2027 10-Year Assessment Preliminary Study Design

Stakeholder and Customer Webcast

PRESENTED BY:

System Planning

November 16, 2026

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Purpose

Summarize	Summarize ATC's project development processes
Solicit	Solicit input for the 2027 Assessment Study Design
Solicit	Solicit input on any new public policy requirements

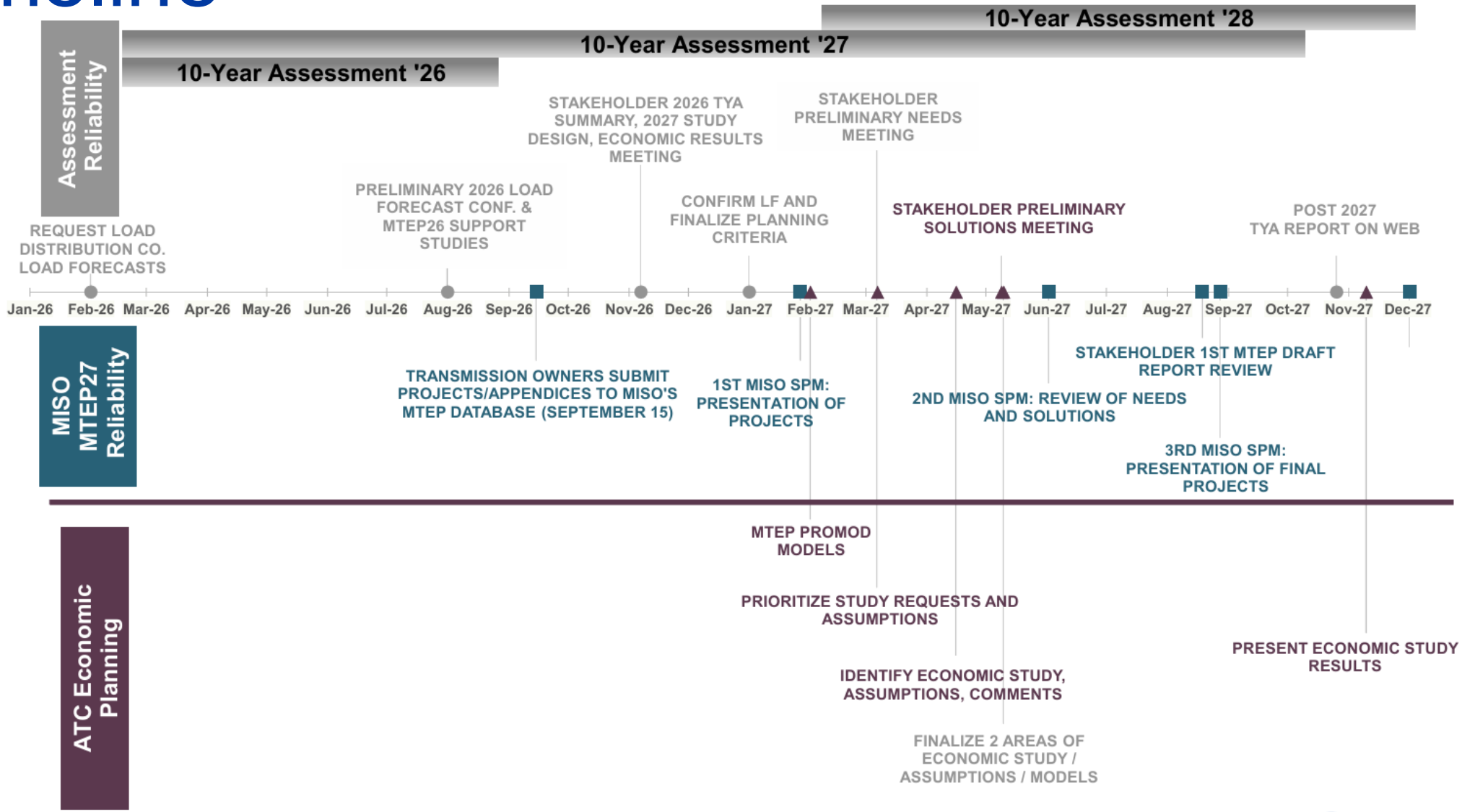
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ATC's project development processes

