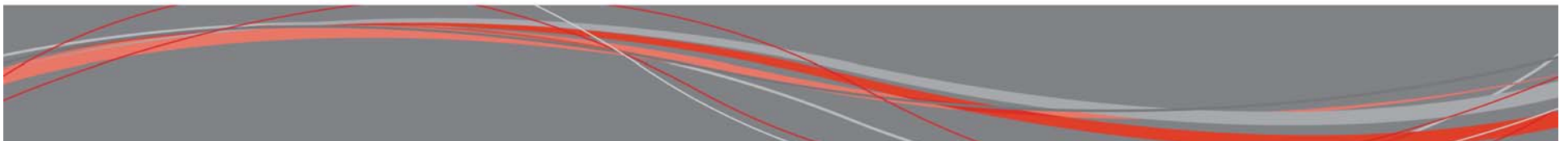




EIM Overview for CCPG December 15, 2011

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Topic Outline

- **Energy Imbalance Market (EIM) Overview**
- **SPP Experience**
- **WECC EIM Design Proposal**
- **Variable Generation Integration**
- **Discussion, Next Steps and Q&A**

EIM Overview

What is an EIM?

The EIM is...

- A Market for Balancing Energy
- Centralized Unit Dispatch for Balancing Energy
- Voluntary

The EIM is NOT...

- An RTO (with planning, day-ahead markets, etc.)
- Centralized Unit Commitment
- Capacity market
- A replacement for current contractual business structure

Features of EIM

- Uses regional security-constrained economic dispatch (SCED)
 - Balancing Area regulating burden drops to 5-minute variability instead of hourly
- Generators are dispatched based on voluntary market-based offers to transact energy
- Operational impact is projected to include increased reliability and reduced operating costs

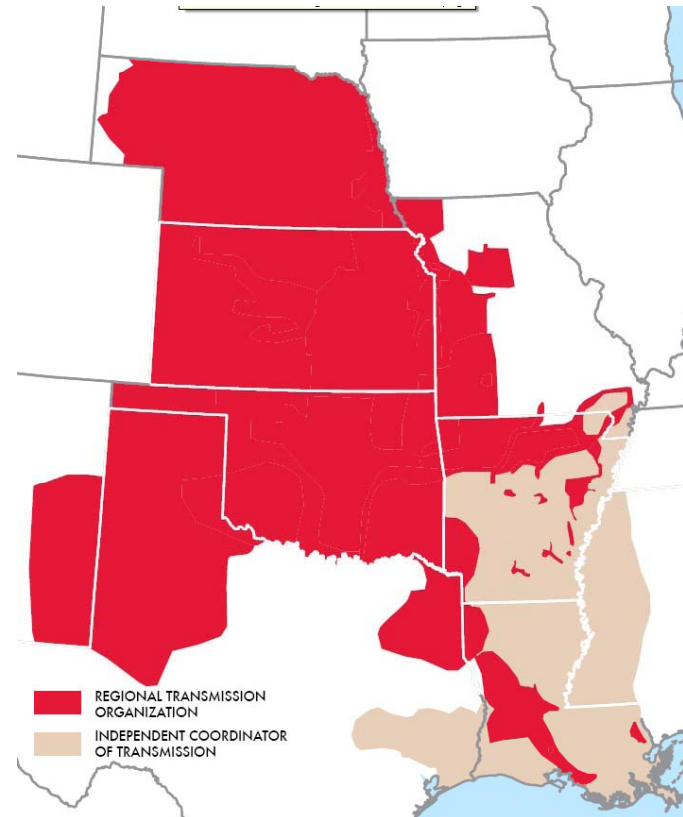
Features of EIM

- **Schedule using physical right**
- **Curtailment calculator tool assigns curtailment obligation based on transmission service priority**
 - **SPP uses NERC IDC/CAT**
 - **WECC proposed Efficient Curtailment Calculator (ECC)**
- **Market Price for imbalance, no penalty**

SPP Experience

SPP Organization

- **Founded in 1941**
- **1991 – Implemented Reserve Sharing**
- **1997 – Reliability Coordination**
- **1998 – Tariff Administration**
- **2001 – Regional Scheduling**
- **2004 – FERC approved RTO**
- **2007 – Launch of EIS Market**
- **2014 – Launch full LMP/ASM**
- **SPP Inc**
 - **RTO and Regional Reliability Organization**
- **SPP 45 GW peak load (Market Footprint)**
- **16 BAs**



SPP EIS Market Launch

- February 1, 2007
- Novel design
- Low Cost
 - Ongoing enhancement/improvements
- SPP EIS Market economic benefits
 - SPP-wide: \$103 million in economic benefits (2007), 20% higher than cost/benefit study predicted

WECC EIM Design Proposal

WECC EIM Design Proposal

- **Adoption of most of the SPP Market design**
- **Congestion Management that incorporates the WECC ECC**
- **Proposal will include some transfer of reliability standards compliance obligations to regional operator**

WECC EIM Design Proposal

- **Regional balancing market operator function but not an RTO nor an all-in regional transmission tariff**
 - **Transmission providers retain their own Tariffs, OASIS and Available Transfer Capability (ATC) calculations**
 - **“Imputed” transmission service charge without reservation, applied after-the-fact**
 - **Provides for transmission service payments for market flows**

Variable Generation Integration

Variable Generation Integration

- **“Traditional” BA operations focus on fixed hourly energy interchange (imports or exports) and all intra-hour balance between generation and load managed with internal resources**
- **This traditional style already poses significant operating challenges to some utilities in the Western Interconnection**
 - **Increasing load-following reserve duty in host balancing areas**

Variable Generation Integration - EIM

- **EIM SCED Solution repositions resources every 5 minutes to obtain the optimal economic and reliable solution**
 - **An added benefit is the solution counteracts volatility in resource output & load forecasting errors**

Next Steps / Discussion / Q & A

Ongoing and Upcoming EIM Activities

- **WECC**

- **Training Workshops**

- **Benefit/Cost Study in June**

- **Organizational and regional risk assessment in September**

- **WECC's role**

- **RC Data to market operator**

Ongoing and Upcoming EIM Activities

- **WestConnect EIM Work Group**
- **Nevada PUC investigation into EIM**
- **Colorado PUC docket opened this week**
- **State PUC consortium being established**

