



Two-tier Capacity Pricing

PJM PPCSTF

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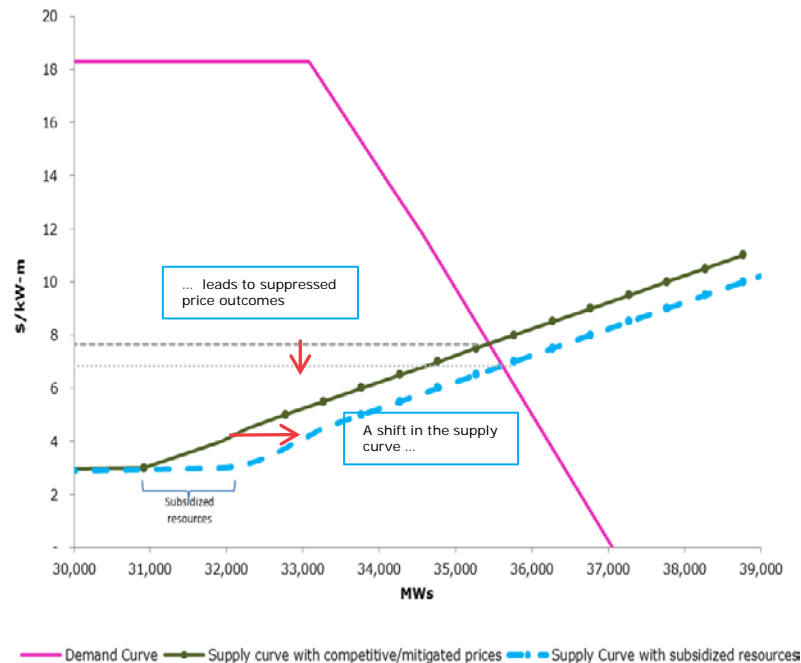


The Tension – as it shows up in forward capacity markets

State perspective:

- State-subsidized resources purchased, for example to advance environmental objectives, have capacity / reliability value, and should be 'counted' in the capacity market
- MOPR* will likely exclude these 'administrative' resources

The price-suppression effect



Market perspective:

- Market prices will be inefficiently suppressed if subsidized resources are free to participate
- MOPR preserves pricing consistent with competitive market participation

* Minimum Offer Price Rule, which acts to ensure that subsidized resources do not offer into the market below their true economic costs



Rationale for a two-tier capacity market proposal

Goals:

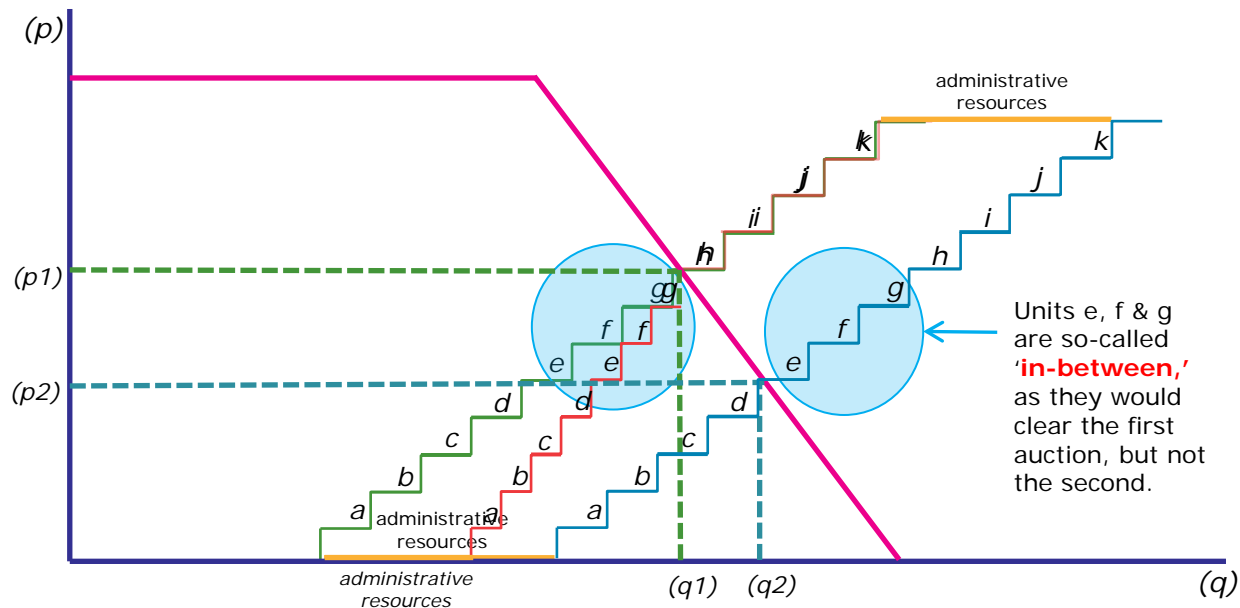
- ✓ Allow state-supported resources to assume a capacity commitment and contribute to meeting the PJM Reliability Requirement, while recognizing that their fixed-cost recovery is coming from outside the market
- ✓ Ensure that resources relying on market revenues experience efficient clearing prices to maintain reliability and avoid Reliability Must Run Contracts
- ✓ Ensure that all resources being counted for resource adequacy have comparable, if not identical, performance obligations
- ✓ Create a financeable capacity market structure that continues to incent investment when and where needed, even as state-supported resources proliferate

