

Comments on Proposals for Clearing Products in RPM Auctions and Related Issues

James F. Wilson
Principal, Wilson Energy Economics

Capacity Senior Task Force
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Four Topics

1. Value of DR products when excess is cleared
 - A. Extended Summer DR
 - B. Limited DR
2. STRPT (aka 2.5% holdback): Purpose and use, treatment in BRA
3. Comments on PJM proposal for clearing DR products
4. Suggested elements of an alternative proposal

1. Value of DR Products When Excess:

A. Extended Summer DR

- The Minimum Annual Resource Requirement is set at a level such that LOLE outside of extended summer considered *de minimus*
 - Procedure calls for increasing ES DR penetration (and reducing Annual) until annual LOLE increases 10%, which would occur outside extended summer period (PJM Manual 20, PJM Resource Adequacy Analysis, Section 5)
 - Minimum Annual Resource Requirement = Reliability Requirement minus Extended Summer DR Reliability Requirement
- Note that, with Annual resources at or above this level, increasing Annual resources OR increasing Extended Summer resources will reduce LOLE (which is concentrated in the extended summer period) the same amount; the two types of resources have equal incremental reliability value once the Min. Ann. Res. Requirement is satisfied.

Extended Summer DR Reliability Target Test

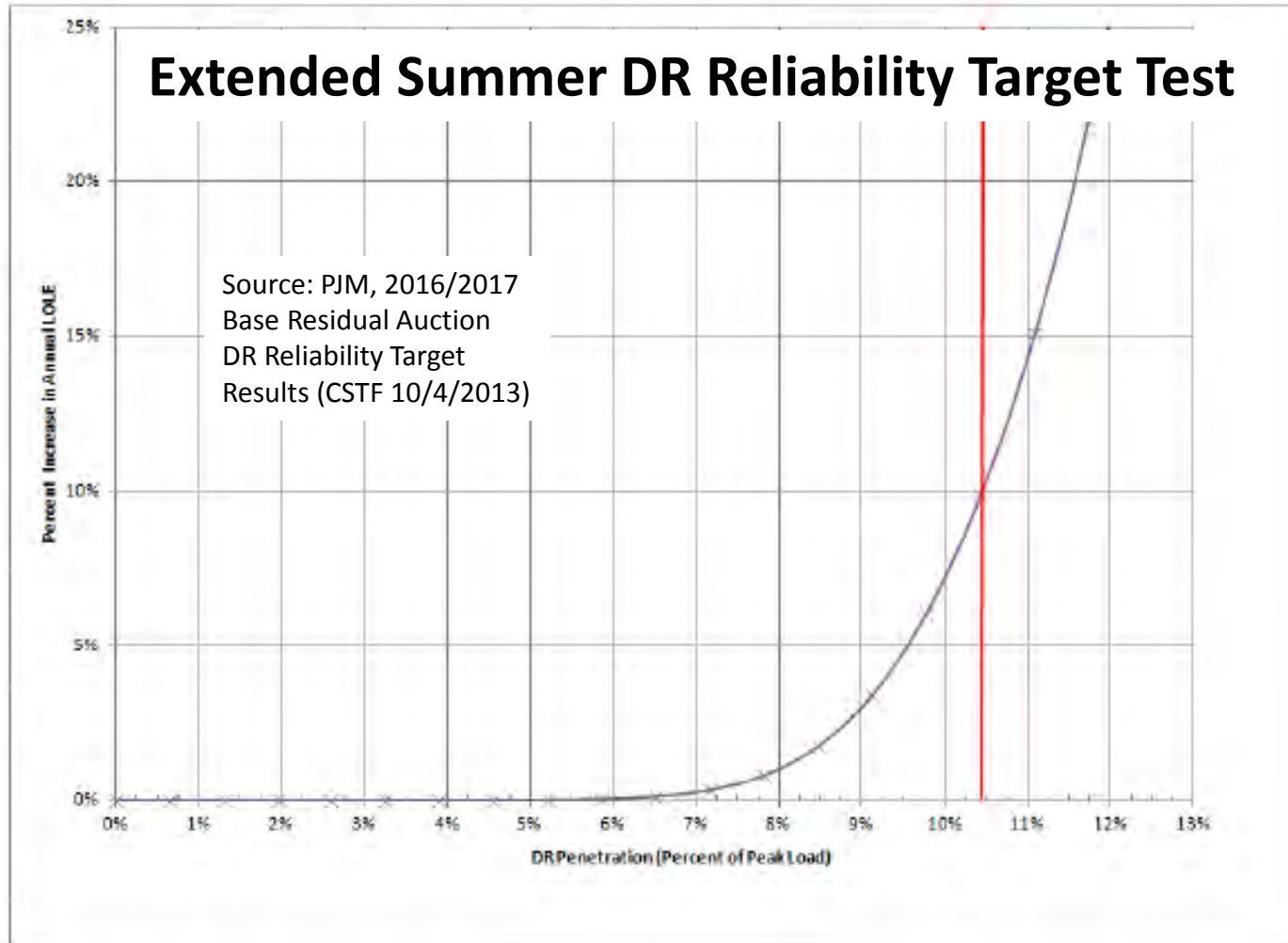
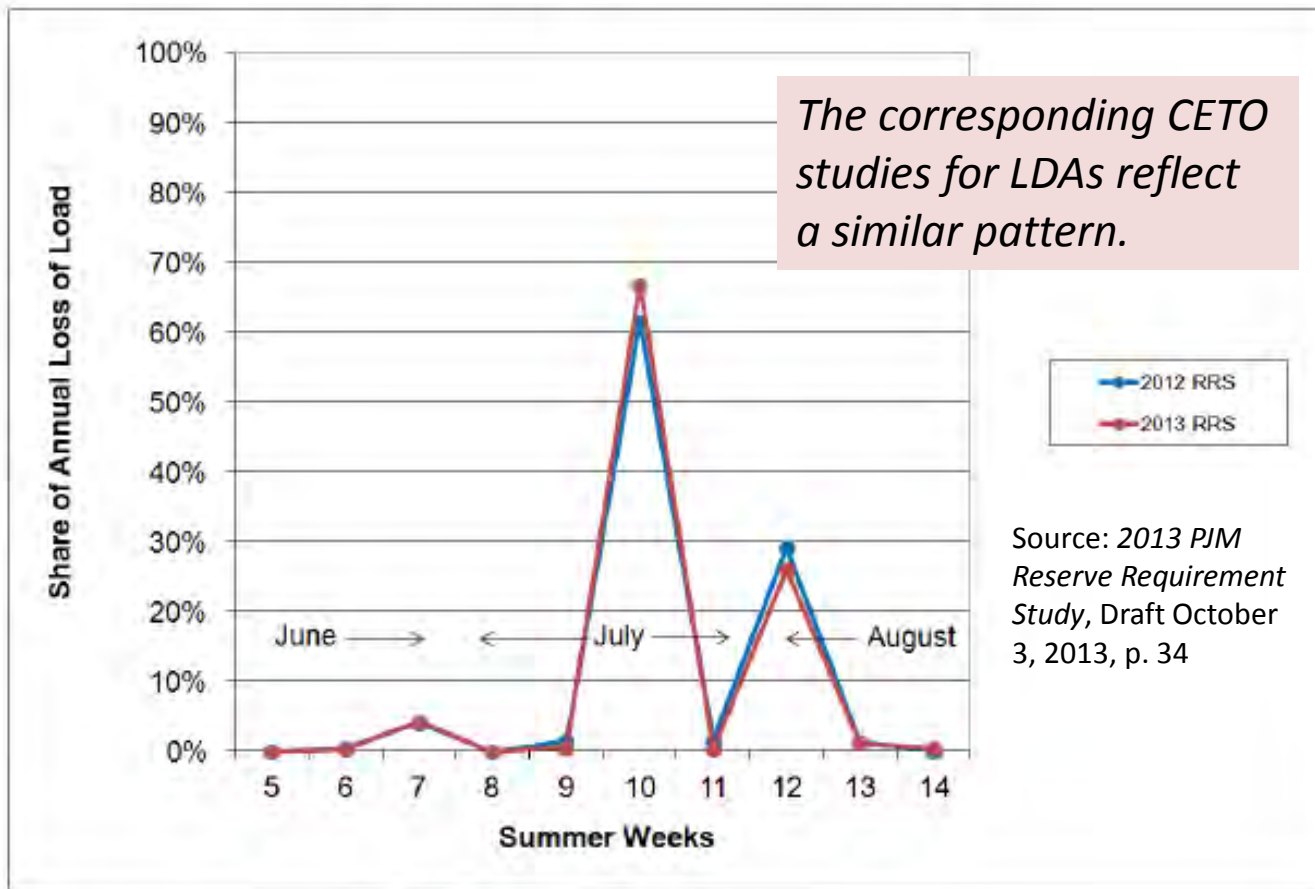


Figure 7: Test 4, PJMRTO. Amount of Extended Summer DR vs Percent Increase in Annual LOLE.

Red line denotes target.

