Grid Access Transformation Proactive Planning Workshop

June 15, 2026

Agenda

- Expansion Planning Study
  - What We Heard From Customers
  - Study Plan Review
  - Initial Expansion Planning Study
    - Study Plan
    - Data Development – Starting Data Sets & Review
- Next Steps
  - Customer Engagement Timeline

Proactive Planning

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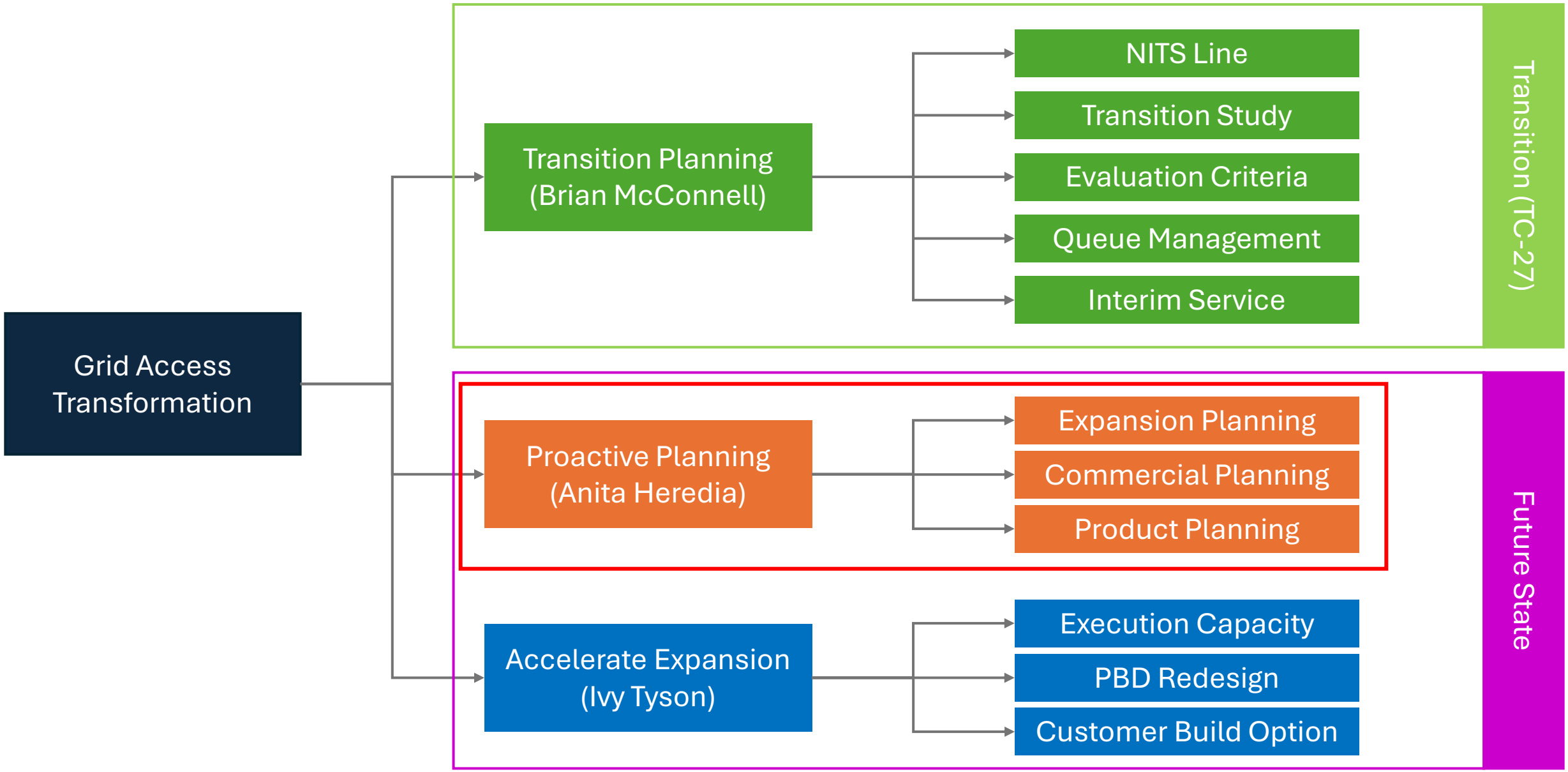
Why We're Here

Current planning environment is overwhelmed by a ≈65GW transmission service request queue which has been on pause since August 2024.

BPA has committed to developing a transformative process to enable capacity to be delivered within a 5-6 year window from determination of approved request to energization.

Prior commercial planning methodologies have been primarily reactive, therefore a fundamental shift is required in how BPA responds to long-term firm transmission service requests, anticipates customer needs, and expands the transmission system.