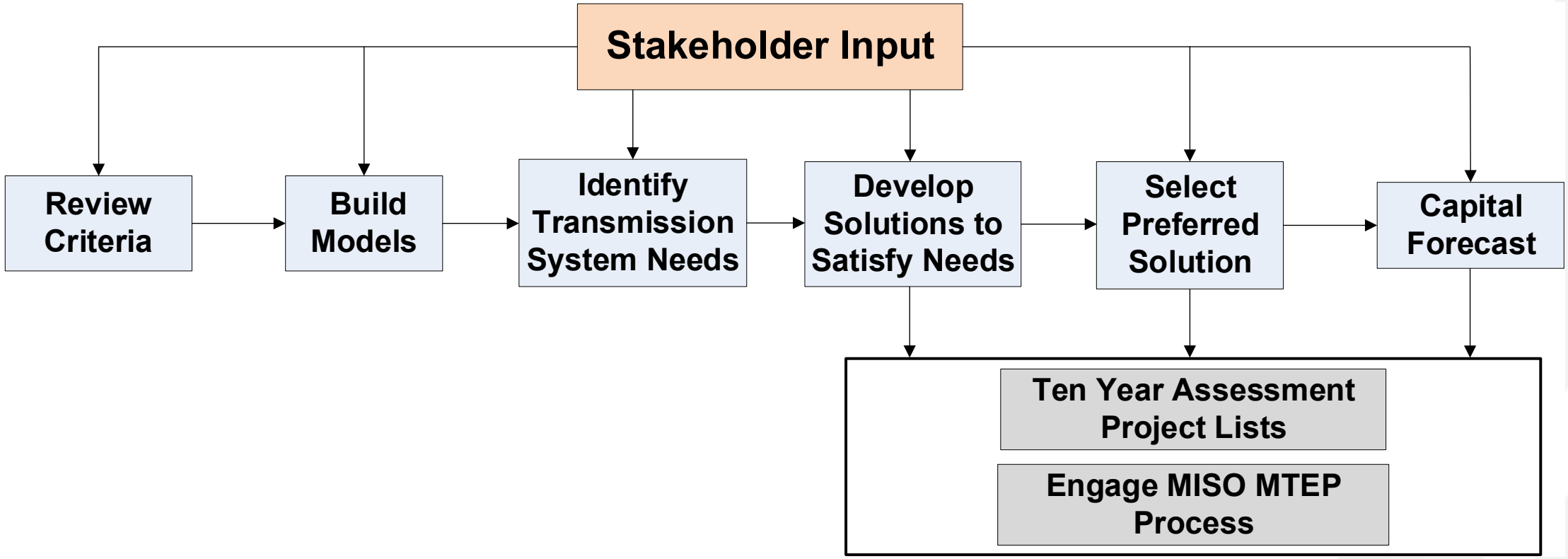
- Local Transmission Planning
  - Asset Renewal
  - Interconnections
  - Network
    - Planning Reliability Criteria
    - Sectionalizing Guidelines
  - Economic Benefits
- Consider Other Solutions
  - Non-Transmission Alternatives (NTAs)
  - Grid Enhancing Technologies (GETs)
- Regional Planning
- Public Policy Requirements

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Timeline

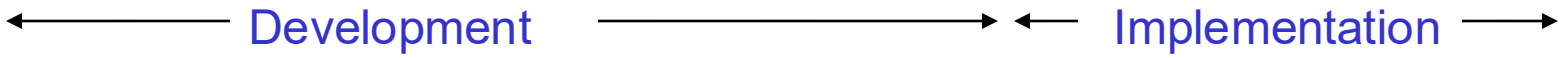

10-Year Assessment '28
10-Year Assessment '27
10-Year Assessment '26
Assessment Reliability
STAKEHOLDER 2026 TYA SUMMARY, 2027 STUDY DESIGN, ECONOMIC RESULTS MEETING
STAKEHOLDER PRELIMINARY NEEDS MEETING
PRELIMINARY 2026 LOAD FORECAST CONF. & MTEP26 SUPPORT STUDIES
CONFIRM LF AND FINALIZE PLANNING CRITERIA
STAKEHOLDER PRELIMINARY SOLUTIONS MEETING
POST 2027 TYA REPORT ON WEB
REQUEST LOAD DISTRIBUTION CO. LOAD FORECASTS
Jan-26 Feb-26 Mar-26 Apr-26 May-26 Jun-26 Jul-26 Aug-26 Sep-26 Oct-26 Nov-26 Dec-26 Jan-27 Feb-27 Mar-27 Apr-27 May-27 Jun-27 Jul-27 Aug-27 Sep-27 Oct-27 Nov-27 Dec-27
MISO MTEP27 Reliability
STAKEHOLDER 1ST MTEP DRAFT REPORT REVIEW
TRANSMISSION OWNERS SUBMIT PROJECTS/APPENDICES TO MISO'S MTEP DATABASE (SEPTEMBER 15)
1ST MISO SPM: PRESENTATION OF PROJECTS
2ND MISO SPM: REVIEW OF NEEDS AND SOLUTIONS
3RD MISO SPM: PRESENTATION OF FINAL PROJECTS
ATC Economic Planning
MTEP PROMOD MODELS
PRIORITIZE STUDY REQUESTS AND ASSUMPTIONS
IDENTIFY ECONOMIC STUDY, ASSUMPTIONS, COMMENTS
PRESENT ECONOMIC STUDY RESULTS
FINALIZE 2 AREAS OF ECONOMIC STUDY / ASSUMPTIONS / MODELS

ATC project identification process



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ATC project status definitions



Strategic

Provisional

Proposed

Planned

In-Service

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Asset Renewal Program Objectives

- Safety – public and worker
- Minimize total life cycle cost [Net Present Value of Revenue Requirements (NPV RR) from customer cost/rate perspective]
- Compliance
- Manage risk
- Reliable performance – maintain or improvement
- Environmental performance improvements
- Coordination with Stakeholders

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Listing of Asset Renewal Project Solutions

