

Fuel Choice Determines Transmission

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Western Interstate Energy Board

Outline of Presentation

- ▶ Message: Utility fuel choice determines what transmission gets built
- ▶ Context
 - Who I am
 - Regional context
- ▶ Western Renewable Energy Zone project
- ▶ Larson observations

Western Governors' Association

Western Interstate Nuclear Board
Established by interstate compact ratified by P.L.91-461; members appointed by Governors of signatory states

Western Conference of Public Service Commissions

Western Interstate Energy Board
Members appointed by Governors of AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, WY, plus provincial representatives from AB, BC, SK
•Serves as the energy arm of the Western Governors' Association
•Current focus on:
 •Opportunities for collaboration among western states/provinces in climate change
 •Implementation of CDEi wind and transmission recommendations
•Web site <http://www.westgov.org/wieb>

Western Interconnection Regional Advisory Body (WIRAB)
• **Governors created pursuant to Section 215(j) of the Federal Power Act.**
• **Appointees by Governors / Premiers from AB, AZ, BC, CA, CO, ID, MT, NE, NV, NM, OR, SD, UT, TX, WA, WY and Mexico.**

Federal Energy Regulatory Commission

North American Electric Reliability Corporation

Western Electricity Coordinating Council

Committee on Regional Electric Power Cooperation (CREPC)
•Joint Committee of WIEB and WCPSCs
•All energy and regulatory agencies in the states/provinces in Western Interconnection
•Web site

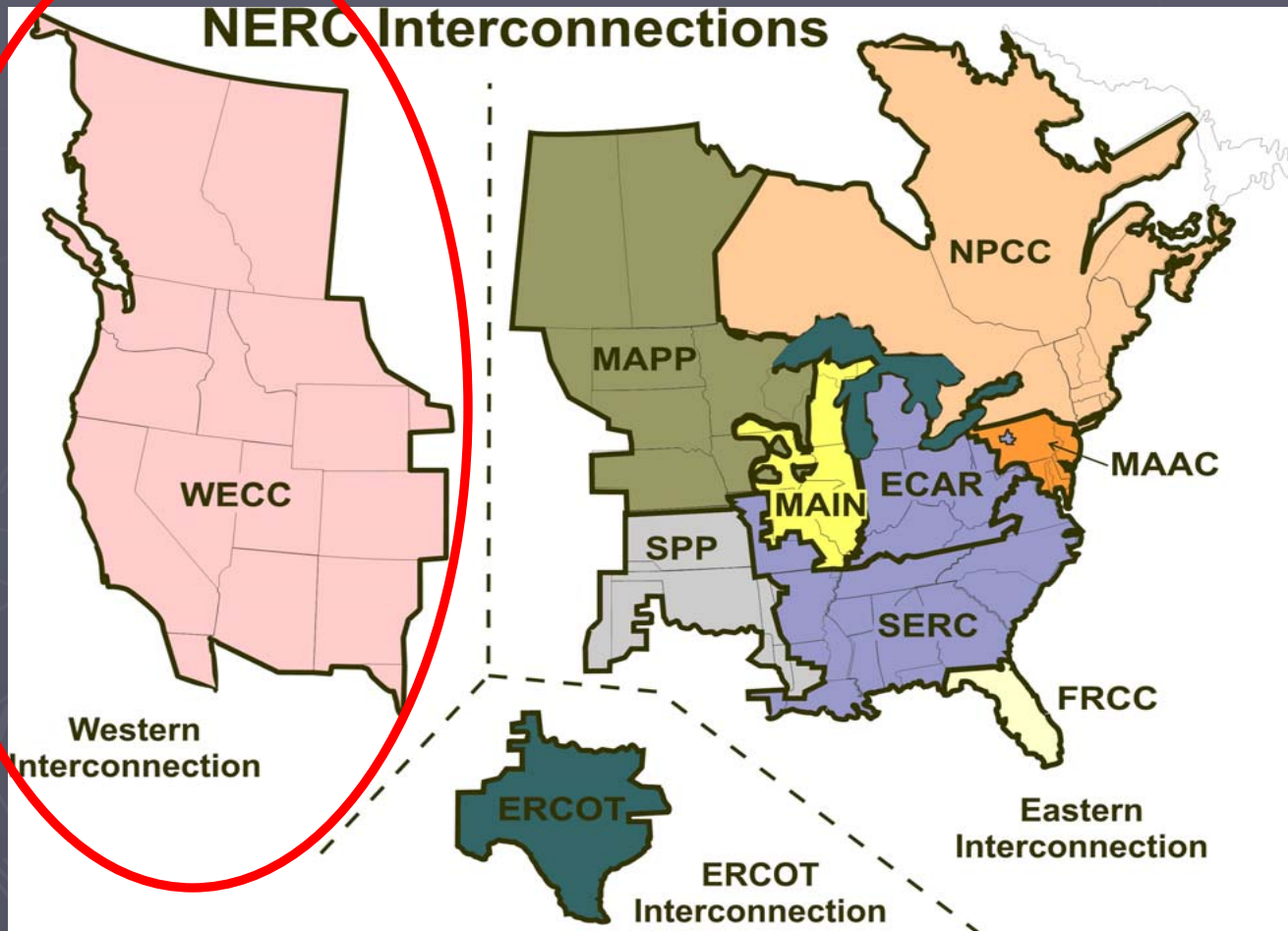
High-Level Radioactive Waste Committee (AZ, CA, CO, ID, NV, NM, OR, UT, WA, WY)

Coal Mine Reclamation Committee (CO, MT, NM, UT, WY)

Regional Context

- ▶ Geographical context
- ▶ Resource context
- ▶ Institutional context
 - Grid management
 - Transmission planning
 - FERC and state jurisdiction
 - Proposed projects