GAT Program Structure | Proactive Planning



Proposed Order of Operations

April 2026 – May 2028: Cycle 1 Expansion Planning

May 2027 – October 2027: GAT Transition Study

June 2026 – October 2030: Commercial Planning

- Commercial planning business model development
- Customer Engagement
- Commercial studies and associated activities

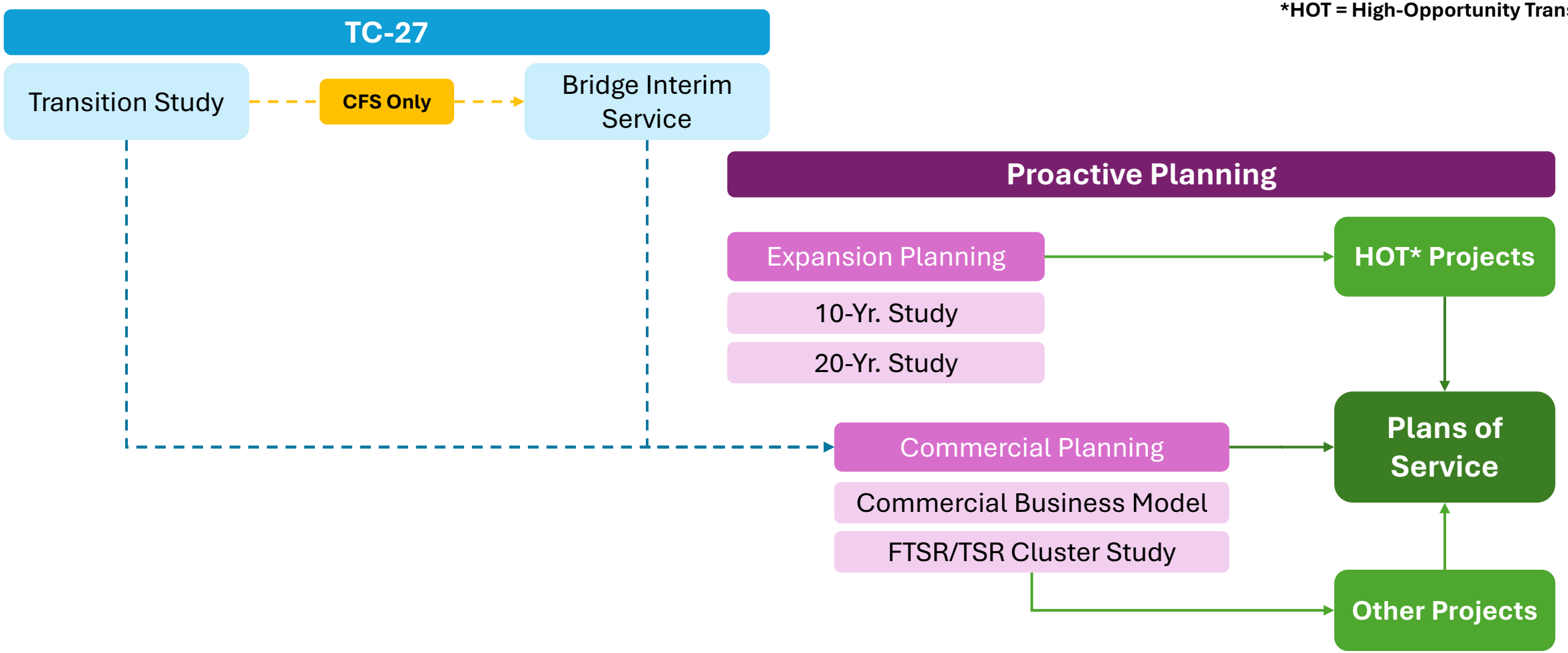
June 2026 – October 2030: Product Planning

- Exploratory research
- Customer engagement
- Activity planning

*Timelines are dependent on length and results of TC-27 Proceeding.

Process from Transition Study to Proactive Planning

*HOT = High-Opportunity Transmission



What We Heard From Customers

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What We Heard…

- Support:
  - Proactively identifying transmission needs without relying on transmission service requests
  - Forward-looking approach utilizing 20-year outlook and scenario development
  - Expansion of Planners' analytical tools to evaluate High-Opportunity Transmission Projects (HOT)
  - Evaluation of new product offerings in Product Planning

What We Heard…

Concerns	BPA Response
Treatment of less probable/certain load forecasts in study models	Will be addressed in the Scenario/Sensitivity Studies.
Priority encumbrance of capacity of transmission projects to NITS customers	Will be addressed within the Commercial Planning Initiative.
Clarity on development of Plans of Services (particularly sub-grid constraints)	Will be addressed within the Commercial Planning Initiative.

What We Heard…

Concerns (cont.)	BPA Response
FERC Order 1920 | "Seven Factors" and "Seven Benefits"	"Seven Factors" and "Seven Benefits" will likely be considered in Proactive Planning discussions with customers.
FERC Order 1920 | Alignment	• If possible, BPA plans to align the Proactive Planning timeline to take advantage of efficiencies gained by alignment with FERC Order 1920. • As we develop our initial Expansion Planning study methodology, we are taking into consideration FERC Order 1920 and other planning processes.

What We Heard…

Suggestions	BPA Response
Incorporating Load Area Reinforcement Study (LARS) into Proactive Planning	While a repeatable LARS process is still being explored, it is out of the scope of the Proactive Planning Expansion Study, but upgrades identified in a LARS study could be inputs to the Expansion Study.
Consolidation of our multiple planning processes (e.g. SPP's model)	BPA will monitor SPP's process and over time will consider the merits of adopting any successful innovations.
Establishment of success metrics for Proactive Planning program	These are currently under development.
Inclusion of analyses of extreme weather events (in 10-Yr.)	Extreme weather is a potential candidate for 20-Yr. Scenario Analysis. Coordinated with NERC TPL-008.

