

Re: Item 6, Clearing of Demand Response in RPM: OCA/SMECO Alternative Proposal (“Package B”)

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PJM Markets and Reliability Committee
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Topics

1. Comments on PJM proposal for clearing DR products
2. Alternative proposal (Package B, aka “OCA/SMECO”, aka W/R 2)
3. Discussion

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

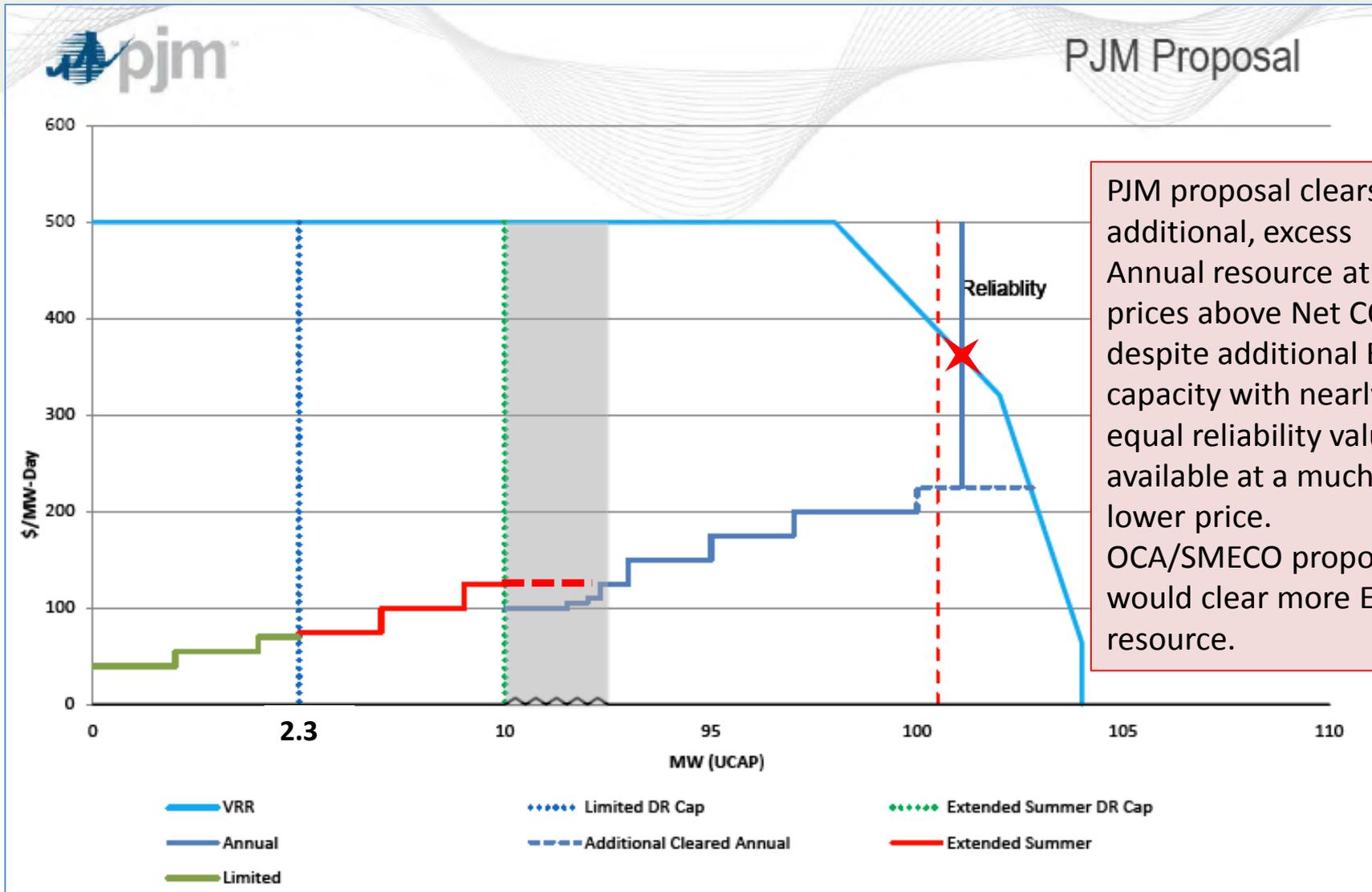
PJM proposes to

1. Treat the Limited Demand Response (“DR”) Reliability Target as a hard constraint (reduced by the full 2.5% STRPT or “holdback”; $4.8\% - 2.5\% = 2.3\%$ for RTO based on 2016/17)
2. Treat the Extended Summer (“ES”) DR Reliability Target as a hard constraint
3. Clear only Annual resources once those constraints are hit

