

NREL's workforce development programs help illuminate pathways to rewarding careers in marine energy and hydropower. *Photo by Sebastian Voortman, NREL*

NREL Programs Channel Students Toward the Future Water Power Workforce

Water power is a flourishing segment of the renewable energy industry, and marine energy and hydropower technologies are poised to play a significant role in meeting the United States' energy demands in the years to come.

Realizing the potential of water power technologies, however, requires new talent and continued innovation. In an effort to grow the talent pool and expand the diversity of the water power workforce, the National Renewable Laboratory's (NREL's) Science, Technology, Engineering, and Mathematics (STEM) and workforce development programs are working to raise student awareness of the exciting career opportunities in water power.

Marine Energy Collegiate Competition Helps Prepare Students for Blue Economy Careers

Administered by NREL on behalf of the U.S. Department of Energy's Water Power Technologies Office (WPTO), the [Marine Energy Collegiate Competition](#) (MECC), challenges multidisciplinary teams of undergraduate and graduate students to offer unique solutions to the growing marine energy industry.

In its first 2 years, the MECC has engaged 48 teams from 47 different institutions, including one historically Black university, one community college, 14 United-States-based minority-serving Institutions, seven Hispanic-serving institutions, eight institutions serving Asian Americans and Native American Pacific Islanders, and 10 international institutions. MECC has provided an estimated 480 students with real-world

experience and industry connections to help them prepare for future careers in the marine energy sector and the blue economy. In addition, MECC established partnerships with the [Interdisciplinary Environmental Association](#) and the [Society of Hispanic Professional Engineers](#). These partnerships will increase engagement and create networking opportunities, enabling MECC to continue to engage diverse communities that will help build a thriving marine energy workforce.

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STEM Portals Electrify Learning for Future Water Power Workforce

NREL's [STEM Hydropower Portal](#) and [STEM Marine Renewable Energy Portal](#) offer resources needed to learn about water power technologies as well as potential career tracks, ensuring that training for tomorrow's workforce begins today.



The 2021 Marine Energy Collegiate Competition challenged teams to design a device that optimizes technology, reduces costs, and explores new opportunities for marine energy. Competitors explored a variety of approaches to meet these criteria, proposing a range of ideas with a singular common goal: to power the blue economy. *Photo from Curtis Rusch*



Resources from NREL's water power workforce development portals are on display in a public ocean energy exhibit at Connecticut's Mystic Aquarium. Photo from Mystic Aquarium

The portals offer a variety of features, including Day-in-the-Life video profiles of water power professionals across diverse disciplines and skill sets. In Fiscal Year 2021, NREL produced two Day-in-the-Life videos: one profiling Brookfield Renewable Compliance Specialist [Allison Frechette](#), and one profiling U.S. Bureau of Reclamation Operation and Maintenance Manager [Vicki Hoffman](#).

Some of the portals' resources are featured in a [public ocean energy exhibit at Mystic Aquarium](#) in Connecticut—the largest aquarium in the Northeast. The exhibit includes a large screen that displays a marine energy animation showing seven different [marine energy technologies](#). NREL technical researchers and communications staff provided guidance to the aquarium on all content created for the exhibit, which is now available on the STEM portal for anyone to access. To celebrate the exhibit's debut, Mystic Aquarium hosted a virtual tour and panel discussion, which included [remarks from WPTO Director Jennifer Garson and industry leaders](#).

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Inaugural Hydropower Collegiate Competition Aims To Renew Aging Workforce

In 2022, WPTO and NREL launched the inaugural [2023 Hydropower Collegiate Competition](#) (HCC). With NREL and the [Hydropower Foundation](#), the HCC calls on interdisciplinary teams of undergraduate and graduate students from a variety of academic programs to offer unique solutions to complex hydropower challenges. For the first HCC, collegiate teams will design a concept to solve leading hydropower challenges, compete in two contests—the

Connection Creation Contest and the Case Study Contest—and present their work at Waterpower Week in spring 2023 or a similar industry event.

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Partnership Helps Expand Clean Energy Education Outreach Program

NREL established a partnership with the Bonneville Environmental Foundation to [develop a nationwide collection of virtual clean energy education hubs](#), starting with the Clean Energy Talent Development Hub for Water Power in the Pacific Northwest. This pilot hub will serve as a model that can be replicated and brought to regions across the nation to advance clean energy education from K–12 through college, with a special emphasis on reaching underserved communities. The Clean Energy Talent Development Hub program aims to promote equitable education through local engagement while creating awareness of and access to clean energy career options for future generations.

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REDi Island Animations Explore the Potential of a Clean Energy Future

With WPTO, NREL introduced the [Renewable Energy Discovery \(REDi\) Island](#), an interactive, educational, 3D animation of a virtual renewable-energy-powered island developed by [IKM Testing](#) that, with help from the next generation of water power scientists, could soon become reality. Designed to inspire K–12 students to join the clean energy revolution, REDi Island explores diverse marine, hydropower, and river-based energy technologies, which could energize whole communities, power microgrids and offshore work, and turn salt water into fresh drinking water, all with clean, reliable, renewable energy from moving waters.

NREL is developing a browser-based application on WPTO's website to eventually introduce into school curricula.

[Follow REDi Island](#) to learn about water power technologies and stay updated on the release of the interactive application.

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