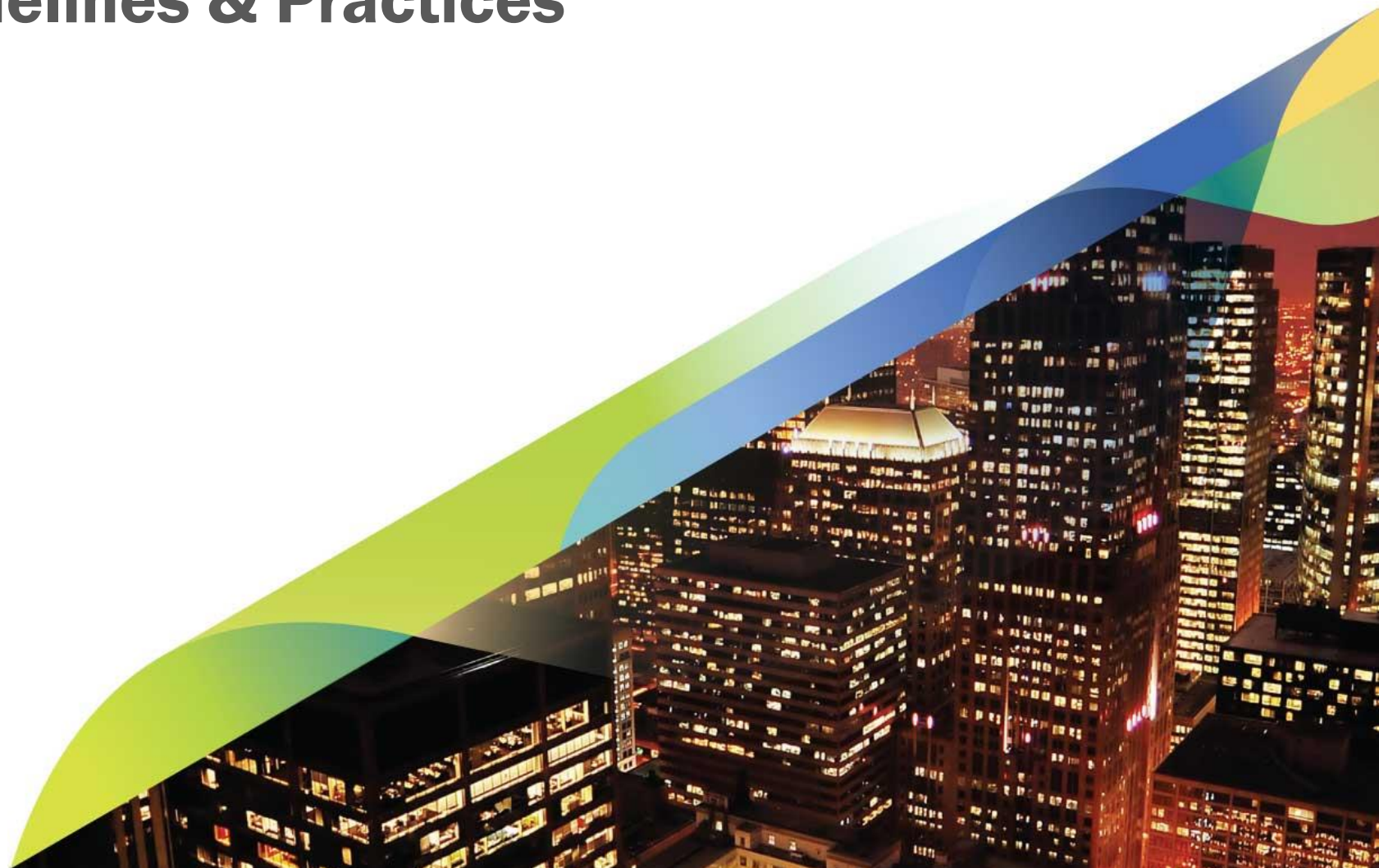




Exelon Utilities Asset Management Guidelines & Practices



Overview

Asset Management Replacement Process

Asset Condition – Health/Risk Assessment

Asset Condition – Factors Considered

Asset Programmatic Reviews

Additional Needs Identification

Summary

Asset Management Supports Reliability

- Asset management activities considers the point at which infrastructure will or is at risk of failing based on various contributing factors.
- The replacement of an asset that is near or at the end of its useful life provides for the following benefits
 - ✓ Maintains and improves the safety and reliability of the bulk electric system
 - ✓ Reduces outage duration and frequency which improves service to customers
 - ✓ Improves operations by increasing system flexibility
- The Asset Management Replacement Process provides for a holistic approach of identifying EOL needs and solutions, taking into account other system drivers.

