Features of ELCC for ESR & Results of ESR ELCC Studies for Other Regions

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Market Implementation Committee: Special Session on Capacity Market Capability of Energy Storage Resources

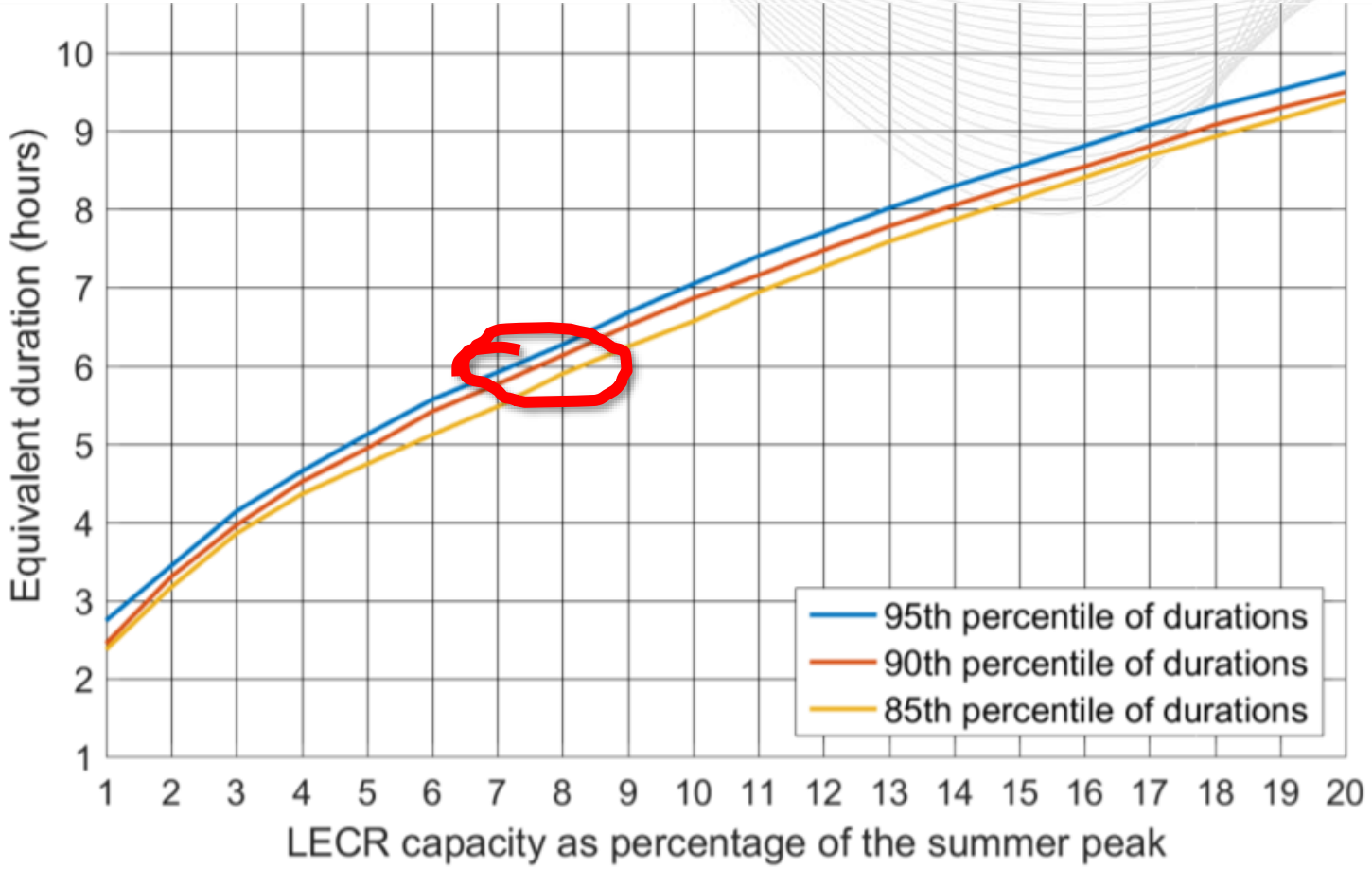
Features of ELCC for ESR

Assuming the fleet of ESR discharges during contiguous hours of peak risk, and given PJM's expected load shape, ELCC results for initial deployments of 6-hour or even 4-hour ESR could be approximately 100%. This value could decline after total deployment of 6-hour or 4-hour ESR exceeds some value over 1,000 nameplate MW.

