

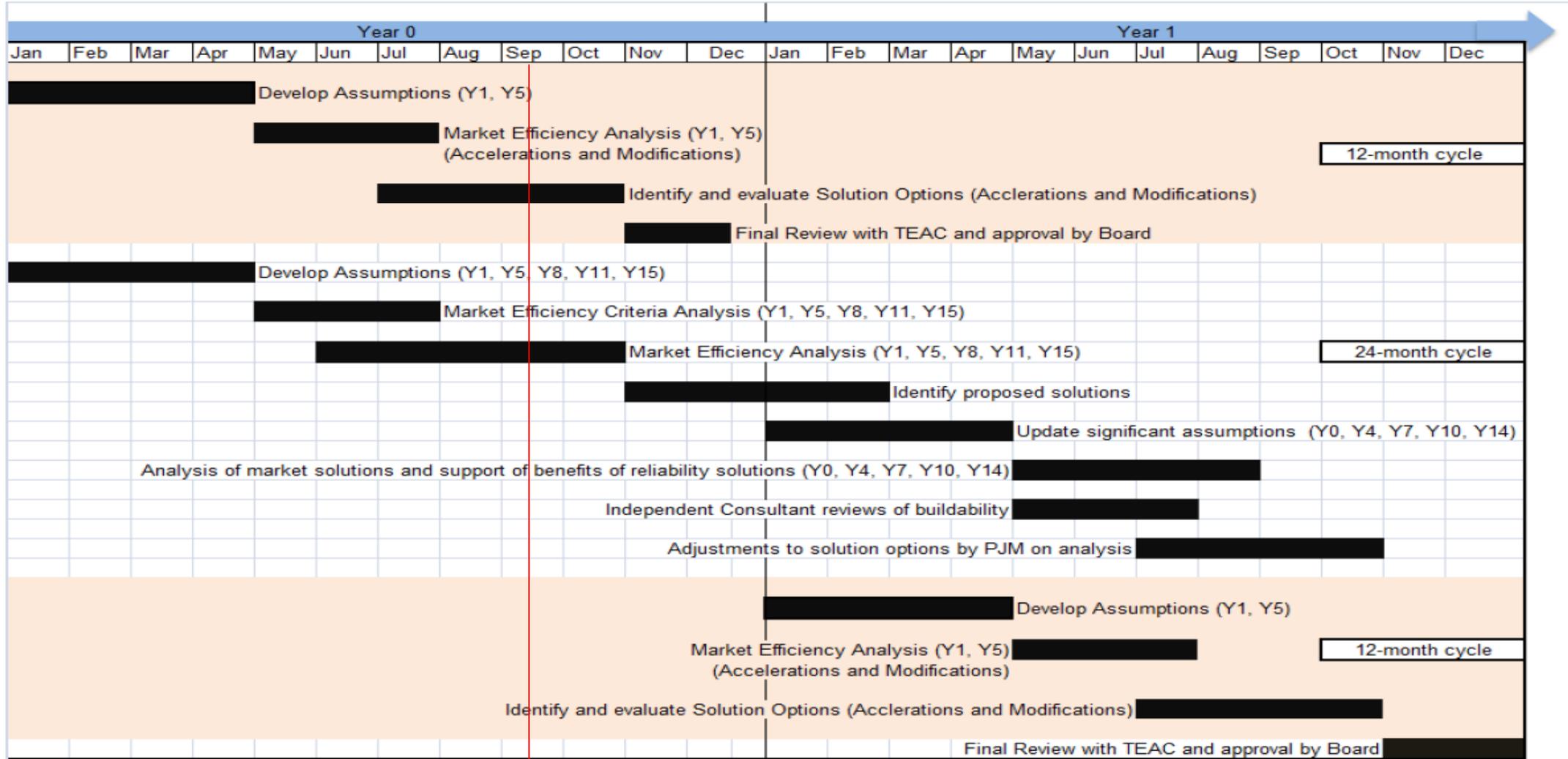


Market Efficiency Update

Transmission Expansion Advisory Committee
September 13, 2018



Market Efficiency Timeline



2018/19 RTEP Long Term Window

- Market Efficiency Training scheduled for October 16th 2018.
- Half-day training course designed to educate participants on the Market Efficiency aspects of PJM's RTEP process.
- Combo session (simultaneous in-person and virtual sessions).
- Cost: There is no charge to PJM Members. Non-Members are charged a nominal fee.
- Offers PDH and CEU
- <https://www.pjm.com/Calendar-Events/PJM-Calendars/Training-Events/2018/October/16/ip-mkt-efficiency.aspx>

