



# A Brief Review of MISO's Reliability Based Demand Curve (RBDC) Implementation

Andrew Taylor

September 18, 2025

# Purpose & Agenda



## Purpose:

Provide Technical Conference with an educational refresher and discuss questions on RBDC.

## Agenda Topics:

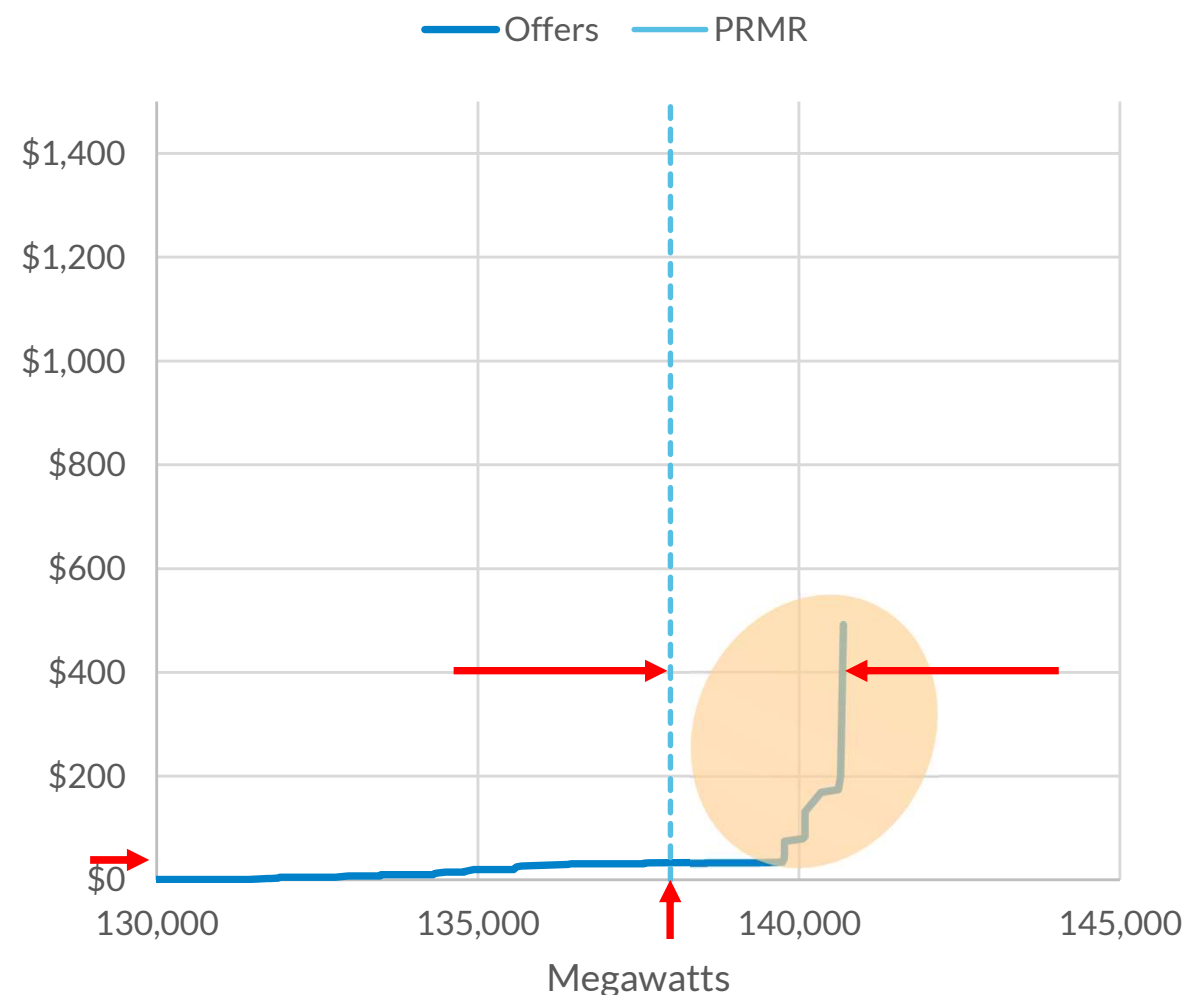
- Review of MISO's Capacity Market
- Summary of RBDC Filing / Order
- Mechanics of RBDC
- Review of RBDC Outcome(s) for 2025-26 Planning Resource Auction (PRA)

# Review of MISO's Capacity Market

- MISO's capacity market was established in the 2009/2010 Planning Year (PY)
  - Initially called the Voluntary Capacity Auction (VCA), it is now known as the Planning Resource Auction (PRA)
  - As the reliability coordinator, MISO sets requirements (Planning Resource Margin Requirement "PRMR"), accredits capacity resources (Seasonal Accredited Capacity "SAC") and facilitates the PRA
- This "auction" construct was established and though there have been reforms, the auction has been carried out largely unchanged for the last ~15 years
- The PRA is held on a "prompt" year basis – meaning just prior to start of the next PY
- "Single, Sealed-Ballot" style auction; more an optimization of all available resources by price
- Envisioned as a residual market; where primary planning role and capacity procurement is carried out by member states (IRPs, etc.).
  - MISO and the PRA do not procure capacity, MISO facilitates the market and ultimately operates a "0 sum" capacity market