What We Heard…

Suggestions (cont.)	BPA Response
Co-Located Generation	Proactive Planning will not be developing changes to its interconnection practices regarding co-location of load and generation. BPA will continue to participate in industry and standard development efforts.
Alternative Transmission Technologies (ATTs)	BPA has actively investigated multiple new technologies, and it will continue to look for alternatives that make sense for the BPA system and will work to incorporate those technologies that meet the need for reinforcement of the transmission system.

Initial Expansion Study Plan

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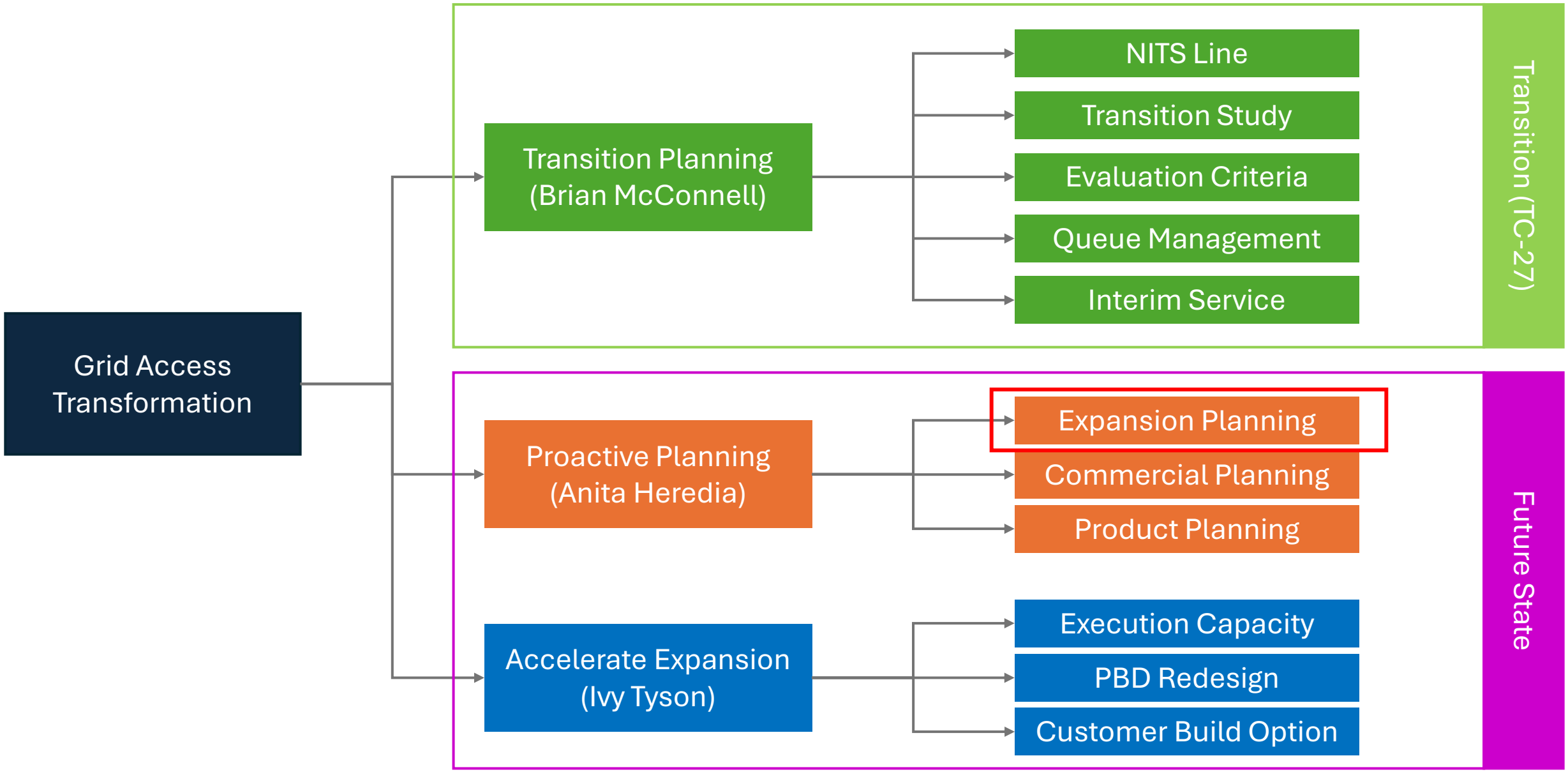
GAT Program Structure | Expansion Planning



Expansion Planning Objective

Expansion Study will establish a repeatable planning cycle that:

- Modernizes BPA's transmission planning processes
  - Expand the timeframe for which BPA identifies system reinforcements
  - Introduce new tools and scenario analysis
- Generates a portfolio of prioritized HOT projects that anticipates the regions growing needs in the 10-20 Year timeframe
- Integrates meaningful stakeholder engagement
  - Develop project prioritization criteria
  - Develop study scenarios

LONG-TERM PROACTIVE PLANNING
EXPANSION STUDY 2-YEAR CYCLE PLAN

FY 2026		FY 2027				FY 2028	
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2

Study Plans, Assumptions, & Criteria

- **Initial Data Set Assumptions & Review**
- **Load, Generation, Topology Inclusion Assumptions**
- **Develop Scenario Study Scenarios & Sensitivities**
- **Cycle 1: Baseline & Scenario Study Plan Documentation**
  - Main Grid Current System Flow Gate Analysis Plan
  - Project Development & Refinement Plan

