

2022 10-Year Assessment Preliminary Study Design

Stakeholder and Customer Webcast

PRESENTED BY

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November 8, 2021



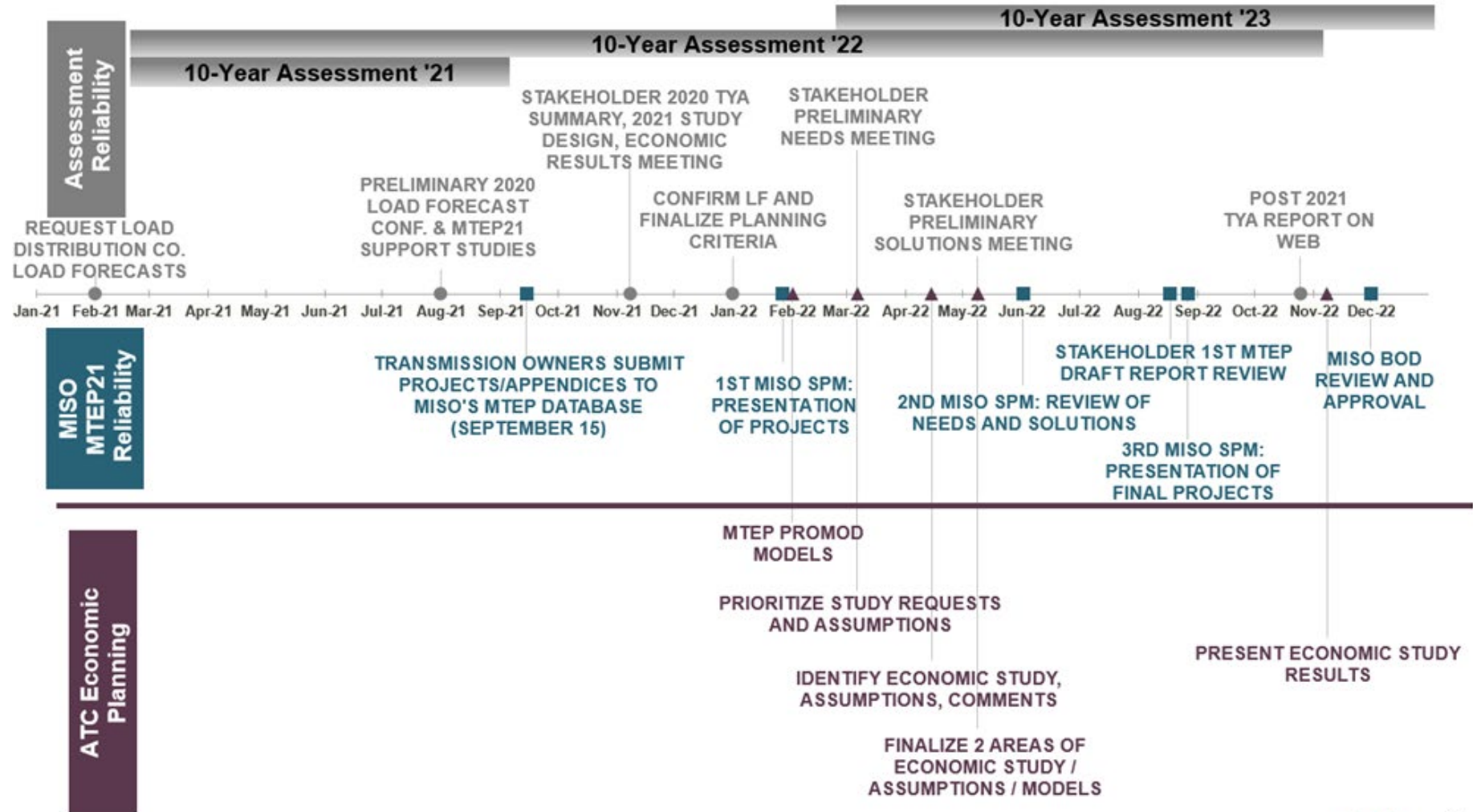
Purpose

- Summarize ATC's project development processes
- Solicit input for the 2022 Assessment Study Design
- Solicit input on any new Public Policy Requirements

