SPP 101
AN INTRODUCTION TO SOUTHWEST POWER POOL
OUR MISSION: Working together to responsibly and economically keep the lights on today and in the future.

OUR VISION: Leading our industry to a brighter future while delivering the best energy value.
**AIR TRAFFIC CONTROL: AN ANALOGY**

<table>
<thead>
<tr>
<th>Air Traffic Control</th>
<th>Southwest Power Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not own airplanes, airlines or airports</td>
<td>Does not own utilities, power generators or transmission lines</td>
</tr>
<tr>
<td>Does not own the sky it monitors</td>
<td>Does not own the land electricity flows across</td>
</tr>
<tr>
<td>Directs air routes to ensure airplanes and passengers are safely transported</td>
<td>Monitors and directs regional bulk power grid to ensure electricity gets from where it’s made to where it’s needed</td>
</tr>
</tbody>
</table>
OUR BEGINNING

- In 1941, 11 member utilities pooled electricity to power aluminum plant at Jones Mill for critical defense
- Maintained after WWII to continue benefits of regional coordination
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 $2.14 billion annually at a benefit-to-cost ratio of 14-to-1.

- A typical residential customer using 1,000 kWh saves $7.39/month because of the services SPP provides.
MILESTONES

1968    Became NERC Regional Council
1980    Implemented telecommunications network
1991    Implemented operating reserve sharing
1994    Incorporated as nonprofit
1997    Implemented reliability coordination
MILESTONES

1998  Implemented tariff administration
2004  Became FERC-approved Regional Transmission Organization
2007  Launched EIS market
2009  Integrated Nebraska utilities
2010  FERC approved Highway/Byway cost allocation methodology and Integrated Transmission Planning Process
MILESTONES

2012  Moved to new Corporate Center
2014  Launched Integrated Marketplace

Became regional Balancing Authority

2015  Integrated System joins SPP
2019  Launched western reliability coordination services

2020  Began developing resource adequacy program for Northwest Power Pool
2021  Launched Western Energy Imbalance Services (WEIS) market
SPP AT A GLANCE

• Located in Little Rock
• Approx. 600 employees
• Jobs in IT, electrical engineering, operations, settlements and more
• 24x7 operation
• Full redundancy and backup site
COMMUNITY INVOLVEMENT AND RECOGNITION

• Best Place to Work in Arkansas:
  2014 Benchmark Award Winner
  2013 Finalist

• Principal Financial Group “Top 10”

• SPP employees support more than 70 Central Arkansas charities including:
  • Arkansas Children’s Hospital
  • Arkansas Foodbank
  • Carelink
  • Girls of Promise
  • Museum of Discovery
  • Our House
  • Race for the Cure
  • Relay for Life
  • St. Jude
  • United Way
  • Youth Home
Our Goal:
To promote and support the STEM career pipeline for Arkansas youth from elementary school through college.

Learn about our efforts at SPP.org/STEM
SPP’s STEM OUTREACH PROGRAM

• Partnership with Little Rock School District:
  • Elementary school reading program
  • Middle school science fairs
  • High school problem-based learning activities
  • Teacher training
  • Supply Drive
• Additional support for:
  • Women’s Foundation of Arkansas’ Girls of Promise Coding Summit
  • Arkansas School for Math, Sciences and the Arts’ Coding AR Future program
  • Arkansas STEM Coalition
• School visits, field trips, outreach events, reading days, and more.
REGULATORY ENVIRONMENT

• Incorporated in Arkansas as 501(c)(6) nonprofit corporation
• Federal Energy Regulatory Commission (FERC)
  • Regulated public utility
  • Regional Transmission Organization
• Founding member of the North American Electric Reliability Corporation (NERC)
NORTH AMERICAN INDEPENDENT SYSTEM OPERATORS (ISO) AND REGIONAL TRANSMISSION ORGANIZATIONS (RTO)
ISO/RTO GROWTH BEFORE 1996
ISO/RTO GROWTH BY 1996

1996: ERCOT
ISO/RTO GROWTH BY 1998

1998: CAISO
1997: ISO-NE
1997: PJM
ISO/RTO GROWTH BY 2000
ISO/RTO GROWTH BY 2002
ISO/RTO GROWTH BY 2006
ISO/RTO GROWTH BY 2008
ISO/RTO GROWTH BY 2010
ISO/RTO GROWTH BY 2014
SPP’S 106 MEMBERS: INDEPENDENCE THROUGH DIVERSITY

106 Members

- 20 Generation and Transmission Cooperatives
- 17 Independent Power Producers
- 16 Investor-Owned Utilities
- 14 Municipal Systems
- 13 Power Marketers
- 13 Independent Transmission Companies
- 8 State Agencies
- 8 Large Retail Customers
- 1 Federal Agency
- 1 Alternative Power/Public Interest
SPP MANAGES THE GRID IN 5 OF THE TOP 100 CITIES IN AMERICA:
KANSAS CITY, OKLAHOMA CITY, TULSA, OMAHA, AND WICHITA
MEMBERS IN 14 STATES

- Arkansas
- Iowa
- Kansas
- Louisiana
- Minnesota
- Missouri
- Montana
- Nebraska
- New Mexico
- North Dakota
- Oklahoma
- South Dakota
- Texas
- Wyoming
OPERATING REGION

- Service territory: 552,885 square miles
- Population served: Approx. 18 million
- Generating plants: 1,162*
- Substations: 6,140*

* In SPP’s reliability coordination footprint
MILES OF TRANSMISSION: 70,025

- 69 kV 17,982
- 115 kV 16,677
- 138 kV 9,942
- 161 kV 5,677
- 230 kV 7,604
- 345 kV 12,052
- 500 kV 91
2020 ENERGY PRODUCTION BY FUEL TYPE: 262.730 TWH TOTAL

- Wind (31.32%)
- Coal (30.88%)
- Natural Gas (26.61%)
- Nuclear (6.40%)
- Hydro (4.45%)
- Solar (0.22%)
- Other (0.12%)