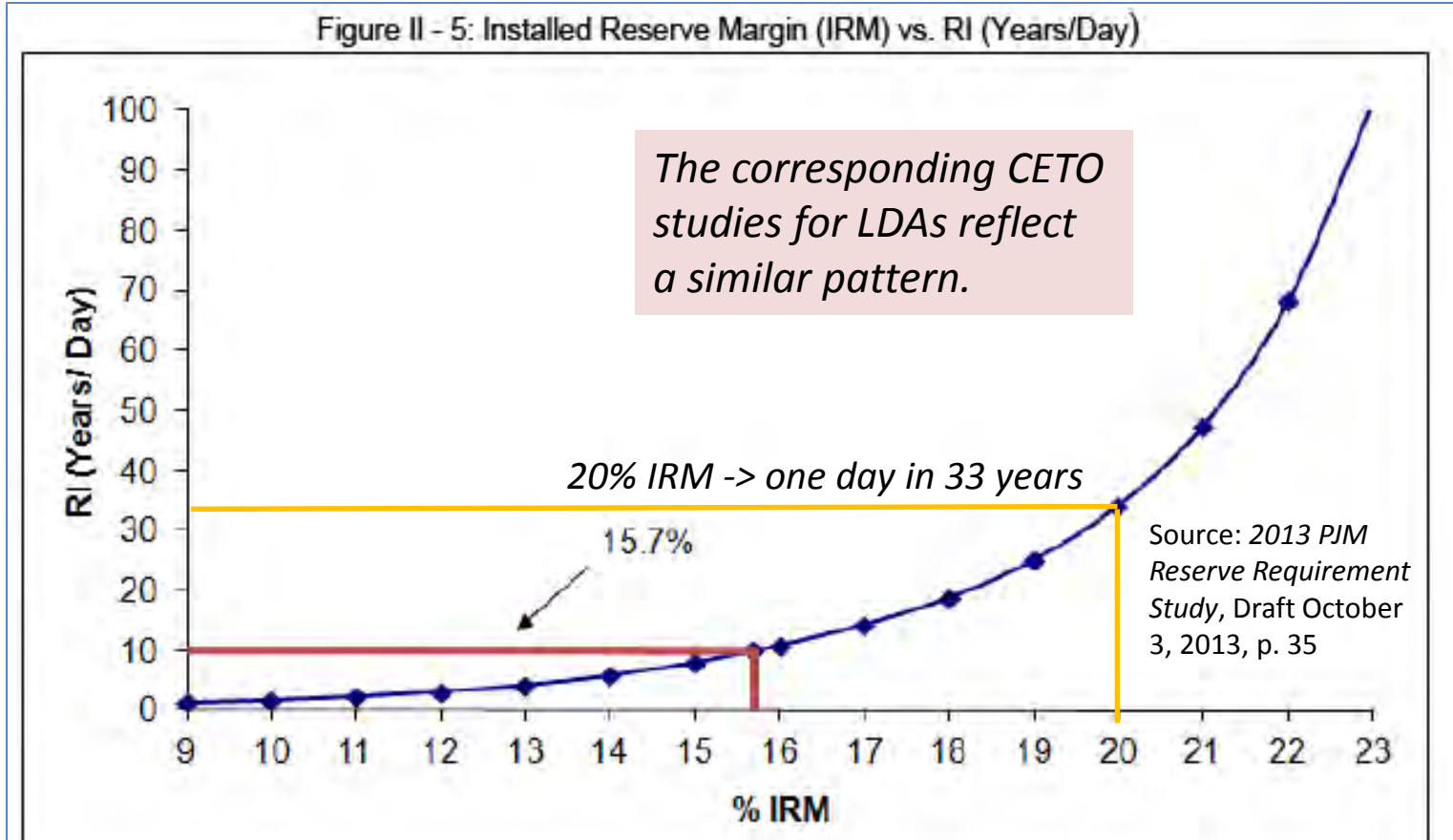
PJM Reserve Requirements Studies suggest loss of load risk (and capacity value) are concentrated in summer (June – September)

Figure II - 4: PJM RTO LOLE Comparison 2012 RRS vs. 2013 RRS



PJM's Reserve Requirements Studies suggest how the reliability value varies as the total cleared quantity changes

Figure II - 5: Installed Reserve Margin (IRM) vs. RI (Years/Day)

