Metrics Report

Wildcat Wind Power
Kansas State University

2022 | 2023

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Introduction

Wildcat Wind Power (WWP) is a design team at Kansas State University. We are student led and completely extracurricular. Our team's overall focus was to increase the awareness and presence of wind energy while providing an educational experience that allows our members to learn in a variety of ways, including working on a team with members in engineering and non-engineering disciplines. Our plan to accomplish this was centered around four main goals: (1) growing and diversifying the team, (2) building a passion among Kansas students for wind energy, (3) building community awareness and support for wind energy, and (4) showing the improvement of the team as a whole and at an individual level. We spent the year structuring our outreach and involvement around accomplishing these goals.

Outreach Events

Each outreach event this year was focused around at least one of our four main goals. By holding this focus in mind, we were inspired to create new and unique events. Because of this, the team had one of our most successful years of outreach events, with a grand total of 28 events. We carried out almost every planned event from our outreach timeline in the fall, and participated in even more by taking advantage of any events that arose and creating new unique opportunities. We attribute many of our successes to our commitment to planning and getting involved immediately after coming back from summer. A table containing all our events along with a description, the goal(s) targeted, and the date of the event is shown below.

Event Name	**Description (Target Goal Number(s))**	**Date**
K-State Activity Fair	Recruiting new members by tabling (1)	8/25 and 3/31
Engineering Organization Fair	Recruiting new members by tabling (1)	8/30 and 1/29
HDR Interview	Industry interview (3,4)	9/20
American Society of Civil Engineers	Presentation for ASCE to build awareness and encourage participation in the team (1)	9/22
Invenergy Interview	Industry interview (3,4)	9/29
Burns & McDonnell Interview	Industry interview (3,4)	10/3
Kansas Renewable Energy Conference Tabling	Talking to local community members to build support for wind energy (3,4)	10/3 and 10/4
Local News Interview	Local news interview to promote the club and wind energy (3,4)	10/4
ICF Interview	Industry interview (3,4)	10/20
Presentation to the K-State Electrical Advisory Board	Building support for the team and showcasing our accomplishments (4)	10/28
Green Tech WWP Highschool K-State Visit (19 Students)	Hosted a K-State Engineering building tour, team presentation, and wind tunnel demonstration for 19 High School Students (1,2,3)	11/10
Mental Health Week Cornhole	Showcasing the important relationship between mental health, school, and the team (4)	11/11
Frankfort Middle and High School Outreach	Presentations to educate 85 area youth about renewable energy and the team (1,2,3)	1/9
Centralia Middle School Outreach	Presentations to educate 25 area youth about renewable energy and the team (1,2,3)	1/10
Nemaha Central High School Outreach	Presentations to educate 60 area youth about renewable energy and the team (1,2,3)	1/11 and 1/12

High School Senior Day	Building passion for renewable energy among High School senior students. Spreading awareness for the club (1,2)	1/26 and 2/13
Bowling Team Building Event	Team building – 11 team members (4)	2/23
Manhattan KidWind Judging	Building passion for renewable energy among Middle and High School students. Spreading awareness for the club– 17 KidWind teams (1,2)	2/28
Engineering Open House	Hands-on wind turbine building activity for Elementary to High School students and their families to build awareness and support (1,2)	4/1
NextEra Wind Farm Tour	Visited all stages of wind farm construction and operation. Networking opportunity for both team and industry professionals (3,4)	4/27
Electrical and Computer Engineering Awards Banquet	Showcasing our achievements and the improvement of the team (4)	5/2
Design Team Cookout	Team building (4)	5/7
K-State Media Presence	Banners, fliers, newsletters, and magazine content around campus and sent to alumni, showcasing the team's success and building awareness. (4)	Ongoing

Online Presence

A strong online presence is an excellent way to make progress on each of our goals. For the first goal, we've used social media to spread awareness about the team and what we do which helps us reach new groups of students for recruitment purposes. Our second goal is reached through social media by connecting with younger students at events and sharing renewable energy positive posts. Similarly, we connect with local community partners to show our support for wind energy and build awareness of renewables. Finally, Instagram is one of the best places for showcasing the achievements of the team and individuals. For example, on 'Windsdays' we post officer spotlights highlighting a specific team member and their accomplishments. We also post about our testing, interviews, and team events throughout the year.

