Transmission Service for Provider of Choice Customers

March 22, 2023

Agenda

- Commercial Transmission Overview
- Network Integration Transmission Service
- Line and Load Interconnection Requests (LLIR)
- BPA Forecasting
- NT Annual Load and Resource Process
- TSR Study and Expansion Process (TSEP)
- Future Engagement Opportunities

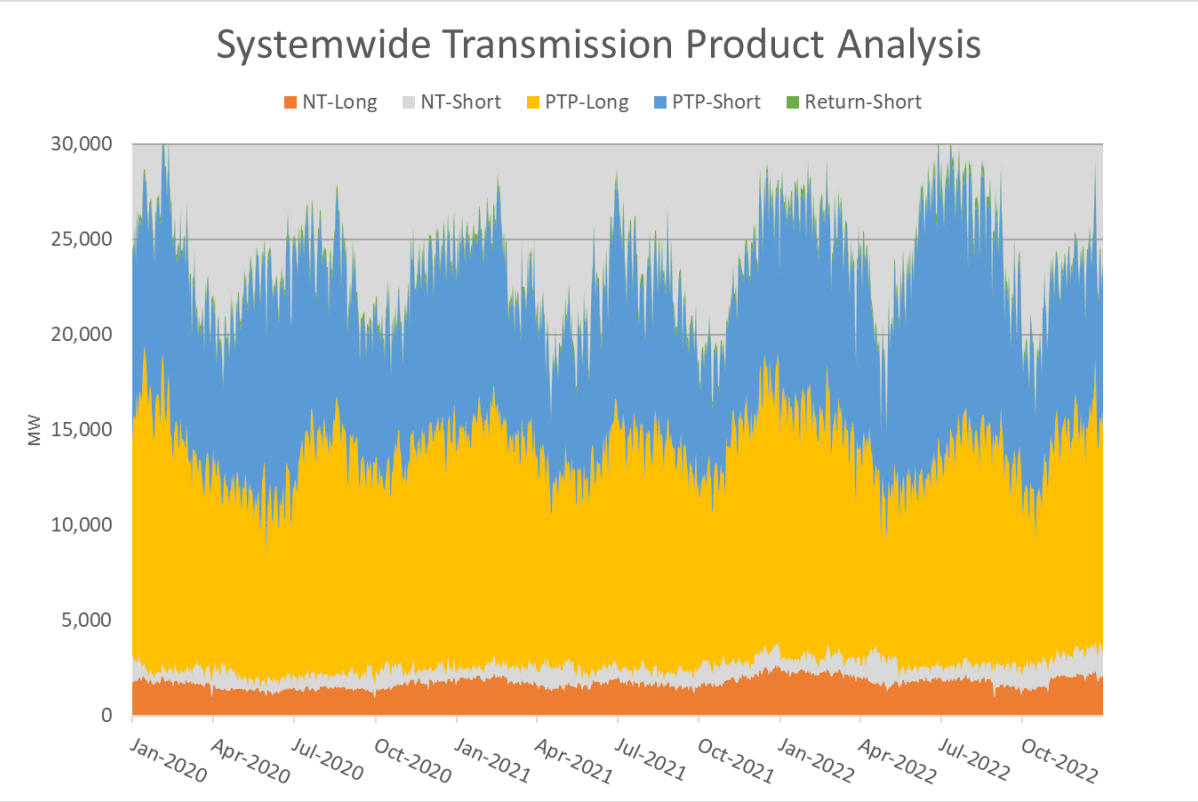
Commercial Transmission Highlights Since 1937

- BPA business lines separated into Power and Transmission in the 1990s
- BPA adopted an Open Access Transmission Tariff (OATT) – must provide non-discriminatory access open and fairly to all those who request it (including non-Preference IOUs, marketers, developers, etc.)
- Transmission on 3rd party systems, Transfer Service, is not an OATT construct; Power offers it to Preference customers in long-term contracts
- NT MOA created mechanisms for Power Services to manage the OATT requirements for the Federal Power DNR on behalf of NT customers (2004, rev. 2011)

