BONNEVILLE POWER ADMINISTRATION

BPA Attachment K Planning Process

Planning Meeting II

November 21, 2023

Agenda

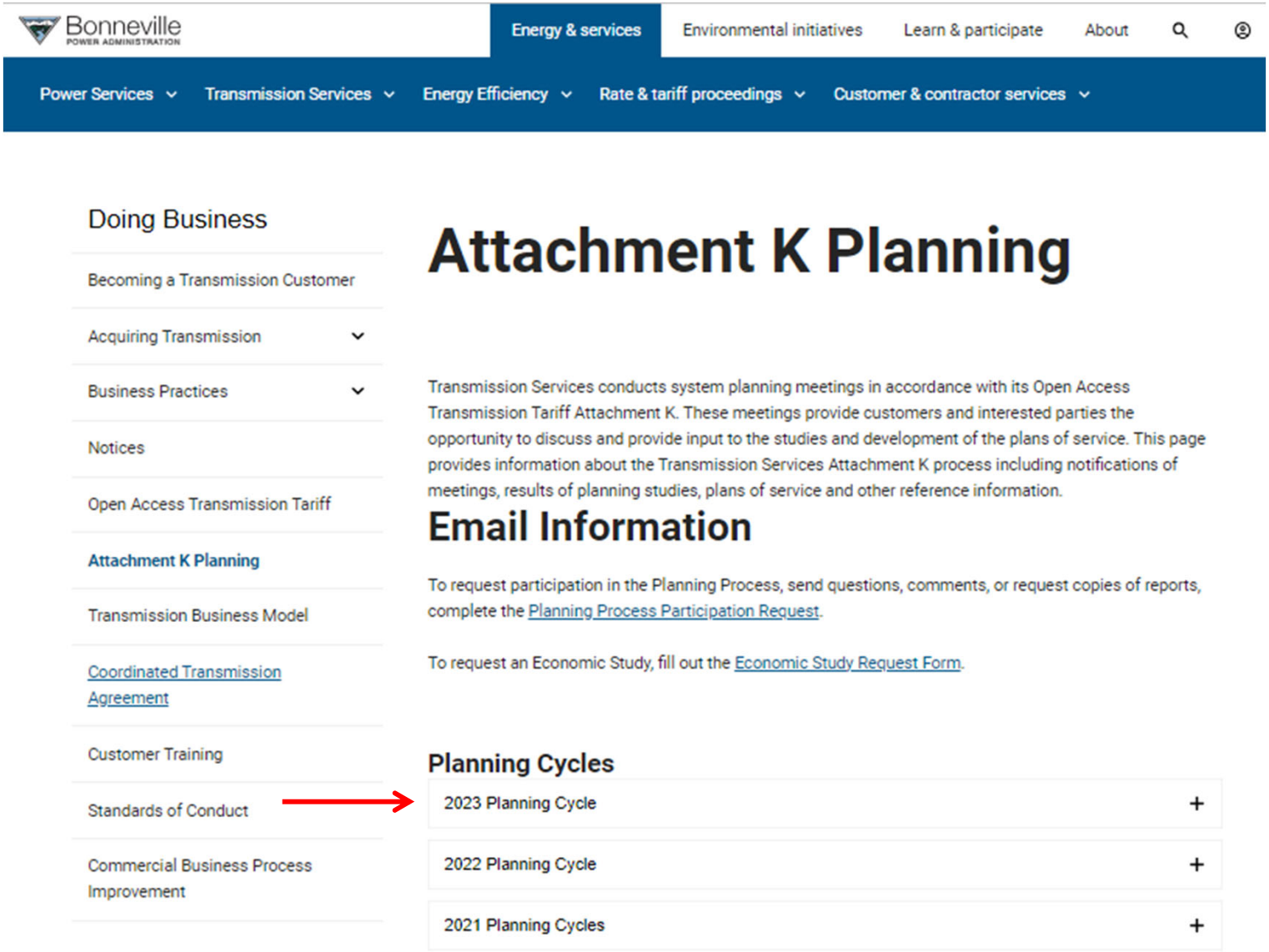
- Introductions
- Attachment K Planning Cycle – 2023
- Attachment K Website
- Economic Study Requests
- Draft Plans of Service for Transmission
- Project Updates and Significant Planned Projects
- Initial Economic Study Results
- Next Steps

