



PPL Electric Utilities

# **PPL 2020 RTEP Planning Assumptions**

**PJM Sub-Regional RTEP Committee  
December 2019**

# Agenda

- Base Case Power Flow Model
- PJM Baseline Analysis
- Supplemental Project Drivers
- Retirement of Existing Facilities



# Base Case Power Flow Model

- PPL uses PJM developed RTEP power flow cases and models for assessments
- 5 year assessment – 2025 PJM RTEP Case
- Contingencies are updated as per NERC TPL 001-4 standard
- Loads will be modeled per the latest PJM Load Forecast Report



# Baseline Analysis

- Both PPL and PJM perform baseline analysis to identify the need for baseline reliability upgrades per the following criteria:
  - ✓ NERC Reliability Standards
  - ✓ PJM Transmission Planning Criteria as specified in Manual 14B
  - ✓ PPL EU Transmission Planning Criteria filed with PJM and FERC under FERC Form 715. The form 715 can be accessed at:  
<http://www.pjm.com/library/request-access/ferc-form-715.aspx>
- PJM and PPL planning departments work closely to validate results
- Potential violations are included in a PJM open window per schedule 6 of the PJM Operating Agreement
- PPL performs analysis by applying TO criteria (Form 715) on BES and non-BES system
- Any baseline violations are addressed through the PJM RTEP process



# Supplemental Project Drivers

	Driver	Examples
1	Equipment Material Condition, Performance and Risk	Degraded equipment performance, operational performance, material condition/health, maintainability/serviceability, obsolescence, equipment failure, predictive failure analysis, employee and public safety and environmental impact.
2	Operational Flexibility and Efficiency	Optimizing system configuration, asset criticality, asset availability, equipment duty cycles and restoration capability, minimize outages.
3	Infrastructure Resilience	Improve system ability to anticipate, absorb, adapt to, and/or rapidly recover from a potentially disruptive event, including severe weather, geo-magnetic disturbances, physical and cyber security challenges, critical infrastructure reduction.
4	Customer Service	Service to new and existing customers. Interconnect new customer load. Address distribution load growth, customer outage exposure, equipment loading.
5	Other	Meet objectives not included in other definitions

# Supplemental Project Drivers

## 1) Equipment Material Condition, Performance and Risk:

Identify and make the needed investments to ensure the safe and reliable operation of the transmission system. These decisions can be based on equipment performance, obsolescence and expected service life concerns, condition of equipment, reliability impact, increased maintenance costs, and engineering recommendations.

### Examples of Project Drivers:

- Degraded Equipment Performance
- Operational Performance
- Material Condition/Health
- Obsolescence
- Equipment Failure
- Asset Modernization and Standardization
- Employee and Public Safety
- Environmental Impact



# Supplemental Project Drivers

## 2) Operational Flexibility and Efficiency

Planning teams coordinate with Operations to identify needed improvements on the transmission system that will provide for improved operating flexibility. These projects can reduce the impact and limit exposure to our customers for planned or forced events and can facilitate improved restoration times. These projects can opportunistically bring the system up to current standards and design principals.

### Examples of Project Drivers:

- Optimizing system configuration
- Equipment duty cycles
- Restoration capability
- Minimize outages



# Supplemental Project Drivers

## 3) Infrastructure Resilience

Improving the resilience of the system is an important consideration in the design of the transmission system and these projects are designed to reduce the impact to our customers for disruptive natural or man made events. These projects can also improve the operability of the system and will reduce customer exposure.

### Examples of Project Drivers:

- Reduction in customer outage exposure by reducing circuit length
- Severe Weather Events
- Network existing radial facilities
- Limit the number of taps on a transmission line





# Supplemental Project Drivers

## 4) Customer Service

Projects that accommodate new, increasing, or future load so that the system can reliably address customer needs. Also includes improvements to facilities that serve our customers.

### Examples of Project Drivers:

- Service to New and Existing Customers
- Interconnect New Customer Load
- Address Distribution Load Growth



# Supplemental Project Drivers

## 5) Other

Meet objectives not included in other definitions..

### Examples of Project Drivers:

- New Technology (pilots)
- Telemetry/Data Availability
- Industry Recommendations
- Others



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# Retirement of Existing Facilities

**The purpose of transmission planning is to ensure that the capacity of the existing transmission system is maintained or expanded as needed to ensure the reliability, efficiency, safety, resilience and security of the transmission system for the benefit of customers. There are no national, regional or local standards or criteria driving the retirement of existing facilities. Although in specific situations, facilities may be removed or not replaced as dictated by system and/or customer needs, and the design and construction of new or replacement transmission projects, decisions to not replace individual facilities may have the cumulative effect of negatively impacting the reliability, efficiency, safety, resilience and security of the transmission system. That cumulative negative impact could also drive the need for additional facilities to be constructed to compensate for those removed, including greenfield installations. Accordingly, existing facilities are maintained in service or retired based on Good Utility Practice.**



Questions?



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