Our social media, @KSU_WWP, was very successful in gaining traction over the past year. We focused our efforts on increasing our Instagram following because we believed it was the best platform to reach college and High School students. This year we reached 1,793 accounts, shared 14 posts, 24 stories, had 10,653 impressions. Our most common audience was 18-24 year olds, making up 74.5% of our accounts reached. We also saw a large local impact, 51% of the accounts reached were from Manhattan. These statistics confirm the success we had in accomplishing our goals of gaining local support for wind energy and reaching younger audiences for both recruitment purposes and to establish a strong base of wind energy support.

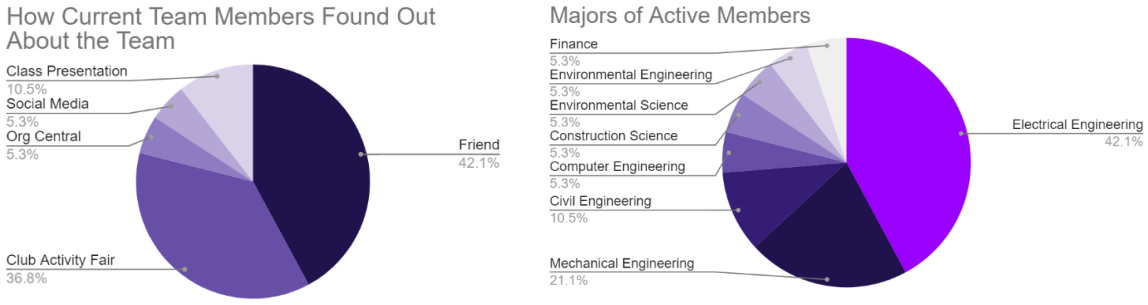
When polling our current members, one joined the team because they saw the team on social media. Our Instagram was brand new last year and we started the competition year with a following of 142 followers. We are ending the year with a grand total of 419 followers, nearly triple what we started with. We did this by keeping a structured posting schedule to prevent overwhelming followers and working with Kansas State accounts to boost our page.

Recruitment Plan Outcomes

Our recruitment was focused around our first goal for the competition year: growing and diversifying the team. We focused on seeking students that are innovative thinkers and reliable teammates from different majors. We found success in recruiting from 9 different majors. These majors offer unique

perspectives on the challenges that offshore wind faces, and the students that contributed were crucial to the success of the team.

One interesting takeaway from our final team breakdown is that we recruited someone from almost every recruitment opportunity we took advantage of. The two best recruitment strategies we've found are by word of mouth and at the club activity fairs. There were four club and activity fairs that we participated in, and we found that it was the best way to reach freshman students. Alternatively, we were able to build interest with these students by presenting to their freshman classes. Getting the opportunity to talk to freshmen is a great way to build enthusiasm in younger students that will keep the club going through member turnover as seniors graduate. Similarly, to recruit more diverse majors we presented to specific clubs such as the American Society of Civil Engineers. Due to our successes in recruiting, we have one of the most diverse sets of majors in team history. The team also consists of 21.1% Freshmen, 26.3% Sophomores, 31.6% Juniors, and 21.1% Seniors. A final breakdown of the team at the beginning of May 2023 is shown below.



Interviews

Our team conducted four interviews during the first semester. Our goal with these interviews was to find a diverse group of industry professionals that could offer both new career opportunities and perspectives on different aspects of the competition. These interviews were also an opportunity to accomplish our goals of building community awareness and support for wind energy while also showing the improvement of the team through introductions and brief presentations. Each of the experts, their title, and the number of attendees are listed below with an interview summary following.

Kirsten Ampela –HDR Senior Marine Scientist *9 attendees*

Kirsten works primarily in the offshore wind industry, applying her marine biology knowledge to marine life surrounding wind farms off the East Coast. Her work is mostly concerned with analyzing how the construction of offshore wind farms affect wildlife and how to mitigate any negative impacts. She enjoys conducting research to answer tough questions in her day-to-day work. When asked about advice she would give to someone entering the workforce, Kirsten emphasized the importance of finding a career which makes you excited to go to work every day. We learned that, while a doctorate degree could advance your career, it was certainly not necessary to begin in the field. Kirsten also emphasized how internships are a great way to get your foot in the door. Our biggest takeaway from Kirsten's interview was the information on noise pollution mitigation strategies, such as a bubble screen, which we chose to include as an environmental mitigation strategy in our Project Development Report.

