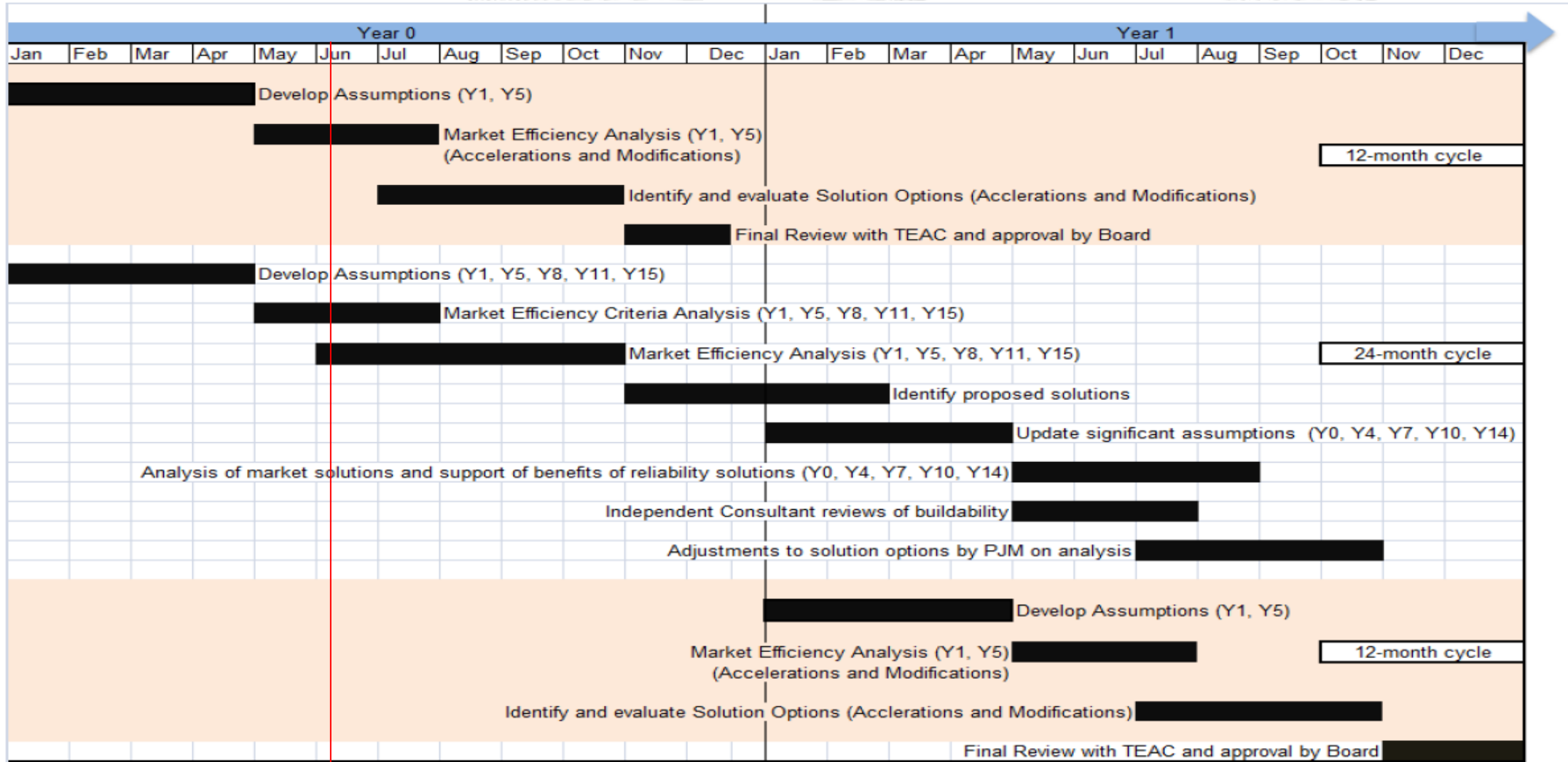




Market Efficiency Update

Transmission Expansion Advisory Committee
June 7, 2018



2018/19 RTEP Long Term Window

- Study Years*
 - 2019 and 2023 to study approved RTEP projects for accelerations and modifications
 - 2019, 2023, 2026, 2029, and 2033 to study new system enhancements
- Underlying input data based on March 2018 PROMOD IV Data Release from ABB
 - Load forecast based on PJM 2018 Load Forecast Report
 - Fuel/Emissions price forecasts from ABB, May 2018 update
 - Generation Expansion consistent with the machine list included in the Planning 2023 RTEP Powerflow
- Simulations performed using PROMOD IV v11.1.13 engine

