National Hydropower Asset Assessment Program

Overview

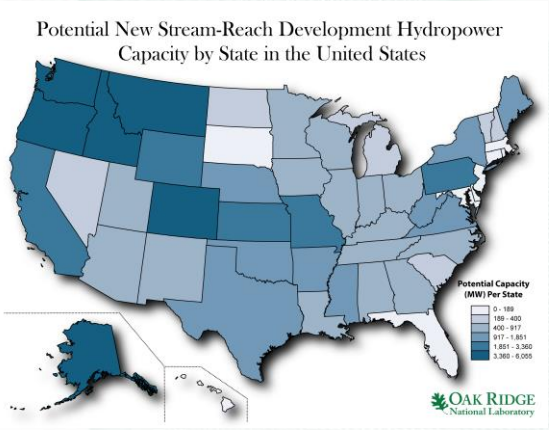
The Oak Ridge National Laboratory (ORNL) National Hydropower Asset Assessment Program (NHAAP) is an integrated energy, water, and ecosystem research and geospatial data integration effort for efficient, sustainable, and environmentally friendly hydroelectricity generation and water management. Our partners include state and federal agencies, non-governmental organizations, technology and resource developers, utilities, and researchers. NHAAP is sponsored by the US Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE). This summary and the core objectives below were originally published on the NHAAP website home page. This information was accessed March 14, 2015 at: http://nhaap.ornl.gov.

Core Objectives

- Perform timely continual assimilation, updates, expansion, and validation of the NHAAP data model to capture the most current information on existing and potential hydropower resources and environmental considerations related to hydropower infrastructure, development, and deployment;
- Ensure the continual capability to deliver of the most accurate, comprehensive, and up-to-date US hydropower resource statistics for the DOE Water Power Program (WPP) and related initiatives;
- Provide publicly-accessible hydropower data and information services to promote hydropower market acceleration and deployment;
- Develop tools and datasets to aid in reducing deployment barriers and environmental impacts of hydropower.

Research & Data

Upon the initiation of NHAAP in 2010, ORNL began compiling and integrating geospatial data from multiple disparate sources on the nations' hydrologic system, hydropower infrastructure, hydropower facility configuration, historic generation, and water availability necessary to trend the production and capacity of the existing US hydropower fleet. The NHAAP data model commenced the first national-scale geospatial data integration effort intended for holistically evaluating US hydropower and related environmental considerations. The NHAAP data model is currently the most spatially complete and attribute rich model of existing and potential US hydropower at the national scale.



This map illustrates total New Stream-Reach Development hydropower potential (MW) by state in the United States (Data are from Kao et al. 2014). Further details and documents can be viewed and downloaded at: http://nhaap.ornl.gov/nsd.

Recent major national scale studies include assessments of new stream-reach development potential, non-powered dam potential, climate change impacts, pumped storage, and aquatic and terrestrial ecosystem conservation within the conventional hydropower arena. Data findings from these studies have been ingested within the NHAAP and contribute to building more robust, accurate, and efficient ongoing and future studies for improved hydropower production and environmental management in the US.

The NHAAP Geographic Information Systems (GIS) team at ORNL provides data management, analysis, modeling, and visualization services to support research initiatives and activities of the DOE WPP. Further information, data, publications, services, and contact information may be obtained from the NHAAP website at: http://nhaap.ornl.gov.

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