# Review of MISO's Capacity Market

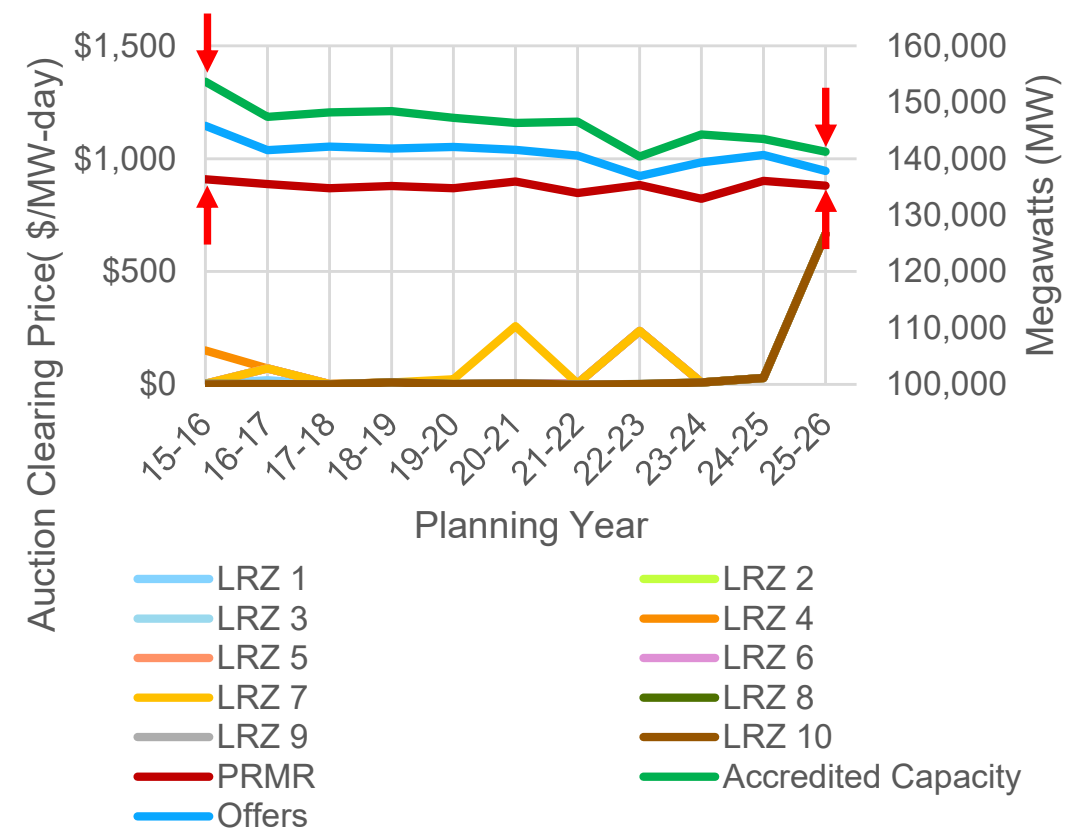
- PRA itself may appear complicated, due to all the factors involved.
- At a high level, it is a relatively simple optimization.
- Prior to RBDC, requirements for load and reserve margin were set (PRMR) and held fixed.
  - NOTE: This essentially sets a vertical, perfectly inelastic demand curve.
- Resource owners place offers for accredited capacity.
- These offers are essentially sorted from lowest to highest price to set the supply curve.
  - NOTE: No value for capacity beyond this requirement



# Review of MISO's Capacity Market

- Resulted in much of the following:
  - Significant, ample supply beyond the requirement existed.
  - Most LSEs offered in at a near \$0 price (residual market).
  - Lead to many years of low capacity prices.
  - What incremental capacity was offered would not clear.
- Over time, incremental capacity left the market
  - This lead to time period where prices remained very low despite shrinking margins.
- Capacity began to shrink to point the where the requirement could no longer be satisfied.
  - Volatile capacity price outcomes (high / low)
  - Example 22-23 PRA (\$236), 23-24 PRA (\$10)

MISO Historic Planning Resource Auction Outcomes



# Summary of RBDC Filing / Order

- MISO Filed with FERC for RBDC in 2023.
- Proposed a change from vertical curve to a downward sloping (left-to-right) demand curve.
- Intended to address many of these issues, including price volatility and value for incremental capacity. (see: *reliability*)
- Intended to improve price signals of the PRA and the market as a whole; better informing decisions on both new investment and potential retirement.
- Ultimately approved by FERC for implementation in the 2025-26 Planning Year.