Commercial Transmission Highlights Since RD

- Tiered Rate Methodology (TRM) & Slice product established in RD
  - Expanded flexibility for customers to use non-fed resources, and created price signals for AHWM loads – customers were interested in affordable market resources to serve AHWM load
  - Led to more direct engagement between NT customers/trade organizations and Transmission outside of the NT MOA
- Transmission has become more congested and in-demand across the US
- Rapid development of resources and loads in the NW creates increased demand for transmission - wind, solar, batteries, data centers, etc.
- In 2008, Transmission conducted first Network Open Season (NOS) to efficiently evaluate increasing transmission requests (largely driven by wind); this has evolved to TSEP
- In 2015, BPA's Administrator called for a team to quickly develop a new plan for long-term firm NT capacity as customers sought to use more non-fed resources and not all could be accommodated for transmission service
- Transmission requests and customers increasing rapidly today for both generation and load; 16 new customers in FY23 – ~700 total Transmission customers, ~550 actively billed
- More customers now participating in cluster studies (including NT) – data centers and other large loads developing at a fast pace (resources often unknown)
  - Generation Interconnection queue is growing! ~230+ projects, ~123,000 MWs
  - Line and Load Interconnection queue is growing! ~146 projects, ~20,000 MWs

Combined System Transmission Flows



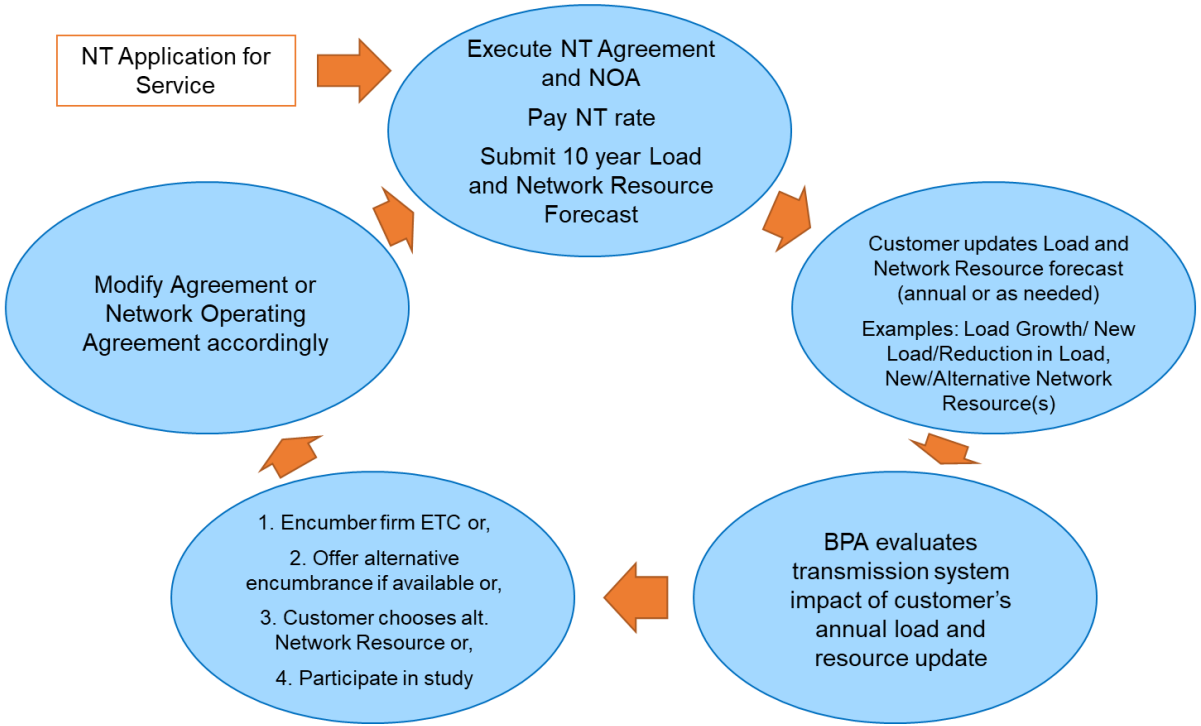
NT Overview

Tariff Transmission Service Products

The Open Access Transmission Tariff (the Tariff) delineates the terms and conditions of providing and taking transmission service.

