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2020 10-Year Assessment Preliminary Study Design

November 4, 2019
Stakeholder and Customer Webcast
Chris Hagman, System Planning

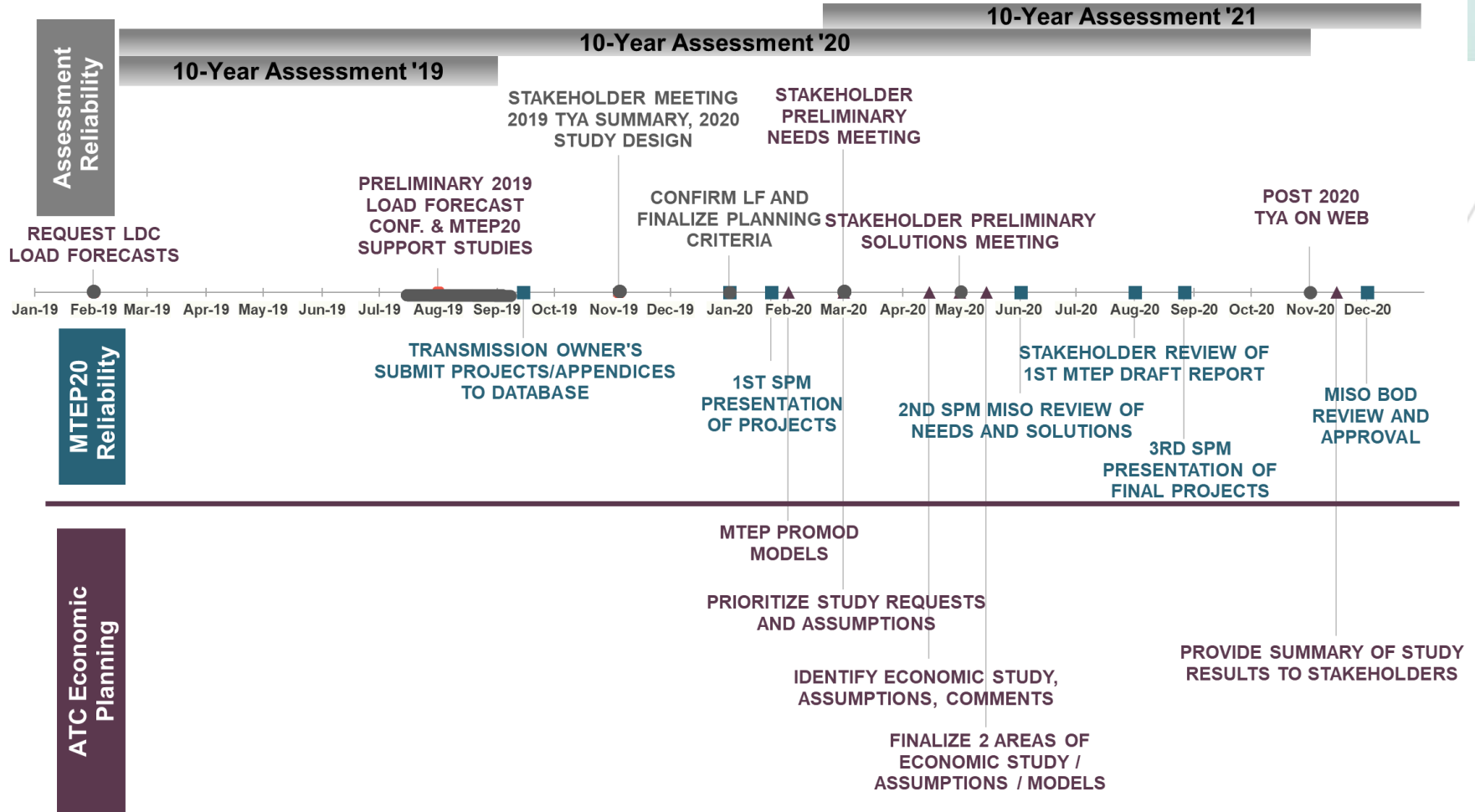
Purpose

- Summarize ATC's project development processes
- Solicit input for the 2020 Assessment Study Design
- Solicit input on Public Policy Requirements