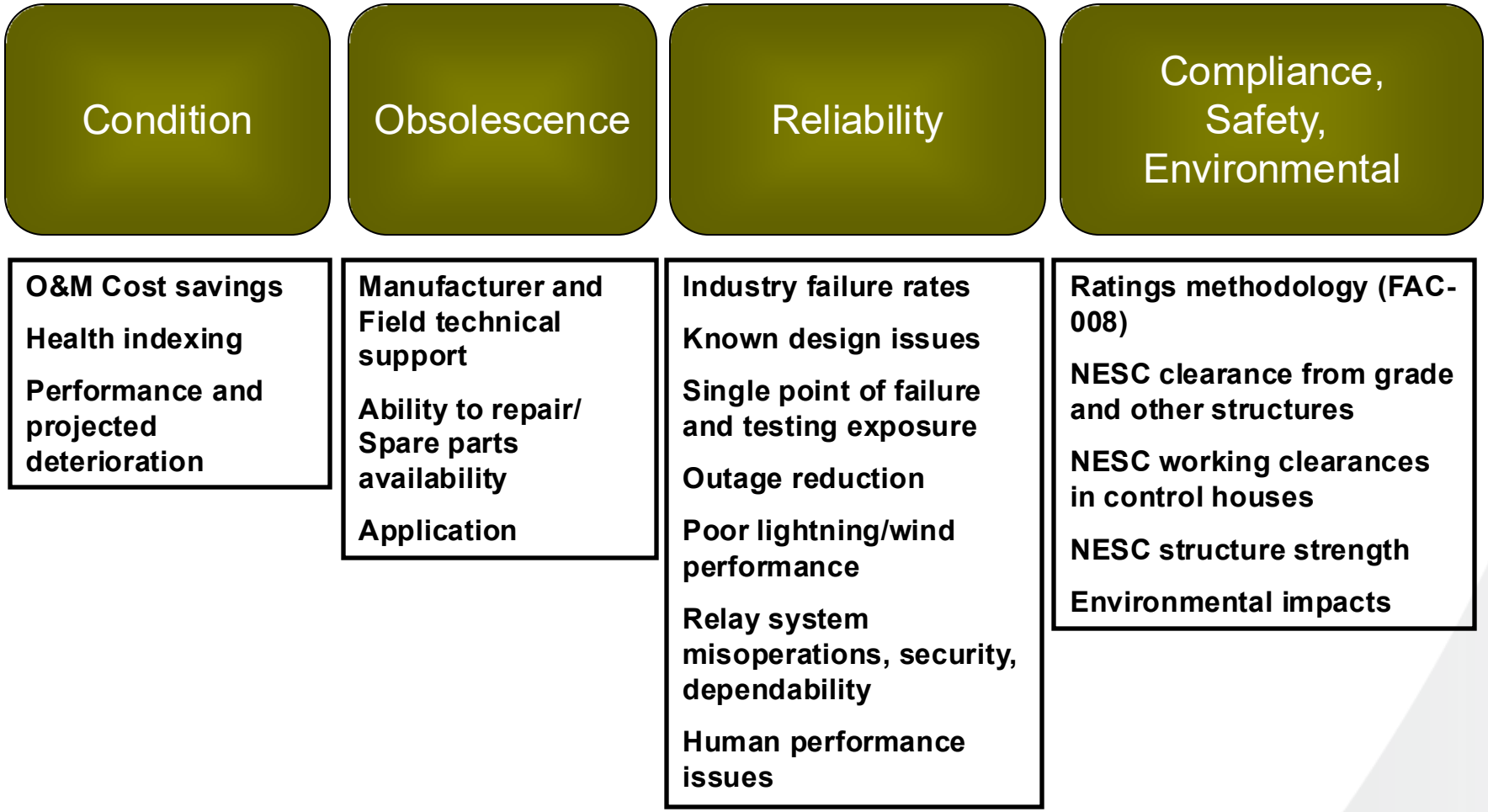
- See ATC 10 Year Assessment Site under
  - Projects - Network Projects List - Related Resources
  - Condition and Performance: Later ISDs, Explanation "Project Added"