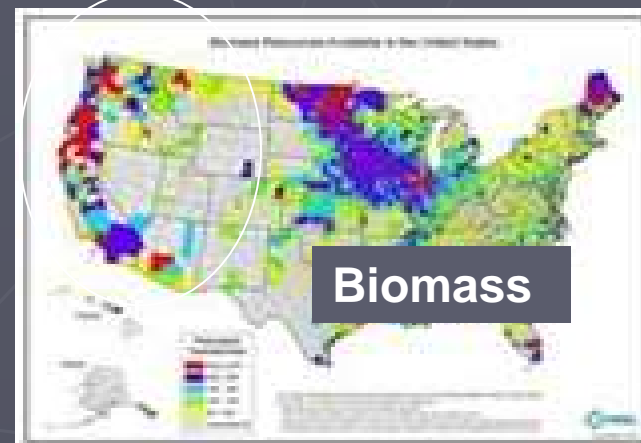
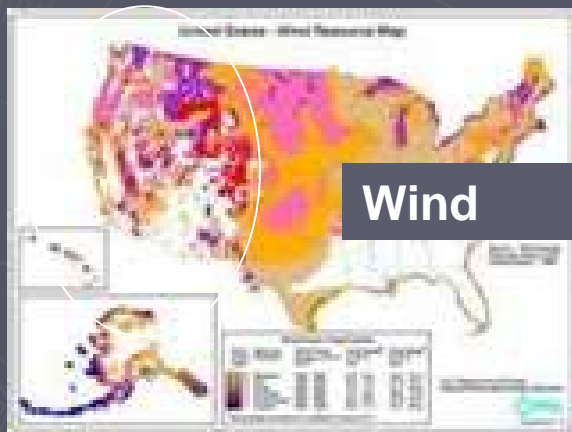
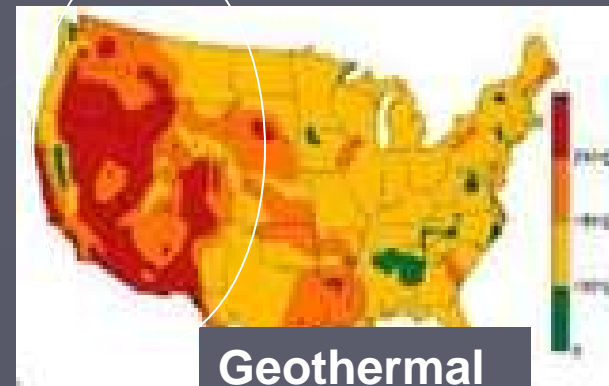
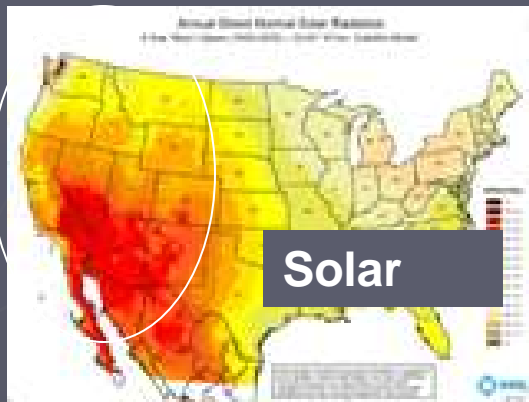
Geographic Context



Generation resource context

- ▶ Resources that can be moved to alternative generation sites
 - Coal
 - Natural gas
- ▶ Location-constrained resources – *most dependent on new transmission*
 - Wind
 - Solar
 - Geothermal
 - Biomass
 - Hydrokinetic (e.g., ocean wave generation)

