



# Review of 2019 RTEP Assumptions Update

Transmission Expansion Advisory  
Committee  
March 7, 2019

- Update of standard RTEP assumptions
- 2019 RTEP
  - TPL-001-4
- Modeling
  - MOD-032 (GOs and TOs)
    - <http://pjm.com/planning/rtep-development/powerflow-cases/mod-032.aspx>
    - Siemens PSS®MOD - Model On Demand (TOs)
    - PJM.com Planning Center Online Tool (Gen Model) – GOs
- RTEP Proposal Windows

(No change from February presentation)

- **Load Flow Modeling**

- Power flow models for outside world load, capacity, and topology will be based on the following 2018 Series MMWG power flow cases
  - 2018 Series 2023SUM MMWG outside world for
    - 2019 Series 2024SUM RTEP, 2022SUM RTEP
  - 2018 Series 2023SLL MMWG outside world for
    - 2019 Series 2024LL RTEP
  - 2018 Series 2023WIN MMWG outside world for
    - 2019 Series 2024WIN RTEP
- PJM to work with neighbors to identify any updates to topology/corrections
- PJM topology for all cases sourced from Model On Demand
  - Include all PJM Board approved upgrades through the December 2018 PJM Board of Manager approvals as well as all anticipated February 2019 PJM Board approvals
- OVEC will be included as a part of PJM

(No change from February presentation)



# Locational Deliverability Areas (LDAs)

- Includes the existing 27 LDAs
- Total of 27 LDAs
  - All 27 to be evaluated for the 2022/2023 delivery year RPM base residual auction planning parameters

LDA	Description
EMAAC	Global area - PJM 500, JCPL, PECO, PSEG, AE, DPL, RECO
SWMAAC	Global area - BGE and PEPSCO
MAAC	Global area - PJM 500, Penelec, Meted, JCPL, PPL, PECO, PSEG, BGE, Pepco, AE, DPL, UGI, RECO
PPL	PPL & UGI
PJM WEST	APS, AEP, Dayton, DUQ, Comed, ATSI, DEO&K, EKPC, Cleveland, OVEC
WMAAC	PJM 500, Penelec, Meted, PPL, UGI
PENELEC	Pennsylvania Electric
METED	Metropolitan Edison
JCPL	Jersey Central Power and Light
PECO	PECO
PSEG	Public Service Electric and Gas
BGE	Baltimore Gas and Electric
PEPCO	Potomac Electric Power Company
AE	Atlantic City Electric
DPL	Delmarva Power and Light
DPLSOUTH	Southern Portion of DPL
PSNORTH	Northern Portion of PSEG
VAP	Dominion Virginia Power
APS	Allegheny Power
AEP	American Electric Power
DAYTON	Dayton Power and Light
DLCO	Duquesne Light Company
Comed	Commonwealth Edison
ATSI	American Transmission Systems, Incorporated
DEO&K	Duke Energy Ohio and Kentucky
EKPC	Eastern Kentucky Power Cooperative
Cleveland	Cleveland Area

(No change from February presentation)

- Firm Commitments
  - Long term firm transmission service consistent with those coordinated between PJM and other Planning Coordinators during the 2018 Series MMWG development
- Outage Rates
  - Generation outage rates will be based on the most recent Reserve Requirement Study (RRS) performed by PJM
  - Generation outage rates for future PJM units will be estimated based on class average rates (No change from February presentation)

- Generic EEFORD values developed for 2024 RTEP base case
  - To be posted with TEAC materials
- Capacity weighted by fuel type
  - Each unit within a given generator class is assigned the average EEFORD for that class

Gen Class	MW	Avg EEFORD
Fossil Steam	61,723	8.35%
Nuclear	28,830	1.49%
Combustion Turbine	26,915	9.09%
Combined Cycle	62,055	3.35%
Hydro	2,927	7.23%
Pumped Storage	5,609	3.39%
Diesel	999	12.33%
Wind	2,031	0.00%
Solar	1,739	0.00%

(No change from February presentation)

