

# Wildcat Wind Power

---

Metrics Report – 04/18/24

## **Faculty Advisor**

---

Don Gruenbacher

## **Student Leads**

---

Israel Barraza  
Macie Sexten

## **Officers**

---

### *Electrical Leads:*

David Pierson  
Kent Detering

### *Mechanical Leads:*

Jacob Lowe  
Rebecca Semple

### *Project Development Leads:*

Jakob Long  
Chase Glasscock

### *Treasurer:*

Joseph Lilley

### *Secretary:*

Jose Rodriguez-Milan

### *Connection Creation Lead:*

Cameron Million



**WILDCAT**   
**WIND POWER**

## **Introduction**

---

Wildcat Wind Power (WWP) is a design team at Kansas State University. WWP is led by students as an extracurricular organization within the College of Engineering, and while the team is comprised mainly of students within the college, efforts from past teams have allowed us to diversify our team to include as many perspectives as possible. This year, our team chose four goals to ensure that we were increasing our presence within the community, and completing the goals set by the competition. These goals were: (1) improving the diversity of majors within our club, (2) fostering our community's passion and knowledge of wind energy improving the teams understanding of hybrid energy systems, (3) improving the community's understanding of hybrid energy systems, and (4) improving the teams understanding of hybrid energy systems. A general timeline of events can be found in Figure 4.

## **Recruitment Strategy Outcomes (Goal 1)**

---

This year we focused heavily on recruiting more diverse perspectives within our club. To accomplish this, we participated in the several activity fairs throughout the year including University wide events to attract diversity, for example our booth at the Spring Org Fair is shown in Figure 2. We managed to recruit from 9 different majors including members in the College of Education and College of Arts and Sciences who greatly helped improve our interactions with students and our project development team (Figure 11). Overall, we are on pace with the College of Engineering as shown in Figure 12 and Figure 13. We also gained membership when compared to last year, however, a large proportion of the team and executive leadership are seniors, and the team will work to improve our grade distribution to include younger members. A breakdown can be found in Figure 10.

## **Online Presence (Goal 2)**

---

Social media has been at the forefront of our methods towards increasing the community's passion and knowledge of wind energy, in addition, the team has also participated in several online campaigns used by the College of Engineering (Figure 3). Our primary method for social media has been our Instagram (@KSU\_WWP) (Figure 5). In the past year on this account we have reached 609 accounts, shared 14 posts, 20 stories, and a total of 9,535 impressions. We had a large local impact with approximately 48% of the interactions coming from within Manhattan, KS. Finally, most of our interactions were young adults in the 18-24 age range (65%).

## **Execute a Cross-Technology Collaborative Opportunity (Goal 3)**

---

We focused on highlighting the ways that solar and wind energy work together, and how that relationship is further benefited with the use of battery storage. We held three major events designed to teach our members and the community about the benefits of using renewable energy sources in unison. We hosted a speaker to talk about the combined use of energy sources, hosted a demonstration for Olathe West High School's Green Technology Academy, and set up a demonstration at Kansas State University's Open House.

Wildcat Wind Power co-hosted John Ransom, an Energy Storage Department Manager at Burns and McDonnell, to come speak on battery storage and its importance in making renewable energy practical. He taught us about how solar and wind power production peak at opposite times in the day, and how in combination with battery storage, this makes for a more stable grid. This event was attended by about 30 students, 12 of which were WWP members. This event furthered our outreach goal of educating students and members of the public on wind and renewable energy.

We also spoke to the Green Tech Academy about solar and wind collaboration (Figure 7). This event had 14 high school student participants and 6 WWP student leaders. This furthered two of our goals. It is important to WWP to promote wind energy as part of a renewable power future. Additionally, speaking to the high schoolers is part of our recruitment strategy. Many of the students we spoke to will attend K-State's engineering program and introducing them to our

club and activities in high school means that we will continue to have a thriving team for years to come.

Our largest Connection Creation opportunity is Open House. This year, our booth was seen by hundreds of community members, and seven of WWP's members were able to interact with both kids and adults from Manhattan, KS and the surrounding area. One of the activities we held was a demonstration of solar and wind power working together, as seen in Figure 1. We were able to speak to kids and adults about the importance of having a robust renewable energy portfolio, focusing specifically on how wind generation happens to peak at opposite times as solar. This event met a few of our high-level outreach goals, primarily supporting wind energy and creating community engagement. This event is WWP's best opportunity to reach the community, and we felt that our discussions with participants were meaningful and effectively promoted the importance of combining Kansas wind energy with solar sources to make our power grid as stable and efficient as possible.

