COMMENT DOCUMENT OF GOOGLE LLC

To: Bonneville Power Administration (BPA)

From: Google LLC

Date: April 30, 2026

Subject: Comments on BPA's "Future State" of Transmission Planning and Expansion

I. Introduction

Google LLC (Google) appreciates the opportunity to comment on the Bonneville Power Administration's (BPA) "Future State" vision for transmission planning and expansion.

We understand BPA plans to implement this "Future State" once the Long-Term Firm (LTF) backlog is cleared via TC-27 interim measures and near-term business practice updates. Google commends BPA's forward-looking approach and its commitment to developing new products to meet the evolving needs of the grid and its users.

As a large energy user committed to 24/7 carbon-free energy, Google has a vested interest in a transmission system that is efficient, reliable, and capable of driving the clean energy transition. Following the April 15, 2026, workshop, we were encouraged by BPA's interest in new products, including those for co-located load and generation. To build on this early-stage work, we are pleased to provide the following recommendations for new product options that we believe will be critical to the grid's evolution

II. The Need for a Holistic and Forward-Looking Transmission Planning Process

Many of the challenges facing the electric grid today are fundamentally infrastructure challenges. The combination of aging infrastructure, historical underinvestment, and fragmented planning has resulted in a transmission system that struggles to keep pace with the rapid growth in demand from data centers, electrification, and new manufacturing. To ensure our nation's economic competitiveness and energy security, it is imperative that we move beyond incremental, reactive planning and adopt a more holistic and forward-looking approach.

Google believes that a successful "Future State" for transmission planning must:

- **Optimize Grid Development:** Account for both generation and load interconnection queues to build the most efficient and cost-effective transmission

backbone.

Be Proactive and Scenario-Based: Use congestion data and resource forecasts to proactively plan for future needs, rather than just reacting to present reliability issues.

Enable Rapid Interconnection: Develop pathways that allow all loads, including data centers, and the generation resources that serve them to interconnect in a timely and efficient manner.

By adopting these principles, BPA can develop a transmission system that is not only reliable but also an enabler of economic growth and decarbonization.

III. New Product Options for a Modern Grid

Google is interested in exploring a range of new product options that can help maximize the use of the existing transmission system and facilitate the interconnection of new, clean energy resources.

BPA is not alone in recognizing the need for these innovative solutions. Across the country, grid operators and federal regulators are actively developing frameworks to accommodate large, flexible, and co-located loads. BPA can look to these ongoing industry efforts as precedents and models for its own Future State products, including:

- Electric Reliability Council of Texas (ERCOT): Controllable Load Resource (CLR) framework.
- Pennsylvania-New Jersey-Maryland (PJM) Interconnection: Non-Firm Contract Demand Transmission Service and Interim Network Integration Transmission Service (NITS).
- Southwest Power Pool (SPP): Conditional High Impact Large Load Service (CHILLS).
- Midcontinent Independent System Operator (MISO): The active Large Load Interconnection Workshop process.
- Federal Level: The joint USDOE/FERC Advance Notice of Proposed Rulemaking (ANOPR) Large Load Interconnection Docket.

Drawing on these national precedents, we believe the following specific product options are particularly promising for BPA's system:

A. Expedited Pathways for Co-located and Electrically Proximate Load and Generation: Creating a streamlined process for studying and interconnecting projects where load and generation are located near each other.

B. Incentives for Curtailable and Flexible Loads: Developing transmission products that reward large customers for their ability to provide grid services through demand flexibility.
C. Integration of Grid-Enhancing Technologies (GETs) and Advanced Transmission Technologies (ATTs): Mandating the evaluation and deployment of advanced hardware and software to unlock latent capacity on existing lines.

A. Expediting Co-Location and Electrically Proximate Resources

One of the most promising avenues for minimizing the need for new transmission infrastructure is to facilitate the co-location of load and generation behind a single point of interconnection. There is broad agreement across the industry that co-location can:

- Dramatically reduce infrastructure costs.
- Improve local reliability.
- Allow for load additions without extensive system upgrades.

To fully unlock the potential of co-location, BPA must prioritize data transparency. Developers require access to granular, up-to-date system data, such as hosting capacity, congestion nodes, and available transfer capability, to identify the optimal locations where co-located resources will provide the most grid benefit and face the fewest interconnection hurdles. Providing this data transparently will allow customers to align their siting decisions with grid needs proactively.