Attachment K Planning Cycle - 2023

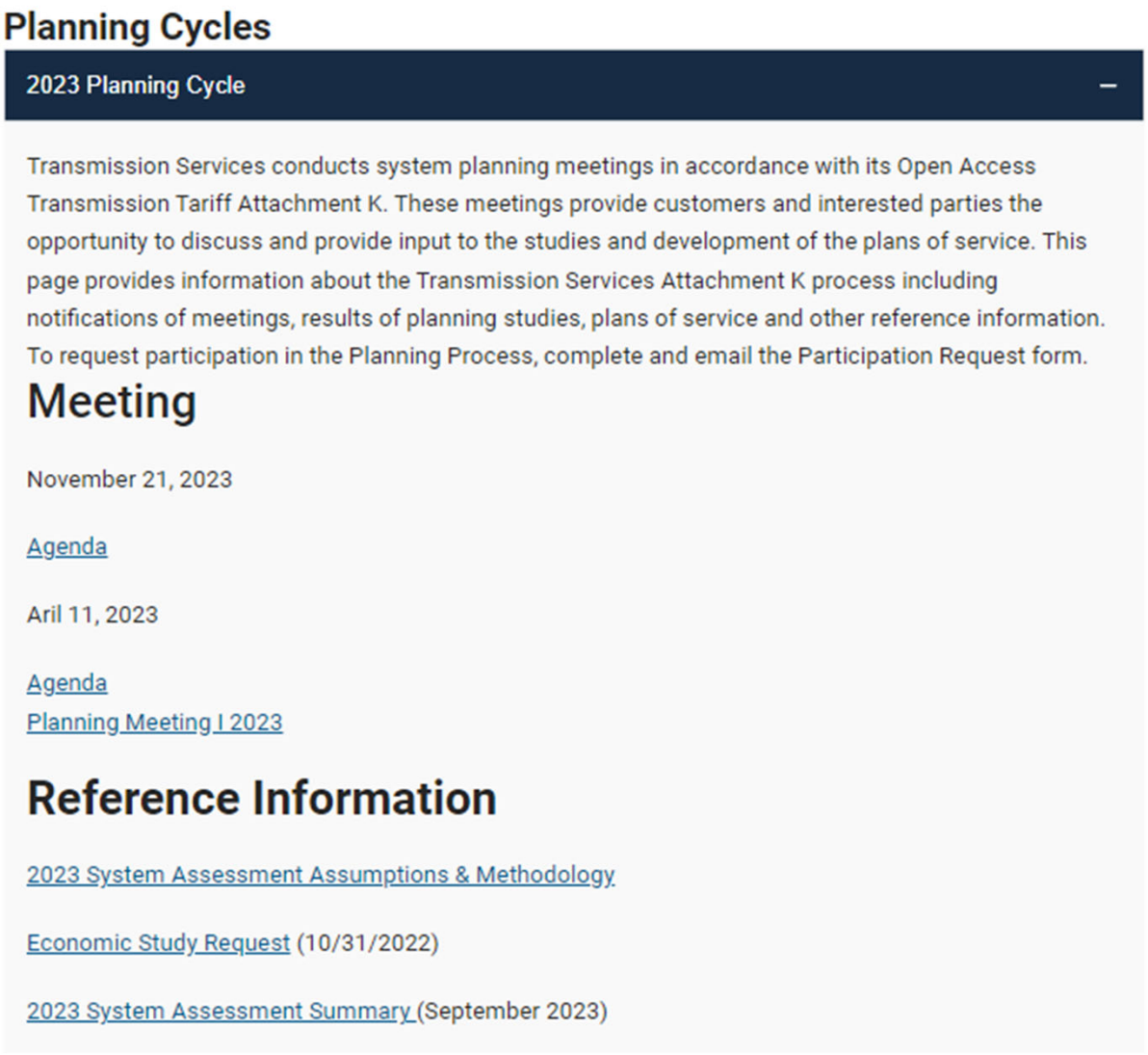
- **Customer Meeting I** — **April 11, 2023**
  - 2022 BPA Transmission Plan
  - 2023 Planning Assumptions, Criteria, Methodology
  - Economic Study Requests
- **Posting I** — **September 2023**
  - Summary of 2023 System Assessment Results and Conceptual Solutions
- **Customer Meeting II** — **November 21, 2023**
  - Draft Plans of Service
  - Initial Economic Study Results
- **Posting II** — **End of Year 2023**
  - 2023 BPA Transmission Plan

BPA's Attachment K Planning Process Website

https://www.bpa.gov/energy-and-services/transmission/attachment-k



BPA's Attachment K Planning Process Website



Planning Cycles

2023 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.

Meeting

November 21, 2023

Agenda

Aril 11, 2023

Agenda
Planning Meeting I 2023

Reference Information

2023 System Assessment Assumptions & Methodology

Economic Study Request (10/31/2022)

2023 System Assessment Summary (September 2023)

Expand Planning Cycle for details

BPA's Attachment K Planning Process Website

- **E-mail Information**
  - ***PlanningParticipationRequest@bpa.gov***
  - ***PlanningEconomicStudyRequest@bpa.gov***
- **Meetings**
  - Meeting announcements, agendas, etc.
- **Economic Studies**
  - Requesting and Tracking Economic Studies
- **Reference Information**
  - Materials associated with the Planning Process, participation forms, etc.
- **Links**
  - 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 own expense.
- There were no Economic Study Requests received during the study cycle which closed on October 31, 2023.

CFR Customers

BPA provides contracted Transmission Planning services for the following NT customers who have Coordinated Functional Registrations (CFR) with NERC.

- Klickitat County PUD
- Lewis County PUD
- Northern Wasco County PUD
- Pend Oreille PUD
- Umatilla Electric Cooperative
- Whatcom PUD
- Lower Valley Energy

Draft Plans of Service (2023 Planning Cycle)

- Most of the draft plans of service on the following slides, have been developed to maintain compliance with the applicable planning reliability standards and criteria
- The following standards and criteria were applied in development of the proposed corrective action plans:
  - **NERC Reliability Standard TPL-001-5.1**
    (North American Electric Reliability Corporation)
  - **WECC Reliability Criteria TPL-001-WECC-CRT-4**
    (Western Electricity Coordinating Council)
- The remaining plans of service provide needed equipment upgrades or improve Operational or Maintenance Flexibility

Draft Plans of Service (2023 Planning Cycle)

- BPA's 2023 System Assessment for the load areas was based primarily on current and some qualified past studies as allowed by the NERC TPL Reliability Standard
- The transmission system was divided into 27 load service areas and 16 paths/interties
- There were four new corrective action plans (plans of service) identified from the 2023 System Assessment
- Several of the projects identified from previous System Assessments have updated schedules
- These updates are shown on the following slides

  Bold text indicates a schedule or status change compared with last year's update.