Identify PCM/LTCE System Constraints

Identify PCM/LTCE System Constraints

Data Development

Phase 1 | Baseline Study

- **PCM, LTCE, PowerFlow Data Sets**: Validate/Update, Align/Map
- **Develop Existing Project List**
  - Review Existing Projects
  - Update Data Sets as Needed
- **Gather Updated Data Load, Generation, Topology Data**
- **Customer + Data Request**
- **3rd – Party Utility/Regional**

Engagement Activities

Phase 2 | Scenario Study

PCM, LTCE, PowerFlow Data Sets: Validate/Update, Align/Map

WECC 20-Year PowerFlow Case Available, Analyzed, and Verified

Needs Study

Phase 1 | Baseline Study

- **Iterative LTCE, PCM, and PowerFlow Needs Devt.**
- **3rd – Party Engagement**

Phase 2 | Scenario Study

Scenario/Sensitivity Study

FlowGate & Tx System Needs Report

Project Development

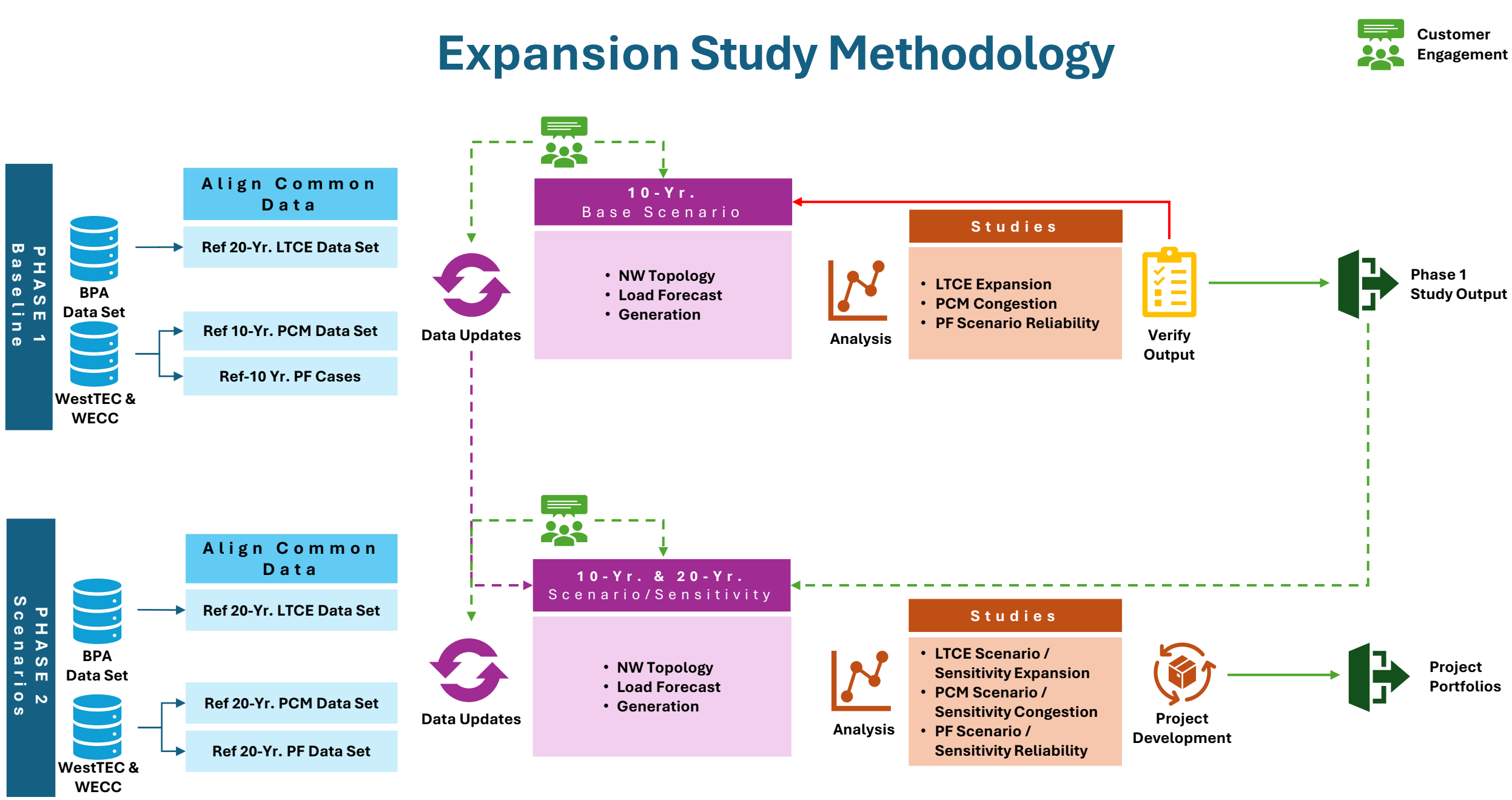
Phase 1 | Baseline

- **Identify-Develop Project (High-Level)**
  - Document & Report on Projects

Phase 2 | Scenario

- **Refine Existing, Develop New Potential Projects**
  - Document & Report on Projects