ATC's 2024 10-Year Assessment Project List

	2025 Est. ISD Month - Year	ZONE	Need Category	Planned / Proposed / Provisional	MISO MTEP Appendix (BOLD = Approved)	MTEP PRJID	Cost
ge Project	Dec-25	1	Operational Flexibility	Planned	**A in MTEP19**	15947	$ 13,857,000
-40), OPGW Installation	Dec-25	1	Communication	Planned	**A in MTEP21**	19587	$ 4,900,000
er	Jul-25	1	T-D Interconnection	Planned	**A in MTEP20**	14907	$ 104,678
al Transformer	Dec-25	1	T-D Interconnection	Planned	**A in MTEP23**	24783	$ 3,700,000
a Network Improvement Project	May-27	1	T-D Interconnection	Planned	**A in MTEP23**	23913	$ 39,900,000
V (Y-47), Rebuild	Dec-25	1	Condition and Performance	Planned	**A in MTEP18**	7763	$ 13,000,000
and Breaker Asset Renewal	Dec-25	1	Condition and Performance	Planned	**A in MTEP22**	19525	$ 8,200,000
w Sub	Dec-25	1	T-D Interconnection	Planned	**A in MTEP23**	24475	$ 4,800,000
ap, 69 kV (Y-71), Partial Rebuild and Rerate	Dec-25	1	Condition and Performance	Planned	**A in MTEP23**	21921	$ 19,200,000
VY-107), Partial Rebuild	Dec-30	1	Condition and Performance	Proposed	A in MTEP25	21922	$ 5,500,000
Interconnection Facilities and Network Upgrades	Dec-29	1	G-T Interconnection	Planned	**A in MTEP21**	19729	$ 21,245,605
wer Transformer Replacement	Jun-27	1	Reliability	Planned	**A in MTEP23**	24093	$ 17,600,000
70), Rebuild & OPGW	Oct-25	1	Condition and Performance	Planned	**A in MTEP23**	23874	$ 12,300,000
Project	Dec-28	1	Reliability	Planned	**A in MTEP23**	22587	$ 92,400,000
tom 115 kV (I-9), OPGW Addition & Partial Rebuild	Feb-32	1	Communication	Proposed	A in MTEP25	23841	$ 47,000,000
V (Y-74), Rebuild & OPGW	Oct-26	1	Condition and Performance	Planned	**A in MTEP24**	24983	$ 48,800,000
on	Nov-25	1	T-D Interconnection	Planned	**A in MTEP24**	22911	$ 561,327
V (Z-52), Reconductor	Jun-26	1	Reliability	Planned	**A in MTEP24**	25160	$ 2,600,000
ect	Dec-28	1	T-D Interconnection	Proposed	A in MTEP25	25314	$ 35,900,000
kV, Construct New Line	Dec-27	1	Reliability	Planned	**A in MTEP24**	25348	$ 10,300,000
(Y-90), Uprate	Oct-26	1	Operational Flexibility	Planned	**A in MTEP24**	22798	$ 3,150,000
grades and Interconnection Facilities	Sep-28	1	G-T Interconnection	Planned	**A in MTEP24**	50108	$ 2,633,000
work Upgrades and Interconnection Facilities	Sep-28	1	G-T Interconnection	Planned	**A in MTEP24**	50107	$ 3,168,000
Upgrades and Interconnection Facilities	Jan-28	1	G-T Interconnection	Planned	**A in MTEP24**	50110	$ 9,703,000
aker and House Asset Renewal	Dec-28	1	Condition and Performance	Proposed	A in MTEP25	50126	$ 7,950,000
Asset Renewal	Dec-28	1	Condition and Performance	Proposed	A in MTEP25	50172	$ 9,800,000
Addition	Dec-26	1	T-D Interconnection	Planned	**A in MTEP24**	22911	$ 500,000
Project	Dec-28	1	Reliability	Proposed	A in MTEP25	50233	$ 17,500,000
sset Renewal	Dec-28	1	Condition and Performance	Proposed	A in MTEP25	50262	$ 5,155,000
k Upgrades and Interconnection Facilities	Mar-29	1	G-T Interconnection	Proposed	A in MTEP25	50507	$ 14,094,000
Upgrades and Interconnection Facilities	May-28	1	G-T Interconnection	Proposed	A in MTEP25	50545	$ 16,455,000
ork Upgrades and Interconnection Facilities	Jun-28	1	G-T Interconnection	Proposed	A in MTEP25	50514	$ 19,847,000
ork Upgrades	Aug-26	1	G-T Interconnection	Proposed	A in MTEP25	50517	$ 1,475,000
ation	Apr-26	1	T-D Interconnection	Proposed	A in MTEP25	50613	$ 3,200,000
ers 69kV (Y-86), Partial Rebuild	Dec-31	1	Condition and Performance	Provisional	B in MTEP25	50629	$ 19,000,000
Relay Asset Renewal	Dec-29	1	Condition and Performance	Proposed	A in MTEP26	50666	$ 4,791,444

