

Update on Renewable Energy and Transmission Policies in the West

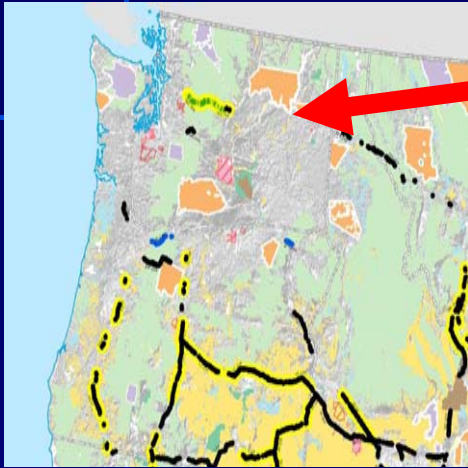
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Western Interstate Energy Board

Colorado Clean Energy Development Authority
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Denver, CO

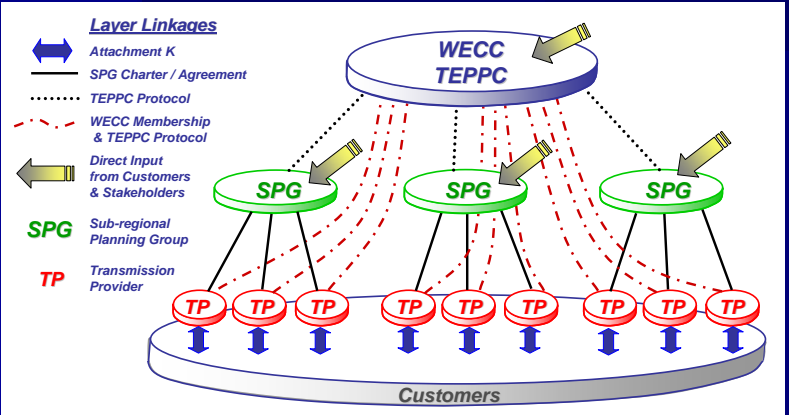
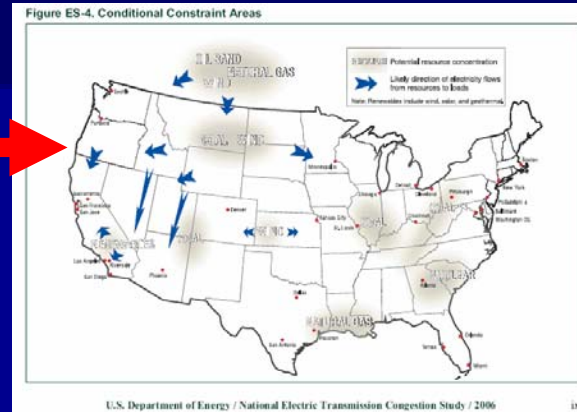
Overview

1. Review existing key policies/projects
2. WGA's Western Renewable Energy Zone (WREZ) project
3. Preparing for carbon constraints in the WECC footprint

Existing policies on transmission

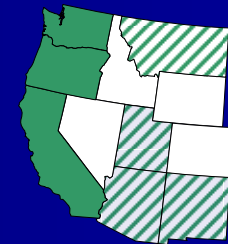
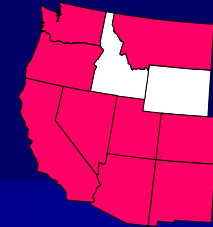


- 368 energy corridors on federal lands
- 1221 congestion study and NIETC designations
- FERC interconnection and transmission service queuing problems
- NREL/WestConnect wind/solar integration study
- Order 890 planning requirements
 - 3 planning level approach in Western Interconnection (transmission provider, sub-regional groups, WECC)



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

WGA's Western Renewable Energy Zones (WREZ) 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.

