BPA Attachment K Planning Process

Planning Meeting I

March 21, 2019

Agenda

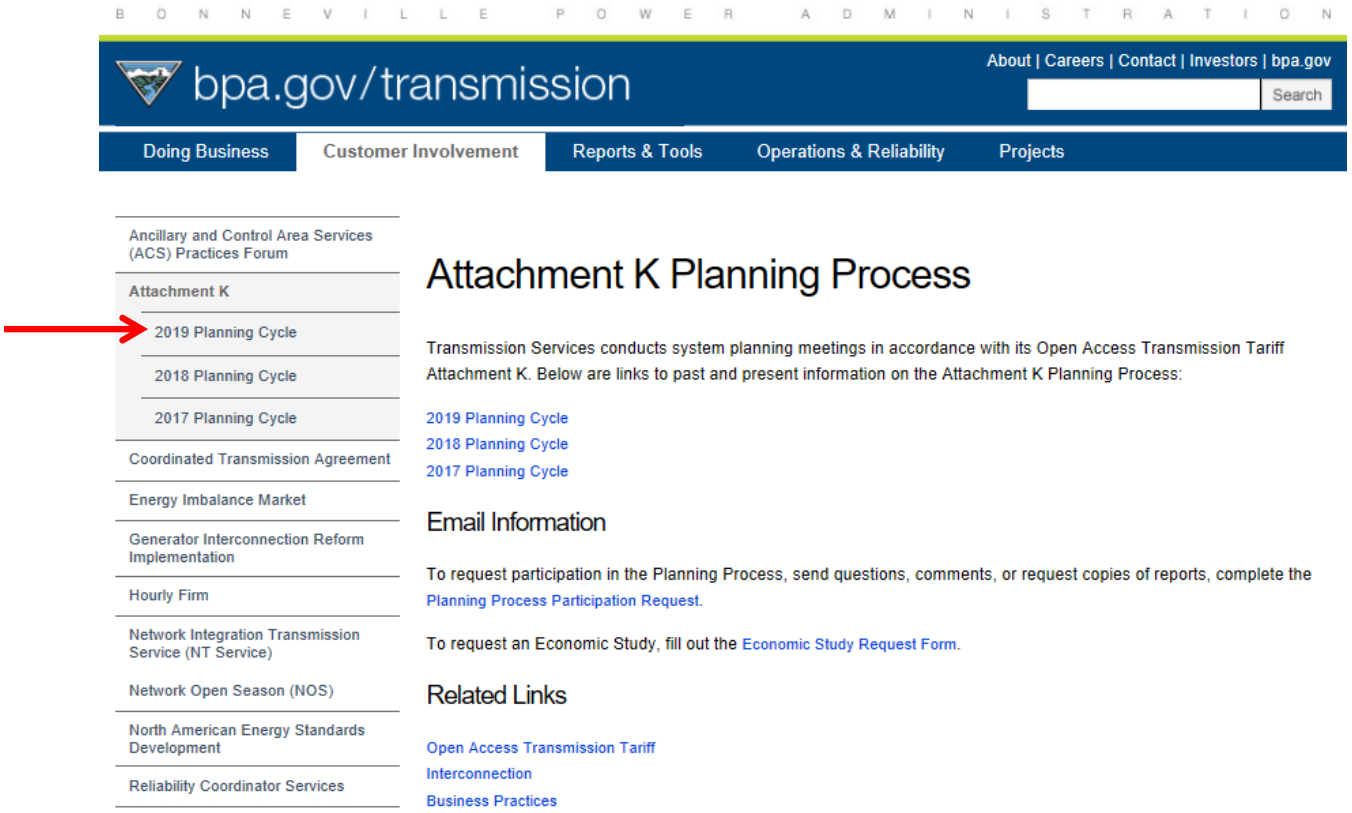
- Introductions
- BPA's Attachment K Planning Cycle – 2019
- BPA's Attachment K Website – 2019
- Economic Study Requests
- 2019 Planning Assumptions, Methodology, and Criteria
- 2018 BPA Transmission Plan
- Next Steps

Attachment K Planning Cycle 2019

- **Customer Meeting I** **March 21, 2019**
  - **2018 BPA Transmission Plan**
  - **2019 Planning Assumptions, Methodology, Criteria**
  - **Economic Study Requests**
- Posting I Spring/Summer 2019
  - Summary of 2019 System Assessment Results and Conceptual Solutions
- Customer Meeting II Fall 2019
  - Draft Plans of Service and Cost
- Posting II End of Year 2019
  - 2019 BPA Transmission Plan

BPA's Attachment K Planning Process Website

http://www.bpa.gov/transmission/CustomerInvolvement/AttachmentK/Pages/default.aspx



BPA's 2019 Attachment K Planning Process Website

https://www.bpa.gov/transmission/CustomerInvolvement/AttachmentK/Pages/2019-Planning-Cycle.aspx

BPA's Attachment K Planning Process Website

- Meetings
  - Meeting announcements, agendas, etc.
- Reference Materials
  - Materials associated with the Planning Process, participation forms, etc.
- Email Information
  - PlanningParticipationRequest@bpa.gov
  - PlanningEconomicStudyRequest@bpa.gov
- Economic Studies
  - Requesting and Tracking Economic Studies
- Related Information
  - Links to information related to the Planning Process

Economic Study Requests

- What is an Economic Study?
  - Studies may be requested to address congestion issues or the integration of new resources and loads.
- How are Requests for Economic Studies submitted?

