TECHNOLOGY INNOVATION 2026 - 2030 RESEARCH PRIORITIES

The Technology Innovation Office works with Bonneville Power Administration (BPA) subject matter experts and executives to establish Research Priorities. The Research Priorities identify gaps in knowledge, practices, or technology that, when addressed, enhance BPA's capabilities to support regional and national energy goals, and generate savings in cost, complexity, risk, or time. They are used by the Technology Innovation team to guide the project selection process to ensure the portfolio ultimately creates efficiencies and aligns with business line, BPA goals, Department of Energy (DOE) principles and Administration priorities. The Research Priorities are divided into three topic areas: BPA-Wide, Power, and Transmission.

BPA-WIDE

Topics that provide Research, Development & Demonstration (RD&D) benefits to organizations across BPA.

RESEARCH PRIORITY	GOAL
Advanced Analytics & Informed Decision Support	• Leverage data analytics and augmented intelligence opportunities to optimize business planning and operations.
Modernized Planning Reforms & Efficiencies	• Explore reformed planning frameworks and data-driven modeling capabilities to support long-term system reliability and affordability in an evolving generation portfolio. • Strengthen real-time system monitoring and forecasting capabilities to maintain situational awareness and reliability amid rapid technology adaptation and dynamic market conditions.
Safety, Security & Regulation	• Ensure best practices in compliance, safety, and threat resilience for BPA workers and systems.

POWER

Topics that primarily provide RD&D benefits to the Power Services organization.

RESEARCH PRIORITY	GOAL
Generation Asset Management	• Explore technologies and methodologies that enhance risk-based decision-making to maximize asset value, environmental compliance, and preserve the reliability and resilience of the assets. • Standardize and modernize asset health metrics and asset management best practices.
Hydro Reliability & Life Extension	• Extend the lifespan of Federal Columbia River Power System (FCRPS) assets through advanced technologies.
Energy Conservation Emerging Technologies	• Explore innovative high efficiency equipment and smart building design across the residential, commercial and industrial sectors.

TRANSMISSION

Topics that primarily provide RD&D benefits to the Transmission Services organization.

RESEARCH PRIORITY	GOAL
Transmission Asset Management	• Explore technologies and methodologies that enhance risk-based decision-making to maximize asset value, environmental compliance, and preserve the reliability and resilience of the assets • Standardize and modernize asset health metrics and asset management best practices.
Transmission Resiliency & Reliability	• Explore the use of technologies and advance digital platforms to support proactive, data informed decisions that enhance grid resilience, optimize system assets, and reinforce our commitment to reliable, affordable energy delivery.
Grid Operations	• Explore modeling and technologies that support reliable, efficient and cost-effective operations.

BACKGROUND

BPA's Technology Innovation Office, established in 2005, provides centralized management of RD&D strategic priorities, projects, memberships, and agreements. Technology Innovation facilitates the development and implementation of technology-based solutions to strategic challenges by maximizing the benefits of internal expertise and external collaborations. BPA RD&D activities also gather fact-based knowledge for BPA-wide decision-making.

BPA partners with various entities, including federal agencies, national labs, electric utilities, nonprofits, and external research organizations, on technology innovation and RD&D activities. These efforts are aligned with BPA's Strategic Objectives, aiming to improve operations, solve challenges, increase efficiencies, and reduce costs. BPA supports focused RD&D that yields meaningful outcomes, prioritizing investments in specialized tools and infrastructure, and exploring new partnerships to facilitate technology transfer and interagency collaboration.

GOVERNANCE

Technology Innovation is led by the Director of Technology Innovation under the oversight of the Information Chief of Staff. While the Technology Innovation Office reports through the Chief Information Office, its strategic focus extends beyond traditional Information Technology (IT) and Operational Technology (OT) concerns to address RD&D across BPA.

BPA's Technology Governance Committee (TGC) is responsible for overseeing the RD&D portfolio and technology transfer initiatives. The TGC:

1. Approves and governs the overarching IT / OT strategy, integrating technology innovation, artificial intelligence, and related initiatives within BPA's framework while ensuring alignment with BPA's business goals.

2. Sets measurable targets for technology strategy, regularly reviews progress, and oversees resource allocation for IT/OT initiatives, including those related to innovation.

3. Responsible for overseeing RD&D portfolio for alignment with TGC technology strategy and supporting technology transfer initiatives, as well as providing guidance on major technology-related capital investments.

BPA RD&D PRINCIPLES

- Align to BPA's strategic objectives.
- Establish executive sponsorship.
- Maximize value-to-cost ratio by seeking partnerships and collaborations.
- Ensure a clear path to implementation or value delivery.
- Focus on implementation ready work.

PROJECT AND MEMBERSHIP SELECTION AND NEXT STEPS

The Technology Innovation Office tracks RD&D proposals and works with internal stakeholders and external entities to determine whether the proposed project or membership is in alignment with BPA's RD&D principles.

Additional review considerations include:

1. BPA Research Priority alignment
2. Executive priorities
3. BPA subject matter expert research requests
4. Technology Innovation budget availability

BPA organizations interested in pursuing an RD&D project or membership should first contact the Technology Innovation Office at technologyinnovation@bpa.gov.