- Summer Peak Load
  - Summer Peak Load will be modeled consistent with the 2019 PJM Load Forecast Report
  - The final load forecast released in December 2018
- Winter Peak Load
  - Winter Peak Load will be modeled consistent with the 2019 PJM Load Forecast Report
- Light Load
  - Modeled at 50% of the Peak Load forecast per M14B
  - The Light Load Reliability Criteria case will be modeled consistent with the procedure defined in M14B
- Load Management, where applicable, will be modeled consistent with the 2019 Load Forecast Report
  - Used in LDA under study in load deliverability analysis
  - Include Demand Response (DR) based on what cleared in the 2021/22 BRA

(No change from February presentation)

- All existing generation expected to be in service for the year being studied will be modeled.
- Future generation with a signed Interconnection Service Agreement, or that cleared in the 2021/22 BRA, will be modeled online along with any associated network upgrades.
- Generation with an FSA will be modeled offline but will be allowed to contribute to problems in the generation deliverability sensitivity testing for years 6 through 15
  - Generation with an executed FSA will not be allowed to back-off problems.
- Additional generation information (i.e. machine lists) will be posted to the TEAC page.

(Updated FSA modeling to reflect revised Manual M14B Attachment C language endorsed in February)



- A few new load deliverability procedures in Manual 14B were endorsed in February
  - Non-radial facilities 345 kV and up will only automatically be considered as CETL limits for an LDA if they have greater than a 2% OTDF
  - PJM may choose to include specific non-PJM transmission facilities in the load deliverability test in order to account for significant loop flows
  - Both thermal and voltage analysis on both Discrete Outage Case and Mean Dispatch Case will be examined
  - Mean thermal loadings will be used instead of median thermal loadings

(New slide to reflect revised Manual M14B Attachment C language endorsed in February)

- Queue projects with an FSA or ISA but are not included in 2019 Series RTEP cases
  - X3-028 (MTX)
    - 2000 MW Energy Transmission Injection Rights and 1500 MW Capacity Transmission Injection Rights
  - Y3-092 (MTX)
    - 1000 MW Capacity Transmission Injection Rights
    - 500 MW Firm Transmission Withdrawal Rights and 500 MW Non-Firm Transmission Withdrawal Rights

(No change from February presentation)

- Generation that has officially notified PJM of deactivation will be modeled offline in RTEP base cases for all study years after the intended deactivation date
- RTEP baseline upgrades associated with generation deactivations will be modeled
- Retired units Capacity Interconnection Rights are maintained in RTEP base cases for 1 year after deactivation at which point they will be removed unless claimed by an interconnection queue project

(No change from February presentation)

- At a minimum, all PJM bulk electric system facilities, all tie lines to neighboring systems and all lower voltage facilities operated by PJM will be monitored.
- At a minimum, contingency analysis will include all bulk electric system facilities, all tie lines to neighboring systems and all lower voltage facilities operated by PJM.
- Thermal and voltage limits will be consistent with those used in operations.

(No change from February presentation)

- PJM/NYISO Interface
  - B & C cables will be modeled out of service consistent with NYISO modeling
- Linden VFT
  - Withdrawal : Modeled at 330 MW Non-Firm Transmission Withdrawal Rights & Modeled 330 MW Long-Term Firm Transmission Service (PJM-NYISO)
  - Injection : Modeled at 315 MW Capacity Transmission Injection Rights
- HTP
  - Modeled at 673 MW Non-Firm Transmission Withdrawal Rights  
(No change from February presentation)

- As part of the 24-month RTEP cycle, a year 7 (2026) base case will be developed and, as necessary, evaluated as part of the 2019 RTEP
- The year 7 case will be based on the 2024 Summer case that will be developed as part of this year's 2019 RTEP
  - The case will be updated to be consistent with the 2019 RTEP assumptions.
- Purpose: To identify and develop longer lead time transmission upgrades

(Updated required evaluation of year 7 case to reflect revised Manual M14B language endorsed in February)

- Similar to the 2018 RTEP and per the PJM Operating Agreement, a proposal window will be conducted for all reliability needs that are not Immediate Need reliability upgrades or are otherwise ineligible to go through the window process.
- FERC 1000 implementation will be similar to the 2018 RTEP.
  - Advance notice and posting of potential violations
  - Advance notice of window openings
  - Window administration

(No change from February presentation)

- Request stakeholder suggestions for and input to 2019 alternative sensitivity studies and scenario analysis

(No change from February presentation)





V1 – 2/25/2019 – Original Slides Posted