Draft Plans of Service

from the 2023 System Assessment

SW Washington Coast Area

Project	Schedule
Cosmopolis-Satsop Park 115 kV No.1 Upgrade	**2027**
• Upgrade the line to 100 deg C MOT	
Satsop Park-South Elma 115 kV No.1 Upgrade	**2027**
• Upgrade the line to 100 deg C MOT	

Portland Area

Project	Schedule
St Johns 230/115 kV Transformer Tie Line Upgrade	**2026**
• Upgrade the Transformer low side tie line	

Draft Plans of Service

from the 2023 System Assessment

Spokane/Colville/Boundary Area

Project	Schedule
Bell-Boundary (Sacheen) 230 kV No.1 Upgrade	**2027**

- Upgrade the line to 100 deg C MOT

Project Updates

Seattle/Tacoma Area

Project	Schedule
Monroe-Novelty 230 kV Line Upgrade	**2026**

Centralia/Chehalis

Project	Schedule
Silver Creek 230 kV Bus Sectionalizing Breaker Addition	2025

Project Updates

Portland Area

Project	Schedule
Troutdale 230 kV Series Bus Sectionalizing Breaker Addition	2025
Keeler 230 kV Bus Sectionalizing Breaker Addition	2026
Keeler 500 kV Bus Reconfiguration and 500/230 kV TX-2	2027
Pearl-Sherwood 230 kV Line Reconfiguration and Pearl 230 kV Bus Sectionalizing Breaker Addition	2027
Carlton 230 kV and 115 kV Breaker Additions (O&M Flexibility)	**2024**
Forest Grove-McMinnville 115kV Line Upgrade (O&M Flexibility)	**2024**

Project Updates

Eugene Area

Project	Schedule
Alvey-Dillard Tap 115 kV Line Rebuild (O&M Flexibility)	**2028**

Olympic Peninsula Area

Project	Schedule
Kitsap 115 kV Shunt Capacitor Relocation	**2026**
Shelton-Fairmount 115 kV No.1 Line Upgrade	**2026**

Project Updates

Mid-Columbia Area

Project	Schedule
Columbia-Rapids 230 kV Line Construction	2023
Columbia 230 kV Bus Tie and Bus Section Breaker Addition (O&M Flexibility)	2023

Walla Walla Area

Project	Schedule
Tucannon River 115 kV Shunt Reactor (15 Mvar) Addition	2025

Project Updates

Umatilla Area

Project	Schedule
Jones Canyon 230 kV Shunt Reactor (40 Mvar) Addition	**Completed**
Morrow Flat 230 kV Shunt Reactor (40 Mvar) Addition	**2025**

Southeast Idaho/Northwest Wyoming Area

Project	Schedule
Spar Canyon 230 kV Reactor (25 Mvar) Addition (O&M Flexibility)	2024

Project Updates

North Idaho Area

Project	Schedule
Troy 115 kV Shunt Capacitor (12.6 Mvar) Addition	**2027**

South Oregon Coast Area

Project	Schedule
Toledo 230 kV and 69 kV Bus Tie Additions (O&M Flexibility)	2024
Wendson 115 kV Bus Tie Breaker Addition (O&M Flexibility)	2024

Okanogan

Project	Schedule
Grand Coulee-Foster Creek 115 kV Line Upgrade	2023

Project Updates

West of Cascades North (WOCN) Path

Project	Schedule
Schultz-Raver 500 kV No. 3 and No. 4 Series Capacitors	**2026**

Significant Planned Projects

Schultz-Wautoma Series Capacitors

Description

This project is necessary to increase South of Allston (SOA) available transfer capability and improve operations and maintenance flexibility for SOA and I-5 corridor paths. The project will add a series capacitor on the Schultz-Wautoma 500 kV line at Wautoma Substation.

