Scarcity Revenue True Up

EPFSTF

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Joe Bowring

Catherine Tyler

Monitoring Analytics

Energy Market and Capacity Market

- **PJM's proposal would substantially increase energy market revenues and reserve market revenues.**
- **PJM's proposal does not address resultant overpayment during the four delivery years for which capacity market has cleared: 2019/2020; 2020/2021; 2021/2022; 2022/2023 (will clear prior to offset)**
- **Result will be overpayment of at least $1.5 billion per year for four years or $6.0 billion total.**
  - **This is likely to be conservatively low estimate.**

Energy Market and Capacity Market

- **PJM's proposal is to use simulation results to calculate net revenue offset for new capacity market auctions, beginning for the auction in 2020, for 2023/2024.**
- **This would mean that a PJM simulation process would set capacity market prices.**
- **It is not appropriate for a nontransparent, non explicitly rule based, and nonmarket calculation to set market prices.**
- **PJM has refused to share simulation output files with the IMM.**

Energy Market and Capacity Market

- **The proposed increase in energy and reserve market revenue to generators is a substitute for capacity market revenue.**
  - **Capacity market revenue is scarcity revenue.**
- **PJM has not stated that its goal is to increase total compensation for generation.**
- **PJM's apparent goal is to shift revenue from the capacity market to the energy and reserve markets.**
- **The shift of revenue requires additional market design changes to ensure that the shift occurs effectively, equitably and efficiently.**

Scarcity Pricing and the VRR Curve

- **The impact on the capacity market demand (VRR) curve needs to be addressed because PJM's proposal is changing the location of scarcity pricing to the energy market.**
- **The reason for the maximum price on the VRR curve is to incorporate scarcity pricing in the capacity market.**
  - **Higher of 1.5 * net CONE or gross CONE**
- **This will no longer be appropriate under PJM's proposal.**

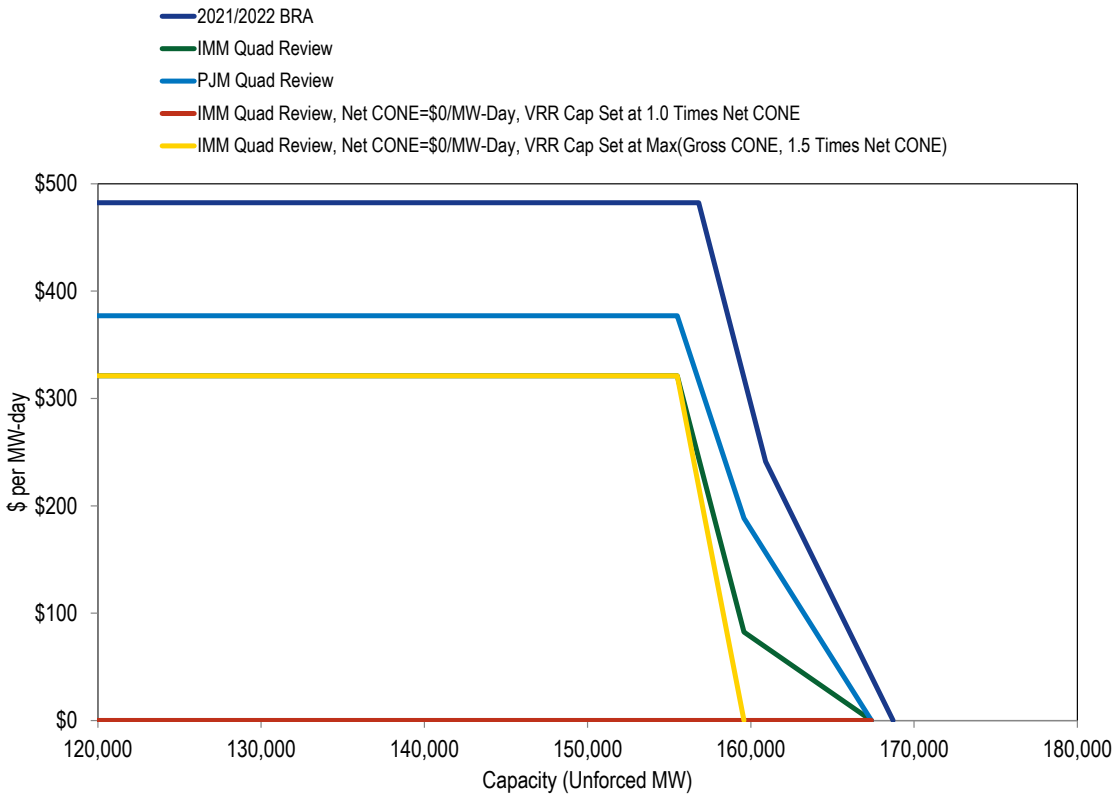
Scarcity Pricing and the VRR Curve

- **Existing shape would become almost vertical with maximum price equal to gross CONE under PJM's proposal**
  - **Increases to the net energy and ancillary services offset would decrease net CONE to relatively low levels.**
  - **If net CONE is zero, existing VRR curve maximum price would equal gross CONE .**
- **The maximum price on the VRR curve should be set at net CONE.**
- **Capacity price could be zero under some conditions.**