**May change based on the outcome of the Market Efficiency Process Enhancement Task Force (MEPETF)*

- Fuel Prices Forecast
- Emissions Prices Forecast
- Load and Energy Forecast
- Demand Resource
- Future Generation
- Transmission Constraints
- Financial Parameters
 - Carrying Charge rate and Discount rate

- 2019 topology for PJM and external world based on the 2019 Summer Peak load flow case from the 2017 MMWG series
- 2023 and later PJM topology will be based on the 2023 Summer Peak load flow case from 2018 RTEP series
- External world representation will be updated as necessary in coordination with the Interregional Planning group
- PJM topology will include all RTEP upgrades approved through February 2018

- PJM zonal peak and energy forecast from 2018 Load Forecast Report

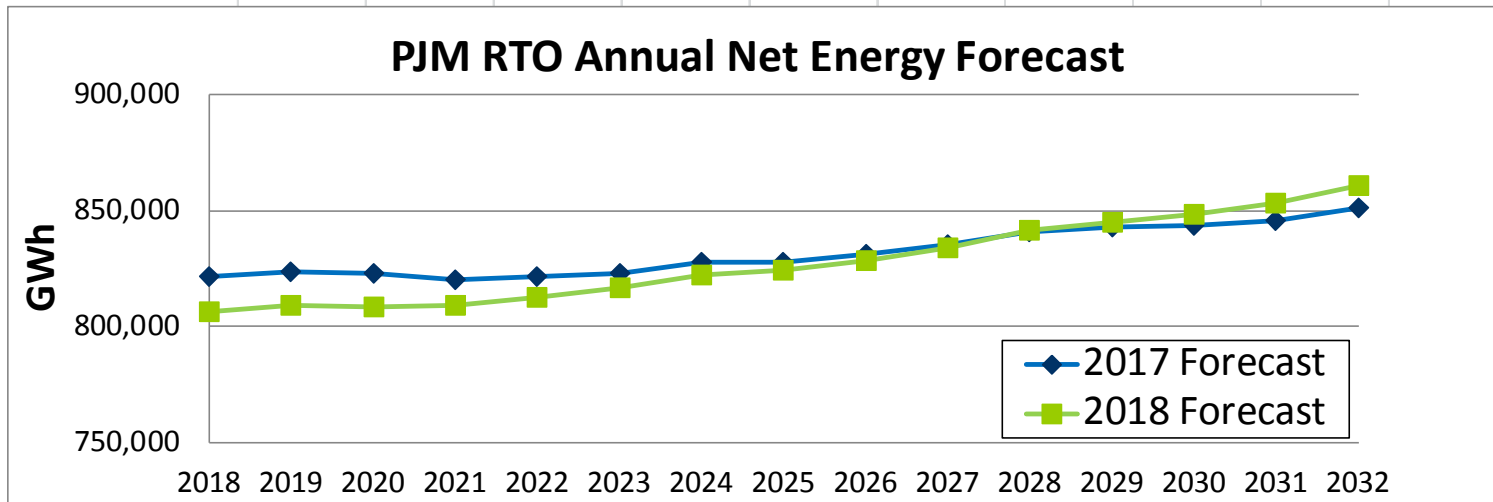
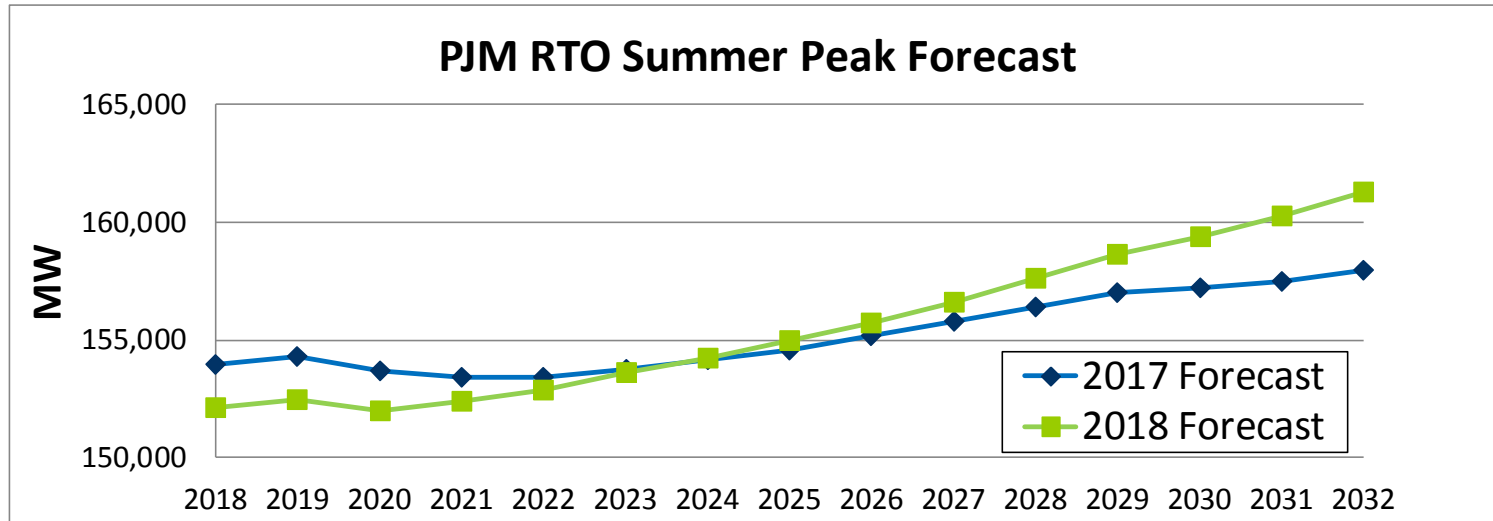
2018 PJM Peak Load and Energy Forecast

