AMP Transmission 2027 Local Planning Assumptions for PJM RTEP Projects

PJM Sub-Regional RTEP

Western Meeting

December 11, 2026

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AMP Transmission (AMPT) Overview

- AMPT owns and operates PJM network transmission facilities

- AMPT has transmission facilities in the ATSI, AEP, and the DAY Zones
  - (4) 138 kV stations
  - (7) 138/69 kV stations
  - (26) 69 kV stations
  - Total of 70 miles of combined 69 and 138 kV transmission line

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AMPT Planning Assumptions

- AMPT plans all facilities in accordance with North American Electric Reliability Council (NERC), ReliabilityFirst (RF), and PJM planning requirements

- AMPT follows PJM Reliability Planning Criteria as stated in Manual 14B
  - https://www.pjm.com/library/manuals.aspx

- AMPT will conduct a yearly planning assessment in accordance with
  - AMPT FERC 715 planning criteria
    - https://www.pjm.com/planning/planning-criteria/to-planning-criteria.aspx

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AMPT Planning Models

- AMPT participates in the development of PJM's RTEP base cases for power flow, short circuit, and stability models
  - Additional information on PJM's Process is described in Manual 14B

- AMPT uses RTEP power flow models and:
  - Performs near-term & long-term annual assessments
  - Studies utilize the latest available PJM RTEP base cases
    - 5-year assessment – 2031 PJM RTEP Case
    - Contingencies are updated as per NERC TPL-001 Standards
  - Works with PJM to develop RTEP base case – ensuring accurate topology

- All deviations from the above stated assumptions and models will be otherwise noted

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AMPT PJM Planning Criteria

- AMPT develops three different categories of PJM projects:
  - **Baseline projects** are developed to address planning criteria violations which originate from internal and/or PJM RTEP Planning analysis
  - **Supplemental projects** are not covered by baseline PJM Planning analysis and address internal AMPT drivers that will be covered in more detail
  - **Network upgrade projects** are developed in conjunction with PJM to provide facilities for connection of new generation facilities and/or upgrades in output of existing generation facilities

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Baseline Project Planning Process

- AMPT will:
  - Evaluate projected future system conditions identifying all potential reliability criteria violations
  - Develop associated system improvements to resolve any identified violations to ensure adherence with all related planning criteria
  - Coordinate with PJM to verify accuracy of modeling information and violations identified through PJM's and AMPT's planning analysis
  - Submit any Baseline violations to PJM in accordance with PJM's annual RTEP process
- PJM will review all validated violations at TEAC and/or Sub-regional RTEP Committees
- All Baseline violations and Baseline solutions will be presented and vetted through the PJM TEAC or Sub-regional RTEP Committees
  - All cases, analysis files and available results will be made accessible through PJM's CEII process

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Supplemental Project Criteria

- AMPT will develop supplemental projects (Attachment M-3) that are identified based on the following drivers:
  - **Customer Service**
  - **Operational Flexibility & Efficiency**
  - **Equipment Material Condition, Performance and Risk**
  - **Infrastructure Resilience**
  - **Other**
- All needs and solutions will be reviewed at the sub-regional RTEP meeting for stakeholder input as part of the PJM M-3 Process.

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Supplemental Project Planning Categories

- **Customer Service**
  - Service to new and existing customers, interconnect new customer load, address load growth, customer outage exposure, and equipment loading
  - Customer Service interconnections that follow the M-3 process are based on:
    - AMPT's Transmission Facilities Interconnection Requirements Document

- **Operational Flexibility & Efficiency**
  - Optimize system reliability through improved system configuration and restoration capabilities
    - Improve system reliability and safety by reducing operator interventions and actions
    - Address reliability risks to system operations

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Supplemental Project Planning Categories

- **Equipment Material Condition, Performance and Risk**
  - Degraded equipment performance, material condition, obsolescence, including at the end of the useful life of equipment or a facility, equipment failure, employee and public safety and environment impact
  - Enhance legacy facilities to modern engineering design standards

- **Infrastructure Resilience**
  - Improve the system's ability to anticipate, absorb, adapt to, and/or rapidly recover from a potentially disruptive event, including severe weather, geo-magnetic disturbances or physical and cyber security challenges, critical infrastructure reduction, optimize inventory of replacement facilities

- **Other**
  - Meet objectives not included in other definitions such as, but not limited to, technological pilots, good utility practice/industry recommendations, environmental and safety impacts, governmental/utility commission regulations, etc.

