Shortage Pricing ORDC - Order 825

Rebecca Stadelmeyer
Sr. Consultant, Market Services
Market Implementation Committee
November 2, 2016

Stakeholder Process Timeline

	Date	Committee	Agenda
✓	Jul. 28, 2016	MRC	Problem Statement/Issue Charge approval
✓	Aug. 10	MIC	Education
✓	Oct. 5	MIC	Education, Interest, Options
✓	Oct. 26	MIC	Education, Interest, Options
✓	Nov. 2	MIC	Interest, Options, Packages
	Dec. 14	MIC	Interest, Options, Packages / 1st Read on Package(s)
	Dec. 22	MRC	Provide update on progress
	Jan. 11, 2017	MIC	Vote on Package(s)
	Jan. 26	MRC/MC	1st Read on Manual/Tariff changes at both MRC and MC
	Feb. 23	MRC/MC	Vote Manual/Tariff changes at both MRC and MC
	Mar. 1	---	Submit 205 filing at FERC

Since PJM will seek simultaneous implementation dates for Settlements and Shortage of February 1, 2018, then if FERC grants this request the above timeline may be relaxed

PJM Proposed Recommendations – Oct. 26

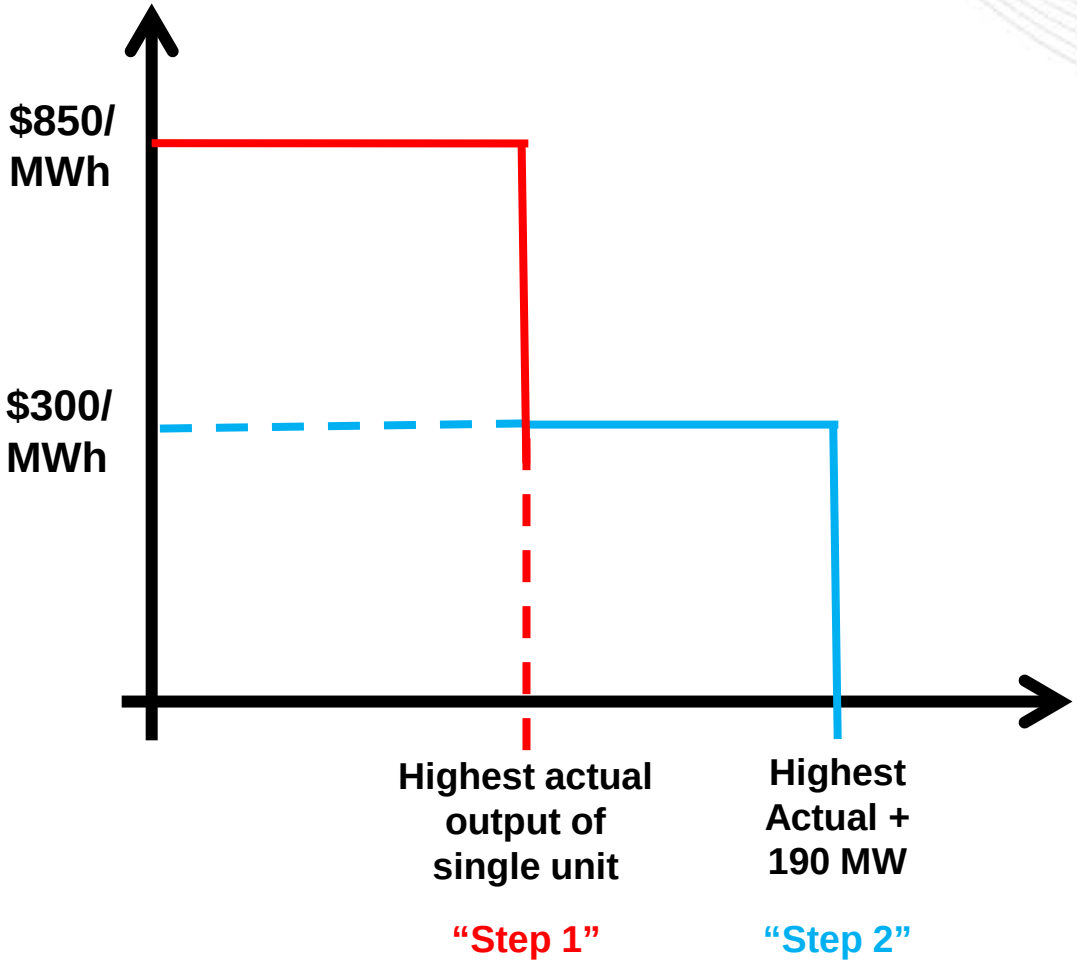
- Based on the historical data shown, PJM recommends that each ORDC:
  - Change Step 1 MW from Economic Maximum of the single largest contingency to the highest actual output of a single unit
  - Retain Step 1 Penalty Factor of $850/MWh
  - Replace current extended Step 2 with a permanent step
    - Use a static number of 190 MWs (MAD SR Mean + 1STDEV)
  - Retain current extended Step 2 Penalty Factor of $300/MWh