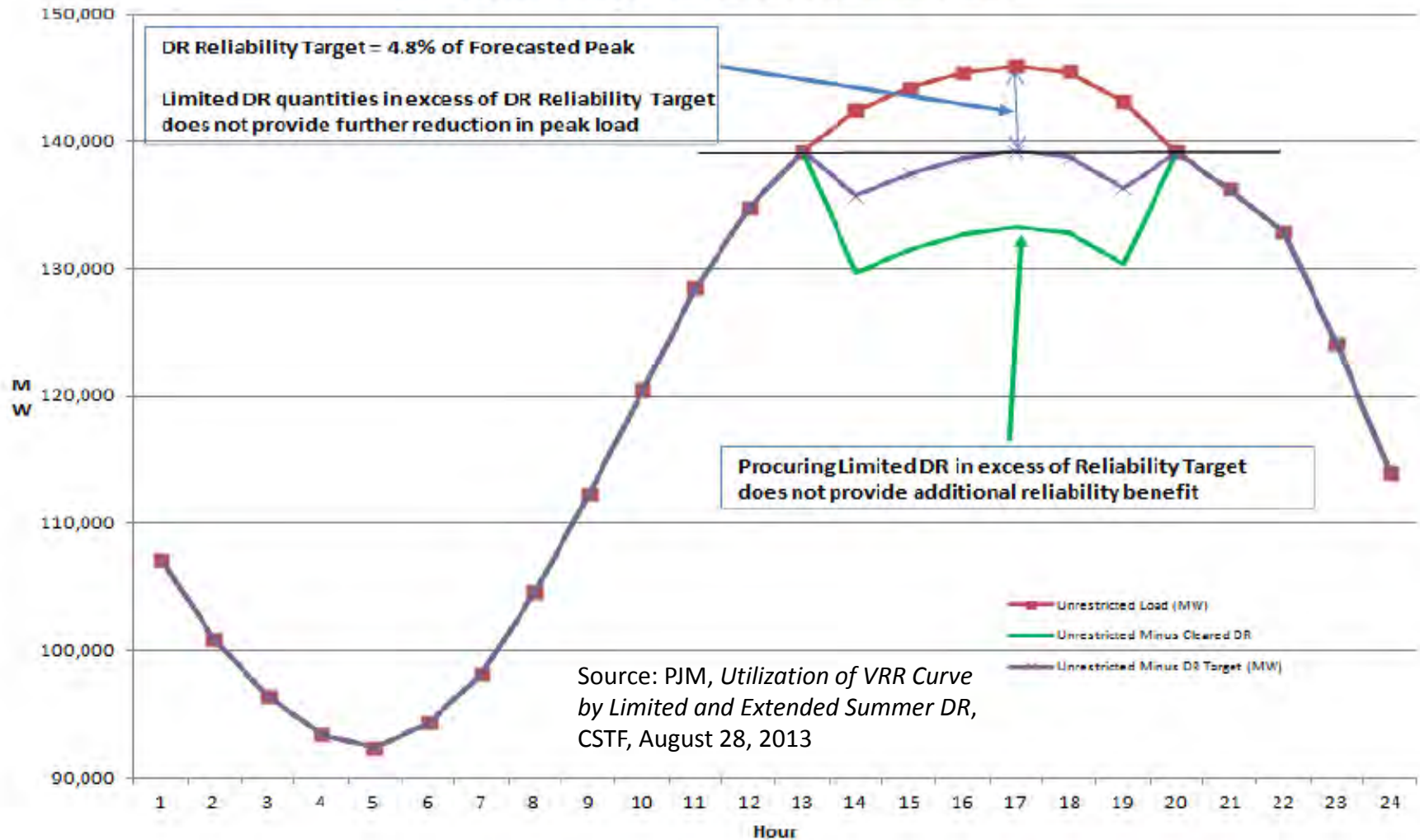


1. Value of DR Products When Excess:

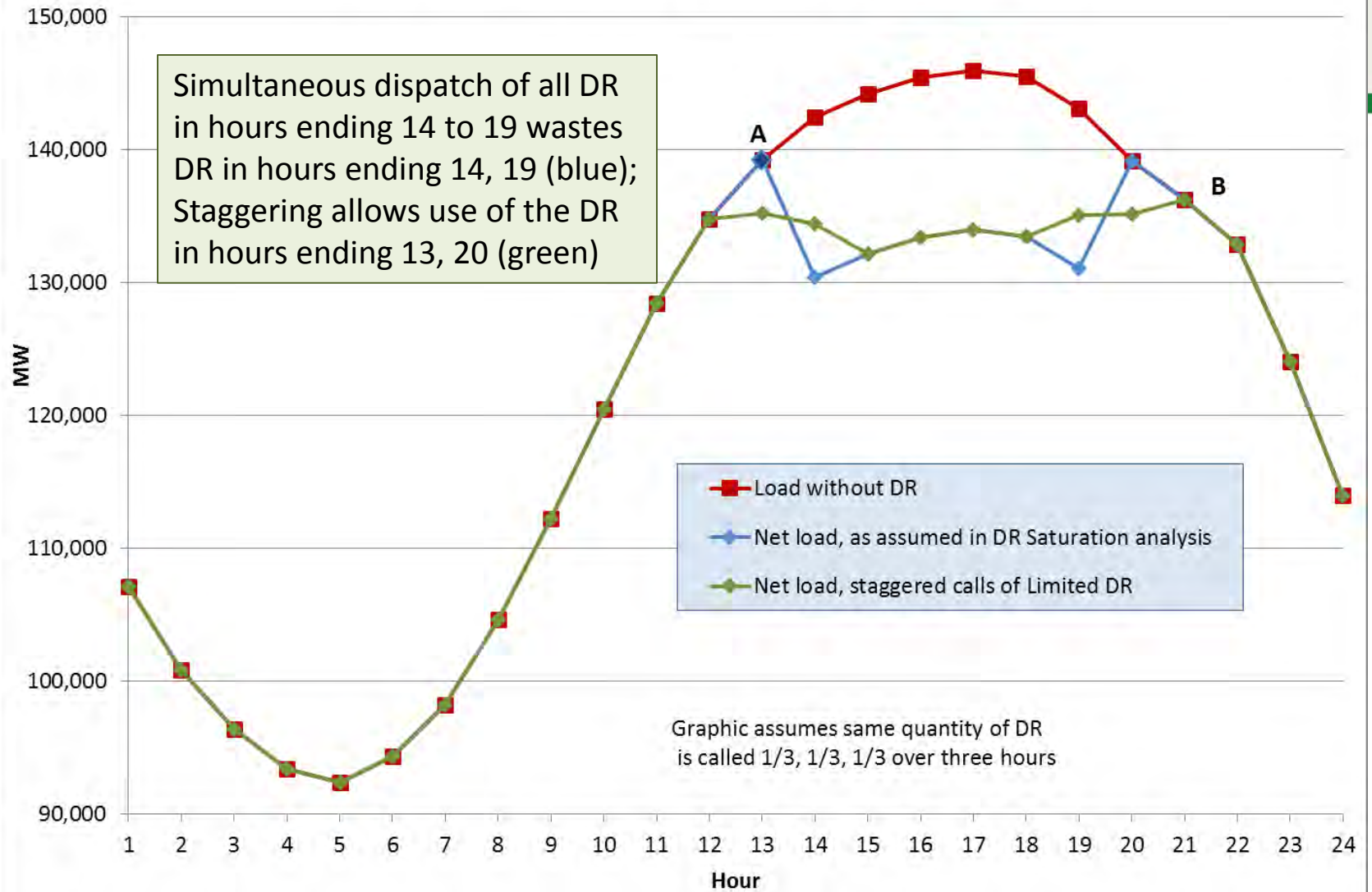
B. Limited DR

- Limited DR Reliability Target is determined by the six hour duration requirement (“Test 1” or “Test 2”) for RTO and all LDAs; ten call limit is not binding
- The tests assume that when any DR is called, all DR of all types is called and activates simultaneously (not just amount needed, not zonal, not staggered; very conservative, wastes the DR)
- DR used as an operational resource can be staggered to stretch it and shape it to load over an eight hour period (say, 1/3, 1/3, 1/3 over three hours)
 - 30/60/120 minute lead times; subzonal dispatch; economic offers; etc.
- Limited DR Reliability Target should be adjusted to reflect this

DR Reliability Target Determination



DR Saturation Analysis - Staggered Calls of Limited DR



2. Treatment of the STRPT (aka 2.5% holdback)

- STRPT is not just for Demand Response!
 - Brattle (2008 p 101): “plan on procuring in the incremental auctions a portion of the needed resources corresponding to the estimated amount of demand response **and other resources** that are likely to become available after the base auction” [emphasis added]
 - Wilson (ER09-412 p. 49): short lead time resources include plant upgrades, plant performance improvements, etc.; DR is less than half of recommended total
 - FERC (March 26, 2009 order P 84 fn 42): “Short lead time resources can include demand response and energy efficiency resources, upgrades to existing generation units, and imports of capacity from areas outside of PJM”
 - 2015-2016 First Incremental Auction (September 2013): over 90% of the cleared capacity was generation
- So not appropriate to reduce Max. Limited DR for 100% of STRPT