187 FERC ¶ 61,202  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Willie L. Phillips, Chairman;  
Allison Clements and Mark C. Christie.

Midcontinent Independent System Operator, Inc.      Docket Nos. ER23-2977-000  
ER23-2977-001  
ER23-2977-002

## ORDER ACCEPTING TARIFF REVISIONS

(Issued June 27, 2024)

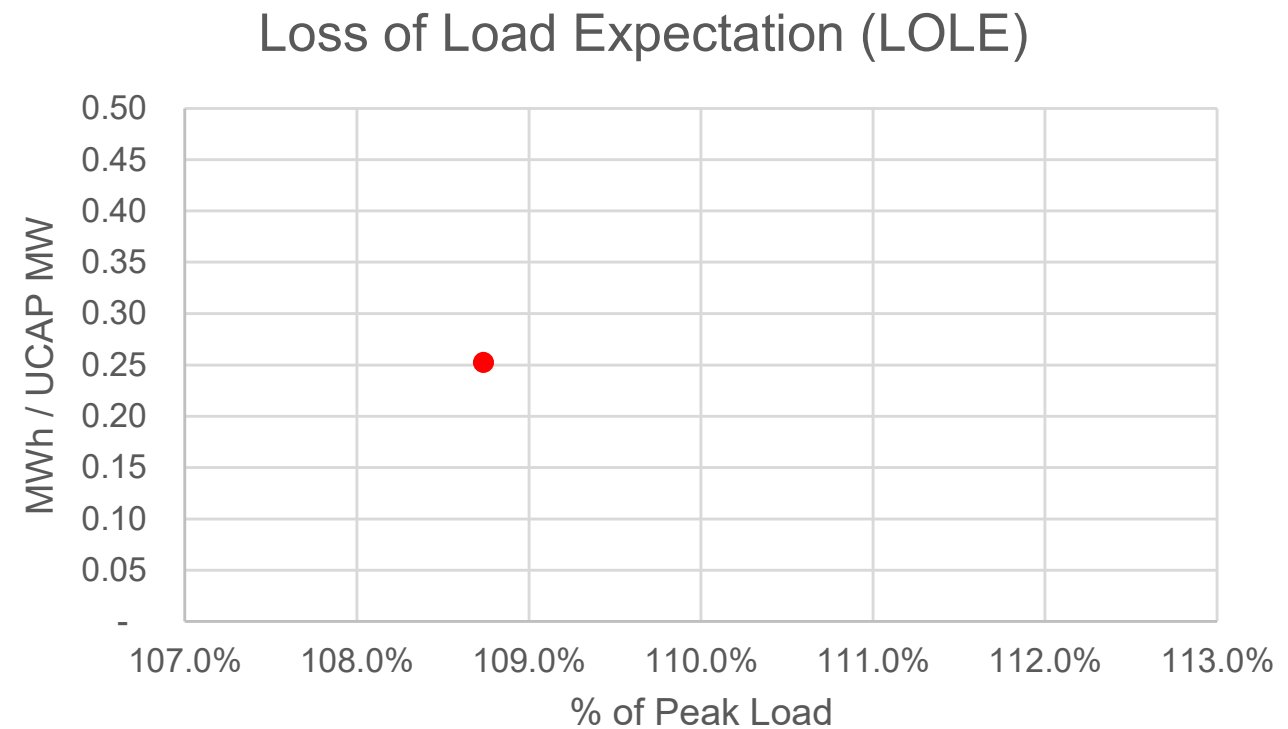
1. On September 29, 2023, as amended on December 21, 2023 and May 13, 2024, pursuant to section 205 of the Federal Power Act (FPA),<sup>1</sup> Midcontinent Independent System Operator, Inc. (MISO) submitted proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets Tariff (Tariff) to implement a downward-sloping Reliability Based Demand Curve (RBDC) in the MISO Planning Resource Auction (Auction) beginning with the 2025/2026 Planning Year. As discussed below, we accept MISO's proposed Tariff revisions, effective June 3, 2024, as requested.

### I. Background

2. MISO has used a vertical demand curve to represent the market's demand for capacity since the Auction's inception in the 2009/2010 Planning Year.<sup>2</sup> When MISO originally proposed the Auction, MISO and others argued that a fixed reliability target in the form of a vertical demand curve would provide a clear target compared to the variable requirement found in a downward-sloping demand curve. Supporters argued that, given that resource adequacy in MISO rested primarily on load serving entities (LSE) that are overseen by Relevant Electric Retail Regulatory Authorities (RERRA),<sup>3</sup> a defined