262,730 TWh Total
ENERGY PRODUCTION BY GENERATION TYPE OVER TIME

Energy Production (MWh)

Coal  |  Gas  |  Wind  |  Nuclear  |  Hydro  |  Other


0  |  50,000,000  |  100,000,000  |  150,000,000  |  200,000,000  |  250,000,000  |  300,000,000

Energy Production (MWh)


0  |  50,000,000  |  100,000,000  |  150,000,000  |  200,000,000  |  250,000,000  |  300,000,000
GENERATING CAPACITY* BY FUEL TYPE:
94,648 MW TOTAL

* NAMEPLATE CAPACITY AS OF 1/13/21

- Natural Gas (38.9%)
- Wind (29%)
- Coal (24.3%)
- Hydro (3.6%)
- Nuclear (2.2%)
- Fuel Oil (1.7%)
- Solar (0.2%)
- Other (0.1%)
GENERATOR INTERCONNECTION REQUESTS UNDER STUDY (BY FUEL TYPE): 100,028 MW TOTAL

- **Solar (44,390 MW)**
- **Wind (33,048 MW)**
- **Storage (13,415 MW)**
- **Gas/Thermal (13,415 MW)**
- **Hybrid: renewables + storage (3,140 MW)**

July 9, 2021
MIN AND MAX PERCENT OF GENERATION MIX BY FUEL TYPE

Jan. 1 – Dec. 31, 2020
MARKET FACTS

• 267 market participants
• 1,162 generating resources
• 2020 marketplace settlements = $16.16 billion
• 2020 transmission service transactions = $4.5 billion
• 51,037 MW coincident peak load (7/28/21)
  • Winter peak: 43,661 MW (2/15/21)
SPP’S IT INFRASTRUCTURE

• 136,000+ data points updated every 2-30 seconds
• Operations model solves 91,400 x 228,948 matrix every two minutes
• Approx. 2,604 servers
• More than 3.4 petabytes of storage
GROWTH IN RESPONSIBILITIES

- Transmission Customer Transactions ($MM)
- Energy Imbalance Market Transactions ($MM)
- Integrated Marketplace

$ TRANSACTIONS (IN MILLIONS)

$ MM TRANSACTIONS (IN MILLIONS)
SPP EXPENSES: 2010-2019

Operating Expenses ($M)

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating Expenses ($M)</th>
<th>Tariff Rate/Admin Fee ($/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$0.20</td>
<td>$0.00</td>
</tr>
<tr>
<td>2011</td>
<td>$0.21</td>
<td>$0.00</td>
</tr>
<tr>
<td>2012</td>
<td>$0.26</td>
<td>$0.00</td>
</tr>
<tr>
<td>2013</td>
<td>$0.32</td>
<td>$0.00</td>
</tr>
<tr>
<td>2014</td>
<td>$0.38</td>
<td>$0.00</td>
</tr>
<tr>
<td>2015</td>
<td>$0.39</td>
<td>$0.00</td>
</tr>
<tr>
<td>2016</td>
<td>$0.38</td>
<td>$0.00</td>
</tr>
<tr>
<td>2017</td>
<td>$0.38</td>
<td>$0.00</td>
</tr>
<tr>
<td>2018</td>
<td>$0.39</td>
<td>$0.00</td>
</tr>
<tr>
<td>2019</td>
<td>$0.39</td>
<td>$0.00</td>
</tr>
<tr>
<td>2020</td>
<td>$0.43</td>
<td>$0.00</td>
</tr>
<tr>
<td>2021</td>
<td>$0.43</td>
<td>$0.00</td>
</tr>
</tbody>
</table>
INTERREGIONAL COORDINATION

- ISO-RTO Council
- Interregional planning efforts
- North American Energy Standards Board (NAESB)
- National Association of Regulatory Utility Commissioners
CONTRACT SERVICES

• Alternative to RTO membership for Transmission Owners
• Oversight of Transmission Owners’ system operations:
  – Reliability Coordination
  – Transmission Planning
  – Tariff Administration
  – Interregional Coordination
• Provides process for assigning cost responsibility for transmission upgrades
OUR STRATEGY

- Reliability Assurance
- Enhance member value and affordability
- Optimize interdependent systems
- Maintain an economical, optimized transmission system
OUR SERVICES
OUR MAJOR SERVICES

- Facilitation
- Reliability Coordination
- Balancing Authority
- Transmission Service/Tariff Administration
- Market Operation
- Transmission Planning
- Training

OUR APPROACH:
Regional, Independent, Cost-Effective and Focused on Reliability
ACTIVITIES OUTSIDE SPP’S SCOPE

- Transmission siting
- Generation planning/siting
- Transmission/generation construction
- Transmission/generation permitting
BOARD OF DIRECTORS

Larry Altenbaumer, Chairman
T. Graham Edwards, Vice Chairman
Barbara Sugg, President and CEO
Bronwen Bastone

Julian Brix
Susan Certoma
Mark Crisson
Joshua W. Martin, III

Elizabeth Moore
Darcy Ortiz
REGIONAL STATE COMMITTEE

Kristie Fiegen, President
South Dakota Public Utilities Commission

Randel Christmann, Vice President
North Dakota Public Service Commission

DeAnn T. Walker, Secretary/Treasurer
Public Utility Commission of Texas

Shari Feist Albrecht
Kansas Corporation Commission

Jefferson Byrd
New Mexico Public Regulation Commission

Mike Francis
Louisiana Public Service Commission

Dennis Grennan,
Nebraska Power Review Board

Geri Huser
Iowa Utilities Board

Dana Murphy
Oklahoma Corporation Commission

Scott Rupp
Missouri Public Service Commission

Kim O’Guinn
Arkansas Public Service Commission
RELIABILITY COORDINATION: AIR TRAFFIC CONTROLLERS OF THE BULK POWER GRID

• Monitor grid 24 x 365
• Anticipate problems
• Take preemptive action
• Coordinate regional response
• Independent
• Comply with more than 5,500 pages of reliability standards and criteria
TRAINING

• In 2020, SPP provided 26,336 training hours to 251 organizations, representing reliability, train-the-trainer, Integrated Marketplace and transmission settlement courses.