Two-tier pricing ensures reliability & continued market-based investment, while providing states the flexibility to contract to meet policy goals



Mechanics of two-tier pricing

- ✓ Capacity auction would occur in two steps. In the 1st step, all resources receiving out-of-market payments to support state policy goals would be subject to offer price mitigation. The 1st-step auction would clear a quantity q_1 @ price p_1 in the diagram below.
- ✓ In the 2nd step, any resources receiving out-of-market revenues and not cleared in the 1st step would be entered into the auction at their submitted (unmitigated) price. The 2nd step would establish a clearing price p_2 , using the same bid stack, with the only changes being to the prices of the administrative resources.
- ✓ Administrative resources that did not clear in the first-step auction would get paid p_2 ; all other resources that cleared the first-step auction would get paid p_1 , including the 'in-between' units.
- ✓ All resources would receive a proportionally lower capacity obligation, to ensure that the total market cost of the auction is no higher than $p_1 * q_1$.





Key Features of NRG's Proposal

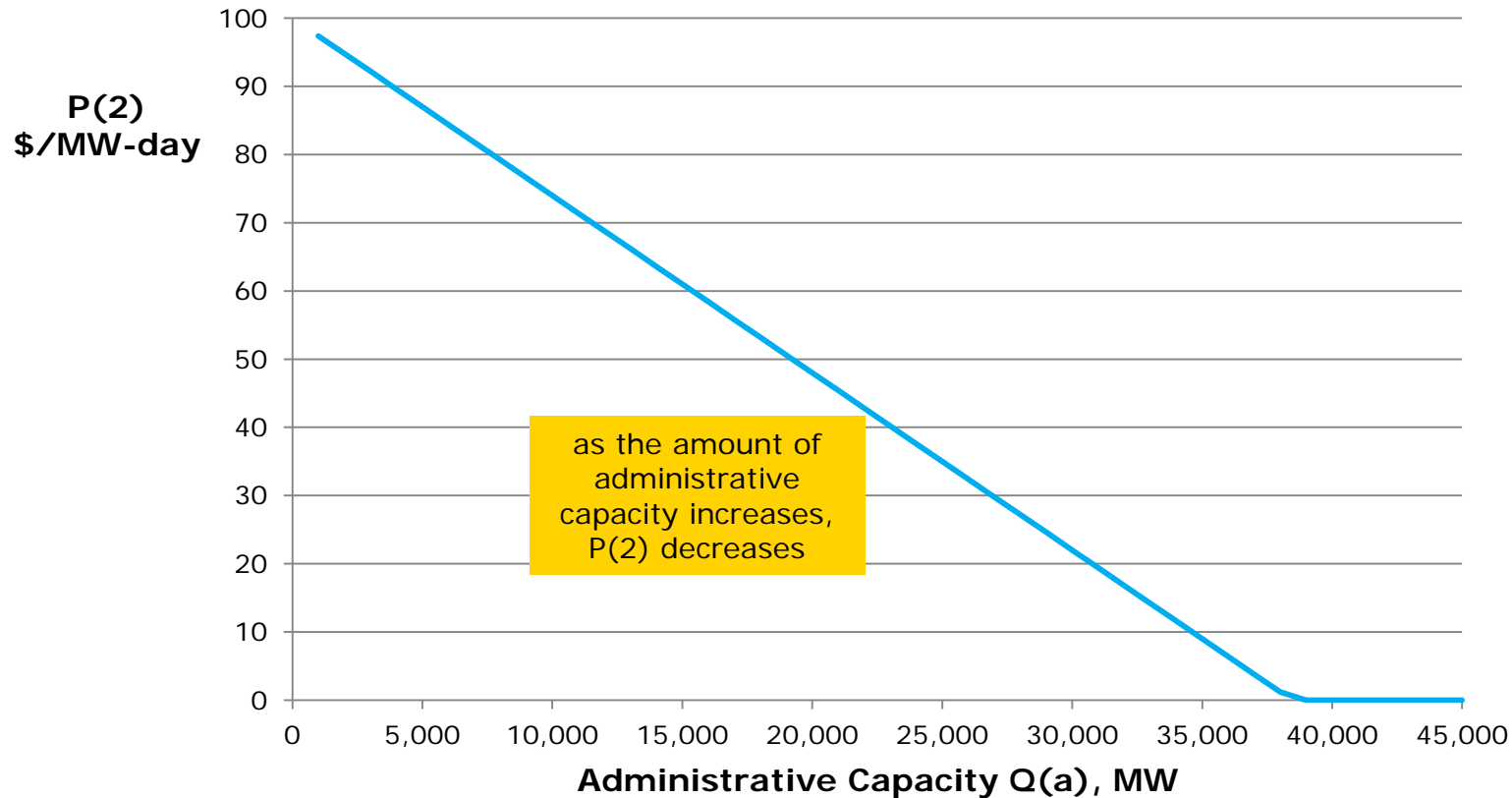
- Price differentiation
 - 'Administrative' resources are recovering fixed costs outside the market, so it is reasonable to compensate them differently for the capacity product
 - The price differentiation creates a natural limiting mechanism (next slide)

