2022 Local Planning Assumptions – Duquesne Light Company

12/17/2021

2021 RTEP Assumptions

- Duquesne uses RTEP power flow models
  - Perform near-term & long-term annual assessments
- Work with PJM to develop RTEP base case
  - Focus on accurate topology and load allocations
- Load model & load management consistent with the 2021 PJM Load Forecast Report
  - Model includes fixed (customer-specific) & scalable loads
  - Scalable load scaled to meet PJM forecast
  - 2026S 50/50 Forecast of 2,888 MW

Approach for Baseline Assessment

- Baseline Projects (bxxxx)
  - Resolve reliability criteria violations, market efficiency criteria, or operational performance issues
- NERC Transmission Planning Standards (TPL)
- PJM Criteria
  - Manual 14B
  - PJM Website (PJM Criteria): http://www.pjm.com/planning/planning-criteria.aspx
- Duquesne Criteria
  - Transmission Voltages: 345 kV, 138 kV, & 69 kV
  - FERC Form 715
  - PJM Website (TO Criteria): http://www.pjm.com/planning/planning-criteria.aspx
  - Facility Connection Standards: https://duquesnelight.com/docs/default-source/default-document-library/standards-for-connection.pdf?sfvrsn=5717a442_0 http://www.pjm.com/planning/design-engineering/to-tech-standards.aspx

Approach for Baseline Assessment

- Both PJM and Duquesne study Duquesne's zone to identify the need for baseline reliability upgrades
  - Must satisfy NERC Transmission Planning Standards (TPL)
  - PJM's focus is to apply PJM criteria
  - Duquesne's focus is to apply Duquesne criteria
- PJM and Duquesne validate with each other to assure a violation exists and requires an upgrade

Approach for Baseline Assessment

- Mitigation/reinforcement is determined through the PJM expansion planning process
- Present violations & reinforcements to TEAC and/or Sub-Regional RTEP Committees
- RTEP power flow cases available through PJM for stakeholders to propose solutions
  - Must follow PJM CEII guidelines to obtain power flow cases

Approach for Supplemental Assessment

- Supplemental Projects (sxxxx)
  - Non-criteria based upgrades
  - Projects may include transmission infrastructure necessary to address:
    - Equipment Material Condition, Performance, and Risk
    - Operational Flexibility and Efficiency
    - Infrastructure Resilience
    - Customer Service
    - Other
  - Supplemental projects reviewed at sub-regional meetings to allow stakeholder input

Approach for Supplemental Assessment

Equipment Material Condition, Performance, and Risk

Equipment Material Condition, Performance and Risk: Degraded equipment performance, material condition, obsolescence, equipment failure, employee and public safety and environmental impact

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.

Project drivers can include:

- Employee and public safety
- Transmission infrastructure replacements (EOL/condition/obsolescence) that are consistent with efficient asset management decisions
- Programmatic replacement of breakers, relays, wood poles, cables, etc
- Environmental drivers
- Supply Strategy guidance resulting in standard conductor sizes and other standard equipment
- Building new 138 kV for future higher voltage conversion and eliminate 69kV in areas with dense load pockets, stranded load, or where there have been reliability performance issues
- Facility Relocation

Approach for Supplemental Assessment

Operational Flexibility and Efficiency

Operational Flexibility and Efficiency: Optimizing system configuration, equipment duty cycles and restoration capability, minimize outages

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.

Project drivers can include:

- Internal and/or regulatory design guidelines or PJM minimum design standards
- Enhancing system functionality, flexibility, or operability
- Removal of existing SPS/RAS/LPS
- Networking existing radial facilities
- Diversifying multiple radial circuits on the same structures from the same sources
- Limiting the number of taps on a transmission line
- Increasing system capacity
- Remedy recurring operational problems
- Provide Operations more options to deal with non-standard operating conditions
- Follow internal Transmission & Substation recommended designs

Approach for Supplemental Assessment

Infrastructure Resilience

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.

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.

Project drivers can include:

- Resiliency enhancements
- Network existing radial facilities
- Diversify multiple radial circuits on the same structures from the same sources
- Limit the number of taps on a transmission line
- Building new 138 kV for future higher voltage conversion and eliminate 69kV in areas with dense load pockets, stranded load, or where there have been reliability performance issues

Approach for Supplemental Assessment

Customer Service

Customer Service: Service to new and existing customers. Interconnect new customer load. Address distribution load growth, customer outage exposure, equipment loading.

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.

Project drivers can include:

- Transmission System configuration changes due to new or expansion of existing distribution substations
- New transmission customer interconnections or modification to an existing customer
- Building to support future economic growth

Approach for Supplemental Assessment

Other

Other: Meet objectives not included in other definitions.

Project drivers can include:

- Industry recommendations
- Potential generation retirements
- Technological pilot projects
- Others

Other Assumptions

Other

- Duquesne-specific transmission assessment & results contained in its annual FERC Form 715
  - Must follow FERC CEII guidelines to access Form 715

- Duquesne will consider other assumptions and analyses suggested by stakeholders

Appendix

Additional Assumptions and Considerations

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