• SPP awarded 19,529 NERC continuing education hours to 196 organizations, including 39 member organizations and SPP staff.

• SPP offers:
  • Regional system-restoration drills
  • Integrated Marketplace training
  • Regional emergency operations sessions
  • Train-the-trainer classes
MARKETS
ELECTRICITY MARKET BASICS

Like any market, SPP’s electricity markets feature:

• Sellers/producers with a product and buyers/consumers who want to buy it
• Prices driven by supply and demand
FINDING BALANCE

Minimum for Reliable Delivery to Customers

No Limits to Low Cost Delivery

Customer Energy Cost

More Transmission Needed
WHAT KIND OF MARKETS DOES SPP OPERATE?

- **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.
- **Western Energy Imbalance Service (WEIS) Market**: Contract-based, real-time balancing market in the western interconnection (as of Feb. 1, 2021).
TRANSMISSION SERVICE MARKET
TRANSMISSION MARKET

- Provides “one-stop shopping” for use of regional transmission lines
- Consistent rates, terms, conditions for all users
- Independent
- Approx. 6,491 transactions per month on average in 2020
- 2020 transmission customer transactions = $4.5 billion

As a “sales agent,” SPP administers a transmission tariff greater than 5,500 pages in length on behalf of its members and customers.
THE VALUE OF TRANSMISSION SERVICE

Without SPP

To get from a generator in Utility A to a customer in Utility C, electricity must flow through lines owned by Utilities A, B, and C, each with its own set of operating rules and associated costs.

$30 transmission service + $30 energy = $45

$15 transmission service + $30 energy = $45

With SPP

SPP moves electricity across Utilities A, B, and C in one transaction for a single service fee, then shares revenues with each party.

$5 transmission service + $30 energy = $35
HOW TRANSMISSION SERVICE WORKS

- Reserving transmission service = reserving a seat on a plane
  - Customer specifies priority, time, source/sink, capacity
  - Tariff administrator approves if capacity exists
- Issuance of NERC Tag = receiving boarding pass
  - Won’t be approved if improper use of reservation
- Creation of schedule from tag = sitting on the plane
  - Generators ramp to provide energy for transaction
  - May be curtailed if transmission system overloaded
WHOLESALE ENERGY MARKET
### WHAT IS A WHOLESALE ENERGY MARKET?

<table>
<thead>
<tr>
<th>Sellers/Producers</th>
<th>Buyers/Consumers</th>
<th>Locational Prices</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Utilities</td>
<td>• Utilities</td>
<td>• Driven by supply and demand at defined locations</td>
<td>• Energy</td>
</tr>
<tr>
<td>• Municipals</td>
<td>• Municipals</td>
<td></td>
<td>• Operating Reserves</td>
</tr>
<tr>
<td>• Independent Power Producers</td>
<td>• Load Serving Entities (LSEs)</td>
<td></td>
<td>• Congestion Rights</td>
</tr>
<tr>
<td>• Generators</td>
<td>• Power Marketers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Power Marketers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SPP’S ENERGY MARKET: INTEGRATED MARKETPLACE

SPP facilitates the marketplace, providing the infrastructure, systems and 24/7 market operations.
SPP’S INTEGRATED MARKETPLACE

SPP financially settles the marketplace

• Calculates prices
• Captures wholesale energy production and consumption
• Collects from market participants (MP) who owe the market
• Pays MPs who are owed by the market
• Remains revenue neutral

SPP has an independent market monitor
INTEGRATED MARKETPLACE OVERVIEW

Key Components

- Day-Ahead (DA) Market
- Real-Time Balancing Market (RTBM)
- Transmission Congestion Rights (TCR) Market

Products

- Energy
- Operating Reserve (Regulation Up, Regulation Down, Spinning, Supplemental)
- Congestion Rights
THE INTEGRATED MARKETPLACE DAY-AHEAD AND REAL-TIME COMMITMENT SCHEDULE

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

**OCTOBER 7**
Day-Before Operating Day (OD-1)
DAY-AHEAD MARKET

**OCTOBER 8**
Operating Day (OD)
REAL-TIME BALANCING MARKET (RTBM)

**OCTOBER 9**
Post Operating Day (OD+1, 2, etc.)
FINANCIAL SETTLEMENT of all MARKET ACTIVITIES
MARKETPLACE BENEFITS

- SPP’s markets provide participants $744M in net savings annually
- Reduce total energy costs through centralized unit commitment while maintaining reliable operations
- Day-ahead market allows additional price assurance capability prior to real-time
- Operating reserve products support implementation of the SPP balancing authority and facilitate reserve sharing
SEVEN YEARS OF SPP’S INTEGRATED MARKETPLACE

• $4.23 billion in cumulative benefits as of April 2021
• Average annual savings of $744 million
• Lowest-cost wholesale energy in the nation ($30/MWh) according to calculations by FERC in 2019 and based on year-to-date spot power prices
• Facilitated growth in renewable energy production from 3 GW in 2009 to 27 GW in 2020 (an increase of 800%)
AVERAGE REAL-TIME MARKET PRICES: 2008-2019

SPP’s markets have helped lower region-wide wholesale electricity prices.
SPP’s markets have helped lower region-wide wholesale electricity prices.
In 2020, SPP’s average wholesale market prices remained the lowest of any organized market in the U.S.