Expected Energization

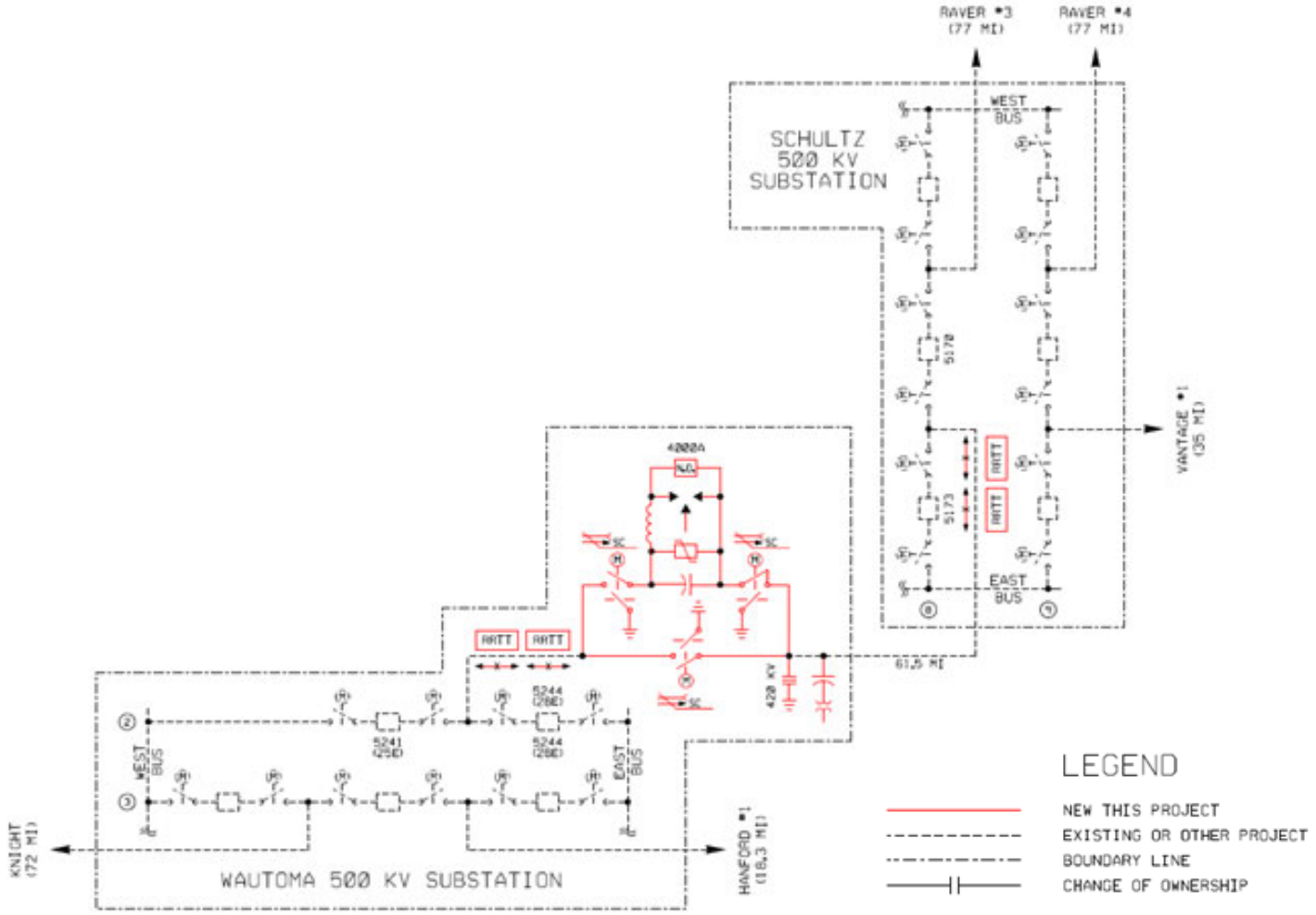
2024

Estimated Cost

$48,000,000

Significant Planned Projects

Schultz-Wautoma Series Capacitors



Significant Planned Projects

Tri-Cities Load Area Projects

Description

The following projects are planned for the Tri-Cities Load Area:

- McNary-Paterson Tap 115 kV Line
- Red Mountain–Horn Rapids 115 kV Line Reconductor
- Richland-Stevens Drive 115 kV Line
- South Tri-Cities Reinforcement

McNary-Paterson Tap – This project adds a new 115 kV bay at McNary and a parallel 115 kV line from McNary to Paterson Tap (2 miles).

Red Mountain-Horn Rapids 115 kV Line Reconductor: This project will reconductor the Red Mountain–Horn Rapids 115 kV section of BPA's Red Mountain–White Bluffs 115 kV transmission line (4 miles).

Richland-Stevens Drive – This project constructs a new 115 kV line to create a double-circuit from Richland to Stevens Drive switching station (3 miles).