- BPA's Tariff provides for two types of Transmission Service:
  - Point-to-Point (PTP) Service
    - Terms and conditions of PTP Service are located in Part II of the Tariff.
    - PTP Service allows the Customer to move power from a Point of Receipt to a Point of Delivery
    - Billed on reservation capacity
    - Reference PTP Product Overview
  - Network Integration Transmission Service (NT Service)
    - Terms and conditions of NT Service are located in Part III of the Tariff and the Network Operating Agreement (NOA)
    - Available only for service from Designated Network Resources to Network Load
    - Billed based on metered Network Load
    - Reference NT Product Overview

Cycle of NT Service



Network Load

Network Load is load designated by the Customer to be served by NT. A Customer may designate less than its total load as Network Load, but may not designate only a part of the load at a discrete Point of Delivery. Load not designated as Network Load must be served with Point-to-Point Transmission Service (PTP). Network Load is designated during the application process or by amending the Service Agreement for Network Integration Transmission Service.

Interconnections and **Delivery Points** – New Interconnections or Delivery Points, as well as modifications to existing Interconnections or Delivery Points are managed through BPA's Load and Line Interconnection Procedures.

Network Resource

A **Network Resource** is any designated generating resource owned, purchased, or leased by a Customer. Network Resources serve Network Load. Network Resources are designated during the application process and may be updated as needed. A Network Resource may not be committed for a sale of one year or more to third parties or otherwise cannot be called upon to meet the Customer's Network Load on a non-interruptible basis except when obligated by a reserve sharing program.

Generation Interconnections – Generation Interconnections are managed through BPA's Generator Interconnection Procedures. Separate procedures are defined for Large (greater than 20MW) and Small (less than or equal to 20MW) Generators.

Secondary Service

A Customer may use Secondary Service to **deliver energy** to its Network Loads from resources that **have not been designated** as Network Resources on an as-available basis at no additional charge. Secondary Service has a higher priority than any non-firm PTP.

Restricted Use of NT

NT may only be used to **serve Network Load**. NT cannot be used for sales of capacity and energy to non-designated loads or to third parties. NT may only be used over the BPA Network and Delivery Facilities. Interties with their own rate may not be used with NT, i.e., Southern Intertie, Montana Intertie, Eastern Intertie.

Line and Load Interconnection Requests (LLIR)

Line and Load Interconnection Request Procedures

Submittal and Initiation

Line and Load Interconnection Request (LLIR) is received by BPA. Request is posted to the Interconnection Queue. BPA acknowledges request to the Customer within 15 Business days.

Cost: There is no cost to submit an LLIR

A Kickoff meeting will then be scheduled and held between BPA's study team (Customer Service Engineer, Account Executive, Transmission Planning, Communication Planning, Environmental Specialists, LL Administrator, LL Lead) and Customer to discuss the request and to determine next steps, if needed.

Interconnection Feasibility Study (FES)

BPA tenders a Line and Load FES agreement, if needed, within 30 Calendar days following the Kickoff meeting. The FES agreement must be executed and returned to BPA, with study deposit, within 15 Business days.

Typical Cost: $20-30K deposit

BPA performs the FES typically within 60 to 90 days (additional time and cost may be needed for complex studies).

BPA sends the completed study report to the Customer, and will schedule a meeting to review the results and to determine next steps.

Line and Load Interconnection Request Procedures

Interconnection System Impact Study (ISIS)

BPA tenders a Line and Load ISIS agreement, if needed, within 30 Calendar days following FES review meeting. The ISIS agreement must be executed and returned to BPA, with study deposit, within 15 Business days.

Typical Cost: $25-35K deposit

BPA performs the ISIS typically within 90 to 120 days (additional time and cost may be needed for complex studies).

BPA sends the completed study report to the Customer, and will schedule a meeting to review the results and to determine next steps.

Interconnection Facilities Study (IFS) and Pre-Scoping

BPA tenders a Line and Load IFS (aka FAS) agreement, if needed, within 30 Calendar days following the ISIS review meeting. The IFS agreement must be executed and returned to BPA, with study deposit, within 15 Business days.

Typical Cost: $25-35K deposit

BPA performs the IFS typically within 8 to 12 months (additional time and cost may be needed for complex Plans of Service).