# Mechanics of RBDC

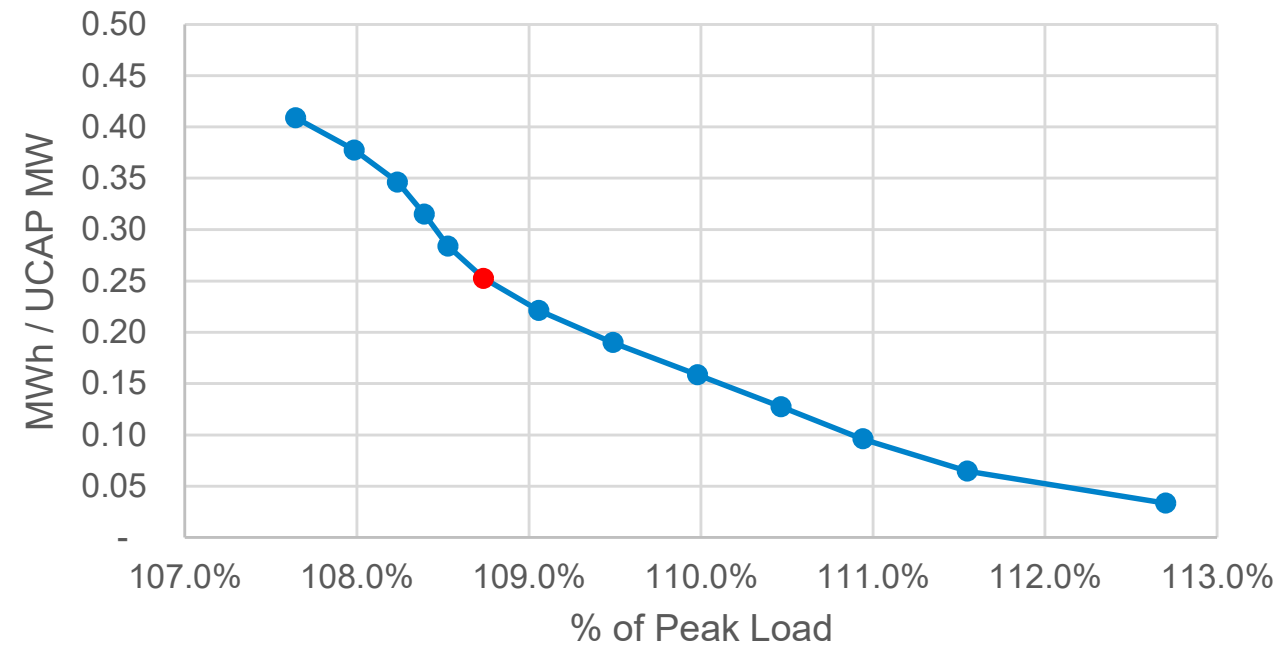
- Begins with Loss of Load Expectation (LOLE)
- This is a probabilistic study which “begins” the planning process leading up to the PRA each year.
- The LOLE study process will determine the amount of additional capacity needed (relative to peak load) to serve the system with the expectation of only 1 loss event in 10 years, or the “1 in 10” standard.



# Mechanics of RBDC

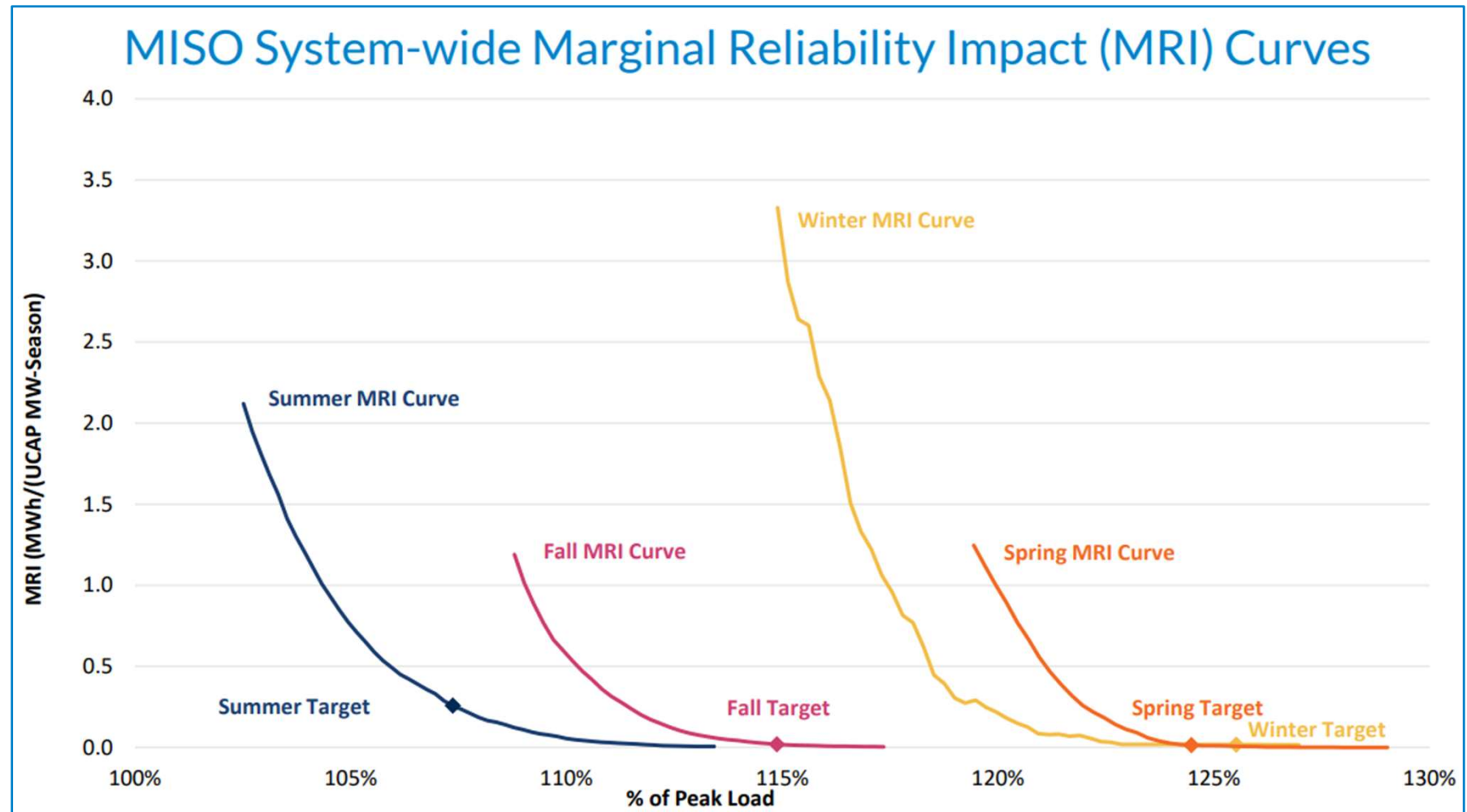
- MISO then modifies this outcome, by adding and removing chunks of capacity from this model.
- More capacity leads to increased reliability
  - Points down and to the right
- Less capacity leads to decreased reliability
  - Points up and to the left
- These relations are called Marginal Reliability Impact or “MRI” curves