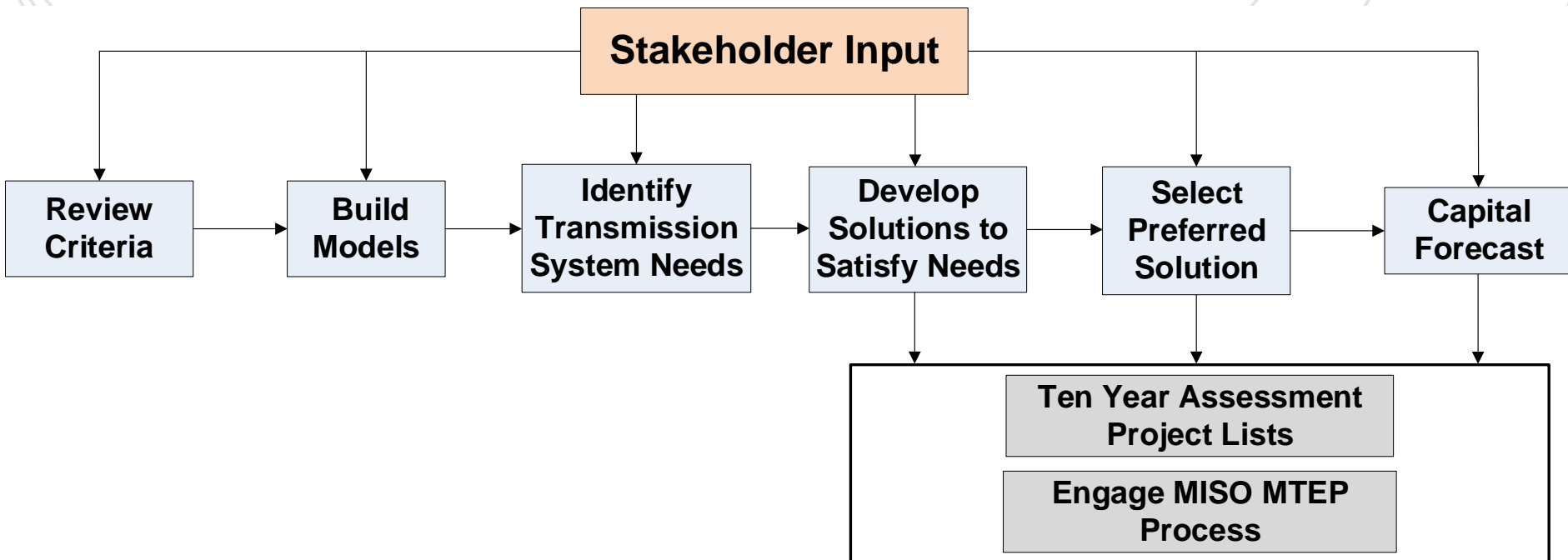
ATC's Project Development Processes

- **Local Transmission Planning**
 - Asset Renewal
 - Interconnections
 - Network
 - Planning Reliability Criteria
 - Sectionalizing Guidelines
 - Economic Benefits Considerations
- **Consider Other Solutions (non-transmission alternatives)**
- **Regional Planning**
- **Public Policy Requirements**

Timeline



ATC Project Identification Process



ATC Project Status Definitions

← Development → Implementation →

Strategic

Provisional

Proposed

Planned

In-Service



Asset Renewal Program Objectives

- Safety – Public and worker
- Minimize total life cycle cost
- Compliance
- Manage risk of aging infrastructure
- Reliability performance improvements
- Environmental performance improvements