MARKETPLACE BENEFITS

- SPP’s Integrated Marketplace paid for itself in less than one year.
DAY-AHEAD MARKET

• Determines least-cost solution to meet energy bids and reserve requirements

• Participants submit offers and bids to purchase and/or sell energy and operating reserve:
  • Energy
  • Regulation-Up
  • Regulation-Down
  • Spinning Reserve
  • Supplemental Reserve
REAL-TIME BALANCING MARKET (RTBM)

• Balances real-time load and generation committed by the day-ahead market and reliability commitment processes

• Operates on continuous 5-minute basis
  • Calculates dispatch instructions for energy and clears operating reserve by resource

• Energy and operating reserve are co-optimized

• Settlements based on difference between results of RTBM process and day-ahead market clearing

• Charges imposed on market participants for failure to deploy energy and operating reserve as instructed
TRANSMISSION CONGESTION RIGHTS (TCR) MARKET

• In the day-ahead market, price separation of market participant’s resource to load may occur due to congestion leaving the market participant exposed to high prices.

• A TCR can be used as hedge against congestion that allows market participants to reduce exposure to high market prices and potentially receive lower-priced deliverable energy.

• TCR market has annual and monthly auction processes related to two products:
  • Auction Revenue Rights (ARRs)
  • Transmission Congestion Rights (TCRs)
MARKET MONITORING UNIT (MMU) ENSURES RELIABILITY, EFFECTIVENESS

- SPP’s internal MMU reports directly to the Board and Oversight Committee
- Independent from SPP RTO
- FERC Order 719 allows ISO/RTO markets to be overseen by internal, external or hybrid monitor
  - Three ISOs/RTOs have an external monitor, two have an internal monitor, and one has a hybrid
  - Order 719 authorizes RTO Board of Directors to decide on the monitor structure and the SPP Board has decided an internal form to be most appropriate for SPP
- MMU reviews real-time/historic data and reports any issues to FERC for investigation
## Notable Market Initiatives

### NDVER to DVER Conversion
- ~7900 MW of Non-Dispatchable Variable Energy Resources
- SPP’s only mechanism to control NDVER output is through out-of-market actions
- Conversion results in increased reliability and market efficiencies

### Enhanced VER Data for Forecasting
- Individual wind turbine location data
- Mid-point and corner location data for solar farms
- Inverter technology and controls information
- Improved forecasting of VERs results in better unit commitment and dispatch, lower production costs, and increased reliability

### Economic Decommitment
- Resources committed in the Day-Ahead Market are not typically decommited unless a reliability need arises that requires it
- Establishment of an economic de-commitment process could alleviate prolonged periods of excess generation which creates severe depression on LMPs

### Regulation Up Market for VERS
- VERs precluded from participating in ‘Up’ products, except for Energy, because of fuel source uncertainty
- Would allow for additional competition in the regulation up product
- Addresses potential scenarios where grid is primarily renewable

### DVER Regulation Enhancement
- SPP has some inefficiencies in the clearing of Regulation and the requirements for DVERs
- Introduces use of real-time capability in real-time market for VERs

### Fast Start Resources
- FERC 206 proceeding
- Delays commitment of Quick Start Resources until Real-Time Balancing Market
## FUTURE MARKET INITIATIVES

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Longer Term Ramping/ Uncertainty Product** | • Builds on current short term ramping product  
• With more renewables, SPP’s forecasting and uncertainty issues continue to grow past short-term into longer than 10-15 minute issues |
| **Distributed Energy Resources** | • Awaiting FERC Order  
• Should allow for a broader spectrum of participation in SPP  
• More flexibility is essential for coming changes |
| **Coordinated Transaction Scheduling** | • Most real time transactions in SPP are fixed transactions. Allowing transactions to be cleared by Market creates value for all participants.  
• Should increase price convergence between seams with other RTOs |
THIS ISN’T OUR PARENTS’ ELECTRIC GRID

Evolving grid

Evolving grid

PLANNING FOR AN UNCERTAIN FUTURE
GRID CONGESTION
AND ITS IMPACTS ON MARKETS AND TRANSMISSION PLANNING
WHAT IS CONGESTION?

• Congestion or “bottlenecks” happen when you can’t get energy to customers along a certain path
  • Desired electricity flows exceed physical capability

• Congestion caused by:
  • Lack of transmission, often due to load growth
  • Line and generator maintenance outages
  • Unplanned outages such as storms or trees on lines
  • Too much generation pushed to grid in a particular location
  • Preferred energy source located far from customers

• Results in inability to use least-cost electricity to meet demand
CONGESTION PREVENTS ACCESS TO GENERATION

Load pockets see higher prices (pay for more expensive, local generation)

Low prices in areas with high amount of cheap generation (wind), constrained by transmission outlets
CONGESTION’S IMPACT ON MARKET PRICES

WDWFPLTATNOW*  
West → East flow across NW Oklahoma  
MEC: $29.36/MWh  
West of constraint: $-9.66 /MWh  
East of constraint: $86.88 /MWh

*WDWFPLTATNOW: Woodward – FPL Switching Station 138kV for the loss of Tatonga – Northwest 345kV
Congestion can expose market participants to high energy costs.

Transmission Congestion Rights (TCRs) market allows participants to protect their load from price spikes.
TRANSMISSION CONGESTION RIGHTS MARKET

• Market participants select transmission paths they want to hedge (protect)
• Transmission Congestion Rights (TCRs) distribute hourly day-ahead congestion rents
• Auction revenue rights (ARR) are based on firm transmission service and distribute revenue generated in auctioning TCRs
• Annual auction has 14 products
• Monthly auction has 2 products
• Participants must do their due diligence when selecting which paths to hedge
TRANSMISSION PLANNING: BASIC CONCEPTS

SERVICES
U.S. primary energy consumption by source and sector, 2017
Total = 97.7 quadrillion British thermal units (Btu)

Source:
https://www.eia.gov/energyexplained/?page=us_energy_home
TRANSMISSION PLANNING CHALLENGES

In most industries, you can put a manufacturing plant anywhere close to an interstate or railroad to transport your product. Locating electric generation is more challenging.

Wind, solar, and hydro energy can only be manufactured where those resources are located. A coal-fired plant must be located in a place with water for cooling, and the ability to deliver large quantities of coal to it. A natural gas-fired plant has to be on a pipeline.