### **Understanding the Wind Energy Industry (Goal 4)**

---

WWP has conducted four insightful interviews with industry professionals. Our primary objective in conducting these interviews was to deepen our understanding of the renewable energy industry (Figure 8). Additionally, we aimed to offer valuable insights to aspiring students looking to enter this field by providing them with practical tips and advice from seasoned professionals who were once in their position. Moreover, these interviews have served as a valuable opportunity for our team to enhance our knowledge and comprehension of the hybrid energy system, particularly in the context of the Project Development Competition.

*Emily Paice – Invenergy Senior Director of Global Sourcing*

14 attendees

Emily embarked on her journey with Invenergy as a Project Engineer in 2015, gradually ascending to the position of Senior Director of Global Sourcing. She offered a comprehensive understanding of sourcing the appropriate and cost-effective technology for renewable energy projects. She attributed her success in the company to her proactive approach in providing assistance outside of what she was required. She said the best aspect of her job is the uniqueness and diversity that comes with each day. Reflecting on her college experience, Emily remarked that she would have opted for more non-core classes such as business and finance. Her insights provided valuable information to our team that was directly applicable to our career endeavors. Emily also expressed her openness to participating in future CWC events.

*Jeremy Lefaver – CEO of Heartland Area Land Owners (HALO)*

12 attendees

Jeremy primarily focuses on collaborating with local communities and government to gain support for wind energy projects in the developmental stages across the Midwest. Leveraging his background in the Missouri government, Jeremy devises a strategic approach to address local opposition. This strategy encompasses monitoring, gathering actionable information, building a coalition, as well as engaging and mobilizing stakeholders. Jeremy founded HALO after identifying a gap between developers and landowners within the wind energy sector. He subsequently motivated us to seize opportunities that we believe possess the potential for significant advancements. Jeremy was really interested in what we were doing as a team and would participate in future CWC events.

*Alan Anderson – Chair of Energy Law Practice Group, Polsinelli*

6 attendees

Alan started working with renewables in 2001, which he really enjoyed because he believed in what he was doing and the benefits for the local economy, ratepayers, and the grid. His firm has around 1000 lawyers and works on 50 to 75 projects at a time. He provided extensive insight into the challenges faced by communities, including declining populations impacting tax bases and commercial enterprises, the shortage of daycares hindering workforce participation due to

childcare responsibilities, and the absence of Pre-kindergarten programs. Moreover, he highlighted how renewable energy projects have positively impacted these issues, expressing genuine pleasure in witnessing the transformative effects within these communities. He stressed the vital importance for undergraduates to immerse themselves in their chosen sector by actively consuming relevant information. Additionally, he highlighted the significance of finding passion in one's work, while also acknowledging the inevitable ups and downs that come with any career path. Furthermore, he shared comprehensive insights on topics ranging from ITC vs. PTC investments to the broader political landscape and upcoming renewable energy trends like green hydrogen. This wealth of knowledge is directly applicable to the Project Development Competition. Lastly, he expressed eagerness to contribute to future CWC events, demonstrating his willingness to support and engage with the community.

*John Felitto – NextEra Project Manager*

*13 attendees*

NextEra is one of the nation's leading renewable energy investors, with a remarkable 66% of their electrical generation sourced from wind power. John assumes the role of project manager, overseeing wind, solar, and battery storage projects across Kansas. During his discussion, John explained the intricate process of planning and executing renewable energy projects. His expertise lies primarily in the financial realm, where he navigates tasks, such as determining construction costs, evaluating project return on investment, and ensuring profitability. John's entry into the industry stemmed from his financial background at Notre Dame, combined with a strong interest in project development. His advice encourages us to maintain an open-minded approach to career opportunities, as unexpected paths may lead to rewarding outcomes. Furthermore, John expressed his willingness to participate in future CWC events, demonstrating his commitment to sharing knowledge and fostering growth within the industry. In addition to these competition interviews, we seized the opportunity to engage with many other experts over the year. These experts generously shared their insights, helping us to bridge gaps in our understanding in much the same manner. While these interactions may not have been formal interviews for the competition, the connections forged, and discussions held are likely to pave the way for future interview opportunities.