Comments on PJM Proposal

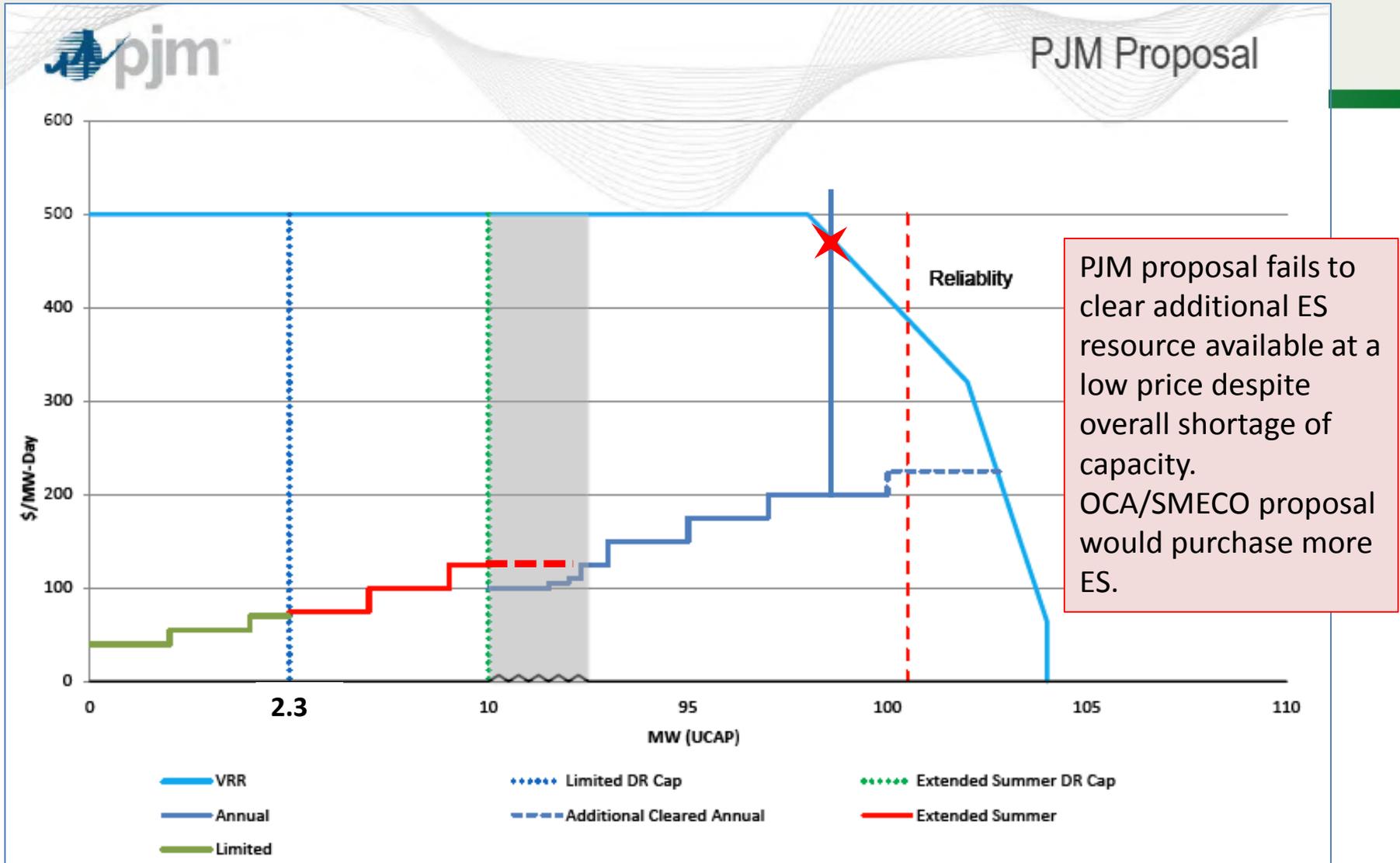
- The PJM proposal results in uneconomic purchase of excess Annual resource under some circumstances; and failure to purchase needed, economical ES resource under other circumstances (see examples)
- The PJM proposal also overly restricts Limited DR in the BRA
- Consequences of these shortcomings:
 - Inefficient procurement from a cost and reliability perspective
 - Discriminatory procurement – unjustified preference for Annual over ES
 - Exaggerated price differentials between products, BRA/IAs; resulting incentives
 - Unnecessary increase in consumer cost
- Linked bids could 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 nearly equal reliability value available at a much lower price. OCA/SMECO proposal would clear more ES resource.

