



PJM Proposal Walkthrough

Summer Only Demand Response
Senior Task Force

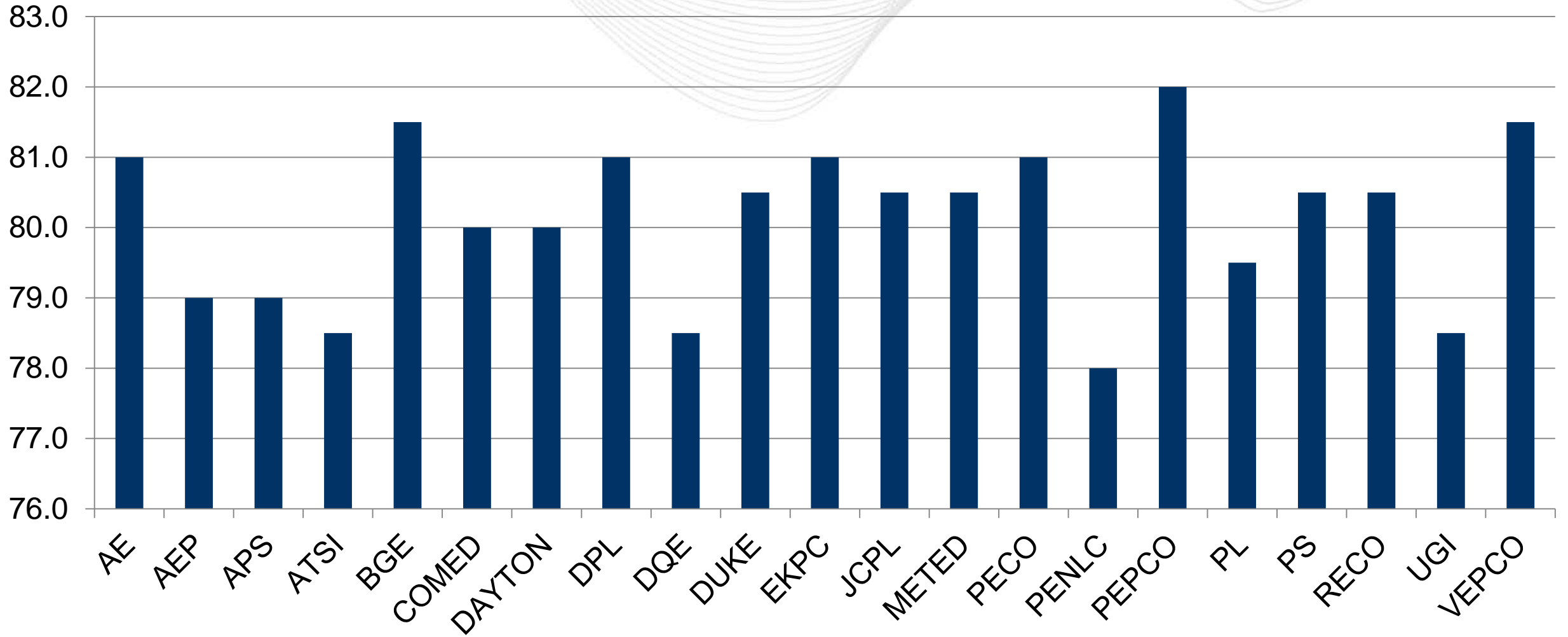
June 13, 2018

- Explain how parts of the PJM package would work using examples.
 - Shaving trigger points
 - Forecast impact
 - Market value