Load	2019	2023	2026	2029	2033
Peak (MW)	152,479	153,632	155,724	158,624	162,095
Energy (GWh)	809,000	816,817	828,788	845,058	864,236

Notes:

1. Peak and energy values from PJM Load Forecast Report Table B-1 and Table E-1, respectively.
2. Model inputs are at the zonal level, to the extent zonal load shapes create different diversity - modeled PJM peak load may vary.

Comparison 2017 and 2018 PJM Load Forecasts



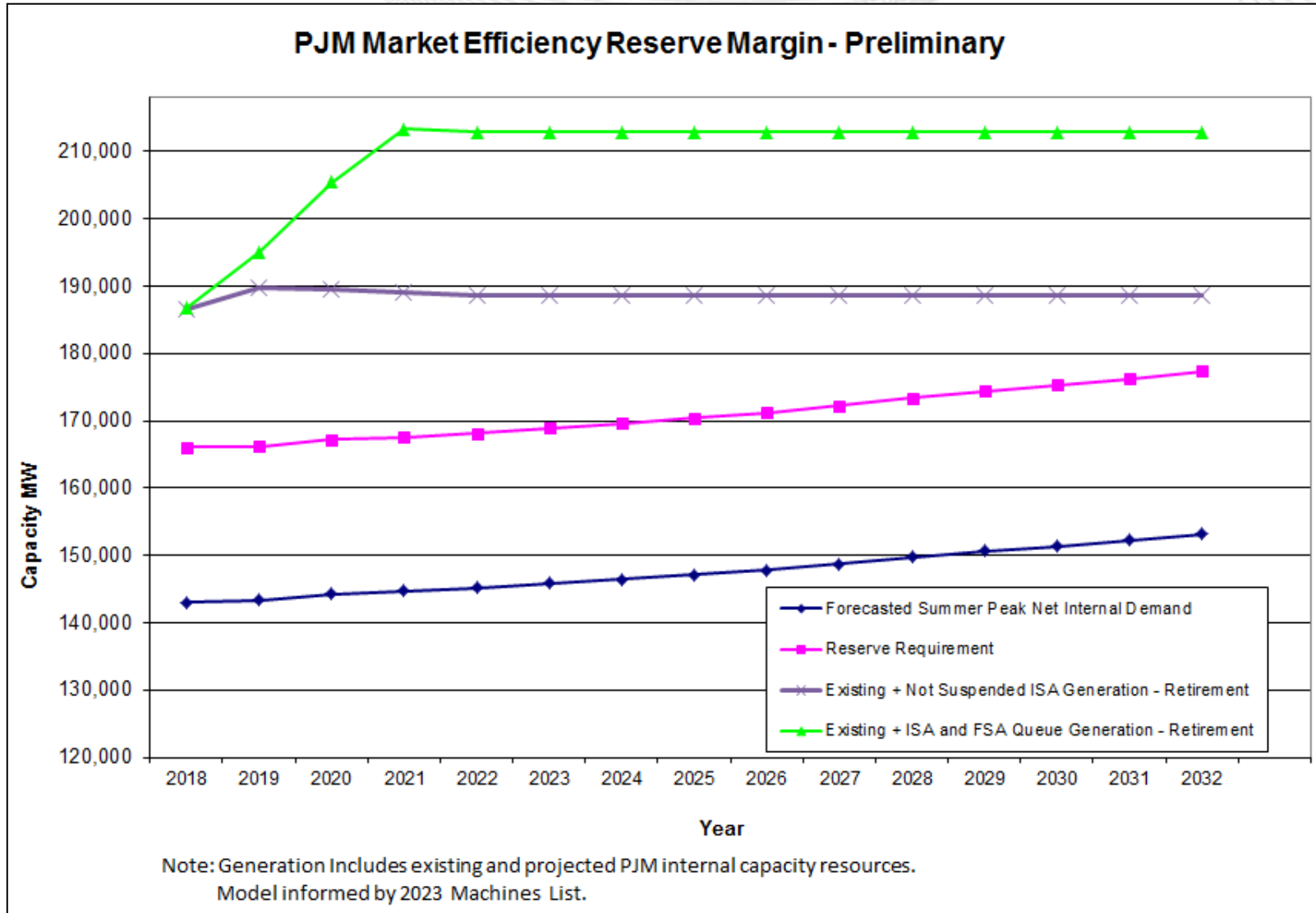
- Model zonal demand resources consistent with Table B-7 of the 2018 Load Forecast Report.

