



Helping to keep the lights on,
businesses running
and communities strong®

2016 10-Year Assessment Preliminary Study Design

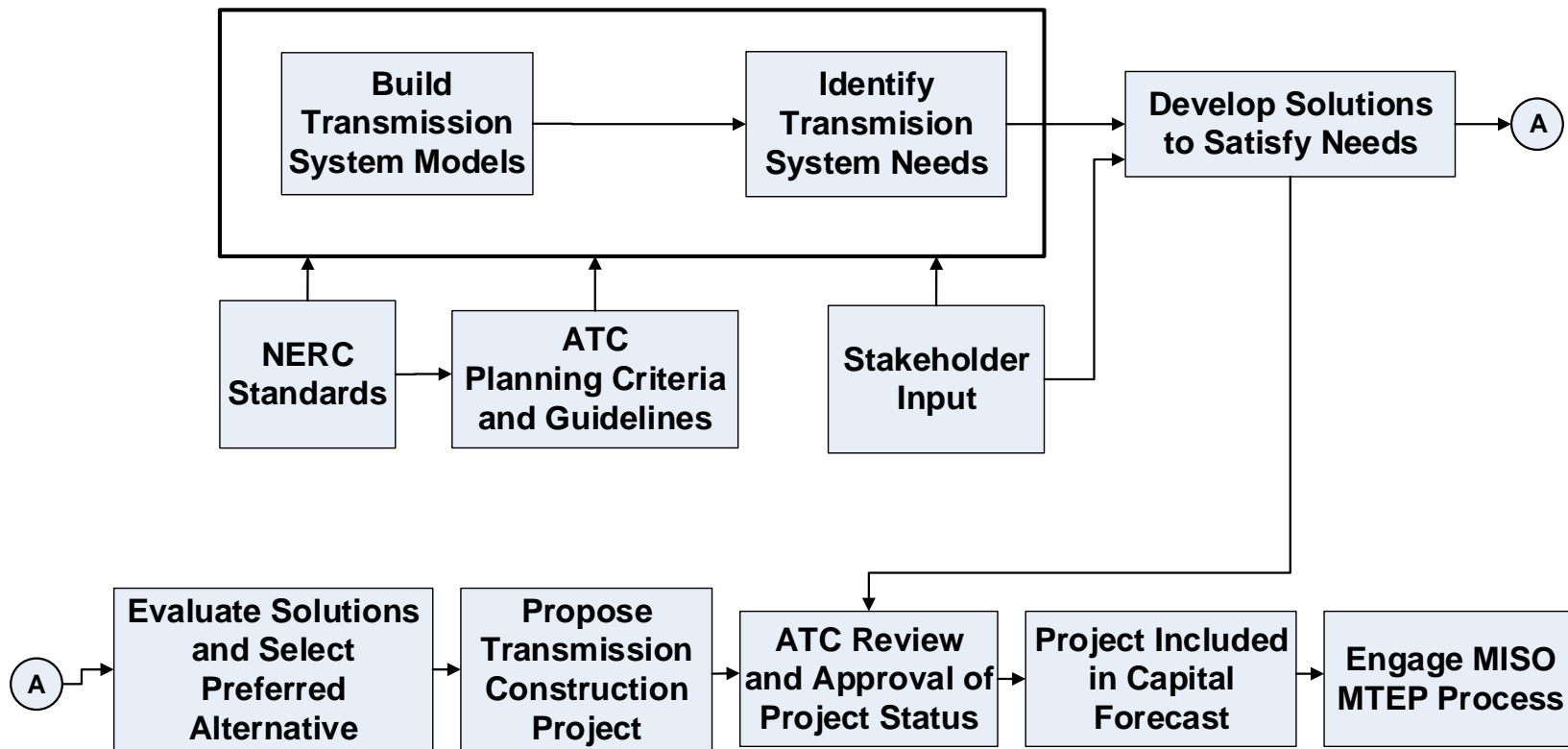
Fall, 2015

Stakeholder and Customer Webcast

Purpose

- Solicit Study Design Input
 - 2016 Assessment Process
 - 2016 Assessment Assumptions
 - Public Policy Requirements