### Reflection on Interviews

These interviews played a vital role in boosting both our competitiveness in the competition and our overall grasp of the wind industry. We were pleased to see strong attendance at each session, with an average of 11 students actively participating. Each interviewee generously addressed student inquiries and offered valuable insights, inspiring us to pursue careers in the field. The experts were not only welcoming but also eager to discuss job opportunities and internships with younger students, fostering potential future interviews for WWP alumni.

### Student and Local Community Engagement (Goal 2)

Engaging in a meaningful and impactful way with the community has always been one of our top goals. This year, we continued some of the annual traditions such as volunteering for the KidWind competition held at K-State, hosting the Green Technology Academy, presenting to the Electrical and Computer Engineering advisory board, and Kansas State's Open House, though the team also sought to improve the impact on the community with a variety of exciting opportunities.

#### Marion County Wind Farm Dedication

One of our first opportunities to engage with the community at large was to participate in the Marion County wind farm dedication. This event was attended by approximately 200 people. It was clear that the developer, Ørsted, and the community had a strong relationship that led to a project that benefited the community and developer greatly. The event included a commendation of the team and a KidWind team from Hutchinson, KS, and our respective national competition success (Figure 6). The representative from our team was able to interact

with the CEO of Ørsted, members of the community, and the construction management firm's project management team.

#### DCCC Presentation

Dodge City Community College (DCCC) invited one of our team members, an alumnus of DCCC, to deliver a presentation on energy and their involvement in the CWC. The presentation included information on various forms of energy including nuclear, solar, hydroelectric, and wind energy, and their interplay with each other on the grid. In their presentation over their involvement in the CWC, they gave an overview of our turbine, and delved into the specific components of our system like the foundation, nacelle, active pitch and how these components led to our team's success. At the conclusion of their presentation, they also presented on the leadership they had experienced being a part of the team, as well as their experiences being a mechanical engineer, but needing to work with a variety of other majors within the team to complete our project.

#### Electrical and Computer Engineering Presentation

A member of our team presented to two different introductory Electrical and Computer Engineering courses. This presentation discussed what WWP does, some of our goals for this year, how they can join the team, and how WWP will help them develop skills for their future.

#### Green Technology Academy

This event served the dual purpose of goals (3) and (4) and was discussed in the Execute a Cross-Technology Collaborative Opportunity section *above*.

#### KidWind Volunteering

The team has found great success in providing an impactful experience for younger students in the KidWind event hosted in Manhattan, KS. During this event, the team helps with the judging conducted in the competition and can talk with the teams and provide some general support. This event has generated meaningful connections as we often see some of the competing teams we've helped during this regional competition at the national KidWind event, we can show them what WWP does, and root for each other.

#### Douglas County Commission Meeting

Douglas County has been evaluating and implementing regulations for wind farms that will be constructed within their county. Jeremy Lefaver, one of our industry contacts, mentioned that he had been doing work in the region and found that the county had set their setback limits at 2,500 ft from property lines. This is far above the industry standard and because of this, many developers felt that they were unable to find value in building wind farms in Douglas County. To provide some support for the Wind industry in this county, two members of our team travelled to Douglas County to provide their perspectives on the setback limits, and how these excessive limits may limit job growth for Kansas Graduates. The duo presented to the three county commissioners and approximately 15 audience members (Figure 9). The team felt that this event has the potential to impact the future of the Wind industry in Kansas greatly.

#### Open House

The team felt that this event completed goals (3) and (4) and was discussed in the Execute a Cross-Technology Collaborative Event section *above*.

#### Engineering Design Showcase

The team will be demonstrating the results of the year-long project at the Engineering Design Showcase. This event will be a great place for members of the team to engage with other students in the College of Engineering and demonstrate our knowledge of hybrid energy systems and wind generation. It will also serve as a great place to hear some great questions from peers to practice answering those prior to the competition.