BPA sends the completed study report to the Customer, and will schedule a meeting to review the results and to determine next steps.

Line and Load Interconnection Request Procedures

Preliminary Engineering Scoping effort (Scoping)

If additional Scoping is required, BPA tenders a Preliminary Engineering Scoping agreement (PEA) within 60 Calendar days following the IFS review meeting (additional time may be needed due to internal actions required for project initiation). The PEA must be executed and returned, with deposit, within 15 Business days.

Cost: Deposit is dependent on the Scoping effort needed

BPA performs the Scoping effort typically within 9 to 12 months (additional time may be needed for complex Plans of Service).

The Scoping effort provides the project attributes that are needed for BPA to gain project approval, and to draft the Construction agreement.

NEPA Environmental Study Agreement (ESA)

If Scoping is needed, BPA tenders an ESA to the Customer during the Scoping effort. The ESA must be executed and returned to BPA, with study deposit, within 15 Business days.

Typical Cost: Varies depending on project impact (small impact is typically $15K)

The NEPA study will start during the Scoping effort, and will continue into Design. Completion of the NEPA study will typically happen around the 90% mark of Design. BPA cannot begin Construction until NEPA study is complete.

Line and Load Interconnection Request Procedures

Design, Procurement, and Construction (Construction)

BPA tenders the Construction agreement within 60 Calendar days following project approval (additional time may be needed to complete internal actions for project approvals and agreement drafting). The Construction agreement must be executed and returned to BPA, with project funding, within 15 Business days.

(Study timeframes and advance funds are estimates. Unspent funds will roll over to the next study or returned to the Customer if request is withdrawn.)

BPA Load Forecasting

Uses of Agency Forecast

- Setting Power and Transmission rates
- Revenue planning
- Operations Planning
  - Power Hydro Operations
  - Transmission ATC
  - Transmission re-dispatch
- Long Term Asset Planning
  - Power Resource Program
  - Transmission system planning
  - Regional coordination
- Compliance
  - NERC/WECC Requirements

BPA Forecast Concepts

Utility System

35-year forecast at annual, monthly, and hourly level

- Energy
- System Peak
- Non Coincident Peak (Sum of POD peaks)
- TTSL (Peak at time of BPA Transmission System peak)

Point of Delivery

35-year forecast at annual and monthly level.

3-year forecast at hourly level

- Energy
- Coincident Peak (Coincident to System peak)
- Non Coincident Peak (POD maximum)
- TTSL (POD peak at time of BPA Transmission System Peak)

Bus

35-year forecast at annual and monthly level.

3-year forecast at hourly level

- Energy
- Coincident Peak (Coincident to System Peak)
- Non Coincident Peak (Bus maximum)
- TTSL (Bus peak at time of BPA Transmission System Peak)

Agency Forecasting Methodology

- Linear Regression
  - Current approach for most customers
  - Econometric approach
  - Captures long term trends
  - Customer level loads
- Statistically Adjusted End Use (SAE)
  - For System energy only, at this time
  - New methodology, transition over next 5 years
  - End use saturations, energy intensities
  - Able to identify energy efficiency and demand side management
  - Provides insight into how electricity is used
  - Customer class of service

Agency Forecasting Data

- MV90 metered data
- Weather data: 15 year average for the assigned weather station
- Economic data from IHS
- End use saturations
- Utility load by sector
- Known data from customers
  - *New loads require 70% chance of coming on line for Power/rates*
  - *Transmission forecasts provided by customers should include all potential loads and resources and do not impact rates (no 70% requirement)*

Frequency and Timing

- Agency forecasts are reviewed and updated once a year
  - Updates for Slice customers must be finalized by the end of June for the Net Requirements Process
  - Updates for Non-Slice customers must be finalized by the end of November
- LaRC files will be sent every September
  - Customers with forecast updates prior to September will receive LaRC data with updated numbers
  - Customers with forecast updates after September will receive LaRC data with prior year numbers
  - LaRCs can be updated at any time for Transmission forecasts
- For RHWM determination years, changes after February must be requested and submitted as a comment through the RHWM Process
- In rate case years, agency forecasts are used for final rate studies and system planning. In non-rate case years, forecasts are used for initial studies and system planning

