BPA Attachment K Planning Process

Planning Meeting I

April 28, 2022
01:00 PM – 02:30 PM
Agenda

• Introductions
• BPA’s Attachment K Planning Cycle – 2022
• BPA’s Attachment K Website – 2022
• Economic Study Requests
• 2022 Planning Assumptions, Methodology, and Criteria
• 2021 BPA Transmission Plan
• Next Steps
Attachment K Planning Cycle 2022

- **Customer Meeting I**
  - 2021 BPA Transmission Plan
  - 2022 Planning Assumptions, Methodology, Criteria
  - Economic Study Requests

- **Posting I**
  - Summary of 2022 System Assessment Results and Conceptual Solutions

- **Customer Meeting II**
  - Draft Plans of Service and Cost

- **Posting II**
  - 2022 BPA Transmission Plan
BPA’s 2022 Attachment K Planning Process Website

Planning Cycles

<table>
<thead>
<tr>
<th>2022 Planning Cycle</th>
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2022 Planning Cycle

Transmission Services conducts system planning meetings in accordance with its Open Access Transmission Tariff Attachment K. These meetings provide customers and interested parties the opportunity to discuss and provide input to the studies and development of the plans of service.

This page provides information about the Transmission Services Attachment K process including notifications of meetings, results of planning studies, plans of service and other reference information. To request participation in the Planning Process, complete and email the Participation Request form.

Meetings

April 28, 2022

Agenda

Reference Information

2022 System Assessment Assumptions and Methodology
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 10/31/2021
Planning Assumptions & Methodology

- System Reliability Assessments may be based on current or qualified past studies as allowed by the NERC TPL Reliability Standard
  - The 2022 System Assessment will be based largely on qualified past studies from the 2020 and 2021 System Assessments.
  - In order to determine if the previous study results are still valid, a number of factors are considered as part of the validation process.
  - Past studies are still valid if there have been no significant changes in topology, load forecast, new or retired generation or loads interconnected, long duration outages, or spare equipment strategy since the studies were performed.
Planning Assumptions

Base Cases

- The base cases for the 2022 System Assessment originated from WECC approved base cases for the Near Term and Long Term Planning horizons and represent both peak and off-peak load conditions. Load forecasts and topology were modified to represent the following years and seasons:

<table>
<thead>
<tr>
<th>Year</th>
<th>Case</th>
<th>Season</th>
<th>Load Level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>23LSP</td>
<td>Spring</td>
<td>Off-Peak</td>
<td>Near term (2-year expected spring loads)</td>
</tr>
<tr>
<td>2023</td>
<td>23HW</td>
<td>Winter</td>
<td>Peak</td>
<td>Near term (2-year) expected winter peak</td>
</tr>
<tr>
<td>2023</td>
<td>23HS</td>
<td>Summer</td>
<td>Peak</td>
<td>Near term (2-year) expected summer peak</td>
</tr>
<tr>
<td>2027</td>
<td>27HW</td>
<td>Winter</td>
<td>Peak</td>
<td>Near term (5-year) expected winter peak</td>
</tr>
<tr>
<td>2027</td>
<td>27HS</td>
<td>Summer</td>
<td>Peak</td>
<td>Near term (5-year) expected summer peak</td>
</tr>
<tr>
<td>2031</td>
<td>31HW</td>
<td>Winter</td>
<td>Peak</td>
<td>Long-term (6-10 year) expected winter peak</td>
</tr>
<tr>
<td>2031</td>
<td>31HS</td>
<td>Summer</td>
<td>Peak</td>
<td>Long term (6-10 year) expected summer peak</td>
</tr>
</tbody>
</table>
Planning Assumptions (Continued)

Base Cases

• Loads in the Northwest Area
  – Peak load forecasts for both winter and summer seasons.
    ▪ Forecasts are provided by Customers for the IOUs and larger utilities (represents approximately 75-80% of loads)
    ▪ Forecasts are developed by BPA’s Agency Load Forecasting group if not supplied by customers (represents 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 2022 System Assessment will rely on current and qualified past studies from the 2020 and 2021 System Assessments 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 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
2021 BPA Transmission Plan

• Can be found on the 2021 Planning Cycle page under Reference Information

• BPA’s Plans for Capital Expansion Projects

• Spans the 10 year horizon from 2021-2031

• 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 2022
  – Summary of 2022 System Assessment Results and Conceptual Solutions

• Attachment K Customer Meeting II – Fall 2022
  – Review Results of 2022 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