Excellent and Diverse Renewable Resources

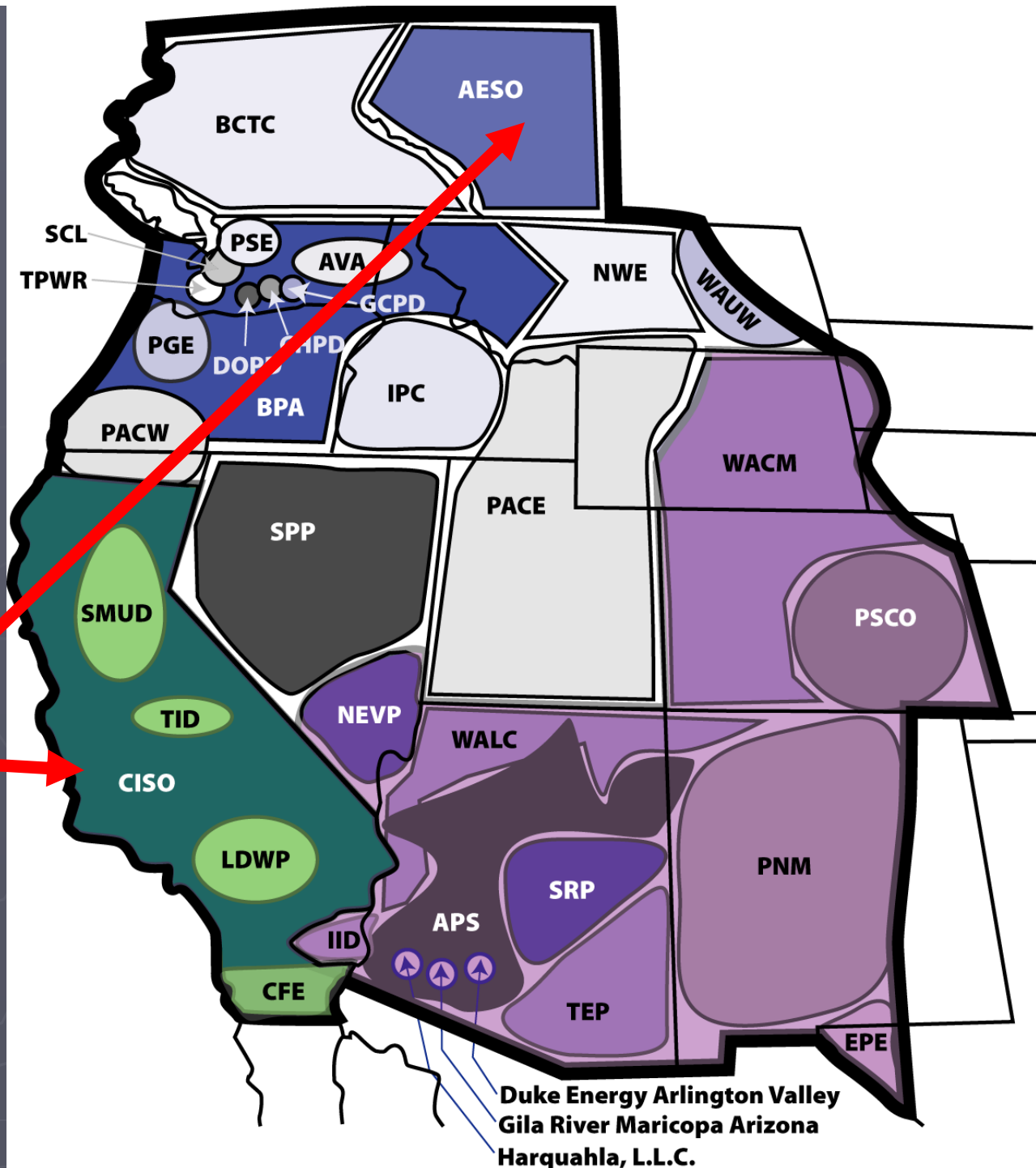


Hydrokinetic

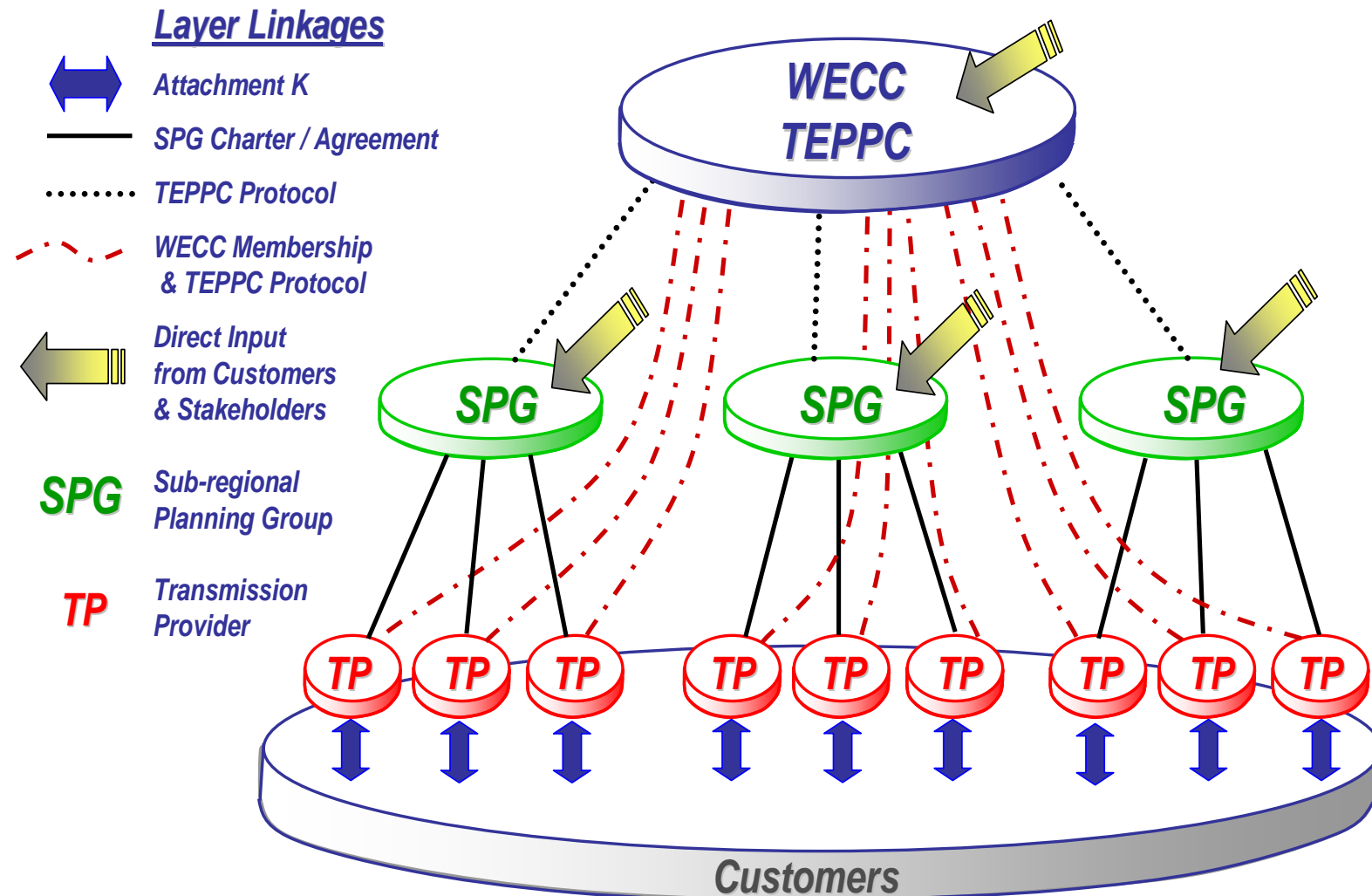
Grid Operation Context

35 Balancing Authorities
(formerly called Control Areas)

2 Regional
Transmission
Organizations



Industry transmission planning framework



Sub-Regional Transmission Planning Groups

NTAC
Northwest
Transmission
Assessment
Committee

**Columbia
Grid**

NTTG
Northern Tier
Transmission Group

Sierra

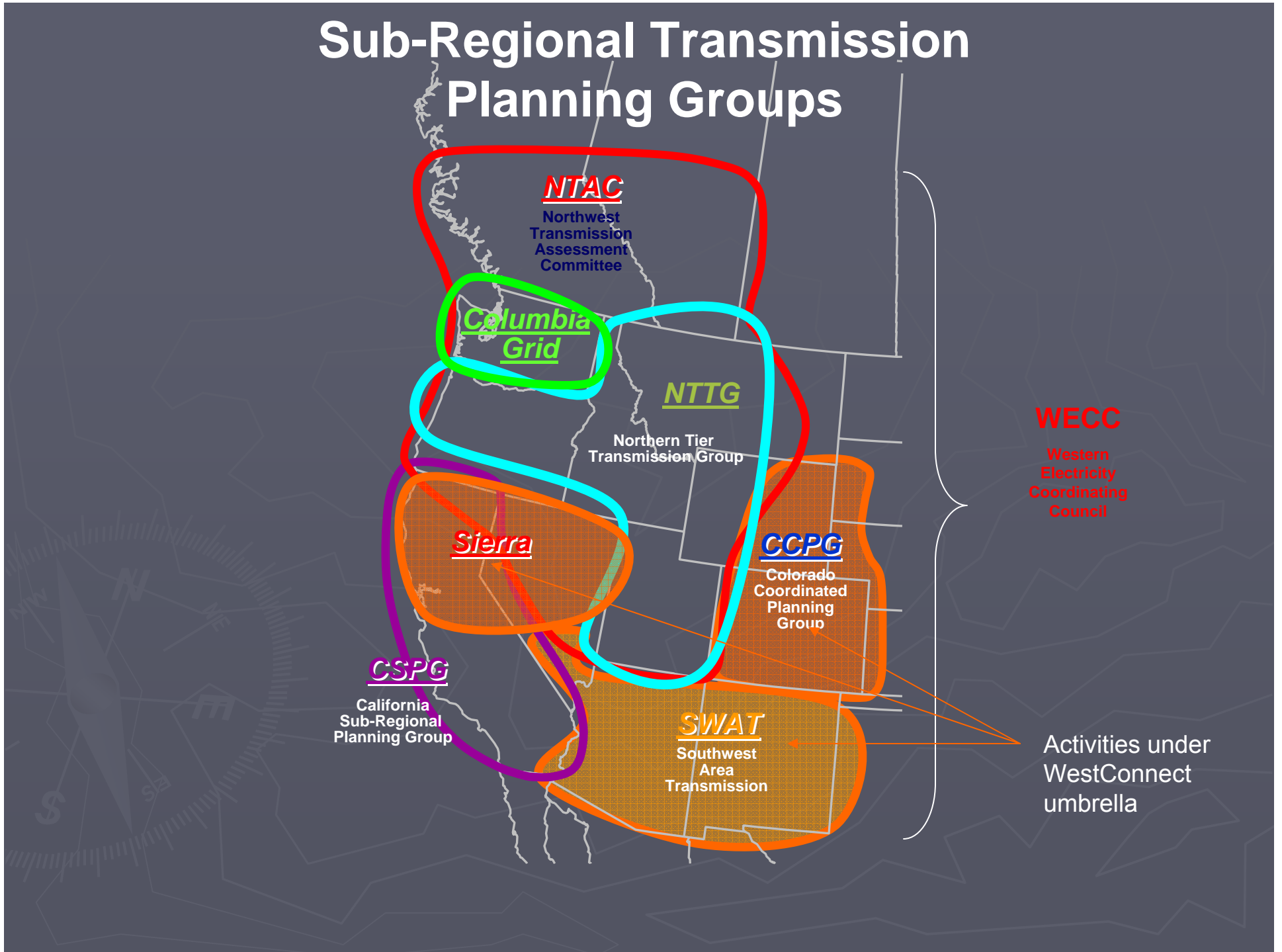
CCPG
Colorado
Coordinated
Planning
Group

CSPG
California
Sub-Regional
Planning Group

SWAT
Southwest
Area
Transmission

WECC
Western
Electricity
Coordinating
Council

Activities under
WestConnect
umbrella



Government Jurisdiction Framework

▶ States

▪ Public Utility Commissions

- ▶ Set retail rates for regulated utilities
 - Whether transmission investment was prudent
 - Amount retail customers pay for transmission

▪ Permitting transmission

- ▶ PUCs issue Certificate of Public Need and Convenience for jurisdictional utilities
- ▶ Local gov't, PUCs or separate siting agency grant environmental permits
- ▶ State law governs eminent domain

▶ Federal government

▪ DOE

- ▶ Designate National Interest Electric Transmission Corridors (NIETCs)