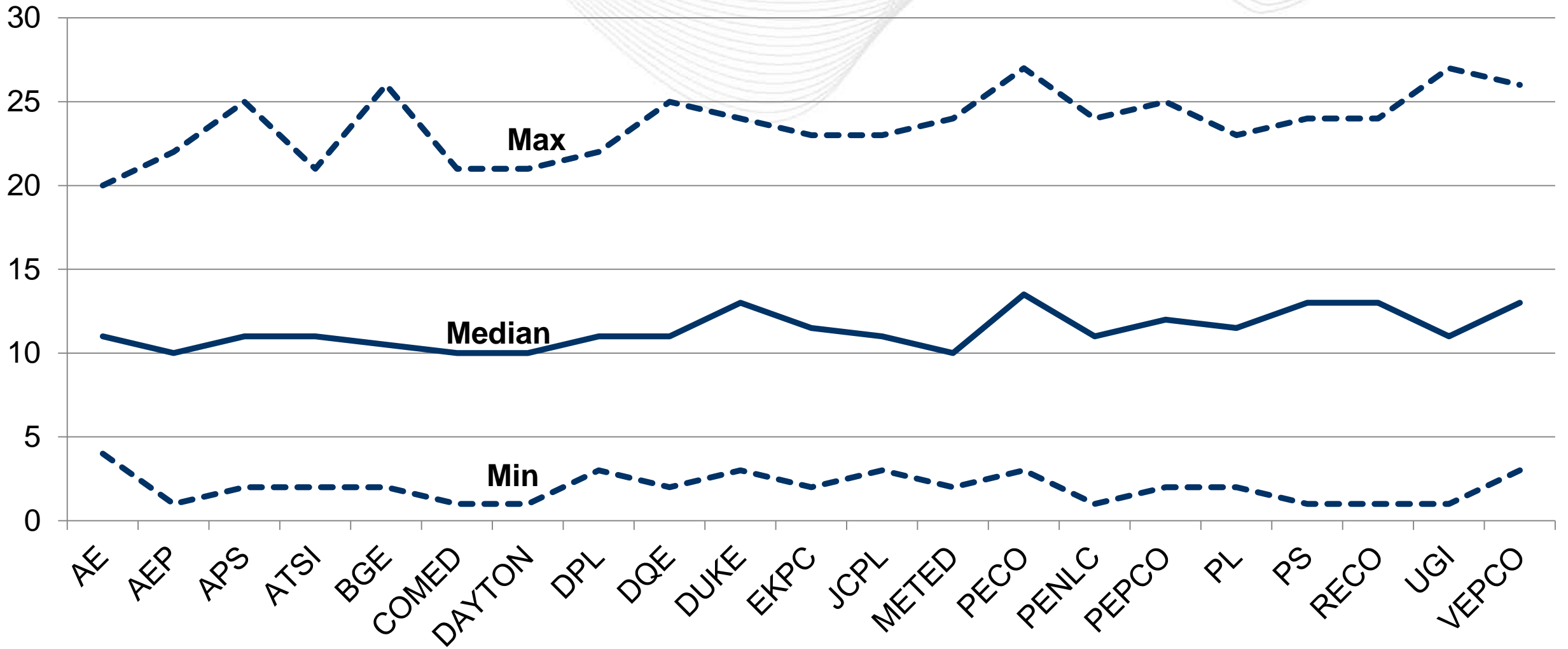
- PJM will initially generate a new lower load forecast based on a modified load history that assumes perfect curtailment compliance back to 1998.
 - Program will be assumed to be enacted every time a pre-determined Temperature-Humidity Index (THI) threshold is reached or exceeded.
 - Perfect curtailment assumption will be re-visited based on actual performance.
 - Capacity value would be reflected through a lower load forecast and thus a reduced Reliability Requirement

- Each peak shaving event will be 6 hours from HE14 to HE19 (***PJM Package***)
- Each peak shaving event will be triggered on non-holiday weekdays which have a max TH1 exceeding the *threshold*
- Peak shaving events can occur any day between May and October

- “THI threshold as determined by PJM”
 - Investigated several potential thresholds and settled on the following method
 - Consider all non-holiday weekdays back to 1998 (May to October)
 - Incrementing by 0.5 THI at a time, count the number of days exceeding the THI value
 - THI threshold is the first instance in which the median number of days per year exceeds 10
 - Different threshold methodologies would lead to different shaving frequency and inevitably different forecast outcomes



THI Threshold – Shaving Frequency (Cuts/Year)

