

Building a national-scale dataset of fish passage infrastructure at hydropower facilities in the United States

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ABSTRACT: Environmental sustainability has become an existential criterion for hydropower facilities – hydropower cannot be considered an eco-friendly technology if it does not provide for basic river functions such as the passage of aquatic organisms. Hydropower dams can act as aquatic barriers to the upstream movement of migratory fish in rivers, reducing population connectivity within watersheds as well as restricting access to habitat to complete complex life history stages. Further, the operations of hydropower facilities, particularly during downstream migration, may cause fish to suffer injury or mortality while attempting to pass through energy generation turbines, from impingement on barrier screens, or while passing over large spillways. Fish passage infrastructure is used to mitigate risks of hydropower dams and operations to migratory fish, but information on the location, types, characteristics, and costs of such infrastructure are incomplete at a national scale in the United States. In partnership with US federal agency and industry stakeholders, we are creating a georeferenced dataset of fish passage infrastructure at US hydropower facilities. This dataset will contain attribute information that is desirable to a diverse range of stakeholders, including data on passage infrastructure and technologies, engineering characteristics, targeted fish species, operations scheduling, estimated costs, and passage performance studies. In addition, non-public information on passage infrastructure, including engineering characteristics, operations, and cost data, will be collected using online surveys of owners/operators of hydropower facilities. Products from this project will address a large gap in knowledge of the deployment of fish passage technology and be freely available to the U.S. hydropower community (i.e., Federal and State regulators and resource agencies, non-governmental organizations [NGOs], Industry members, and other stakeholders) to aid in project planning and regulatory licensing activities. This work will support the development of decision support tools and information to improve environmental performance and ensure hydropower’s long-term value as a flexible, renewable energy resource.