



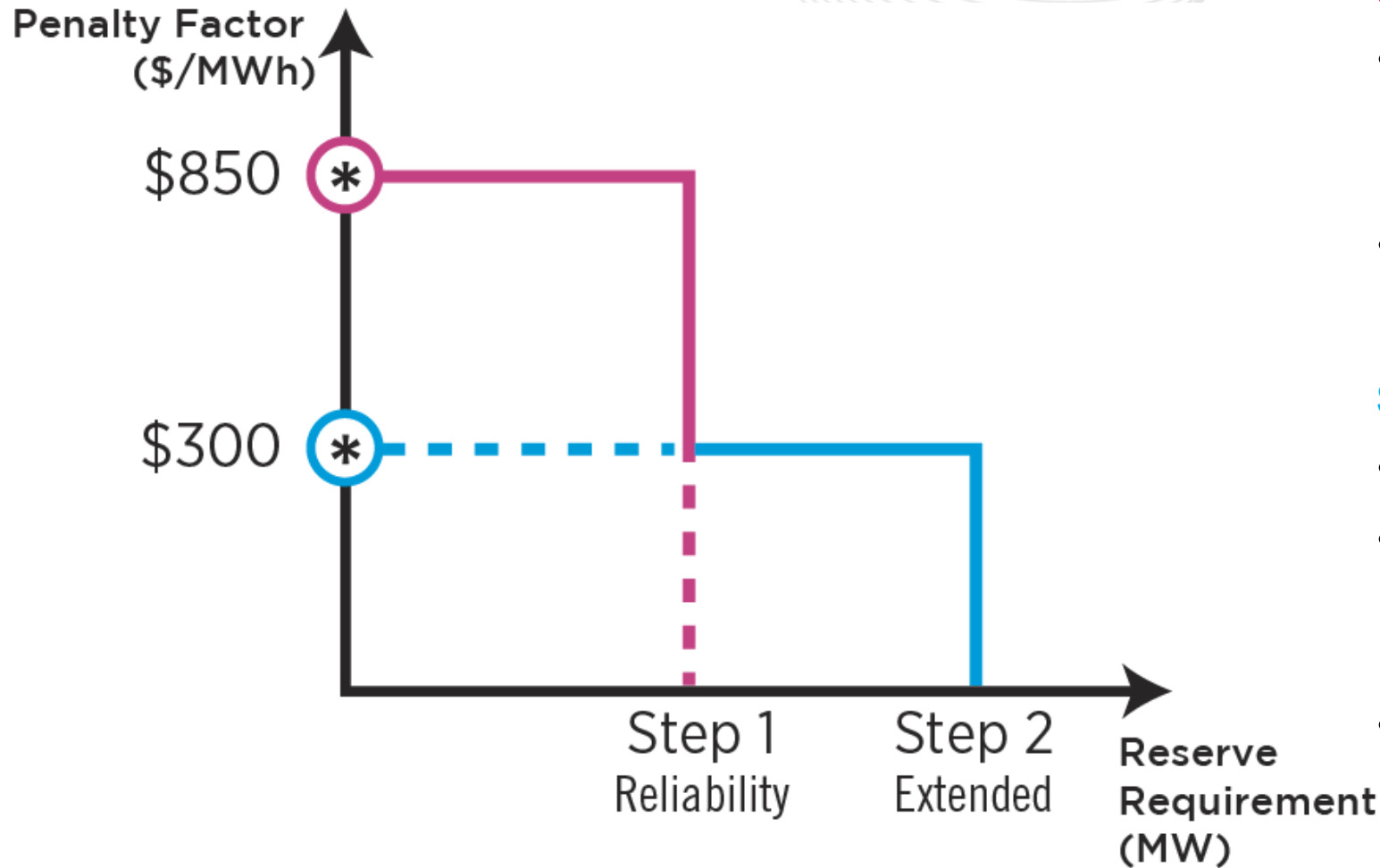
# Key Work Activity #3 Discussion

Susan Kenney  
Facilitator  
Energy Price Formation Senior Task Force  
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- Three Key Work Activities are included in the approved Problem Statement and Issue Charge

KWA #1	Education on the use of ORDCs and Transmission Constraint Penalty Factors in LMPs including the input assumptions for the ORDCs	Complete
KWA #2	Explore potential “circuit breaker(s)” or other stop loss approach(es) and include potential additional operational authorities needed by PJM to maintain grid reliability under such conditions.	Complete
KWA #3	<p>Explore potential enhancements to PJM’s ORDC rules to address the impact of recent changes in PJM’s dispatch protocols on forecast uncertainty embedded within the approved curve shape.</p> <p>Explore, and address as appropriate, the additional market and credit risks of the ORDC changes in light of recent events in ERCOT, SPP, and MISO.</p>	TBD

- Key Work Activity #3 was assigned following FERC's approval of the downward sloping Operating Reserve Demand Curves (ORDC) but before the December 22, 2021 FERC Order on Remand.
- In the FERC Order on Remand, it was deemed PJM failed to demonstrate that the existing ORDCs needed to be updated to include uncertainties around load, wind, and solar forecasts, and unanticipated supply resource outages.
- As a result, the current ORDCs were maintained with the October 1, 2022 Reserve Price Formation implementation.



## Step 1 of the Demand Curve

- This represents the Reliability Requirement, which is generally the output of the largest online unit.
- The penalty factor for being short Step 1 is \$850/MWh.