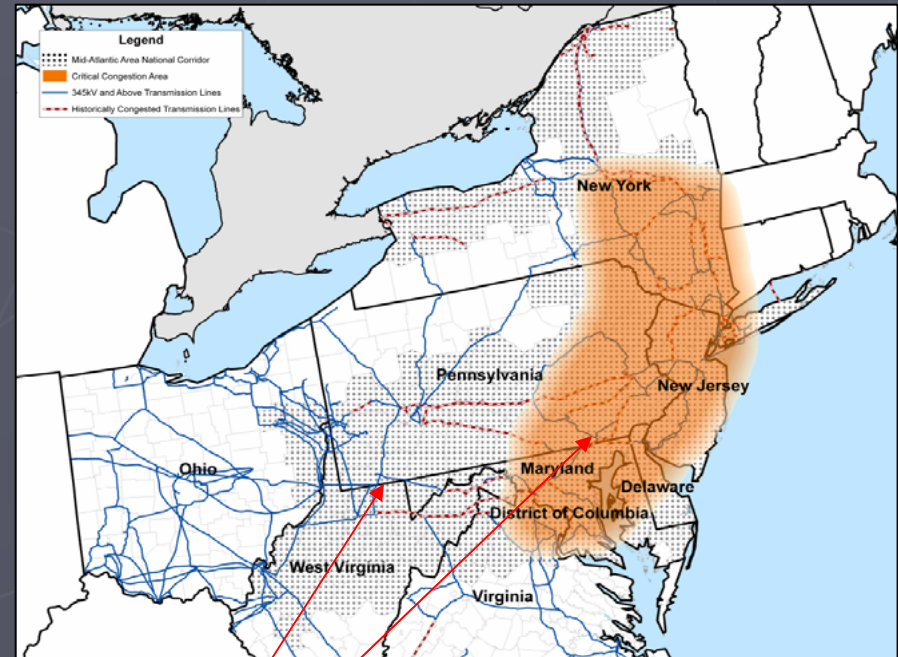
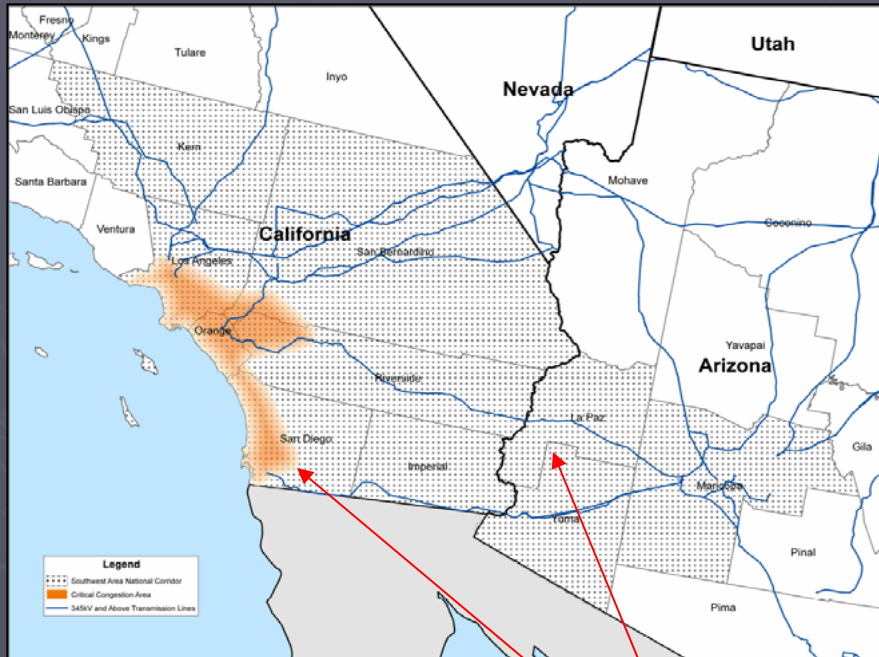
▪ Federal Energy Regulatory Commission

- ▶ Approves transmission tariffs
- ▶ Pre-empt state siting decisions in NIETCs

▪ Land management agencies

- ▶ Designation energy corridors across federal lands
- ▶ Issue rights-of-way on federal lands

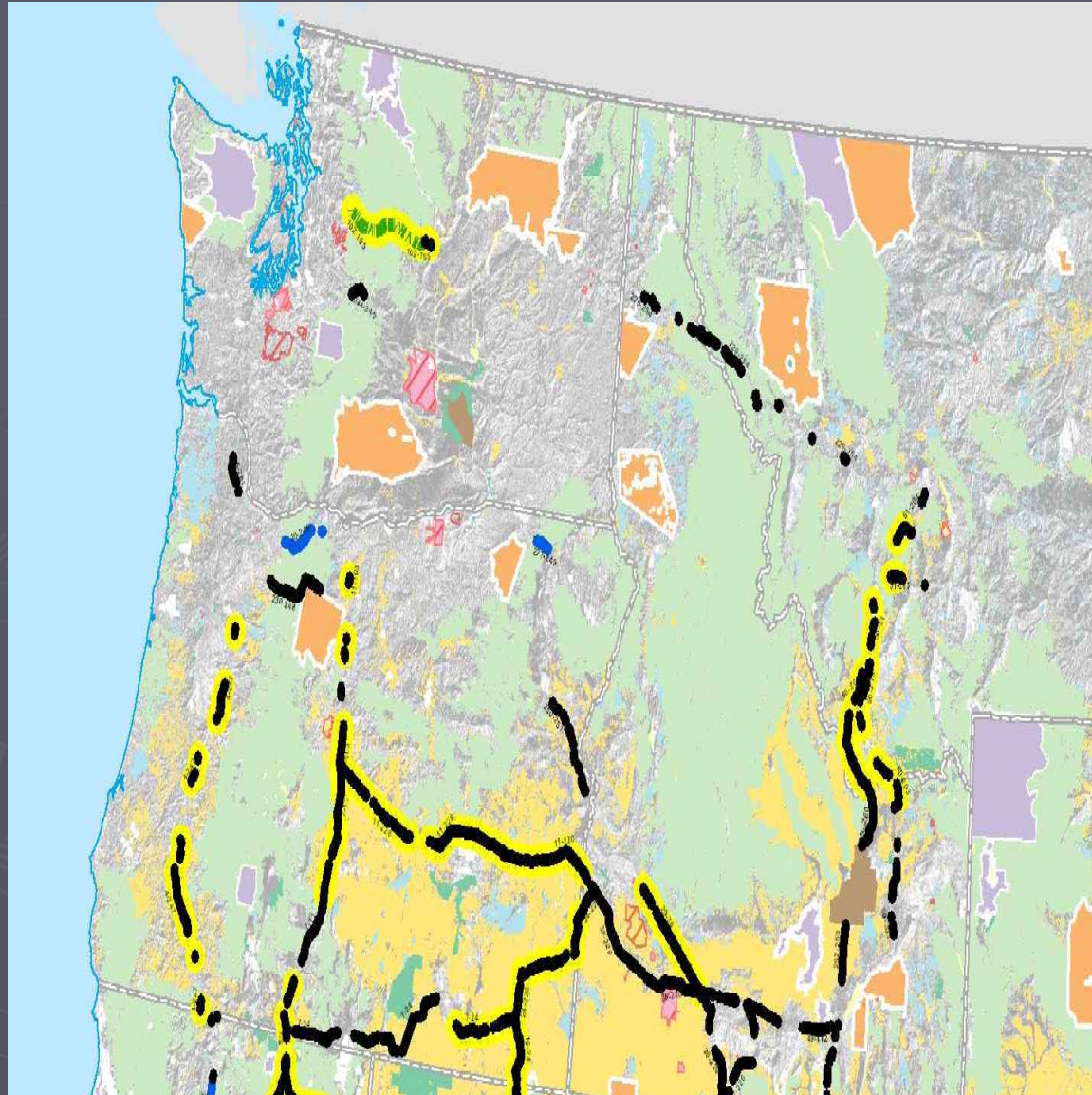
National Interest Electric Transmission Corridors