In many cases, “roads” don’t exist to move wind and solar energy to electricity customers, and building them is a long and costly process.
TRANSMISSION PLANNING CONSIDERATIONS

Must take into account a number of considerations, including

- Reliability
- Economics
- Public Policy
TRANSMISSION PLANNING CONSIDERATIONS

- What parts of grid need strengthening to “keep the lights on?”
  - Some redundancies are necessary to mitigate outage-related risks
- Where are current and future generation located?
- Where are electricity consumers located?
- Where on the grid do we frequently see congestion?
- Will laws mandating more renewable energy or a carbon tax impact traffic?
- How do coal/gas prices impact traffic?
  - People will use more coal if gas prices rise, and vice versa
- How do regional temperatures impact traffic?
  - If temperature differs across region, one area may need more energy
TRANSMISSION INVESTMENT DIRECTED BY SPP

$8.9B in completed projects
$1.8B in scheduled projects
Comparative distribution of transmission investment

TRANSMISSION INVESTMENT SINCE 2006
• In 2020, SPP members completed 29 transmission projects totaling $175 million.
• $10.4 billion in transmission upgrades were planned and approved from 2004-2019.
• 70,025 miles of transmission lines in SPP’s footprint would circle the earth more than twice!
• SPP’s transmission-owning members have approximately $15.7B in net transmission investment.
TRANSMISSION PLANNING
HOW SPP MAKES PLANNING DECISIONS

- Integrated Transmission Planning process
- Generation Interconnection Studies
  - Determines transmission upgrades needed to connect new generation to electric grid
- Aggregate Transmission Service Studies
  - Determines transmission upgrades needed to transmit energy from new generation to load
  - Shares costs of studies and new transmission
- Specific transmission studies
TRANSMISSION BUILD CYCLE IN SPP

Planning Study (12-18 mo.)

TO Selection (3-12 mo.)

Design, ROW Acquisition, & Construction (2-6 yr.)

3 ¼ yr.

8 ½ yr.

Responsible Party

SPP

Transmission Owner
INTEGRATED TRANSMISSION PLANNING (ITP) PROCESS

- Annual planning cycle assesses near- and long-term economic and reliability needs
- Produces a 10-year transmission expansion plan each year, combining near-term, 10-year, and TPL-001-4 assessments into one study
- 20-year assessment performed no more than once every five years except when directed by the SPP board of directors
- 30 study models assess a variety of potential scenarios
SPP’S TRANSMISSION PLANNING STUDIES

**Stakeholder-driven, member-funded**

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

**Customer-initiated, customer-funded**

- Transmission Service
- Congestion Hedging*
- Generation Interconnection Service
- Sponsored Upgrades

*Currently funded by members, but new admin fee structure will charge to market participants
LONG-TERM TRANSMISSION SERVICE STUDIES

Aggregate
Attachment Z1

Delivery point transfer
Attachment AR

Delivery point addition
Attachment AQ
AGGREGATE STUDIES

• Analyzes clusters of requests for transmission service needed to assure delivery of generation to load
• Cluster studies performed semi-annually
• Costs of transmission upgrades shared among study participants
• Highway/byway cost allocation for upgrade costs up to safe harbor limit
DELIVERY POINT TRANSFER STUDIES

- Analyzes impacts of transferring load from one customer to another
- Performed as requested
- If impacts found, customer required to submit aggregate study request
DELIVERY POINT ADDITION STUDIES

• Analyzes transmission needed to add new load to network or modify load service points
• Performed on a monthly basis, as requested
• SPP determines network upgrades, local TO determine load connection facilities
• Highway/byway cost allocation

Recent load-addition requests have included:
• Data centers
• Oil & gas infrastructure
• Irrigation
WHO PAYS FOR TRANSMISSION PROJECTS?

- **Sponsored**: Project owner builds and receives credit for use of transmission lines.
- **Directly-assigned**: Project owner builds and is responsible for cost recovery and receives credit for use of transmission lines.
- **Highway/Byway**: Most SPP projects paid for under this methodology.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Region Pays</th>
<th>Local Zone Pays</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 kV and above</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>above 100 kV and below</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>300 kV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 kV and below</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>
TRANSMISSION OWNER SELECTION: ORDER 1000

• SPP developed the Transmission Owner Selection Process (TOSP) to allow competitive bidding on certain transmission projects

• Transmission Facilities that meet criteria in the SPP Tariff and are approved for construction (or are endorsed by the SPP board of directors) are known as competitive upgrades

• SPP will solicit proposals for competitive upgrades from qualified RFP participants utilizing the TOSP
STATE REGULATORS’ ROLE

• Regional State Committee — Retail regulatory commissioners from:
  Arkansas   Missouri   Oklahoma
  Iowa       Nebraska   South Dakota
  Kansas     New Mexico Texas
  Louisiana  North Dakota

• Primary responsibility for:
  • Cost allocation for transmission upgrades
  • Approach for regional resource adequacy
  • Allocation of transmission rights in SPP’s markets
THE VALUE OF TRANSMISSION
2015 VALUE OF TRANSMISSION STUDY

• Assessed 348 projects from 2012-14, representing $3.4B of transmission investment

• Based on Integrated Marketplace’s first year of operation (March 2014 – Feb. 2015)

• APC savings > $660k/day ($240M/year)

• Overall NPV of all benefits expected to exceed $16.6B over 40 years.

• BENEFIT-COST RATIO OF 3.5 TO 1
“The SPP Value of Transmission study is a path-breaking effort...”

“... A more accurate estimate of the total benefits that a more robust and flexible transmission infrastructure provides to power markets, market participants and, ultimately, retail electric customers.”

