The Hydropower Foundation's Waterpower Club–Waterpower Community Partnership: Creating a College-to-Hydro Pipeline

The Endicott College team won the 2023 Hydropower Collegiate Competition, an event that was one of the inspirations for the WC2 program.

How do you attract college graduates to join an industry that's often not even on their radar? The Hydropower Foundation (HF) sees a solution in its new university-based Waterpower Clubs. In this interview, Hydropower Foundation Advisory Board Member Russ Sanford talks about plans to use waterpower community speakers, mentors, internships, scholarships, and an easy-to-use career portal to move hydropower and marine energy to the head of the class.

Hydro Leader: Please introduce yourself and tell us how you came to be in your current position.

Russ Sanford: My career began as a civil/environmental engineer. After 3½ years, I moved to a strategy and business development role. I have been in the architecture, engineering, and construction industry for over 30 years. My passion for the environment and renewable energy attracted me to the opportunity to join Kleinschmidt Associates in 2011, and today, I serve as the company's chief growth officer. Our mission is to balance engineering, regulatory, and science-based technical expertise with practical experience to solve challenging renewable energy, water, and natural environment projects for our clients. My role is to oversee our growth initiatives, including industry and client engagement efforts. I have also been a member of the HF's advisory board since 2022.

Hydro Leader: Please introduce the HF.

Russ Sanford: Founded in 1994, the HF is dedicated to ensuring hydropower's sustainable contribution to a clean energy future. It is a dedicated group of engineers, scientists, green energy supporters, technologists, biologists, businesses, companies, and nongovernmental organizations (NGOs) with a mission to develop a waterpower workforce through programs that provide future workers with knowledge and opportunities in the industry. The organization is a 501(c)(3) nonprofit committed to supporting the nation's first and most flexible renewable resource, hydropower. The HF is funded by contracts, grants, events, and industry sponsorships.

Hydro Leader: Please tell us about the idea behind the Waterpower Club–Waterpower Community Partnership, also known as WC^2.

Russ Sanford: First, let's address the challenge for the waterpower community. We lack cohesion because of the diversity of asset ownership throughout North America, and we lack a national voice for workforce development. Additionally, and unfortunately, there is no unified understanding of the role waterpower technologies can play in decarbonizing our grid. At best, our industry has scattered individual recruiting efforts by certain firms. As a result, the entire community is straining to

PHOTOS COURTESY OF THE HF.

Russ Sanford speaks at a Hydro Think Tank competition.

find the talent needed to facilitate the potential growth that is forecast for our industry. That is why the HF needs to bring the waterpower community together to create Waterpower Clubs at universities.

The purpose of the WC² initiative is to connect students with the waterpower community. The first Waterpower Clubs will be student-run clubs supported by the HF. The HF will support students and faculty in forming a structure, scheduling activities, and creating programming and will maintain communication with the faculty member involved and the student chair.

The HF's goal is to provide

- presentations from waterpower community professionals (2–3 per semester)
- career training and mentoring
- access to HF student events and programs
- internship and cooperative education notifications
- scholarship opportunities (2 per academic year per school)
- access to the Hiring for Hydro career portal
- funding for club-related food and activities
- 3-day Hydropower Think Tank mini-competitions (1–2 per academic year)
- help in coordinating with asset owners to tour their hydro plants

Through the program, students will be exposed to a community that is foundational to a carbon-free energy future. They will have the opportunity to experience one of the most challenging renewable energy careers available.

The other side of WC² is the waterpower community. Community partners must provide student clubs with presentations, internship or co-op opportunities, assistance with project challenges, and a listing of career opportunities at their firms. Financial support to students may also be provided through scholarship opportunities.

Hydro Leader: Where did the idea to start these clubs come from?

Russ Sanford: Major corporations in other industries regularly partner with universities, and every college or university has student clubs. The challenge for the waterpower community is that we are geographically dispersed, and while many of our firms may be large, hydropower is not always the dominant portion of the business. That is why the HF needed to bring the waterpower community together to create the Waterpower Clubs at universities.

Two things really brought this idea together. When I started researching the idea of student clubs, I came across

The Northern Arizona University team won third place in the 2023 Hydropower Collegiate Competition.

Participants in a Pacific Northwest Hydro Think Tank competition tour Wanapum Dam.

an article about Lockheed Martin, a major space and defense contractor. The article talked about the company's university partnerships and included several interviews with students. One thing that jumped out at me was that one student mentioned that he did not participate in the partnership activities because he was seeking a career that, in his mind, provided an opportunity to work on renewable energy projects. I was not aware of any large-scale university partnership programs formed by the waterpower community.

The second thing that brought this together in my mind was the Hydropower Collegiate Competition (HCC) developed by the National Renewable Energy Laboratory and supported by the HF. Aiming to attract a new set of skilled workers to modernize the U.S. hydropower fleet and lead the next-generation workforce, the HCC attracts a new cadre of innovators who can help customize hydropower's role as a renewable energy resource. I was honored to help judge the competition this year, and the mix of students was intriguing. The teams drew students from a variety of disciplines—not just from engineering but from fields as diverse as political science, natural sciences, business, and marketing. We wanted to create a program that would welcome anyone who has a passion for supporting renewable energy and has skills that could allow them to take on any number of roles in our industry. Many other student clubs focus on a single discipline, but we hope the diversity of students in the Waterpower Clubs will make them unique and attractive.

