

After Action and Metrics Report

California Polytechnic State University, San Luis Obispo

Summary of Goals and Reflection on Outreach Strategies

The central goal of PolyWave Energy's outreach strategy this year was to improve public perception of marine energy by building excitement and awareness around it. To achieve this goal, we became involved in our on-campus community, inspired, and educated younger students about marine energy, and built social media platforms that shared informational materials about marine energy and informed the broader public about our project.

We took on this project at the beginning of the school year with little prior knowledge of marine energy. For this reason, we spent a significant portion of the year conducting research on marine energy and focused our attention on connecting with industry professionals early-on so that we could solidify our knowledge about marine energy before turning our outreach efforts towards educating others.

During our interviews with industry professionals, we discussed ways we could engage our community using our newfound knowledge, proposing three community engagement solutions: a presentation to a middle school class, a cross-technology networking event for energy-focused clubs on Cal Poly's campus, and the creation of a Water Power Club in collaboration with Cal Poly's Hydropower Collegiate Competition (HCC) team. As a team, we completed the first solution, a K-12 educational opportunity in the form of a presentation to a local middle school. This presentation allowed us to connect with students who are considering pursuing a college education, introduce them to potential career paths, and help spark their interest in marine energy, all of which contributed positively to our goal of improving marine energy's public perception.

While this presentation was the event we formally selected, we also attended a cross-technology event hosted by fellow renewable energy-focused clubs on campus which allowed us to network with students with similar passions. One of the challenges of competing as a senior project is the turnover of team members year-to-year. With each competing year, a new team of students join and start the project with minimal knowledge transfer from the previous year. To address this challenge as a team, we chose to put additional time into founding a club that would create a lasting presence on campus for students to learn about renewable energies and compete in the MECC and HCC year after year.

This year, we also aimed to generate a social media presence to address our high-level outreach goals among a broader audience. Building a social media following from the ground up on Instagram and LinkedIn proved to be a challenge as we faced a short timeline to gain followers and increase engagement. The social media section of this report will discuss the metrics and outcomes in detail. Our hope is that by creating a club on campus, engagement and follower count can continue to increase over time through building our network of connections.

Industry Interview Metrics and Outcomes

Throughout the course of this project, we interviewed several industry professionals that helped us gain insight into the needs of the market and the design of our device. Each conversation we had offered a unique perspective on the technologies within the industry, the market opportunities, and the strategies we should take in building the business and device.

While it was not feasible for every member of the team to attend every interview, we ensured that there were at least two members at each interview so that one person could conduct the interview and one person could focus on taking notes. Each interview was also recorded, with the consent of the interviewee, and so team members absent at the live interview could watch the recorded version. Tables 1 and 2 below provide detailed information regarding the interviews including contact information and topics covered.

Table 1: Interviewee Information

Name	Job Title, Organization, & Region	Contact	Relationship Origin	Industry Sector	Interest in Future Events
Lance McMullan	Founder & CEO of Sitkana, Alaska	lance.mcmullan@gmail.com	Professional, Existing Connection	Owner, Developer, Tidal Energy	No
Bill Toman	Energy Manager, Vandenberg Space Force Base, California	witomanium@gmail.com	Professional, Cal Poly Faculty Connection	Operations and Management	No
Jose Beltran	CEO of Beltra Energy Corporation, Utah	beltraenergy@gmail.com	Professional, LinkedIn	Owner, Developer, Energy Storage and Ocean Wave Technology	Yes
Curtis Rusch	Senior Research Engineer at Applied Physics Laboratory, UW, Washington	curusch@uw.edu	Professional, Cal Poly Faculty Connection	Researcher	No
Chris Malzon	Senior Account Executive at Advanced Navigation, California	chris.malzone@advancednavigation.com	Professional, LinkedIn	Consultant, AUV & Navigation	No

Curtis Anderson	Environmental Engineer at the Pacific Northwest National Laboratory, Washington	curtis.anderson@pnnl.gov	Professional, LinkedIn	Researcher	Yes
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Table 2: Interview Topics and Attendance