Asset Management Replacement Process



Asset Health

Condition

History

Risk

Obsolescence

Safety



Additional Needs Identification

Customer Service

Operational Flexibility &

Efficiency

Resilience

Other



Solution Determination

Multi-driver considerations

Engineering

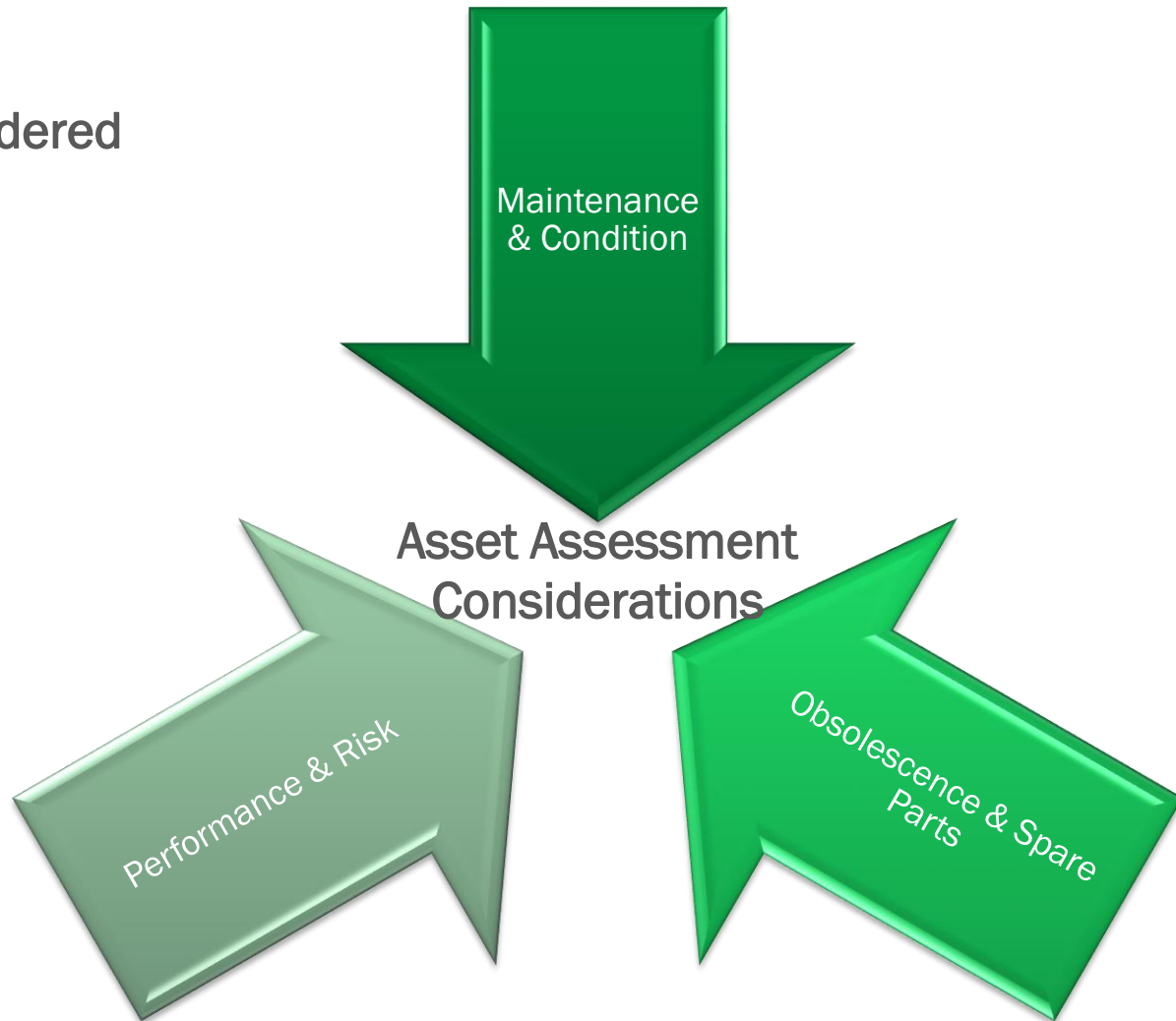
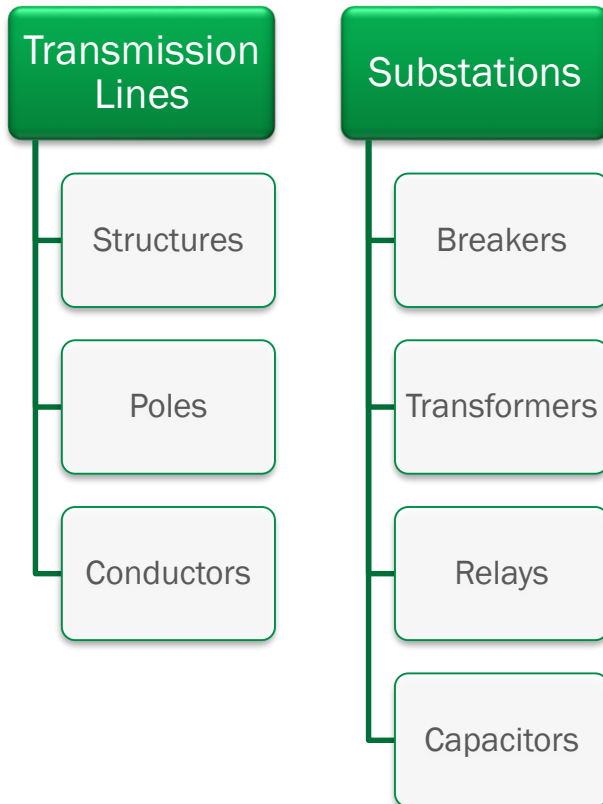
Design Standards