PJM Proposed Recommendations – Nov. 2

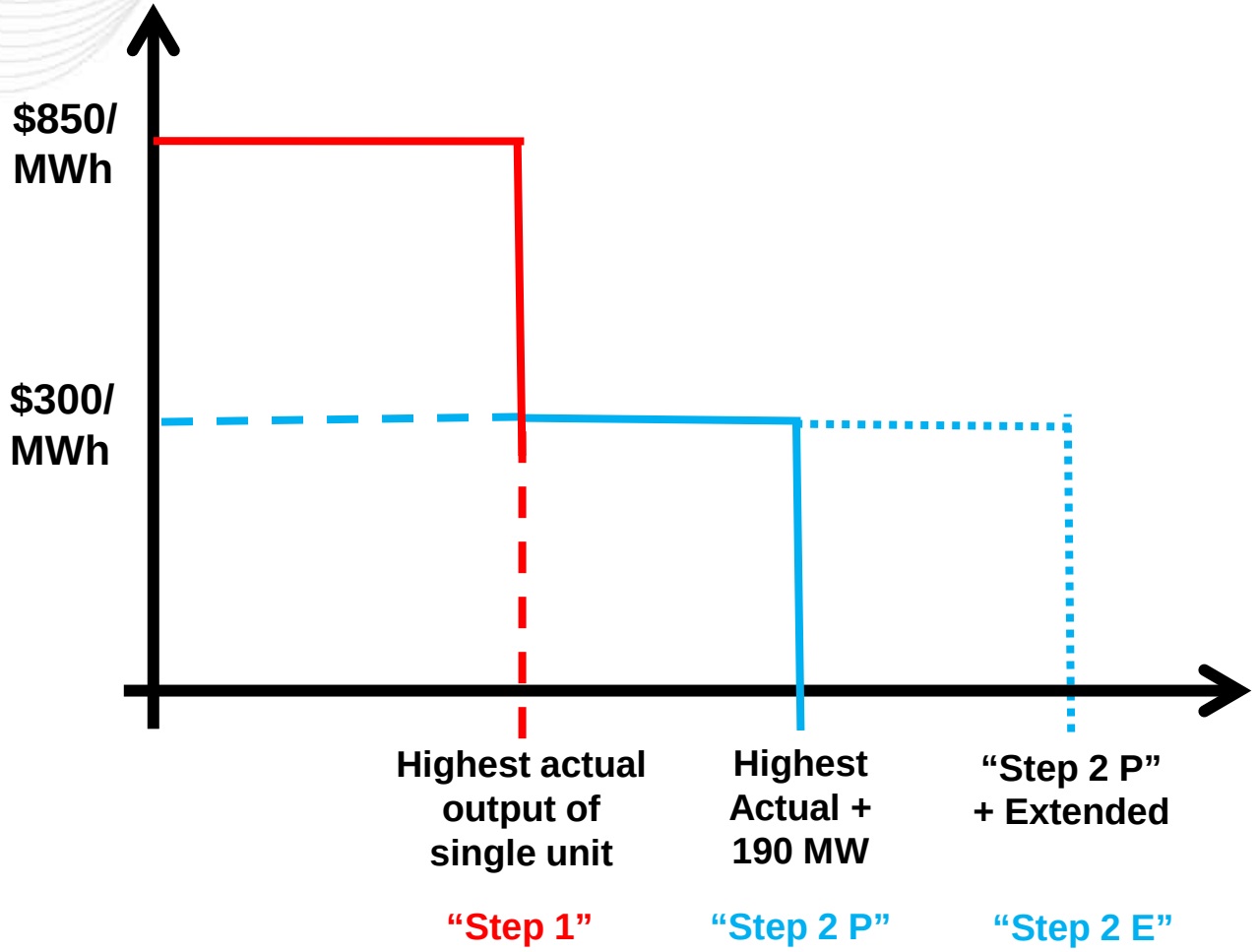
- Based on the historical data shown, PJM recommends that each ORDC:
  - Change Step 1 MW from Economic Maximum of the single largest contingency to the highest actual output of a single unit
  - Retain Step 1 Penalty Factor of $850/MWh
  - Add a permanent Step 2
    - Use a static number of 190 MWs (MAD SR Mean + 1STDEV)
  - Retain current extended Step 2
  - Retain current $300/MWh Penalty Factor for both permanent and extended Step 2