- Quantity pro-rating for cost containment
 - The proposal is structured to ensure that the market-settled cost of capacity is equal to (no greater than) the cost that would have occurred absent any administrative capacity (i.e., $P1 * Q1$)
 - Pro-rating applies equally to all resources, competitive and administrative, to spread the cost proportionally (rather than concentrating the cost on only the marginal resources that would be excluded from the market under PJM's approach)
 - Under CP, having a small quantity of unobligated capacity mitigates a resource's performance risk and/or enhances upside potential in Performance Assessment Hours



Market-Responsive Limits (1)

- As the amount of administrative capacity increases, P2 decreases

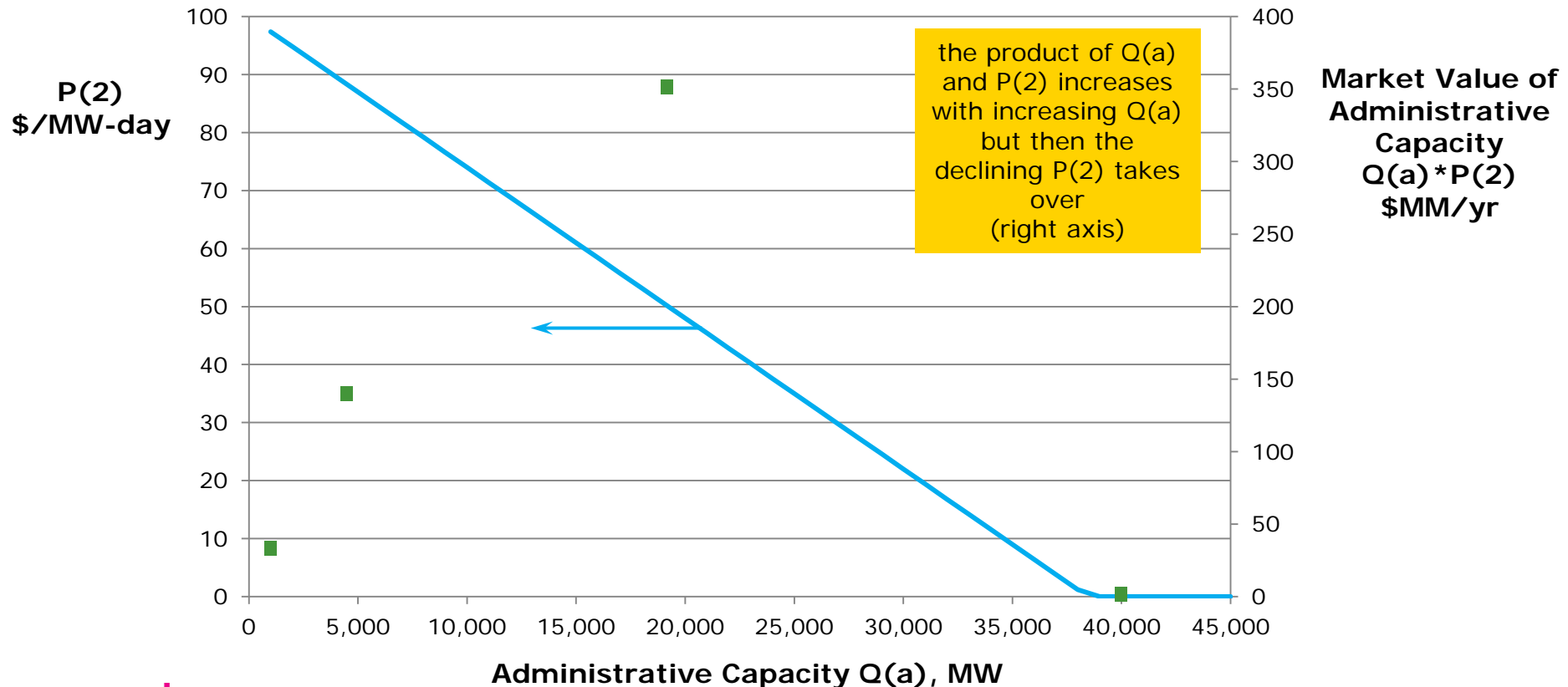


— Supply curve pricing will affect the shape of this relationship between $Q(a)$ and P(2)