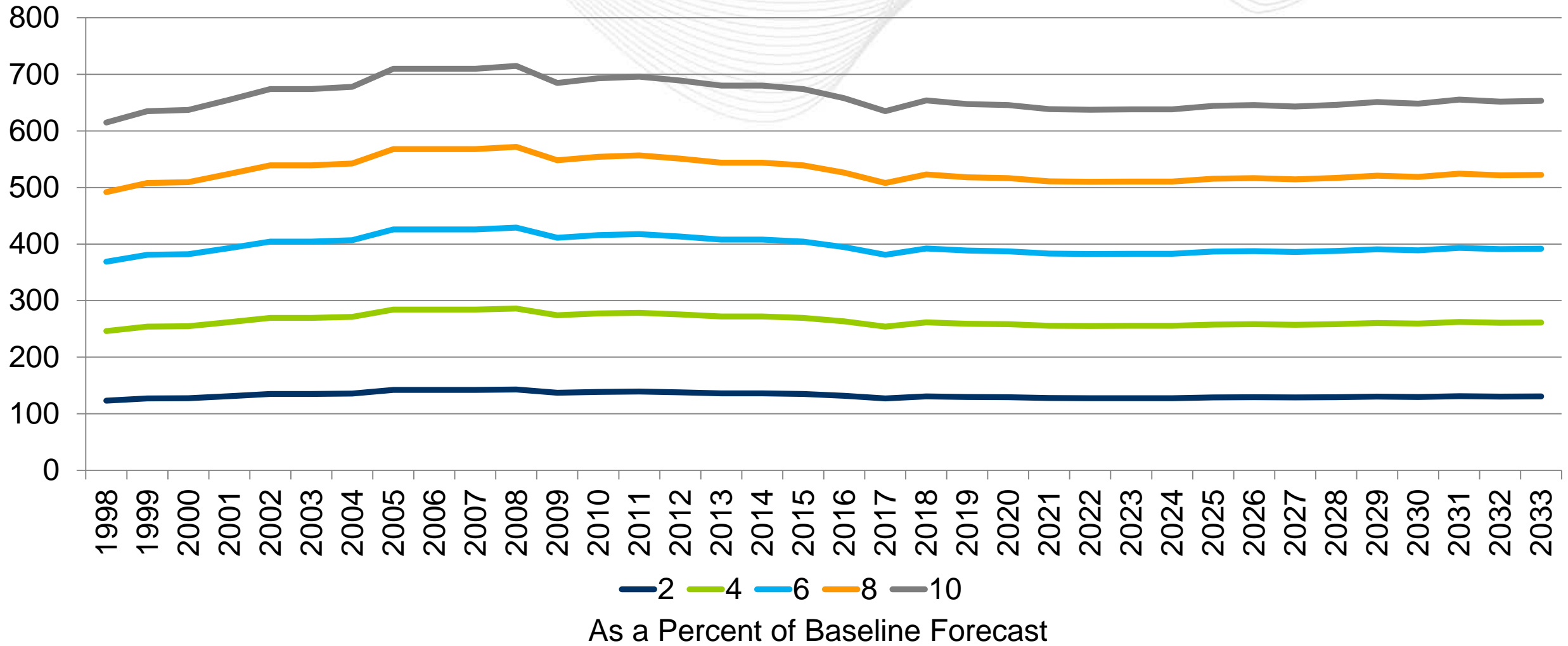


- Current: Forecast model uses unrestricted load
 - Manual 19: “Hourly metered load data are supplemented with estimated load drops...”
 - Shaving would reduce historical unrestricted load, which would lower the forecast through changing model coefficients
- Proposed: Modify forecast model to include shaving (or load management) as an independent variable
 - Not relying on shaving to get reflected in regression model parameters
 - Forecast values would be more consistent with expected operation
 - Can more easily reflect non-performance (Design Component 2b)

- Step 1: Zone would identify future shaving amounts
 - PJM would take that amount as a share of the baseline forecast (no shaving) and would assume that amount (as a share of the weather normal peak) was in place historically on shaving days