Asset Renewal Criteria

Safety/Compliance

Public and
Worker
Safety

NERC

NESC
Clearances

NESC
Strengths

Reliability Performance

Historical
Performance

Condition

Corporate
Reliability
Goals

Industry
Trends/Bad
Actors

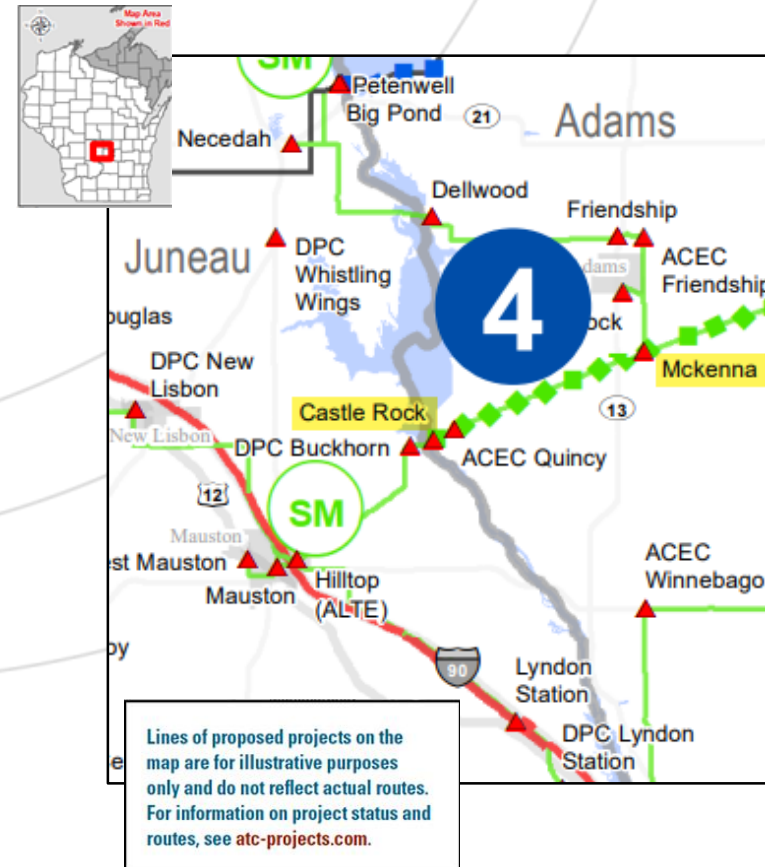


Asset Renewal Considerations

- Is the asset still needed?
 - Assess area needs
 - Obtain cross-functional and distribution provider input
 - Consider removal of lines (full/partial retirement)
- What ratings are needed?
- Investing prudently using defensible criteria

Asset Renewal: McKenna - Castle Rock 69 kV (Y-47), Rebuild

- Condition of 1950's Wood Structures and Hardware
 - In bottom 5% for 69 kV lines.
- Address existing reliability and market constraint issues
 - Increased rating needed to meet long-term reliability needs.
 - Line is a known market constraint.
 - Increased rating projected to provide economic benefits of between \$600k and \$4.5M over 40-years (assumes X-43 rebuild).



