Market Efficiency Update

Transmission Expansion Advisory Committee

October 11, 2018

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Upcoming Market Efficiency Training

- 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

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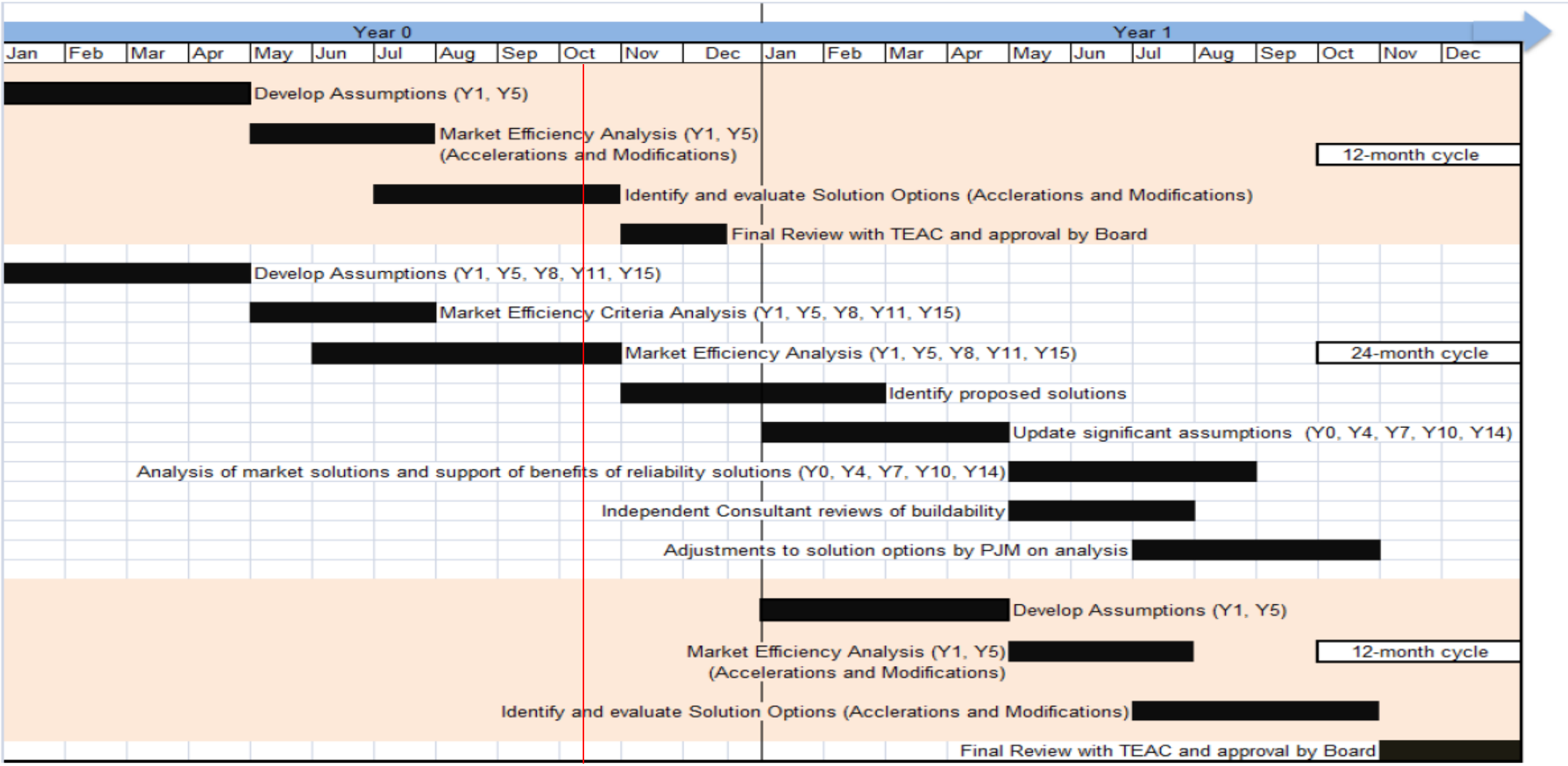
Market Efficiency Timeline