Name	Topics Discussed	Date	Interview Format	Team Members in Attendance
Lance McMullan	Prototyping and testing a tidal energy device. Career path, starting a company, funding pathways, challenges with implementing marine energy technologies.	10/19/23	Zoom	2
Bill Toman	Current state of marine energy on west coast, opportunities and growth of marine energy field, current and future projects, advice for career development.	10/13/23	In-Person	4
Jose Beltran	Global energy initiatives, research of past/current patents, companies, and technological successes. Using LinkedIn to build our network.	1/17/24	Zoom	3
Curtis Rusch	Wave energy converter testing, AUV charging, challenges of wave energy, device development, marine energy's role in renewable energy field, funding challenges.	1/18/24	Zoom	2
Chris Malzone	AUV technologies, challenges of marine technology implementation, career paths, student involvement, power needs.	1/23/24	Zoom	5
Curtis Anderson	Environmental considerations, national research database resources, understanding end users by mapping out prime oil rig locations for optimal use.	1/19/23	Zoom	3

Event Metrics and Outcomes

Using the knowledge, we gained from our interviews and research into marine energy, we planned a K-12 educational event. We contacted a teacher at Fesler Junior High in Santa Maria, California, who teaches an 8th grade Advancement Via Individual Determination (AVID) class that supports middle schoolers and prepares them for a path to college. Fesler Junior High School is a middle school with 1000

total students whose demographics include 8.7% enrolled in special education, 34.5% qualifying for English Language Learner support, and 89.3% qualifying for free or reduced-priced lunch.

Before the presentation we met with the teacher to discuss what content would be most impactful for her class, and she highlighted their interest in potential career paths, as a college preparatory class. We planned our presentation to support her class's needs and presented it to her 35 students in-person at their campus. We discussed potential careers within the marine energy industry on both the business side and the engineering side in addition to providing supporting information about renewable energy, marine energy in particular. We helped foster their interest in marine energy by showcasing our project and providing them with hands-on examples of what we have been working on as college students and asking interactive questions.

Upon reflection of the presentation, we made a significant impact on the students we communicated with because of the tailored approach we created. We built our entire presentation around the knowledge that they were middle school students in the AVID program. By structuring our presentation to the level of understanding and knowledge the students had, we created an environment that welcomed active engagement and learning. We received positive feedback from the teacher we worked with after the presentation concluded. Through this we empowered students with knowledge and encouraged them to continue exploring this industry.

Beyond our executed solution, we started the process of creating the Cal Poly Water Power club. Members of MECC and HCC collaborated to recruit members to the newly founded club by tailoring announcements to prospective members, and discussing officer positions, scholarships, and internships. Members of our team hosted a booth on campus where we spoke with Cal Poly engineering students, visiting middle school students, and other passers-by to generate interest in the club for next year. Recruitment efforts are ongoing, and our first club meeting is on May 14th.

Another aspect of our outreach was attending a cross-technology networking event hosted by three energy-focused clubs on campus. This event was attended by 27 students, including members of Cal Poly MECC, HCC, Collegiate Wind Competition (CWC) teams, and industry members from renewable energy companies. This was an extremely effective event in growing our network on campus.

Social Media Metrics and Outcomes

For our social media strategy, we utilized 3 forms of social media; Instagram, LinkedIn, and a website. Our goal for social media was to create a strong online presence that allowed us to share updates on the team and informational posts about marine energy. While the website was not interactive like the Instagram and LinkedIn accounts, it served as a platform to relay information on the Cal Poly team and the competition.

We spent the duration of this competition trying to increase our followers and engagement of the Instagram and LinkedIn by making announcements in classes on campus, promoting the accounts on our personal social media, and having professors send out email announcements to their students. We were

able to gain followers over time, however, not to the extent we had hoped for. Data on the likes, comments, and followers on the Instagram and LinkedIn can be found in the Appendix.

Despite our continuous efforts to increase followers and drive engagement, we faced difficulty in converting interest into action, especially on Instagram. We were able to generate interest through promotional announcements, activities, and informative content; however, we struggled with turning the interest of these individuals into a tangible increase in followers. This difficulty highlights the importance of capturing attention and providing incentives for engagement. We learned about the need for compelling reasons to follow our social media, whether through more active content, engaging contests, or new incentives. Moving forward, we would refine our approach to create a bigger conversion of interest into active participation. We would also continue partnering with other clubs or groups on campus for shared promotion of our project.

We had more success with more connections and engagement on LinkedIn and found that it provided a better environment for networking within the marine energy industry. Despite achieving a higher level of engagement, there is still room for improvement. In the future, we would post more regularly on LinkedIn and try fostering a greater sense of community connection through group forums or virtual events.