WREZ: Phase 1

- 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. Colorado SB 91

WREZ: Phase 2

- 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

WREZ: Phases 3 & 4

Conceptual, beyond current budget period –

3. Coordinated procurement for renewables
4. Institutional options to facilitate interstate transmission for renewables

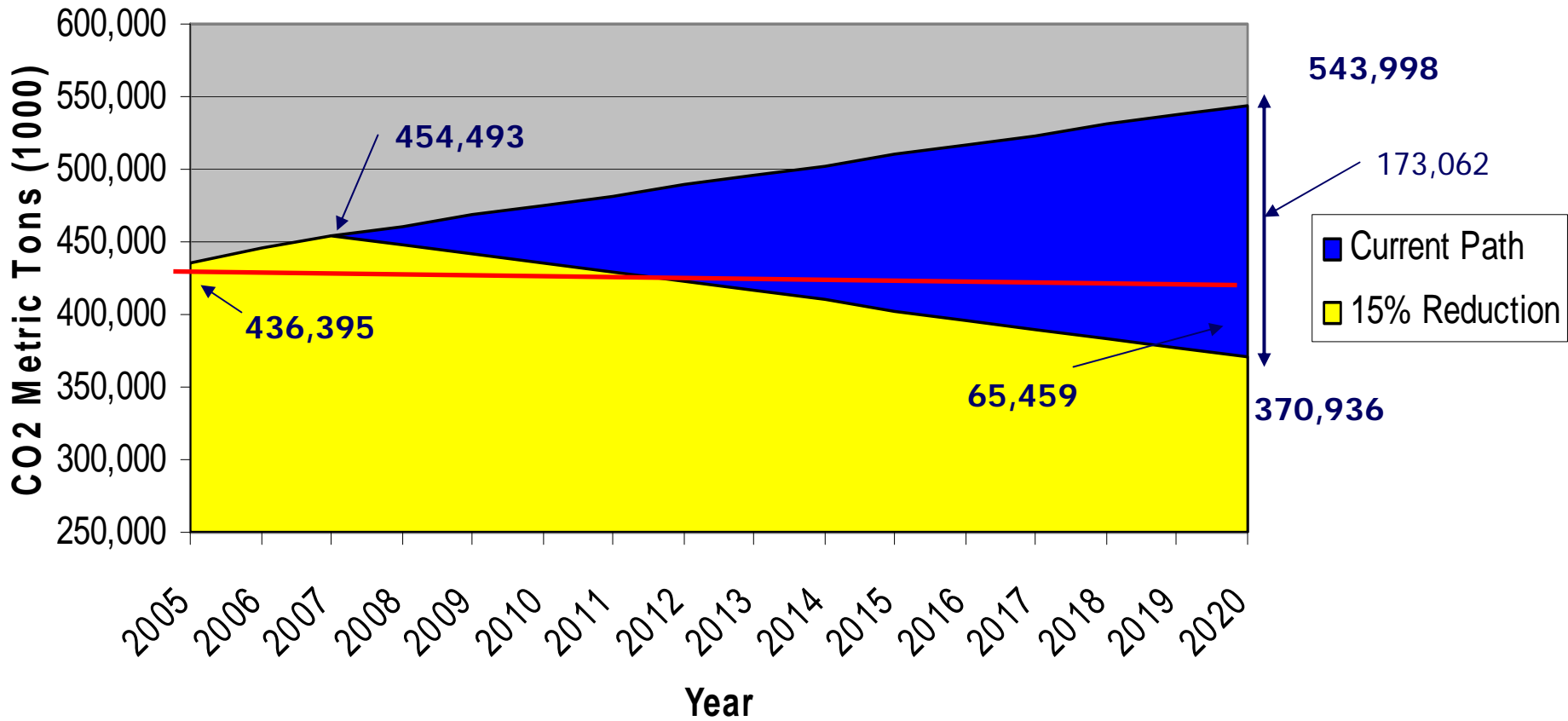
Best Guess Timeline

- May 28-29 kick-off meeting
 - Steering Committee meeting
 - Technical Committee meeting
 - Initial workgroup meetings
- November
 - End of Phase 1 (identification of zones)
 - Launch of Phase 2 (transmission from zones)

Preparing for Carbon Constraints in the WECC Footprint

- Strategy for WECC and state/provinces
 - Transmission planning to develop renewable resources
 - Resource adequacy analysis
 - System operations to integrate large amount of renewables
 - Engage resource planners of load serving entities (LSEs)

CO2 Constraint Wedge to 2020



TEPPC Transmission Planning: Low Carbon Scenario

WIRAB request for 3-step analysis:

1. Add renewable generation to meet a 15% renewables, consistent with NERC's LTRA scenario (WECC-wide: 2017 RPS=8.6%; 2020 RPS=12.5%)
2. Add energy efficiency consistent with WGA CDEAC goal of 20% energy efficiency by 2020.
3. Impose carbon adder to reach 15% CO₂ reduction by 2020.

TEPPC Transmission Planning: Low Carbon Scenario, cont.

- Proposed mix of incremental renewables to meet NERC's 15% target by 2020:
 - Wind = 19,540 MW
 - Solar = 7,815 MW
 - Geothermal = 4,008 MW
 - Biomass = 668 MW
- Analyses (CEC and NWPCC) show carbon adder needed if renewables and energy efficiency displace coal generation and larger CO₂ emissions