RUPower Community Connections Challenge Final Report

Zachary Soricelli and Paul Alves

School of Engineering
Rutgers University, Piscataway, NJ 08854, USA

I. After Action Report

RUPower team aims to address issues surrounding marine energy perception. By maintaining a social media presence, attending conferences, performing industry interviews, and hosting public events, the team made that goal possible. The *"@rupower_"* Instagram account consists of team member spotlights, team updates featuring in-lab photos, and educational visuals – all of which have allowed RUPower's following to understand who we are, what marine energy is, and why we are here. Of course, there were some challenges faced with social media. The team had trouble promoting their Facebook, and decided to contribute our full attention to our Instagram page, which proved to be advantageous. Our following began to grow steadily, and we continued to send out email and GroupMe invites to Rutgers students to capitalize on that growth.

Performing interviews with a diverse group of industry professionals granted our team with insightful and unique takeaways. After the interviews, our team agreed that we needed to emphasize the high efficacy, low cost, and overall functionality of marine energy technologies throughout our outreach campaigns – and we did exactly that. Finding interviewees that fit our team's mission was initially difficult but was proven to be possible after countless in-depth Google and LinkedIn searches in relation to the nation's leading organizations in marine energy.

RUPower's efforts extended beyond the digital world as well. On January 12, 2024, the RUPower Team sent team captain Katherine Moreira and representative Zachary Soricelli to present an overview of the team's actions at the *Rutgers Offshore Wind Energy Collaborative*'s annual symposium. This opportunity connected the team with professionals in New Jersey's renewable energy sector, provided the team with further education regarding arguments supporting negative perceptions of marine energy, and allowed the team to receive feedback regarding their project direction and progress.

On April 27, 2024, the team set up a table at Rutgers' annual outreach event called *Rutgers Day*. This event drew tens of thousands of individuals to see and celebrate the variety of organizations housed in Rutgers. As such, it provided a perfect opportunity to spread the word about the benefits of marine energy. It also allowed the team to reach a wide variety of audiences. *Rutgers Day* was attended by everyone in the area: public, students and professors, family and friends, as well as Rutgers alumni from all different backgrounds and from across the United States. RUPower's participation in this event allowed the team to display exactly how marine energy works through live turbine demonstrations and drew intrigue from both potential future members and the general public. This was perhaps the most successful effort at changing marine energy perceptions in the Rutgers community simply due to the sheer amount of individuals passing by.