We learned the importance of setting interim goals with social media to help us build towards our long-term goals and keep us on track for increasing our engagement at a steady rate. Another lesson we learned throughout this project was to stick to a social media posting schedule. We created a monthly calendar with days to post and the type of content that would be shared. This was an extremely valuable tool, but it was difficult to maintain diligently as full-time students.

Overall, while we did not achieve the highest level of followers or engagement as we had hoped, we still did impact the community. For the followers we did have, we posted informational content and engaging updates on the team. We also learned invaluable lessons from this sector of the competition; everything is a learning curve. Moving forward with social media accounts, we are better equipped to achieve our goals of establishing a compelling online presence.

Social Media Links:

- LinkedIn: [MECC Cal Poly SLO](#)
- Instagram: [@calpolymecc](#)
- Website: [Cal Poly MECC](#)

Appendix: Social Media Data and Outreach Photos

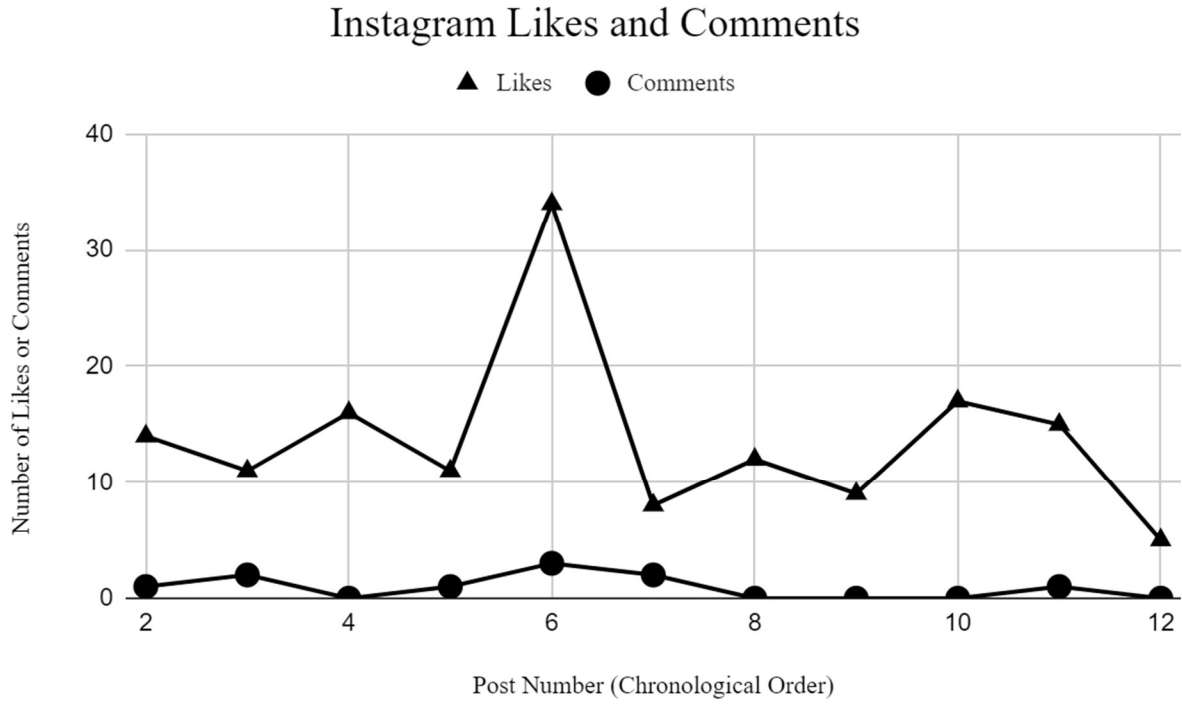


Figure 1: Instagram likes and comments data.

Total Number of Followers	Total Number of Following
78	47

Table 3: LinkedIn Data

POST TOPIC	POST #	LIKES	COMMENTS	REPOSTS	IMPRESSIONS
Info about MECC	1	6	0	3	742
Top wave energy news	2	2	0	1	276
Meet our team	3	24	0	1	2,325
Team goal and solution	4	3	0	0	215
Impact of AUVs	5	3	0	0	280
Wave energy quiz	6	3	1	0	213
Tethys AUV	7	5	0	0	401
Marine energy market report	8	4	0	0	248
Behind the scenes with engineers	9	5	0	1	584
Highlighting our trip to the middle school	10	3	0	1	470
More behind the scenes building our device	11	5	0	1	254

Total Number of Connections
258



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Following

Message

+8 ...