PJM Proposed Recommendation - Graph Comparison

OCTOBER 26



NOVEMBER 2

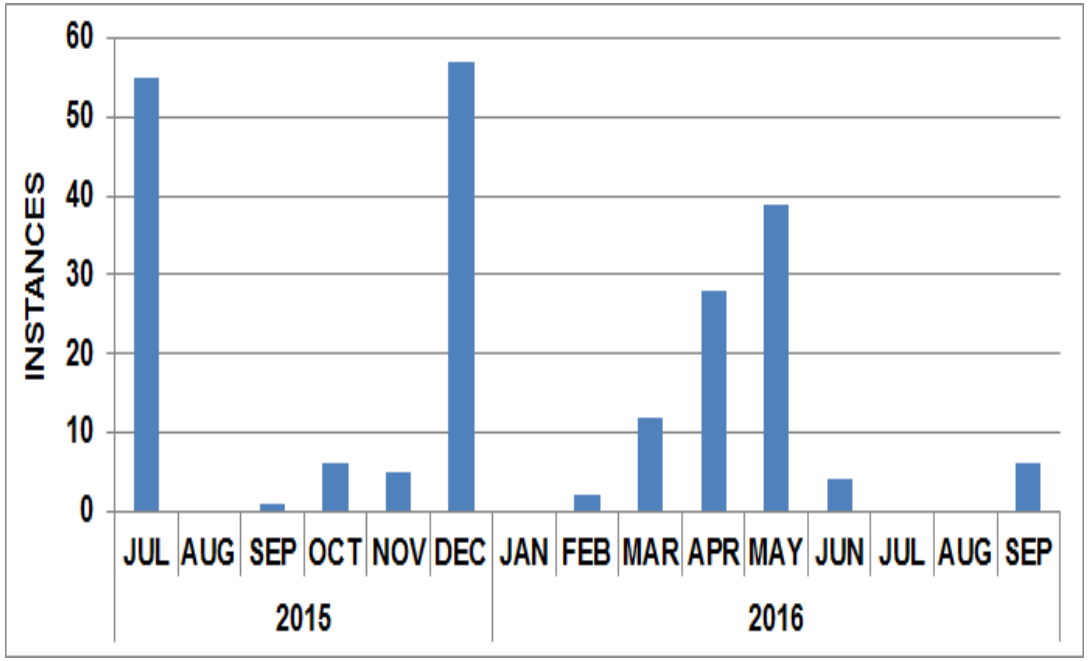


Appendix

MAD Synch MW Deficits Without Pricing the Shortage

- From July 1, 2015 through September 30, 2016
- 215 instances where the $850/MWh penalty factor would have been included in the calculations of LMPs and reserve clearing prices
  - 2015: 124 instances (0.234% of total Jul-Dec 2015 instances)
  - 2016: 91 instances (0.115% of total Jan-Sep 2016 instances)

	Shortage MW				
Year	**Mean**	**Median**	**Min**	**Max**	**Standard Deviation**
2015	102	85	0	380	83
2016	92	61	3	463	102
Combined	98	73	0	463	92



Impact of Making the Change

- Dynamic reserve requirement will more flexibly procure reserves
  - Sometimes more than the current requirement, sometimes less
- More rational linkage between market clearing prices and the level of reserve shortage
  - Very small MW shortage will not result in very large price swings
- Better transitions into tight/shortage conditions.
  - Less volatility as conditions worsen due to additional steps
- Better price signals prior to when synchronized reserves are less than the largest contingency
  - At will resources and interchange are incentivized earlier

RTO/ISO ORDC Summary

	PJM	MISO	ERCOT	ISONE	NYISO
Penalty Factors	1. $850/MWh 2. $300/MWh (only during HWA and specific conditions)	1. $3,500/MWh (0%-4% cleared Reserves) 2. $1,100/MWh (4%-95% cleared Reserves) 3. $200/MWh (96%-100% cleared Reserves)	1. Created RT Price added to reflect the Value of Lost Load (VOLL) based on Loss of Load Probability. VOLL is set to $9,000/MWh	1. $1,500/MWh (system-wide 10-min) 2. $1,000/MWh (system-wide 30-min) 3. $250/MWh (system-wide replacement 10-min) 4. $250/MWh (reserve zone specific) 5. $50/MWh (system-wide 10-min spinning)	There are 12 different ORDC that have Penalty Factors between $775/MWh and $25/MWh Manual 2 (Ancillary Service); Section 6.8 (Operating Reserve Demand Curves) provides details
Regions	1. RTO 2. Mid-Atlantic+Dominion	1. Zone 1 2. Zone 2 3. Zone 3 4. Zone 4 5. Zone 5 6. Zone 6 7. Zone 7	1. System wide	1. Rest of System 2. Rest of CT Zone 3. SWCT Zone 4. NEMA/Boston Zone	1. West 2. East 3. Southeastern 4. Long Island
Products	1. Online; within 10 min 2. Offline; within 10 min	1. Online; within 10 min 2. Online or Offline; within 10 min	1. Online; within 10 min 2. Offline; within 10 min 3. Offline; within 30 min	1. Online; within 10 min 2. Offline; within 10 min 3. Online or Offline; within 30 min	1. Online; within 10 min 2. Offline; within 10 min 3. Online; within 30 min 4. Offline; within 30 min