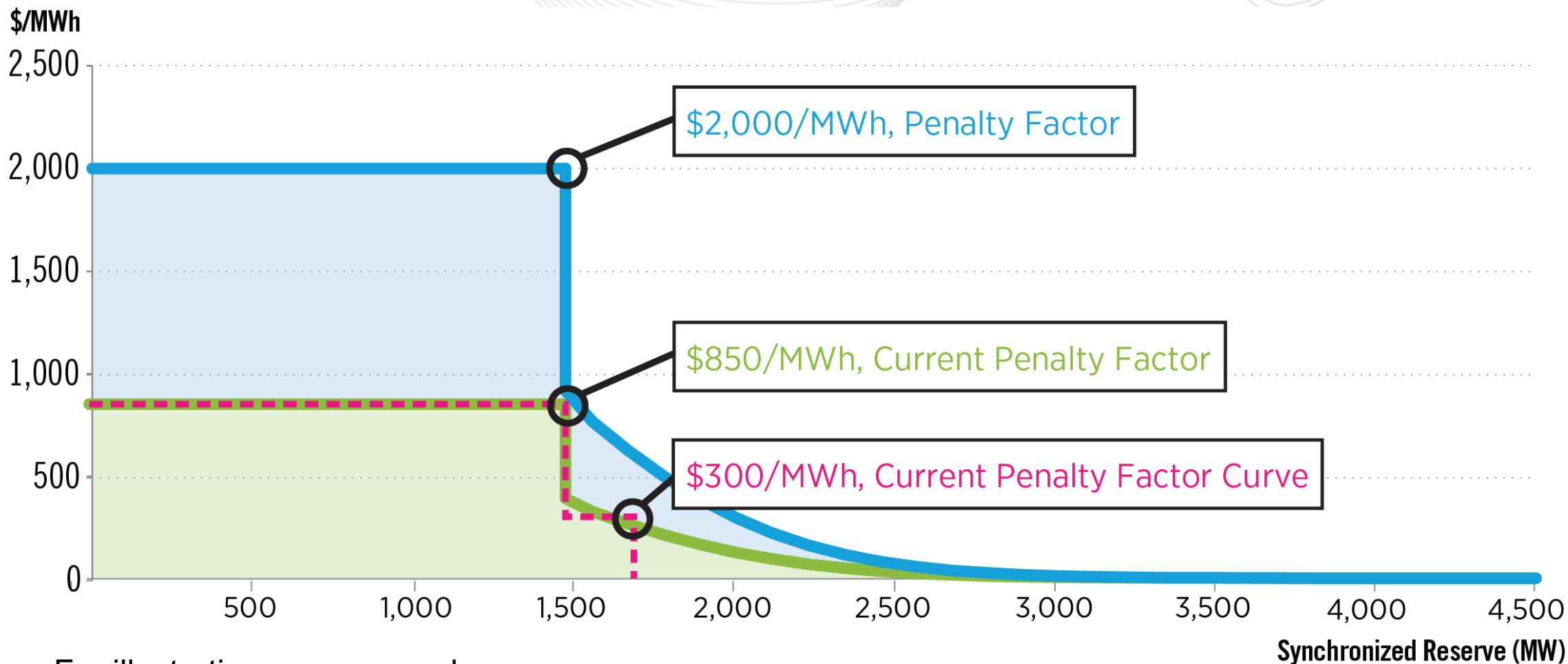
## Step 2 of the Demand Curve

- Adds 190 MW to the Reliability Requirement
- Also includes an Optional Adder MW that can be used to capture additional reserves that are scheduled for reliability reasons
- The penalty factor for being short Step 2 is \$300/MWh.

	Reserve Service		
	Synchronized Reserve (SR)	Primary Reserve (PR)	30-Minute Reserve (30-Min)
Reliability Requirement	Largest Single Contingency	150% of Synchronized Reserve Reliability Requirement	Greater of (Primary Reserve Reliability Requirement, 3000 MW, or largest active gas contingency)
Reserve Requirement	SR Reliability Requirement + Extended Reserve Requirement	PR Reliability Requirement + Extended Reserve Requirement	30-Min Reliability Requirement + Extended Reserve Requirement

From Manual 11, Section 4.3

# Comparison of Downward Sloping ORDC and Current ORDC and Current ORDC



For illustrative purposes only.

	10-Min (SR)	10-Min (PR)	30-Min
<b>Marginal Reliability Requirement</b>	DA – Largest EcoMax of available resources.*  RT – Max (Output of largest online resource or largest EcoMax of online resources)*	DA and RT - 150% of the SR requirement.	DA and RT – (Max of 3,000 MW or largest active gas contingency or PR requirement)**
<b>Uncertainties</b>	Load, Wind, Solar, Thermal Forced Outages	Load, Wind, Solar, Thermal Forced Outages	Load, Wind, Solar, Thermal Forced Outages, Net Interchange
<b>Adjusted by Regulation?</b>	Yes	Yes	Yes
<b>Look-Ahead Uncertainty Interval</b>	30 minutes	30 minutes	60 minutes
<b>Penalty Factor</b>	\$2,000/MWh	\$2,000/MWh	\$2,000/MWh

\* Under normal operating conditions. May be increased due to additional spin needed due to transmission outage condition (M11 section 4.2.2) or operator actions.

\*\* May be increased due to operator actions.

Is Key Work Activity #3 still in scope?



Facilitator:  
Susan Kenney  
[Susan.Kenney@pjm.com](mailto:Susan.Kenney@pjm.com)

Secretary:  
Andrea Yeaton  
[Andrea.Yeaton@pjm.com](mailto:Andrea.Yeaton@pjm.com)

**Energy Price Formation Senior Task Force**



### Member Hotline

(610) 666-8980

(866) 400-8980

[custsvc@pjm.com](mailto:custsvc@pjm.com)

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(610) 666-2244 / [it\\_ops\\_ctr\\_shift@pjm.com](mailto:it_ops_ctr_shift@pjm.com)