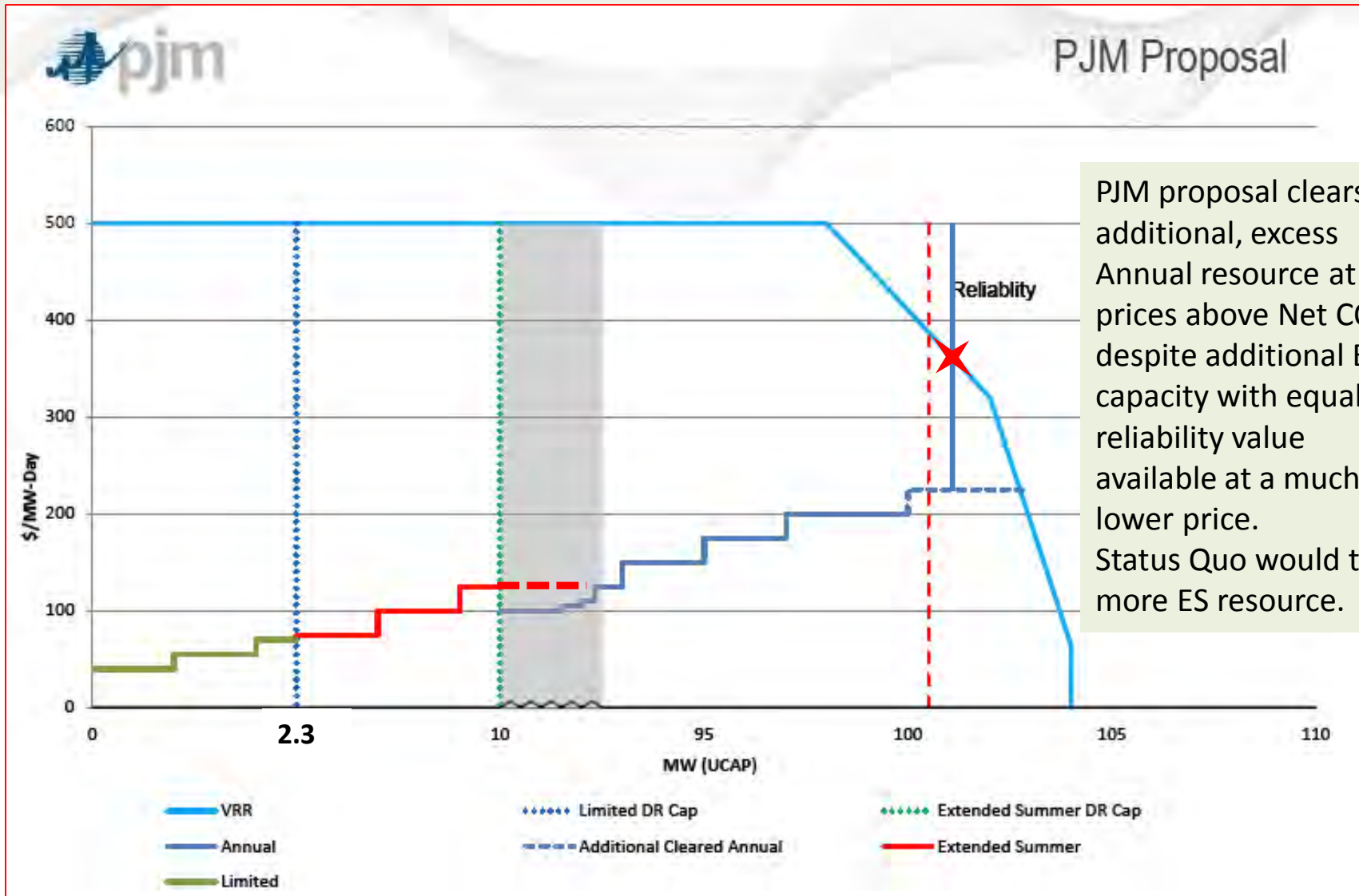
3. PJM Proposal for Clearing Ann/ES/Limited Products

- PJM proposes to treat Limited DR Reliability Targets and Extended Summer DR Reliability Targets as hard constraints in the base residual auction; then to clear only Annual resources against the sloped VRR curve
- PJM also proposed to subtract the STRPT from the Limited DR Reliability Target (CSTF 7/31/13, slide 10)
 - Maximum Limited DR is shown as only 3,462 MW or about 2.3%, not 4.8%
 - (equals Limited DR Reliability Target, 7,616 MW, minus STRPT, 4,153 MW)