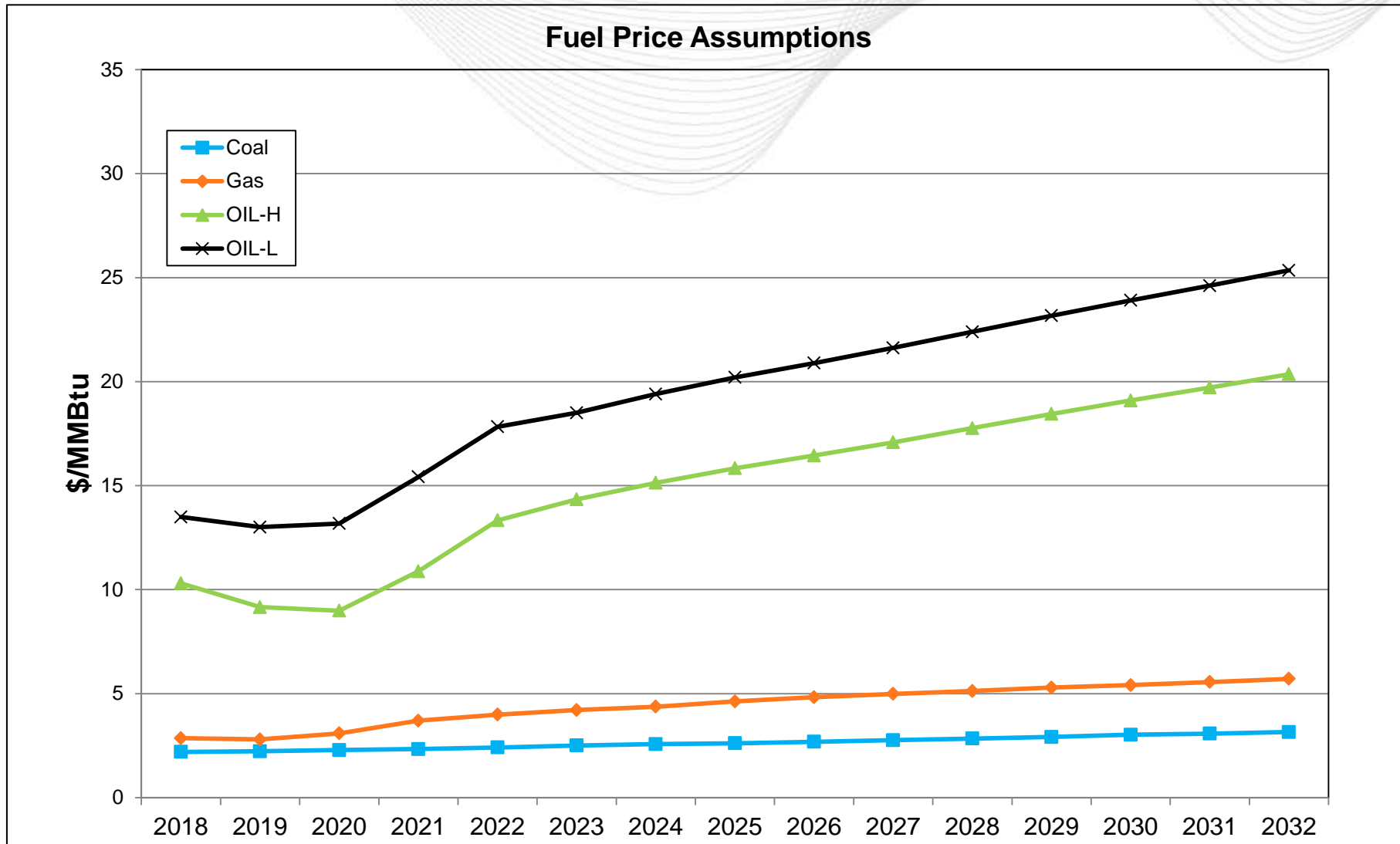
2018 PJM Demand Resource Forecast

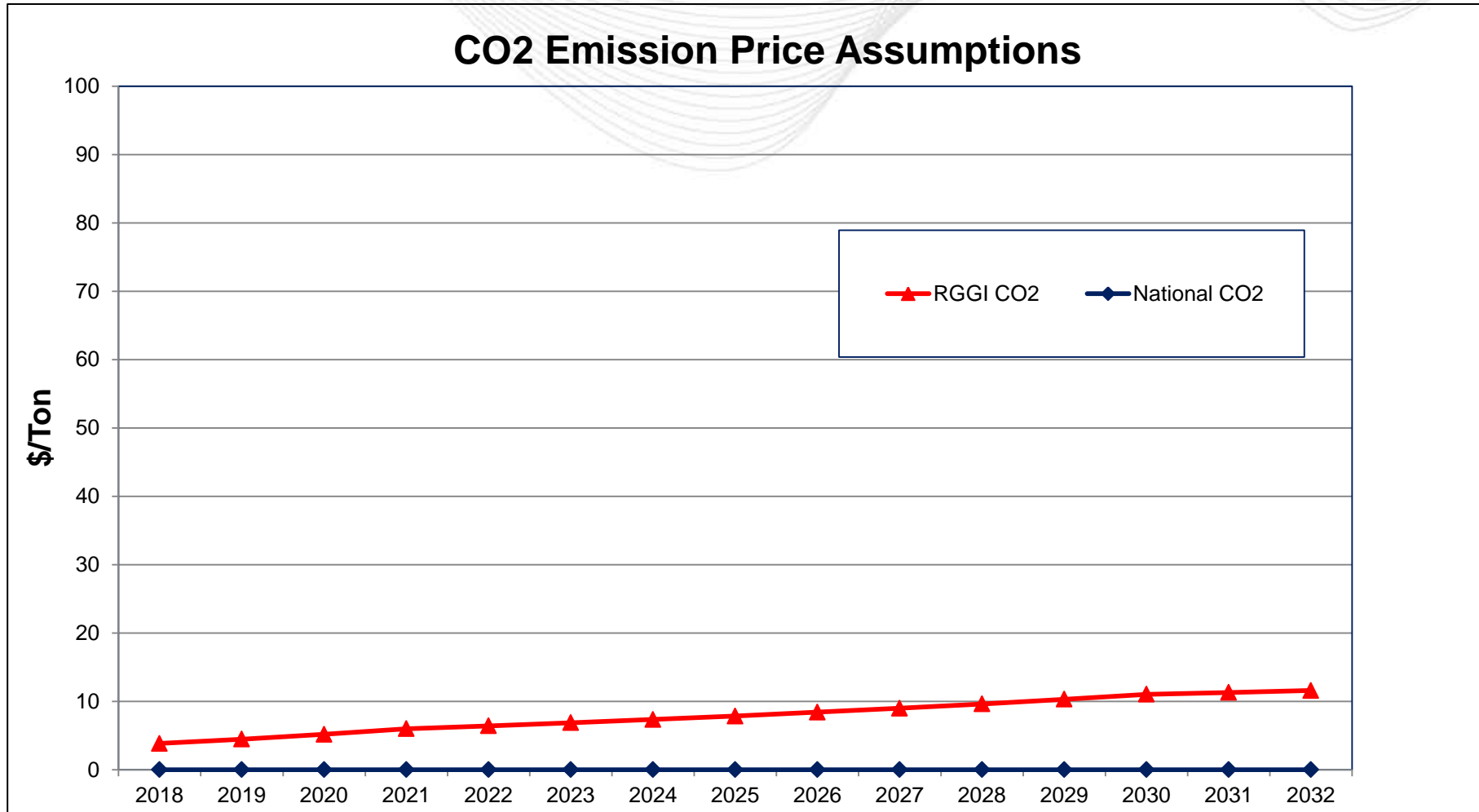
	2019	2023	2026	2029	2033
Demand Resource (MW)	9,113	7,747	7,862	7,989	8,179

