2024 Local Planning Assumptions – Duquesne Light Company

12/15/2023

2024 RTEP Assumptions

- Duquesne Light 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 2023 PJM Load Forecast Report
  - Model includes fixed (customer-specific) & scalable loads
  - Scalable load scaled to meet PJM forecast
  - 2028S 50/50 Forecast of 2,702 MW

Approach for Baseline Assessment

- Baseline Projects
  - Resolve reliability criteria violations, market efficiency criteria, or operational performance issues

- Reliability Criteria Evaluated Against
  - NERC Transmission Planning Standards (TPL)
  - PJM Criteria (Manual 14B)
  - Duquesne Criteria (FERC Form 715)
    - https://www.pjm.com/-/media/planning/planning-criteria/duquesne-light-company-planning-criteria.ashx)

- 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

Approach for Baseline Assessment

- PJM and Duquesne validate with each other to assure a violation exists and requires an upgrade
- Mitigations/reinforcements are determined through the PJM expansion planning process
- Violations & reinforcements are presented to the 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
  - 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 TEAC and 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

End of Expected Useful Life Program

Transmission Assets

DLC's End of Expected Useful Life Program

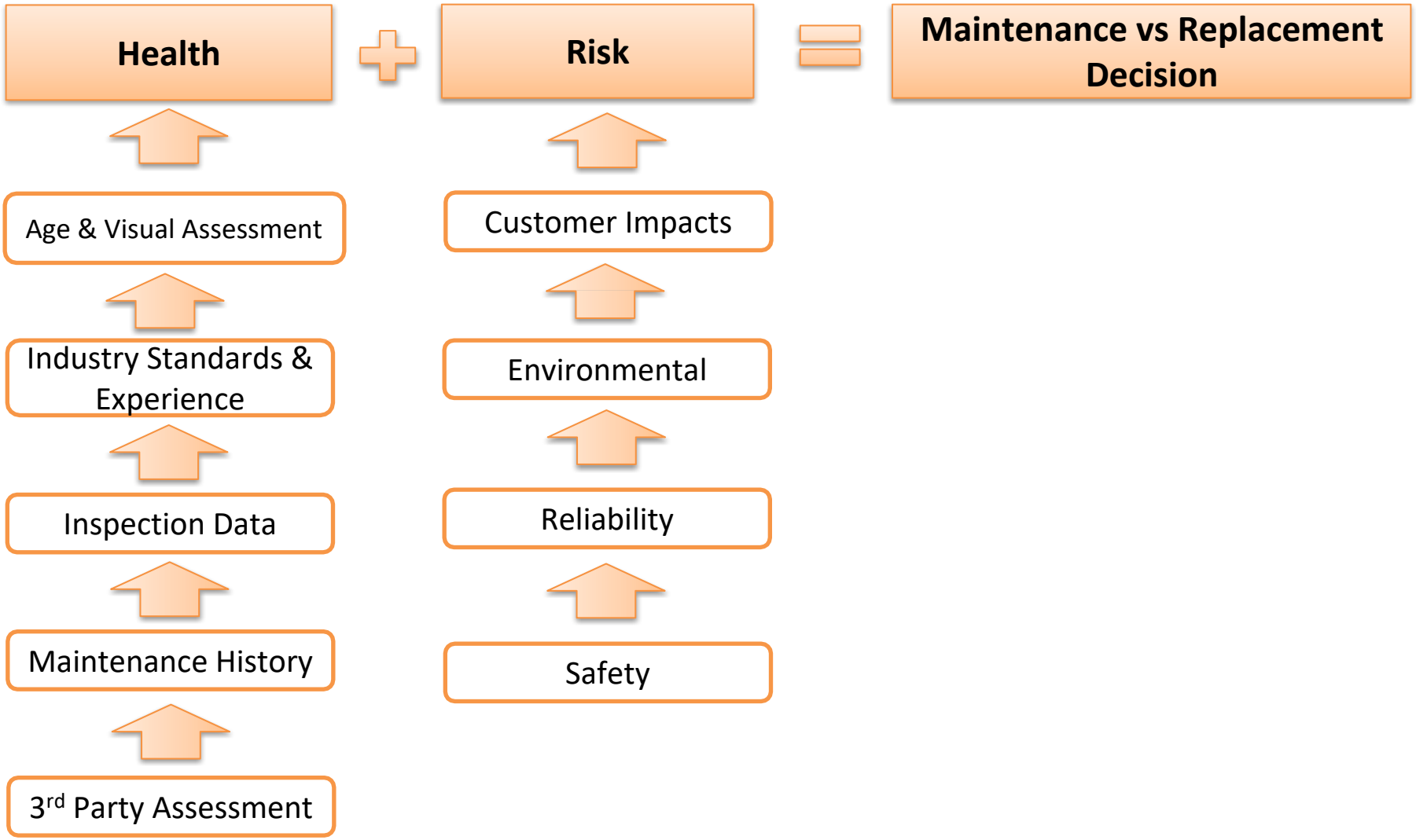
End of Expected Useful Life Program

- The purpose of Duquesne Light's End of Expected Useful Life Program is to provide interested stakeholders with information regarding Duquesne Light's program used to determine when certain transmission assets are approaching the End of its Expected Life (EOL). EOL determinations fall within Duquesne Light's Asset Management program. Duquesne Light is solely responsible for making determinations regarding the management of its assets.

- Duquesne Light's End of Expected Useful Life Program is utilized when identifying and determining when certain transmission assets are approaching the end of their expected useful life.

EOL Asset Health

End of Expected Useful Life Program



DUQUESNE LIGHT CO.

Asset-Specific Characteristics: Lines - Overhead

End of Expected Useful Life Program

- Asset specific heath index characteristics include the following:
  - Below grade inspections
  - Conductor condition
  - Condition of wood pole Above grade inspections
  - Foundation embedment depth
  - Insulator type
  - Paint condition
  - Soil boring data
  - Structural connections
  - Structural corrosion condition
  - Structural steel material
  - Type of foundations; concrete or grillage
  - Wood crossarm and brace condition

Asset-Specific Characteristics: Lines - Underground

End of Expected Useful Life Program

- Asset specific heath index characteristics include the following:
  - Conduit condition
  - Dielectric fluid cooling (DFC) system condition
  - Line termination conditions
  - Manhole structure
  - Pumping plant equipment, material, and structure condition
  - Subsurface condition

Asset-Specific Characteristics: Transformers

End of Expected Useful Life Program

- Asset specific heath index characteristics include the following:
  - Bushing condition
  - Cooling system condition
  - Insulation power factor
  - Internal inspection analysis
  - Load tap changer condition (if applicable)
  - Oil sample analysis
  - Turns ratio

Questions