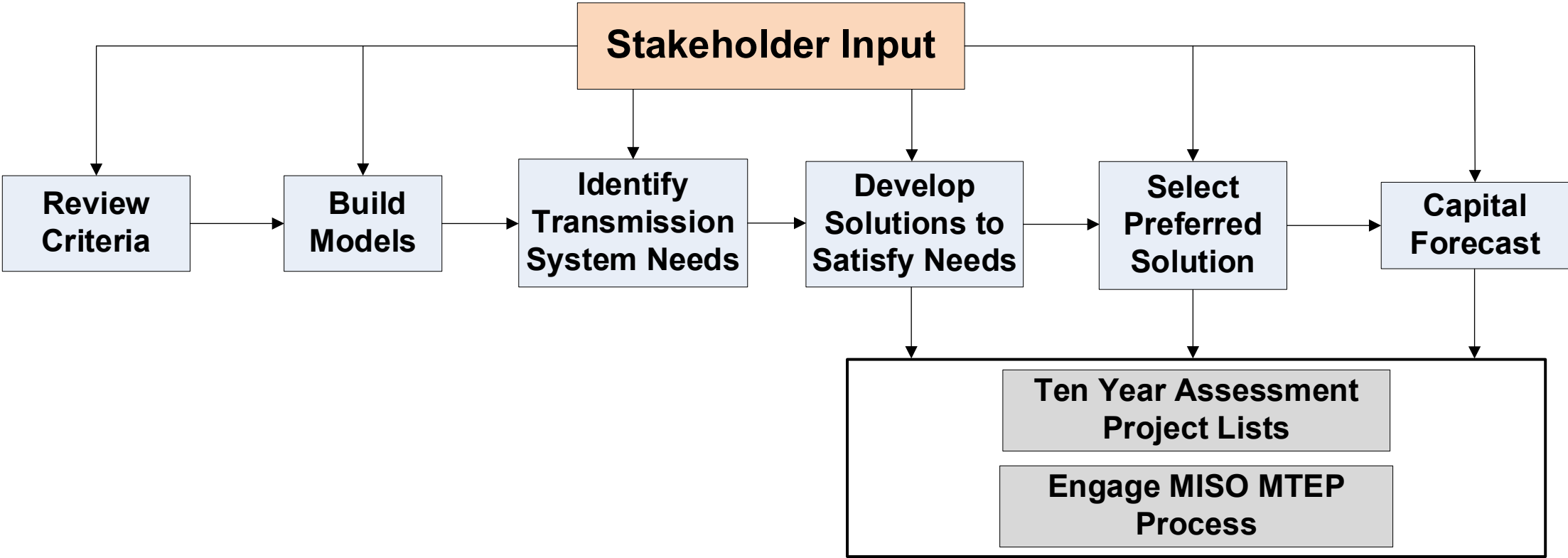
ATC's project development processes

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

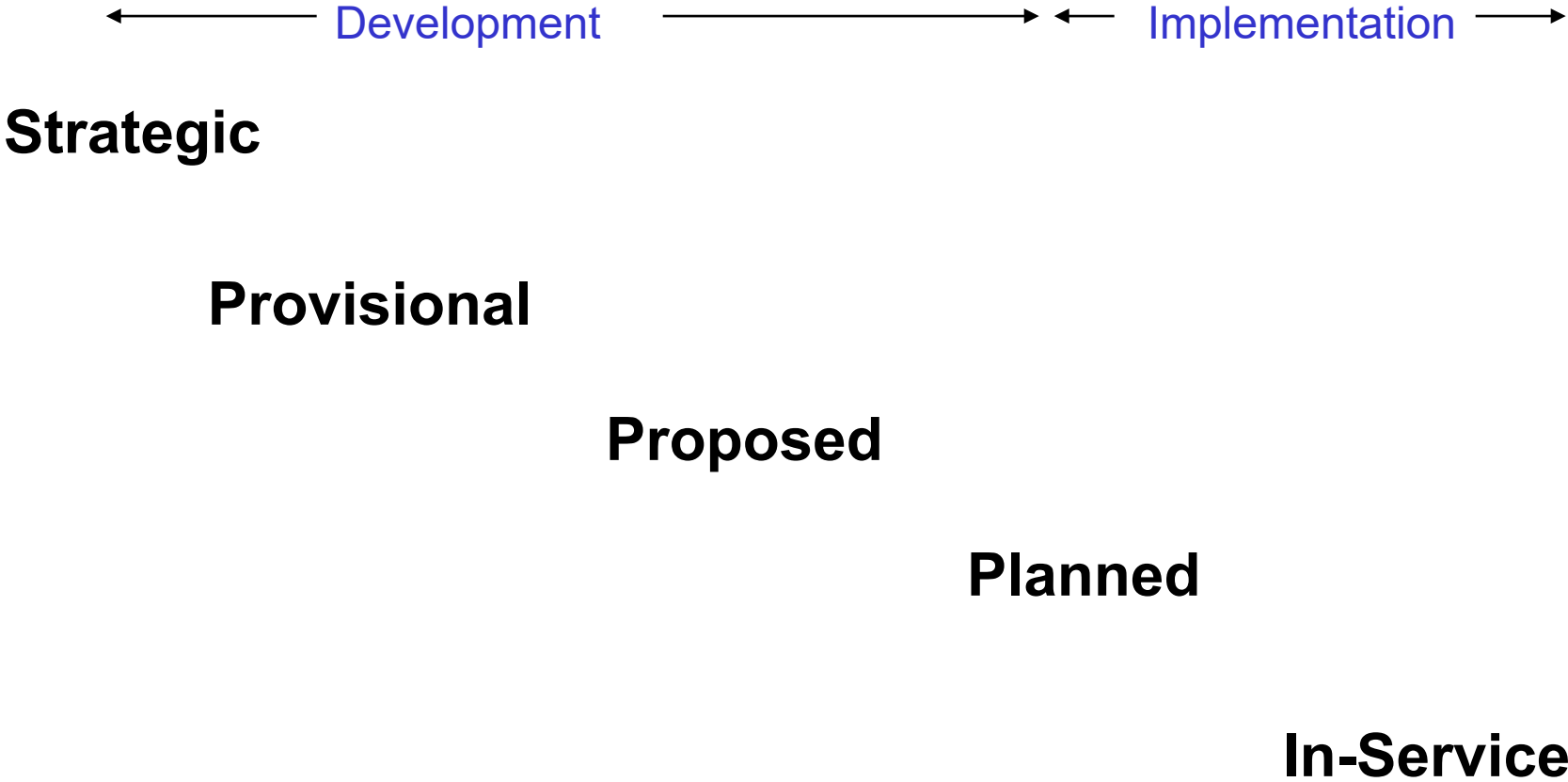
Timeline



ATC project identification process



ATC project status definitions



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

Replacement is based on...

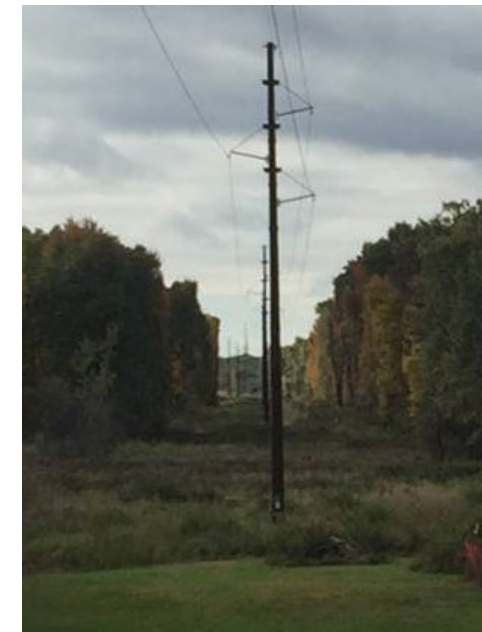
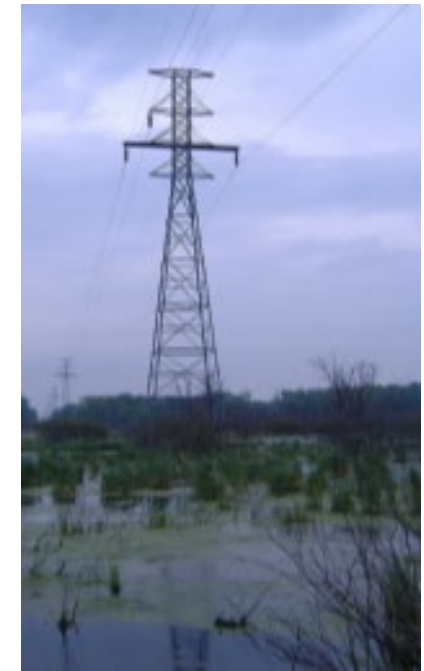
- Safety – public and worker
- Condition – tests, maintenance costs/risks
- Obsolescence – part availability, factory support, craft labor expertise with this specific equipment, available spares
- Utilization – application, system changes
- Criticality – consequence of failure, outage impacts
- Costs – maintenance and replacement
- Environmental – PCB contamination, oil volumes and containment, proximity to waterways, SF6 gas leaks, lead, mercury, environmental compliance/risks
- Compliance – NERC, CIP, EPA, State DNR
- Other Considerations – test frequency, on-line monitoring, test information available, fleet size, common fleet issues, maintenance history, failure mode, industry experience