VRR Curves

- **VRR curve 1: Actual 2021/2022 VRR**
- **VRR curve 2: IMM Quadrennial Review proposal**
- **VRR curve 3: PJM Quadrennial Review proposal**
- **VRR curve 4: IMM Quad Review; Net CONE = 0; Max price = Gross CONE**
- **VRR curve 5 IMM Quad Review; Net CONE = 0; Max price = Net CONE**

RTO VRR Curve Comparison



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VRR Curves

- **VRR curve 1: Actual 2021/2022 VRR**
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- **VRR curve 3: PJM Quadrennial Review proposal**
- **VRR curve 4: IMM Quad Review; Net Revenue with 10 percent increase in LMP; Max price = Gross CONE**
- **VRR curve 5 IMM Quad Review; Net Revenue with 10 percent increase in LMP; Max price = Net CONE**

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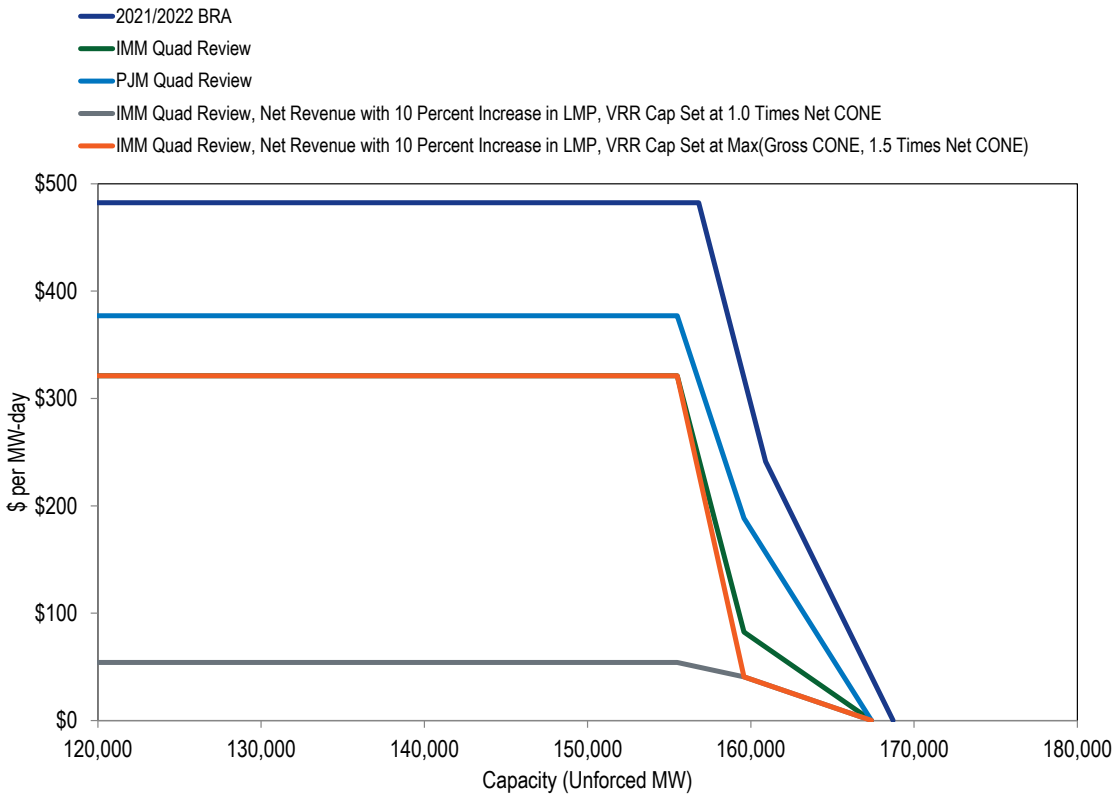

First Four Years Under PJM's Proposal

- **PJM's proposal will result in an overpayment of at least $1.5 billion per year for four years or $6.0 billion total during the transition period.**
- **There needs to be a true up for the first four delivery years or a delay in implementation.**
- **The true up issues would be much smaller if the IMM's proposal were adopted.**

Forward Looking Offset

- **If revenues are to be shifted from the capacity market to the energy market, there must be a clear and verifiable mechanism to ensure that the shift occurs effectively, equitably and efficiently.**
- **Without a forward looking energy and ancillary services offset in the capacity market, the capacity price and the energy price cannot reach an equilibrium.**
- **A forward looking energy and ancillary services offset is required for the modified ORDC approach to work efficiently.**

Energy Market and Capacity Market

- **The true up for the first four delivery years should return excess capacity revenues to customers.**
- **In the absence of a forward looking energy and ancillary services offset, the true up for the following years should also return scarcity revenues to customers unless a resource's scarcity revenues exceed the scarcity revenues of the reference unit .**

True Up Transition Mechanism

- **Scarcity rents in energy and reserve markets are the portion of revenues directly attributable to the scarcity price adder to LMP.**
- **ORDC scarcity rents were not anticipated in previously cleared capacity auctions.**
- **Calculate scarcity rents for the reference CT using actual delivery year prices to determine what the accurate E&AS offset would have been.**
  - **Calculate cumulative scarcity rents each day and a final number at the end of the delivery year.**
  - **True up delivery year capacity payments by the calculated amount.**

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403
(610) 271-8050

MA@monitoringanalytics.com
www.MonitoringAnalytics.com