

## Call for Partners

The Idaho National Laboratory's (INL) Hydro Hybrids team is looking for case study partners (with no cost share commitment) to help in applying the black start and islanding guidelines INL is developing for run-of-river hydropower plants.

This case study will determine the modifications, retrofits, or upgrades that would be required to make their run-of-river hydropower plant capable of black starting and provide emergency power to critical loads during grid outage.

INL's only request from the partner is that they provide data and specifications of their plant and review INL's results. INL takes data protection seriously. All data shared with the Hydro Hybrids team will be restricted to the study and only anonymized case studies will be published to illustrate the type of recommendations that come from the guidelines.

## Deadlines

INL would like interested participants to respond in about three weeks from the date of announcement.

INL envisage that the results from the study will be ready by June 28, 2024.

## Background

Under normal grid operations, run-of-river hydropower plants and other generators connected to the grid usually help each other in meeting load demand. During grid outage, however, it is advantageous if run-of-river hydropower plants can island (i.e., operate off the grid) to provide emergency power to critical infrastructures such as hospitals, water treatment plants, etc. To achieve this, run-of-river hydropower plants must be able to black start and restore local power, independent of the grid, to critical loads. Black starting and islanding run-of-river hydropower plants have been identified to be generally difficult as these plants are slow to respond to changes in load demand and need external grid support to regulate frequency.

In view of this, the Hydro Hybrids research team at Idaho National Laboratory have been working on technical guidelines that will help operators identify what upgrades are required to allow their run-of-river hydropower plants to black start and island to provide backup power. Since run-of-river hydropower plants usually connect with other plants to meet grid demand, it may not be immediately obvious to operators that their hydropower plants do not have islanding capabilities.

This effort is motivated by the challenges INL encountered in field demonstrations. In 2021, INL partnered with the Idaho Falls Power to demonstrate that integrating ultracapacitors with its small (run-of-river) hydropower plants in standalone mode can improve frequency response and increase load carrying capacity. INL's findings are documented in a [technical report](#).

Also, INL collaborated with the Fall River Rural Electric Cooperative in 2023 to demonstrate that by retrofitting hydro-governor control and using Microgrid-in-a-Box (i.e., a battery energy-based system), run-of-river hydropower plants can be islanded to provide emergency power to critical loads. "Fall River Electric Cooperative is focused on investing in technology that can improve the lives of our owner-members and this partnership with INL is a prime example," said Fall River CEO Bryan Case. "The Microgrid-in-a-Box test has accelerated our ability to deploy a hydropower and battery system to provide our members with electricity in the event of natural disasters or other local emergencies." Read more [here](#).

Idaho National Laboratory's ability to find partners is crucial to the success of this project, as partnerships will allow INL to validate the applicability of these guidelines and get valuable feedback to update the guidelines. Also, this will allow INL to provide partners with comprehensive assessments of how ready their run-of-river hydropower plants are for standalone operation.

## **Contacts**

To indicate your interest in participating, please contact:

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