Comments on PJM Proposal

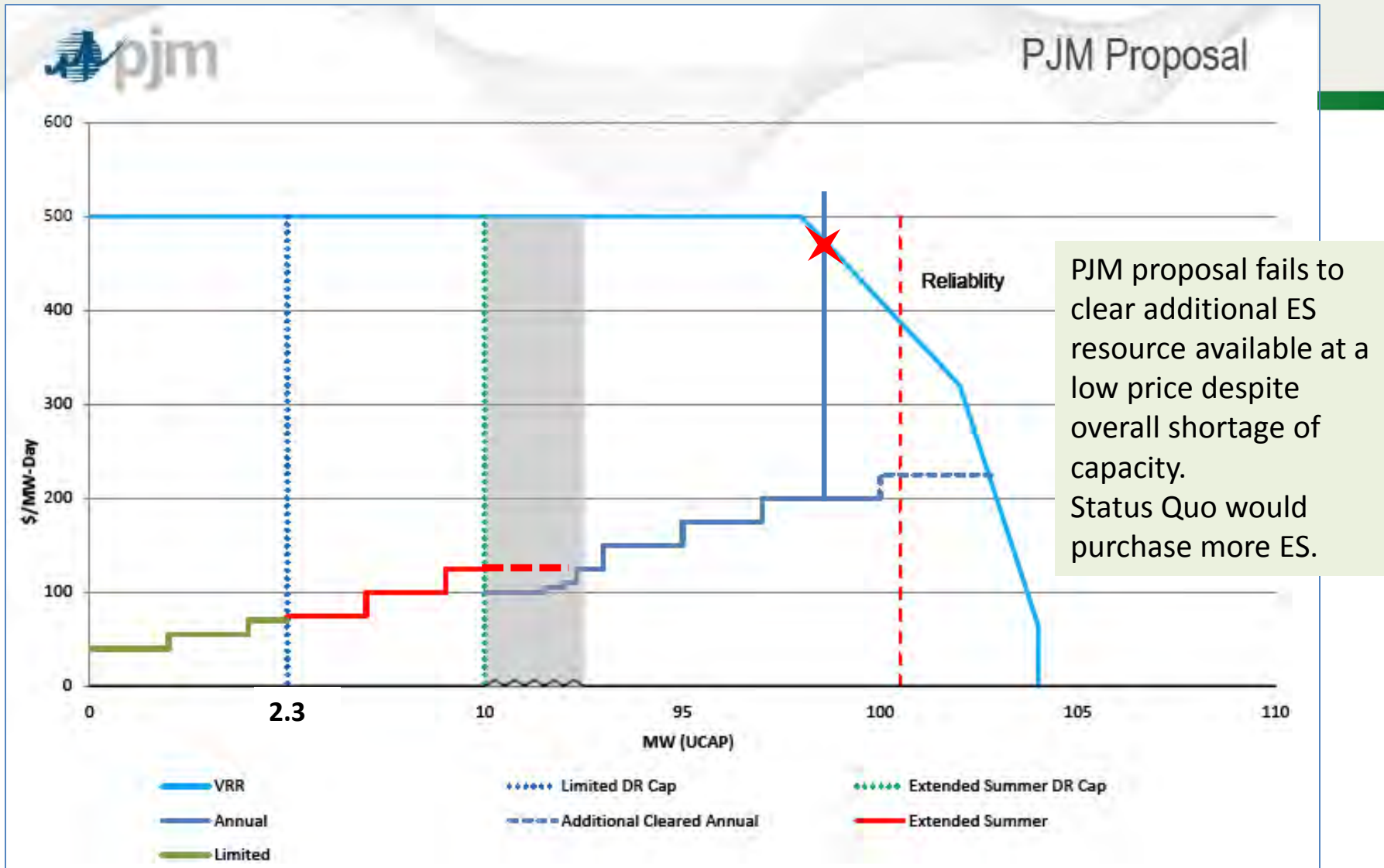
- The PJM proposal results in uneconomic purchase of excess Annual resource under some circumstances; and failure to purchase needed, economical ES or Limited resource under other circumstances (three examples follow)
 - Inefficient procurement from a cost and reliability perspective
 - Discriminatory procurement – unjustified preference for Annual over ES
 - Unnecessary increase in consumer cost
 - Linked bids would only partially mitigate these problems, to an extent that will vary by LDA and likely decline over time