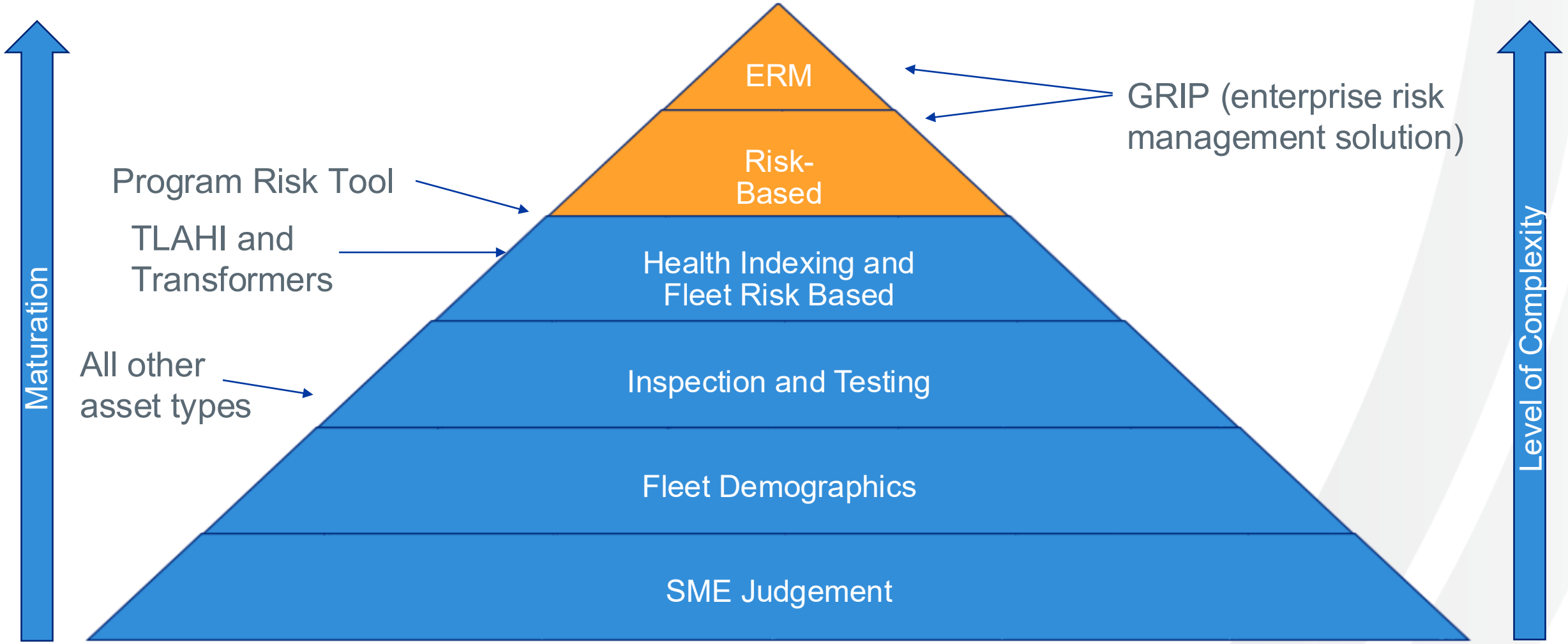
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Asset Renewal Program Replacement is based on…. (Hint: Not Age!)



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Asset Management Journey



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ATC Asset Management Advancement

Legacy AM Tools

- TLAHI – T-Line Asset Health Index
- THI – Transformer Health Index
- Asset Management Plans
- SME judgment

Future State

GRID RISK INVESTMENT PLANNING

Enterprise Asset Performance Management

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Grid Risk Investment Planning (GRIP)

- Objective: Develop an Enterprise Asset Management tool that will provide risk-based prioritization for asset renewal projects, a consistent framework across need drivers, and optimize maintenance schedules.





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GRIP: Data, Risk and Decisions

Grid Risk Investment Planning (GRIP) helps identify and prioritize assets that need action.

1 Data Inputs

Asset, maintenance, operation and planning data.

Complete, high-quality data supplies the inputs.

2 GRIP Calculations

Asset condition and age help estimate how likely failure is.

Criticality and financial impacts help estimate how serious failure would be.

GRIP combines both to assess risk and also estimates remaining useful life.

3 Results

Power BI (PBI) displays calculation results by asset and location.

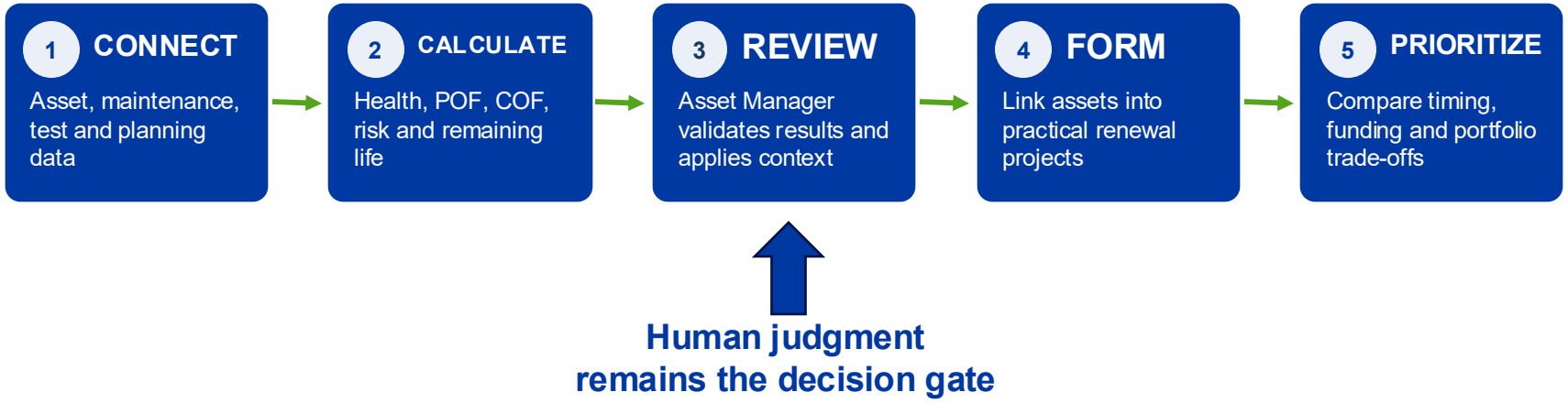
Meaningful visuals help teams make data-informed decisions.

