Energy Markets 201

DOE – Western Tribal Clean Energy Webinar Series
February 24, 2016
Agenda

• The Electric Grid
• Wholesale vs Retail
• How is the West structured?
• Organized Market vs Bi-Lateral Market
The Electric Grid

**Generation**
2,000–24,000 Volts

**Transmission**
69,000–765,000 Volts

**Distribution**
23,000 Volts

**Load**
4.16 kV – 34.5 kV

Residential
Commercial
Industrial
The Electric Grid – 2 Views

• Reliability View (Grid Operators)
  Balance Supply (Generation) & Demand (Load)
  Mandatory compliance standards

• Merchant View (Providers/Consumers)
  Sellers want to sell higher than their production costs
  Buyers want to buy lower than their own production costs
Balancing Areas in the West
What is a Market?

- Any time buyers & sellers get together to exchange goods or services
- Multiple energy Market time horizons (Real time - Hourly, Day Ahead, & Forward)
Potential Suppliers (Sellers)

- Utilities
- Municipalities
- Government Agencies
- Independent Power Producers (IPP)

Potential Consumers (Buyers)

- Anyone who has an obligation to serve load or to deliver energy (Utilities, Municipalities, etc.)
Deal Components

- Price ($/MWh)
- Product (Firm, Non Firm, Contingent, etc.)
- Volume (MWs/hr)
- Term (hourly, daily, monthly, quarterly, etc.)
- Trading hub (Mead230, Palo Verde, etc.)
How are prices set?

• Market prices are determined by what people are willing to pay?
• Many drivers (supply, demand, weather, fuel costs, RPS requirements, etc.)
• Vary each hour of the day as well as seasonally
• Risk plays a big role
• The longer the horizon, the more difficult to forecast
The lifecycle of an energy deal

- Buyer/Seller communicate their intent to Buy/Sell (phone, IM, electronic platform, Broker, RFP, etc.)
- Negotiate terms (product, price, volume, hub, etc.)
- Deals are confirmed
- Energy scheduled
- Energy flows
- Settled ATF
Wholesale vs Retail

Wholesale

- Generation
  - 2,000–24,000 Volts

Transmission
- 69,000–765,000 Volts

Distribution
- 23,000 Volts

Retail

- Load
  - 4.16 kv – 34.5 kv

Residential

Commercial

Industrial
Organized & Bi-Lateral Markets

• Independent Buyers & Sellers of energy products get together and transact one with another. Price and terms are agreed to by the two parties.

• An organized market is the mechanism through which energy products are bought & sold. The CAISO runs a full market (energy, capacity, ancillary services) and a Energy Imbalance Market.
Questions??

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