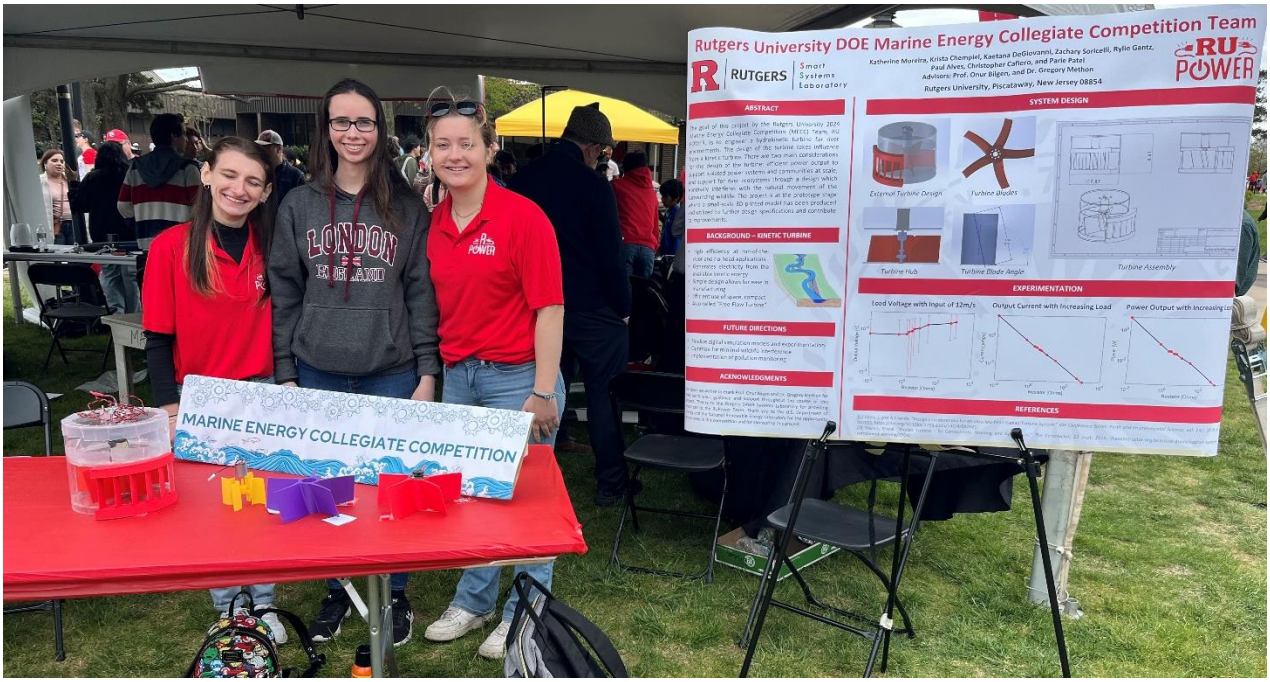

Figure 1: RUPower's Kaetana DeGiovanni, Krista Chempiel, and Rylie Gantz at Rutgers Day.

In addition to these core efforts, RUPower took smaller, yet equally pertinent, attempts at outreach through online communications materials on social media and a "Earth Day with RUPower" webinar in which the team presented to attendees the current impact and future potential of marine energy and sharing the opportunity to engage in the unique experience of the *Marine Energy Collegiate Competition* by signing up for next year's team.

II. Metrics Report

RUPower reached out to eight individuals in the marine energy sector to conduct industry interviews. Of these eight, four responded and were interviewed. As indicated by this response rate of only 50%, the team's biggest challenge in conducting these interviews was refining our outreach strategy. What the team found is that maximizing responses requires a concise yet comprehensive email with preferred times listed to minimize effort on the part of the interviewee. All interviewees agreed to further communications regarding future MECC events. Below is a summary of each interview including attendance metrics and contact information:

Bill McShane Water Power Technologies Office william.mcshane@ee.doe.gov

Bill McShane is a technology manager at the Water Power Technologies Office (WPTO). Mr. McShane specializes in R & D engineering; he explores a machine's various control systems to determine which of those systems functions best for optimal energy. We quickly realized that his studies aligned closely with ours, as we aim to develop a more efficient water turbine. Mr. McShane also touched on the low cost and low risk of marine energy in terms of production and how emphasizing those attributes could effectively spread awareness. This interview was conducted by RUPower's Rylie Gantz and Krista Chempiel.

Mikaela Freeman Pacific Northwest National Laboratory mikaela.freeman@pnnl.gov

Mikaela Freeman is a marine science and environmental policy analyst focusing on marine energy outreach and engagement. Ms. Freeman emphasized the importance of providing the public eye with a visual of our project, as that is what marine energy is lacking. Being underwater, marine energy systems are a "mystery" to the general public and are therefore misunderstood. This interview was conducted by RUPower's Rylie Gantz, Krista Chempiel, Kaetana DeGiovanni, Katherine Moreira, and Paul Alves.

Joseph Ruggeri NJDEP joseph.ruggeri@dep.nj.gov

Joseph Ruggeri is an NJDEP civil engineer who focuses on flood mitigation. Mr. Ruggeri specializes in dam structures and has significant insight into environmental awareness. Although dams are a known pollutant and an obstacle to fish migration, Mr. Ruggeri takes extra care in implementing fish ladders and removing any concentrated sediment before releasing a dam. Mr. Ruggeri showed us that, while marine energy may seem overly obstructive at a glance, there are additional measures that can be taken to improve environmental welfare. This interview was conducted by RUPower's Rylie Gantz and Kaetana DeGiovanni, and Katherine Moreira.

Ryan Coe Sandia National Laboratories rcoe@sandia.gov

Ryan Coe is a wave energy and fluid dynamics modeling specialist conducting research under the Sandia National Laboratories' Water Power Technologies Program. Mr. Coe discussed the challenges of deploying and maintaining marine energy technology. These devices are difficult to access once installed – especially on days with stronger currents – and are highly susceptible to heavy loads. However, a diversified renewable energy grid is essential for a chance at a sustainable future and should therefore be prioritized regardless of the challenges. As Mr. Coe says, "The wind doesn't always blow, and the sun doesn't always shine." This interview was conducted by RUPower's Katherine Moreira and Krista Chempiel.

