Energy storage in integrated resource plans pnnl

Integrating renewable energy into the nation"s power grid isn"t as simple as plugging in a wind or solar power plant or energy storage facility--these resources produce direct current, while the power grid largely runs on alternating current.

Pacific Northwest National Laboratory is the U.S. Department of Energy"s premier chemistry, ... IRP Integrated Resource Plan . ... years to update regulations and policies to better accommodate energy storage technologies (PNNL 2019). Through the Equitable Regulatory Environment thrust area, one of the missions of the Energy

About PNNL. Pacific Northwest National Laboratory draws on its distinguishing strengths in chemistry, Earth sciences, biology and data science to advance scientific knowledge and address challenges in sustainable energy and national security.Founded in 1965, PNNL is operated by Battelle for the Department of Energy"s Office of Science, which is the single ...

We examined how 21 U.S. utilities are treating energy storage in integrated resource planning. High-level findings: 15 of the 21 IRPs included battery storage in their process. Of those: Eight plans did not select battery storage Five plans selected batteries in their preferred portfolio Two plans selected batteries in an alternate portfolio

Funded by GDO and the Washington State Department of Commerce, the 18-month study will explore how utilities in Idaho, Montana, Oregon, and Washington can plan infrastructure investments to address complex dynamics facing the region such as high load growth, electrification, planning for extreme weather events, and meeting decarbonization ...

The Plan is used as a guide for PNNL in making facility and infrastructure decisions essential to supporting the PNNL vision: to establish a modern, collaborative, flexible, and sustainable campus while optimizing the efficiency of operations in support of courageous discovery and innovation.

Grid Energy Storage; Grid Resilience and Decarbonization. Earth System Modeling ... Richland, WA: Pacific Northwest National Laboratory. [12] O"Brien J.G., E.L. Barrett, X. Fan, R. Diao, R. Huang, and Q. Huang. 2017. ... and safety. PacifiCorp"s Energy Gateway transmission expansion program represents plans to build approximately 2000 miles of ...

He has also participated in assessments of utility integrated resource plans to identify best practices related to the inclusion of battery energy storage and related to evaluation of the impact of potential water shortages on the resource plans. ... Pacific Northwest National Laboratory. A Review of Water and Climate Change Analysis in ...

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PNNL"s Grid Storage Launchpad is an innovation and testing facility that accelerates the development, validation, and commercial readiness of storage systems for the power grid. For transportation applications, PNNL collaborates with researchers across the country on large energy storage initiatives.

RICHLAND, Wash.--The urgent need to meet global clean energy goals has world leaders searching for faster solutions. To meet that call, the Department of Energy"s Pacific Northwest National Laboratory has teamed with Microsoft to use high-performance computing in the cloud and advanced artificial intelligence to accelerate scientific discovery on a scale not ...

PNNL-28060 Energy Storage Seminar for Western State Regulatory Commission Staff Report on Proceedings August 2019 JB Twitchell RS O"Neil K Mongird Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830 Pacific Northwest National Laboratory Richland, Washington 99352

This training covers practices for incorporating utility-scale and distributed energy storage in integrated resource plans (IRPs), improving storage modeling, and reviewing IRP ...

PNNL"s Energy Storage Materials Initiative is finding ways to accelerate the design of energy storage systems. There are millions of potential chemistry and materials combinations that could accelerate next-generation energy storage. At PNNL, we are rapidly identifying promising materials by using high-throughput systems to screen large data ...

Ruth Sayers - Director of Technology at Faradion; Colin Wessells - CEO at Natron Energy; Darren Tan - CEO at UNIGRID Battery; Cheap and abundant, sodium is a prime and promising candidate for new battery technologies. For this interactive panel, PNNL material scientist Xiaolin Li will host special guests who are leaders in developing sodium-based battery solutions.

o IRPs have also struggled with battery energy storage ... alan oke@pnnl.gov (509) 372-4113. Thank you. 14. Title: Integrated Resource Plans in the U.S., Overview Author: Cooke, Alan Created Date: 12/15/2021 3:02:01 PM ...

This document is an integrated monitoring plan for the groundwater project. It documents well and constituent lists for monitoring required by the Atomic Energy Act of 1954 and its implementing orders; includes other, established monitoring plans by reference; and appends a master well/constituent/ frequency matrix for the entire site.

Lawrence Berkeley National Laboratory and Pacific Northwest National Laboratory, in collaboration with E9 Insight, created a database of 95 energy equity actions targeting electricity and natural gas utilities. ... Energy Storage; Integrated and Distribution System Planning; Program Design; Regulation and Policy ... convenes stakeholders ...

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This has resulted in an energy system that places increased health and environmental burdens on vulnerable populations. This report discusses how a strategic integration of energy storage in power plant decommissioning plans can mitigate these negative effects while providing energy system, environmental, and societal co-benefits.

A new report, Energy Storage in Local Zoning Ordinances, prepared by a team of PNNL energy storage and battery safety experts, defines the potential community impacts of an energy storage project in terms relevant to local planners. It provides real-world examples of how communities have addressed these impacts.

PNNL-32978 . Acknowledgments We would like to thank Samuel Bockenhauer and Patrick Soltis of the Department of Energy, Water ... for long duration energy storage resources. Compensation Mechanisms for Long-Duration Energy Storage . D Bhatnagar JC Bedoya . ... IRP integrated resource plan ISO independent system operator ITC Investment Tax Credit ...

PNNL will also develop educational materials centered on energy equity and implementation strategies to support transmission planners. Technical Assistance PNNL will develop and operate a technical assistance program to help interested transmission planners at RTOs/ISOs, PMAs, and utilities to improve community engagement and integrate equity ...

PNNL is advancing the development of energy storage materials, components, and software to improve the electric grid and to power the next generation of electric cars. Our researchers are leading the way in future transportation-scale and grid-scale battery developments.

Staff at the Pacific Northwest National Laboratory (PNNL) performed a review of 21 recent integrated resource plans (IRPs) to determine how battery energy storage and pumped storage hydro (PSH) are treated by utilities and/or load serving entities when planning resources for their future.

This Strategic Plan is fully aligned with the strategic plans of DOE and its Office of Science. We recognize that shifts in science and technology, national priorities, and resources made available through the Federal budget process create planning uncertainties and, ultimately, a highly dynamic planning environment.

An Energy Storage Integrated Resource Plan (IRP) is not designed or intended to identify and quantify all of the benefits of energy storage resources. However, it is the traditional gateway for a utility to establish its future needs, outline near-term investments to meet those needs, and set an expectation of rate recovery when those investments are made.

valuation and assessment of energy storage in integrated resource plans (IRPs) Support Provided: Technical review of over a dozen IRPs to catalogue ... PNNL has developed and refined the Energy Storage Evaluation Tool (ESETTM) o ESET contains five distinct modules for evaluating batteries, hydrogen, pumped storage, buildings (virtual ...

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Traditionally, electric grid planning balances safe, reliable, efficient, and affordable service for current and future customers. As policies, social preferences, and the threat landscape evolve, additional considerations for power system planners are emerging, including decarbonization, resilience, and equity.Renewable and clean energy goals, especially in the context of deep ...

Monthly updates on PNNL energy storage research, leadership, highlights, and information about the Department of Energy Grid Storage Launchpad, the facility which advances the next generation of grid energy storage technologies.

(971) 940-7124 Send Email. Biography. Christine joined the Energy Policy and Economics Group at PNNL in 2020. She is recognized as a leader in transportation electrification and has worked on numerous strategic planning projects involving light-, medium-, and heavy-duty vehicles, along with building and grid integration.