Marginal Reliability Impact (MRI) Curve



# Mechanics of RBDC

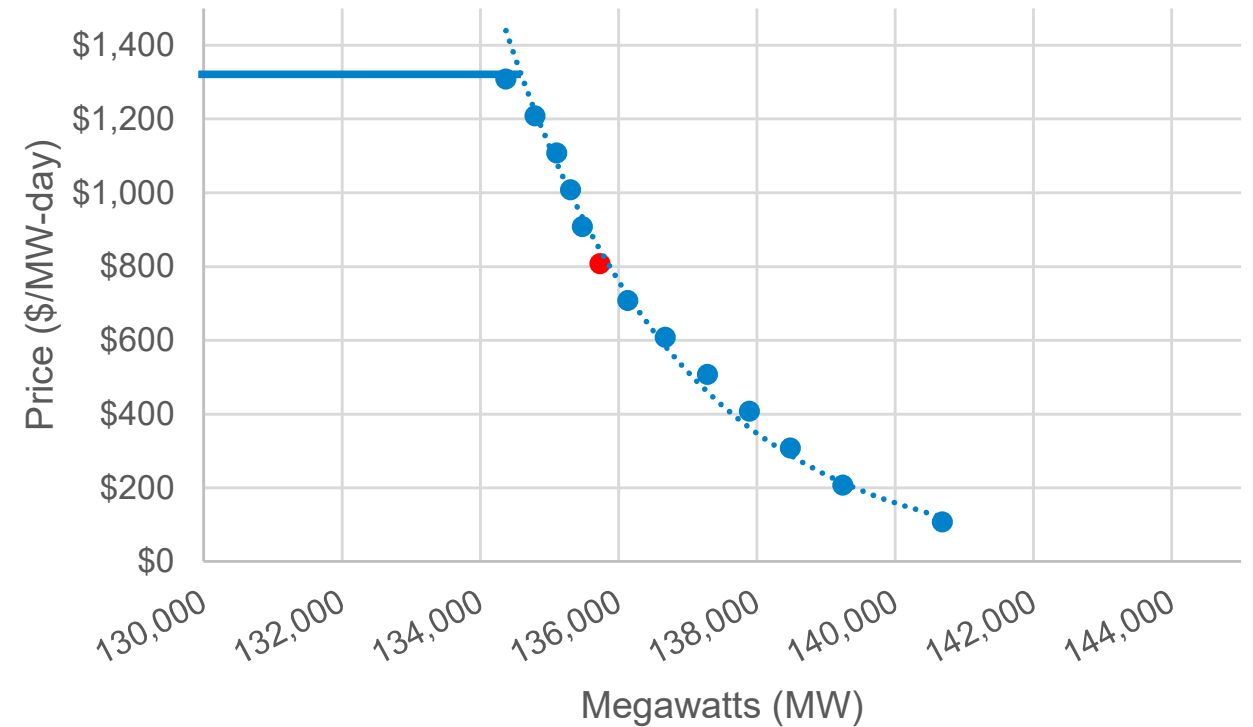
- Example of actual MRIs developed during RBDC implementation.
- Note curves are not perfectly smooth.
- RBDCs are ultimately further smoothed in the process prior to PRA clearing.