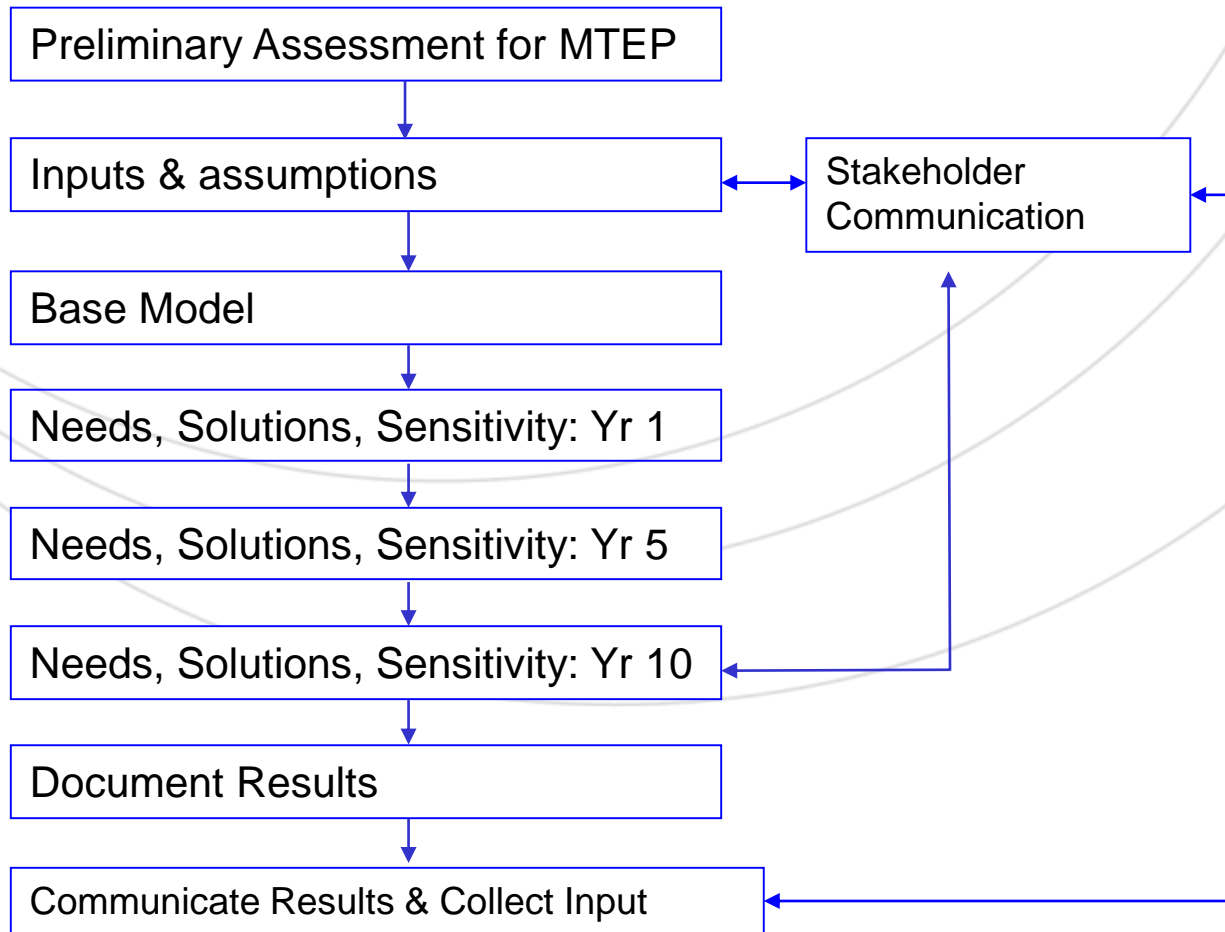
Interconnections

- **G-T**
 - Support 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 NERC regional and local criteria
- Best Value Plan (BVP)
- Customer involvement
- Address Public Policy requirements
- Maintain or improve the adequacy and reliability of the electric transmission system

Network Planning Assessment Process



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 v19.3 & Planning Assessment Practices v7.3
- 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)

Criteria Updates Since Last Year

- **Criteria v19.3 compared to v19.1**
 - Relaxed the lagging power factor requirements for generators from 0.90 to 0.95
 - Added “Inverter-Based Resources Stability Assessment”, subsection 1.2.1.C)3
 - Minor clarifications to other language in criteria section 1.2
- **Assessment Practices v7.3 compared to v7**
 - Simplified multiple outage process description
 - Relaxed the lagging power factor requirements for generators from 0.90 to 0.95
 - Removed the 5% Transmission Reliability Margin (TRM) for MISO generation interconnection studies