Health and criticality measures vary by asset type. The broader method applies across all asset classes.

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With GRIP Planning begins with a common risk view

GRIP turns connected asset evidence into a repeatable starting point for Asset Manager decisions.



FROM assembling the evidence **TO** evaluating alternatives and value

WHAT CHANGES FOR THE BUSINESS

Trusted starting point
Common calculations expose the evidence behind risk.

Comparable priorities
A consistent framework supports cross-asset decisions.

End-to-end traceability
Connect asset condition, risk, project scope and forecast dollars.

Faster scenario refresh
Reassess timing and funding as inputs or constraints change.

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GRIP: A Multi-Year Journey

2025
INTERNAL BUILD

GRIP build requirements, methodology and data architecture advanced; internal project kickoff May.

2026
BUILD TO PRODUCTION

Production calculations, application releases, reporting, validation and hyper-care across priority assets.

2027
TRUST, CONNECT, SCALE

Validate deployed models; demonstrate gained value; establish the data framework, system integrations and remaining priority scope.

2028+
OPERATIONAL DATA

Integrate online monitoring and field operational data to strengthen condition insights, models and planning decisions.

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Interconnections

- G-T
  - MISO Attachment X and Y Processes
- D-T
  - Collaborate with distribution providers through the BVP process
    - Load Interconnection Request Form (LIRF)
    - Distributed Energy Resource Request Form (DERRF)
    - Economic Development Projects
- T-T
  - Collaborate with other Transmission Owners

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Network planning objectives

- Compliance with North American Electric Reliability Corporation (NERC) regional and local criteria
- Best Value Planning (BVP) process
- Customer involvement
- Address public policy requirements
- Maintain or improve the adequacy and reliability of the electric transmission system

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Planning Criteria and Assessment Practices

- NERC Standards, particularly TPL-001, Version 5.1
- ATC Planning Criteria
  - Consists of criteria and assessment practices
  - Current versions: Planning Criteria v25, v26 & Planning Assessment Practices v22.5, v23
  - Planning Criteria v25 & v26
    - v25 (Aug 2025)
      - ✓ Added new section 9 for Large Load Interconnection Requirements, moved Definitions to section
    - v26 (Sept 2026)
      - ✓ Added new event L1 & corresponding footnote to Table A
      - ✓ Added and revised language for Dynamic Stability Assessment on application of dynamic criteria
      - ✓ Revised language on IBR dynamic performance requirements
      - ✓ Added new section 2.1.1 B iii for Large Load voltage recovery
      - ✓ Removed majority of section 8, Exceptions to ATC Planning Criteria
      - ✓ Added new section 10 on Remedial Action Schemes (RAS)
  - Planning Assessment Practices v22.5, v23
    - v22.5 (July 2025)
      - ✓ Added guidance for studying P6 contingencies with non-SCADA controlled disconnect switches under 12.2 'Multiple Contingency Planning'
    - v23 (Sept 2026)
      - ✓ Added language on the study area for generator interconnection dynamic stability studies.
      - ✓ Added section 15 on Steady State Voltage Unbalance.

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Large Load Guideline and Criteria Update

- **ATC Load Interconnection Guide** (updated on August 22, 2025) describes ATC's minimum requirements and process for the connection of load to ATC's transmission system.

- **ATC Planning Criteria** (updated September 14, 2026) provides technical details of ATC's planning criteria

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Major Additions to ATC Planning Criteria

The guide adds measurable behavior, high-resolution evidence, and ATC authority to manage identified reliability risk



RIDE-THROUGH + RECOVERY	Voltage and frequency behavior, protection settings, backup transfer and controlled return to grid supply must be disclosed and studied.
RAMPING + POWER FACTOR	Project-specific ramp limits may be set; new/qualified-change large loads target >98% lagging/leading power factor at the transformer low side.
OSCILLATIONS + EMT	EMT studies are triggered by weak-grid, proximity and fast-control risks; oscillatory demand may require limits, control changes or mitigation.
MONITORING + EVENT DATA	High-resolution, time-synchronized recording supports model validation, post-event review and root-cause analysis; records are retained for at least 90 days.

Additional sections on Large Load Planning Assumptions, Customer Confirmation and Study Requirements, Schedule and Cost Impacts, Mitigation Requirements, and Return to Service requirements.