South Tri-Cities Reinforcement - This project constructs a 500 kV substation on the Ashe-Marion #2 500 kV line with a 500/115 kV transformer, and a 115 kV line to Badger Canyon (17 miles).

Significant Planned Projects

Tri-Cities Load Area Projects – continued

McNary-Paterson Tap is presently in the construction phase.

Estimated Schedule: Summer 2024

Estimated Cost: $ 7,400,000

Red Mountain-Horn Rapids 115 kV Line Reconductor is an approved project in design. The estimated project cost and schedule will be refined as the project progresses through design.

Estimated Schedule: Summer 2025

Estimated Cost: $ 3,600,000

Richland-Stevens Drive 115 kV Line is an approved project in design. The estimated project cost and schedule will be refined as the project progresses through design.

Estimated Schedule: Spring 2027

Estimated Cost: $ 12,500,000

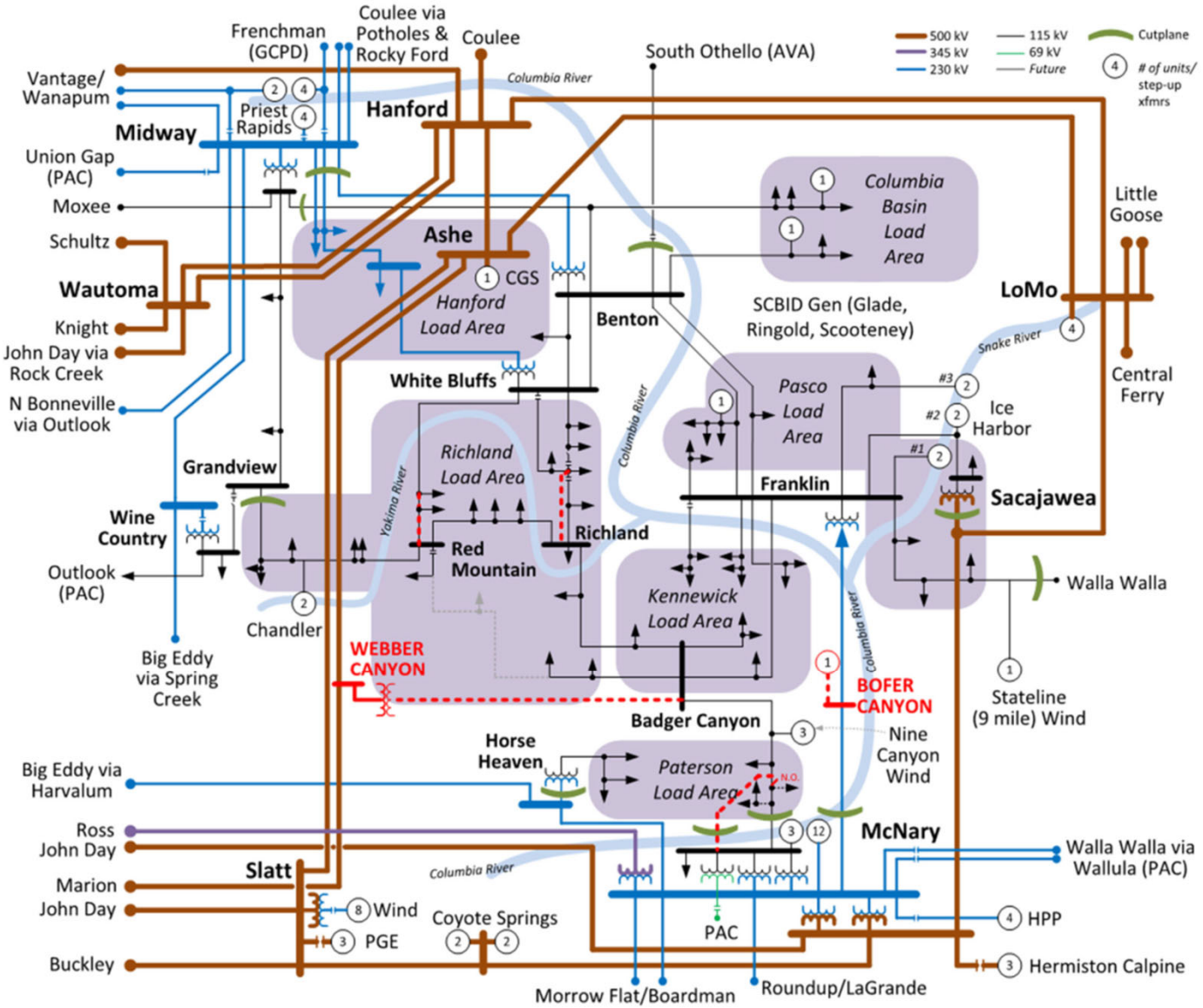
South Tri-Cities Reinforcement is an approved project in design. The estimated project cost and schedule will be refined as the project progresses through design.