Transmission Annual Load and Resource Forecasting

Planning for the Transmission System

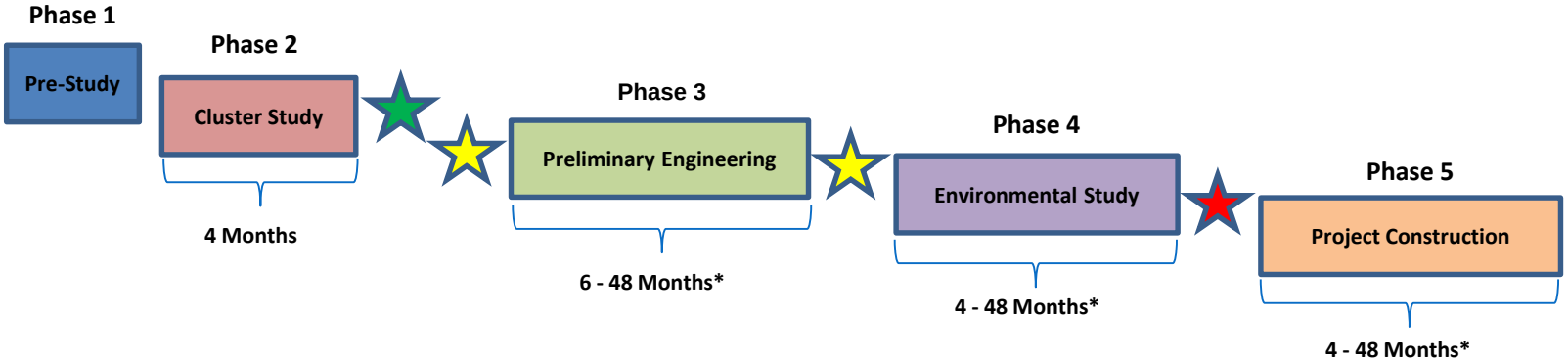
Customers' Network Load is included in BPA's Transmission System planning. BPA endeavors to construct and place into service sufficient transfer capability to deliver Customer's designated Network Resources and accepted forecasted resources to **serve its Network Load in accordance with the Tariff.**

NT Load and Resource Forecasting

A Customer must provide annual updates of ten-year forecasts of Network Loads and Network Resources. BPA facilitates this through the **NT Annual Load and Resource Forecast Process**. In addition, BPA requests notification as soon as possible when changes to forecasts occur. BPA uses a Forecast Transmission Service Request (FTSR) to track proposed and accepted Customer forecasts and to encumber or reserve capacity.

Following an evaluation of a forecast it may be accepted with or without modifications. In addition, limitations may be identified such as sub-grid upgrades, pending interconnection work, or other situations requiring further study.

TSR Study and Expansion Process (TSEP) Overview



At each of these points, BPA refreshes project-specific information , and the customers may decide whether to proceed.

***Estimated range; actual timelines vary based on project scope and/or environmental impacts**

Customer Closeout Package – Study participants are provided with a study report, a closeout letter detailing the requirements for each of their TSRs to obtain service, and an election form to determine the next steps for each of their TSRs. If applicable, the customer may be tendered an offer for LTF service.

Next Step Agreements - Prior to the commencement of a next phase, BPA will provide customers with updated information on the rate treatment, percentage shares of projects, other non-binding information, such as estimated project costs or timelines. An offer of CFS, if applicable, maybe be made at this time. BPA will provide the customer with Preliminary Engineering or Environmental Study agreements, or both as is applicable.

Service Agreement - Prior to the construction decision, BPA will determine whether to offer the requested service at an embedded or incremental rate. BPA will offer the Customer a service agreement for the requested service.

Does Transmission Matter when NT Customers Choose Resources for AHWM Load?

OATT Requirements & the NT MOA

Yes!