“Estimated present value of the production cost savings in the SPP study likely is understated...”
TRANSMISSION PLANNING MAPS
RENEWABLES IN SPP
OUR EVOLVING ENERGY MIX

Trend By Year

Percentage of Generation

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>Gas</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>63%</td>
<td>24%</td>
<td>6%</td>
</tr>
<tr>
<td>2012</td>
<td>59%</td>
<td>27%</td>
<td>8%</td>
</tr>
<tr>
<td>2013</td>
<td>61%</td>
<td>21%</td>
<td>11%</td>
</tr>
<tr>
<td>2014</td>
<td>60%</td>
<td>19%</td>
<td>12%</td>
</tr>
<tr>
<td>2015</td>
<td>55%</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td>2016</td>
<td>48%</td>
<td>23%</td>
<td>17%</td>
</tr>
<tr>
<td>2017</td>
<td>46%</td>
<td>23%</td>
<td>20%</td>
</tr>
<tr>
<td>2018</td>
<td>42%</td>
<td>23%</td>
<td>26%</td>
</tr>
<tr>
<td>2019</td>
<td>35%</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
YTD GENERATION: 85,550,786 MWH

As of May 4, 2021
RENEWABLE PENETRATION

• Renewable penetration record: 87.5% of load
  • 5:08 a.m. on 5/8/21
  • 19,663 MW of 22,469 MW of load served by renewables
  • 81.8% of total generation at that time was renewables

Penetration of Load by Fuel Type

- Wind (83.9%)
- Coal (10.5%)
- Gas (6.5%)
- Hydro (3.6%)
- Nuclear (2.4%)
- Waste (0.04%)
- Other (0.9%)
CO2 REDUCTION IN SPP’S MARKET
(IN MILLIONS OF METRIC TONS)

228.9 million metric tons of CO2 have been displaced by wind in total since 2014.

Overall CO2 emissions in SPP’s footprint have fallen 29% since the Integrated Marketplace’s launch in 2014.
THE COUNTRY’S HIGHEST WIND SPEEDS ARE IN THE SPP BALANCING AUTHORITY
Wind Energy’s Share of Electricity Generation
WIND IN SPP’S SYSTEM

- 27,452 MW: Wind installed today
  - 13,305 turbines at 233 wind resources in the eastern interconnection (most are 80m hub height)
  - Largest wind resource: 478 MW (Hale Wind Farm in Hale County, TX)
- 11,636 MW: Unbuilt wind w/signed interconnection agreements
- 39,720 MW: Wind in all stages of study and development
- An additional 33GW of forecasted wind installation by the end of 2025
WIND PENETRATION IN THE SPP SYSTEM

• Maximum wind output: 21,133 MW (3/29/21)
• Minimum wind output (last 12 mos.): 252.3 MW (1/9/21 @ 10:06)
• Maximum wind penetration: 84% (5/8/21)
• Average wind penetration (2020): 32.2%
• Max wind swing in one day: > 16 GW on Dec. 11-12, 2019 (17.9 GW to 1.7 GW in 21 hours)
• Max 1-hour ramp: 3,700 MW
INSTALLED WIND CAPACITY BY YEAR
THE DIFFERENCE A DAY MAKES

• On Dec. 11, 2019, 17.9 GW of wind power served 51% of our load. Less than 21 hours later, wind shrunk to 6% of our generation mix, and other sources like coal and gas ramped up to serve load. This illustrates the value of a diverse fuel mix able to accommodate a wide variety of operational circumstances!
WHY FUEL DIVERSITY MATTERS: SPP’S RECORD WIND SWING (16 GW IN 21 HOURS)

Max @ 20:10 on 12/11: 17,861 MW

Min @ 16:58 on 12/12: 1,744 MW
Wind from GI Queue In Service or On Schedule

SPP Southwest Power Pool

This map contains the intellectual property of SPP and may not be used, copied or disseminated by third parties without the express permission of SPP. All rights reserved.
WIND DEVELOPMENT CHALLENGES

- Intermittent
- Must be supplemented with constant generating sources
- Wind in remote areas
- Expensive new transmission needed
- “Not in my backyard” siting issues
- Seams agreements
- Renewable Energy Standards
SOLAR IN THE U.S.
SOLAR IN SPP’S SYSTEM

- Solar in service: 235 MW
- Solar in all stages of study and development: 36,323 MW
Wind & Solar In GIQ

SPP Southwest Power Pool

Legend:
- ≤75
- ≤200
- ≤400
- ≤700
- ≤2500

This map contains the intellectual property of SPP and may not be used, copied or disseminated by third parties without the express permission of SPP. All rights reserved.
DISTRIBUTION OF RENEWABLE GENERATOR INTERCONNECTION REQUESTS
DISTRIBUTION OF NEW RENEWABLE RESOURCES
% OF NEW ELECTRICITY GENERATION IN U.S. RTOS

New generation built in each RTO since 2012 including what will be built through 2022

<table>
<thead>
<tr>
<th>RTO</th>
<th>Renewable Sources</th>
<th>Non-renewable Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPP</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>CAISO</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>ERCOT</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>NYISO</td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td>NE</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>MISO</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>PJM</td>
<td>25%</td>
<td>75%</td>
</tr>
</tbody>
</table>

Source: NRDC analysis of S&P Global Market Intelligence data
TOP 10 CORPORATE BUYERS OF CLEAN ENERGY IN SPP’S MARKET

MW in Power Purchase Agreements

- Google: 1135 MW
- T-Mobile USA: 320 MW
- Facebook: 320 MW
- AT&T: 220 MW
- Royal Caribbean Cruises: 200 MW
- Microsoft: 178 MW
- Anheuser-Busch InBev NV: 153 MW
- Iron Mountain: 145 MW
- Equinix: 125 MW
- Kimberly-Clark: 120 MW

MW in Purchased-Power Agreements
WESTERN ENERGY SERVICES
By Southwest Power Pool

Western Reliability Coordination
Western Energy Imbalance Service Market
WESTERN ENERGY SERVICES

A family of contract-based products offered to new customers in the Western Interconnection

• Unscheduled Flow Mitigation (currently providing)
• Western Reliability Coordination Services (Dec. 1, 2019)
• Western Energy Imbalance Service Market (Feb. 2021)
• Planning coordination (discussing with prospective customers)
• RTO membership not required
MAPS
WEST/EAST DC TIES