Asset renewal considerations

- Is the asset still needed?
 - Assess area needs
 - Obtain cross-functional and distribution provider input
 - Consider removal of lines/equipment
 - Consider system reconfiguration
 - Other alternatives
- What ratings and performance are needed?

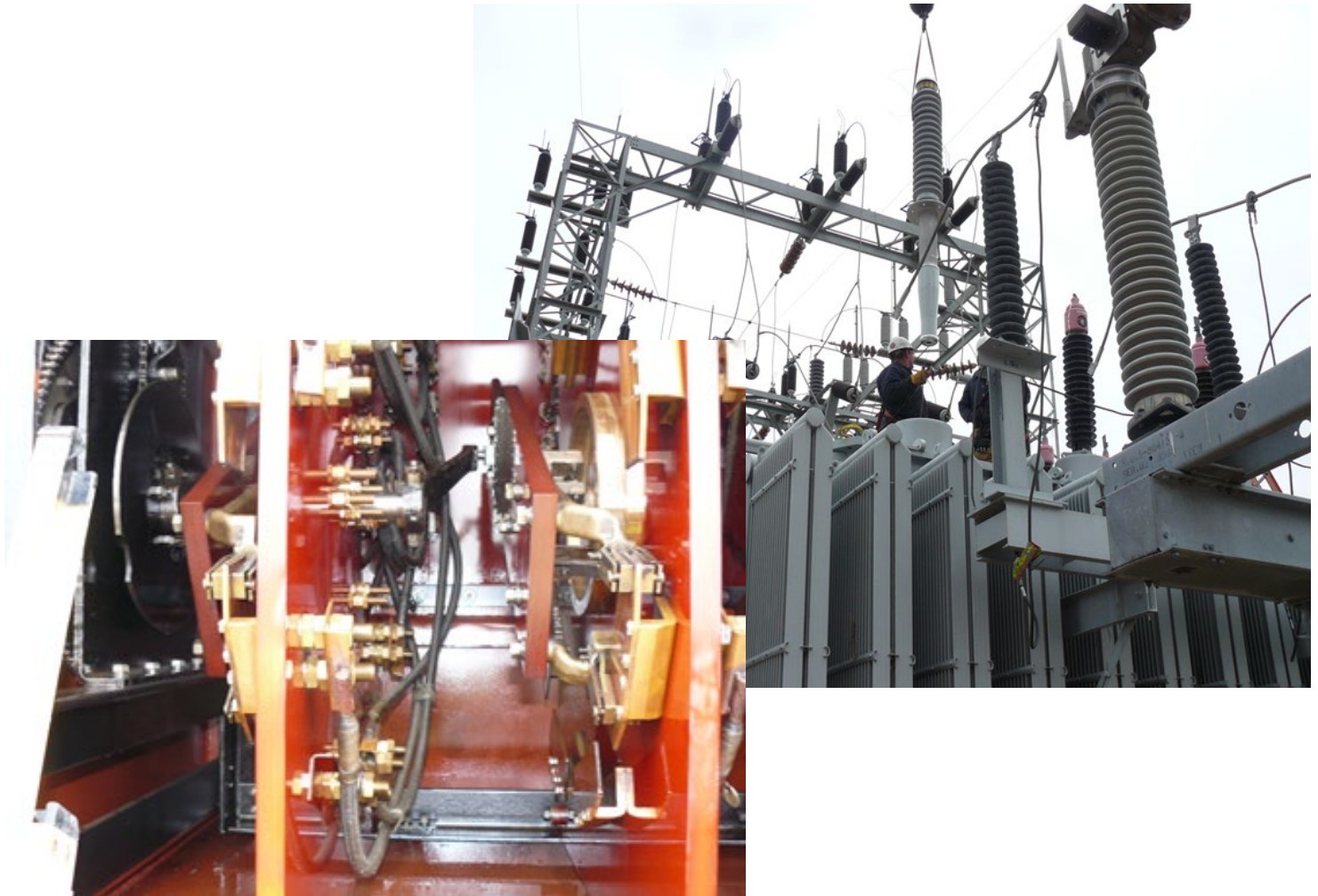
Asset Renewal T-line Needs Example (past vs. project complete)