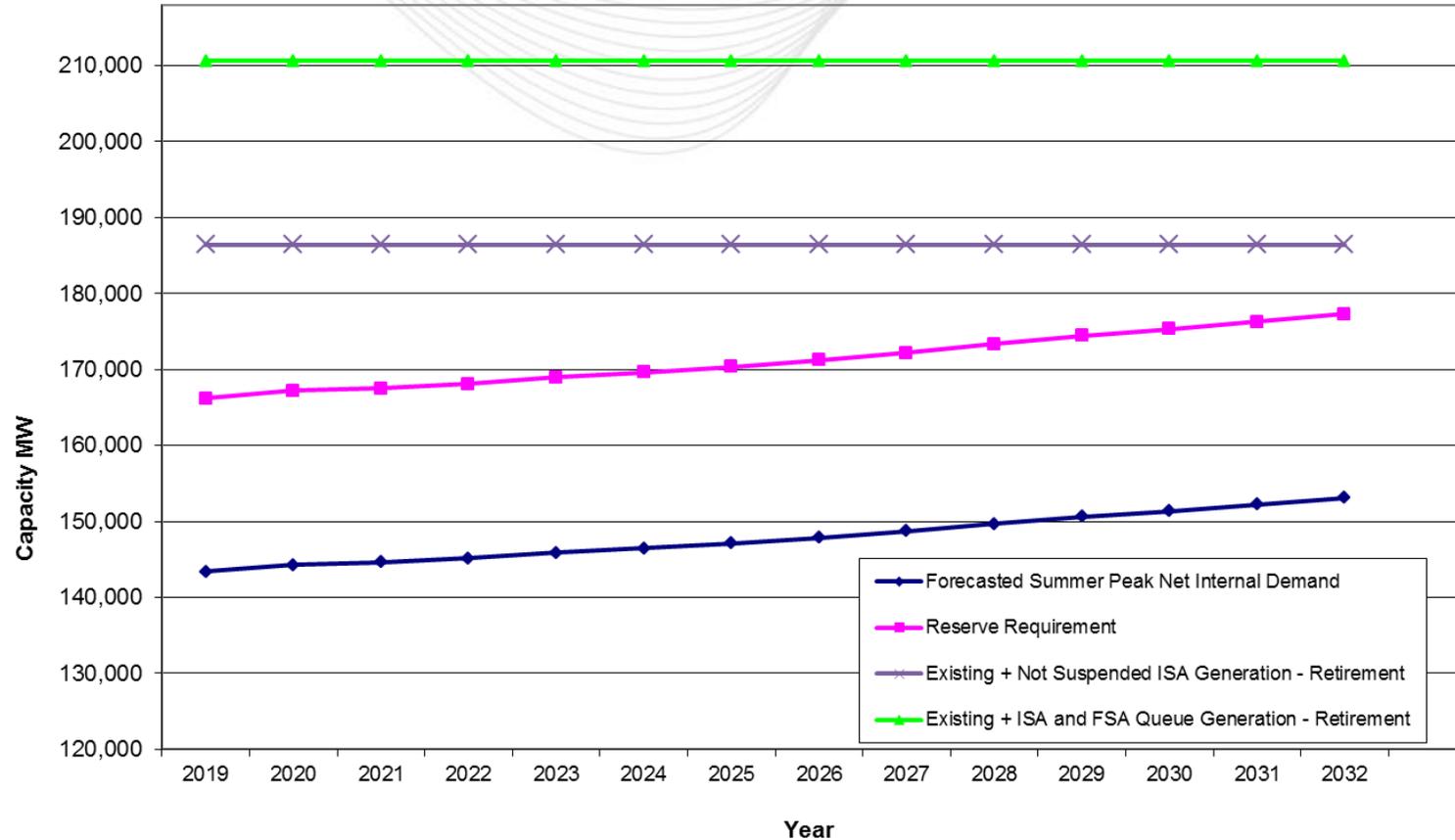
- 2018/19 Market Efficiency assumptions and model review
 - Market Efficiency assumptions to be used for the 2018/19 RTEP Window were presented and reviewed at May'18 through Aug'18 TEAC meetings.
 - Preliminary Market Efficiency model was posted at the beginning of August.
- PJM requested feedback and comments from stakeholders
 - Feedback received by August 31st was included in the updated Market Efficiency base case (posted on 09/13/2018).
- Following review and comments by TEAC, Market Efficiency final assumptions will be presented at the October TEAC and shared with PJM Board for consideration.