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2018/19 RTEP Long Term Window

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Updated Market Efficiency Base Case (10-08-2018)

- Posted updated 2023 Base Case (XML files PROMOD 11.1.13 format)
  - Includes MISO feedback received by Oct 4th
  - Includes PJM stakeholders feedback received by Oct 4th
  - Posted model includes all years: 2019, 2023, 2026, 2029
  - Also posted separate PROMOD XML file to remove FSA units

  http://www.pjm.com/planning/rtep-development/market-efficiency.aspx
- Posted Additional Files
  - Updated event file
  - 15-years Monte Carlo outage library
  - Current Congestion Output Report (simulated years 2023 and 2026)
- Final Base Case to be posted before the start of Long-Term Window

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2018/19 Market Efficiency Assumptions

- Posted Market Efficiency Assumptions Whitepaper
  - https://www.pjm.com/-/media/committees-groups/committees/teac/20181011/20181011-2018-market-efficiency-analysis-assumptions.ashx
  - Recently announced First Energy retirements not included (network upgrades not finalized at this time)

- 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
  - Discount Rate: 7.37%
  - Carrying Charge: 12.84%

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2018/19 Market Efficiency Sensitivities

Sensitivity	Range
Load Sensitivity	Plus or Minus 2%
Gas Sensitivity	Plus or Minus 20% Henry Hub
No FSA Sensitivity	Remove all units with FSA or suspended ISA status

- PJM reserves right to add sensitivities as necessary.

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TEAC Market Efficiency Special Session

- Live WebEx TEAC session scheduled for Oct 24th, 2:00 – 4:00 pm EPT
  - Overview of the 2018/2019 Market Efficiency Base Case
  - Review of PROMOD congestion outputs
  - Overview of RTEP Window process
- Final Market Efficiency 2018/19 base case, problem statement, congestion drivers, and required documentation to be posted before November 1st 2018
- PROMOD modeling sensitivity cases will be posted
- Long-Term Market Efficiency Window opens November 1st 2018

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Next Steps

Step	Timeline
Live WebEx TEAC session	Oct 24th
Post Final Base Case, Target Congestion Drivers and Sensitivities	End of October 2018
Long Term Proposal Window	November 2018 - February 2019
2018 Reevaluation Analysis	October – November 2018
2018 Acceleration Analysis	November – December 2018
Analysis of Proposed Solutions	March - November 2019
Final TEAC Review and Board Approval	November - December 2019

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Market Efficiency RTEP Window Registration

- Register for the 2018/19 RTEP Market Efficiency Window at
  - http://www.pjm.com/planning/competitive-planning-process.aspx

- In the CEII 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.