- Portage – Dam Heights 69kV Rebuild (Y-16)
 - Project Background
 - ◆ Approximately 25 of miles of rebuild
 - Past Needs
 - ◆ Condition and Performance Issues
 - ◆ Replace 1910's vintage lattice structures
 - ◆ Outages: One of the most frequently outage ATC lines
 - ✓ On average about 4 outages per year
 - ✓ Need to update to avian friendly design
 - ✓ Improved lightning performance
 - Current status
 - ◆ Project went in-service Fall of 2017
 - ◆ No outages since the new design went into service



Lancaster Power Transformer – Life Extension

- Allis Chalmers Power Transformer built in 1954
- Life Extension – 2015
 - High Voltage Bushings
 - Load Tap Changer bypass
 - Oil Seal Gaskets
- Planned Retirement 2024 after LDC distribution buildout



Interconnections

- G-T
 - MISO Attachment X and Y Processes
- D-T
 - Collaborate with distribution providers through Load Interconnection Request Form (LIRF) and BVP process
- T-T
 - Collaborate with other Transmission Owners

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

Planning Criteria

- NERC Standards, particularly [TPL-001, version 4](#)
- ATC Planning Criteria
 - [Consists of criteria and assessment practices](#)
 - <http://www.atc10yearplan.com> (About tab)
 - Current versions: Planning Criteria v21.2 & Planning Assessment Practices v21.1
 - Planning Criteria v21.2: clarified generator power factor requirements
 - Planning Assessment Practices v21.1: enhanced the bus target rating process
- Sectionalizing Guidelines
 - Developed with distribution providers early in ATC's history
 - <http://www.atcllc.com/wp-content/uploads/2017/12/Load-Interconnection-Guide-Rev-7-121517-Pub.pdf> (Sections 3.6.1-3.6.2)

2021 studies and assumptions

- Preliminary 2021 Load Forecast Confirmation and MTEP22 Support Studies
- Modeling Assumptions
 - Model Years
 - Load
 - Generation
 - No Load Loss Allowed Contingency Analysis
- Additional Studies

Preliminary load forecast and MTEP21 support studies

- Initial screening (reduced generator reactive capability)
 - Summer peak (5 and 10 year models)
 - 2021 load forecast
 - 2021 TYA outside world (2020 MMWG cases)
- To confirm 2021 Load Forecast and support MTEP22 database development
 - No load loss allowed contingencies
 - Completed August 2021

2022 TYA model years

- 2022 (As-planned)
 - 2023
 - 2027
 - 2032
-
- All models will likely be completed by the Spring of 2022