- BPA's OATT details requirements and options for customers to use various kinds of resources
  - NT resources that meet designation requirements can be used to obtain Long-Term Firm transmission at least 60 days before service
  - NT resources that do not meet designation requirements (e.g., Schedule C market purchases) do not qualify for Long-Term Firm transmission
- BPA has a planning obligation for NT loads and resources – Transmission needs to know customers' plans
  - If customers do not know resources in advance, BPA cannot plan effectively for Long-Term Firm transmission (e.g., Mid-C market purchase)
- *Transmission forecasts provided by customers should include <u>all</u> potential loads and resources (no 70% requirement)*
- Integrating a new load or resource can take years – planning early is critical
- Some customers may already arrange for their own transmission, or have hired a third-party to do so (especially PTP or Slice)
- The NT MOA allows Power to transact with Transmission on behalf of NT customers <u>for federal resources</u>
- Customers who normally rely on Power to provide transmission services will need to make their own arrangements for non-federal resources

Scenario 1: NT Customer - Load Following/Directly Connected

NON-FEDERAL RESOURCE

- Transmission services not covered under NT MOA; may need to hire a 3rd-party scheduler
- Register through OATI (Open Access Technology Int'l) for EIR (Electric Industry Registry) – pay annual fee
- Register in OASIS (Open Access Same-Time Information System)
- Forecast the non-fed resource in a LaRC (BPA to evaluate ability to encumber LTF capacity)
    - If BPA can't encumber capacity, customer offered an opportunity to participate in TSEP to identify upgrades to BPA's Transmission System
- Determine whether a resource qualifies to be designated as a Network Resource and whether capacity is available
- DNR (Designate Network Resource) in OASIS to schedule transmission
    - If not able to DNR (e.g, Schedule C market purchase), may be able to obtain 6NN (non-firm) on an as-available basis
- Submit a TSR (Transmission Service Request) in OASIS on the same day as the DNR

FEDERAL (TIER 2 or New Resource (NR) rate)

- Forecast federal resource in annual LaRC (new in FY23)
- Nothing else required with Transmission; transmission services included in Power rates and covered by NT MOA

Scenario 2: NT customer - Load Following/Transfer

NON-FEDERAL RESOURCE

- Transmission scheduling services not covered under NT MOA; may need to hire a 3rd-party scheduler
- Register through OATI (Open Access Technology Int'l) for EIR (Electric Industry Registry) – pay annual fee
- Register in OASIS (Open Access Same-Time Information System)
- Forecast the non-fed resource in a LaRC (BPA to evaluate ability to encumber LTF capacity)
    - If BPA can't encumber capacity, customer offered an opportunity to participate in TSEP to identify upgrades to BPA's Transmission System
- Determine whether a resource qualifies to be designated as a Network Resource and whether capacity is available
- DNR (Designate Network Resource) in OASIS to schedule transmission
    - If not able to DNR (e.g, Schedule C market purchase), may be able to obtain 6NN (non-firm) on an as-available basis
- Submit a TSR (Transmission Service Request) in OASIS on the same day as the DNR
- NOTE: Third-party transmission obtained by Power Services
- NOTE: May elect Mid-C Exchange Agreement in RD contract on a per-rate-period basis to obtain firm power and transmission, when cannot DNR (e.g., Schedule C market purchase) or cannot access 6NN due to transmission constraints, and if not NLSL

FEDERAL (TIER 2 or NR)

- Forecast federal resource in annual LaRC (new in FY23)
- Nothing else required with Transmission; transmission services included in Power rates and covered by NT MOA

Scenario 3: NT Customer - Load Following/Transfer using the Exchange Agreement in RD for a Mid-C Market Purchase

- Forecast the amount of the market purchase as a federal resource in annual LaRC
- Load will be served by a federal resource over firm transmission
- Transmission services included in Power rates and products
- Does not apply to NLSL

Questions on Transmission for an NT Load or Resource?

- Please reach out to your Transmission AE

Reminder:

Forecast new loads and resources early and often – no 70% likelihood requirement for potential new Transmission loads!

  - Queue time matters -- the earlier the better
  - Even if you submit an LLIR, include the load in your transmission forecast
  - If a forecast may require TSEP participation, customers will want to ensure BPA Transmission is aware prior to the close of the request window (BPA will announce the deadline)

Wrap Up

- Questions?

Future Transmission Engagement Opportunities

- BPA Calendar
- Generator Interconnection Reform (TC-25)
- Evolving Grid customer meeting