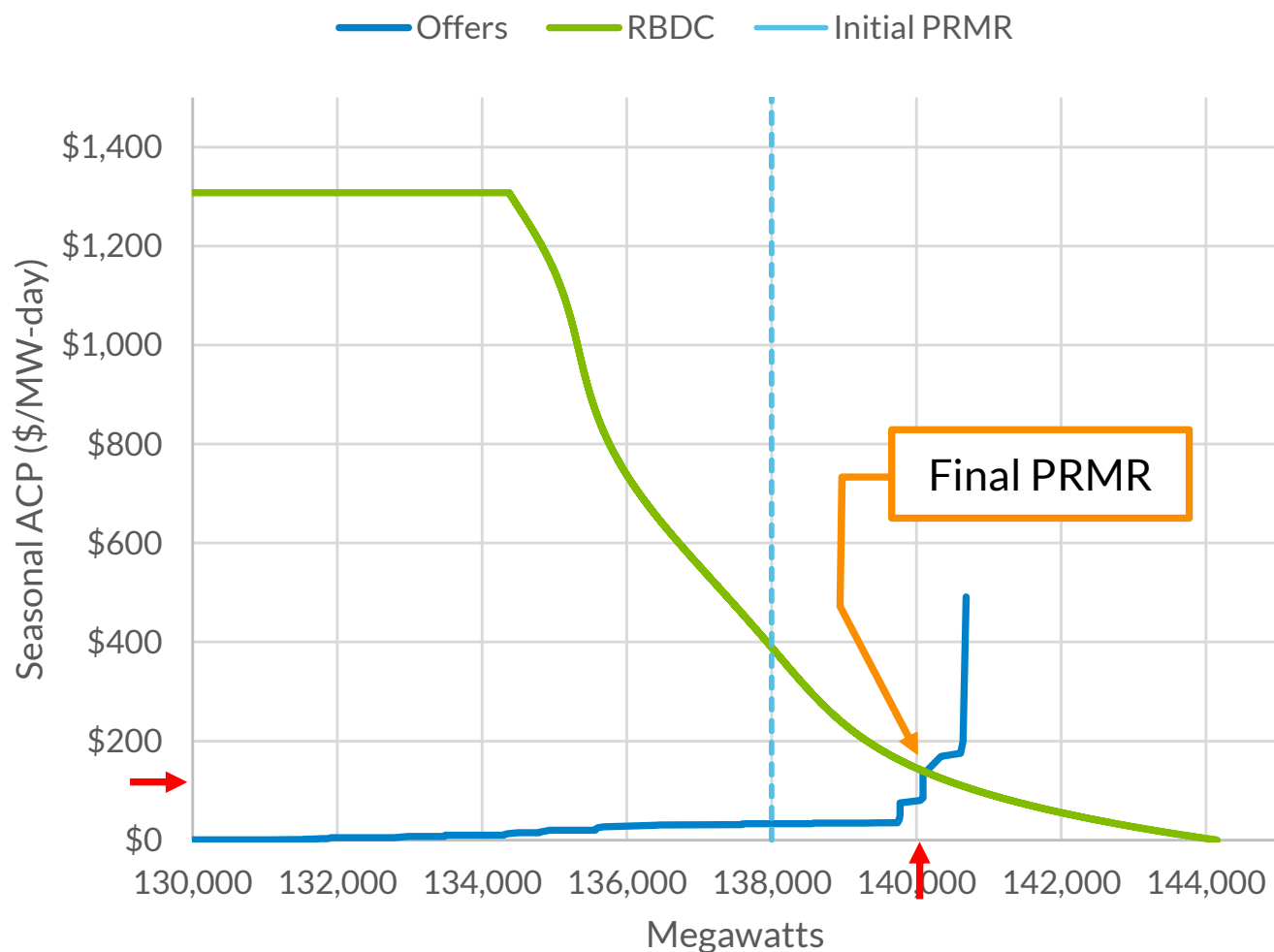
# Mechanics of RBDC

- Using a conversion factor based upon expected market revenue (“Net CONE”), MISO translates the MRI to a price basis (from EUE basis).
- This sets the reliability-based demand curve (RBDC).
- The RBDC is capped at Seasonal CONE.