ATC Transmission Planning Process



Project Status

← Development → Implementation →

Strategic

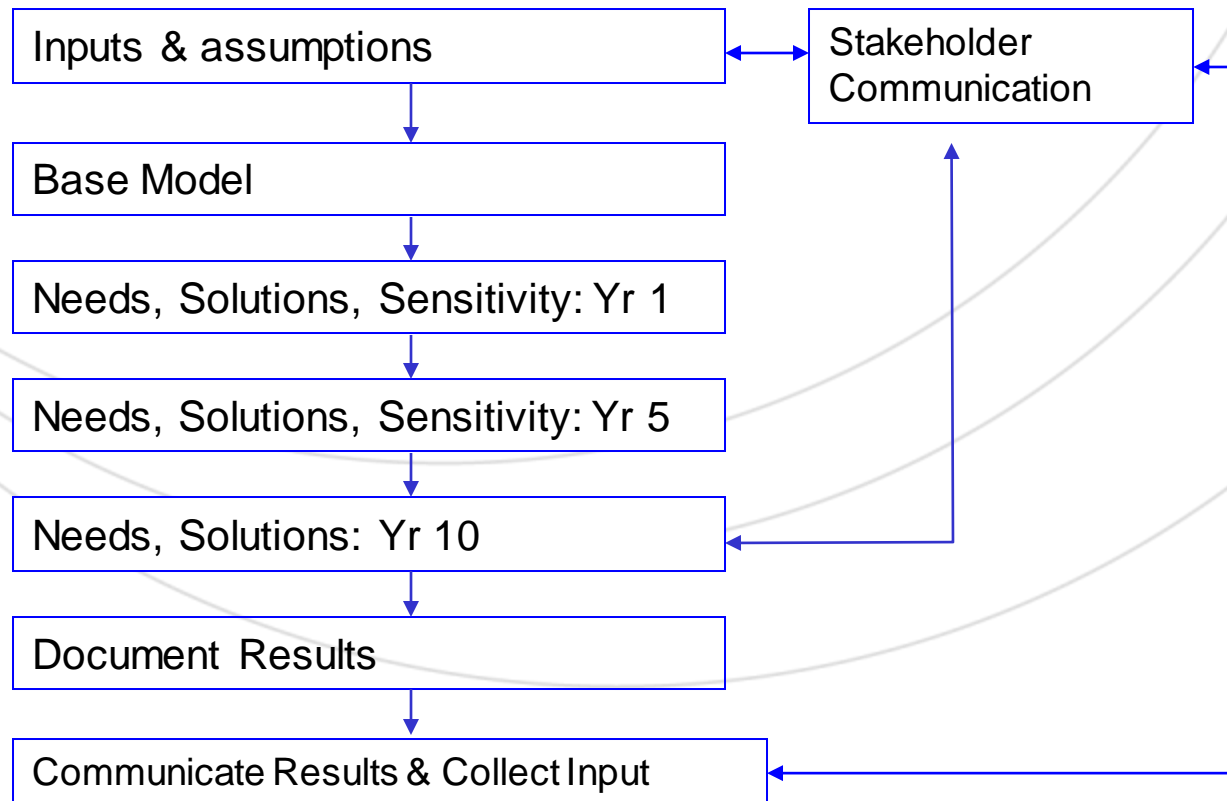
Provisional

Proposed

Planned

In-Service

Assessment Process



Planning Criteria & Assessment Practices

- NERC Standards, particularly TPL-001, version 4
- ATC Planning Criteria/Assessment Practices
 - <http://www.atc10yearplan.com> (About tab)

Public Policy Requirements

- Following 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
- For the 2016 10-Year Assessment, assessing combined impacts using:
 - Expected load forecasts from LSEs
 - Confirmed generation additions
 - Confirmed generation retirements
 - Multiple year analysis over a range load levels
 - Minimum
 - Shoulder
 - Peak
 - High Load Sensitivity
- Any public policy driven needs that may not be covered by the Assessment process?

Model Years

- 2016 (As-planned)
 - 2017
 - 2021
 - 2026
- All models will likely be completed by the Spring of 2016

Load - Historical

- Requested by October 1
 - Summer peak
 - Winter peak
 - Light load
 - Shoulder load
- Due by November 1
- Add to databases

Load – Expected Forecast

- Requested LDC forecasts February 2015
 - 11 years
 - Consistent with resource planning forecast
- Received in April 2015
- ATC compiles
 - Comparisons to previous forecasts
 - Differences confirmed with LDCs
 - Finalized copy to LDCs – September 2015

Generation Modeling

- Existing generator data
 - Annual updates requested in Q3
- Generation additions
 - Only add generators with signed interconnection agreements
 - Additions modeled at MISO Facility study location
 - MISO queue suspended generators with signed IAs
 - included in after 18 months
- Generation retirements
 - generators with a completed MISO Attachment Y are modeled as retired, unless there is an SSR agreement

Generation Dispatch

- **Local Balancing Area merit order dispatch:**
 - Used for Assessment summer peak and shoulder models. Local Balancing Area dispatch from merit order provided by LBA
- **ATC-wide merit order dispatch:**
 - Minimum load models
 - ATC-wide merit order dispatch determined with PROMOD
- **Generators without scheduled transactions:**
 - If signed IA,
 - generation included in the host Local Balancing Area.

Reactive Power Resources

- **Intact system and outage conditions**
 - Maintain voltage criteria for
 - 90% maximum generator reactive power output
 - 90% minimum generator reactive power consumption

2016 Assessment – Capital Project Drivers

- Preliminary MTEP 16 Support Studies
- No Load Loss Contingency Needs – 3 years
- Multiple Outage Screening
- Generation - Transmission Studies
- Distribution - Transmission Studies
- Economic Benefits Studies
- Regional Reliability
- Public Policy Requirements, part of studies above
- Asset Renewal Studies

Preliminary MTEP16 Support Studies

- Initial screening (reduced generator reactive capability)
 - Summer peak (5 and 10 year models)
 - 2015 load forecast
 - 2015 TYA outside world (2014 MMWG cases)
- To support MTEP16 database development

Additional reduced generator reactive capability studies

- **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

Sensitivities

- Load Forecast – 90/10 instead of expected 50/50
- Distribution substation capacitor bank study
 - Remove all banks
 - Run no load loss allowed contingencies
 - Identify limitations
 - Years and load level TBD?
- Security Constrained Economic Dispatch study?
 - May be more likely to mimic real time biases
 - Develop a SCED dispatch and apply to a case
 - No load loss allowed contingencies, years and load level TBD
- Others?

Schedule

- Expected Load Forecast – Done
- Criteria and Methodology Update – 3rd Qtr 2015
- Preliminary MTEP16 Support Study – Done
- **Stakeholder Study Design Meeting – Fall 2015**
- **Stakeholder Design Comments – November 30th, 2015**
- Study Design Completion - 4th Qtr 2015
- Model Development Completion – 2nd Qtr 2016
- **Preliminary Needs – 1st Qtr 2016**
- **Preliminary Solutions – 2nd Qtr 2016**
- **Document and Publish – 3rd Qtr 2016**

ATC intends to share preliminary needs and solutions with Stakeholders in the quarters noted above

Thank you for Participating

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

David Smith

Phone: 920-338-6537

Email: dsmith@atcllc.com

By November 30, 2015