Criteria Considerations

- **Emergency Thermal Ratings**
 - Clarify use in planning studies
 - Cover event duration
- **Appropriate Ratings – complete ATC definition/impacts**
- **Return to Normal Rating during event**
 - May develop plan to assess impacts
 - Not developing projects for 2020 Assessment

2020 Studies and Assumptions

- Preliminary 2019 Load Forecast Confirmation and MTEP20 Support Studies
- Modeling Assumptions
 - Model Years
 - Load
 - Generation
 - No Load Loss Allowed Contingency Analysis
- Additional Studies

Preliminary Load Forecast and MTEP20 Support Studies

- Initial screening (reduced generator reactive capability)
 - Summer peak (5 and 10 year models)
 - 2019 load forecast
 - 2019 TYA outside world (2018 MMWG cases)
- To confirm 2019 Load Forecast and support MTEP20 database development
 - No load loss allowed contingencies
 - Completed July 2019

Projects Submitted to MTEP20

- [MTEP20 Active Project List](#)

2020 TYA Model Years

- 2020 (As-planned)
 - 2021
 - 2025
 - 2030
- All models will likely be completed by the Spring of 2020

Load - Historical

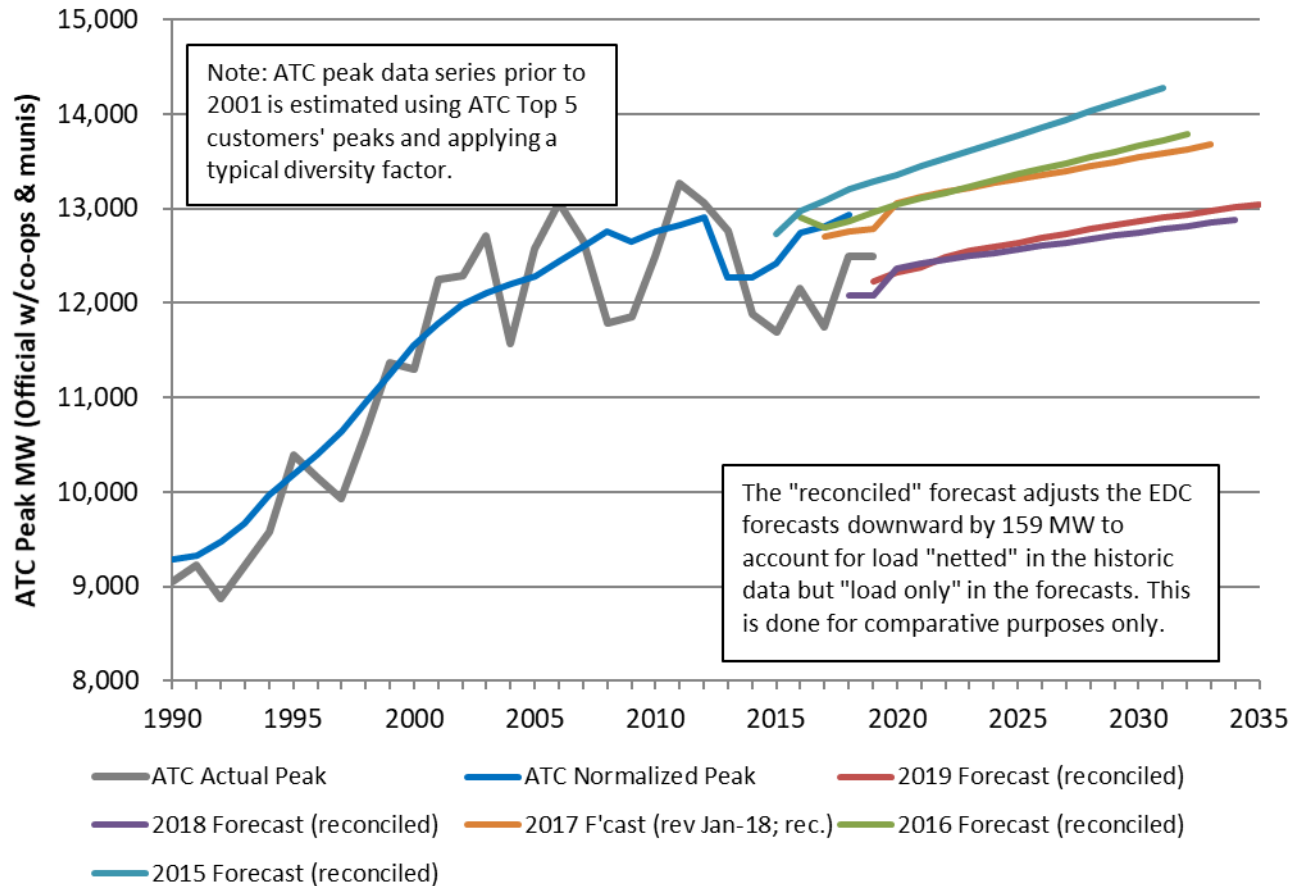
- Requested September 27, 2019
 - Summer peak
 - Winter peak
 - Light load
 - Shoulder load
- Received November 1, 2019
- Add to databases