Reliability Based Demand Curve (RBDC)

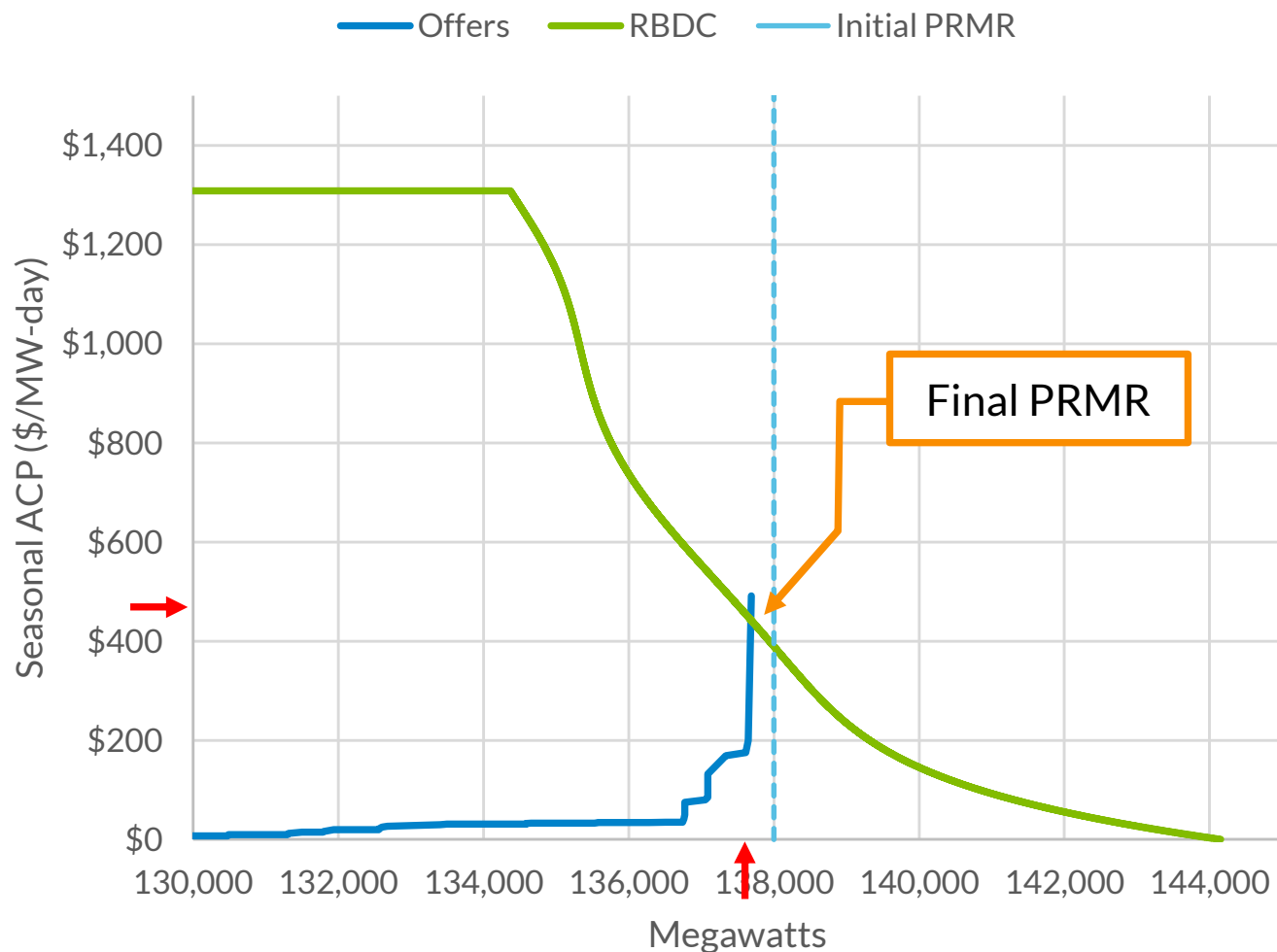


# Mechanics of RBDC



- We can return to our PRA example from earlier.
- Implementation of RBDC allows additional capacity – beyond the “Initial PRMR” – to be cleared, should that capacity be offered in at a price lower than the value of reliability.
- This phrase was used often in PRA results:
  - *Cost of capacity vs. Value of reliability*
    - NOTE: Should capacity be offered in at a very high price; less reliability will be procured since the RBDC will not clear more capacity if its cost is higher than the value of reliability at that same point.
- Consequence of the design is PRMR cannot be known until the PRA is complete; now termed **“FINAL PRMR”**