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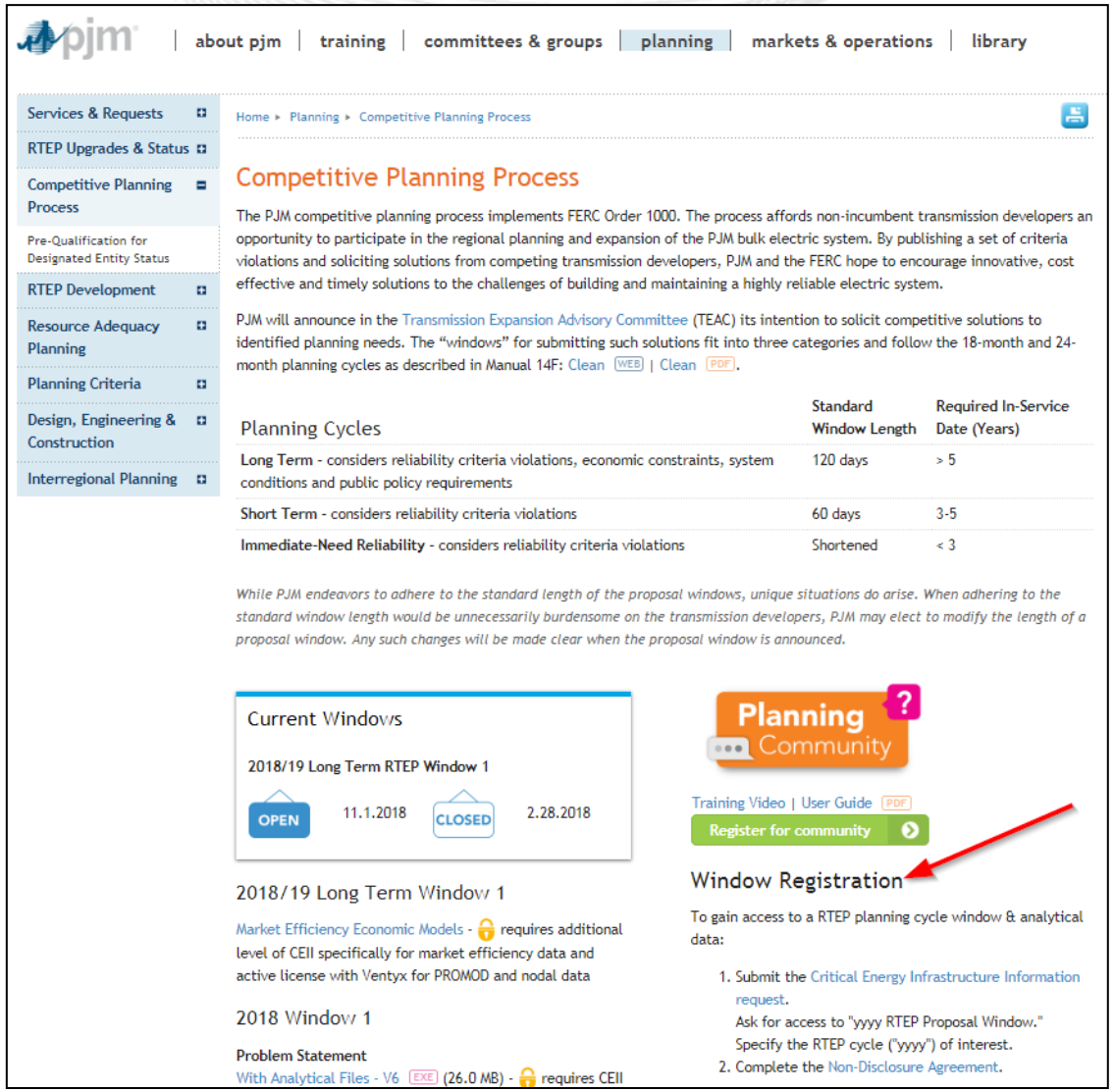
RTEP Window Registration Screenshot



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Market Efficiency RTEP Window Data Posting

- 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

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2018 Reevaluation
Approved Market Efficiency Projects

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Reevaluation Process Status

- Completed Reevaluations
  - Project 2014/15_1-9A, AP-South, (b2743.1-8, b2752.1-7)
    - 9A Reevaluation presentation posted at September 2018 TEAC meeting
  - Project 2016/17_1-5E, BGE, (b2992.1-4)
    - See next slide
- 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