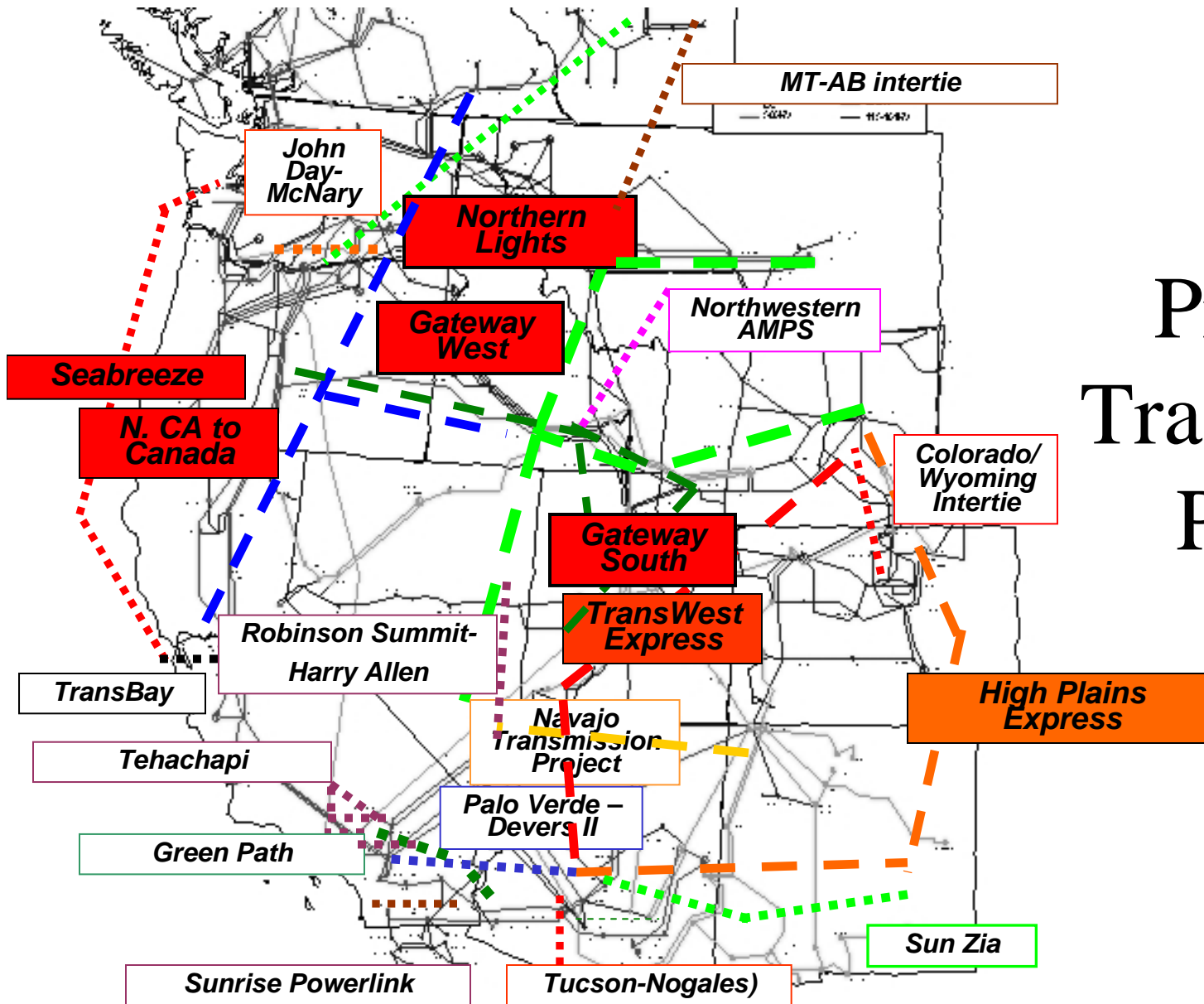
Designated "corridor"

