BPA Attachment K Planning Process

Planning Meeting I

April 30, 2021

01:00 PM – 03:00 PM

Agenda

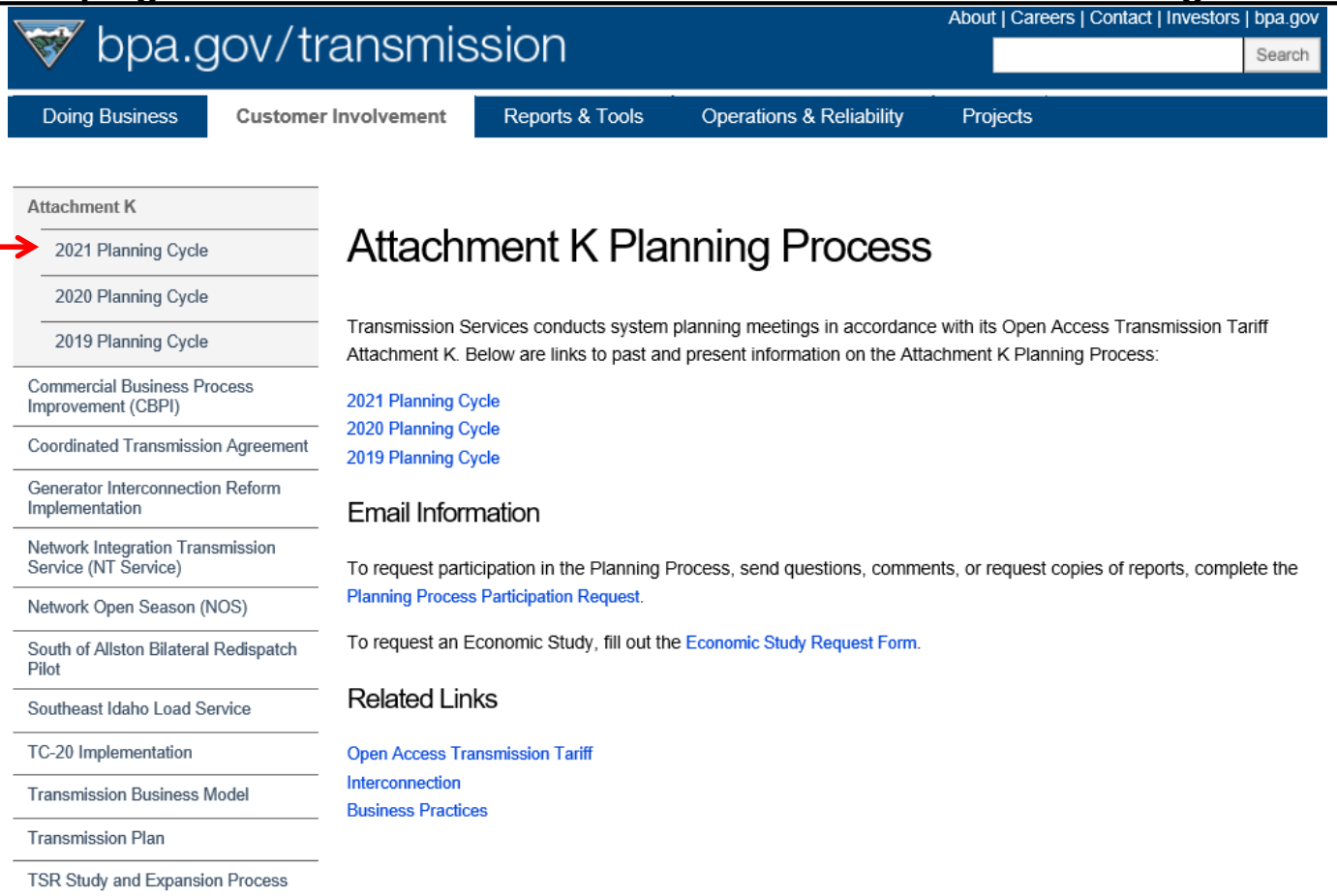
- Introductions
- BPA's Attachment K Planning Cycle – 2021
- BPA's Attachment K Website – 2021
- Economic Study Requests
- 2021 Planning Assumptions, Methodology, and Criteria
- 2020 BPA Transmission Plan
- Next Steps

Attachment K Planning Cycle 2021

- **Customer Meeting I** **April 30, 2021**
  - **2020 BPA Transmission Plan**
  - **2021 Planning Assumptions, Methodology, Criteria**
  - **Economic Study Requests**
- Posting I Summer 2021
  - Summary of 2021 System Assessment Results and Conceptual Solutions
- Customer Meeting II Fall 2021
  - Draft Plans of Service and Cost
- Posting II End of Year 2021
  - 2021 BPA Transmission Plan