Hydro Leader: How do the clubs fit into the HF's broader workforce development programs?

Russ Sanford: We're hoping that WC² will accelerate our other programs. In the past, we would go to a conference somewhere, like Portland or Atlanta, and we would call all the universities in the area to invite students to attend a Hiring for Hydro event. Or we would contact hydropower asset owners willing to host a Hydro Think Tank competition and then call universities in that region to invite students. WC² flips that around. Whenever there is a conference, we will be able to invite the Waterpower Club students in that region to join us. Same with the Hydro Think Tank competitions. This approach should make it easier to facilitate our programs.

Hydro Leader: What has the interest been so far? Have you received inquiries from students about starting clubs or from businesses about becoming a partner?

Russ Sanford: Every person we've spoken with about the WC² program gets excited! We formally launched the program in September, and within a few weeks, the first Waterpower Club was formed at Manhattan College in New York. This year, it had a team at the collegiate competition, and I met one of the team's faculty advisors. Several other schools have begun the process of forming a club as well.

On the partnership side, we formally launched invitations to the waterpower community at the National Hydropower Association (NHA) Clean Currents conference in October. The program is endorsed by NHA, the Northwest Hydroelectric Association, and the Midwest Hydro Users Group.

Hydro Leader: You talked about the need for new professionals to enter the industry. Are there a lot of job opportunities in the field for engineers with a specialty in hydro and for people with other degrees?

Russ Sanford: Yes! There are a ton of opportunities for several reasons. First, the solar and wind industries started from zero 15 years ago and have quickly grown a large workforce dedicated to deploying their renewable energy generation sources. Thanks in part to the growth and recognized need for dispatchable resources such as hydropower and marine energy to maximize variable renewable energy value, the value of waterpower and pumped storage resources has never been greater, and we face a corresponding need to recruit a sizable and

PHOTOS COURTESY OF THE HF.

capable workforce to replace the rapidly aging existing waterpower workforce.

The second main reason is the aging of our infrastructure. The average age of hydroelectric plants in the United States is 64 years, according to the Energy Information Administration. These aging assets require ongoing repairs and updates to continue supplying clean, renewable electricity. At the same time, these facilities are facing new, stricter regulatory requirements, which increase their need for dam engineering and fish passage engineering.

Hydro Leader: What are the stumbling blocks that are preventing students from discovering the industry?

Russ Sanford: When many people think of renewables, they think of wind and solar. Wind and solar have certainly gotten better media coverage. Hydropower is rarely taught about in school. People don't see hydro facilities as often as they see wind turbines and solar panels, which is another reason hydro isn't on their radar.

According to a recent report by the U.S. Department of Energy's Water Power Technologies Office and the HF, other barriers that could be hindering waterpower workforce growth include a lack of hydropower educational programs and student awareness of the industry and competition with other industries, particularly for jobs in engineering and skilled crafts and trades.

Hydro Leader: If readers who work in the waterpower community want to become partners in WC², what can they do and how can they get in touch with the HF?

Russ Sanford: The second WC in WC² is the waterpower community, and to be successful in creating Waterpower Clubs, we need both volunteers and significant funding. If we work collaboratively with our community, we have the potential to create hundreds of student clubs. This may mean that some organizations will be working with perceived competitors, but that is the only way we'll be able to quickly create student clubs to help develop a workforce for the entire waterpower community.

What do we need from your organization? First, a champion: someone who will be the point of contact for the HF. Second, a commitment of both financial support and volunteer time to support student clubs. Third, an intention to create opportunities for internships, visits to hydropower and marine energy facilities, and hands-on experiences wherever possible.

There are different levels of partnership, depending on the size of the partner organization and its focus. We would like members of the waterpower community—not just hydro owners but consultants, equipment manufacturers, NGOs, and contractors—to become partners. We are asking for a financial commitment of $5,000 to become a regional partner, which is where most organizations will fall. This would give the member organization access to up to five college or university clubs in that region.

HF Student and Event Coordinator Amanda Neves, HF Executive Director Linda Ciocci, and HF Program Director Bree Mendlin.

We also hope that companies that already have relationships with a university join this larger effort. Our goal is to be able to align multiple partners on a state or regional basis to work together at certain universities. Instead of competing with each other for talent, we should try to collectively develop a large pool of graduates who are excited about working in our community.

Readers who are interested in becoming WC² partners can review our new website, https://waterpowerclub.hydrofoundation.org/, and contact HF Program Director Bree Mendlin at bree@hydrofoundation.org and HF Student and Event Coordinator Amanda Neves at amanda@hydrofoundation.org.

Hydro Leader: What is your vision for the future?

Russ Sanford: As I mentioned, our vision is to start hundreds of Waterpower Clubs in the United States and Canada. We also want to expand our workforce program to include opportunities for careers in the skilled trades, as these are also critical to the waterpower community's future. We already have some people interested in establishing Waterpower Clubs in high schools. And we are looking to create more diversity within our industry. Our vision is to create a workforce that is well educated, environmentally focused, and as inclusive as the region from which it comes. It is an exciting vision and one that we can achieve. H

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