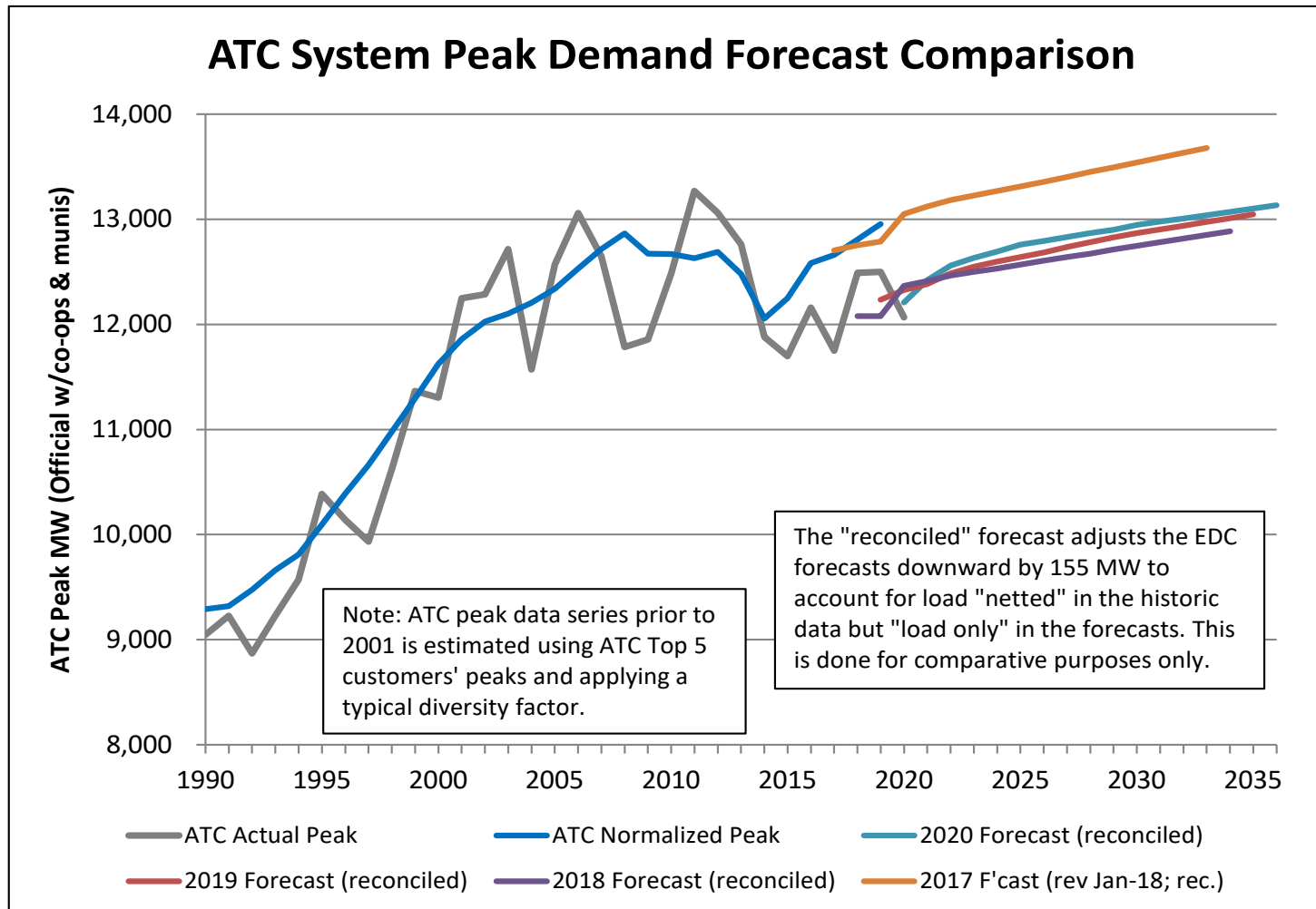
2021 Load Forecast- Historical

- Requested October 30, 2021
 - ATC's 2021 summer peak hour
 - ATC's 2020-2021 winter peak hour
 - Light load
 - Shoulder load
- Requested by November 1, 2021.
- Compile, review, and add to the existing load databases

2021 Expected forecast for TYA 2022

- Requested LDC forecasts in February 2021
 - 11 years per D-T IA
 - Consistent with resource planning forecast
 - Expected (50/50 probability)
- Received in April 2021
- 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 2021
 - Forecasts incorporated into the 2022 TYA to plan the system

Load forecast trends



Annual growth rates
(2021-2031 for all)

