



Modeling Generation Senior Task Force Update & Recommendation

Stanley Williams
Director, Market Settlements
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- **Focus of the Modeling Generation Senior Task Force (MGSTF)**
 - Charter developed and approved by the PJM MRC in March 2017
 - Consider expanding the model that is used in PJM's systems to improve the ability to represent the various components of all generation
- **Key Work Activities**
 - Review the work of prior groups addressing the model of combined cycle units to better understand the reasons the model was not implemented or used.
 - Promote understanding of generating plants and their need for a more flexible model.
 - Identify and assess the feasibility of market rules/mechanisms to integrate generation resources into PJM's markets such that their operating characteristics are understood, are properly modeled and adequately compensated.
 - Identify necessary changes to OA, Tariff, and manuals needed to implement any new model.

- The Modeling Generation Senior Task Force has developed solutions to improve resource modeling for complex resources such as combined cycle units, coal units with multiple mills, and pumped hydro in PJM's market clearing engines
- Many of the proposed solutions are dependent upon the completion of PJM's next generation energy market (nGEM) systems development efforts which will require several years to complete and implement
 - Current nGEM implementation forecast to support advanced resource modeling is 2023
- As a result of the long-term solution timeframe, PJM's market participants requested that PJM staff develop modeling options which can be implemented in the near-term prior to the nGEM implementation

- Option 1 – Add additional segments to the Energy Offer Curve beyond the 10 currently available to increase resource configuration modeling capabilities
- Option 2 – Provide market participants with the ability to submit Hourly Differentiated Ramp Rates for resources in both the Day Ahead and Real Time Markets
 - Provides market participants with the ability to change a resource's ramp rate intraday up to 65 minutes prior to the operating hour to better manage resource configuration changes.
 - Aligns with existing intraday offer logic rules that allow updates to be submitted up to 65 minutes prior to the operating hour
- Option 3 – Implement Soak Time modeling of resources to allow Market Sellers to specify in Markets Gateway the Hot/Intermediate/Cold Soak Time(s) for resources and the expected hourly energy output produced prior to the resource becoming dispatchable by PJM

- Option 1 – Add additional segments to the Energy Offer Curve
 - Low complex solution with implementation possible in early 2020
 - No Tariff or manual language changes required for implementation
- Option 2 – Provide market participants with the ability to submit Hourly Differentiated Ramp Rates
 - Medium complex solution with implementation possible in 2020
 - Tariff and manual language will need to be developed and approved
 - A FERC filing and FERC approval will be required prior to implementation
- Option 3 - Implement Soak Time
 - Highly complex solution with implementation possible in 2021
 - Soak Time Tariff and manual language has already been approved through the Members Committee
 - A FERC filing and FERC approval will be required prior to implementation

Please indicate which option you will use:	Yes	No	% in favor
Option 1: Add Additional Segments to the Energy Offer Curve (Low Implementation Complexity)	27	54	34%
Option 2: Hourly Differentiated Ramp Rate Curve (Medium Implementation Complexity)	57	22	72%
Option 3: Implement Soak Time (High Implementation Complexity)	41	38	52%

The total number of unique poll responses received was 10 representing 79 member companies

- Memorialize the Modeling Generation Senior Task Force Stakeholder Requirements Document for implementation with PJM's next generation energy market systems
 - Review and provide updates to the MGSTF Stakeholder Requirements Document on a bi-annual basis by the MGSTF going forward through implementation
 - Provide periodic updates to the MRC and MC via MC Informational Webinars
- Implement Near-Term Solution Options 2 and 3
 - Develop and present Tariff and manual language for Option 2 for review and endorsement by the MGSTF, MRC and MC

- Following PJM MRC and MC endorsement PJM staff will:
 - Memorialize the Modeling Generation Senior Task Force Stakeholder Requirements Document for implementation with PJM's next generation energy market systems
 - Review and provide updates to the MGSTF Stakeholder Requirements Document on a bi-annual basis by the MGSTF going forward through implementation
 - Provide periodic updates to the MRC and MC via MC Informational Webinars
 - Submit the required FERC filings for Options 2 and 3
 - Begin implementation efforts for Options 2 and 3