  PlanningEconomicStudyRequest@bpa.gov
- Requests may be submitted any time…

  Requests submitted after October 31 will be considered in the next prioritization process

- BPA will complete up to two Economic Studies per year at its expense
- There were no Economic Study Requests received during the annual cycle ending on 10/31/2018

Planning Assumptions & Methodology

- System Reliability Assessments may be based on current or qualified past studies as allowed by the NERC TPL Reliability Standard
  - The 2019 System Assessment will be based partly on qualified past studies from 2017 and 2018 and relies partly on the results of current studies

Planning Assumptions

Base Cases

- Loads in the Northwest Area
  - Utilize peak load forecasts for approximately 2, 5, and 10 years out, reviewed and/or updated annually, and off-peak load forecasts for the near-term (2 years out) planning horizon.
  - Peak load forecasts for both winter and summer seasons.
    - Forecasts provided by Customers for the IOUs and larger utilities (approximately 75-80% of loads)
    - Forecasts developed by BPA's Agency Load Forecasting group if not supplied by customers (approximately 20-25% of loads)
- Resources
  - Model existing generating resources and selected future resources proposed to be online, if needed to meet the forecast loads within the 10 year horizon.

Planning Assumptions (continued)

- Update Northwest Area database
  - Update with the latest seasonal peak and off-peak load forecasts
  - Update with the latest network topology
  - Model future resources as needed, network expansion projects, and firm transmission obligations
- Sensitivity Cases

  Other patterns and conditions may be developed as sensitivities based on:
  - Load level, load forecast, or dynamic load model assumptions
  - Expected transfers
  - Expected in-service dates of new or modified Transmission Facilities
  - Reactive resource capability
  - Generation additions, retirements, or other dispatch scenarios
  - Or other system conditions unique to certain geographical areas

Planning Methodology

- System Assessment.
  - Check network topology and load forecast / load growth assumptions for each area of interest.
  - Modify base cases to stress the study area and benchmark with historical data.
  - Develop sensitivity cases as needed for worst case generation or transfer patterns.
  - Perform steady state power flow simulation of all single contingencies and credible multiple element contingencies.
  - Study a large selection of single and multiple contingencies to evaluate voltage stability and transient stability performance.
  - Model RAS as required.

Planning Methodology (continued)

- Identify Potential Problems
  - Compare system performance with NERC and WECC Reliability Standards to determine if there are potential system performance deficiencies.
  - Identify deficient areas for follow up and possible corrective action plans.
  - Problems may include:
    - Steady State - Thermal overloads or Under/Over Voltages
    - Stability
      - Insufficient reactive margin (voltage stability)
      - Large voltage or frequency deviations (transient stability)
- Develop Conceptual Solutions
  - Solutions to mitigate potential system performance deficiencies may include transmission expansion projects, facility upgrades, and/or non-wires solutions (e.g. energy efficiency, distributed generation, redispatch, or demand side management).

Planning Methodology (continued)

- Cost Estimates for the Conceptual Solutions
  - Preliminary cost estimates are developed for the conceptual solutions
  - Preliminary estimates are used for comparing cost effectiveness of the conceptual solutions
- Develop a Plan of Service for the Preferred Alternative
  - Establish the project team
  - Draft Project Requirements Diagram (PRD) and circulate for comments
  - Initiate Concept Design Document and Project Scoping
  - Finalize the plan of service and PRD
  - Update and refine cost estimates
  - Develop the Business Case and Request capital funding for project

Planning Criteria

Standards and Criteria used for Planning:

- NERC and WECC Reliability Planning Standards
  - NERC (North American Electric Reliability Corporation) TPL-001-4
  - WECC (Western Electricity Coordinating Council) TPL-001-WECC-CRT-3.1 Regional Reliability Criteria

2018 BPA Transmission Plan

- BPA's Plans for Capital Expansion Projects
- Spans the 10 year horizon from 2018-2028
- Projects categorized by
  - Load Service Areas
  - Paths and Interties
  - Generator Interconnections
  - Line and Load Interconnections
- The following information is provided for each Project:
    - Project Description
    - Purpose
    - High-level Cost Estimate
    - Proposed Energization Date

Next Steps

- Summarizing results of the 2019 System Assessment
- Posting I – Spring/Summer 2019
  - Summary of 2019 System Assessment Results and Conceptual Solutions
- System Assessment for 2020

Sign up to participate in future meetings or receive additional information by:

- Filling out the Participation Request form on BPA's Planning Process website and sending it via e-mail to: PlanningParticipationRequest@bpa.gov