SLIDES: Fuel Choice Determines Transmission

Doug Larson

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Fuel Choice Determines Transmission

Doug Larson
Western Interstate Energy Board
Message: Utility fuel choice determines what transmission gets built

Context
- Who I am
- Regional context

Western Renewable Energy Zone project

Larson observations
Regional Context

► Geographical context
► Resource context
► Institutional context
  ▪ Grid management
  ▪ Transmission planning
  ▪ FERC and state jurisdiction
  ▪ Proposed projects
Geographic Context

NERC Interconnections

Western Interconnection
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
  - Hydrokenetic (e.g., ocean wave generation)
Excellent and Diverse Renewable Resources

- **Solar**
- **Geothermal**
- **Wind**
- **Biomass**
- **Hydrokinetic**
Grid Operation Context

35 Balancing Authorities (formerly called Control Areas)

2 Regional Transmission Organizations
Industry transmission planning framework

Layer Linkages
- Attachment K
- SPG Charter / Agreement
- TEPPC Protocol
- WECC Membership & TEPPC Protocol
- Direct Input from Customers & Stakeholders
- Sub-regional Planning Group
- Transmission Provider

WECC
TEPPC

SPG

TP

Customers
Sub-Regional Transmission Planning Groups

- **NTAC**: Northwest Transmission Assessment Committee
- **NTTG**: Northern Tier Transmission Group
- **CCPG**: Colorado Coordinated Planning Group
- **CSPG**: California Sub-Regional Planning Group
- **Sierra**: Sierra
- **Columbia Grid**: Columbia Grid
- **SWAT**: Southwest Area Transmission

Activities under WestConnect umbrella

- **WECC**: Western Electricity Coordinating Council
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

- Palo Verde – Devers II
- Navajo Transmission Project
- Green Path
- TransBay
- Tehachapi
- Sunrise Powerlink
- Tucson-Nogales
- High Plains Express
- MT-AB Intertie
- Colorado/Wyoming Intertie
- Northern Lights
- Gateway West
- Gateway South
- TransWest Express
- N. CA to Canada
- TransBay
- John Day-McNary

Proposed Projects:
- Northwestern AMPS
- Colorado/Wyoming Intertie
- Seabreeze
- Sunrise Powerlink
- Tucson-Nogales
- N. CA to Canada
- Sun Zia
- TransBay
- Tehachapi
- Gateway West
- Gateway South
- Pal Verde – Devers II
- High Plains Express
- MT-AB Intertie
- Colorado/Wyoming Intertie
- Northern Lights
- TransWest Express
- N. CA to Canada
- Seabreeze
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
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
Fuel Choice Determines Transmission Requirements

This discussion will focus on the western context for electric transmission development and the myths and realities of transmission. The core message is that the generation fuel choices of utilities will determine what new transmission is built.

The discussion of the regional context will focus on:

- The geographical context, which is the Western Interconnection;
- Western generating resource options;
- The jurisdiction of federal and state governments over transmission decisions; and
- Proposed western transmission projects.

Larson will report on the Western Governors’ Association’s new Western Renewable Energy Zone project.

The presentation will conclude with observations on:

1. The increasing attractiveness of location-constrained renewable generation;
2. Supersizing transmission lines to such resources; and
3. The unintended consequences of not building transmission.