Expansion Study Methodology



Expansion Study

- Initial Study Cycle:
  - Backbone transmission system analysis
  - Split into 2 phases
    - Phase 1: 10-Yr. baseline study of high-probability future
      - High-probability loads, topology, and generation
      - Limited sensitivities to load and generation
    - Phase 2: Multi-future scenario study & project development
      - Several scenarios/sensitivities for loads, topology, and generation

Initial Expansion Study: Data Development

Jonathan Young, Stan Williams, Anders Johnson

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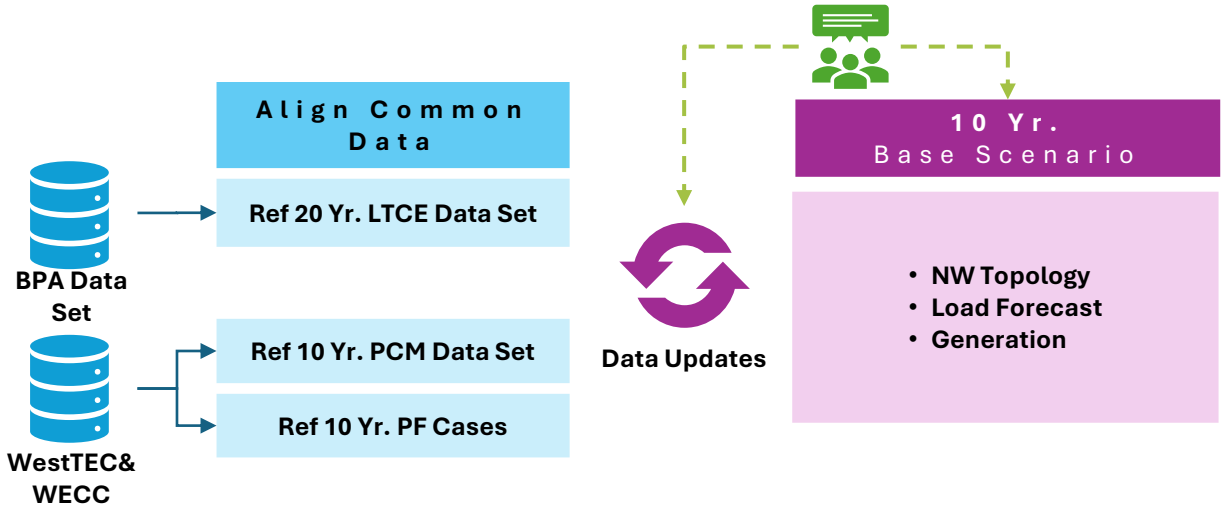
Expansion Study: Baseline Study Data

- Where does it come from?
- What are we going to do with it?
- How can you help us?