13 posts

77 followers

47 following

Cal Poly MECC

Cal Poly SLO's Marine Energy Collegiate Competition Team

www.linkedin.com/in/mecc-cal-poly-slo-4277322a9?utm_source=share&utm_campaign=sh...

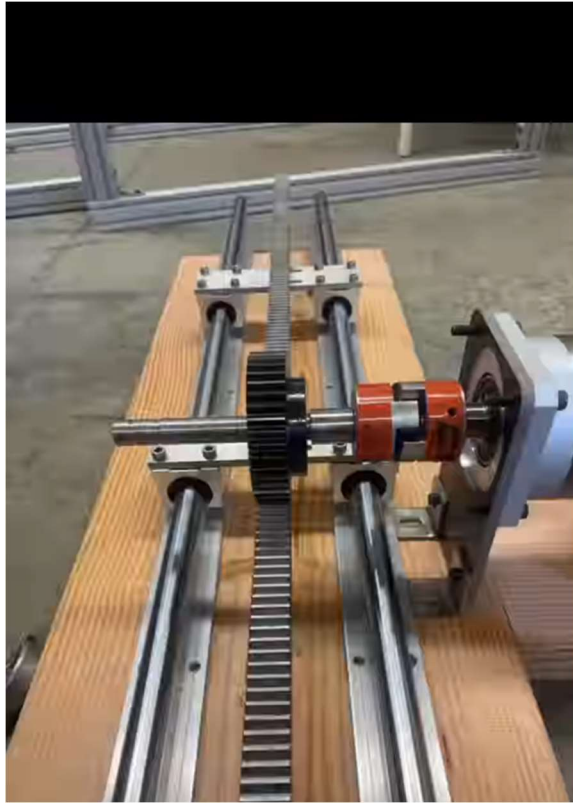
POSTS

REELS

TAGGED



Figure 2: Current Instagram feed showing the most recent posts.



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supramiya • Jdot Breezy - Shoot it Out (Slowed)

calpolymecc Look at that rack and pinion go 🤖
(And our hardworking engineers!)

Designed for efficiency and sustainability, our Wave Energy converter brings clean, renewable power to AUV charging stations that are mounted on oil rigs.

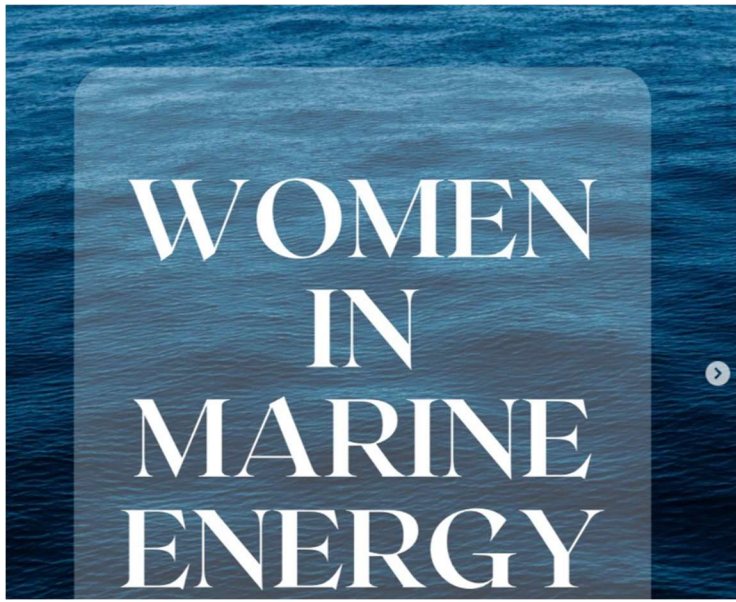
Our innovative rack and pinion system harnesses the power of the ocean while mitigating potential environmental harm. From simulated testing to real-world implementation, we're pioneering a greener, cleaner future!