Example 1: Inefficient Procurement of Annual Resource

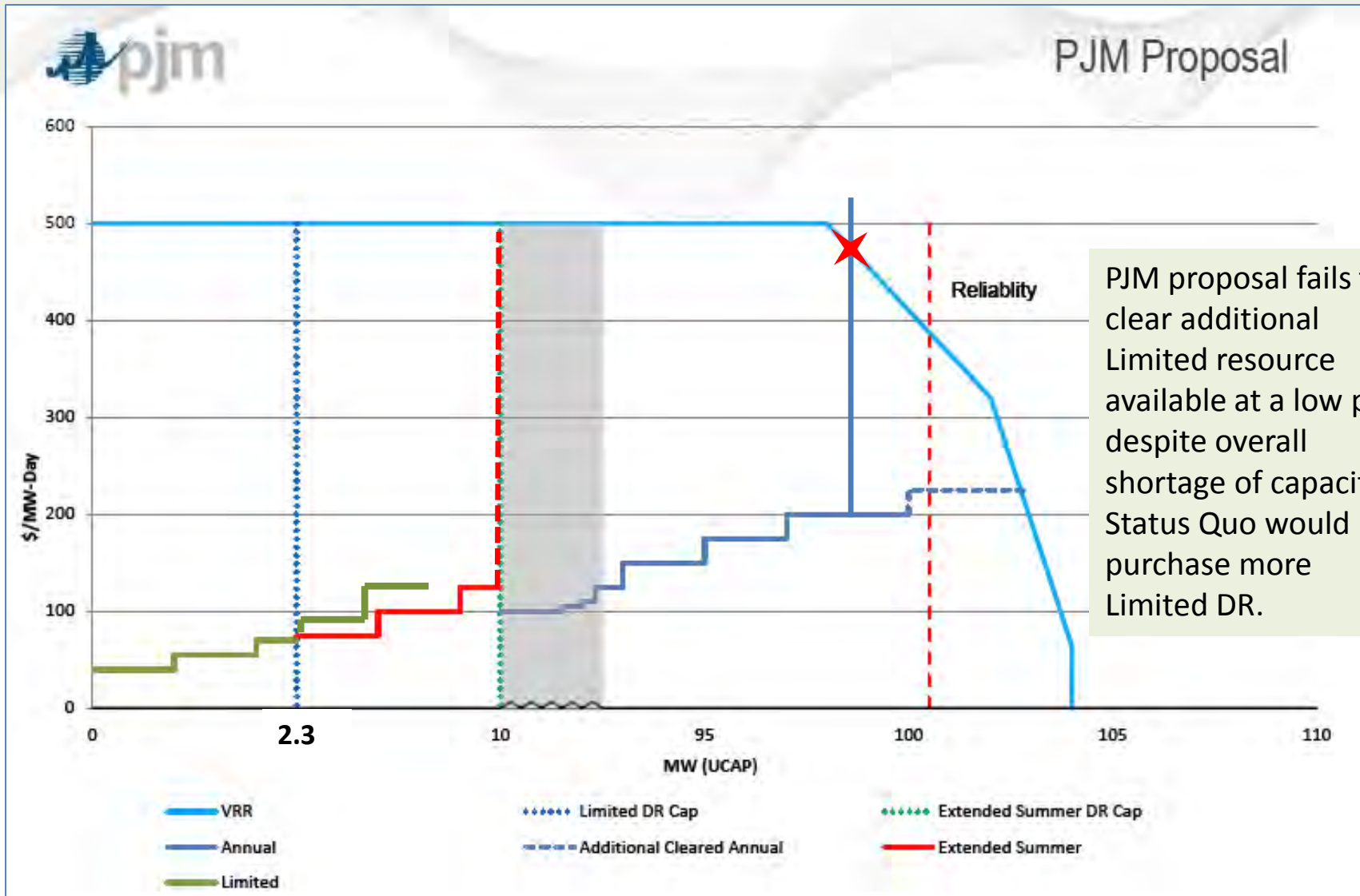


PJM proposal clears additional, excess Annual resource at prices above Net CONE despite additional ES capacity with equal reliability value available at a much lower price. Status Quo would take more ES resource.

Example 2: Failure to Procure Needed ES Resource



Example 3: Failure to Procure Needed Limited Resource



PJM proposal fails to clear additional Limited resource available at a low price despite overall shortage of capacity. Status Quo would purchase more Limited DR.

4. Elements of an Alternative Proposal

1. Fixed constraints on Limited DR in the base residual auction, but:
 - A. Calculate Limited DR Reliability Targets reflecting use as operational resource
 - B. Subtract only a portion of STRPT from the target (portion TBD)
2. Recognize that once the Minimum Annual Resource Requirement is satisfied, LOLE outside Extended Summer period is *de minimus*, and incremental Extended Summer resource has the same reliability value as incremental Annual resource, even for large excesses
 - A. ES and Annual resources compete equally once Min. Ann. Res. Req't met
3. Also recommend utilizing sloped VRR curve concept for clearing quantities of Annual resource at prices above Net CONE