What's Happening with Small Hydropower (SHP) in New England?

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November 2018

The Role of Dams in the Energy Transition

New England has more than 7,000 small dams that are old or aging. Many of these dams are powered and coming up for Federal Energy Regulatory Commission (FERC) relicensing within the decade. Energy companies are beginning to look at non-powered infrastructure and thinking creatively about how to use these structures for renewable electricity generation.

What are the costs?

We spoke with dam owners and decision makers around New England to get a sense of what information needs we can meet with this work, and both project costing and power plant performance information are in high demand. Unfortunately, available cost data for small hydropower are limited, and the models used to assess potential costs are typically aimed at siting new dams, rather than expanding capacity or installing turbines on existing dam infrastructure. In short, even dam owners may not be fully informed about the costs of different hydropower project options. We attempt to address this information gap in our work.

What decision maker support are we generating?

We reviewed small hydropower costing estimation models, noting the potential application and limits of each. We built upon this review and designed our own cash flow model to help scope potential upgrades and retrofits to existing small dams. We gathered information about dams in Maine's Penobscot River and Union River in a short series of Dam Factsheets. Now, we are compiling publicly available data on New England dams from Army Corps, FERC licenses, and the Maine Hydropower Study. We use these data to compare with our cash flow model outputs. We use these data to compare with our cash flow model outputs to provide a

High spring flows at the Milford Dam in Maine's Penobscot River. Photo by Emma Fox.

set of recommendations for dam owners, developers, and other stakeholders interested in hydropower project option cost comparison.

Researchers

Emma Fox is a Ph.D. candidate in Ecology and Environmental Science at the University of Maine's School of Economics. She is interested in participatory processes and building better tools to support renewable energy and natural resource decision making.

Dr. Sharon Klein is an Associate Professor in the University of Maine's School of Economics. She is an interdisciplinary energy researcher, and studies community energy initiatives, community solar, small-scale hydropower, and decision making using Multi-Criteria approaches.

Kaitlyn Raffier is an undergraduate student and Research Assistant studying Environmental Sciences and Economics. She is interested in data management and communication as well as looking at ways to improve data visualization to help people better understand data and its trends.

Erica Hathaway is an undergraduate student and Research Assistant studying Economics and Mathematics. She is interested in applying statistical analysis to interpret data and explain the results to assist both individuals and policymakers.

Funding

Support for this research is provided by the National Science Foundation's Research Infrastructure Improvement NSF #IIA-1539071, USDA National Institute of Food and Agriculture Hatch project 0230040, and Department of the Interior, U.S. Geological Survey Grant No. G16AP00057 through the Senator George J. Mitchell Center at the University of Maine.

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