Regional Transmission Planning in the West

FERC Technical Conference on Planning Models and Software

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Bradley M Nickell, PE
Director of Transmission Planning
WECC Facts

- The Western Interconnection includes all or part of 14 U.S. states, 2 Canadian provinces and a portion of Baja California Norte, Mexico.
- WECC is governed by an independent and balanced stakeholder board consisting of 32 directors drawn from the WECC membership classes.
- Membership - 253 members in seven classes.
WECC Functions

Non-Planning Functions
- Compliance Monitoring and Enforcement
- Standards Development
- Reliability Coordination
- Market-Operations interface
- Operator training
- WREGIS

Planning Functions
- Loads and Resources Assessments
- Reliability studies
- Transmission Expansion Planning
Today’s Discussion

- What are we planning for?
- Planning Organizations in the West
- Planning Models at WECC
- Regional Transmission Expansion Planning (RTEP) Project
What is Planning?

- Identification of future infrastructure needs to:
  1. Serve the expected load reliability
  2. Meet public policy directives
  3. Minimize cost and environmental impact
- Transmission planning – identify future transmission capacity needs given a future set of loads and resources
  - It’s all about resource planning
- Planning serves project development
Planning for Uncertainty

Drivers
- Supply
- Demand
- Environment

Decision
- Investment
- Operations

Outcome
- Cost
- Reliability
- Environment

Loads – Resources – Transmission
Proposed Major Transmission Projects in WECC

Proposed Transmission Projects in the Western Interconnection

Note: This plot includes selected projects from Table 3.2 of 2008 TEPPC Study Plan (v7)
Projects have been grouped to simplify coding.

- Sea Breeze Projects
- TransCanada Projects
- Gateway & Other NTTG Projects
- Columbia Grid Projects
- TransWest Express
- LS Power & Great Basin Projects
- WY-CO Intertie Project
- High Plains Express
- Sun-ZIA
- Canada/PacNW-NoCalif
- Central CA Clean Energy (C3ET)
- Green Path North
- Devers-Palo Verde 2
- Navajo Transmission Project
Organizations Involved in Transmission Planning

Federal
- Congress
- FERC
- DOE

Regional (WECC)
- TEPPC
  - Create Transmission Expansion Policy
  - Create Annual Study Program
- RTEP
  - Complete expanded transmission studies
  - Create 10- and 20-Year Plans
- SPSG
  - Guide RTEP Project
  - Ensure stakeholder involvement
- SPG
  - Coordinate known sub-regional projects

States & Provinces
- Energy Agencies
- PUCs

Local
- Utilities and Other TX Developers
TEPPC
Transmission Expansion Planning Policy Committee

● TEPPC’s analyses and studies focus on studies with Interconnection-wide implications
  ▪ Reliability, Cost, Emissions

● TEPPC’s role does not include
  ▪ Detailed project-specific studies
  ▪ Advocating projects
  ▪ Identifying potential “winners” and “losers”
  ▪ Siting and cost allocation

● Provides governance over the RTEP project
WECC’s Transmission Expansion Planning Policy Committee (TEPPC)

- **TEPPC Annual Study Program**
  - Study Request window is open every year from Nov 1st until Jan 31st
  - Any interested stakeholder is welcome to submit a study request to TEPPC for consideration

- **TEPPC’s analyses and studies focus on studies with Interconnection-wide implications, and evaluate:**
  - Regional transmission congestion
  - Economic generation dispatch, variable production cost, emissions, capital costs, etc.
Planning Meetings

The “Archetypes”
- The Chairman
- The Cynic
- The Timorous
- The Disengaged
- The Contrarian
- The Process Checker
- The Threatened
- The Pragmatist
- The Evaluator
- The Creative Enthusiast
Planning Models

- Production Cost Models
  - Operational simulations
  - Variable costs
  - Transmission congestion
  - Emissions

- Capital Cost Models

- Loadflow and Stability Models
  - Capacity planning
  - Reliability analysis
Future TEPPC Modeling Tools

- To conduct a 20-year scenario analysis:
  - Multiple resource scenarios must be considered
  - Multiple transmission expansion alternatives must be investigated

- A Long Term Planning Tools Task Force was established by TEPPC to evaluate alternative tools that could analyze long-term expansion planning scenarios more efficiently than production cost simulation tools
Future TEPPC Modeling Tools

- This tool will help screen scenarios for transmission needs
  - Scenario visualization tool
  - Nodal expansion analysis tool
- The task force has completed a review of available tools to meet the future needs of TEPPC, and is in the process of preparing an RFP
RTEP
Regional Transmission Expansion Planning

- ARRA-funded via a $14.5M DOE Grant to WECC
  - Corresponding $12.0M Grant to WGA
- Activities managed by TEPPC
- WECC’s proposal available at the RTEP website – www.wecc.biz
RTEP

Primary Deliverable

● Interconnection-wide Transmission Plans
  ▪ A body of analysis that identifies new or greatly-upgraded lines required under a wide range of potential futures
    – Include operational implications, emissions and cost
  ▪ Analyses must be transparent, and produced through collaboration among industry experts and representatives from states, federal agencies, and relevant NGOs

● Requires multi-constituency steering group to provide strategic direction
  ▪ at least 1/3 of steering group to be state officials
### Planning Activities (new activities in Red)

<table>
<thead>
<tr>
<th>Region (WECC)</th>
<th>Short Term 0-5 Years</th>
<th>Medium Term 5-10 Years</th>
<th>Long Term 20 Years</th>
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<tbody>
<tr>
<td>Regional (WECC)</td>
<td>OTC, TTC</td>
<td>TEPPC Congestion Analysis</td>
<td>20yr Regional Trans Target Plan</td>
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<td>Rating Process</td>
<td>10yr Regional Plan</td>
<td>LSE Planning Coordination (WIRPF)</td>
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<td>TEPPC (5yr)</td>
<td>Project Planning &amp; Rating Process</td>
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<tr>
<td>Subregional (SPG)</td>
<td>OTC, ATC</td>
<td>Sub-Reg Trans Biennial Cap</td>
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<td>Short-term Assessment</td>
<td>Annual Econ Study</td>
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<td>Short-term Design Planning</td>
<td>SPG 10yr Att K Plan</td>
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<td>OATT studies</td>
<td>10yr SPG Coordinated Reliability Plan</td>
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<td>Local (Utilities)</td>
<td>Operating Studies</td>
<td>Attachment K or equivalent</td>
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<td>Compliance Studies</td>
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<td>Long-range studies</td>
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Questions

Bradley Nickell
Director of Transmission Planning
Western Electricity Coordinating Council
155 North 300 West, Suite 200
Salt Lake City, Utah 84103
801.819.7604
bnickell@wecc.biz

All information on the RTEP project can be found on the WECC website at
http://www.wecc.biz/Planning/TransmissionExpansion/RTEP/Pages/default.aspx
Glossary

- DSM – Demand-Side Management
- EE – Energy efficiency
- FERC – Federal Energy Regulatory Commission
- FOA – Funding Opportunity Announcement
- NERC – North American Electric Reliability Corporation
- NGO – non-profit, Non-governmental Organization
- RTEP – Regional Transmission Expansion Planning
- SPG – Subregional Planning Group
- SPSG – Scenario Planning Steering Group
- SPSC – State and Provincial Steering Committee
- TEPPC – Transmission Expansion Planning and Policy Committee
- VGS – Variable Generation Subcommittee
- WGA – Western Governors’ Association
- WIEB – Western Interstate Energy Board
- WREZ – Western Renewable Energy Zone