Environmental Organizations' Perspective on High Level Design Concepts

SUSTAINABLE FERC PROJECT

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Goals of Reform

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Ensure resource adequacy

…as the resource mix and load patterns change

…in the face of emerging risks

…at lowest possible cost.

Shortcomings of Current Design

Built around summer peak risk, so inefficient at handling more diverse risk cases.

Built around thermal generation, so difficult to integrate resources with different characteristics.

Contains a variety of accommodations for traditional generators that end up acting as subsidies.

Result is some unclearly managed risk and higher costs. Many risks are hidden through high reserve margins.

Reliability Targets

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- PJM raises legitimate questions if the simple 1-in-10 LOLE standard is adequate.
    - Duration and depth of blackouts matters
    - Do time or other factors matter?
- State commissions are in the best position to represent customers' needs.
- The current approach—universal standard with DR for customers who can accept less firm service—is reasonably flexible.
- Reliability targets are separable from market design; our market design goal here should be something flexble enough to allow updates to RA metrics without other changes.

Qualifications and Accreditation

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- Emphasis should be on accreditation over qualification. Few resources should be excluded, but counting reliability value must be rigorous.
- Accreditation should be reformed to properly allocate supply-risks to the resources that cause them.
- ELCC (or something similar) for all resources, with classes defined by common risk

ELCC for Thermal Resources

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- Many resource adequacy issues not well handled with current rules: correlated outages, summer derates, fuel supply.
- ELCC approach inherently addresses most of these.
- Regarding fuel supply, consider defining ELCC classes based on “fuel secure” vs “non-secure” or even by common contingency such as pipeline.
- Seasonal accreditation that incorporates fuel risk cleanly incorporates winter reliability issues and sends clear price signals for firm winter capacity.

Considerations for Marginal ELCC

- Several issues need to be addressed for Marginal ELCC to work in PJM
  - Missing Megawatts: under marginal ELCC, the sum of individual resources' UCAPs is less than the total resource adequacy value of the fleet. NYISO will address this by corresponding adjustments to resource adequacy requirements. In a multi-state RTO, that creates a free-ridership problem, where benefits from investment in ELCC resources flows to other states.
  - Dynamic Values: ELCC values must be calculated during auction clearing and include synergies/antagonism between resource classes. The entire point of a marginal approach is to find the optimal amount of each resource type. Static ELCC values prevent that from happening. They can also cause the auction to fail dramatically when marginal values are low.
  - Penalty Structure: UCAP based obligations do not work with marginal ELCC due to the missing megawatts problem. If each resource is obligated based on its UCAP, the system will be relying on capacity that no supplier is required to provide.

Performance Assessments

- ELCC discounts resources UCAP to reflect risks. Like anything else, once risk is properly priced in, it is fully accounted for.
- To be consistent, ELCC resources should be obligated to perform to the assumptions of the ELCC model: storage to duration class, thermal to fuel class, etc.
- However, to avoid moral hazard, unit-specific forced outages (as opposed to common contingencies) should not be considered in ELCC and should remain under something like the current penalty structure.
- RMI discusses this in more depth.

Seasonal Markets

- Seasonal variations in supply, demand, and transmission all suggest value from optimizing across seasons.
- Lack of seasonal requirements and accreditation causes inefficiencies:
  - Quantity of winter capacity based on summer peaks
  - Limited opportunities for seasonal resources

Seasonal Markets

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- A 2017 PJM analysis shows opportunity for savings from balancing summer and winter resource adequacy:

Key Results from PJM's Winter Season Resource Adequacy Analysis (MW UCAP)							
		Allocating LOLE **90/10** to summer, winter:			Allocating LOLE **70/30** to summer, winter:		
Zone	Status Quo (annual requirement)	*Summer req't is higher by:*	*Winter req't is lower by:*	Max. summer-only resource:	*Summer req't is higher by:*	*Winter req't is lower by:*	Max. summer-only resource:
RTO	167,393	433	(13,538)	**13,971**	1,461	(16,172)	**17,633**
MAAC	66,385	200	(8,407)	**8,607**	660	(9,477)	**10,137**
EMAAC	36,921	120	(7,109)	**7,229**	460	(7,559)	**8,019**
The above results are based on reasonable assumptions about likely future wintertime generation forced outage rates ("Scenario 5A"). Including, instead, the "polar vortex" performance data, the results (shown below) are very different; and PJM staff have not taken a position yet on which assumption they recommend to use:							
RTO	167,393	433	(4,164)	**4,597**	1,461	(7,846)	**9,307**
MAAC	66,385	200	(3,947)	**4,147**	660	(5,167)	**5,827**
EMAAC	36,921	120	(5,089)	**5,209**	460	(5,689)	**6,149**

Note: these results assume planned maintenance is not allowed by Capacity Resources during the winter peak period.
Source: PJM presentation to Resource Adequacy Analysis Subcommittee, August 4, 2017.

Possible Seasonal Approach

- Two, three, or four season models all reasonable.
  - We see some value in having a shoulder month capacity price.
  - We see little gains from going beyond four seasons.
- Separate reliability requirements and resource accreditation for each season
  - Sends clear price signals for winterization and summer-only resources.
- Revenue sufficiency options:
  - Seasonal/Annual ACRs and linked offers most complex solution, but will limit uplift.
  - Annual ACR with seasonal clearing simpler, but need to understand the uplift implications.