Understanding the Full-Requirements Supply Product

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Objectives of Presentation

- To provide understanding (not valuation approaches) of the components of the full-requirements product
- To provide background for the auction presentations
Full-Requirements Isn’t New

- Utilities have been pricing the full-requirements product for decades through the retail rates
- While the products are nearly identical, the context has changed
  - Market basis brings ability to use risk management tools
Customer Gets Same Product

- Full-requirements supply contract requires supplier to assume risks inherent in utility’s obligation – i.e., the physical product has to be identical to what the customer receives from the utility.
Assembling a Supply Portfolio

• Auctions draw a variety of market intermediaries: generators, marketers, financial entities. An auction participant can:
  • Purchase load-following energy from generator or marketer, who will then manage associated risks, OR
  • Build up portfolio on its own (combination of physical and financial products) and self-manage associated risks

• Full Requirements Product (FRP) is “vertical” share of total mass market load – fixed % of total electric demand for those rate classes
Cost Components of the Product

• Underlying energy, congestion, transmission losses, capacity (including required reserve), ancillary services, network service, customer migration, renewable energy
  – Energy adjusted for expected and unexpected customer usage
Other Costs Are Function of Auction Design

- Appropriate auction design and regulatory oversight would avoid inclusion of other costs components in clearing price, for example regulatory risk
Underlying Energy

• FRP pricing begins with forward prices for baseload energy (100% load factor) a/k/a underlying
  – Quotes available in visible over the counter (OTC) market
  – Forward price is expected future spot price
  – Visible market means bids/offers that are active or just traded in the market
    • Confidence in bids/offers directly proportional to depth and volume of transacted products
  – Energy transacts in time buckets: 5 x 16, 2 x 16, 7 x 8
Adjustments to 100% Load Factor Products

- Customer usage reflects expected deviations from constant delivery (i.e., same quantity in each hour)
- Customer usage also reflects unexpected deviations (weather, customer behavior, etc.)
Congestion, or Basis

• Most forward products transact at a trading hub – e.g., Western Hub, NiHUB
  – Scheduling the energy for load may entail congestion risk:
    • The difference between the value of energy at the hub and the value at the load zone

• Also need to consider transmission losses from the hub to the load
Reconciliation Risk

- Difference between scheduled energy and metered energy
- Difference typically smoothed over all hours of month
Load Curves

• Historical hourly load and price used as starting point to quantify risks

• Actual load and price shows:
  – Volumes by time bucket
  – Load factors by period or time bucket
  – Usage and price under different conditions
  – Price-load correlations
Capacity

- Cost of planning reserves (including required reserve) based on customers’ expected peak demand
- Direct approach to reliability planning
Customer Migration

• Movement of customers to and from standard offer load at their discretion, pursuant to utility switching rules
  – Standard offer rate caps customer risk
• Supplier risk: getting long in low-value market, or short in a high-value market
Customer Migration Illustration

Customers leave utility service. Supplier must now sell energy bought at higher average price into lower price market.

Customers return to utility service. Supplier must either have bought additional supply when prices were lower, or must now go out and buy high, sell low.

Market prices

Utility service rate

Price

Time (years)
Ancillary Services

• Transmission-related expenses
  – Regulation, spinning reserve, other services necessary to support transmission of capacity and energy from resources to loads
  – Charged to network service customers
Network Service

• Reservation of firm transmission over high-voltage system to network loads, based on customer contribution to transmission system peak
Renewable Energy Credits

- Financial assurances that purchases being made from generators that use renewable fuels
Regulatory Risk

- If participants believe significant chance results could be rejected, or that supply contract could be terminated by regulator during supply period, risk will be priced into the deal

- Mitigation:
  - Regulatory approval of process up front critical to allow efficient, prompt approval of results
  - Scope of approval focused on appropriate factors (was auction conducted according to established rules?)
  - Assurance that supply contract will be honored throughout delivery term