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

2016 10-Year Assessment Preliminary Study Design

February 24, 2016

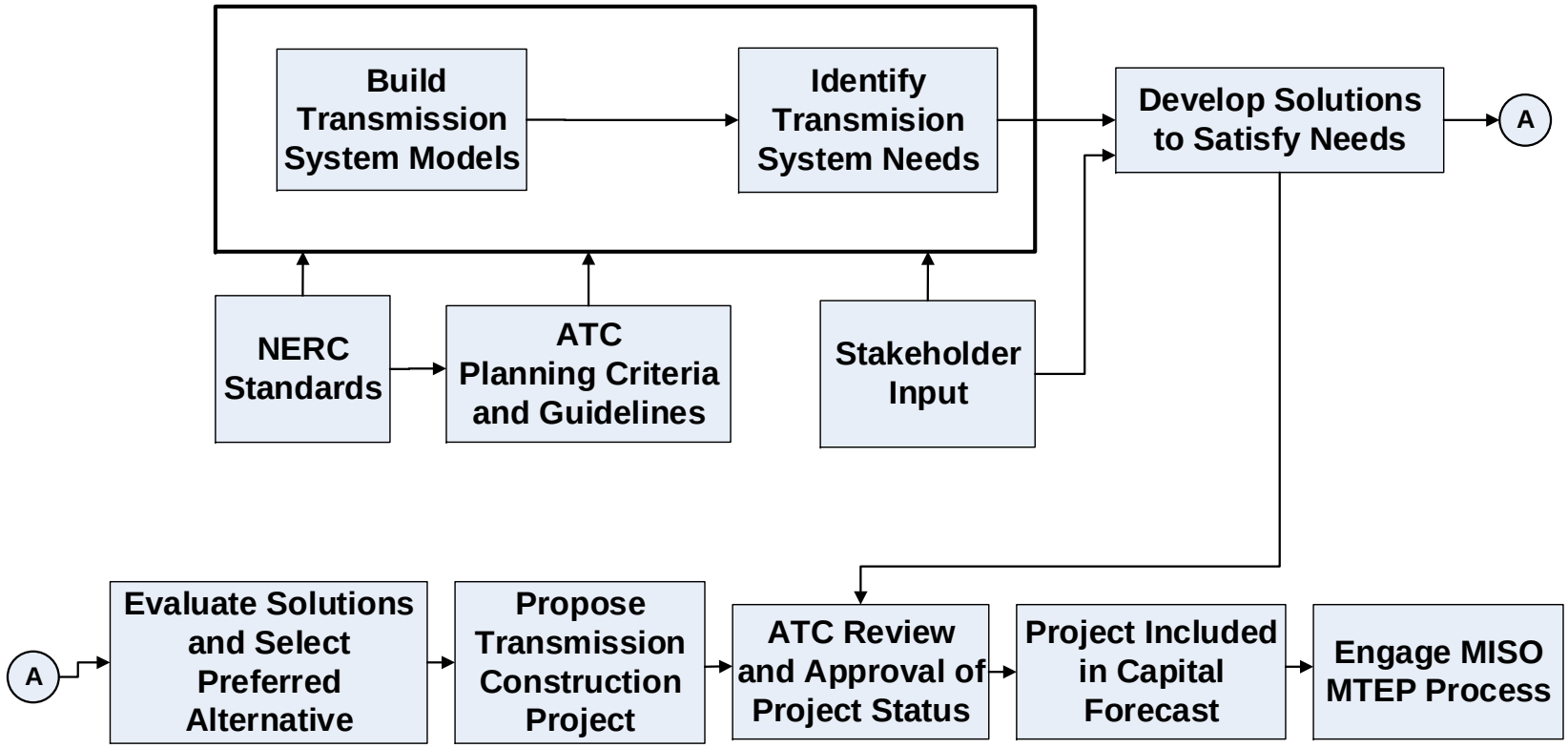
Stakeholder and Customer Webcast

atcllc.com

Purpose

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

ATC Transmission Planning Process



Project Status

Strategic

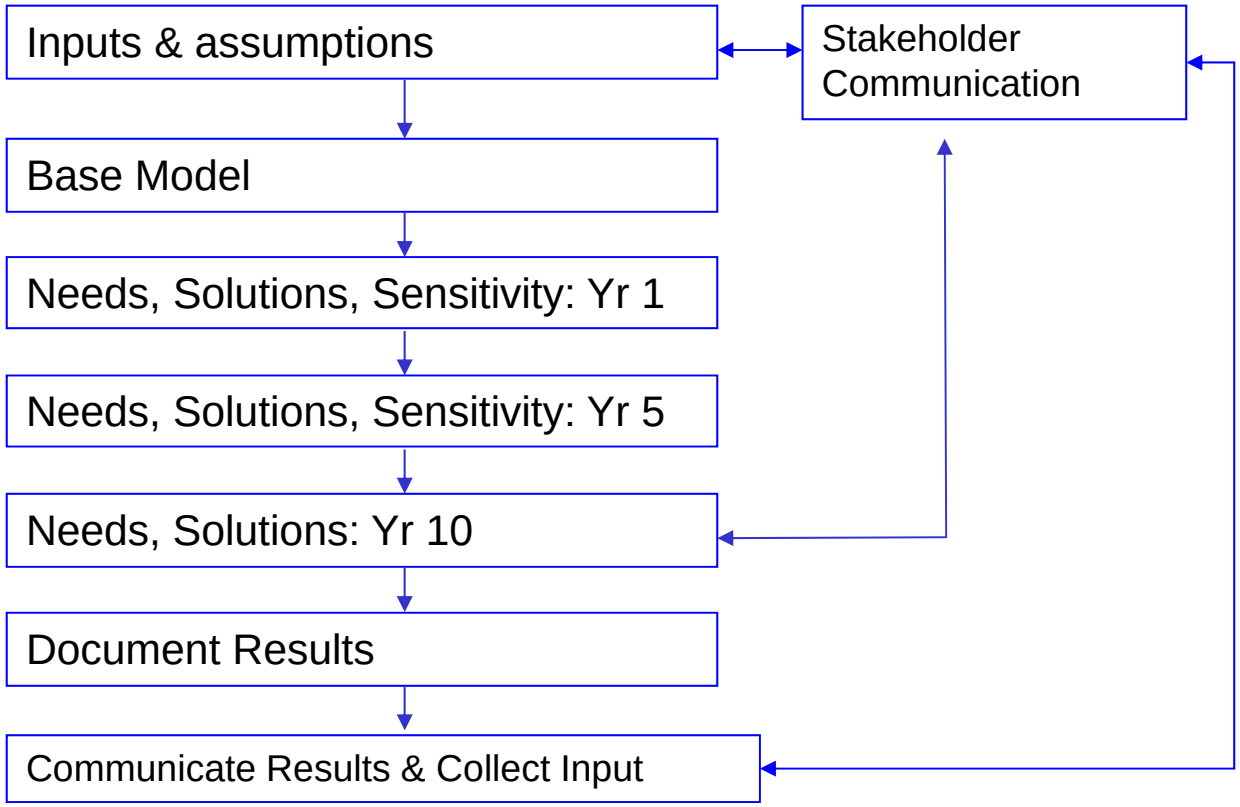
Provisional

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, 2015
  - Summer peak
  - Winter peak
  - Light load
  - Shoulder load
- Received November 1, 2015
- 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, 2015
- 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
  - No load loss allowed contingencies
  - Completed September 2015

Additional No Load Loss Allowed Contingency Analysis

- 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 distribution capacitor banks
  - Run no load loss allowed and select P6 contingencies
  - Identify limitations
  - 10 year out 90/10 and Shoulder models
- 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 – Final Draft
- Preliminary MTEP16 Support Study – Done
- Posted 2016 TYA Preliminary Study Design – Fall 2015
- Stakeholder Study Design Meeting – February 24, 2016
- Stakeholder Design Comments Due – March 8, 2016
- Study Design Completion – 1st Qtr 2016
- 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 March 8, 2016