FERC Large Load Show Cause Order

- Applies to all FERC-jurisdictional RTO/ISOs and member TOs

- Areas of reform:
  1. Transmission service application and study process, including consideration of alternative transmission technologies
  2. Preventing cost shifting and requiring transparency
  3. Co-location arrangements and behind the meter generation
  4. New transmission services for flexible large loads
  5. Generating facilities serving large electrically proximate co-located load

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Large Load Cost Allocation Mechanisms

Applicability

- Applies to load interconnection requests for loads of 100 MW or greater or requiring transmission upgrades of $100M or more

CWIP Charge

- Equal to return on project CWIP balance and associated taxes
- Charged monthly to LDC when CWIP is recorded through to when project is in service
- Included in Large Load Project Commitment Agreement (LLPCA)

Minimum Transmission Charge

- Ensures Network service is charged for 100% of requested transmission capacity
- Begins after transmission upgrades providing the requested capacity are in service
- Minimum term of 15 years from the last in-service date for transmission upgrades
- Included in Minimum Transmission Charge Agreement (MTCA)

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2027 studies and assumptions

- 2026 Load Forecast Confirmation and MTEP27 Support Studies
- Modeling Assumptions
  - Model Years
  - Load
  - Generation
  - No Load Loss Allowed Contingency Analysis
- Additional Studies

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Preliminary load forecast and MTEP27 support studies

- Initial screening (reduced generator reactive capability)
  - Summer peak (5 and 10 year models)
  - 2026 load forecast
  - 2026 TYA with outside world from the (2025 MMWG cases)

- To confirm 2026 Load Forecast and support MTEP27 database development
  - No load loss allowed contingencies
  - Completed August 2026

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2027 TYA model years

- 2027 (As-planned)
- 2028
- 2032
- 2037

- All models will likely be completed by the Spring of 2027

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2026 Load Forecast- Historical

- Requested September 29, 2026
  - ATC's 2026 summer peak hour
  - ATC's 2025-2026 winter peak hour
  - Light load (Easter morning at 4:00 AM)
  - Shoulder load

- Requested by November 1, 2026.

- Compile, review, and add to the existing load databases

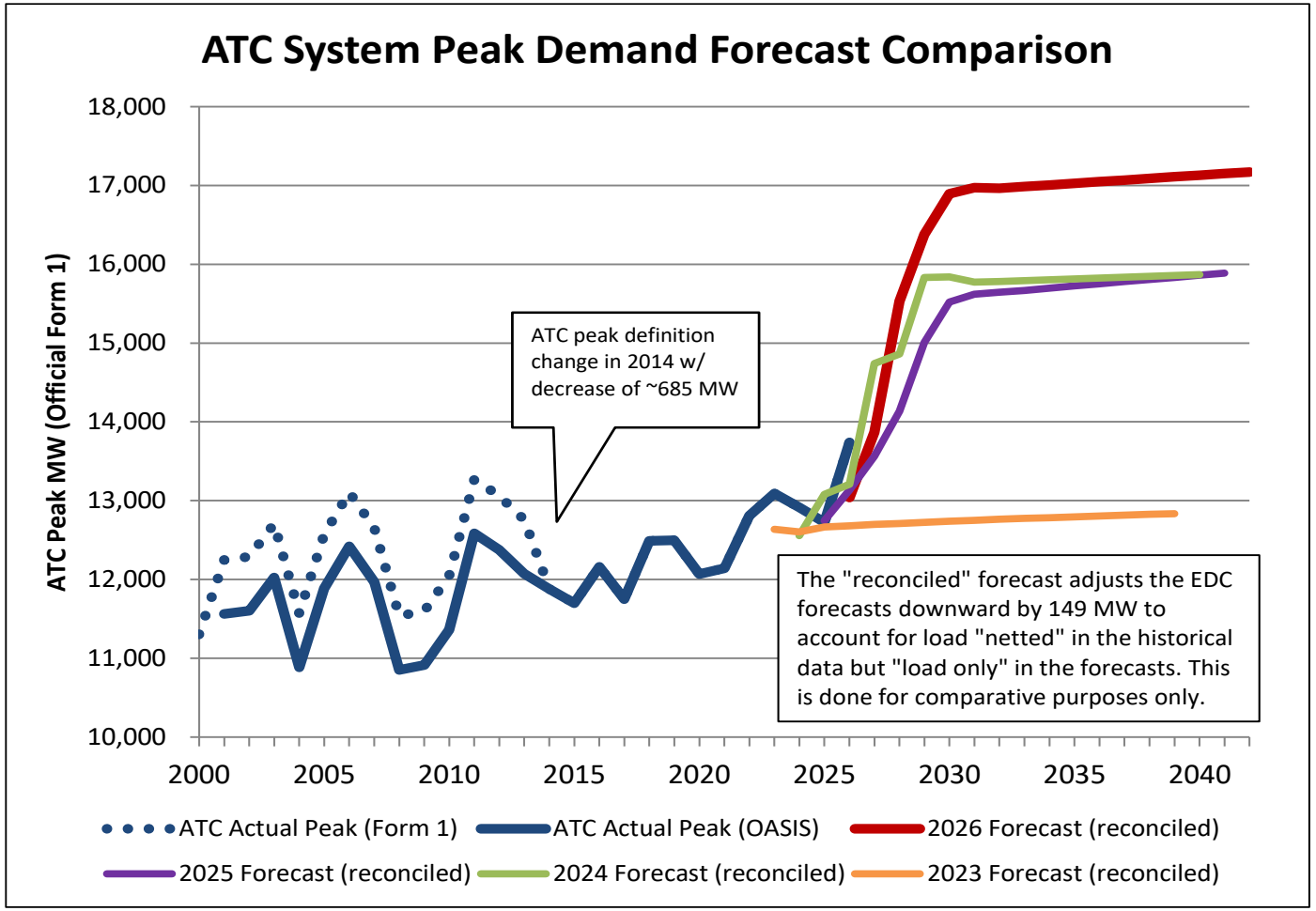
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2026 Expected forecast for TYA 2027