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AMPT End of Life Policy

- There are no National, State, or local criteria or other industry standards addressing asset End of Life analysis.
- This document provides AMPT assumptions, guidelines, and considerations used by AMPT to determine if a Transmission facility is approaching or has reached its End of Life (EOL).
- The transmission solutions may also consider other factors such as resilience, reliability, and operational flexibility for asset planning that is efficient and cost effective.
- This policy is applicable to all transmission voltages, not just BES as required by the PJM M-3 Process.

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AMPT End of Life Policy

- The purpose of AMPT Equipment EOL Policy is to inform stakeholders of the guidelines AMPT uses to determine when transmission assets are approaching or have reached their practical EOL and determine the disposition of that asset.
- AMPT uses these guidelines to assess the operational and physical condition as an asset approaches or is determined to have reached its expected end of life.
- Since this is an AMPT policy, AMPT is solely responsible for the determination of when an asset is approaching or has reached the end of its useful life.

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AMPT End of Life Assessment

Input factors considered (but are not limited to):

- **Age:** Used as an initial filter but not the sole determinant. Typically, assets at 40-60+ years are nearing end of life and are considered for replacement or removal.
  - Microprocessors and other electronic components typically reach end of life at 15-20 years.
- **Criticality:** Determined by its role within the transmission system.
- **Maintenance Needs:** Excessive or intensive unplanned maintenance or repair.
- **Performance:** Unscheduled outage rates and durations.
- **Obsolescence:** Lack of part availability or manufacturer support or functional obsolescence such as electromechanical relaying schemes.

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AMPT End of Life Assessment

Input factors considered (but are not limited to):

- **Industry Bulletins:** Equipment types with unacceptable maintenance or operational issues.
- **Environmental Impact:** Equipment with environmentally unfriendly characteristics or catastrophic failure modes.
- **Environmental Surroundings:** Susceptibility to flooding, posing a runoff threat, or other environmental factors.

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AMPT End of Life Replacement/Removal

Analysis will be completed to determine the future need for assets approaching or at the end of their useful life, and a solution/strategy will be developed.

- **Replacement**
  - Like-for-Like
  - "Improved" replacement (i.e., replace transformer at EOL with one of greater capacity)
- **Program Replacement**
  - If asset determined at EOL, and is one of many of similar type/vintage, consider program replacement
- **Removal**
  - Determine impact of removal or equipment function addressed by concurrent but otherwise unrelated project

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AMPT End of Life Replacement/Removal

Considerations when determining replacement/removal strategy.

- **Transmission System Resilience**
  - When addressing asset at EOL, consider the grid's ability to absorb, adapt to, or rapidly recover from an event – either from a natural event, operational error or intentional event.
- **Operational Flexibility and Effiencey**
  - Optimizing station or line configurations to restore customer load following an outage.
- **Enhanced Customer Service**
  - Reduction of outage exposure to a customer and/or maintenance outage availability (networking radial loads).
- **Industry Requirements**
  - Other drivers such as regulatory requirements or recommendations (i.e., NERC, EEI, EPRI), generation additions, or potential interconnections.

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AMPT EOL Considerations – Transmission Line

- **Overhead lines**
  - Conductor type/condition
  - Structure type/condition
    - Wood pole lines
    - Inoperable air-break switches, lack of switching capability or flexibility
    - Polymer insulators that are not UV-resistant
  - Static Wire Type
  - Insulator and Hardware Type
  - Foundation Type/below ground condition
  - Grounding Type
- **Underground Lines**
  - Cable condition, doble test results, presence of water trees
  - Manhole structure & safety
  - Conduit condition, water in conduits, poor soil conditions
  - Line terminations
  - Obsolete or difficult to maintain designs such as oil-filled cable systems

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AMPT EOL Considerations – Substation

- **Transformers**
  - Manufacturing Date
  - Tanks and Radiators
  - Load Tap Changer
  - Oil Condition
  - Insulation
  - Core
  - Winding
  - Bushings
  - Accessories
  - Oil Containment
- **Interruption Devices (Circuit Breakers and Circuit Switchers)**
  - Manufacturing Date
  - Interrupting Medium
  - Insulating Medium
  - Operator Type
  - Fault Operations
  - Switched Operations

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AMPT EOL Considerations – Substation

- **Station Equipment**
  - Station Batteries
  - Battery Charger(s)
  - Relays
  - SCADA Equipment
  - Communication Equipment
  - Station Physical Security (Lighting, Fence, Gate)
  - Support Steel and Foundations
  - Capacitor Banks
  - Bus, Conductors, and Insulators
  - Arresters
  - Disconnect Switches
  - Control Cables and Cable Trench
  - Ground Grid
  - Station Power (AC Service)
  - Instrument Transformer (Voltage/Current)
  - Station Configuration
  - Control House

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Questions?

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