Comprehensive Transmission Planning: New Challenges To Coherence, Functionality, and Economic Efficiency

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Harvard Electricity Policy Group
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Increasing Need for Transmission Planning Coordination

- Increasing need to build large transmission projects driven by reliability and anticipated renewables requirements across the nation

- Multiple geographic transmission areas with different planning mechanisms & processes

- Multiple barriers to constructing transmission projects in a timely manner including:
  - Lengthy multi-agency siting and permitting processes
  - Obtaining timely federal land management agency decisions on licenses and permits
  - Planning models that require a “base case” for studying needed transmission – in this changing environment, what exactly is the “base case”??
Sub-regional planning groups formed into three regional groups to address common planning issues within Western Interconnection

• **Northwest Power Pool** *(NTAC, NTTG, Columbia Grid)*

• **Westconnect** *(SSPG, CCPG, SWAT)*

• **CA Joint Transmission Planning Group**
  - CA also has Renewable Energy Transmission Initiative
Western Interconnection Transmission Planning Coordination

**Transmission Expansion Planning Policy Committee (TEPPC)**

TEPPC guides the analysis and modeling for economic transmission expansion planning for the Western Interconnection.

TEPPC also provides coordination among the sub-regional planning groups.

**Planning Coordination Committee (PCC)**

Required transmission needs identified by TEPPC may become transmission projects to meet the needs.

Transmission project sponsors will follow the required reliability planning assessment that falls under WECC’s PCC.
Transmission Projects in the Western Interconnection

- 17 Proposed Projects
- 12,000 Miles of New 500 kV Transmission
  - AC: 7000 miles & 24,000 MW
  - DC: 5000 miles & 13,000 MW
- Operating dates between 2013-2020

Legend
± 500 kV Lines
AC  DC
Transmission Planning Challenges

Planning Initiatives

- **February 2006** – FERC Order 890 with nine principles required for transmission planning
- **March 2009** – Technical conference to address the interconnection of variable renewable resources
- **May 2009** – FERC announcement on regional conferences to assess existing planning efforts to integrate regional energy resources into the nation’s power grid
- Congress is considering various transmission planning, siting, and cost allocation proposals

Challenges

- Role of the federal government and regional authorities
- Bottoms-up approach or top-down process
- Traditional utility or merchant driven planning
- Regional and interregional planning
- Cost allocation
Panel Participants

**Craig Glazer**
Vice President – Federal Government Policy
PJM Interconnection

**Susan Tomaskey**
President – AEP Transmission
American Electric Power

**Bill White**
Vice President
David Gardiner & Associates

**Stephen Whitley**
President and Chief Executive Officer
New York Independent System Operator
APPENDIX
Proposed Regional Transmission Projects
## Proposed Regional Transmission Projects

### Rocky Mountain / Southwest Projects

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Transfer Capability (MW)</th>
<th>Planned Operating Year</th>
<th>Resource Being Accessed</th>
<th>Sponsor(s)</th>
<th>Est. Miles</th>
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</thead>
<tbody>
<tr>
<td>A.</td>
<td>1,600</td>
<td>2021</td>
<td>Geothermal</td>
<td>LADWP, IID</td>
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<td>B.</td>
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<td>2017</td>
<td>Wind/Solar</td>
<td>WAPA, SRP, TSGT, Xcel, PNM</td>
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<td>C.</td>
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<td>2013</td>
<td>Wind/Solar</td>
<td>Southwestern Power Group LLC, SRP, TEP</td>
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<td>D.</td>
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<td>2013</td>
<td>Wind/Coal</td>
<td>Transwest LLC (Anschutz Corp)</td>
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<tr>
<td>E.</td>
<td>600-1,500</td>
<td>2010-2014</td>
<td>Wind/Coal</td>
<td>PacifiCorp</td>
<td>700</td>
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<td>F.</td>
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<td>2015</td>
<td>Wind/Hydro/ Cogen/Clean Coal</td>
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<tr>
<td>G.</td>
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<td>Solar</td>
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<td>H.</td>
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<td>2010</td>
<td>Nuclear/ Nat. Gas</td>
<td>IID, APS</td>
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<tr>
<td>I.</td>
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<td>2015</td>
<td>Wind, Hydro, Cogen, Clean Coal</td>
<td>TransCanada</td>
<td>1,000</td>
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<tr>
<td>J.</td>
<td>1,600</td>
<td>2010</td>
<td>Coal/Nat. Gas/Solar</td>
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<td>K.</td>
<td>1,400</td>
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<td>Hydro/ Wind</td>
<td>PG&amp;E</td>
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<td>L.</td>
<td>2,000</td>
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<td>Wind</td>
<td>NVEnergy</td>
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<td>M.</td>
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<td>Wind</td>
<td>LS Power</td>
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### Pacific Northwest Projects

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<tr>
<th>Project Name</th>
<th>Transfer Capability (MW)</th>
<th>Planned Operating Year</th>
<th>Resource Being Accessed</th>
<th>Sponsor(s)</th>
<th>Est. Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.</td>
<td>Canada to CA (CNC) Project</td>
<td>3,000</td>
<td>Wind/ Hydro/ Cogen</td>
<td>PG&amp;E(Lead), Avista, PacifiCorp, BCTC</td>
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<td>O.</td>
<td>Northern Lights Celilo 3,000</td>
<td>2014</td>
<td>Wind/ Hydro/ Cogen/Clean Coal</td>
<td>TransCanada</td>
<td>1,000</td>
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<td>P.</td>
<td>Seabreeze Projects (Underwater DC)</td>
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<td>Wind</td>
<td>Seabreeze</td>
<td>100 to 1,000</td>
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<td>Q.</td>
<td>Gateway West 1,500</td>
<td>2012-2014</td>
<td>Wind/Coal</td>
<td>PacifiCorp</td>
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