Congested area

Energy corridors on federal lands



Major Proposed Transmission Projects



Reminder of core message:

**Fuel Choices
Determine
Transmission**

Pushing and Pulling on the Transmission Expansion String

Historical Approach: Push on the string by:

- Transmission planners evaluating lines to renewable resource areas (e.g., exercise Order 890 transmission planning protocols);
- Increasing rate of return on transmission investments
- Designating corridors and pre-empting state siting law



New Approach: Expanding options LSEs consider

- WGA Western Renewable Energy Zone project
- Enable LSEs and others to evaluate REZ options from their perspective
- Compare with other generating options
- Identify synergies among LSEs to reach specific zones

WGA Western Renewable Energy Zone (WREZ) Project

The project will provide better information to LSEs, transmission providers, generation developers, state regulators so that they can make more informed decisions about:

- Costs of renewable power
- Optimum transmission needed to move renewable power to consumers
- Potential partners in developing transmission to access renewable areas
- Where renewable energy developers can site their facilities to ensure access to the transmission system and minimize environmental impacts

Overview of WREZ Phases

1. Identification of WREZs

- Technical analysis
- Stakeholder “ground truthing”

2. Conceptual transmission from WREZs

- Model to allow LSEs, their regulators and others to evaluate power from REZs compared to alternatives
- Engaging existing transmission expansion planning processes

3. Coordinated procurement for renewables

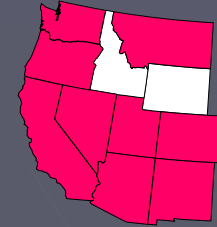
4. Institutional options to facilitate interstate transmission for renewables

Larson's observations

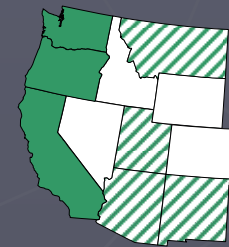
1. Renewable generation becoming more attractive
 - RPS requirements
 - Carbon limits
 - Rising cost of coal and gas generation
2. Supersizing transmission lines
3. Unintended consequences of blocking transmission lines

State Actions Affecting Renewables

- ▶ 9 states with RPS + renewable policies in BC
- ▶ 7 Governors, 1 Premier working on region carbon cap and trade system (which will increase pressure for more renewable development)
- ▶ **State-by-state REZ efforts**
 - CO S 91
 - CA Renewable Energy Transmission Initiative
 - AZ Black & Vetch study
 - NV Governor's renewable and transmission task force
 - NM PNM/RETA wind collector system



RPS
states



Existing CO2
power
purchase or
power plant
siting
limitations and
participation
in WCI

