Repairing MISO’s Capacity Market: Reliability-Based Demand Curve

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MISO IMM

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Introduction

• Ensuring that adequate resources are available to serve load is a vital objective of most RTOs.

• Capacity markets *supplement* energy and AS markets to satisfy this objective, but do not replace them.

✓ Energy and AS markets (particularly shortage pricing) will continue to play a central role in:
  – Maintaining resource adequacy;
  – Incenting suppliers to build and maintain resources with needed attributes; and
  – Motivating good resource performance.

• This presentation will discuss issues related to reforming the capacity market so it can efficiently serve its purpose.
Perhaps the most important capacity market design element is the representation of demand.

✓ MISO’s representation of demand causes understated capacity prices, which has led to many uneconomic retirements.

• Key Economic Concept: the demand for any good is determined by the value the buyers derive.

✓ The value of capacity is derived from the reliability it provides.

• The current vertical demand curve violates this principle

✓ In reality, each MW of capacity above the minimum requirement increases reliability and lowers real-time energy prices.

✓ These effects diminish as the surplus increases, which is consistent with the shape of a downward sloping demand curve.
The following figures illustrate the importance of the demand curve used in the capacity market based on the 2021/2022 PRA.

**Vertical demand curves** generally cause the market to clear near zero in most years or at CONE when the market is in shortage.

✓ This provides extremely poor long-term investment/retirement incentives.

**Sloped demand curves** produce prices between zero and CONE at a price reflecting the marginal value capacity.

✓ The slope of the curve should reflect incremental change in the LOLE as the capacity level changes – will produce a convex curve (not linear)

The figure shows that sloped and vertical demand curves produce very different prices with the same set of supply offers:

✓ **Actual prices:** from $0.01 (South) to $5/MW-day (Midwest).
✓ **Efficient prices:** from $28 (South) to $173/MW-day (Midwest).
Effects of the Sloped Demand Curve on the 2021/2022 PRA Results

- Vertical Demand Curve
- Unconstrained Supply Curve
Effects of the Sloped Demand Curve on the 2021/2022 PRA Results
Benefits of a Reliability-Based Curve

Setting capacity prices under a reliability-based curve will...

1) Facilitate efficient long-term decisions that satisfies MISO’s reliability needs and reducing consumer costs.

2) Deliver substantial benefits for regulated utilities.
   - Raise revenues for most utilities
   - Reduce financial risk and volatility associated with over-building and underbuilding of capacity.

3) Improve incentives for non-regulated entities:
   - Removing the implicit subsidy to competitive loads and munis/coops that are short of supply.
   - Improving the wholesale market revenues for unregulated suppliers to facilitate more efficient investment and retirement decisions.
Questions about the Reliability-Based Demand Curve

• **Does it raise costs for regulated utilities?**
  ✓ No, it lowers the net costs for most regulated utilities.
  ✓ Regulated utilities carry most of the surplus capacity in MISO and this will allow them to sell it at an efficient price.
  ✓ Today, the carrying costs of utilities’ surplus is borne by its retail customers – effectively subsidizing the entities that are short.

• **Does it increase planning risk for regulated utilities that will not know their precise requirement?**
  ✓ No, it reduces their risk – the requirement moves substantially each year with changes in the load forecast and required margin.
  ✓ When utilities over-shoot they are forced to carry the entire cost of the surplus and sell it in the PRA at close to zero.
  ✓ Efficient capacity pricing mitigates the risk of being slight short or slightly long on capacity.
Questions?