- Posted updated 2023 Base Case (XML format)
 - Includes stakeholders feedback received by August 31st
 - <http://www.pjm.com/planning/rtep-development/market-efficiency.aspx>
 - Also posted the version without FSA units
- Posted Files
 - XML files compatible with PROMOD 11.1.13
 - Updated event file
 - 15-years Monte Carlo outage library
 - 2023 Simulated Congestion
- Final Base Case to be posted before the start of Long-Term Window

- Included feedback from stakeholders received by August 31st
- Updated ARR definitions
 - To match aggregate definitions as used in the 2018 ARR Allocation
- Updated generators' Must Run status
 - Based on ABB's feedback and historical 2016-2018 evaluation
- Updated Gas Forecast
 - Based on latest update from ABB
- Updated Reactive Limits
 - Based on historical analysis 2017/2018
- Updated Interregional Model
 - To align better with historical operations

- Uniform generation expansion consistent with the machine list included in the Planning 2023 SP Powerflow
 - Posted Market Efficiency base case includes all ISA, FSA and Suspended ISA units
 - Posted a second case, “NoFSA”, that only includes ISA units (FSA and Suspended ISA units removed from this scenario).
 - Generator construction status updated as of end of May 2018.
 - Updated retirements to current.
 - Applied MEPETF Manual 14B change effective August 23rd
- Financial parameters, Discount Rate and Carrying Charge, NSPL based on the Transmission Cost Information Center spreadsheet
 - <http://www.pjm.com/planning/rtep-upgrades-status/cost-allocation-view.aspx>