Figure 1 - Open House Wind/Solar Demonstration



Figure 2 - Spring Organization Fair



Figure 3 - Engineering Hype Video Screenshots

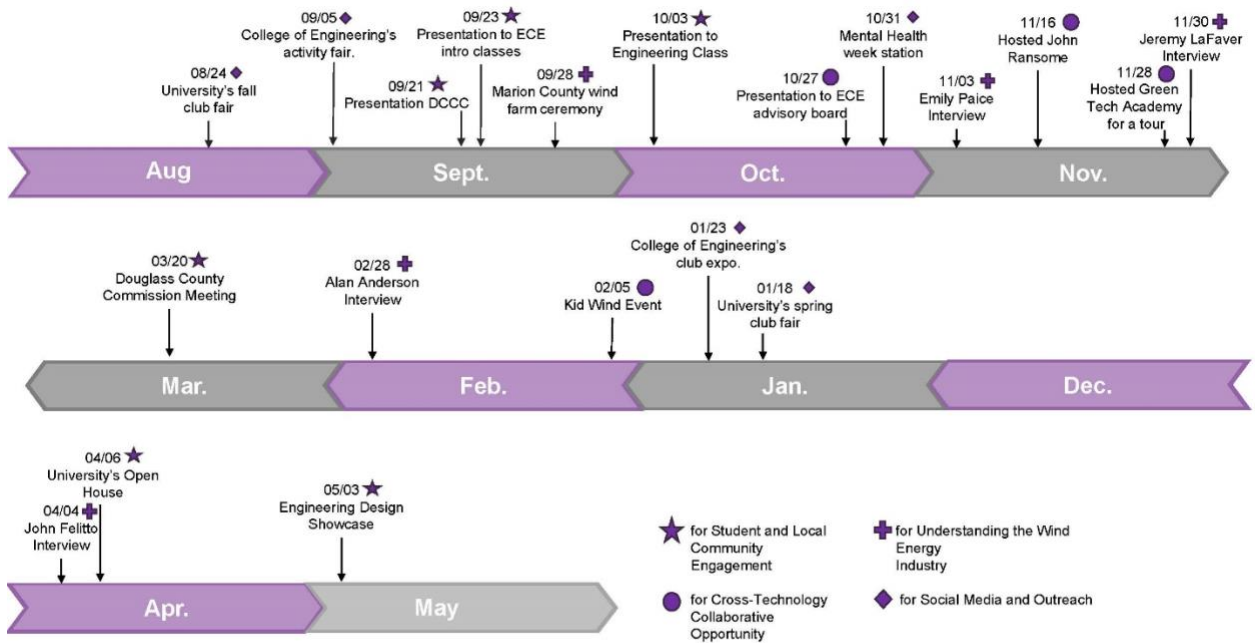


Figure 4 - Timeline of Events

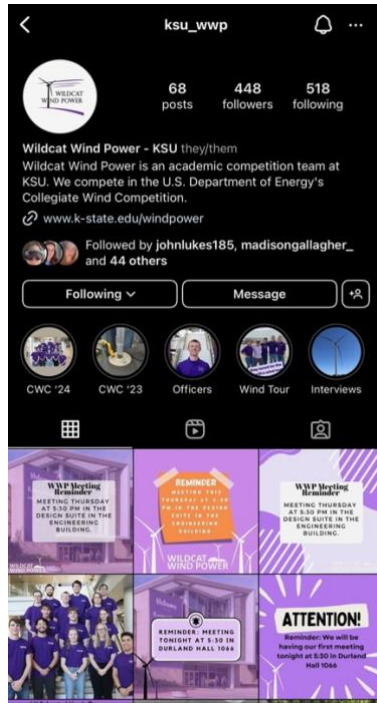


Figure 5 - KSU\_WWP Instagram Page



Figure 6 - Marion County Visit





*Figure 7 - Green Tech Academy Visit*

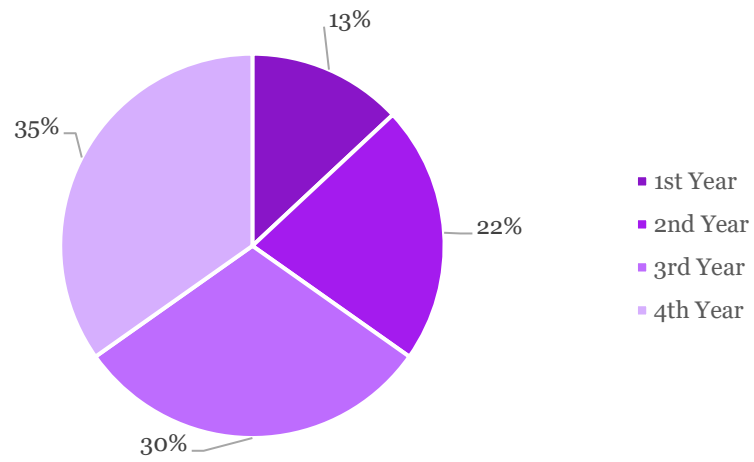
 <p>Photo Courtesy of LinkedIn</p> <p>Jeremy LaFaver HALO – President &amp; CEO Jeremylafaver@gmail.com</p>	 <p>Photo Courtesy of