

NAU COMMUNITY CONNECTIONS FINAL REPORT

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1 After-Action Report & Outreach Impact

Actions Taken:

Following the February submission, outreach efforts were refined to better align with the goal of increasing awareness of hydropower career pathways. Initial efforts focused on broad community engagement; however, based on interview insights and early feedback, outreach shifted toward more targeted educational environments.

Key actions included classroom presentations to undergraduate engineering students, supporting outreach initiatives through the NAU Energy Club, and collaborating with external teams on community-focused projects.

These efforts included assisting with preparation for the KidWind Challenge, supporting a campus plant sale that raised over \$1,000 for sustainability initiatives, contributing to the reconstruction of a greenhouse on NAU campus, and assisting the Ponderosa High School (PHS) capstone team in developing projects for their outreach efforts.

2 Industry Interviews

The industry interviews that were conducted served two roles in our overall project; gain first-hand information about a respective dam and learn about common struggles dams face. Additionally, we interviewed a representative from the turbine manufacturer Voith.

In order to assure the value of our interviews, we aimed to connect our industry outreach with the siting and design portions of the project. Our process for deciding on who to interview was based on what dams we were interested in for those challenges. Additionally, we briefly talked with a representative from Voith Hydro upon making our turbine selection, to ensure our team properly understood the StreamDiver model.

Table 1: Industry Interview Details & Contact Information

Interviewee	Sector	Company	Email	Relationship	HCC Interest
Matthew Traver	Water Operations	USACE	matthew.d.traver@usace.army.mil	Professional	No
Roger Wilson	Navigation	USACE	roger.l.wilson@usace.army.mil	Professional	No
Tim Chambers	Water Operations	Three Rivers Park District	tim.chambers@threeriverspark.org	Professional	No
Albin Atzmueller	Sales & Project Engineering	Voith	albin.atzmueller@voith.com	Professional	Yes

2.1 Peoria Lock & Dam

Date & Time: 3pm-4pm MST 10/21/25

Question Count: 19

Team Attendance: Karsten J., Anthony N., Nathaniel H., Dawson S., Corbin D.

During the interview with Matthew Traver, we learned a lot about the structure of the Peoria Lock & Dam and the unique wicket gates that it had. Traver explained the process of manually opening and closing each wicket and the budget struggles they often wrestled with. He also informed us of the extreme flood season the site experienced, often submerging the entire structure.

This interview had a lot of bad news for us that we felt vastly improved our site selection strategy going forward. As explained in the siting and design report, our initial siting strategy was based almost entirely on quantifiable data (head, flow, etc.). Hearing how the structure of the dam was nearly impossible to add a turbine system, plus the extreme weather conditions that added significant risk to the project, made us realize how vital it is to take qualitative features into account during site selection.

2.2 John C. Stennis Lock & Dam

Date & Time: 12pm-1pm MST 1/29/26

Question Count: 35

Team Attendance: Karsten J., Anthony N., Nathaniel H., Dawson S.

Our team was able to speak to Roger Wilson, the navigation manager of the Tombigbee-Tennessee Waterway regarding John C. Stennis Lock and Dam. He explained how the site had very strict standards on head and tail water levels due to the heavy boat traffic the lock experienced. We learned how the flood gates were usually closed during the local dry season, meaning no flow was going through the dam. Wilson also discussed how they often had to work hard for proper funding to support ongoing repair and expansion projects, citing how a full overhaul of the system would cost \$1.2 billion.

Similar to the previous interview, a lot of bad news about the site was heard. The limits on flow really limited how much power we could produce throughout the year, especially since we intended to have our system be run-of-river. While we had a much better understanding of the site going into the meeting, information on many of these dams online is incomplete or inaccurate, which speaks to the value of talking directly to the experts on a specific site.

2.3 Coon Rapids Dam

Date & Time: 1pm-2pm MST 3/24/26

Question Count: 19

Team Attendance: Karsten J., Anthony N., Nathaniel H., Dawson S.

For our third and final dam owner interview, we spoke with Coon Rapids Dam manager, Tim Chambers, who was very excited to speak with us. We primarily discussed the state of the remaining powerhouse structure as online information regarding it was sparse. The surrounding park was also a major talking point as we wanted to minimize the impact on the visual identity of its surroundings. Chambers explained the local importance of the park and how they often had hundreds of visitors daily. He also explained the problem of funding for maintenance of the dam as it required renting expensive equipment for extended periods of time.

After the first two meetings and site selection attempts. The team went into this interview with a much deeper understanding of the site. This foresight paid off as we had no major issues appear during the discussion. Overall, we felt very comfortable with our site at this point. The only potential issues being potential community pushback from those against such a renovation.

2.4 Voith Hydro

Date & Time: 8am-8:30am MST 10/21/25

Question Count: 8

Team Attendance: Dawson S., Corbin D.

A brief meeting was arranged with Voith Hydro representative, Albin Atzmueller. We discussed the StreamDiver turbine as it had piqued our interest as an efficient, yet affordable turbine option for our project. Atzmueller explained how the StreamDiver was designed with the goal of making the design and construction of small hydro projects faster and cheaper.

From this meeting we learned a lot of information that assisted the team during our facility design process. The goal itself also spoke to us about a major issue in hydropower being initial cost and funding.

