Economies of Scale: 
THE BENEFITS OF SPP’S MARKETS, TODAY AND IN THE FUTURE

Since SPP was formed in 1941 when eleven utilities pooled their power to operate a defense plant, our goal has been to provide regional benefits to owners, users, and operators of the bulk power grid. Over the years we have systematically added new services that provide economies of scale, facilitating effectiveness and efficiencies difficult for individual members to achieve on their own or through bilateral transactions:

• When we implemented reliability coordination in 1997, SPP began acting as an “air traffic controller” for the footprint. Using data from our members and neighboring utilities, we maintain a real-time model of the regional electric grid, including information such as lines and generators in service. SPP’s region-wide, “bird’s eye” view of the grid, unavailable to individual utilities, benefits members by ensuring the grid is always able to withstand the next emergency that might occur.

• In 1998 we implemented a transmission market that provides a “one-stop-shop” to help members move power across the regional grid.

• The first energy market SPP implemented in 2007 offers members a central, regional clearinghouse where they can buy and sell power and take advantage of least-cost energy. The first year of market operations provided participants $103 million in benefits.

Implementing the Integrated Marketplace is the next major step in SPP’s strategic plan to provide additional regional benefits. These markets will allow SPP’s customers to take better advantage of our region’s diverse generating resources, including coal, natural gas, hydro, wind, and nuclear. The Day Ahead market will determine which generating resources should be used based on region-wide prices and demand, reducing overall costs for the footprint. In the Operating Reserve market, SPP will balance supply and demand for the market footprint, reducing individual participants’ balancing duties and the amount of reserve energy each has to carry. This market will also facilitate the reliable integration of our region’s vast renewable resources.

Future market development is monitored by SPP’s Regional State Committee, which is comprised of state regulatory commissioners. The committee facilitates rigorous cost-benefit studies before SPP begins new market development. A 2009 study estimated that implementing new markets would generate an additional $100 million in net savings per year for the SPP footprint.

RELIABILITY and ECONOMICS INSEPARABLE

SPP believes that reliability and economics are inseparable; we cannot discuss one without the other. As a single organization addressing both issues, SPP provides cost-effective choices and organizational efficiency to our members and our region.

SPP’s new energy markets will enhance reliability of the electric grid in addition to providing regional economic opportunities.
Where We Are Today:
TRANSMISSION AND ENERGY MARKETS

TRANSMISSION MARKET

SPP’s transmission market is a “one-stop-shop” for use of the regional transmission grid. When a utility reserves transmission service through the SPP market, it is similar to buying an airline ticket. When you buy a ticket, you reserve your seat on the plane. When a utility reserves transmission service, it is reserving its right to move electricity on the transmission grid.

Transmission lines are owned by different companies that “rent” the use of their lines. Sending power from a generator to customers may require the use of lines owned by multiple parties that each impose a fee. SPP simplifies the transmission service process by handling each request from beginning to end under a single set of rules and rates. Customers make just one transmission service reservation rather than contacting multiple parties to request service under differing rules and rates. All participants benefit from the increased activity the transmission market creates.

SPP collects and returns revenues for these transactions to transmission owners. As a not-for-profit organization SPP does not retain proceeds, though there is a “sales fee” per megawatt hour. Under oversight of the Federal Energy Regulatory Commission, SPP independently administers an Open Access Transmission Tariff that provides the market’s common set of rates, terms, and conditions and ensures all users have non-discriminatory and fair access to the grid. SPP’s primary goal is to maintain system reliability while managing transmission grid operations.

TODAY’S ENERGY MARKET

In the Energy Imbalance Service (EIS) market, participants buy and sell wholesale electricity in real-time. If a utility requires more energy than it scheduled, the market provides the utility another option to buy the “extra” energy at real-time prices to make up the difference and meet its demand. Without this centralized market, the utility would have to self-supply the generation, or contact other providers, determine the best price, then arrange a purchase. It is much more convenient and cost-effective to have all offers and prices available and administered in one region-wide marketplace.

Participants can use the EIS market to get the least expensive available energy from other utilities. Sometimes a market participant can save money by purchasing power from another provider to supplement or replace its own generation. If a utility offers inexpensive power, SPP can direct that generator to ramp up and supply more energy for the benefit of market participants.

SPP facilitates the market, ensures that the least expensive energy is used to meet demand, and monitors the balance of supply and demand to ensure the transmission system remains stable and reliable. A 2005 analysis of the EIS market estimated benefits of $86 million for the EIS market’s first year; the actual benefit was $103 million.