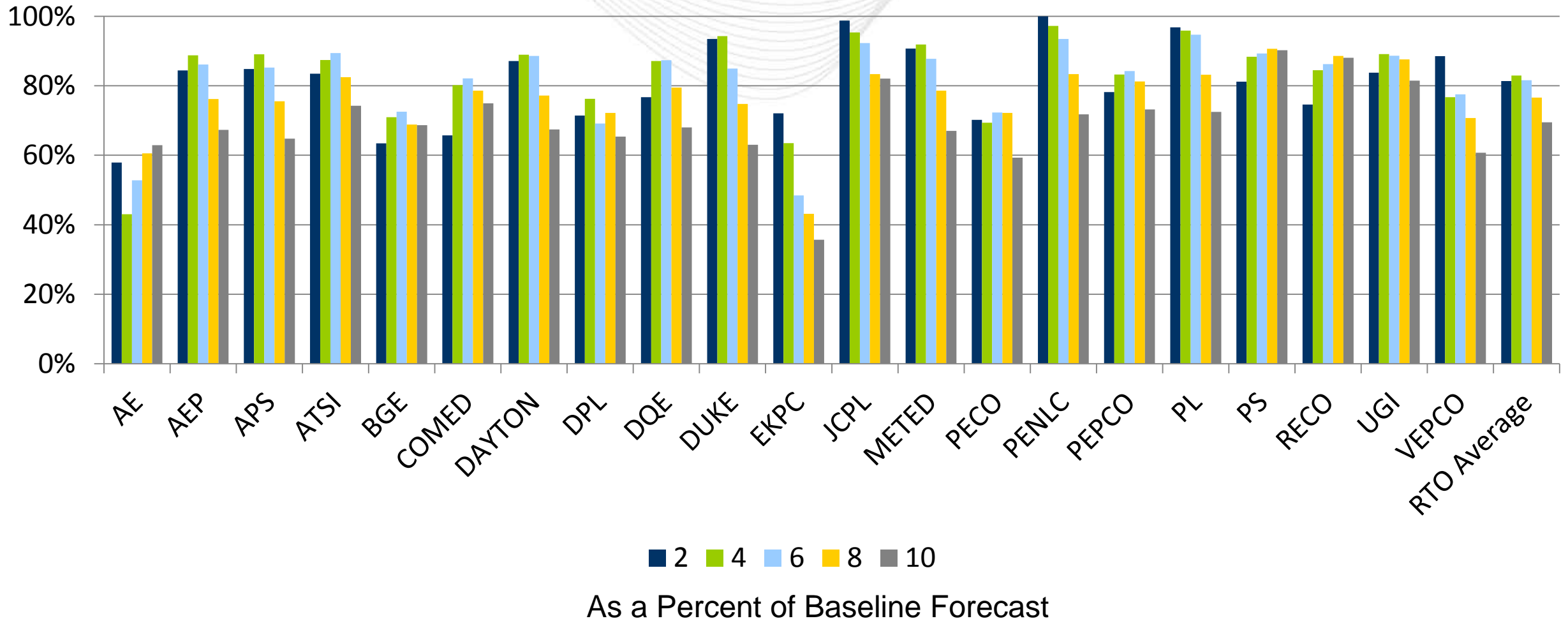
BGE Example: Shaving Amount (MW) by Year by Percent of Baseline Forecast



- Step 2: PJM runs the forecast
 - Shaving will be assumed to be enacted every time the Temperature-Humidity Index (THI) threshold is reached or exceeded
 - In history: Determines model parameters
 - In forecast: Uses model parameters, and enacts shaving on all instances of the weather simulation that meet the criterion
 - Resulting forecast reflects the zone's shaving behavior



Peak Forecast Impact as a Share of Shaving Amount by Zone and by Shaving Amount (Percent of Baseline)



- Step 3: Capacity Market MW Valuation (Design Component 2e)
 - VRR curve is reflective of the reliability requirement, which depends on the load forecast and the monthly load profile.
 - Reliability Requirement = $CETO + UCAP + DR$
 - ***CETO: Capacity Emergency Transfer Objective***
 - UCAP: Unforced Capacity
 - ***DR: Forecasted Demand Resources multiplied by the FPR (forecast pool requirement)***
 - For sake of illustration, we will consider zones for which parameters were posted for the 2021/22 RPM BRA, and will assume a shaving amount of 6% of forecasted load.