Cost Effectiveness

Project Scheduling

Asset Condition – Health/Risk Assessment

Major Types of Assets Considered



Evaluating the health of an asset helps to determine if an asset is reaching the end of its useful life.

Asset Condition – Factors Considered



Equipment Inspection and testing - Periodic inspections of assets is based on technical standards, industry best practices, and vendor recommendations. Inspections can include but are not limited to visual patrols, thermographic checks, diagnostic testing, etc.



Historical Performance - Transmission performance metrics such as System Average Interruption Duration Index (SAIDI), Customer Average Interruption Duration Index (CADI), System Average Interruption Frequency Index (SAIFI), Momentary Average Interruption Frequency Index (MAIFI), Customers Interrupted (CI), Customer Minutes of Interruptions (CMI), Forced or Manual Outage rates and duration, where applicable, are considered.



Maintenance History – Periodic preventative and corrective maintenance can improve an asset’s overall health. However, unplanned maintenance due to component failures or excessive maintenance due to defects may be indicative of an asset nearing the end of its useful life. Additionally, comparisons of maintenance cost to replacement cost may be evaluated.



Equipment Failure Data - Failure and extent of condition analysis is a critical part of determining whether problems are isolated exceptions or systematic.

Asset Condition – Factors Considered Continued



Age – The age of an asset is determined based on when the asset was manufactured and/or installed. Although age is a factor, it alone is not the single most influential criteria supporting repair or replacement decisions.



Obsolescence - Equipment identified as obsolete due to unavailability of parts, lack of manufacturer support, etc. Equipment identified as obsolete does not automatically lead to immediate replacement once asset reaches end of service life.



Asset Criticality – Equipment criticality is determined relative to the electrical position of the equipment on the system which considers additional aspects such as major transmission substations, critical customers & customer count, critical transmission lines & interconnections.



Environment Conditions – Environmental conditions such as topography, weather, and land condition can be a contributing factor in an asset's operational life. For example, icing, wind, protected habitats, and animal activities may impact the operability and maintenance of an asset.



Third- Party Consultations – On an as needed basis, a third-party assessment will be performed on an asset or class of assets

** Proprietary and/or confidential information will not be disclosed.*

Additional Needs Identification



Additional system needs are considered in developing solutions to address assets reaching the end of their useful lives such as:



Operational Flexibility and Efficiency - Optimizing system configuration, equipment duty cycles and restoration capability, and/or minimizing outages.



Infrastructure Resilience – Improving the grid’s 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.



Customer Service - Servicing new and existing interconnecting load customers, addressing customer transmission & distribution load growth, outage exposure, and equipment loading.



Meeting other objectives not previously captured including, but not limited to industry recommendations, potential generation retirements, technological pilot projects, and governmental / utility commission regulations.

Refer to annual Exelon Utilities Assumptions materials found within the SRRTEP Meetings.

Summary

Asset Replacement Criteria

- Asset management decisions are driven by asset condition, maintenance, operational improvements, obsolescence/spare part availability, cost effectiveness, outage impacts, geography, safety, and other factors
- Transmission facility replacement is an asset management decision made by utilities based on good engineering judgement, taking into account safety, reliability, risk, impact, and customer concerns
- Refer to Exelon Utilities Asset Management Guidelines and Practices document found <https://www.pjm.com/-/media/committees-groups/committees/srrep-ma/2020/20201216/20201216-exelon-final-end-eol-guidelines.ashx>