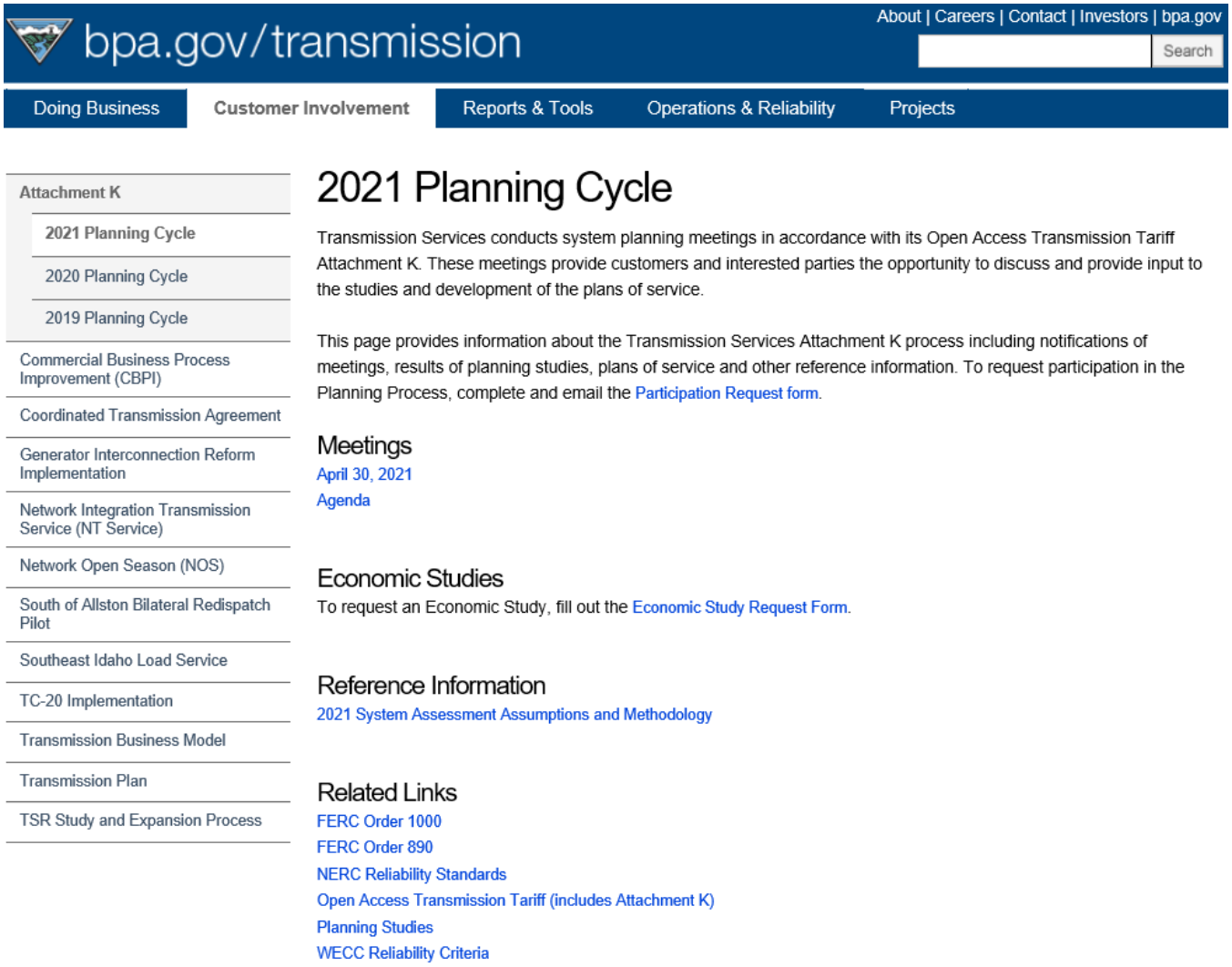
BPA's Attachment K Planning Process Website

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



BPA's 2021 Attachment K Planning Process Website

https://www.bpa.gov/transmission/CustomerInvolvement/AttachmentK/Pages/2021-Planning-Cycle.aspx



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 10/31/2020

Planning Assumptions & Methodology

- System Reliability Assessments may be based on current or qualified past studies as allowed by the NERC TPL Reliability Standard
  - The 2021 System Assessment is based on qualified past studies from 2020
  - BPA's 2020 System Assessment relied largely on the results of current studies.

Planning Assumptions

Base Cases

- The base cases used for the 2021 System Assessment originated from WECC approved base cases for the Near Term and Long Term Planning horizons and both peak and off-peak loads. Load forecasts and topology were modified to represent the following:

Year	Case	Season	Load Level	Notes
2022	22LSP	Spring	Off-Peak	Near term (2-year expected spring loads
2022	22HW	Winter	Peak	Near term (2-year) expected winter peak
2022	22HS	Summer	Peak	Near term (2-year) expected summer peak
2026	26HW	Winter	Peak	Near term (5 year) expected winter peak
2026	26HS	Summer	Peak	Near term (5 year) expected summer peak
2030	30HW	Winter	Peak	Long-term (6-10 year) expected winter peak
2030	30HS	Summer	Peak	Long term (6-10 year) expected summer peak

Planning Assumptions (Continued)

Base Cases

- Loads in the Northwest Area
  - 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.
  - The 2021 System Assessment rely on current and qualified past studies from the 2020 System Assessment as allowed by NERC TPL-001-4.
  - 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-3.2 Regional Reliability Criteria

2020 BPA Transmission Plan

- Can be found on the 2020 Planning Cycle page under Reference Information
- BPA's Plans for Capital Expansion Projects
- Spans the 10 year horizon from 2020-2030
- 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

- Posting I – Summer 2021
  - Summary of 2021 System Assessment Results and Conceptual Solutions
- Attachment K Customer Meeting II
  - Review Results of 2021 System Assessment including draft plans of service

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