New Report Can Help Reduce Time and Cost to Advance Hydropower

This old sawmill in Freedom, Maine, has been retrofitted with the Restoration Hydro Turbine, a fish-friendly turbine developed by Natel Energy, Inc. The mill houses a school and a restaurant that are powered by the hydropower plant. *Photo courtesy of Natel Energy, Inc.*

Hydropower accounts for 37% of the nation's renewable energy generation and 7% of its total energy. This clean, renewable energy source provides power in all but two U.S. states (Delaware and Mississippi) and could help the country achieve the Biden administration's goal of 100% carbon-free electricity by 2035.

But there's a problem: In the next two decades, the licenses of more than 600 hydropower projects will expire. If those projects fail to relicense, the country will lose the amount of clean energy needed to power about 5.5 million homes—equivalent to the entire state of Pennsylvania. Because hydropower projects can impact local ecosystems, federal, state, and tribal authorities require new and ongoing development to navigate a complex regulatory process to earn a license (like a governmental clean bill of health). This process protects air and water quality, preserves wildlife habitats, prevents soil erosion, and shields valuable cultural and recreational resources, but can also impede or prevent project development.

Analysis Pinpoints Licensing Challenges

A new report, titled "An Examination of the Hydropower Licensing and Federal Authorization Process," can help hydropower developers navigate complex regulatory currents. With funding from the U.S. Department of Energy's Water Power Technologies Office, researchers at the National Renewable Energy Laboratory (NREL) and Oak Ridge National Laboratory examined which regulatory bottlenecks can impact the time, costs, or risks of launching new or refurbishing old hydropower projects.

Although the report does not propose any specific recommendations to change the current hydropower licensing and authorization process, the findings will aid decisionmakers to identify areas for reform. And, the analysis will help policymakers and regulators, including the Federal Energy Regulatory Commission; U.S. Army Corp of Engineers; federal land management agencies; federal and state resource agencies; and Indian tribes engage in informed discussions with hydropower industry stakeholders like utilities, developers, consultants, trade associations, and nongovernmental organizations.

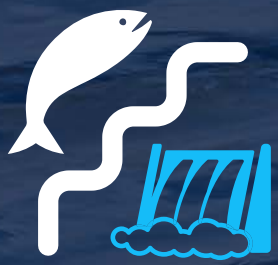
> "The hydropower licensing process helps protect valuable ecosystems, but the time and cost can vary dramatically, creating uncertainty that could de-incentivize developers from launching or completing projects. This report clarifies which factors are responsible for that uncertainty, so decisionmakers can improve the process to build a clean energy future."
>
> Aaron Levine, NREL Senior Legal and Regulatory Analyst

Hydropower licensing costs have unbalanced burdens:

small projects

large projects

Licensing costs disproportionately impact smaller projects more, even though regression analyses show that smaller projects have **shorter licensing timelines**.



Settlement agreements may result in greater environmental benefits

- expanded fish passage across dams
- increased species protection
- improved recreational facilities

The hydropower licensing and federal authorization process can lead to **improved environmental outcomes and stakeholder relationships**.

The U.S. hydropower licensing process requires up to 11 federal and state agencies

PROS

More opportunities for resource agencies, tribes, and public community members to share perspectives on water quality and more

CONS

Delays and increased costs from required external participation and engagement

Relicensing hydropower projects take 2.6 years longer than obtaining an original license

Source: "An Examination of the Hydropower Licensing and Federal Authorization Process" NREL Report (2021)

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