Example - Capacity Market Implications 2021/2022 Planning Parameters

Official Posted

	PS	PEPCO	ATSI	COMED	BGE	PLGRP*	DAYTON	DEOK
CETO	5620	1550	6020	-640	4470	-850	2480	3110
Reliability Requirement	11501	8073	15598	26112	7910	9974	3979	7557

With Shaving at 6% of Baseline Forecast

CETO	5460	1670	6260	90	4790	-400	2530	3050
Reliability Requirement	11022	7802	15153	25338	7634	9849	3866	7343

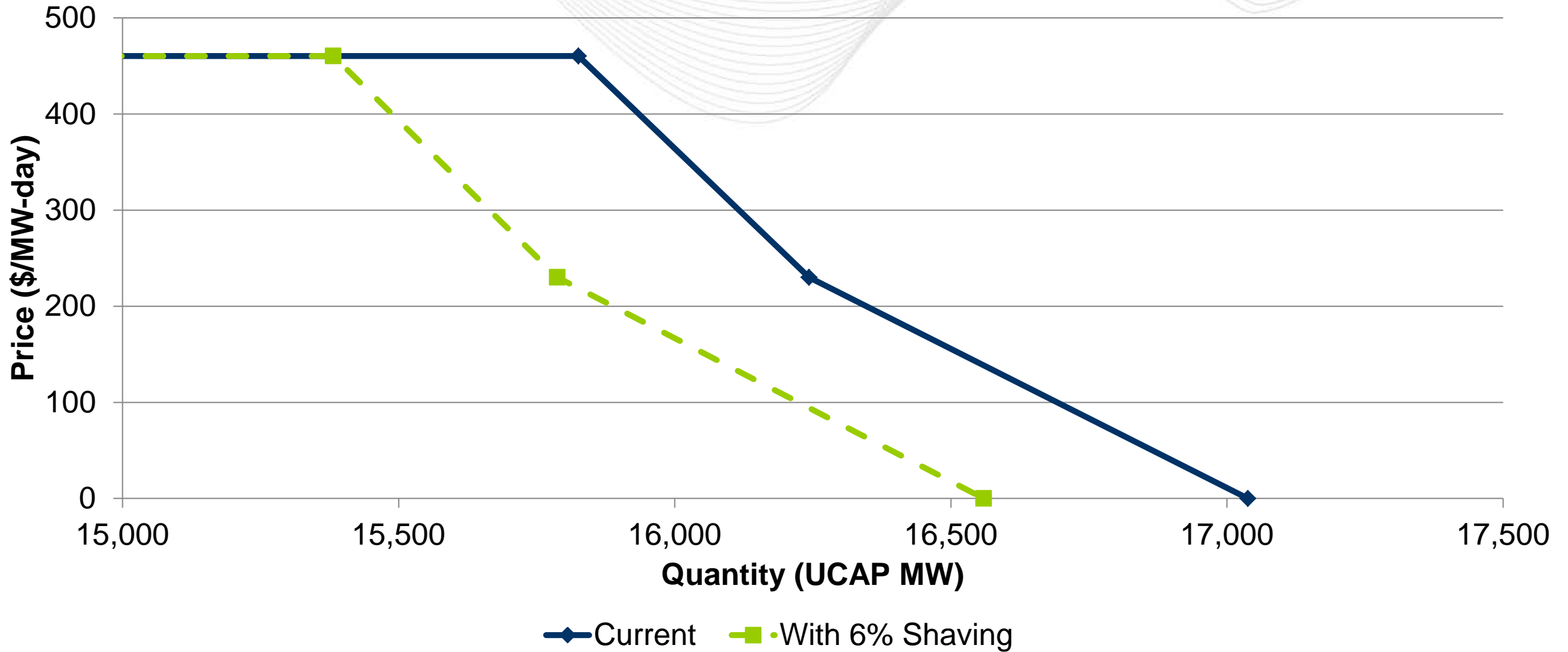
Shave Amount	562	367	745	1288	383	422	195	320
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Rel Rqt Reduction as a Share of Shave Amount	85%	74%	60%	60%	72%	30%	58%	67%
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* PLGRP results only included shaving in PL zone, not UGI

ATSI Example – Capacity Market Implications

Variable Resource Requirement Curve



- How do we best account for existing peak shaving activity? Will entities provides us with their history?
- Is it necessary to account for shaving program weather sensitivity? If so, what would be the best way to do so?
 - Preceding analysis assumed the same MW shaving value within a year regardless of weather