III. Action Outcomes

RUPower has participated or, at times, held five distinct events since the beginning of the competition. First was the Rutgers University Involvement Fair, which aimed to host 15,000 to 20,000 students according to *The Daily Targum*, the student newspaper at Rutgers. This event represented the general population of Rutgers University students and focused on recruitment for the team. Second was the Rutgers School of Engineering club showcase, an event geared specifically towards engineering students and attended by 100-200 students and professors. This event was valuable to recruit students directly and to spread the word to professors with industry and student connections. After this was the Rutgers Offshore Wind Energy Collaborative's annual symposium which drew in 50-100 industry professionals. Two of RUPower's team leads presented the team's work here and gained valuable connections to industry professionals and community members interested in renewable energy. Next was RUPower's "Celebrate Earth Day" Webinar which was focused on discussing the advantages and environmental impacts of marine energy of all different forms. With attendees from Rutgers School of Engineering, the team discussed topics in marine energy, the project RUPower has designed throughout the course of the academic year, and opportunities for joining next year's team. RUPower's final outreach effort was the annual *Rutgers Day* to which RUPower brought the completed turbine, logo stickers with QR codes of the RUPower Instagram, and various 3D printed components to talk about the team and marine energy. The event typically receives about 100,000 visitors making it the perfect opportunity for outreach.

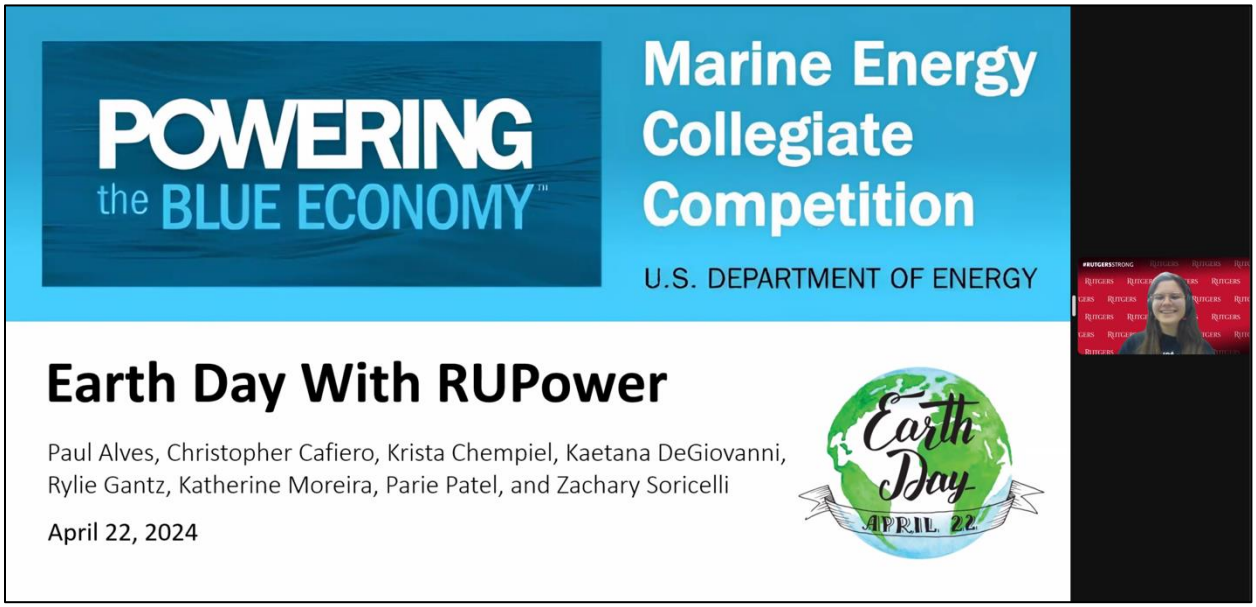

Figure 2: RUPower's Katherine Moreira welcoming webinar attendee's to the "Earth Day with RUPower" Event.

IV. Social Media Strategy Outcomes

As mentioned previously, the social media strategy from mid-year to final submission was altered slightly. Our Facebook page was not gaining traction, and our team decided to reposition our focus fully onto Instagram. This change led to a significant increase in Instagram followers. Our team decided to start our account with team member introductions, then team updates, and then educational visuals (which were integrated into the team updates to encourage a steady flow of media). The team updates were our most popular posts, and that was expected. The team updates featured real-time, in-lab photos that allowed followers to get a glimpse of what the Rutgers MECC team was doing on a day-to-day basis. These updates reached between 20-30 accounts each. The integration of the educational visuals allowed for a big picture understanding of hydropower, and the posts were made with the intent of being as easily digestible as possible. In the future, our team aims to post educational visuals sooner and more often in hopes of them getting as much attention as the team updates did.

