Item 3: Committee Education on Day-Ahead and Real-Time Market Operation

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Finance & Audit Committee Meeting

ERCOT Public
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Course Overview

Topics in this presentation include:

1. ERCOT Market Relationships
2. ERCOT Market Transactions
3. Managing Congestion Costs
4. Credit Requirements
5. Market Participation
The ERCOT Market Environment
Qualified Scheduling Entities

- Settle financially with ERCOT
- Must meet creditworthiness requirements
CRR Account Holders
- Settle financially with ERCOT
- Must meet creditworthiness requirements
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Market Transactions for Energy and Ancillary Services

- Bilateral Trades
- Day-Ahead Market
- Real-Time Market
Bilateral Trades

Arranged between QSEs

• De-centralized Forward Market
• Products
  – Energy
  – Ancillary Services
• QSEs settle with each other

Both QSEs must report trades to ERCOT to impact ERCOT Wholesale Settlements
The Day-Ahead Market

ERCOT Facilitated Market

• Centralized Forward Market
• Buy and sell Energy
• Sell Ancillary Services to ERCOT
• QSEs settle with ERCOT
Real-Time Market

ERCOT Real-Time Operations

• Manage reliability
  • Match generation with demand
  • Operate transmission system within established limits

• Operate the system at least cost

• QSEs settle with ERCOT
Why Forward Markets?

Real-Time Prices are Volatile!

Houston Load Zone 7/22/2017

Real-Time Prices are Volatile!
Day-Ahead Market

Products bought and sold in the DAM:

- Energy Offers & Bids
- Ancillary Service Offers
- PTP Obligation Bids

Day-Ahead Market

Awards

Prices
ERCOT Wholesale Settlement

ERCOT Settles the Day-Ahead Market

• Buyers
  – Pay Day-Ahead Market price
  – Receive MW credit in Real-Time

• Sellers
  – Are paid Day-Ahead Market price
  – Incur MW obligation in Real-Time
Real-Time Settlements

QSEs Representing Load

- Pay for energy not previously purchased through Trade or DAM
- Settle with Load Serving Entities
Real-Time Settlements

QSEs Representing Resources

• Are paid for all energy not previously sold through Trade or DAM
• Pay for any undeliverable Ancillary Services
• Settle with Resource Entities
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Managing Congestion Costs

- Day-Ahead Market
- Real-Time Market
Settlement Points

All Energy settled at one of three types of Settlement Points:

- Resource Nodes
- Load Zones
- Hubs

Each Settlement Point has its own Settlement Point Price.
Price separation across the grid exposes buyers and sellers of energy to **Congestion Costs**
Hedging Congestion Costs in Day-Ahead Market

Congestion Revenue Revenue Rights (CRRs)

- Financial instruments
- Purchased at Auction Clearing Price
- Settled at Day-Ahead Market Price Spread
Hedging Congestion Costs in Real-Time

Day-Ahead Market Point-to-Point Obligations

- Financial instruments
- Purchased at Day-Ahead Market Price Spread
- Settled at Real-Time Price Spread
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Credit Relationships

Counter Party

Maintains Secured Collateral with ERCOT

Available credit is shared

CRR Account Holder

QSE

Day-Ahead Market Credit Limit
Credit Exposure comes with Market Activities
Counter-Party posts Secured Collateral to make credit available to its QSEs and CRR Account Holders.
Available Credit

Available Credit

Secured Collateral

Unsecured Credit

Available Credit

CRR Credit Exposure

Other Credit Exposure

Credit Exposure from owning CRRs satisfied only by Secured Collateral

All other Credit Exposure satisfied by Secured and Unsecured Credit
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