Estimated Schedule: Winter 2027

Estimated Cost: $ 107,000,000

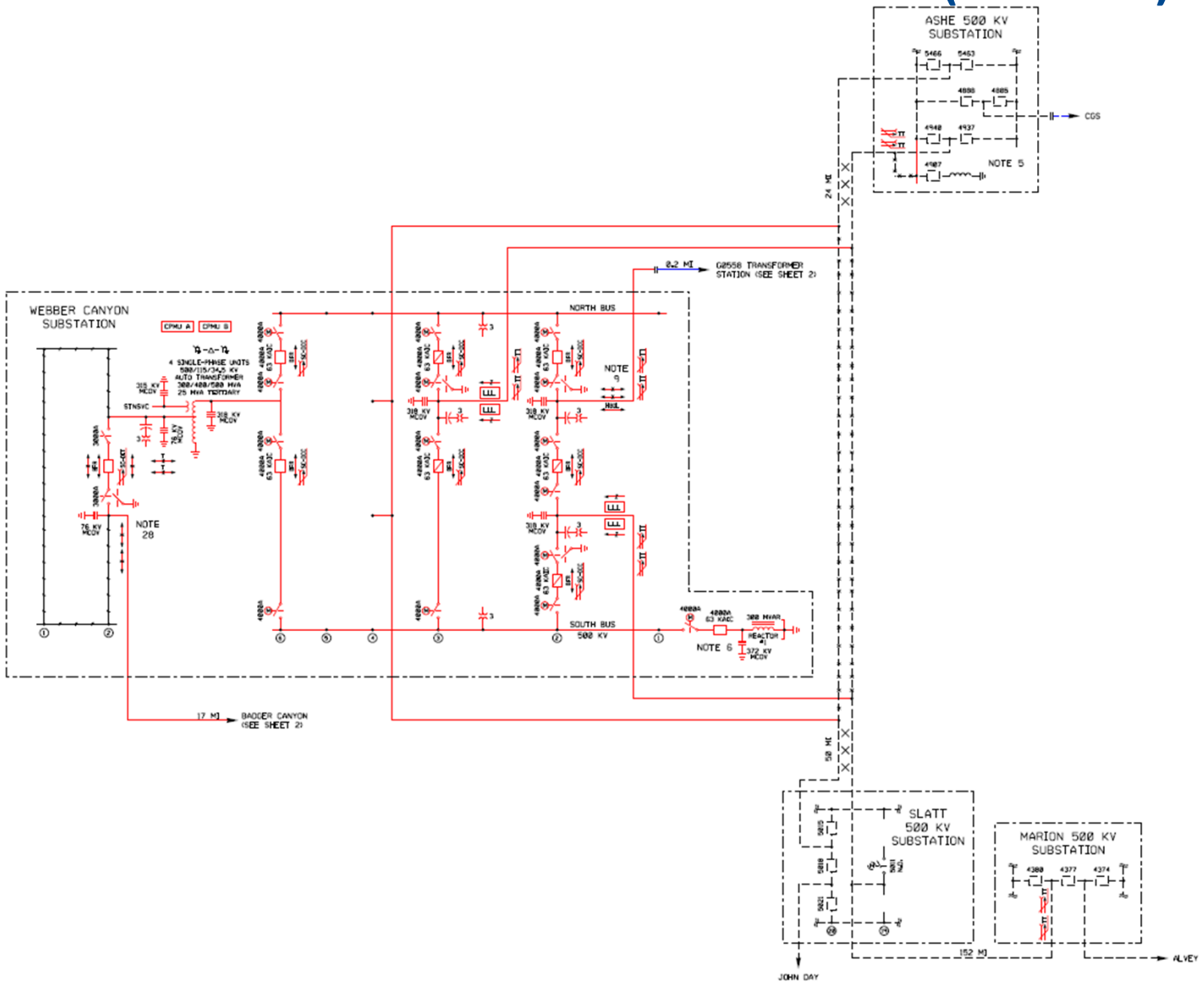
Significant Planned Projects

South Tri-Cities Reinforcement



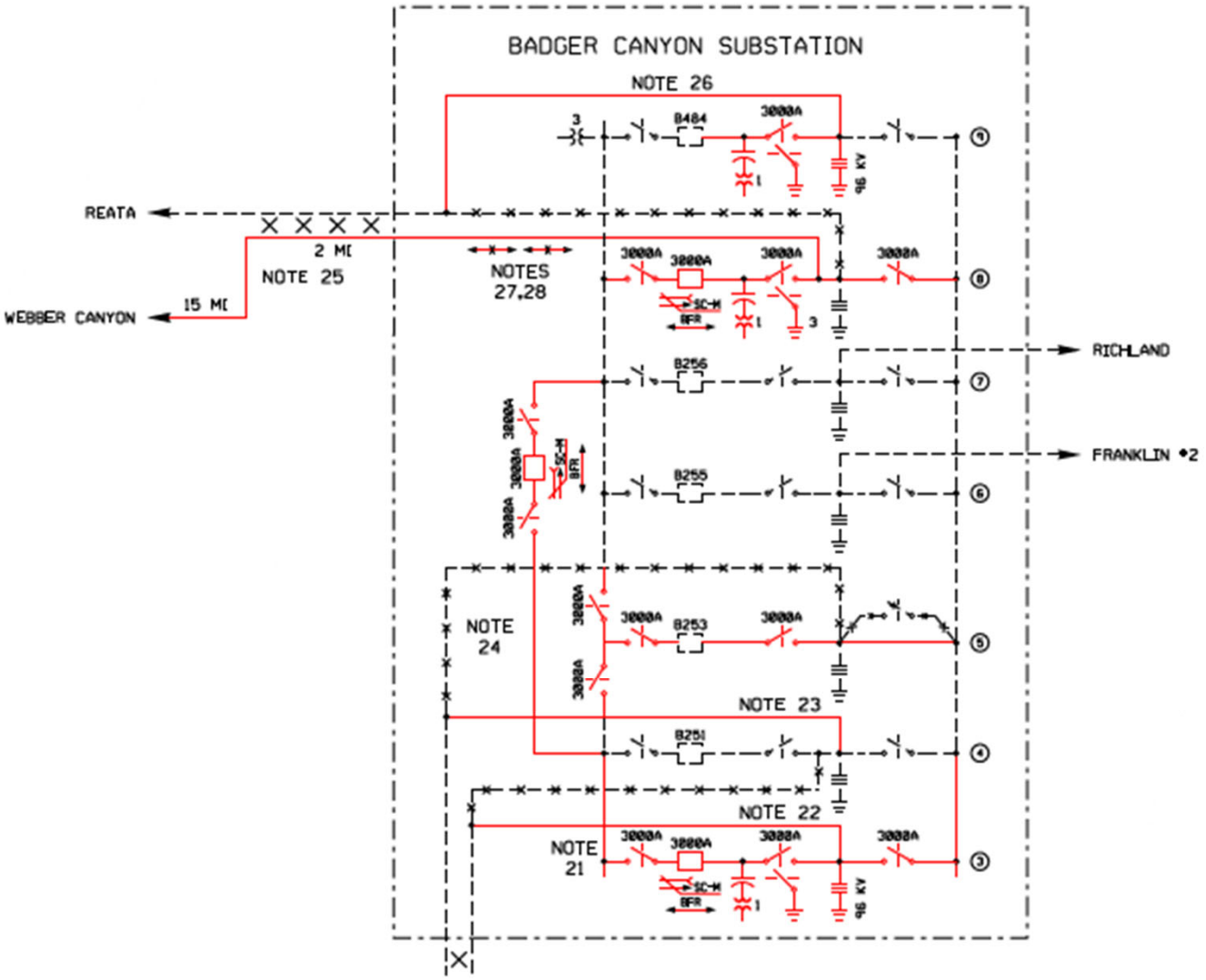
Significant Planned Projects

South Tri-Cities Reinforcement (sheet 1)



Significant Planned Projects

South Tri-Cities Reinforcement (sheet 2)