- Requested LDC forecasts in February 2026
  - 11 years per D-T Interconnection Agreement
  - Consistent with resource planning forecast
  - Expected (50/50 probability)
- Received in April 2026
- ATC compares forecasts to previous forecasts and historic data
  - Notable differences are confirmed with the LDCs and revised if needed
  - Finalized copy of forecast provided to LDCs in August 2026
  - Forecasts incorporated into the 2027 TYA to plan the system

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ATC 2026 Annual Peak Demand Forecast (for 2027 TYA)



The current ATC load forecast is significantly higher than last year's forecast

Most of the incremental growth in the next five years is from a handful of large data centers. Other growth (residential, misc. industrial) is relatively modest by comparison.

An annualized 10-year growth rate would be 2.7%, but the ramp-up is front-loaded in 2027-2032

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Generation modeling

- Existing generator data
  - Annual updates requested from Generator Owners (GOs) in Q3
- Generation additions
  - Only add generators with signed interconnection agreements (IAs)
  - Additions modeled at MISO Facility study location
- Generation retirements
  - Generators with a completed MISO Attachment Y are modeled as retired, unless there is a System Support Resource (SSR) agreement
- Under intact system and outage conditions
  - Generators are limited to:
    - 90% of maximum reactive power output and
    - 90% of maximum reactive power consumption

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Generation dispatch

- Local Balancing Area (LBA) merit order dispatch:
  - Used in Assessment's summer peak and shoulder models.
  - Provided by LBAs
- ATC-wide merit order dispatch:
  - Used in minimum load models
  - ATC-wide merit order dispatch determined using PROMOD
- Generators without scheduled transactions:
  - If they have signed IAs, generation is included in the host LBA.

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Additional network planning studies

- Load Loss Allowed
- Existing Generator Stability Reviews
- Annual Fault Study
- Sensitivity Studies

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No load loss allowed contingency analysis

- Peak
  - 1, 5, and 10 year out models
- Shoulder (firm)
  - 5 and 10 year out models
  - 70% load except for Zone 2 (90% load) and northern Zone 4 (80% load)
  - Shoulder rating methodology
- Minimum load
  - 1 and 5 year out model
  - 40% load, may be adjusted based on analysis of historical loads

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Projects Flow from TYA to MTEP

- Projects developed in the 2026 TYA process will be included in the MTEP27 approval process
  - A list of those projects can be found in the TYA 2025 Network Project List.pdf
- Projects that may develop after the 2026 TYA publication will be included on the project list each quarterly update and will be submitted into MTEP27
- MISO Active Project List

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MTEP27 – Summary (as of 11/2/2026)

- Appendix A Projects
  - Count: 47
  - Est Cost: $1,479,742,513
- Appendix B Project
  - Count: 19
  - Est Cost: $398,300,000

MTEP27 Appendix A Project Breakdown

Project Category	Count
Baseline Reliability Project	0
Generator Interconnection Project	15
Other – Age and Condition	24
Other – Load Growth	1
Other – Local Needs	5
Other – Local Reliability	2
Total	**47**

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Non-Transmission Alternatives (NTAs)

- ATC and MISO work together in the TYA and MTEP processes to provide Stakeholders an opportunity to provide NTA Feedback on Projects
- MISO will post a list of NTA eligible projects as part of their Subregional Planning Meeting (SPM) #1, in January of 2027.
  - MISO will accept stakeholder project alternatives through May 31, 2027.
  - Best candidates for NTA consideration are MTEP Appendix B and Target Appendix B projects.
  - Stakeholders should submit alternatives to MISO's MTEP SPM contact, who is Greg Plauck.

Regional planning

- MTEP
- MISO's Coordinated Seasonal Assessments
- Reliability First's (RF's) Seasonal Assessments

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Public policy requirements

- Follow MISO Tariff (Attachment FF) Processes
- Previously identified requirements
  - State Renewable Portfolio Standards (RPSs)
  - EPA regulations
  - State mandates and goals for energy efficiency (EE) and demand side management (DSM) programs
- Currently ATC is responding to comply with FERC Large Loads Show Cause Orders in a manner that preserves our planning and interconnection processes addressed in the Company's Tariff
- We are asking for any feedback on whether there are additional public policy requirements we need to be made aware of

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Schedule

- Expected Load Forecast – Review complete August 2026
- Preliminary MTEP26 Support Study – Done
- Post 2026 TYA Preliminary Study Design Presentation – Done
- Stakeholder Preliminary Study Design Meeting – November 16, 2026
- Stakeholder Study Design Comments Due – November 30, 2026
- Study Design Completion – December 2026
- Preliminary Needs Meeting – March 2027
- Preliminary Solutions Meeting – May 2027
- Document and Publish – November 2027

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Thank you for participating

To provide solicited comments or for more information, please contact:

Ted Weber (tweber2@atcllc.com)

by November 30, 2026

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