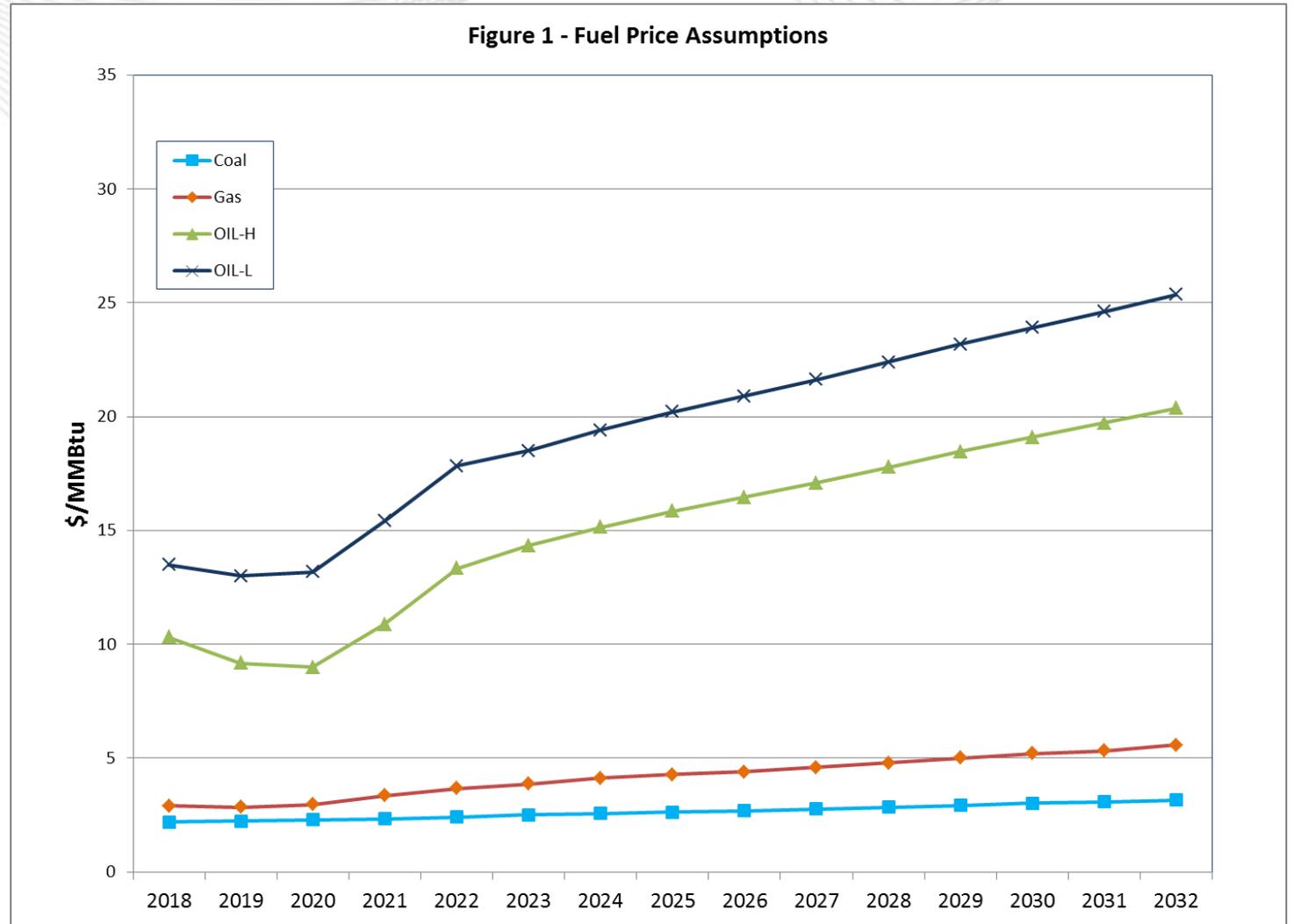
PJM Market Efficiency Reserve Margin - with Uniform Expansion



Note: Generation Includes existing and projected PJM internal capacity resources.
 Model informed by 2023 Machines List.

- Generation expansion updated with approved retirements since previous assumption presentation

- Gas Price Forecast from ABB, August 2018 update
- Coal, Oil-H, and OIL-L Price Forecasts from ABB Spring Case, May 2018 update



Step	Timeline
Identify Congestion Drivers	September - October 2018
Post Final Base Case, Target Congestion Drivers and Sensitivities	October 2018
Long Term Proposal Window	November 2018 - February 2019
2018 Reevaluation Analysis	August – October 2018
2018 Acceleration Analysis	November – December 2018
Analysis of Proposed Solutions	March - November 2019
Final TEAC Review and Board Approval	November - December 2019

- Register for the 2018/19 RTEP Market Efficiency Window at
 - <http://www.pjm.com/planning/competitive-planning-process.aspx>
- In the CEI Request form write “Access to the 2018-19 Long Term RTEP Window” as the description of the information requested.
- Everyone must register to access the data regardless of prior participation in the PJM Competitive Process.
- Long-Term Market Efficiency Window opens November 1st 2018

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[RTEP Upgrades & Status](#) | **Competitive Planning Process**

The PJM competitive planning process implements FERC Order 1000. The process affords non-incumbent transmission developers an opportunity to participate in the regional planning and expansion of the PJM bulk electric system. By publishing a set of criteria violations and soliciting solutions from competing transmission developers, PJM and the FERC hope to encourage innovative, cost effective and timely solutions to the challenges of building and maintaining a highly reliable electric system.