A utility has three ways to serve its customers: generate its own power, buy power from another provider, or buy from the SPP market. The EIS market allows participants to compare real-time prices from many sources to make the most cost-effective decisions. Sometimes a participant can buy power for less than it would cost to generate its own energy.
Where We’re Going:
INTEGRATED MARKETPLACE

**DAY AHEAD MARKET**

The new Day Ahead market will optimize generation choices for the entire SPP footprint. The market will determine which generating units should run the next day for maximum cost-effectiveness, based on resources available for the region. Regional commitment of generation (rather than individual utilities committing their own generation) will reduce overall costs for the footprint and will be responsible for most of the additional $100 million in benefits projected by the cost-benefit study.

Currently, each market participant decides which generation it will run the next day to meet its own needs, based on knowledge of its own system. Generation choices are limited, and market participants may incur costs that could be avoided. For instance, if a high-cost generator is turned on but kept at a minimum, this costs the utility money.

In the Day Ahead market, participants will make bids and offers for the next day’s demand (load) and generating resources (supply). Market participants can offer electricity for sale and bid to buy electricity. The market puts bids and offers together so participants will know how much energy will be supplied the next day and how much it will cost.

Congestion on the transmission grid can impact market decisions and prices. Congestion occurs when the desired amount of electricity is unable to flow due to limitations on the physical transmission system, such as generator outages or storm damage. Congestion impairs the ability to use least-cost electricity to meet demand.

For generation owners to allow their resources to be optimized for the region rather than their own needs, they need assurance they will be protected from the cost impacts of market decisions. Protection against congestion costs is needed to provide that assurance. SPP’s market will include a financial instrument that functions as an “insurance policy” and reimburses market participants if they incur congestion costs. The congestion “credit” or “charge” will be based on price differences between locations on the grid. As energy prices diverge because of congestion, the financial instrument provides offsetting value to the instrument’s holder.

The centralized market could provide access to a more diverse fuel mix than might be available to an individual utility.
OPERATING RESERVE MARKET

The Operating Reserve market will provide participants with greater access to reserve electricity, improve regional balancing of supply and demand, and facilitate the integration of renewable resources. In the Operating Reserve market, participants can buy and sell reserve electricity that is used to meet emergency needs and regulate load changes. The kinds of reserve energy available in the market will be:

Supplemental Reserve: Generation that is offline but ready to be generating within 10 minutes.

Spinning Reserve: Extra generating capacity available for nearly immediate use by increasing the power output of generators already connected to the electric grid.

Regulation Reserve: Generation required to maintain the quality of electricity, such as maintaining the balance between demand and generation.

In addition to providing system stability, greater access to reserve energy helps facilitate the integration of large amounts of renewable energy into the electric grid. Renewable generation sources such as wind and solar are highly variable; grid operators cannot predict exactly when the wind will blow or the sun will shine. If renewable generation suddenly increases or decreases, other sources of generation must quickly ramp up or back down to keep an uninterrupted power flow. The Operating Reserve market will support participants’ ability to quickly meet changing generation needs.

The market will improve balancing of generation and load across the region. Because electricity cannot be stored efficiently, maintaining balance between supply and demand must be accomplished by physically adjusting generators up or down (or by managing the demand side of the equation; demand response is a new frontier in the industry).

For an Operating Reserve market to work, it is necessary for all participants to be part of the same Balancing Authority (BA). BAs ensure that at every moment in time, and in plans for future times, there is sufficient generation to reliably supply electricity. SPP’s BAs include investor-owned utilities, public power, municipalities, and electric cooperatives.

SPP is combining these BAs into one entity; SPP will serve as the Consolidated Balancing Authority (CBA) for the entire market footprint. As the CBA, SPP will balance supply and demand for the region, maintain frequency, and maintain electricity flows between adjacent BAs. The CBA must meet numerous North American Electric Reliability Corporation (NERC) standards and criteria, and will have an obligation to NERC to meet performance standards.

The CBA will provide economic incentives and structure for the most efficient regional grid operation. With SPP as the CBA, the amount of Regulation Reserves individual market participants are required to carry will be reduced. The consolidated structure will offer market participants more reserve resources from which to draw, allowing the region to meet NERC standards more efficiently. The CBA will facilitate centralized unit commitment, in which the Day Ahead market determines what generation should be utilized for maximum regional benefit.