2.5 Final Interview Takeaways

Below is a summary of the key takeaways we learned about the hydropower and water resources industry from these interviews:

- **Money/Funding** - A reoccurring issue in every interview we performed was money. Usually for repairs, maintenance, or upfront costs. Due to their size, hydro projects can easily cost several million or even a few billion dollars. This had a big impact on our design and minimizing cost became one of our main goals.
- **Interview Importance** - We quickly learned the value of talking directly with those who work directly with the dams we researched for our project. Information about water infrastructure is scarce online and often restricted due to public safety concerns. This influenced our project as becoming more aware of these wide array of considerations in hydropower strengthened our final product

3 Events & Activities

The team conducted a combination of classroom outreach, campus engagement, and collaborative support activities to promote awareness of hydropower and sustainability.

Classroom Presentations:

- Sessions: 3
- Students reached: 50 (undergraduate engineering students)
- Duration: 10 minutes/session

Presentations introduced hydropower fundamentals, applications, and career pathways. Interactive questions were used to assess engagement and understanding.

Campus & Community Engagement:

The team supported multiple outreach and sustainability initiatives through the NAU Energy Club and external collaborations, including:

- Assisting with a campus plant sale fundraiser (\$1,000+ raised)
- Supporting preparation for the KidWind Challenge (K-12 outreach initiative)
- Contributing to greenhouse reconstruction on NAU campus
- Assisting the PHS capstone team with community outreach projects

These activities expanded outreach beyond the classroom and contributed to broader sustainability engagement.

4 Communications & Media

The team utilized both digital and in-person communication methods to support outreach efforts and extend engagement beyond direct interactions.

Outreach content and project updates were shared through Instagram platforms, including the NAU

Energy Club account and a team-specific HCC account, allowing engagement with both campus audiences and broader external viewers. These platforms were used to promote outreach activities, share educational content, and increase visibility of hydropower and renewable energy topics.

During classroom presentations, QR codes were incorporated to provide participants with direct access to additional resources and project information, supporting continued engagement beyond the initial interaction.

Collaboration with the NAU Energy Club and campus networks further expanded outreach visibility and helped connect students with opportunities to engage in sustainability and renewable energy initiatives.

5 Outreach Strategy Outcomes

Outreach efforts reached approximately 50 individuals through classroom presentations, with additional engagement through Instagram extending total reach to over 5000 viewers.

Key Outcomes

Initial responses indicated that approximately 40% of participants had prior awareness of hydropower, demonstrating relatively low baseline familiarity even among engineering students.

Following the presentations, approximately 65% of participants reported improved understanding of renewable energy concepts, indicating that the outreach effectively increased comprehension of key topics.

Approximately 18% of participants indicated interest in pursuing a career in renewable energy, highlighting an opportunity for increased exposure to renewable energy pathways. Additionally, approximately 70% of participants expressed interest in learning more about renewable energy, demonstrating strong curiosity and openness to further engagement.

An average of 10% of participants per session engaged further by following the team's social media platform, indicating interest beyond the initial interaction.

- Social media outreach generated over 5,000 views across team and partner platforms
- Digital engagement resulted in over 100 interactions, including likes, comments, and shares
- Content reached both followers and non-followers, expanding visibility beyond existing networks



Figure 1: Pictured: Dawson and Anthony presenting to Freshman engineering students

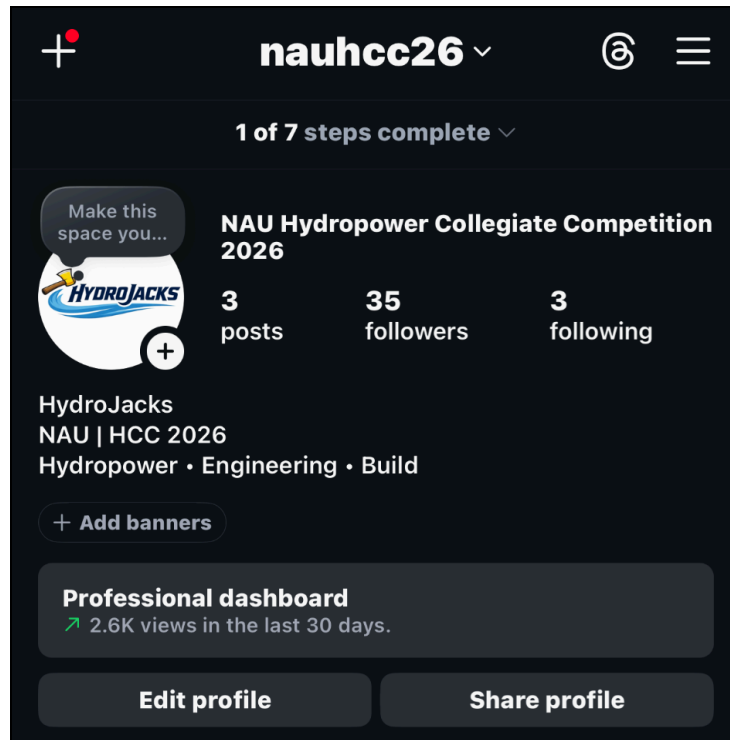


Figure 2: Social media engagement metrics demonstrating outreach reach and interaction

Lessons learned

Outreach revealed that awareness of renewable energy among undergraduate students is relatively limited, with only 40% reporting prior familiarity. However, the increase to 65% reporting improved understanding demonstrates that targeted educational outreach can effectively address this knowledge gap.

While initial interest in renewable energy careers was modest (18%), the high percentage of participants expressing interest in learning more (70%) suggests strong potential for growth with continued exposure.

The observed conversion of approximately 10% of participants to active followers, along with common questions about joining the NAU Energy Club and participating in the competition, indicates that outreach not only increased awareness but also encouraged deeper interest and involvement.

Future outreach efforts will continue to combine interactive presentations with digital communication strategies to maximize both immediate engagement and sustained impact.