Relevant existing studies:

- PJM IEEE paper (peak shaving, not ELCC)
- NREL ESR capability analysis including PJM (peak shaving, not ELCC)
- Potomac Economics for NYISO
- Astrape for Southwest Power Pool
- PJM-internal preliminary ELCC analysis for 2023 resource mix

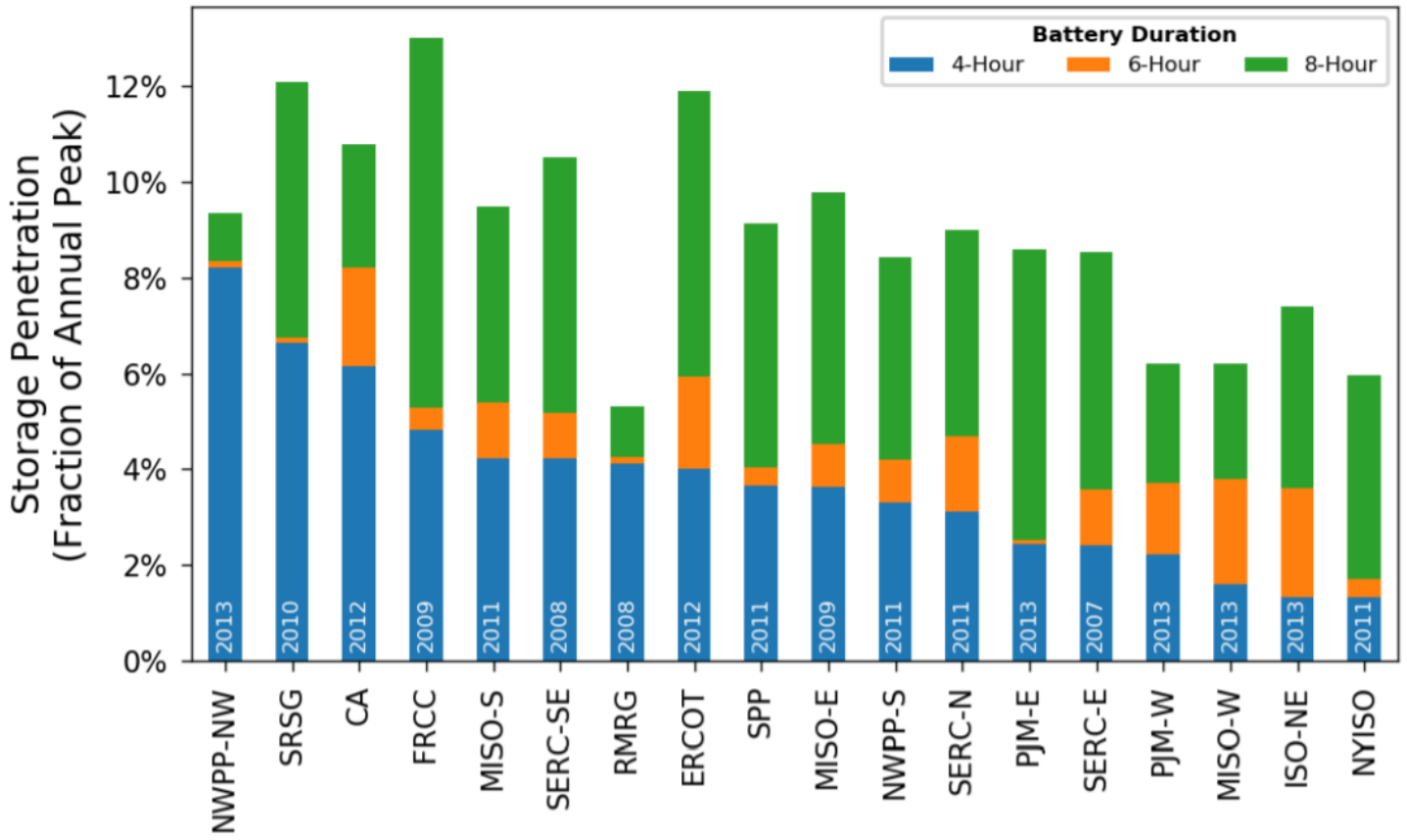
PJM IEEE Paper



- 6-hour resources could cover about 7% of the peak for nearly all peak shapes.

