



**Helping our members work together
to keep the lights on...
*today & in the future***

SPP Integrated Marketplace
Workshop

October 25, 2010

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**

Integrated Marketplace – What is it?



EIS vs. Integrated Marketplace Features

Capability	EIS	Integrated Marketplace
Transmission		
• Reservations	✓	✓
• Scheduling (internal/external)	All Reservations	Third Party Reservations
• Transmission Congestion Rights		✓
Energy		
• Bilaterals	✓	✓
• Day-Ahead Market		✓
• Real-Time Balancing Market	✓	✓
Operating Reserve		
• Regulation	Self-Designated	Market
• Reserves	Self-Designated	Market
Unit Commitment	Self-Commitment	Centralized Commitment

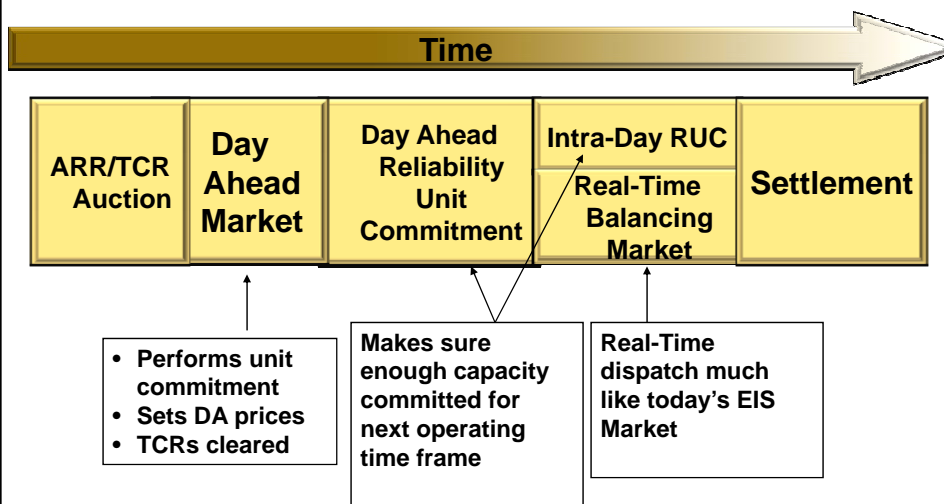
SPP design leverages proven features from other RTO markets.

	CAISO	ERCOT Nodal	MISO	PJM	SPP Marketplace
Day-Ahead Market	✓	✓	✓	✓	✓
Real-Time Market	✓	✓	✓	✓	✓
Marginal Losses	✓	✓	✓	✓	✓
Co-Optimization	✓	✓	✓	✓	✓
Must Offer in Day-Ahead Market	✓		✓	✓	✓
Resource Make-Whole Payment	✓	✓	✓	✓	✓
Transmission Congestion Rights/Auction Revenue Rights (TCR/ARR)	✓	✓	✓	✓	✓
Virtual Energy	Feb 2011	✓	✓	✓	✓

Design was selective for regional differences

	CAISO	ERCOT Nodal	MISO	PJM	SPP Marketplace
Combined-Cycle Special Handling	Partial Implementation	In Process			✓
5-Minute Settlement			✓ (Operating Reserve only)		✓
Zonal Operating Reserve Cost Allocation			✓		✓
Installed Capacity Market		Reliability Must Run		✓	

SPP Integrated Marketplace Functions



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**

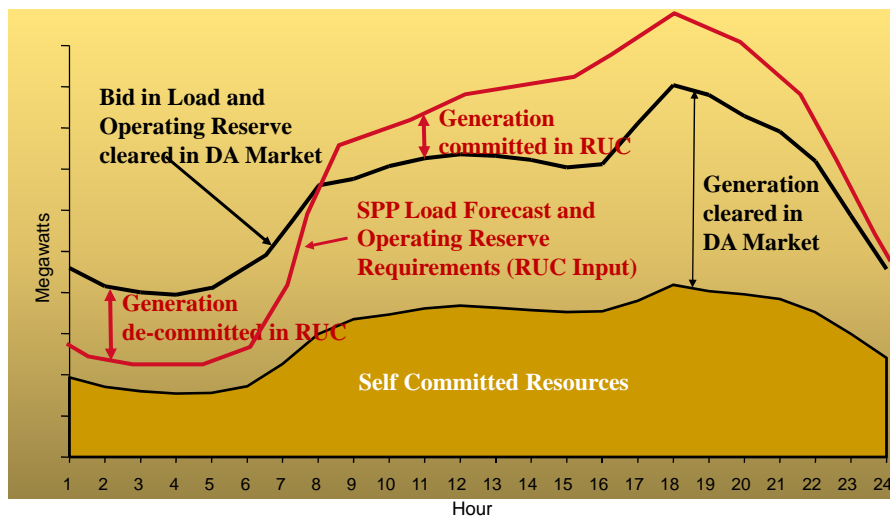
Reliability Unit Commitment (RUC) Scope and Objective

