# Regulation Performance Impacts

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- *Issue 1: The current benefits factor curve is not aligned with regulation signal types dispatched in operations. RegD control signal at times moves in the opposite of ACE control due to energy neutrality reset*

  - **Solution: Shift Benefits Factor Curve to the left (BF=0 at 40%) and during identified excursion hours implement a RegD 'cap' that will allow up to 26.2% (measured in Performance Adjusted MW) of the regulation requirement to be met with RegD resources**

- *Issue 2: Adjusted Total Cost formulation is ineffective in instances of RegD self-schedule and/or offered at $0. The Market Clearing engine 'block-assigns' a benefits factor to these resources and does not optimally procure a RegA-RegD mix.*

  - **Solution: Implement tie-breaker logic for benefits factor ranking to allow unit specific benefits factors be assigned to all RegD Self-Scheduled and $0 cost resources based on resource performance**
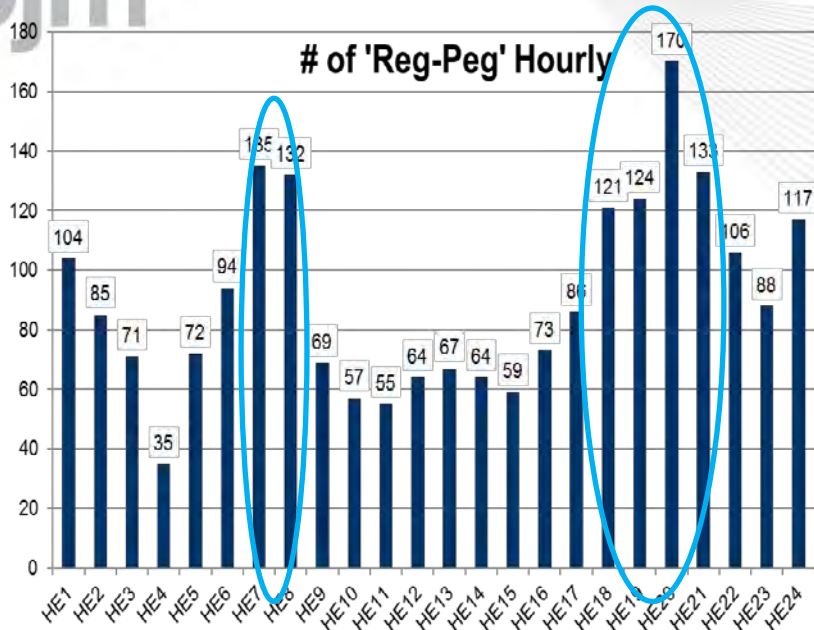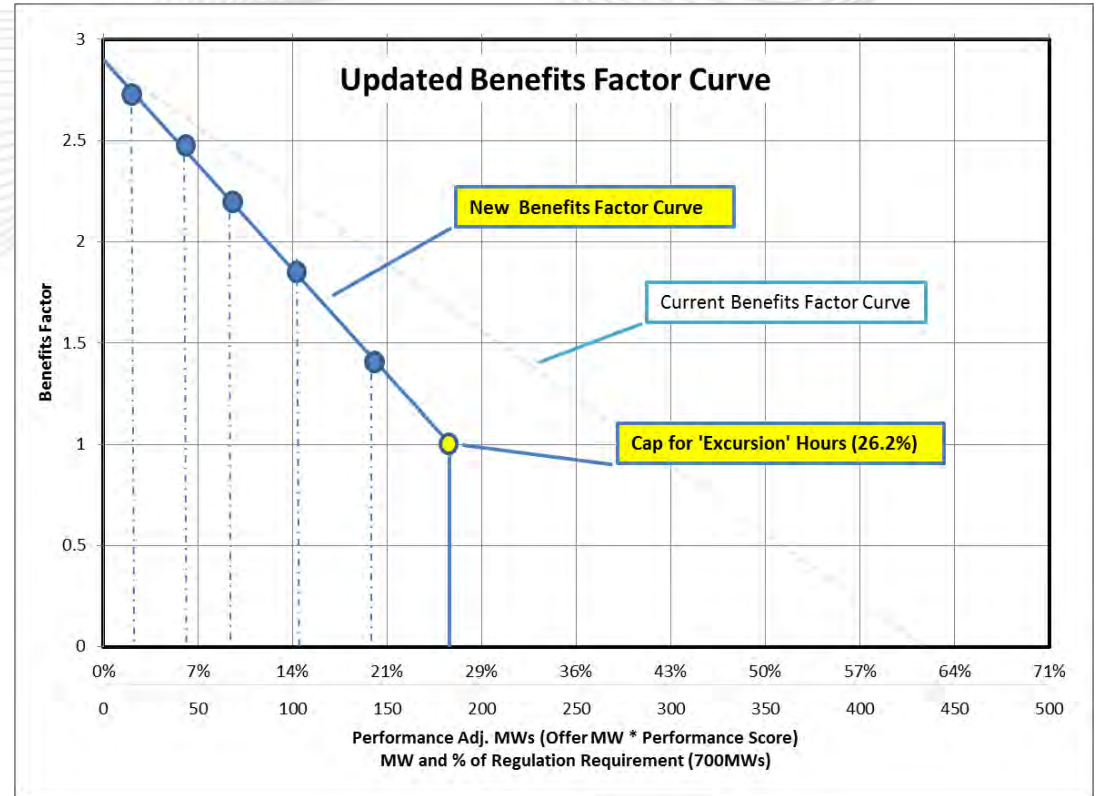
- "Excursion" hours were identified as hours where dispatch frequently manually moves the regulation signal
  - Excursion Hours: HE7, HE8, HE18, HE19, HE20, HE21
- During these hours the Benefits factor curve will be capped at BF=1 (26.2%)

- Adjusting the Benefits Factor Curve to 40% will allow up to ~280MW on-peak and ~210MW off-peak (Performance Adjusted MW) of RegD resources to be considered for regulation commitment
    - Translates to 329MW on-peak and 247MW off-peak Raw (Offer) MW (with average RegD performance equal to 0.85)

- During "Excursion" Hours, capping RegD at BF=1 will allow up to ~183MW on-peak (Performance Adjusted MW) of RegD resources to be considered for regulation commitment
    - Translates to 215MW on-peak Raw (Offer) MW (with average RegD performance equal to 0.85)

- Current qualified RegD Raw (Offer) MW total 600 MW

Regulation D	
Resource Type	Offer MW
Battery/Storage	136
DSR	15
Hydro	420
CT	110

- A tie-breaker logic will be added to allow unit specific benefits factors to be assigned to self-scheduled & $0 cost resources
    - Tie-breaker will be <u>based on performance</u> and <u>only applied to the resources BF ranking</u>

Benefit Factor tie-breaker logic:

If cost = $0, rank with performance score (highest to lowest), else use current Adjusted Total Cost equation

$$The\ Adjusted\ Total\ Cost\ (\$)_{BF\ calc} = \left(\frac{Cap\$ + LOC\$ + Perf\$}{PS\ *\ BF} \right)$$

Submit Offers
No Updates

BF Ranking
tie-breaker will be used

Unit Commitment
No Updates

Market Clearing Price
No Updates

Resources self-schedule and submit regulation offers

Tie-breaker logic will be used to rank RegD $0 cost resources and assign BF. (higher performance more benefit)

Units will be committed based on original Adjusted Total Cost Equation.

MCP will be determined based on original Adjusted Total Cost Equation