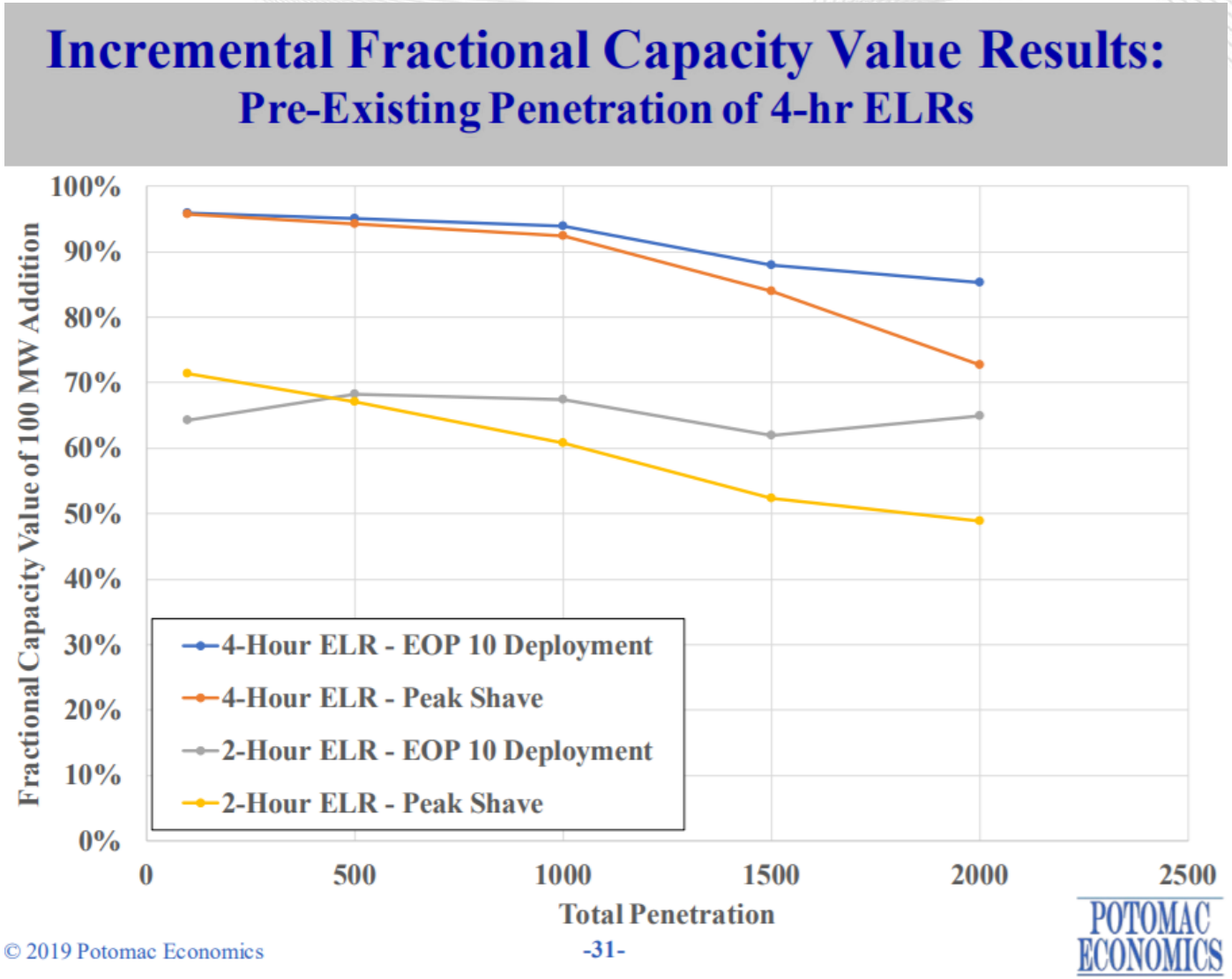
Limited Energy Capability Resource Duration Requirement for Participation in PJM Capacity Market
https://www.pjm.com/-/media/library/reports-notices/special-reports/2019/esr-duration.ashx?la=en
https://www.pjm.com/-/media/committees-groups/committees/mic/20180914-special/20180914-item-05-esr-duration-slidedeck-0914.ashx
https://ieeexplore.ieee.org/abstract/document/8791630

