordinated procurement**
- 4. Institutional reforms**



Phase 1: Identification of REZs

- **Technical work**
 - **NREL/Contractor conducts resource assessment; supply curves; delineation of WREZ boundaries**
- **Stakeholder input to identifying WREZs**
 - **Web based GIS**
 - **Easy electronic stakeholder input**
 - **Iterations between technical work (e.g., technical contractor work, stakeholder input, and WREZ technical committee/work groups)**
- **Build on/supplement individual state REZ work**
 - **E.g. ACC/B&V, NM RETA work**



Phase 2: Transmission

- **Develop conceptual transmission plans**
 - **Transmission work integrates with existing sub-regional and WECC transmission expansion planning processes**
 - **Develop FEAST-type model to derive delivered price of resource from REZs to LSE load centers.**
 - **Transparent tool, ability to change assumptions**
 - **Available to LSEs, regulators, and other stakeholders**
 - **LSE fuel choice key driver for transmission:**
 - **Identify and compare REZ options**
 - **Identify synergies with other LSEs**



WREZ Structure

- **Steering Committee**
- **Technical Committee**
- **Zone Identification and Technical Analysis (ZITA)**
 - **Wind**
 - **Solar**
 - **Geothermal/Biomass**
 - **Hydro**
- **Environment and Lands (E&L)**
- **Generation and Transmission Modeling (GTMWG)**



Questions?