Google urges BPA to develop an expedited interconnection process for co-located facilities. This process should be based on a coordinated study of the combined load and generation, taking into account the net impact on the grid. Studying these facilities together can align project timelines, reduce uncertainty, and ensure that any necessary network upgrades are identified in the most efficient manner.

Beyond traditional co-location, we also encourage BPA to create pathways for the joint study of *electrically proximate* load and generation. Generation that is located near a load, even if not behind the same meter, can provide significant system benefits by reducing the need for network upgrades and accelerating the timeline for bringing new resources online. BPA could, for example, develop a time-limited, provisional interconnection service for generators that are electrically proximate to a new large load, allowing them to come online quickly while a longer-term solution is developed.

B. Creating a Framework for Curtailable and Flexible Loads

Incentivizing the voluntary participation of curtailable and flexible loads is another critical component of a modern grid. Large loads, including data centers, can be designed and

operated to provide valuable grid services, such as reducing demand during peak periods or providing ancillary services. This flexibility can help:

- Maximize the use of existing grid infrastructure.
- Reduce the cost of network upgrades.
- Shorten the time required to interconnect new loads.

A recent study from Princeton University's ZERO Lab[1] found that combining flexible grid connections with a "bring-your-own-capacity" framework could shorten interconnection wait times by three to five years while maintaining grid power availability for over 99% of hours.

To unlock this potential, Google recommends that BPA develop a framework to facilitate and incentivize the participation of curtailable loads. This framework should include:

- **Rules for Interconnection and Operation:** These rules must account for how large loads operate in practice and encourage innovation in flexible load management.
- **Pathways to Firm Service:** While providing flexibility, large loads may still require a pathway to transition to long-term firm service as the transmission system is built out.
- **Minimum Standards and Reliability:** Clear standards are needed to ensure that curtailable loads respond when called upon by system operators, in compliance with all appropriate reliability standards.

By creating a voluntary pathway for curtailable loads to connect to the grid, BPA can harness the power of demand-side resources to increase the speed at which new loads can interconnect while ensuring system reliability.

C. Integrating Grid-Enhancing Technologies (GETs) and Advanced Transmission Technologies (ATTs)

As BPA develops its transmission plan, the integration of Grid-Enhancing Technologies (GETs) and Advanced Transmission Technologies (ATTs) must be a core component. Before committing to time-intensive and expensive new greenfield transmission lines, BPA should maximize the capacity of existing corridors through reconductoring and advanced power flow controls.

[1] Carlo Brancucci et al., Camus, encoord, and Princeton ZERO Lab, Flexible Data Centers: A Faster, More Affordable Path to Power, at 16 (Dec. 2025), https://www.camus.energy/flexible-data-center-report.

Google has seen the benefits of these technologies firsthand. For example, our work with CTC Global[2] to support the deployment of advanced conductors has demonstrated how replacing legacy wires with high-performance ATTs can dramatically increase line capacity, reduce line losses, and mitigate thermal sag all within existing rights-of-way. By adopting ATTs, alongside GETs such as dynamic line ratings and topology optimization, BPA can unlock latent system capacity rapidly, cost-effectively, and with minimal environmental impact.

We encourage BPA to establish planning criteria that mandate the evaluation of GETs and ATTs as a required first step in all future expansion and upgrade projects, integrating them as standard products within the transmission planning toolkit.

IV. Conclusion

The transition to a "Future State" of transmission planning presents a unique opportunity for BPA to create a more efficient, flexible, and resilient grid. Google believes that by embracing holistic planning and developing new product options that facilitate co-location and reward load flexibility, BPA can successfully navigate the challenges of load growth and the clean energy transition.

We are eager to continue working with BPA and other stakeholders to develop these and other innovative solutions. We believe that a collaborative approach will be essential to building the grid of the future and ensuring a prosperous and sustainable energy future for the Pacific Northwest.

Respectfully submitted,

Google LLC

[2] Press Release, Google & CTC Global, Google and CTC Global Announce Initiative to Expand American Electric Grid and Transmission Capacity, U.S. Supply Chain with Advanced Conductors (Jun. 17, 2025), https://www.businesswire.com/news/home/20250617507388/en/Google-and-CTC-Global-Announce-Initiative-to-Expand-American-Electric-Grid-and-Transmission-Capacity-U.S.-Supply-Chain-with-Advanced-Conductors.