

New hydropower report identifies opportunities to reform the licensing process

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Both clean hydropower and environmental regulations can help protect the planet, but sometimes, they can get in each other's way. "An Examination of the Hydropower Licensing and Federal Authorization Process" helps identify how decisionmakers can smooth these procedures. Credit: Dan Meyers, Unsplash

In the early 1970s, water turned gold. As oil supplies plummeted, prices

skyrocketed. Congress, desperate for anything not-oil, compelled electricity companies to buy up local hydroelectric energy at luxurious prices, launching a frenzy to build small hydropower not unlike the previous Gold Rush. All an ambitious citizen needed was a bit of unclaimed falling water and an engineer.

But the mini-[hydropower](#) boom did not last. At first, the government relaxed regulations to encourage development. But soon after, the increased activity sparked increased [environmental concerns](#), rebooting federal and state oversight. By the late 1980s, developers of both mini and major hydropower projects had to wade through more regulations than any other energy source except nuclear.

Today, those regulations hold. They do good work, ensuring fish can migrate and spawn, [endangered species](#) can keep critical habitats, humans can canoe well-loved rivers, and cultural artifacts or burial grounds can remain undisturbed. But they can also stymie development, adding years and millions of dollars to projects that could replace polluting fossil fuels with clean, renewable energy and help the country transition to carbon-free energy by 2035.

"Both environmental regulations and hydropower can help protect the planet," said Aaron Levine, a senior legal and regulatory analyst at the National Renewable Energy Laboratory (NREL). "So, what's the right balance between protection and development?"

To help answer that question, Levine and a team of researchers from the NREL and Oak Ridge National Laboratory set out to survey the current regulatory landscape and identify which protections, bureaucratic hoops, or developer designs might hinder hydropower projects from earning a license to operate (like a governmental clean bill of health). Their findings, published in a report titled, "An Examination of the Hydropower Licensing and Federal Authorization Process," could help

decision-makers streamline the [regulatory process](#) without cutting critical protections—the best of both worlds.

To analyze the complex regulatory web, Levine and the research team collected [quantitative data](#)—for example, how many years the [licensing](#) process takes on average—as well as qualitative data, sourcing licensing stories from a wide pool of regulators, developers, nongovernmental organizations, and tribal representatives.

Several hydropower developers, for example, cited the Endangered Species Act as "the number one issue" (as one utility operator put it) in prolonging the licensing process. The act has a stellar 99% success rate of keeping endangered species from extinction. It is not that developers do not want to protect endangered species; but, in some cases, they disagree about how to go about it.

One developer quoted in the report said the reservoir where he planned to construct his [project](#) housed an endangered species of fish. Regulators requested he commission a study to assess whether the plant should install fish screens—barricades that keep fish from swimming underneath. But even without a study, which, the developer said, could cost \$2 million, he knew he needed fish screens. "So let's just jump to the end," he said, and install the screens.

Both developers and regulators cited disagreements over environmental studies and what data are necessary as significant snags in the licensing timeline. Developers must present previous (or commission new) environmental studies that will help them protect local ecosystems, cultural resources, and wildlife. Because commissioning a study can be costly, some developers hope previous research and data will be sufficient; if regulators disagree, this back-and-forth negotiation can lengthen the process.

One [developer](#) said they spend "too much time talking about what to study and not enough time actually studying it." Of course, sometimes, these talks go smoothly; one regulator reported their "applicants produced a plan based on my recommendations and guidance."

Unsurprisingly, the greater the environmental complexity, the longer and more costly it is for a hydropower project to earn a license. New projects, according to the report, fare better than older. An original license takes an average of 5 years to obtain; a relicense takes an average of 7.6. It is harder to renovate an old project to meet new regulations than build a new one to code. And sometimes the necessary renovations are impossible.

"There are some facilities," one state regulator told the research team, "that simply cannot become compliant with Clean Water Act, Endangered Species Act, or any of the other federal acts that comprise the federal licensing process. ... It becomes necessary to remove outdated projects."

For new builds and those that can be renovated, Levine and his team identified three primary factors that can increase the time and cost to earn a license: compliance with the Endangered Species Act or the Clean Water Act and turnover or limited staffing at state and federal agencies. But other issues consistently impede the licensing process. Some developers provide regulators with incomplete or inadequate information: A statistical analysis of over 100 license proceedings showed that 17% of state water quality certifications took 2 years or longer and some Endangered Species Act certifications took months to years longer in part because of missing data (though, because developers and regulators sometimes disagree about what data is necessary, "missing" data can be subjective).

Another time-lengthening factor is a simple matter of choice:

Developers can choose from three different licensing processes. And one, the Integrated Licensing Process, follows a strict timeline, saving developers an average of about 1 year.

But other factors disproportionately affect certain types of projects. Smaller projects often have shorter licensing timelines, but, because they bring in less revenue, the costs hit them harder than larger, more profitable projects. And, because older projects can continue to generate income while seeking a relicense, the costs are less burdensome for them than for new projects, which cannot start construction or operation until they have their license in hand.

The report's authors do not advocate for any specific regulatory changes but simply pinpoint the pain points in the hope that their analysis can guide decision-makers to the stickiest areas where improvements can have the greatest impact.

"Because our report offers perspectives from all sides of the licensing process—regulators, developers, nongovernmental organizations, and tribes—we hope stakeholders can listen and learn from each other. Reform requires all parties to examine how they can improve," Levine said.

In other top hydropower-producing countries like Canada and Norway, fewer governmental agencies (about five to six, compared to 11 in the United States) weigh in. Those countries also offer fewer opportunities for tribal and other community members to voice concerns. While this engagement can add time to the U.S. licensing process, it can also help developers serve the communities where they operate.

The mini-hydropower boom of the 1980s may be long over, but there is another rush—and a far more critical one—happening now. Today's climate crisis is turning renewables into gold, and, if regulators and

developers can work together, hydropower could once again displace oil (and other fossil fuels) to help save the planet.

Highlights of the Hydropower Licensing and Federal Authorization Process Report

Want to learn more? Join us on Nov. 18, 2021, at 11 a.m. MT for a webinar titled "Highlights of the Hydropower Licensing and Federal Authorization Process Report." Hear more in-depth analyses of the U.S. hydropower licensing and approval process, including which hydropower project attributes or regulations may influence licensing timelines, costs, and risks. Learn how policymakers, federal and state regulators, and industry stakeholders can use this report to have informed discussions about how to streamline the licensing [process](#).

More information: An Examination of the Hydropower Licensing and Federal Authorization Process. www.nrel.gov/news/program/2021-11-18-hydropower-licensing-and-federal-authorization-process-report.html

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