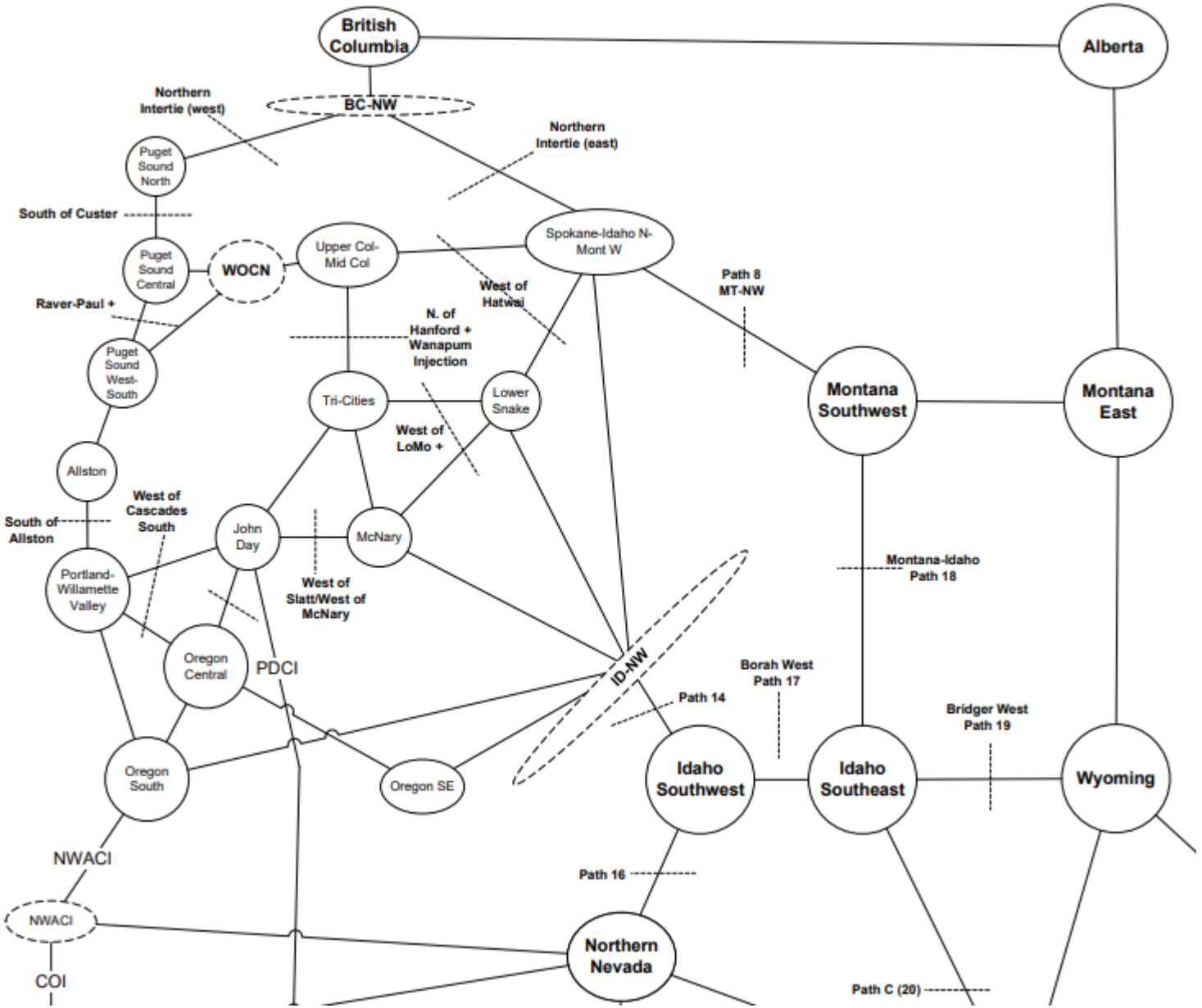
Expansion Study: Data Rationale

Data Set	Source	BPA Rationale
Long-Term Capacity Expansion (LTCE)	**BPA**	BPA model has greater focus within PNW to align with study objective.
Production Cost Model (PCM)	**WestTEC / WECC**	Generic resources in placeholder locations to align with IRPs vs. specific high likelihood power plants.
PowerFlow (PF)	**WestTEC / WECC**	PNW and interconnection-wide peaks are at different times.

* See appendix for more information on LTCE, PCM & PowerFlow

Expansion Study: Baseline Data Sets

- BPA LTCE Data Set
  - Starting Data Set
    - Model of WECC System from 2025-26
    - Updates to Zonal Topology/Loads/Generation in 2025-26
  - Planned Updates
    - Loads: Latest 20 Yr. BPA Forecast
      - Includes inputs from LaRC Submittals from 2025
    - Generation: Align with PCM/PF Updates
    - Topology: Align with PCM/PF Updates


British Columbia
Alberta
Northern Intertie (west)
BC-NW
Northern Intertie (east)
Puget Sound North
South of Custer
Puget Sound Central
WOCN
Upper Col-Mid Col
Spokane-Idaho N-Mont W
West of Hatwai
Path 8 MT-NW
Raver-Paul +
N. of Hanford + Wanapum Injection
Puget Sound West-South
Tri-Cities
Lower Snake
Montana Southwest
Montana East
West of LoMo +
Allston
West of Cascades South
South of Allston
John Day
McNary
Portland-Willamette Valley
West of Slatt/West of McNary
Montana-Idaho Path 18
Oregon Central
PDCI
ID-NW
Borah West Path 17
Path 14
Bridger West Path 19
Idaho Southwest
Idaho Southeast
Wyoming
Oregon South
Oregon SE
NWACI
Path 16
NWACI
Northern Nevada
COI
Path C (20)

Expansion Study: Baseline Study Data Sets

- PCM/PF Data Sets
  - Starting Data Set
    - WestTEC 10-Yr. Power Flow and PCM Data Sets
      - Reviewed and Updated Across WECC
      - Vintage 2025-26
    - 2026 PCM Update Includes Median Runoff Assumptions for Columbia River System Hydro

Expansion Study: Baseline Study Data Sets

Planned Updates to the Northwest Area from the starting WestTEC models

Update Area	Details
Loads	Latest 10 Yr. BPA & WECC Case Forecasts. Data was due to NorthernGrid from TPs on 5/8/2026.
Generation	Replacement of generic generators with specific generators informed by the 2026 GI Transition Cluster Study.
Topology	WestTEC Base Topology Without Uncommitted Projects.

Expansion Study: Baseline Study Data Sets

- PCM/PF Data Sets (Cont.)
  - Planned Updates to the Northwest Area
    - Potential Topology Removals:
      - Lower-probability expansions within the 10-Year horizon.
    - Significant mid-cycle load & resource status changes

Expansion Study: Scenario Study

- Expansion Study Starting Data Sets
  - LTCE
    - Use Same 20-Yr. Data Set from Baseline Study
      - Potential updates to Align with PCM/PF Data Sets
  - PCM/PF
    - WestTEC 20-Yr. Power Flow and PCM Data Sets
      - Being Reviewed and Updated Across WECC
      - To Be Completed Later this Year

Expansion Study: Scenario Study

- Updates to Scenario Study Starting Data Sets
  - LTCE
    - Align Updates with PCM/PF Updates
  - PCM/PF
    - Customer Input – Engagement Meetings, LaRCs, & Submittals
    - WECC 20 Yr. Power Flow Case
      - To Be Completed 10/2/2026

Data Review

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Baseline Data Review & Updates

- Customers may request review of **their** data for update recommendations
  - BPA will provide modeled load, resource, and topology information for review

- Incorporate **material updates** provided by customers for high-certainty topology, generation, and/or loads for baseline analyses.