NREL Peak Shaving Study



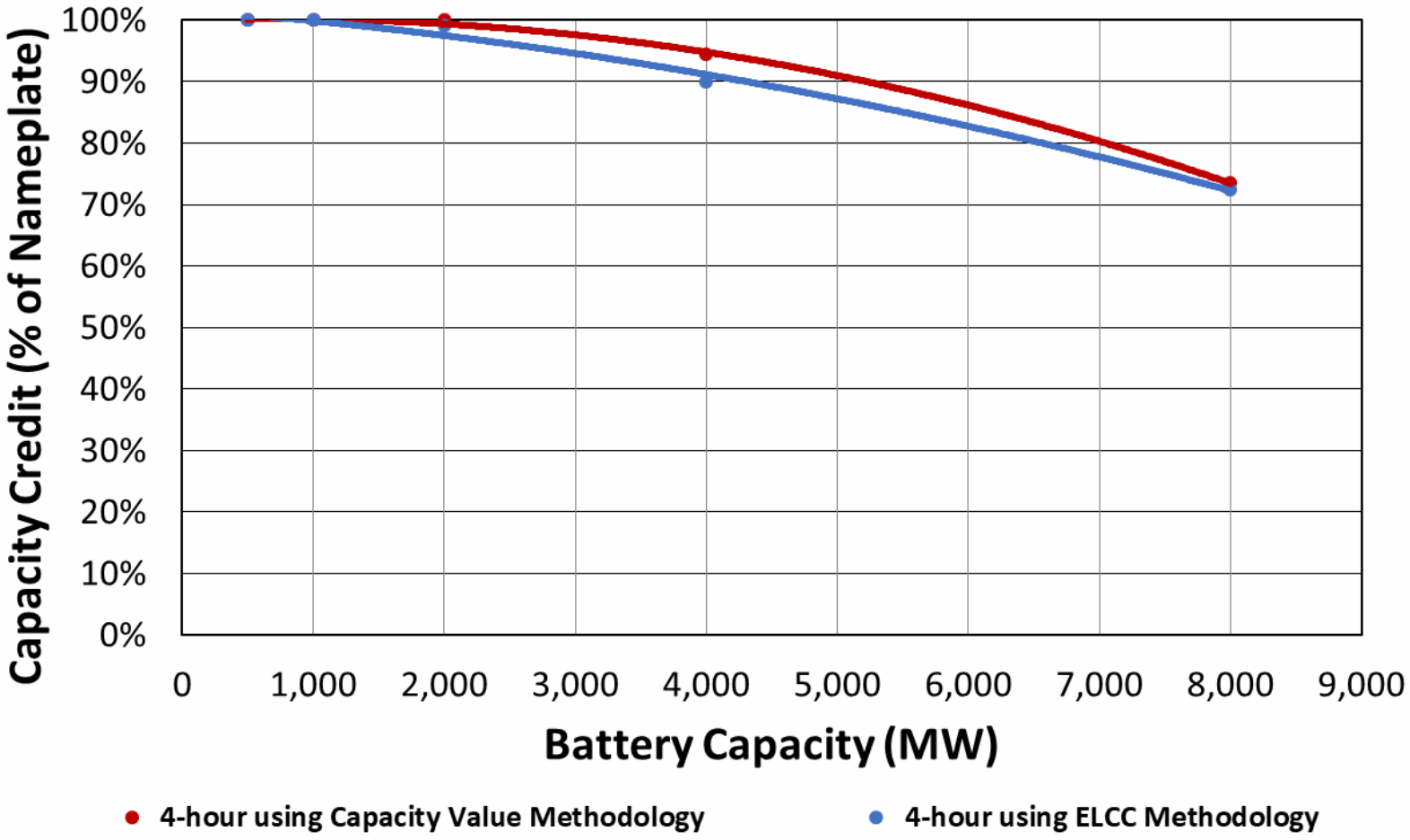
The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States. 2019. Paul Denholm, Jacob Nunemaker, Pieter Gagnon, and Wesley Cole. https://www.nrel.gov/docs/fy19osti/74184.pdf

Potomac Economics NYISO Study



https://www.nyiso.com/documents/20142/4615689/MMU+ELR+Capacity+Value+Study+012419.pdf

Astrape ELCC for SPP



https://www.spp.org/Documents/61378/SAWG%20Agenda%20and%20Background%20Materials%2020200129.zip