- **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



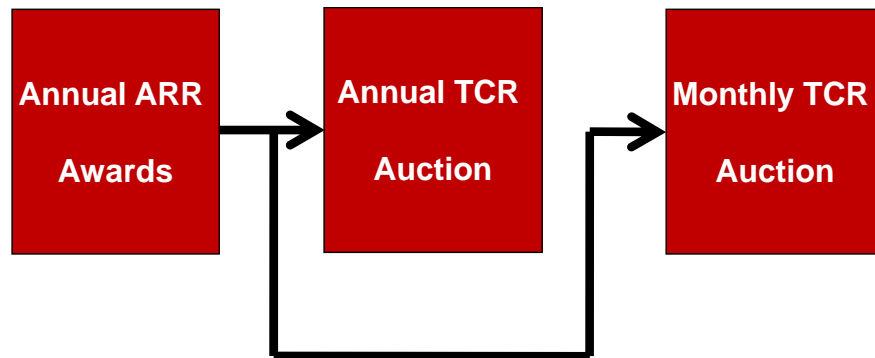
Real-Time Balancing Market similar to today's EIS - balancing Resources and Load.

- **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



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**



-OR-



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
- **ARRs 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

Integrated Marketplace Milestones

Key Milestone	Estimated Completion Date
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

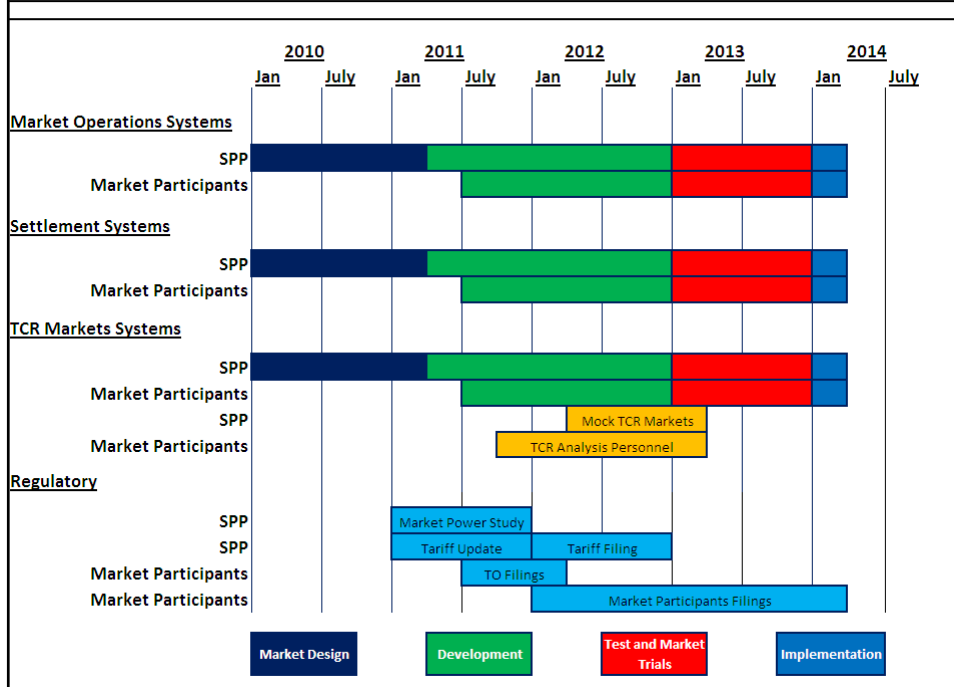
Note: Milestone dates assume that no new major projects divert SPP resources from the Integrated Marketplace effort.



Member Readiness



Integrated Marketplace Project Roadmap



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**

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 & ARR**
- **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



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