- **Submit a data review/update request**
  - Submit requests to proactiveplanning@bpa.gov by **Close of Business, July 1.**

Baseline Data | Sample Formats

- Option 1: Bus Level Load/Gen Review
  - Only available to data owner
  - Only high certainty/high impact updates
  - Excel table with modeled MW/MVar
    - Fill in New Load MW/MVar & Description

Load/Gen				Modeled Load		New Load		Description
Number of Bus	Name of Bus	ID	Owner Name	MW	Mvar	MW	Mvar	
40001	Bus 1	1	Owner X	5	1.5	xxx	xx	XXX
40002	Bus 2	1	Owner X	10	3			
40003	Bus 3	1	Owner X	15	4.5			
40004	Bus 4	1	Owner X	5	1.5			
40005	Bus 5	1	Owner X	10	3			

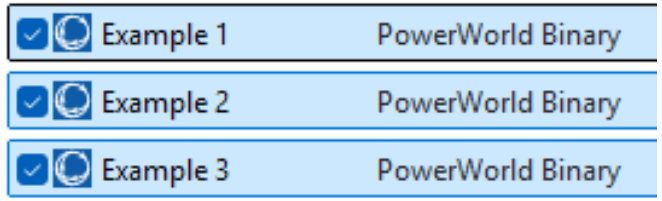
Baseline Data | Sample Formats

- Option 2: Owner Level Load/Gen Review
  - Only available to data owner
  - Only high certainty/high impact updates
  - Excel table with modeled MW/MVar
    - Fill in New Load MW/MVar & Description
    - Owner loads will be scaled to new levels
      - Adjustments only to loads identified as scalable

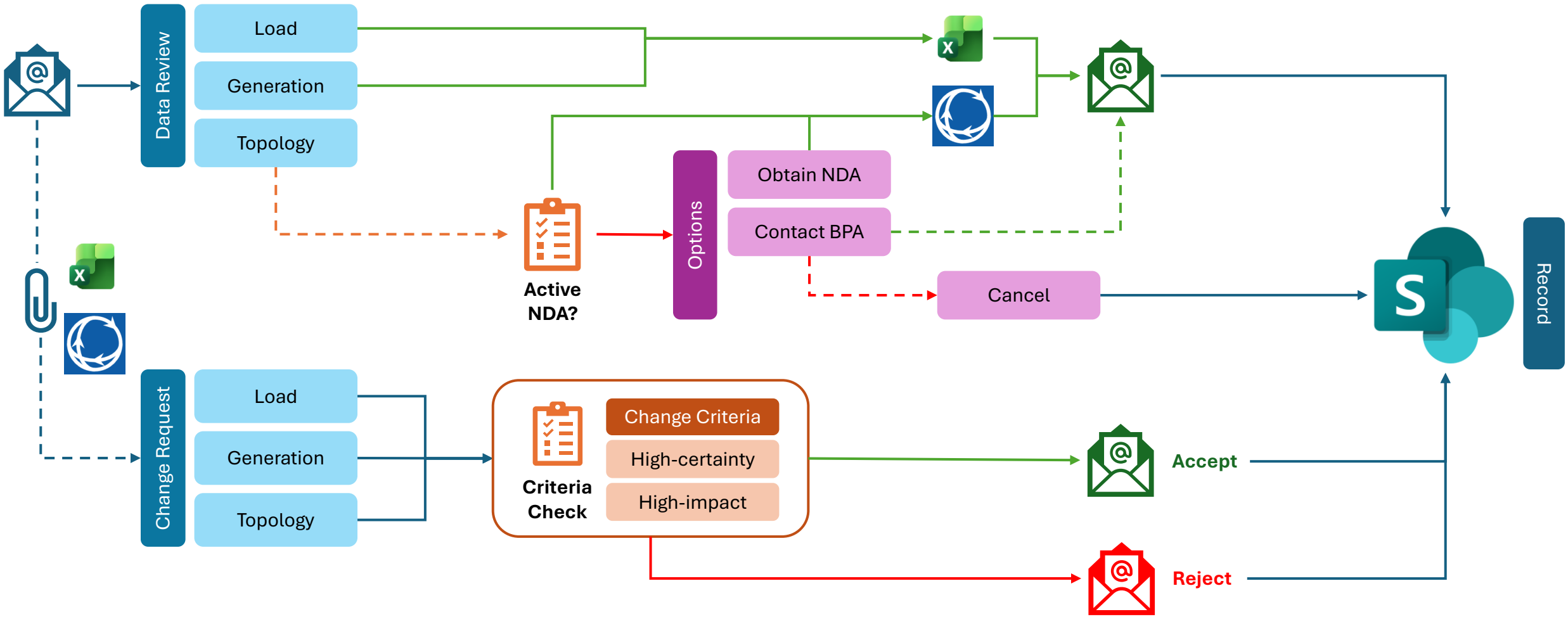
Owner		Modeled Load		New Load		Description
Owner Number	Owner Name	Gen MW	Load MW	MW	Mvar	
1	Owner X	525	425	xxx	xx	XXX

Baseline Data | Sample Formats

- Option 3: Topology Review
  - Only available to topology data owners with WestTEC NDA
    - Contact BPA for data owner reviews without NDA
  - Only high certainty/high impact updates
  - PowerWorld .pwb file
    - Provide .aux file updates & Description
      - Description should include description of changes, including any load/gen adjustments



Customer Data Request Process



Scenario Data Review & Updates

- Future Data Requests for 20-Yr.:
  - Collaborative scenario/sensitivity development
  - Enhanced load details
    - Ranges
  - Unique area plans (20-Yr.)
  - Key drivers for future load demand
    - Population demographics (industrial, commercial, etc.)