Western Utility Carbon Assumptions

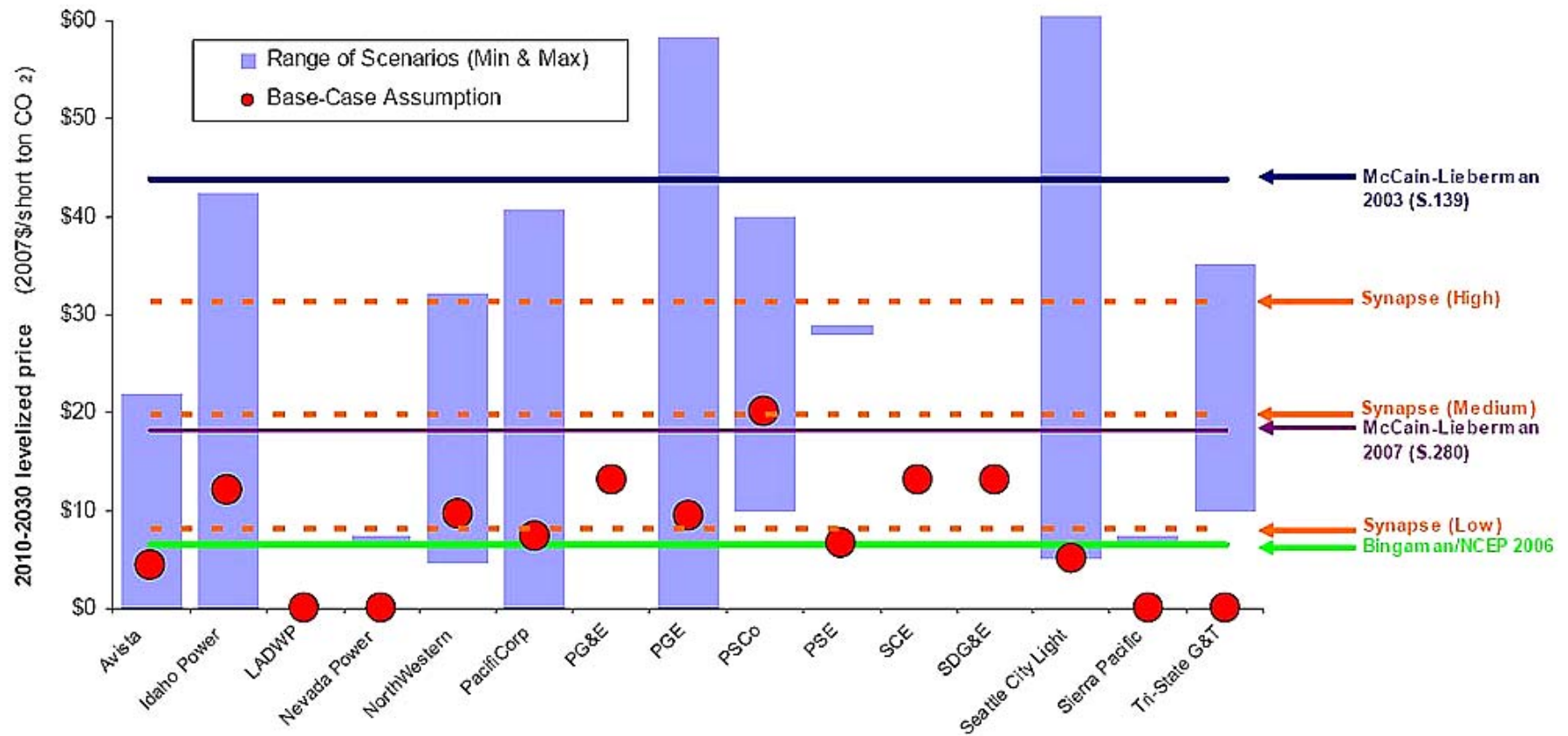


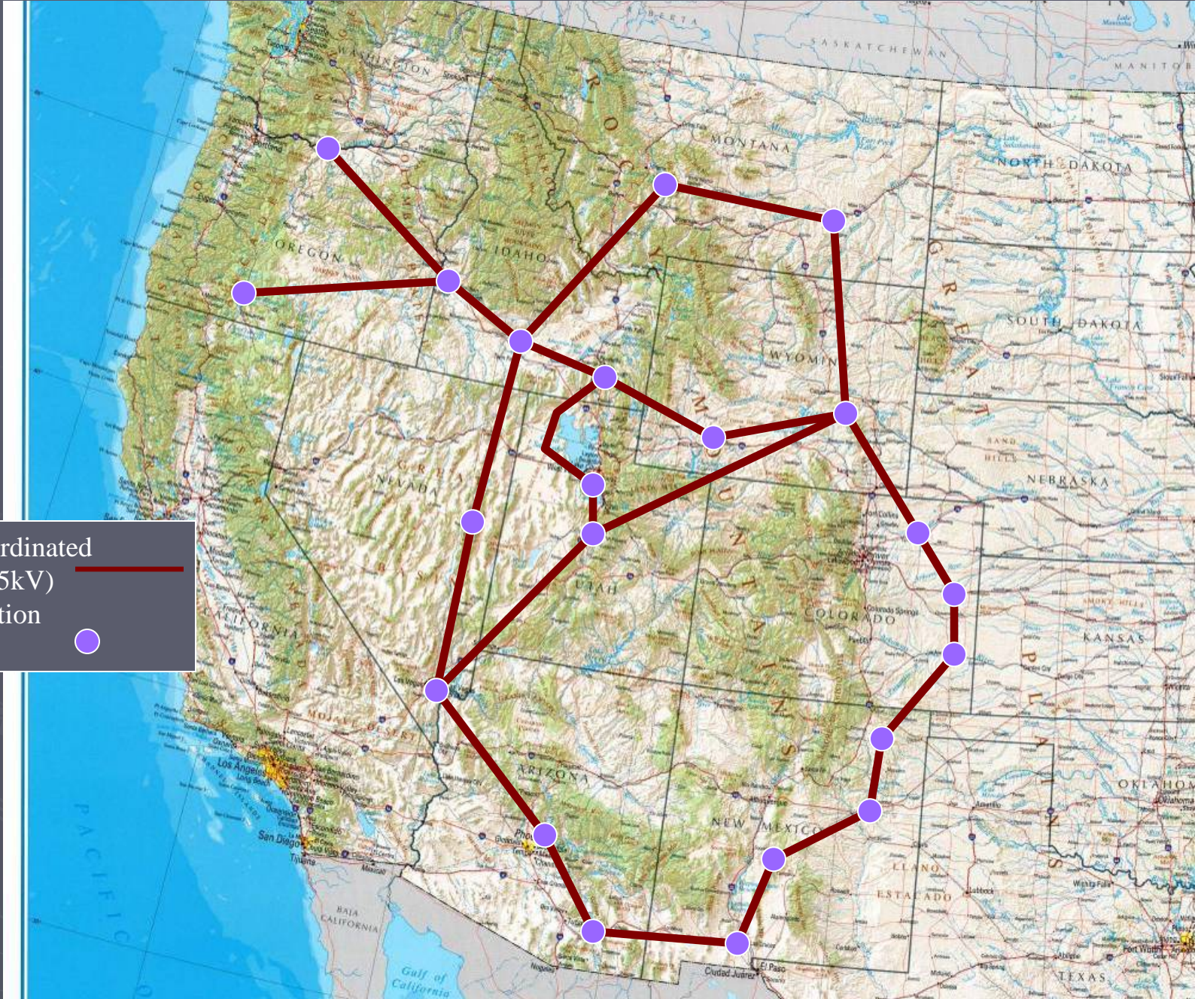
Figure ES - 1. Levelized CO₂ Emission Prices Used in Utility Resource Plans (2010-2030)

Notes: See Table A - 3 in the appendix for notes on conventions and assumptions used to construct the figure.

Supersizing transmission

- ▶ The idea of “supersizing” lines to large renewable resource areas will get traction, perhaps in federal legislation
 - Overbuild size of line but limit number of lines
 - There are tradeoffs between reliability and “supersizing”

One Vision of a Supersized Transmission Grid



Proposed Joint / Coordinated
Transmission (all 765kV) ———
Possible interconnection
locations ●

Unintended consequences of blocking transmission

- ▶ Efforts to kill coal plants by blocking transmission may be successful, but at the cost of crippling renewables and increasing reliance on natural gas
 - In greenhouse gas cap & trade system there is a need to consider full lifecycle emissions of fuel options (e.g., GHG emissions from gas production)

Core message:

**Fuel Choices
Determine
Transmission**

Thank you