2018 Forecast: 0.29%
 2019 Forecast: 0.41%
 2020 Forecast: 0.43%
 2021 Forecast: 0.27%

**ATC Load Forecast Growth by Zone
 2021-2031 Annual Growth Rates**

Zone	Forecast Year			
	2021	2020	2019	2018
Zone 1	0.3%	0.5%	0.4%	0.4%
Zone 2	0.3%	0.4%	0.3%	0.3%
Zone 3a	0.5%	0.6%	0.7%	0.7%
Zone 3b	0.2%	0.4%	0.4%	0.6%
Zone 4	0.2%	0.3%	0.2%	0.2%
Zone 5*	0.2%	0.5%	0.4%	0.1%
ATC Total	0.27%	0.43%	0.41%	0.29%

*Zone 5 influenced by Mt. Pleasant growth

Load forecast trends, (*Continued*)

Model	ATC Load (MW)		
	2020 Assessment	2021 Assessment	2022 Assessment
Year 1 Summer Peak	12,600	12,700	12,800
Year 5 Summer Peak	+200	+300	+100
Year 10 Summer Peak	+400	+400	+300
Year 5 Shoulder	9,100	9,300	9,100
Year 10 Shoulder	+100	+200	+100

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

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, generator included in the host LBA.

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

Additional network planning studies

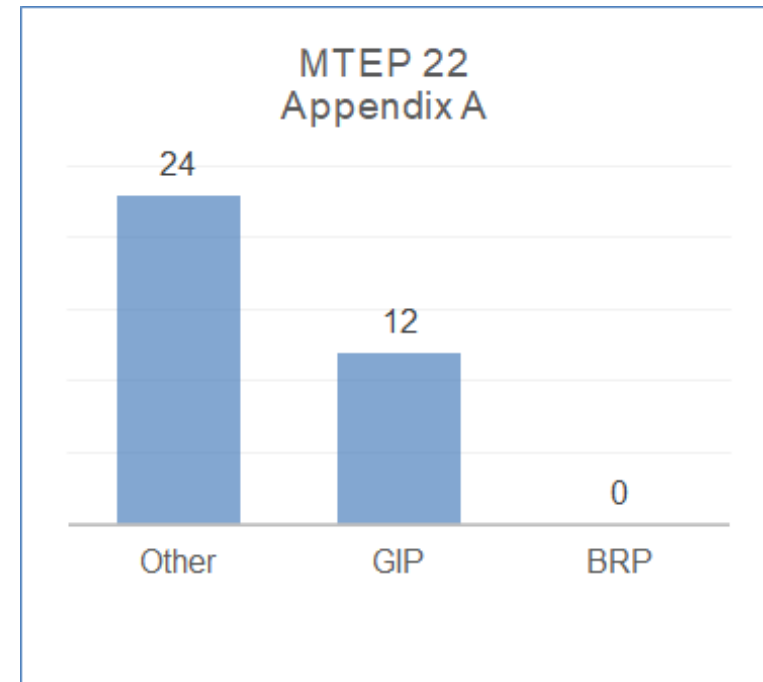
- Load Loss Allowed
- Existing Generator Stability Reviews
- Annual Fault Study
- Sensitivity Studies

Projects Flow from the TYA to MTEP

- Projects developed in the 2021 TYA process will be included in the MTEP22 process a list of those projects can be found in the [2021 TYA Project List](#)
- Projects developed subsequent to the 2021 TYA are included on the project list and will be submitted into MTEP22
- [MISO Active Project List](#)

MTEP22 Project Submittals

- Appendix A Projects
 - Count: 36
 - Total: \$415,688,930
- New Appendix B Projects
 - Count: 13
 - Total: \$190,927,943
 - +3 2024 “programs”, cost estimates being developed
- Remaining Appendix B Projects
 - Count: 8



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 2022.
 - MISO will accept stakeholder project alternatives through May 31, 2022.
 - 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

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
- We are asking for any feedback on whether there are additional public policy requirements we need to be made aware of.

Schedule

- Expected Load Forecast – Review complete August 2021
- Preliminary MTEP22 Support Study – Done
- Post 2022 TYA Preliminary Study Design Presentation – Done
- Stakeholder Preliminary Study Design Meeting – November 8, 2021
- Stakeholder Study Design Comments Due – November 30, 2021
- Study Design Completion – December 2021
- Preliminary Needs Meeting – March 2022
- Preliminary Solutions Meeting – May 2022
- Document and Publish – October 2022

Thank you for participating

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

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By November 30, 2021