Significant Planned Projects

Buckley GIS Replacement

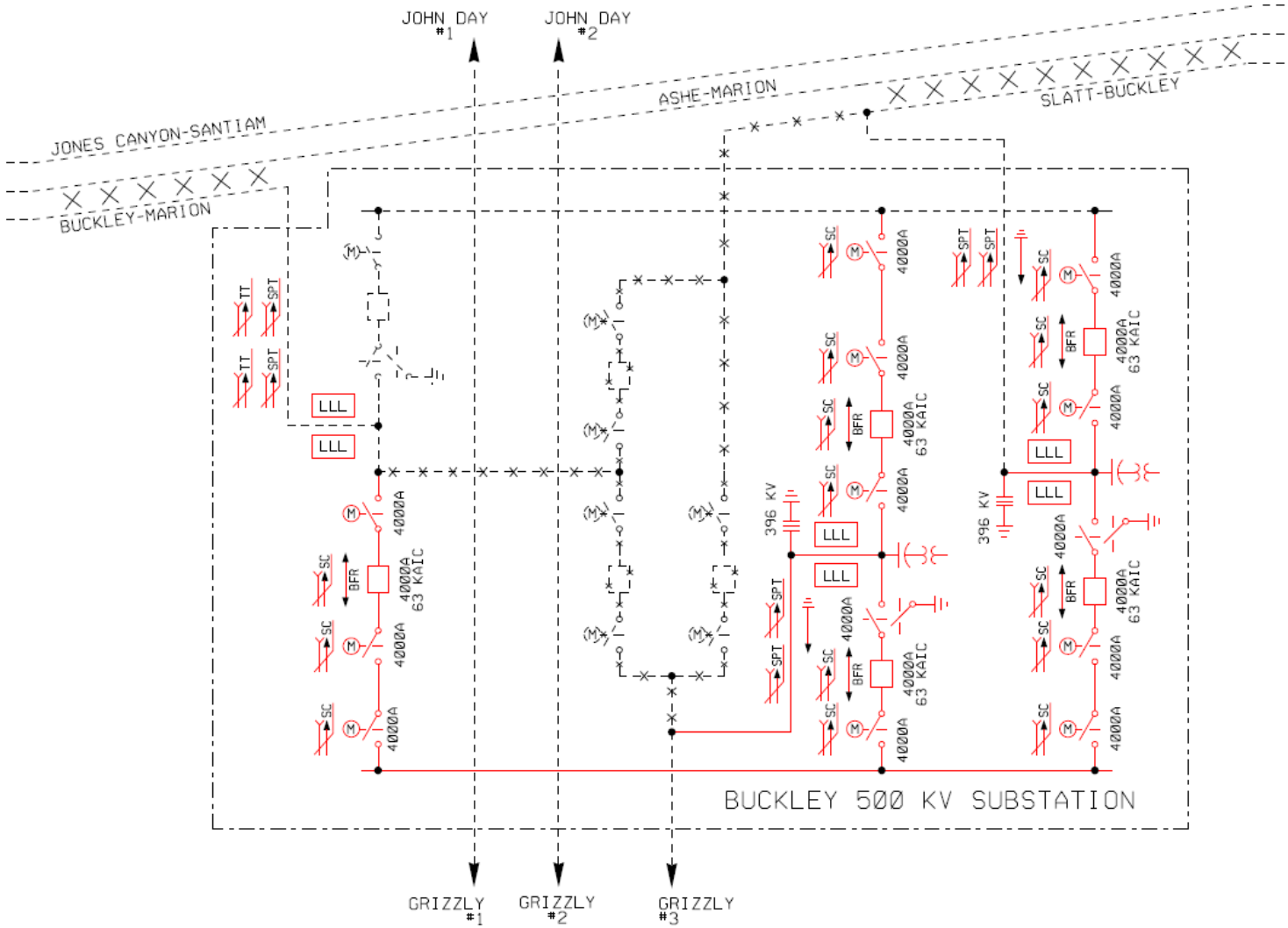
Description

This project is required to replace the Buckley 500 kV Gas Insulated Substation (GIS) with an Air Insulated Substation (AIS). The Buckley GIS has out lived its useful life and will run out of the necessary spare parts to continue its operation in the next 5 years. The long range plan for Buckley is to develop an AIS Substation with three 500 kV bays in arranged in a double breaker double bus configuration for the Buckley-Marion, Slatt-Buckley, and Buckley-Grizzly 500 kV lines.

Estimated Schedule: 2027
Estimated Cost: $ 50,000,000

Significant Planned Projects

Buckley GIS Replacement



Economic Study – Initial Results

- There was one Economic Study Request received during the study cycle which closed on October 31, 2022.

- The Economic Study Request had 2 parts:

Part 1	Part 2
POR = Midway 230 kV	POR = Midway 230 kV
POD = Lower Columbia	POD = Lower Columbia / Tri-Cities
Amount = 3000 MW	Amount = 3000 MW / 800 MW

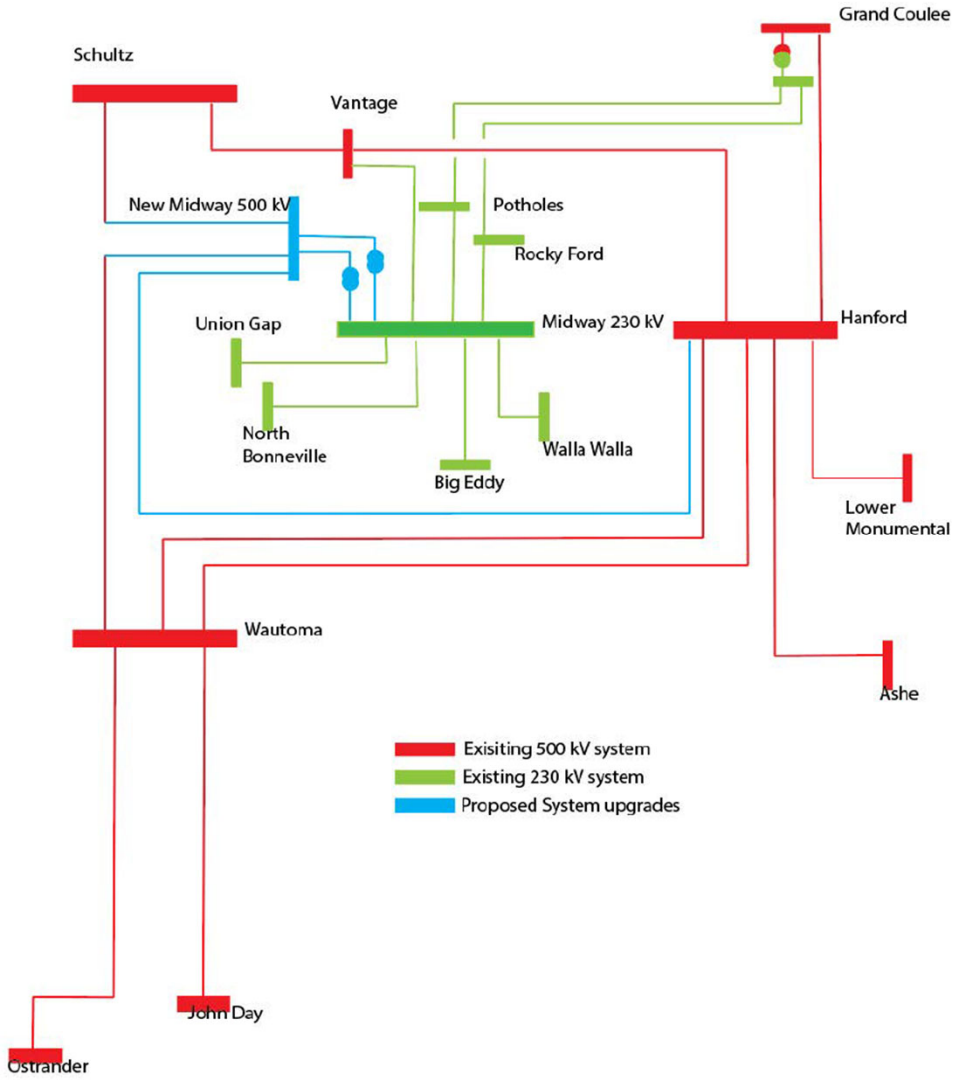
Economic Study – Initial Results

Part 1

POR: Midway 230 kV

POD: Lower Columbia (3000 MW)