Our Instagram account acquired 22 followers as of May 5, 2024. In addition, another 31 non-follower accounts were reached between February and May. This indicates that future iterations of the team should strive to increase non-follower to follower conversion through engaging content. 16 posts were made between November and May, receiving 118 likes. Though posts were evenly distributed throughout the period of activity, the account's most recent posts have received, on average, more likes than early posts. This indicates that the account has been steadily growing, reaching more accounts as the year has progressed.

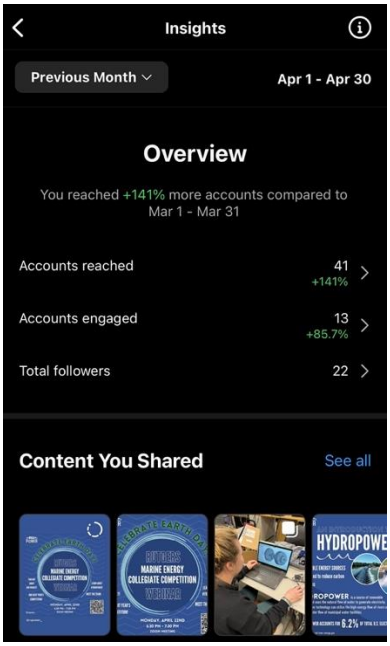

Figure 3: Accounts reached in the month of April (in comparison to March) on RU power's Instagram account @rupower.

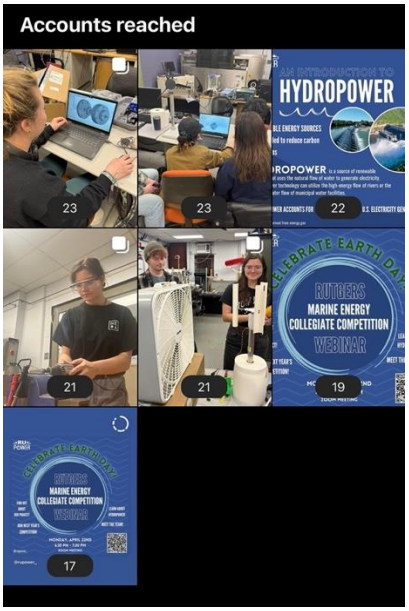

Figure 4: A layout of the @rupower Instagram posts made during the month of April. Posts include real-time team updates, educational infographics, and a RUPower Earth Day webinar flyer.

Figure 5: Introduction post made on the @rupower Instagram page.

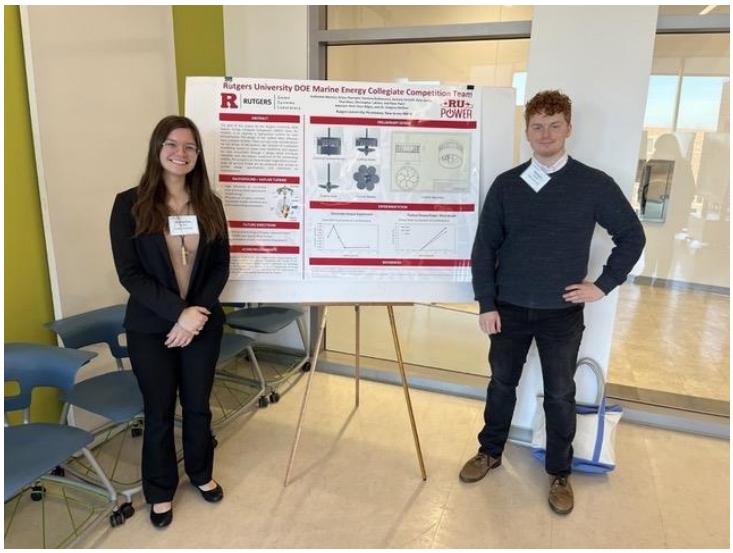

Figure 6: President Katherine Moreira (left) and Marine Science Team Lead Zachary Soricelli (right) presenting at the *Rutgers Offshore Wind Energy Collaborative's* annual symposium.