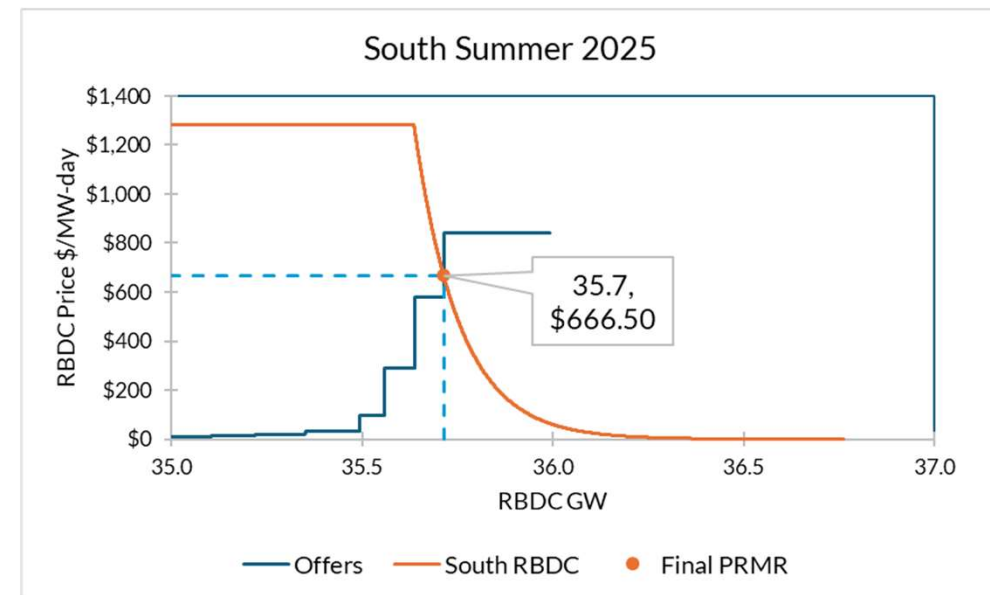
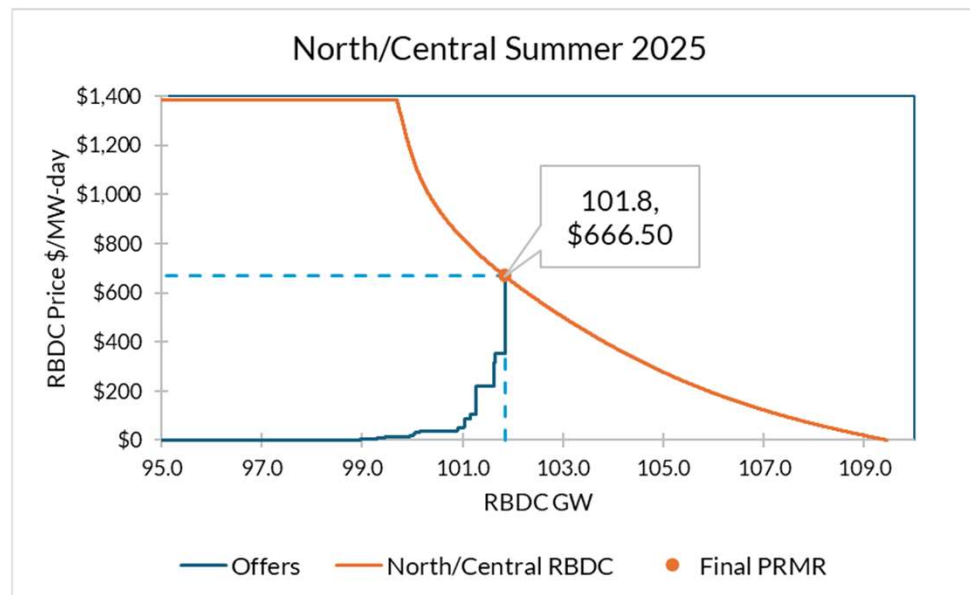
# Mechanics of RBDC



- While the objective of RBDC is to provide improved price signals for *incremental* reliability, the approach also impacts PRA outcomes where Initial PRMR is not satisfied.
- RBDC recognizes that failing to achieve the planning requirement by a small amount (...by a *single MW*) is not immediately worth CONE pricing.
  - Just as surpassing the planning requirement does not make incremental capacity worthless
- RBDC establishes the financial value of reliability.

# RBDC outcomes for the MISO PRA

- Prices reflect incremental value of reliability
- Incremental reliability cleared (to “right” of LOLE point) in all Seasons
  - NOTE: Additional 1.5% - 6.1% reserve margin cleared
- In Summer, all but one (1) resource was cleared
  - All capacity offered in below value of reliability at the MW point
- Pricing sends improved investment signal for capacity for member states, merchant generators, etc.



# RBDC outcomes for the MISO PRA

- 25-26 PRA resulted in all Seasons clearing additional capacity than initially planned.
- As reviewed, this was due to incremental capacity being offered in at a price lower than the value of reliability.
- The Season with the highest risk (Summer) will set “1 in 10” criterial, tend to have the highest ACP.
- MISO is beginning to enter preparations for the 26-27 PRA and looks forward to continued use of RBDC in its capacity market construct.

	2025 Planning Resource Auction Initial Target vs. Final Cleared	Additional Reliability	Auction Clearing Price
Summer	 Initial, 7.90% Cleared, 9.80%	+1.9%	\$666.50
Fall	 Initial, 14.90% Cleared, 17.50%	+2.6%	\$91.60 N/C \$74.09 S
Winter	 Initial, 18.40% Cleared, 24.50%	+6.1%	\$33.20
Spring	 Initial, 25.30% Cleared, 26.80%	+1.5%	\$69.88
			<i>Annualized</i> \$217 (North/Central) \$212 (South)



Questions?