1,320 MW transfer capability between Eastern and Western Interconnections
SPP RTO AND WEIS FOOTPRINTS
WESTERN RELIABILITY COORDINATION (RC) SERVICE
WESTERN RELIABILITY COORDINATION SERVICES
SPP-provided RC services launched December 2019

CUSTOMERS
- Arizona Electric Power Cooperative, Inc.
- City of Farmington, NM
- Colorado Springs Utilities
- El Paso Electric Company
- Intermountain Rural Electric Association
- Platte River Power Authority
- Public Service Company of Colorado (Xcel Energy)
- Tri-State Generation and Transmission Association
- Tucson Electric Power
- Western Area Power Administration (WAPA) Desert Southwest Region, WAPA Rocky Mountain Region, and WAPA Upper Great Plains – West
WESTERN RELIABILITY COORDINATION
STAKEHOLDER GROUPS

Western Reliability Executive Committee (WREC)

Western Reliability Working Group (WRWG)

West Modeling Task Force

RC Readiness Task Force

Congestion Management and Seams Task Force
THE WESTERN ENERGY IMBALANCE SERVICE MARKET (WEIS)
WEIS OVERVIEW
WEIS OVERVIEW

• SPP’s contract-based energy imbalance service market will:
  • Balance generation and load regionally and in real time
  • Centrally dispatch energy from participating resources every five minutes
  • Respect existing resource-adequacy and transmission service constructs
  • Enhance reliability and affordability of electricity delivery
  • Provide price transparency of wholesale energy
  • Allow parties to trade bilaterally and hedge against transmission congestion
  • Take advantage of synergies by leveraging existing SPP systems and processes

• Separate and distinct from SPP’s role as a Regional Transmission Organization (RTO) and operating under separately filed WEIS Tariff

• Design leverages best practices from SPP’s administration of an EIS market 2007-2014 and foundational constructs already in place in the west
WHAT DOES WEIS DO?

Provides Asset Owners (AOs) infrastructure to offer resources into marketplace to address Energy Imbalance (EI)
MP OBLIGATIONS

✔ Continue procedures to manage capacity adequacy, reserves, etc.

✔ Subject to EI and registration under WEIS

✔ Submit Resource Plans, Ancillary Service (A/S) plans, and Offer Curves once registered
WHAT IS ENERGY IMBALANCE?

Difference between prearranged schedules of each generator and load location and what actually happens.
ENERGY IMBALANCE (EI) EQUATION

Actual Production or Usage – Scheduled Production or Usage

\[ EI = A - S \]
### KEY WEIS FEATURES: PRODUCTS, PRICING AND DISPATCH

<table>
<thead>
<tr>
<th>DESIGN COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Product</td>
<td>Energy imbalance (five-minute)</td>
</tr>
<tr>
<td>Supply Adequacy</td>
<td>Supply adequacy checked day-ahead and before each operating hour</td>
</tr>
<tr>
<td>Pricing Mechanism</td>
<td>Locational Marginal Prices (LMP)</td>
</tr>
<tr>
<td>Dispatch</td>
<td>SPP sends resources real-time security constrained dispatch signals calculated by its market clearing engine (MCE)</td>
</tr>
<tr>
<td>Unit Commitment</td>
<td>Each entity is responsible for commitment of generation to meet its real-time obligation</td>
</tr>
</tbody>
</table>
**KEY WEIS FEATURES: SETTLEMENTS**

<table>
<thead>
<tr>
<th>DESIGN COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement Responsibilities</td>
<td>SPP provides centralized calculation, collection and distribution of market settlements.</td>
</tr>
<tr>
<td>Settlement Granularity</td>
<td>Five-minute</td>
</tr>
<tr>
<td>Settlement Timeline</td>
<td>Daily settlement statements</td>
</tr>
</tbody>
</table>
# KEY WEIS FEATURES: TRANSMISSION AND PARTICIPATION

## TRANSMISSION

<table>
<thead>
<tr>
<th>DESIGN COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Service</td>
<td>Regional JDTS used as non-firm, “as-available“ service with lowest priority offered at zero cost.</td>
</tr>
</tbody>
</table>

## PARTICIPATION

<table>
<thead>
<tr>
<th>DESIGN COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>Participation open to entities with load or generation in or pseudo-tied into a participating balancing authority.</td>
</tr>
</tbody>
</table>
THE WEIS IS NOT:

- A consolidated balancing authority
- A day-ahead market
- TCRs (congestion hedging)
- Ancillary services (those remain the BA’s responsibility)
- Reliability Coordination (see SPP’s distinct Western RC Service)
- Transmission planning
- Consolidation of transmission tariffs
WEIS ADMINISTRATION

• Operated under a Western Joint Dispatch Agreement (WJDA) defining terms of market administration
  • Separate and distinct from SPP’s role as a Regional Transmission Organization (RTO) and operating under separately filed WEIS Tariff
• Implementation and ongoing costs paid by WEIS participants based on proportional share of Net Energy for Load (NEL)
• Requires four-year initial commitment from WEIS participants with no long-term commitments after its first four years
• WJDA guarantees participants a say in market’s ongoing evolution through representation on the Western Markets Executive Committee
• Market monitoring by SPP’s Market Monitoring Unit
WESTERN MARKETS EXECUTIVE COMMITTEE (WMEC)

- Comprises representatives of each non-affiliated WJDA signatory
- Forum in which SPP and WEIS participants collaborate to finalize market rules
- After go-live, WMEC will have authority to:
  - Approve/reject tariff amendments
  - Establish market protocols
  - Recommend proposed amendments to the WJDA
- SPP board gives significant recognition to WMEC in their ultimate oversight of WEIS
WEIS IMPLEMENTATION
Seven market participants executed contracts for market service:

