Committee on Energy Resources & the Environment

Can You Call on Your Capacity in a Crisis?

This session will begin at 1:45PM
WELCOME

Hon. Charlotte A. Mitchell
Chair
North Carolina Utilities Commission
PANELISTS

Tim Burdis
Senior Manager
State Policy Solutions
PJM

Libby Kirby
Transmission Operations Electrical Engineer
Bonneville Power Administration

Gabe Murtaugh
Storage Sector Manager
CAISO

Lynn Hecker
Senior Manager – Resource Adequacy Policy
MISO
MISO Non-thermal Resource Accreditation Overview

2022 NARUC Summer Policy Summit

July 19, 2022
Changing resource portfolio with rapid growth of intermittent resources drives continued risk profile shifts and an increased need for resource accreditation reforms to address reliability imperative.

Resource Portfolio continues to evolve with increasing growth of renewables

Historical Emergency Declarations increase across the year

Future portfolio indicates continued shift of reliability risks across the year

Renewable reliability contributions vary by penetration and portfolio mix

MISO Futures Report - MISO’s Renewable Integration Impact Assessment (RIIA) - Aligning Resource Availability and Need
MISO is pursuing continued accreditation enhancements for non-thermal resources

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Current Annual Accreditation</th>
<th>Seasonal Accreditation proposed in MISO’s 2021 RA reform filing</th>
<th>Further Enhancements currently underway</th>
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<tbody>
<tr>
<td>Wind</td>
<td>Annual ELCC and then allocate to individual wind resources based on performance over 8 peak summer days per year</td>
<td>Seasonal ELCC and then allocate to individual wind resources based on performance over 8 peak days per season</td>
<td>Evaluate availability-based accreditation approaches, including probabilistic, deterministic, and blended</td>
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<td>Solar</td>
<td>Three-year, historical availability-based hours 15, 16, 17 EST from June to August</td>
<td>Three-year, historical availability-based hours 15, 16, 17 EST for spring, summer and fall. Hours 8, 9, 19, 20 EST for winter</td>
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| Demand Response | Lead time > 6 ≤ 12 hour credited 50% until 2023  
Annual calls ≥ 5 <10 credited 80%  
and calls ≥ 10 credited 100% | Summer/Winter: Lead time ≤ 6 hours and calls ≥ 5 credited 100%  
Spring/Fall: Lead time ≤ 6 hours and calls ≥ 3 credited 100% | Evaluate notification time and availability during times of need |
| Storage       | Accredited based on outage rates | Seasonal outage rates | Evaluate availability during times of need |

ELCC = Effective Load Carrying Capability
Contact Information

Lynn Hecker
Senior Manager, Resource Adequacy Policy and Analytics
MISO
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Overall Capacity Factor: 26.7%

Lower capacity factor when temperatures are low or high, higher capacity factor when temperatures are mild.
While the average capacity factor is 33% when the temperature is between 50 and 60 degrees, there is still significant variation on hourly output.

Libby Kirby, Bonneville Power Administration, eakirby@bpa.gov
We can see similar variation in temperature bins with higher average capacity factors.
Developing Storage and Strategic Vision for a Carbon Neutral Grid

July 19, 2022
NARUC Summer Policy Summit
Gabe Murtaugh, Storage Sector Manager
Developers are building large amounts of new energy storage on the CAISO grid.

- California has a goal to generate electricity in a 100% greenhouse gas free manner by 2045
  - Energy will come from renewables
  - Storage is required to save energy for consumption when generation is less than loads

- Storage is rapidly growing, because of state procurement mandates

- CAISO currently has 3,500 MW of installed storage
  - Most new storage is lithium-ion and most is 4-hour duration
The CAISO expects a massive buildout of storage to meet California’s 2045 GHG reduction targets.
Storage primarily provides ‘energy shifting’ services, and overall actual performance is increasing.
COMMENTS OR QUESTIONS

Gabe Murtaugh
Storage Sector Manager, California ISO
gmurtaugh@caiso.com
Thanks for attending.
We look forward to seeing you here at 3:15 PM for the next ERE session.