👍👍👍👍

#marineenergy #blueeconomy #sustainability #oceans
#conservation #energy #greenenergy #engineering
#environment #autonomousunderwatervehicle #robotics
#marineconservation #savetheocean #research #calpolymecc
#calpolyslo

Edited · 2d

Figure 3: Example Instagram post – compilation video of the engineers building the WEC.



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calpolymecc Celebrating Women in Marine Energy

In honor of Women's History Month, we're shining a spotlight on some incredible women making waves in the field of marine energy! Here's to their groundbreaking achievements and unwavering dedication to a sustainable future:

- 🌟 Inna Braverman - CEO of Eco Wave Power
Inna's pioneering spirit and entrepreneurial vision have propelled Eco Wave Power to the forefront of renewable energy innovation. Her leadership has led to the development of innovative wave energy solutions, harnessing the power of the ocean to generate clean electricity.
- 🌟 Britta Schaffermeister- CEO of Dutch Marine Energy Center
As the driving force behind the Dutch Marine Energy Center, Britta is championing the advancement of marine energy technologies in the Netherlands and beyond. Her commitment to collaboration and knowledge-sharing is paving the way for sustainable energy solutions worldwide.
- 🌟 Carrie Schmaus - Marine Energy Technology Manager at the Water Power Technologies Office
Carrie's expertise and leadership at the Water Power Technologies Office have been instrumental in advancing research and development initiatives for marine energy technologies. Her dedication to driving progress in the field is shaping the future of renewable energy production.

Figure 4: Example Instagram post – informational slideshow celebrating women in marine energy for Women's History Month.



MECC Cal Poly SLO • 1st

Student at California Polytechnic State University-San Luis O...

4w • 🌐



Inspiring the next generation of ocean guardians!

This past Friday our marine energy team had the incredible opportunity to share our passion for renewable energy with the students at Fesler Middle School in Santa Maria. In educating younger students about the world of marine energy, we hope to shape a brighter and greener future for all!



Figure 5: Sample LinkedIn post updating followers on the presentation to the local middle school.

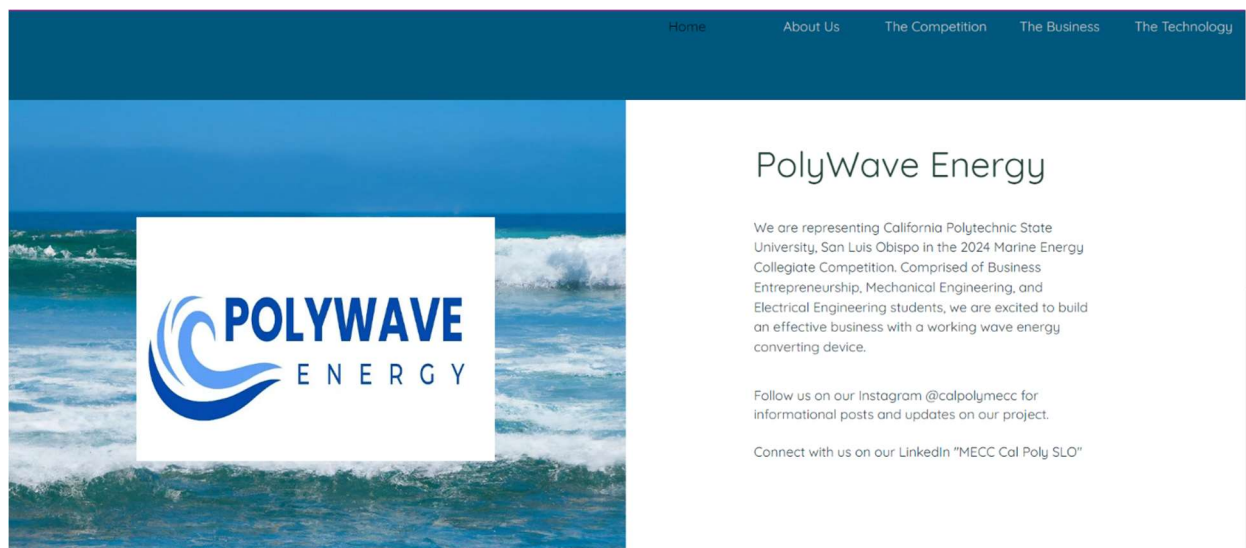


Figure 6: Website landing page.





Figure 7: Team photo from the presentation to the local middle school.



Figure 8: Presentation at local middle school.