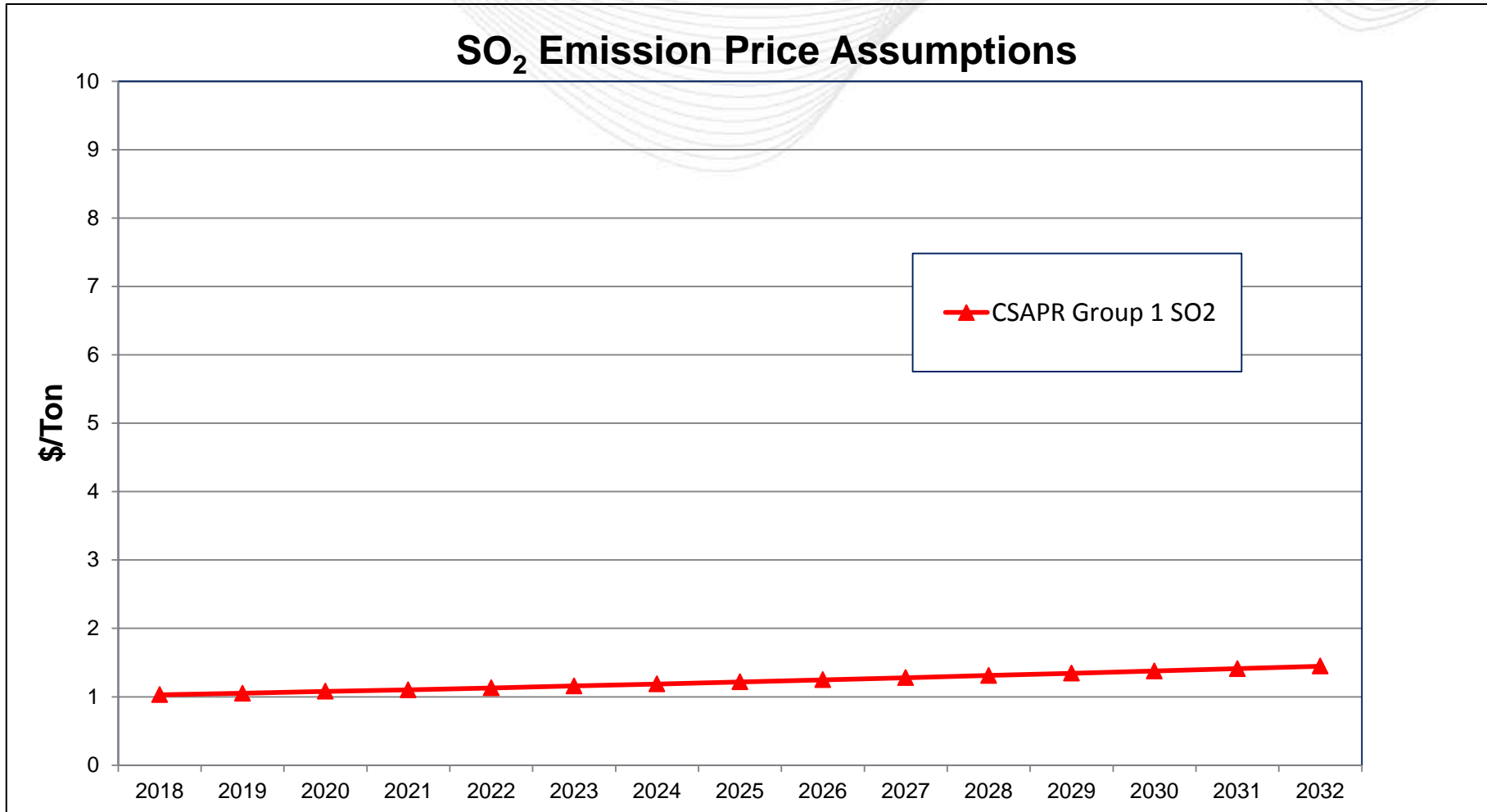
- Generation included in Market Efficiency models include all ISAs and FSAs*
- Machine list posted at January TEAC
 - <http://pjm.com/-/media/committees-groups/committees/teac/20180111/20180111-informational-teac-machines-list.ashx>