Requested in-service 12/31/2032



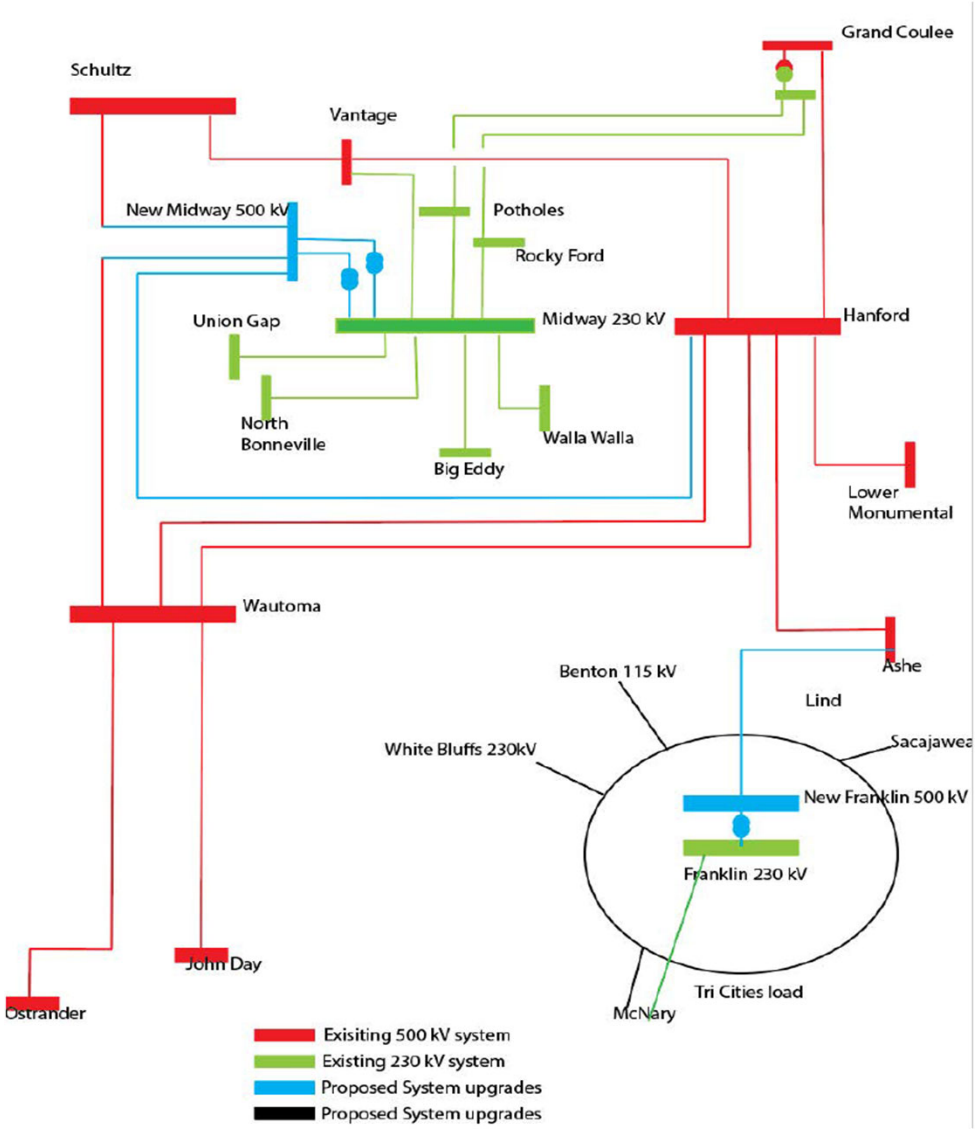
Economic Study – Initial Results

Part 2

POR: Midway 230 kV

POD: Lower Columbia (3000 MW) /
Tri-Cities (800 MW)

Requested in-service 12/31/2035



Economic Study – Initial Results

Economic Study results are based on a high-level analysis using the best available information at the time

Findings are based on assumptions which are subject to change

The results are only intended to be used to develop reasonable judgments about possible system expansion required to support requests for transmission service.

More detailed information, studies, or requests for transmission service for points of receipt (POR's) in this Economic Study should be requested and analyzed through the OATT transmission service queue [aka TSEP / Cluster Study process].

Economic Study – Initial Results

Part 1

Proposed Facilities:

New Midway 500 kV yard with two 800 MVA 500/230 kV transformers

Loop in the Schultz to Wautoma 500 kV line into Midway substation.

New 500 kV line between Midway and Hanford

Estimated Cost: $244,000,000 (approx.)

However, these facilities alone do not provide adequate capacity to deliver 3000 MW from Midway to the Lower Columbia area.

Economic Study – Initial Results

Part 1

At a minimum, the following additional facilities (or equivalent) are needed:

2 New Midway-John Day 500 kV Lines (approx. 90 miles each)

2 - 500 kV bays at Midway Substation *

2 – 500 kV bays at John Day Substation *

* *Bays include necessary switchgear, communications, controls, and protection*

The Estimated Cost of the additional facilities is: $650,000,000 (approx.)

Grand Total (Proposed facilities plus Additional) = **$894,000,000 (approx.)**

For more detailed studies or plans of service, a TSR should be submitted to the TSEP process.

Economic Study – Initial Results

Part 2

Proposed Facilities:

- New Midway 500 kV yard with two 800 MVA 500/230 kV transformers
- Loop in the Schultz to Wautoma 500 kV line into Midway substation.
- New 500 kV line between Midway and Hanford
- New Franklin 500 kV yard with one 500/230 kV transformer
- New 500 kV line between Ashe and Franklin 500 kV

Estimated Cost: $452,000,000 (approx.)

However, these facilities alone do not provide adequate capacity to deliver 3000 MW from Midway to the Lower Columbia area and 800 MW to the Tri-Cities area.

Economic Study – Initial Results

Part 2

At a minimum, the following additional facilities (or equivalent) are needed:

2 New Midway-John Day 500 kV Lines (approx. 90 miles each)
2 – new 500 kV bays at Midway Substation *
2 – new 500 kV bays at John Day Substation *
New Franklin-McNary 500 kV Line (approx. 27 miles)
New 500 kV bay at Franklin Substation *
New 500 kV bay at McNary Substation *

* *Bays include necessary switchgear, communications, controls, and protection*

The Estimated Cost of the additional facilities is: $763,000,000 (approx.)

Grand Total (Proposed facilities plus Additional) = **$1,215,000,000 (approx.)**

For more detailed studies or plans of service, a TSR should be submitted to the TSEP process.

Next Steps

- **Update the BPA Transmission Plan** based on the 2023 planning cycle and post by the end of December, 2023.

- **Jan.1, 2024 – Begin 2024 Attachment K Planning Cycle**

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