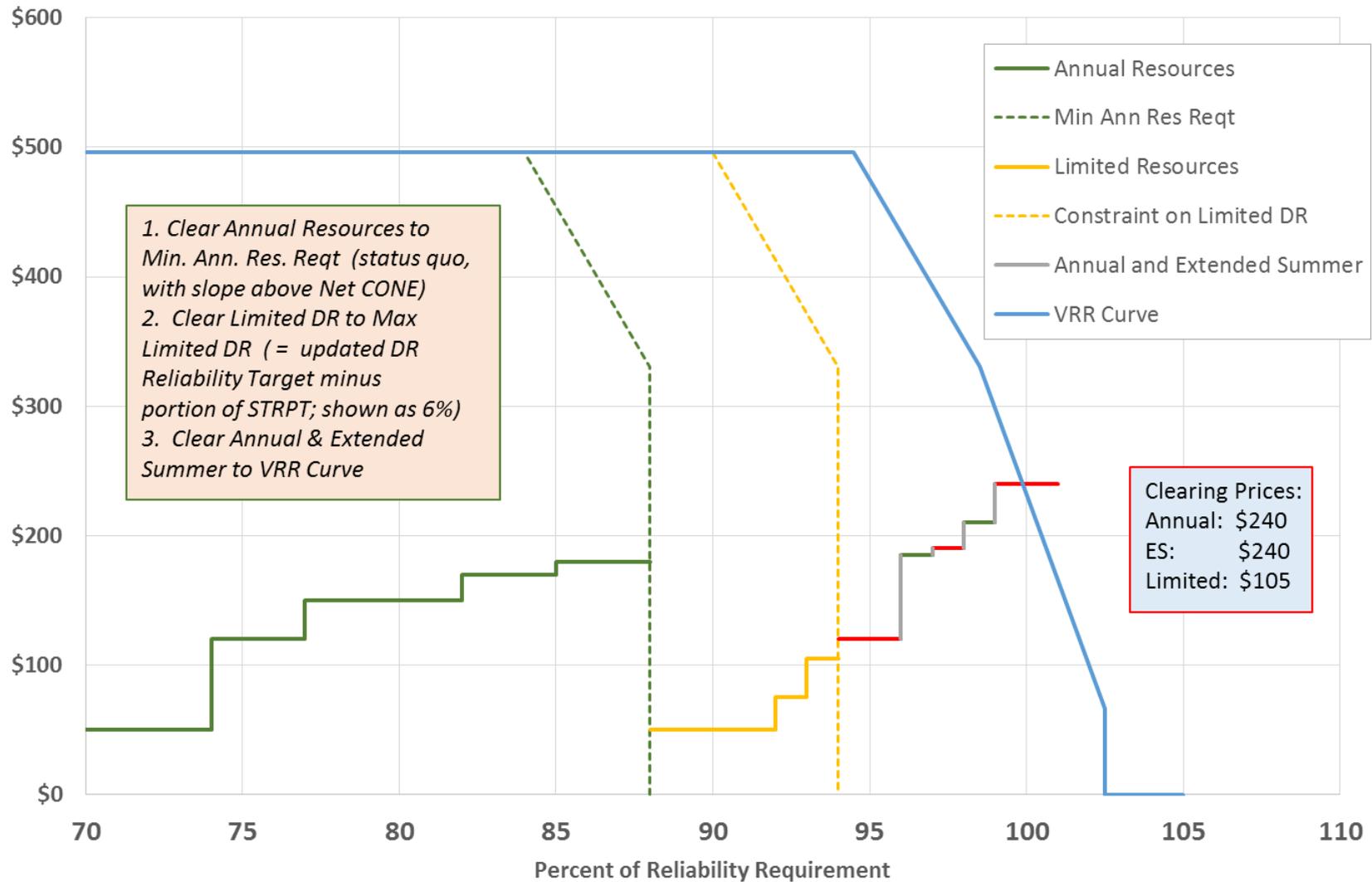
Example 2: Failure to Procure Needed ES Resource