- Potential Load Area Reinforcement Studies (LARS) may inform modeling assumptions for Scenarios/Sensitivities
- 20-Yr. data request process to be discussed at August meeting with official requests shortly after

Next Steps

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Customer Engagement Timeline (Proposed)

- August (Virtual)
  - Update on Accelerate Expansion Program
  - Update on progress of Expansion Planning
  - Consolidated Overview of Transmission Planning Activities
  - Introduction to Product Planning
  - Introduction to Commercial Planning
  - GERP 1.0 and 2.0 Updates

Appendix

Terms & Definitions

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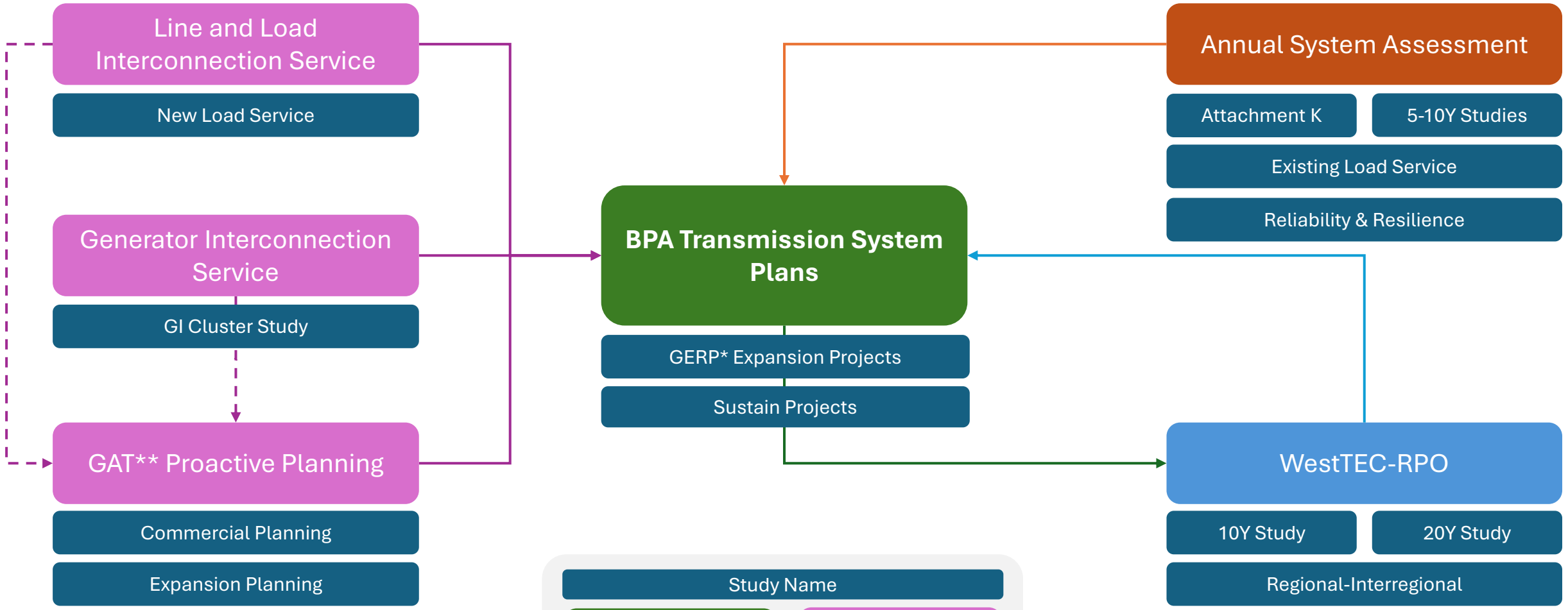
Transmission Planning



Long-Term Capacity Expansion (LTCE)

- Projections and insights into the potential capital expenditures that will be necessary on the regional electric system over the next 20 years
- Co-optimization of least-cost resource and transmission investments
- Improved insight for difficult decisions such as new transmission and generator builds
- Implications of major public policies
- Regional collaboration

Production Cost Modeling (PCM)

- Security-constrained economic dispatch (SCED) simulation minimizes costs of serving loads from available generating resources without violating constraints for each hour
- Regional perspective
- Simplified DC power flow approximation
- Benefit estimates from “All Lines in Service” simulations can be adjusted to account for increased expansion value during outages and severe weather

Resiliency / PowerFlow (PF)

- Confirm that the future power system can withstand credible contingencies without thermal overloads or voltage violations/instability
- Inform transmission constraint limit assumptions used in PCM and LTCE
- Analyze full AC power flow performance of representative steady state condition snapshots

Scenarios vs Sensitivities

- Scenarios
  - **Holistic view of a possible future**.
  - Commonly defined by **multiple variables**
  - Can illustrate a narrative
  - Examples of a scenario can be:
    1) Full Electrification
    2) AI/Data Center Proliferation
    3) Effects of State Policies

- Sensitivities
  - Useful for **stress tests**
  - Defined by **1 variable**
  - Effects of a single variable on a scenario
  - Think… How would this future perform with this one change?