



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

Presented to:

MISO Resource Adequacy Subcommittee

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.



Correcting the Demand in the Capacity Market

- 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.

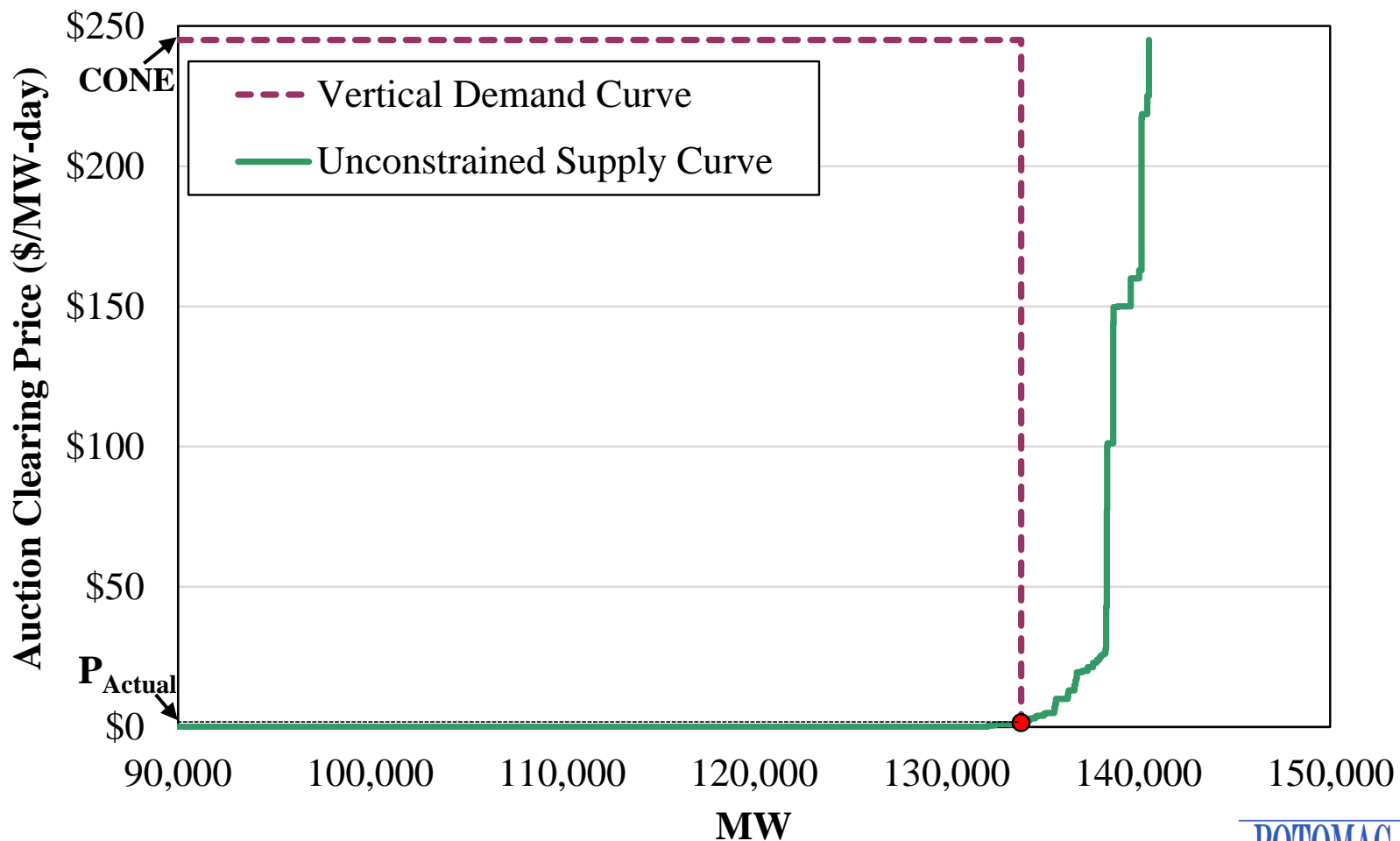


Illustrating the Effects of the Capacity Demand Curve

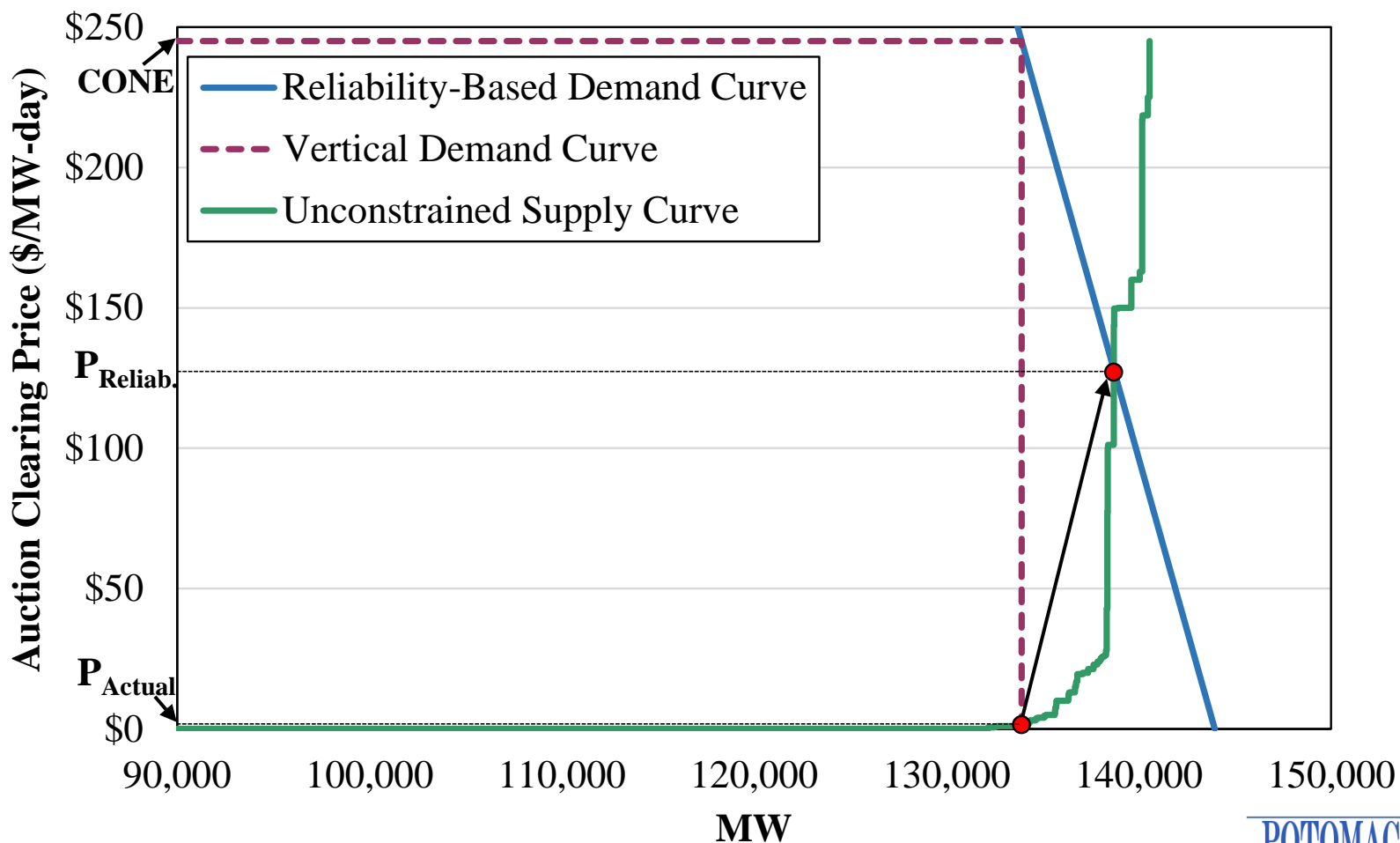
- The following figures illustrate the importance of the demand curve used in the capacity market based on the 2021/2022 PRA.
- Vertical demand curves generally cause the market to clear near zero in most years or at CONE when the market is in shortage.
 - ✓ This provides extremely poor long-term investment/retirement 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



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?