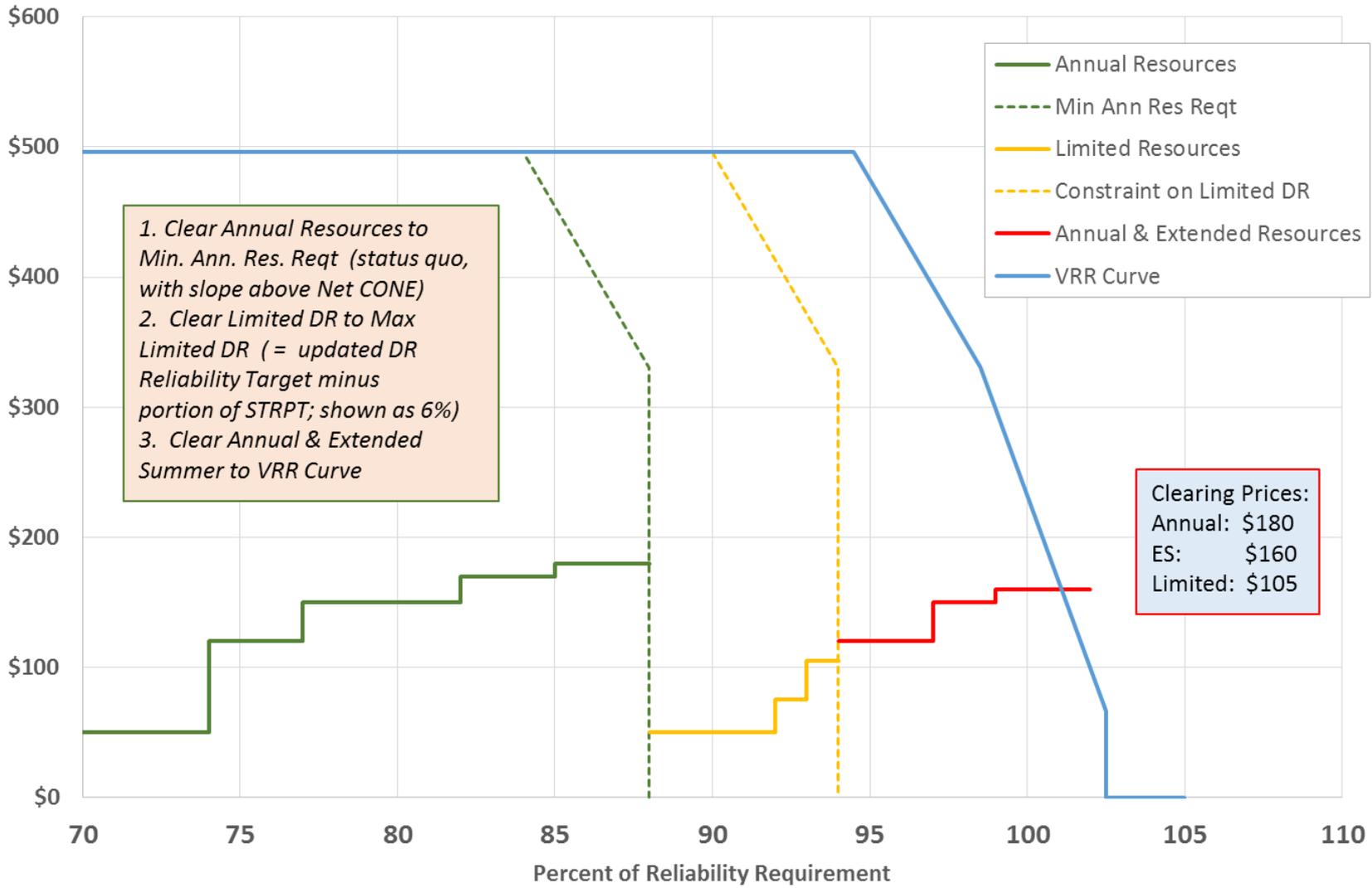
2. OCA/SMECO Alternative Proposal

1. Clear Annual Resources to the Minimum Annual Resource Requirement, as under Status Quo; however, apply sloped demand curve concept for prices above Net CONE
2. Set a maximum limit on Limited Resources, as under PJM's proposal, however:
 - A. Update Limited DR Reliability Targets to reflect use of DR as operational resource (increases the DR Reliability Target from 4.8% to over 6% for RTO)
 - B. Subtract only a portion of STRPT from the target (portion TBD)
3. Once Minimum Annual Resource Requirement constraint is met, Annual and Extended Summer resources allowed to compete to the sloped VRR curve

OCA/SMECO Proposal For Clearing DR in RPM Base Residual Auctions (illustrating circumstances with no price separation, Annual/ES)



OCA/SMECO Proposal For Clearing DR in RPM Base Residual Auctions (illustrating circumstances with price separation, Annual & ES)



3. Discussion

OCA/SMECO proposal is superior to the PJM proposal:

1. Sets a maximum on Limited DR, but at a more reasonable level:
 - Limited DR Reliability Target updated to reflect use of Limited DR as an operational resource with more granular dispatch (30- 60- 120-minute lead times, subzonal dispatch, etc. etc.)
 - Deducts only a portion (perhaps pro-rata portion) of STRPT
2. Once the Minimum Annual Resource Req't is met, allows Annual and Extended Summer resources to compete to the VRR curve:
 - Nearly all remaining loss of load chance is in the Extended Summer period; Annual and Extended Summer resources have nearly equal reliability value.

PJM's Simulations Show the Advantages of the OCA/SMECO Proposal

- Simulations of the PJM proposal show:
 - Substantial price differentials between Annual and Extended Summer resources in 2015/16 despite clearing Annual resources well beyond Min. Ann. Res. Req't
 - Limited DR cut to 35%-37% of actual results; prices crushed to less than half prices for other products in nearly all zones (\$1/MW-day in one zone)
- Simulations of the OCA/SMECO (“W/R 2”) proposal show:
 - Annual and Extended Summer generally clear at same price, Annual resources are cleared beyond Min. Ann. Res. Req't – more competition, lower prices
 - Limited DR cleared at an intermediate value well below actual results, well above levels under PJM proposal
 - Limited DR prices mostly 80% to 88% of Annual/ES resource clearing prices