Market-responsive Limits (2)

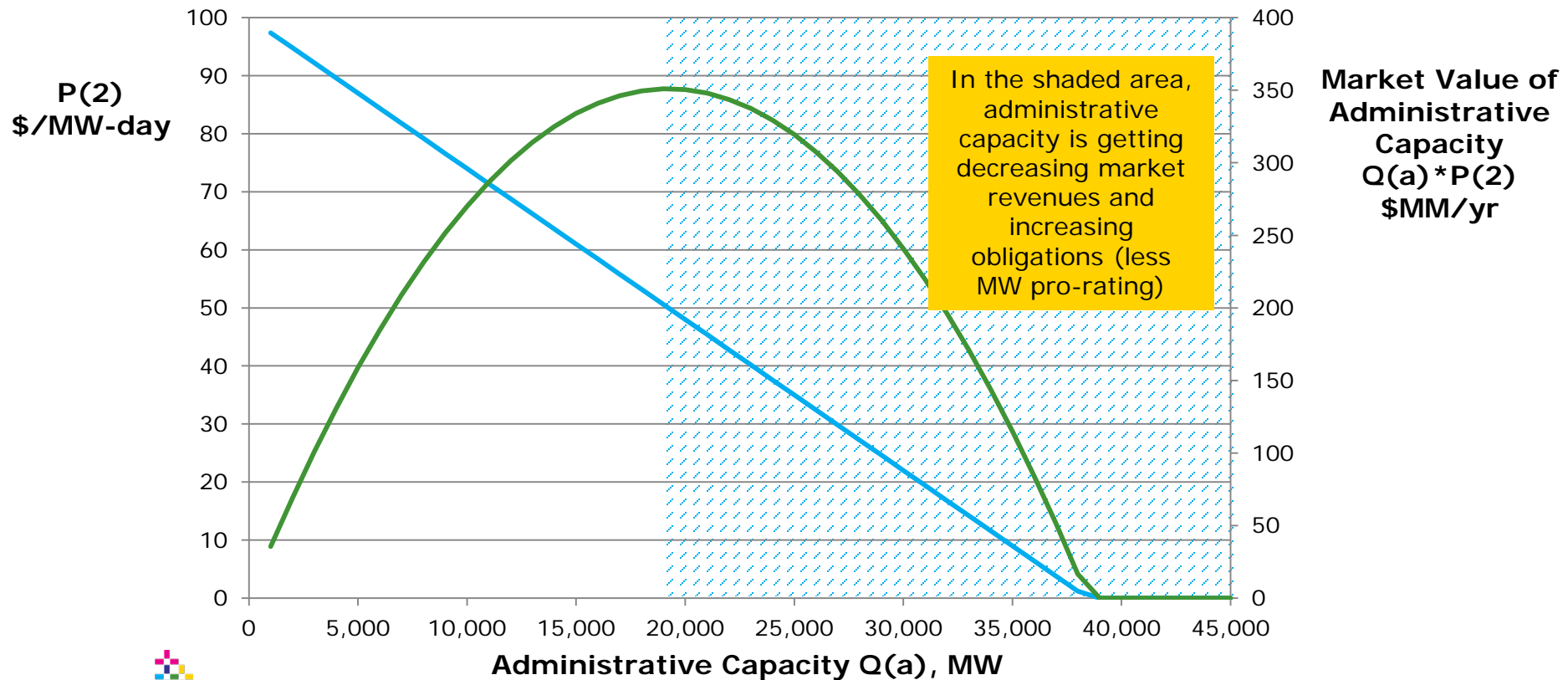
- The market value of the administrative capacity ultimately goes to zero as P(2) goes to zero





Market-Responsive Limits (3)

- Because of the price differentiation there is a logical upper limit on the quantity of administrative capacity
 - This limit increases with higher $P(1)$, ie, as the market is increasingly short





Summary

- NRG's MW pro-rating approach to two-tier pricing is preferable because it:
 - does not rely on one price to select resources but pays them a different price
 - bidding incentive issues
 - does not concentrate risk of exclusion on resources at the margin
 - risk translates to cost
 - creates potential value to resources in a performance-based capacity construct
 - lower performance risk (or potential performance upside) translates to lower cost
 - contains a mechanism that limits the incentive to continue adding administrative resources



Questions?

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