



# Review of 2017 RTEP Assumptions

Transmission Expansion Advisory  
Committee  
December 15, 2016

- Update of standard RTEP assumptions
- 2017 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 Online Tool – (GOs)
    - Powertech SDDDB – System Dynamics Database (GOs)
- RTEP Proposal Windows

- Load Flow Modeling
  - Power flow models for world load, capacity and topology will be based on the 2022 summer peak case from the 2016 ERAG MMWG series power flow base case
  - Update of adjacent areas with latest topology
  - PJM topology will be based on the 2021 RTEP case that was used in the 2016 RTEP
    - Include all PJM Board approved upgrades through the December 2016 PJM Board of Manager approvals as well as all anticipated February 2017 PJM Board approvals



# Locational Deliverability Areas (LDAs)

- Includes the existing 27 LDAs
- Total of 27 LDAs
  - All 27 to be evaluated for the 2020/2021 delivery year RPM base residual auction planning parameters
  - Also to be evaluated for the 2022 Summer RTEP case

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
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

- Firm Commitments
  - Long term firm transmission service will be consistent with operations
- 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

- Currently EEFORd values are unit specific and confidential
- To increase transparency and replicability of results PJM investigated the sensitivity of using generic EEFORd values
  - Examined 2021 summer peak RTEP
- Begin applying generic EEFORd in 2022 RTEP

- Generic EEFORD values developed for 2021 RTEP base case
  - Will be updated and posted for 2022 RTEP studies
- 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	73,006	9.74%
Nuclear	34,074	2.16%
Combustion Turbine	27,414	9.45%
Combined Cycle	48,164	5.09%
Hydro	3,047	7.62%
Pumped Storage	5,597	3.35%
Diesel	1,056	13.17%
Wind*	1,891	0.00%
Solar*	634	0.00%

\* No change for wind and solar

- Summer Peak Load
  - Summer Peak Load will be modeled consistent with the 2017 PJM Load Forecast Report
  - The final load forecast data is expected to be available late December 2016
  - Include Demand Response (DR) and Energy Efficiency (EE) that cleared in the 2018/19 BRA
- Winter Peak Load
  - Winter Peak Load will be modeled consistent with the 2017 PJM Load Forecast Report
- Light Load
  - Modeled at 50% of the Peak Load forecast per M14B
    - Will continue to pursue a load adjustment through the Planning Committee
  - 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 2017 Load Forecast Report
  - Used in LDA under study in load deliverability analysis



- 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 2019/20 BRA, will be modeled along with any associated network upgrades.
  - Generation with a signed ISA will contribute to and be allowed to back-off problems.
- Generation with an executed Facilities Study Agreement (FSA) will be modeled along with any associated network upgrades.

- Generation with an FSA will be modeled consistent with the procedures noted in manual 14B
  - Exceptions to those procedures will be vetted with stakeholders at a future TEAC
- Generation with an executed FSA will be modeled off-line but will be allowed to contribute to problems in the generation deliverability testing.
  - 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 when developed.

- 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

- 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.

- PJM/NYISO “ConEd” Wheel Cancellation
  - The ConEd wheel will not be modeled in the 2017 RTEP due to the anticipated cancellation of the corresponding transmission service.
  - As of December 2016, PJM and NYISO operations are working to implement an Operational Base Flow (“OBF”) as an interim protocol.
    - PJM planning will not model any OBF in long term planning studies.

- As part of the 24-month RTEP cycle, a year 7 (2024) base case will be developed and evaluated as part of the 2017 RTEP
- The year 7 case will be based on the 2022 case that will be developed as part of this year's 2017 RTEP
  - The case will be updated to be consistent with the 2017 RTEP assumptions.
- Purpose: To identify and develop longer lead time transmission upgrades

- Similar to the 2016 RTEP and per the PJM Operating Agreement, a proposal window will be conducted for all reliability needs that are not Immediate Need reliability upgrades.
- Implementation will be similar to the 2016 RTEP.
  - Advance notice and posting of potential violations
  - Advance notice of window openings
  - Window administration

# Questions?

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