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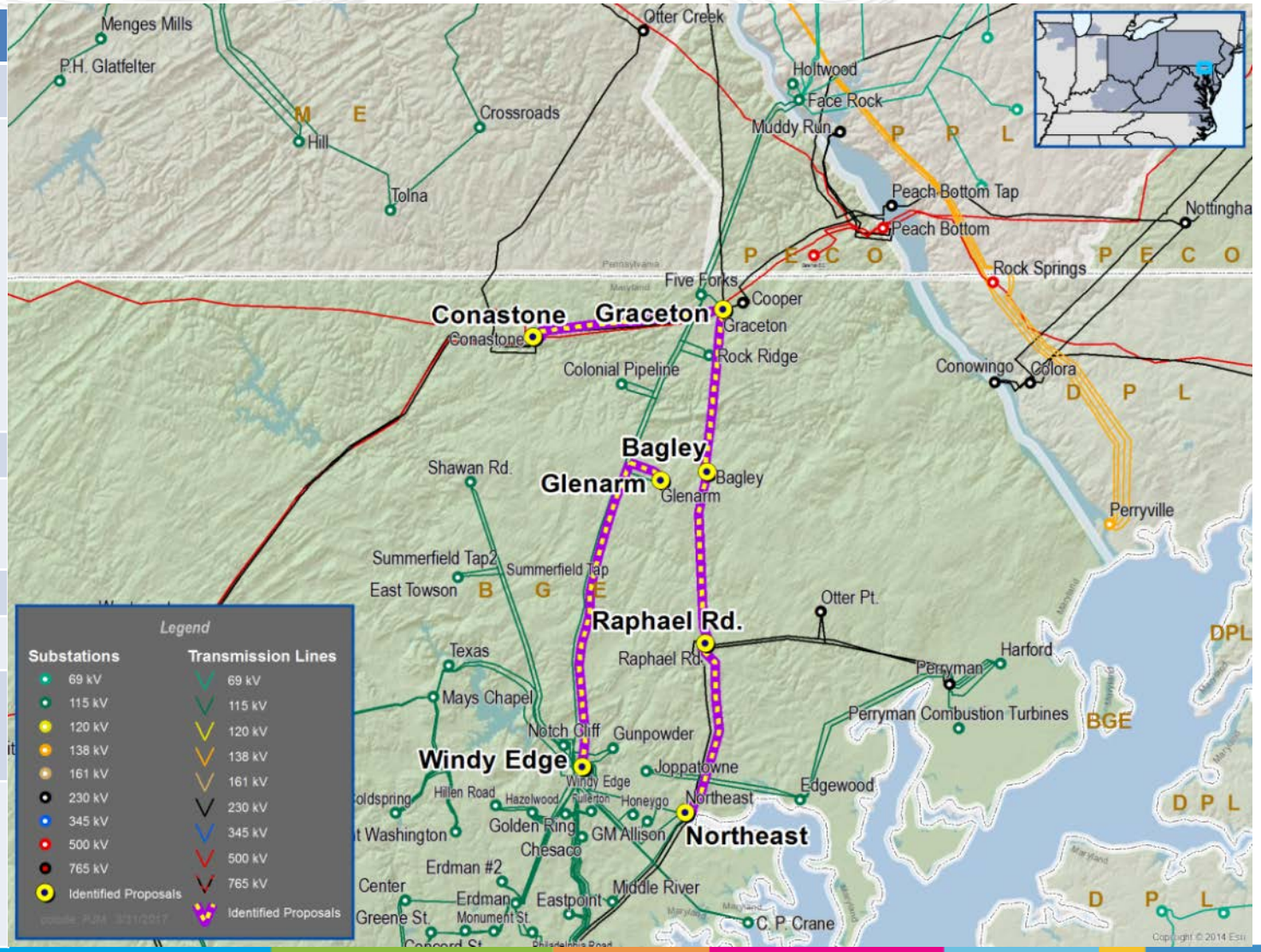
BGE 1-5E

Project ID: 201617_1-5E
Proposed by: BGE
Proposed Solution: Reconductor the Conastone to Graceton 230kV lines. Upgrade substation equipment at Conastone. Add bundled conductors to the Graceton-Bagley-Raphael Road 230kV double circuit lines. Reconductor the Raphael Road to Northeast 230 kV double circuit lines. Upgrade substation equipment at Windy Edge substation.
kV Level: 115/230 kV
In-Service Cost ($M): $25.40 PJM Cost Estimate ($M): $39.65
In-Service Date: 2021
Target Zone: BGE
ME Constraints: CONASTONE - GRACETON - BAGLEY 230 kV
Notes: B/C = 9.18 > 1.25 threshold (PASS) Reevaluation completed Oct 2018



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Revision History

- Revision History
  - V1 – 10/9/2018 – Original Version Posted to PJM.com

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