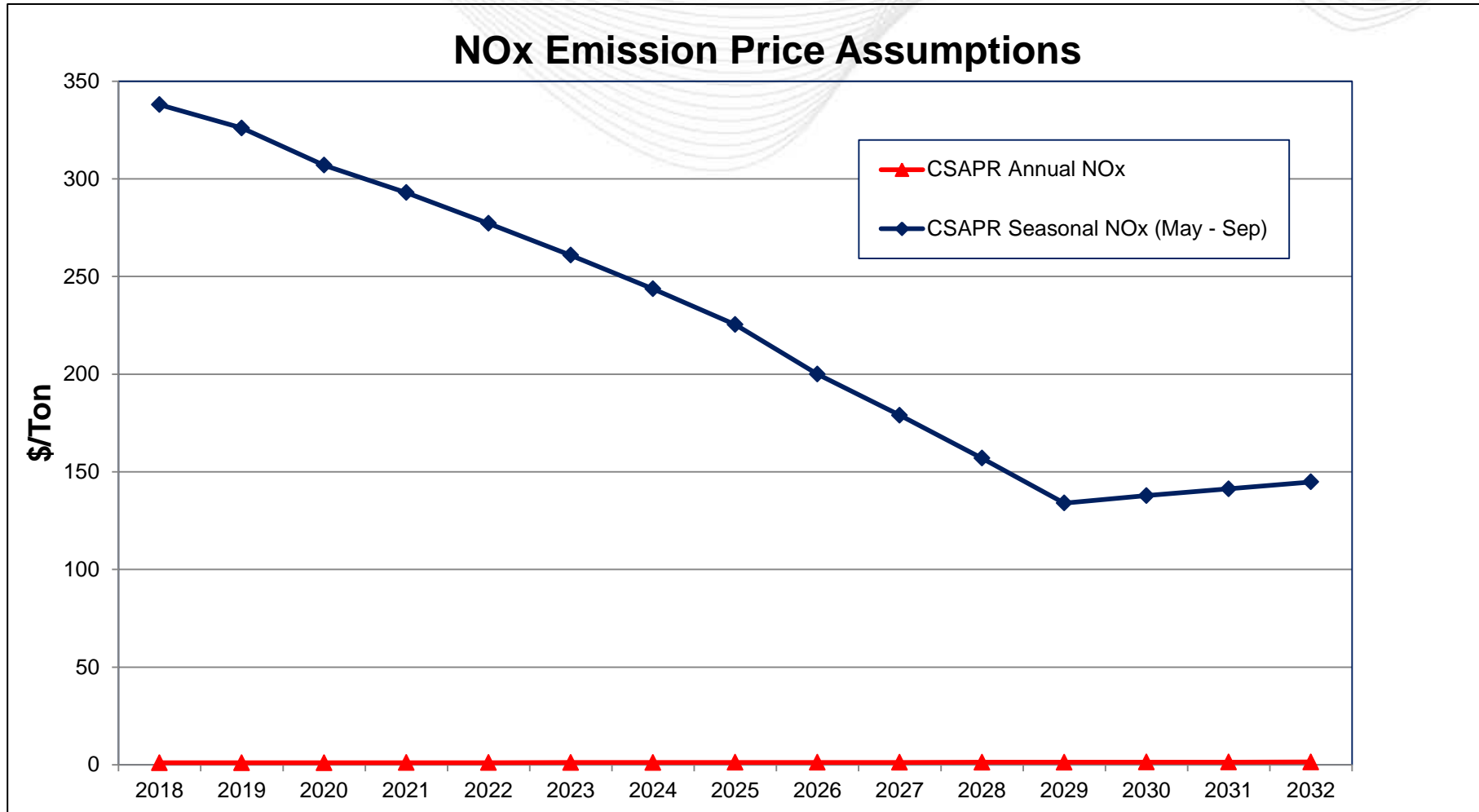
**May change based on the outcome of the Market Efficiency Process Enhancement Task Force (MEPETF)*











- Thermal Constraints
 - NERC Book of Flowgates
 - Planning study results for monitored facilities and monitored/contingency pair facilities
 - Historical PJM congestion events
- Voltage Constraints
 - PJM reactive interface limits
 - MW limits based on historical values and voltage stability analysis
 - RTEP upgrades impact future reactive interface limits

- Discount rate and levelized Carrying Charge rate are developed using information contained in TO Formula Rate sheets (Attachment H) ^[1]
 - Discount rate based on weighted average after-tax embedded cost of capital
 - Levelized annual carrying charge rate based on weighted average levelized plant carrying charge rate
- Updated values for the financial parameters to be posted before the opening of the 2018/19 Long-Term Window
- Carrying Charge rate calculation details can be found on the Transmission Cost Information Center page
 - <http://www.pjm.com/planning/rtep-upgrades-status/cost-allocation-view.aspx>

[1] <http://www.pjm.com/markets-and-operations/billing-settlements-and-credit/formula-rates.aspx>

Step	Timeline
Build Base Case	June – July 2018
Post Preview Base Case	July 2018
Stakeholders Feedback	August – September 2018
Identify Congestion Drivers	September 2018
Post Final Base Case and Target Congestion Drivers	October 2018
Long Term Proposal Window	November 2018 - February 2019
Analysis of Proposed Solutions	March - November 2019
Final TEAC Review and Board Approval	November - December 2019

- Market Efficiency Web Page located at <http://www.pjm.com/planning/rtep-development/market-efficiency.aspx>
- During October 2018 PJM will post
 - Market Efficiency Case Files for all study years
 - Access requires CEII confirmation (PJM and MISO)
 - Access requires PROMOD vendor (ABB) confirmation
 - XML Format
 - Reference Files
 - Input Assumptions Summary
 - Updated Modeling Document will provide details of setup and modeling methods

- Revision History
 - V1 – 6/4/2018 – Original Version Posted to PJM.com