

Introduction to Seasonal Capacity Market Concepts

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A seasonal capacity market recognizes sub-annual supply and demand

Elements may include:

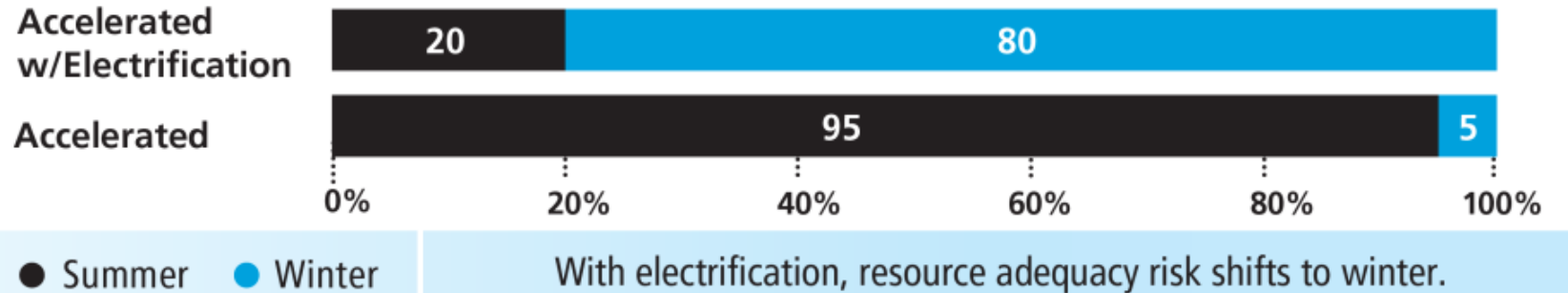
- Separate seasonal reliability requirements
- Separate seasonal capacity accreditation
- Differentiated seasonal capacity payments

In one sense, PJM already has a (partially) seasonal market:

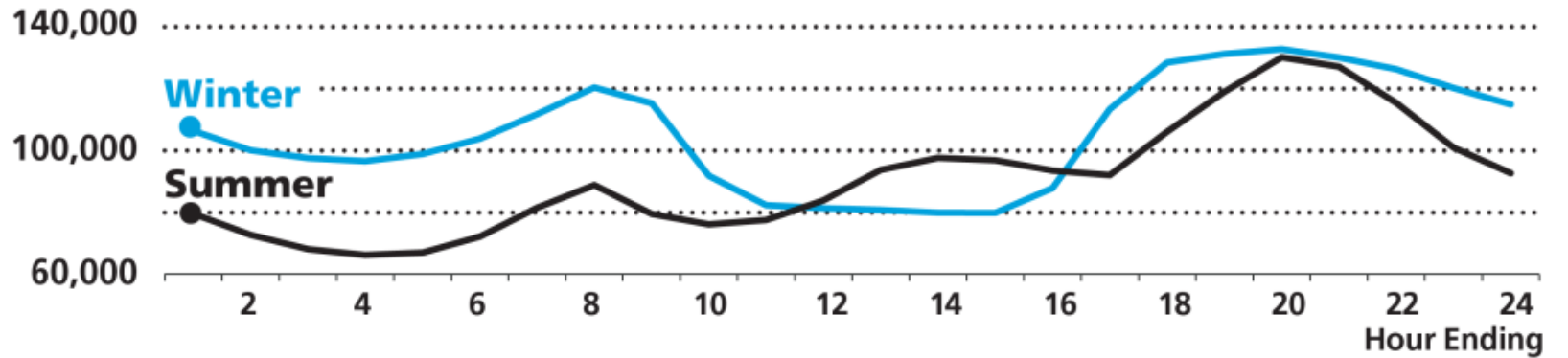
- Partially recognizes seasonal (un)availability of ELCC resources
- Recognizes higher thermal winter FOR and summer ambient derates
- Facilitated aggregation of summer and winter resources

Second phase of “Energy Transition in PJM” study indicates changes on both supply and demand side will increase importance of reliability risks outside of traditional summer season.

Load-Loss Risk (%)



Net-Load (MW)*



Net-load profile in winter is flatter, with a slightly higher, but considerably wider, peak demand.

*Accelerated with electrification

Seasonal capacity market construct could improve efficiency by lowering costs while maintaining or improving reliability

- More fully recognize seasonal risks
- More fully recognize seasonal resource capabilities
- Incentivize efficient investment in resources that can most contribute to system reliability needs at lowest cost

	PJM (Current)	NYISO	MISO (Proposed)
Commitment Periods	Annual	6-month strips & monthly	Quarterly
Resource Adequacy Requirement	Single annual requirement	Reflects <i>annual peak</i> , even in winter	Reflects <i>seasonal risks</i> (lower in winter)
Accreditation	Partially reflects seasonal performance expectations	Seasonally differentiated	
Auction	Single auction	Separate auctions	

Each period must be reliable enough to achieve the annual target

EXAMPLE: 2-SEASON MARKET WITH ANNUAL 0.10 LOLE TARGET:

Summer LOLE + Winter LOLE \leq 0.10 Annual LOLE

- Allocating risks equally across seasons may result in high summer reserve margins, which is costly in a net-summer-peaking system met mostly by annual resources.
- Determining least-cost allocation would require balancing marginal costs and marginal benefits of capacity in different seasons.

Does reliability and risk analysis today sufficiently capture all drivers of risk throughout the year? Does it reflect the magnitude of risks?

Does the approach for setting requirements mitigate risks throughout the year as efficiently as possible?

Are the approaches to understanding risks, setting requirements, and qualifying resources adequate to reflect evolving resource mix and system conditions?

What are the advantages and disadvantages of accounting for seasonal risks and resource capabilities through a seasonal construct vs. improving the annual model?

KWA #3

- Procurement metric and level in each season
- Allocation of risk across seasons

KWA #4

- Performance expectations and incentives/penalties across seasons

KWA #5

- Seasonal qualification requirements (potentially including requirements for winterization, fuel security, etc.)
- Seasonal resource accreditation

KWA #6

- Whether and how obligations should vary by season

KWA #7

- Market clearing mechanisms (potentially including co-optimization across seasons)

KWA #8

- Seasonal obligation periods

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Seasonal Capacity



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