HELPING OUR MEMBERS WORK TOGETHER TO KEEP THE LIGHTS ON... TODAY AND IN THE FUTURE.
SPP and Mountain West

Presentation to Montana Generation and Transmission Working Group
September 12th, 2017
Lanny Nickell
Vice President, Engineering
SPP’s MISSION
Helping our members work together to keep the lights on ... today and in the future.
Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs)
SPP’s 95 Members: Independence Through Diversity

As of April 12, 2017
SPP’s 2016 Energy & Capacity Mix

Energy Consumption
- Gas (22.36%)
- Coal (47.48%)
- Hydro (5.84%)
- Wind (17.07%)
- Nuclear (6.83%)
- Other (0.41%)

Installed Capacity
- Gas (40.81%)
- Coal (31.04%)
- Hydro (4.07%)
- Wind (19.21%)
- Nuclear (2.51%)
- Other (2.36%)
Regional State Committee

Stephen Stoll, RSC President
Missouri Public Service Commission

Shari Feist Albrecht, RSC Vice President
Kansas Corporation Commission

Kristie Fiegen, RSC Secretary/Treasurer
South Dakota Public Utilities Commission

Dennis Grennan
Nebraska Power Review Board

Libby Jacobs
Iowa Utilities Board

Randy Christmann
North Dakota Public Service Commission

Patrick Lyons
New Mexico Public Regulation Commission

Dana Murphy
Oklahoma Corporation Commission

Donna Nelson
Public Utility Commission of Texas

Kim O’Guinn
Arkansas Public Service Commission
# Authority of the RSC

<table>
<thead>
<tr>
<th>4 Areas of Authority</th>
<th>Description</th>
<th>Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost Allocation</strong></td>
<td>Whether participant funding will be used for transmission enhancements &amp; whether license plate or postage stamp rates will be used for the regional access charge</td>
<td>8</td>
</tr>
<tr>
<td><strong>Financial Transmission Rights (FTRs)</strong></td>
<td>FTR allocation, where a locational price methodology is used; and the transition mechanism to be used to assure that existing firm customers receive FTRs equivalent to the customers’ existing firm rights</td>
<td>3</td>
</tr>
<tr>
<td><strong>Planning for Remote Resources</strong></td>
<td>Whether transmission upgrades for remote resources will be included in the regional transmission planning process and the role of transmission owners in proposing transmission upgrades in the regional planning process</td>
<td>1</td>
</tr>
<tr>
<td><strong>Resource Adequacy</strong></td>
<td>Determine the approach for resource adequacy across SPP</td>
<td>1</td>
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</tbody>
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“As the RSC reaches decisions on the methodology that will be used to address any of these issues, SPP will file this methodology pursuant to Section 205 of the Federal Power Act. However, nothing in this section prohibits SPP from filing its own related proposal(s) pursuant to Section 205 of the Federal Power Act.” – SPP Bylaws
Our Major Services

• Reliability Coordination
• Market Operation
• Transmission Planning
• Transmission Service/Tariff Administration

• Balancing Authority
• Facilitation
• Standards Setting
• Compliance Enforcement
• Training

OUR APPROACH:
Regional, Independent, Cost-Effective and Focused on Reliability
SPP Reliability Coordination

- Monitor grid 24x365
- Anticipate problems
- Take preemptive action
- Coordinate regional response
- Independent
- Comply with more than 5,500 pages of reliability standards and criteria
SPP’s Markets

• **Transmission Service**: Participants buy and sell use of regional transmission lines that are owned by different parties.

