Agenda

• Integrated Marketplace – Why?
• Integrated Marketplace – What is it?
• Project Milestones
• Member Readiness
Net benefits ~ $100 million/year

• Reduce total energy costs through centralized unit commitment while maintaining reliable operations
• Day-Ahead Market allows additional price assurance capability prior to real-time
• Includes new markets for Operating Reserve to support implementation of Consolidated Balancing Authority (CBA) and facilitate reserve sharing
## EIS vs. Integrated Marketplace Features

<table>
<thead>
<tr>
<th>Capability</th>
<th>EIS</th>
<th>Integrated Marketplace</th>
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<tbody>
<tr>
<td><strong>Transmission</strong></td>
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</tr>
<tr>
<td>• Reservations</td>
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<tr>
<td>• Scheduling (internal/external)</td>
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<td>• Transmission Congestion Rights</td>
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<td><strong>Energy</strong></td>
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<td>• Bilaterals</td>
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<td>• Day-Ahead Market</td>
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<td>• Regulation</td>
<td>Self-Designated Market</td>
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<td>• Reserves</td>
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<td>Self-Commitment</td>
<td>Centralized Commitment</td>
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## SPP design leverages proven features from other RTO markets.

<table>
<thead>
<tr>
<th>Capability</th>
<th>CAISO</th>
<th>ERCOT Nodal</th>
<th>MISO</th>
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Design was selective for regional differences

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SPP Integrated Marketplace Functions

- **ARR/TCR Auction**
  - Performs unit commitment
  - Sets DA prices
  - TCRs cleared

- **Day Ahead Market**

- **Day Ahead Reliability Unit Commitment**

- **Intra-Day RUC Real-Time Balancing Market**

- **Settlement**
  - Makes sure enough capacity committed for next operating time frame
  - Real-Time dispatch much like today’s EIS Market
Day-Ahead Market Scope and Objective

• 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

Day-Ahead Market to achieve cost-effective unit commitment

• “Must offer” for physical Resources proposed in market design

• Includes Offers / Bids for virtual supply and virtual Load

• Import/Export schedules may also be submitted

• Co-optimizes Energy and Operating Reserve and produces Locational Marginal Prices (LMPs) and Market Clearing Prices (MCPs) to meet Energy Bids and Operating Reserve
Day-Ahead Market creates financially binding energy and commitment forecast

- Unit Commitment is performed
- Creates financially-binding day-ahead schedule for Energy and Operating Reserve
- SPP guarantees revenue sufficiency of committed Resource Offers
- Transmission Congestions Rights are settled with these LMPs

Reliability Unit Commitment (RUC) Scope and Objective

- Day-Ahead RUC performed following Day-Ahead Market clearing
- Intra-Day RUC performed throughout Operating Day as needed, at least every four hours
- RUC ensures market physical commitment and produces adequate deliverable capacity to meet SPP Load Forecast and Operating Reserve requirements
RUC is in addition to Day-Ahead Market

- Every available Resource has to offer
- SPP guarantees revenue sufficiency of committed Resource Offers

Understanding RUC
Real-Time Balancing Market similar to today’s EIS - balancing Resources and Load.

- Uses Security Constrained Economic Dispatch (SCED) to ensure results are physically feasible
- 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

Auction Revenue Rights (ARRs) and Transmission Congestion Rights (TCRs)
ARRs and TCRs allow Resource owners to be indifferent to unit commitment impact on congestion

- **Annual ARR Awards**
- **Annual TCR Auction**
- **Monthly TCR Auction**

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**Auction Revenue Right (ARRs) ...**

- Market Participant’s entitlement to a share of revenue generated in TCR auctions
- Allocated to Market Participants based on firm transmission rights (NITS or PTP) on SPP transmission grid
- Can be a credit or charge based on the TCR auction clearing price of the ARR path
Transmission Congestion Rights (TCRs) are...

- Financial Instruments that entitle owner to a stream of revenues or charges
- Based on hourly Day Ahead marginal congestion component differences across the path

ARRs awarded annually – are basis of TCRs

- ARRs allocated annually (in April)
- Market Participants nominate from Firm Transmission Service
  - Network Integrated Transmission Service agreement
  - Point to Point Firm Transmission Service Request
- ARR awarded
  - Monthly
  - Seasonal
  - On Peak
  - Off Peak
How can I obtain TCRs?

- Annual TCR auction
  - Holder converts ARR
  - Purchase transmission capability
- Monthly TCR auction
  - Purchase “left over” transmission capability
- Short-Term TCR request
  - Request with Transmission Service Request
- TCR secondary market

Settlement of ARRs/TCRs

- Net Auction revenues are allocated to holders of ARRs
- TCRs settled using Day-Ahead Market prices
- Auction revenues, congestion revenues, congestion rights revenues are settled concurrently with Operating Day
### Project Milestones

- **MWG Finalize Baseline Protocols**: September 2010
- **MOPC Approval of Baseline Protocols**: October 2010
- **Board Approval of Implementation Budget**: January 2011
- **Market Design**: April 2011
- **Vendor Development (Design & Build)**: January 2013
- **Testing & Market Trials**: January 2014
- **Implementation**: March 2014

**Note:** Milestone dates assume that no new major projects divert SPP resources from the Integrated Marketplace effort.
Member Readiness

Integrated Marketplace Project Roadmap

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- Market Design
- Development
- Test and Market Trials
- Implementation
**Integrated Marketplace Regulatory Considerations**

- **2011**: SPP MMU will conduct market power study
- **Q3 2011 - Q1 2012**: Some TOs will need to file with FERC to get permission to sell into SPP’s new markets at market-based rates
- **Q1 2012**: SPP will update its Tariff and seek FERC approval for Tariff and go-live date
- **Q1 2012 to go-live**: Market Participants will need to file in their retail jurisdictions, usually state commissions, to seek permission to participate in SPP’s new markets

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**New Member Activities: TCR Markets**

- **Staffing to support** mock TCR Markets, starting by 2Q 2012
- **Staffing to support** ARR processes and TCR auctions
  - Monthly/Seasonal ARR process & TCR auction (42 annual model inputs)
  - Monthly TCR auction (2 or 4 monthly model inputs)
- **Staffing to support** Secondary Market
  - Bulletin board system
  - Bilateral trading of existing TCRs
New Member Activities: Operations

- Staffing to support Day Ahead and Real-Time Balancing Market

- Develop Day-Ahead and Real-Time Decisional Data, including:
  - Three-Part Offers (Energy, Start Up, No Load)
  - Operating Reserve Offers (4 products)

- Work with vendors to develop software for internal use
  - Lead time is at least one year prior to delivery to MPs
  - SPP plans to meet with at least OATI, PCI, and ABB in February to review protocols and persuade development to begin

New Member Activities: Settlements

- Receive increased settlement statement detail
  - 47 charge types vs. 7 currently and over 120 billing determinants

- Understand complex calculations involving market-wide totals or rates
  - Make Whole Payments, Marginal Loss Surplus

- Analyze Transmission Congestion Settlements

- Develop new system interactions

- Review processes for credit
  - Impacts of TCRs & ARRs

- Enhance reporting – internally and externally
Summary

- Although Integrated Marketplace implementation is March 2014, Market Participants need to prepare sooner:
  - Analyze internal staffing
  - Develop software products
  - Develop Offers and Bids