Esteban Correa -Invenergy Director of Renewable Electrical Engineering *18 attendees*

Invenergy is a renewable developer that focuses on solar, onshore wind, and offshore wind. Esteban spoke about Invenergy's offshore wind project off the coast of New Jersey. During Esteban's time at Invenergy, he has had the opportunity to communicate with EPC contractors on renewable projects. Over Esteban's tenure, he has advanced to roles with more focus on management than detailed design of projects. Esteban believes that part of becoming a great engineer is not being afraid of making

mistakes - making mistakes is a learning opportunity. Esteban also shared that Invenergy has many entry-level full-time and internships positions for those with or pursuing Bachelor's Degrees.

Brent Wells –Burns & McDonnell Project Manager *5 attendees*

Brent focuses on the management of EPC offshore wind projects. As an EPC, Brent gets to take projects from an idea and turn them into a reality. The opportunity to play a key part in a new and growing industry is something that Brent finds extremely empowering. Brent shared how his background as an electrical engineer has allowed him to excel at his current project management role. Having system design knowledge allows him to make better decisions as he solves issues that arise throughout the construction process. In Brent's field of work, a Bachelor's degree is required and PE certification is strongly encouraged.

Hayden Dillavou –ICF Energy Markets Analyst *16 attendees*

At ICF, Hayden focuses primarily on the ERCOT power market. Hayden enjoys this market because it has challenges which are unique when compared to other ISOs. He gets to work remotely with many colleagues across the world. Working with colleagues with diverse backgrounds gives Hayden a large pool of knowledge to draw on when he has questions. When asked about advice he would give to those entering his field, he emphasized the importance of gaining experience working with ISOs. Hayden has a great passion for renewable energy and enjoys employing simulations to enable smoother interconnections for renewables. Hayden shared that the competition was a great steppingstone for his entry into the renewable energy industry. This interview was unique to the team because it was the first interview with someone working specifically in the power markets sector.

Outside of these interviews for the competition, we also had the opportunity to talk to many other experts throughout the year. These experts offered knowledge to fill gaps in our understanding in a similar fashion. Although these were not formal interviews for the competition, the connections made and conversations had will likely lead to opportunities for interviews in the future.

Reflection on Interviews

The interviews we conducted were valuable to both our competition deliverables and our personal development. We had a high attendance at the interviews, with an average of 12 students. We used the information we learned from asking questions to the experts to strengthen our knowledge and fill in any gaps we may have had previously. By asking questions about job and internship opportunities we were made aware of new options for future positions. Though graduating seniors had already accepted positions at other companies, the experts were excited to talk to younger students about internship opportunities in the future.

Team and College Breakdown

As of Fall 2022, the Carl R. Ice College of Engineering had 2,766 total students. Of these, 17.8% are female and 14.1% multicultural. Our team breakdown survey at the beginning of May showed that of 19 active members, 21% were female and 16% multicultural, both higher than the college average. The officer team is made up of 10 students, 3 of which are women.

Conclusion

Structuring the team's outreach around our four goals gave us purpose in every event we partook in. The large amounts of people we reached will not only help the team in the short-term but have a long-term impact on the support of Kansas wind energy. Building excitement in both students and the local community allows us to create a foundation for renewable energy that will continue to grow stronger as time goes on. The team had one of our most successful years of recruitment and created a space where students can learn and make mistakes without classroom penalties. The legacy of the 2023 team is a strong future for both the team and local renewable support.

References

[1] Kansas State University. (n.d.). Percentage by race, gender, and Pell status, fall 2020. Retrieved from https://www.k-state.edu/pa/data/student/studentfb/Percentage%20by%20race%20gender%20and%20pell.pdf

[2] Kansas State University College of Engineering. (2021). Fact Book 2021. Retrieved from https://engg.k-state.edu/docs/college-data/fact-book.pdf