• **Integrated Marketplace**: Participants buy and sell wholesale electricity in day-ahead and real-time.
  - **Day-Ahead Market** commits the most cost-effective and reliable mix of generation for the region.
  - **Real-Time Balancing Market** economically dispatches generation to balance real-time generation and load, while ensuring system reliability.
Transmission market

- Provides “one-stop shopping” for use of regional transmission lines
- Consistent rates, terms, conditions for all users
- Independent
- More than 4,700 transactions per month on average
- 2016 transmission customer transactions = $3.879 billion

As a “sales agent,” SPP administers a transmission tariff greater than 5,500 pages in length on behalf of its members and customers.
Integrated Marketplace Overview

KEY COMPONENTS
• Day-Ahead Market
• Centralized Unit Commitment
• Real-Time Balancing Market
• Transmission Congestion Rights Market

PRODUCTS
• Energy
• Operating Reserve (Regulation Up, Regulation Down, Spinning, Supplemental)
• Congestion Rights
SPP’s Marketplace Facts

- 185 participants
- 726 generating resources
- 2016 Marketplace Settlements = $15.8 billion
- 50,622 MW coincident peak load (7/21/16)
- Wind penetration record: 54.22% (3/19/17 @ 00:55)
SPP’s Transmission Planning Studies

Stakeholder Driven, Member Funded Studies

- Integrated Transmission Planning
- High Priority
- Balanced Portfolio
- Interregional Projects

Customer Initiated, Customer Funded Studies

- Transmission Service
- Generation Interconnection Service
- Sponsored Upgrades
2005-2017 Transmission Expansion

Current Investment ($B)

- > 300 kV: 3.6
- 100 – 300 kV: 2.5
- < 100 kV: 0.4
- Total: 6.5

Projects Constructed or with NTCs (2005 - 2017)

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Future Transmission Expansion

Future Investment (B$)

<table>
<thead>
<tr>
<th>Voltage Range</th>
<th>Investment (B$)</th>
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<tbody>
<tr>
<td>&gt; 300 kV</td>
<td>1.9</td>
</tr>
<tr>
<td>100 – 300 kV</td>
<td>1.4</td>
</tr>
<tr>
<td>&lt; 100 kV</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>3.5</td>
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Projects Constructed
or with NTCs

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THE VALUE OF SPP

- Transmission planning, market administration, reliability coordination, and other services provide net benefits to SPP’s members in excess of more than $1.7 billion annually at a benefit-to-cost ratio of 11-to-1.

- A typical residential customer using 1,000 kWh saves $5.71/month because of the services SPP provides.
Mountain West Membership Opportunity

**2015 Snapshot**

<table>
<thead>
<tr>
<th>Transmission Owner</th>
<th>Annual Transmission Revenue Requirement ($)</th>
<th>12-month Coincident Peak (MW)</th>
<th>Annual Energy (MWH)</th>
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</thead>
<tbody>
<tr>
<td>Basin Electric Power Cooperative Westside</td>
<td>8,203,959</td>
<td>110</td>
<td>638,352</td>
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<tr>
<td>Cheyenne Light Fuel &amp; Power</td>
<td>6,848,030</td>
<td>193</td>
<td>1,330,174</td>
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<tr>
<td>Black Hills Colorado Electric Utility</td>
<td>12,452,172</td>
<td>314</td>
<td>1,600,638</td>
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<tr>
<td>City of Colorado Springs Utilities</td>
<td>24,025,218</td>
<td>661</td>
<td>4,374,955</td>
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<tr>
<td>Common Use System (BEPC &amp; BHC)</td>
<td>30,899,530</td>
<td>859</td>
<td>4,892,644</td>
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<tr>
<td>Platte River Power Authority</td>
<td>39,923,267</td>
<td>510</td>
<td>3,251,514</td>
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<tr>
<td>Western CRSP</td>
<td>69,097,743</td>
<td>1,424</td>
<td>5,185,539</td>
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<tr>
<td>Western LAP</td>
<td>65,198,148</td>
<td>710</td>
<td>2,534,139</td>
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<tr>
<td>Tri-State Generation and Transmission Association</td>
<td>117,460,625</td>
<td>1,934</td>
<td>12,607,330</td>
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<tr>
<td>Public Service Company of Colorado</td>
<td>220,662,842</td>
<td>5,680</td>
<td>33,024,691</td>
</tr>
<tr>
<td>DC-ties (4 ties in footprint)</td>
<td>18,000,000</td>
<td>710 *</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>612,771,534</td>
<td>12,395</td>
<td>69,890,856</td>
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