Load – Expected Forecast

- Requested LDC forecasts February 2019
 - 11 years
 - Consistent with resource planning forecast
 - Expected (50/50 probability)
- Received in Quarter 2 of 2019
- ATC compares forecasts to previous forecasts
 - Any notable differences are confirmed with the LDCs
 - Finalized copy of forecast provided to LDCs in August 2019
 - Forecasts used to plan the system

Load Forecast Trends

ATC System Peak Demand Forecast Comparison



Forecast Year	10-Year Average Growth Rate
2019	0.50%
2018	0.50%
2017	0.53%
2016	0.52%
2015	0.66%

Load Forecast Trends, Continued

Model	ATC Load (MW)		
	2018 Assessment	2019 Assessment	2020 Assessment
Year 1 Summer Peak	13,000	12,300	12,600
Year 5 Summer Peak	+400	+400	+300
Year 10 Summer Peak	+600	+600	+500
Year 5 Shoulder	9,400	8,900	9,200
Year 10 Shoulder	+100	+100	+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

- Existing Generator Stability Reviews
- Annual Fault Study

Non-transmission Alternative Consideration

- Preliminary process developing with our stakeholders
- Two ways NTA process can be initiated
 - Need initiated by local distribution provider
 - Identify T or D related reliability/service concerns
 - Develop needs and solutions
 - Communicate with ATC to promote collaboration
 - Use existing D-T or G-T processes
 - Need initiated by ATC
 - 10-Year Assessment screening – develop Needs/Limitations lists
 - Customers/stakeholders engage ATC with ideas
 - Collaborate to identify possible DER options from customers
 - Open project development discussions
 - Use modified BVP practices to balance comparison of appropriate alternatives

Regional Planning

- **MTEP**
 - Preliminary screening helps ATC to better prepare for upcoming MTEP cycle
- **MISO Coordinated Seasonal Assessments**
- **Reliability First (RF) Seasonal Assessments**

Public Policy Requirements

- Follow MISO Tariff (Attachment FF) Processes
- Previously identified requirements
 - State Renewable Portfolio Standard (RPS) mandates
 - EPA regulations
 - State mandates and goals for energy efficiency (EE) and demand side management (DSM) programs
- Any public policy requirements not identified in ATC or MISO processes?

Schedule

- Expected Load Forecast – Review complete August 2019
- Preliminary MTEP20 Support Study – Done
- Post 2020 TYA Preliminary Study Design – Done
- Stakeholder Study Design Meeting – November 4, 2019
- Stakeholder Design Comments Due – November 30, 2019
- Study Design Completion – December 2019
- Preliminary Needs Meeting – March 2020
- Preliminary Solutions Meeting – May 2020
- Document and Publish – October 2020

Thank you for Participating

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

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By November 30, 2019