The OCA/SMECO Proposal Maintains Reliability

- Like Status Quo, clears Annual Resources to the Minimum (w/slope)
- Constrains Limited DR based on Limited DR Reliability Target
- Can clear additional Extended Summer once Min. Ann. Res. Req't satisfied; at that point, difference in incremental reliability value of Annual and Extended Summer resources is trivial:
 - First 1% of excess: Ann v. ES difference is 0.7 events per one hundred years!
 - Declines to 0.2 events/100 years for third, 0.1 events/100 for fourth % of excess
- Limited DR increases LOLE beyond ES Target's 10% threshold?
 - Three tests are applied to Limited DR to ensure full reliability value, no additional LOLE for using Limited DR rather than Annual or ES
 - If this is still a concern, the threshold used in ES Reliability Target can be reduced from 10% to 9% (ES Target drops from 10.5% to 10.3%), making room for a small amount of LOLE related to Limited DR

The OCA/SMECO Proposal is More Efficient, Lower Cost

- **More Efficient:** Avoids unjustified price separation between Annual and ES resources that can occur under the PJM proposal; allows Annual and ES to compete once Min. Ann. Res. Reqt satisfied
- **Lower Cost:** Lower cost due to more efficient clearing of Ann/ES, more reasonable constraint on Limited DR
- **Total Resource Credits Cost based on simulations of 2015/16, 2016/17:**
 - OCA/SMECO two year cost is close to actual Base Residual Auction results
 - OCA/SMECO saves \$1.7 billion compared to PJM proposal

OCA/SMECO Proposal Addresses Concerns About Vertical Demand Curve, “Boom/Bust”

- Concerns about “vertical demand curve” for annual resources based on Hobbs Model overstated under current circumstances (sloped supply curves; diversity of resource types and costs; diversity of investor forecasts; many short lead time resources; IAs to acquire additional resources, etc.; Wilson presentation to CSTF, 9/24/2013)
- OCA/SMECO proposal nevertheless provides sloped demand curve:
 - At prices above Net CONE: sloped Min. Ann. Res. Req’t curve
 - At prices below Net CONE: Annual resources compete with Extended Summer to the VRR curve
 - PJM simulations: In most instances Annual resources “see” the sloped VRR curve

PJM's Proposal Worsens Price Divergence and Resulting Inefficiencies, Incentives

	Price differentials, Ann. <-> Ext. Sum		Price differentials, Ext. Sum. <-> Lim.		Price differentials, BRA <-< IAs
	BRA	IAs	BRA	IAs	
PJM proposal	large	none	large	none	larger

Impacts of highly restricting Limited and Ext. Sum. DR in BRAs:

- Exaggerated product price differentials in the BRA
- No price differentials in IAs (no Min. Annual or Min. Ann/Ext. Sum. Req'ts)
- Exaggerated BRA/IA price differentials
- Inefficiencies and bad incentives resulting from lack of price convergence

OCA/SMECO Proposal Moderates Price Differentials, Give Better Chance for Price Convergence

	Price differentials, Ann. <-> Ext. Sum		Price differentials, Ext. Sum. <-> Lim.		Price differentials, BRA <-< IAs
	BRA	IAs	BRA	IAs	
PJM proposal	large	none	large	none	larger
OCA/SMECO	smaller or none	none or small	smaller	none or small	smaller

OCA/SMECO proposal results in more moderate price differentials between products, and between BRAs/IAs

- Better opportunities to offer planned capacity at appropriate time, BRA or IA
- Less incentive to offer questionable capacity into BRA to get best price, etc.

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]
 - FERC (March 26, 2009 order, 126 FERC ¶ 61,275, 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”
 - Cleared Annual Resources in IAs have far exceeded the STRPT (next slide)
- Conclusions:
 - Not appropriate to reduce Max. Limited DR for all or much of STRPT
 - Arguably, Min. Ann. Res. Req’t should reflect a large portion of STRPT

Generation Cleared in IAs (generally at lower prices) Has Exceeded the STRPT

MW UCAP	2015/16 (1 IA to date)	2014/15 (2 IAs to date)	2013/14 (all 3 IAs)
Total Cleared Generation in IAs	3,994.8	6,666.0	5,364.7
STRPT (2.5% Holdback)	4,069.4	3,708.1	3,749.7
Ratio, cleared generation to holdback, IAs to date	0.98	1.80	1.43
Cleared generation to date, percent of peak	2.5	4.5	3.6