PJM will announce in the [Transmission Expansion Advisory Committee \(TEAC\)](#) its intention to solicit competitive solutions to identified planning needs. The “windows” for submitting such solutions fit into three categories and follow the 18-month and 24-month planning cycles as described in Manual 14F: [Clean](#) [WEB](#) | [Clean](#) [PDF](#).

Planning Cycles	Standard Window Length	Required In-Service Date (Years)
Long Term - considers reliability criteria violations, economic constraints, system conditions and public policy requirements	120 days	> 5
Short Term - considers reliability criteria violations	60 days	3-5
Immediate-Need Reliability - considers reliability criteria violations	Shortened	< 3

While PJM endeavors to adhere to the standard length of the proposal windows, unique situations do arise. When adhering to the standard window length would be unnecessarily burdensome on the transmission developers, PJM may elect to modify the length of a proposal window. Any such changes will be made clear when the proposal window is announced.

Current Windows

2018/19 Long Term RTEP Window 1

OPEN 11.1.2018 CLOSED 2.28.2018

2018/19 Long Term Window 1

[Market Efficiency Economic Models](#) - requires additional level of CEII specifically for market efficiency data and active license with Ventyx for PROMOD and nodal data

2018 Window 1

Problem Statement

With Analytical Files - V6 [EXE](#) (26.0 MB) - requires CEII

Planning Community

[Training Video](#) | [User Guide](#) [PDF](#)

[Register for community](#)

Window Registration

To gain access to a RTEP planning cycle window & analytical data:

- Submit the [Critical Energy Infrastructure Information request](#).
Ask for access to "yyyy RTEP Proposal Window."
Specify the RTEP cycle ("yyyy") of interest.
- Complete the [Non-Disclosure Agreement](#).

- Market Efficiency Web Page located at
 - <http://www.pjm.com/planning/rtep-development/market-efficiency.aspx>
- Data will be posted before November 1st 2018
 - Market Efficiency Base Case files for all study years (XML format)
 - Access requires CEII confirmation (PJM and MISO)
 - Access requires PROMOD vendor (ABB) confirmation
 - PROMOD input files: .lib, .eve
 - Benchmark test case and results
- Auxiliary Files
 - Input Assumptions Summary
 - Updated Modeling Document which will provide details of setup and modeling methods
 - Benefit/Cost Evaluation Tool
 - ARR Data

2018 Reevaluation Approved Market Efficiency Projects

- In accordance with the PJM Operating Agreement, Schedule 6, section 1.5.7(f), PJM annually reviews the costs and benefits of constructing new, previously approved market efficiency projects included in the RTEP.
- Reevaluation process applies to market efficiency projects approved during the 2014/15 and 2016/17 RTEP Windows
- Specifically, in its reevaluation, PJM reviews:
 - changes in construction cost estimates for approved market efficiency projects.
 - anticipated resource development, including merchant transmission, generation and demand response.
 - changes in system conditions, including but not limited to, changes in the load forecast.
- To remain an approved market efficiency project, upon reevaluation, each project must meet or exceed a benefit-to-cost ratio of 1.25.

- Using the current Market Efficiency base case (posted on 09/13/2018)
- Analysis to be performed individually, one project at a time
 - New PROMOD base case created by removing/reversing the topology changes related to the approved market efficiency project
 - Quantify the benefits of adding back the project to the base case
 - Compare B/C ratio to 1.25 threshold
- PJM completed reevaluation of project 2014/15_1-9A, AP-South, (b2743.1-8, b2752.1-7)
 - See details in 9A Reevaluation presentation posted at September 2018 TEAC meeting

- Currently reviewing with project owners the construction status and the cost updates.
- Currently prioritizing the reevaluation work with the opening of the RTEP Window.
- Projects already in-service or with a near in-service date will not be reevaluated.
- As projects complete reevaluation, results will be presented at the next TEAC meetings.
- PJM anticipates completing the reevaluation process by the November 2018 TEAC meeting.

- Revision History
 - V1 – 9/12/2018 – Original Version Posted to PJM.com