- Basin Electric (to include WMPA)
- Deseret G&T Cooperative
- Municipal Energy Agency of Nebraska
- Tri-State G&T
- WAPA Colorado River Storage Project (CRSP)
- WAPA Rocky Mountain Region (RMR)
- WAPA Upper Great Plains Region (UGP)

SPP will onboard additional market participants according to normal onboarding timelines (~every six months)
MARKET BENEFITS
YEARNLY BENEFITS OF SPP’S EIS MARKET (2007-2013)

Provided $103M in benefit to members in its first year.
WEIS BENEFITS

ASSET OWNERS (AOs)

- Pool resources
- Gain access to lower/more transparent pricing
WEIS BENEFITS

- Operate closer to economical efficiency
- Can generate less and buy lower-cost energy
- May offer energy into market to gain exposure
WEIS BENEFITS

LOAD-SERVING ENTITIES (LSEs)

More efficient competition among suppliers (resources)

Access to lower spot energy prices
EXAMPLE 2: NO PARTICIPATION

Bilateral Contract: 200 MWh @ $40/MWh

No arrangement
EXAMPLE 2: NO PARTICIPATION

Cost: $25/MWh

Cost: $30/MWh
EXAMPLE 2: NO PARTICIPATION

Load 1:
Contract Purchase Price:
200 MWh x $40/MWh = $8,000

Unit 1:
Contract Sale Price:
200 MWh x $40/MWh = $8,000
Cost to Produce:
200 MWh x $30/MWh = $6,000
Net $2,000
EXAMPLE 3: MARKET PARTICIPATION (NO CONGESTION)

$30/MWh into WEIS

$25/MWh into WEIS
EXAMPLE 3: MARKET PARTICIPATION (NO CONGESTION)

More economical ($25/MWh vs. $30/MWh)

Dispatched to minimum (10 MWh)

Unit 3 is the marginal supplier

$25/MWh LMP
EXAMPLE 3: MARKET PARTICIPATION (NO CONGESTION)

Unit 1:
Contract Sale Price: $8,000
Cost to Produce:
(10 MWh x $30/MWh) = $300
EI (Buy from Market):
(190 MWh x $25/MWh = $4,750
Net
$2,950

$E = A - S$
EXAMPLE 3: MARKET PARTICIPATION (NO CONGESTION)

Unit 3:
- Contract Sale Price: $0
- Cost to Produce: $(190 \text{ MWh} \times \$25/\text{MWh}) = \$4,750$
- EI (Sold to Market): $(190 \text{ MWh} \times \$25/\text{MWh}) = \$4,750$
- Net: $\$0$

EI = A - S

EXAMPLE 3: MARKET PARTICIPATION (NO CONGESTION)

Load 1:
Contract Purchase Price: $8,000
EI: $0
Net $8,000

EI = A - S
SUMMARY

Purchased energy from WEIS in lieu of producing at higher cost (saved $950)

• $2,000 w/no participation vs. $2,950 w/participation

Continues to receive compensation from Load 1 for contract

Allowed to use otherwise unused capacity

<table>
<thead>
<tr>
<th>Load 1:</th>
<th>Contract Purchase Price: $8,000</th>
<th>EI: $0</th>
<th>Net: $8,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1:</td>
<td>Contract Sale Price: $8,000</td>
<td>Cost to Produce: $300</td>
<td>EI (Buy from Market): $4,750</td>
</tr>
<tr>
<td>Unit 3:</td>
<td>Contract Sale Price: $0</td>
<td>Cost to Produce: $4,750</td>
<td>EI (Sold to Market): $4,750</td>
</tr>
</tbody>
</table>
THE SPP DIFFERENCE

WHAT DISTINGUISHES SPP’S WEIS FROM OTHER MARKETS
INDUSTRY-LEADING MARKET DEVELOPMENT AND ADMINISTRATION

• Market design, governance and customer-centric business model all lead to greater reliability and more affordable electricity than other service providers can offer.
CUSTOMER TESTIMONIALS

• “SPP has a proven track record in operating energy imbalance and full day-two markets. SPP’s experience makes them an excellent choice for operating a market. Adding to the advantage of SPP is their independent board of directors, a proven stakeholder process, and a governance structure that specifically includes commissioners from state regulatory commissions.” – Paul Sukut, CEO and General Manager, Basin Electric

• “Through the WEIS, our regional utilities are moving forward together with a cost-effective solution that quickly increases market efficiencies, reduces expenses for our members and electric consumers, and supports Tri-State’s rapid transition to cleaner energy. Our entry into the WEIS advances the goal to provide utilities across the west options to participate in a real-time, beneficial market solution.” – Duane Highley, CEO, Tri-State Generation and Transmission Association

• “With the pace of change in the electric industry increasing, generation options evolving, and pressing needs regarding balancing area operations, we have a need to look at different market structures for WAPA’s diverse customers and needs” - Mark Gabriel, Administrator and CEO, Western Area Power Administration
A CUSTOMER-CENTERED BUSINESS MODEL

• SPP is a customer-driven organization.

• Only market administrator to delegate real decision-making authority to market

• Over decades of operating a multi-state system, SPP has earned a reputation as a peerless facilitator of win-win solutions that are inclusive of the diverse interests of numerous states and customer types.

• SPP designs, builds and operates its markets for the good of participants, not to benefit itself or other customer sectors or stakeholders.
CONSISTENCY AND TRANSPARENCY IN THE MARKET

• Other markets are fragmented with different rules, processes and procedures applied inconsistently across numerous regions. SPP offers a single set of market rules, a consistent customer interface, and unified market administration.

• Unparalleled price transparency: participants can trust they’ll have the information they need to make sound business decisions.

• Centralized settlement process: participants deal directly with SPP rather than multiple balancing authorities.

• Other providers report gross benefits and hide costs. SPP is confident enough in the integrity of our tools and processes that we let the numbers speak for themselves.
CONTACT SLIDE

Communications

Please feel free to contact us at communication@spp.org if you need help with the PPT, need modifications or would like to add a slide to the template.