LinkedIn</p> <p>Emily Paice Invenergy – Senior Director of Global Sourcing epaice@invenergy.com</p>
 <p>Photo Courtesy of Alan Anderson</p> <p>Alan Anderson Polsinelli – Energy Practice Group Chair aanderson@Polsinelli.com</p>	 <p>Photo Courtesy of John Felitto</p> <p>John Felitto NextEra – Project Manager John.Filetto@nee.com</p>

*Figure 8 - Industry Interview Contacts*

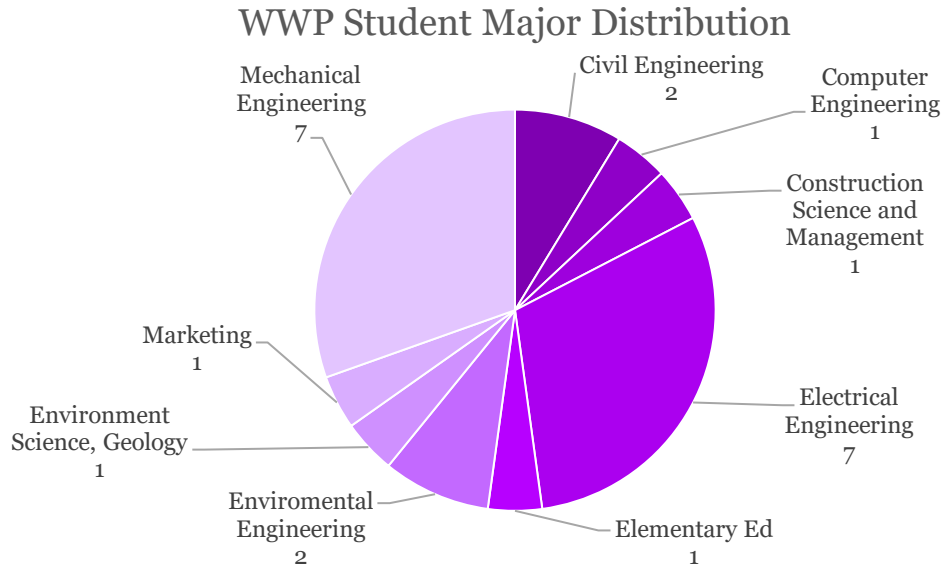


*Figure 9 - Douglas County Commission Meeting*

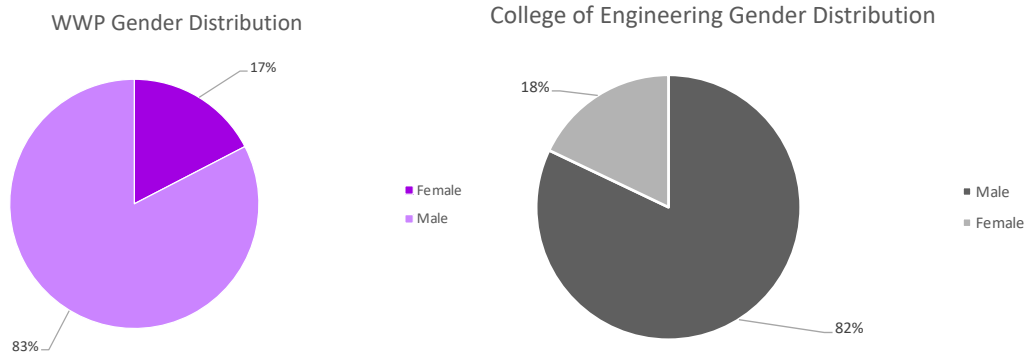
### WWP Grade Level Distribution



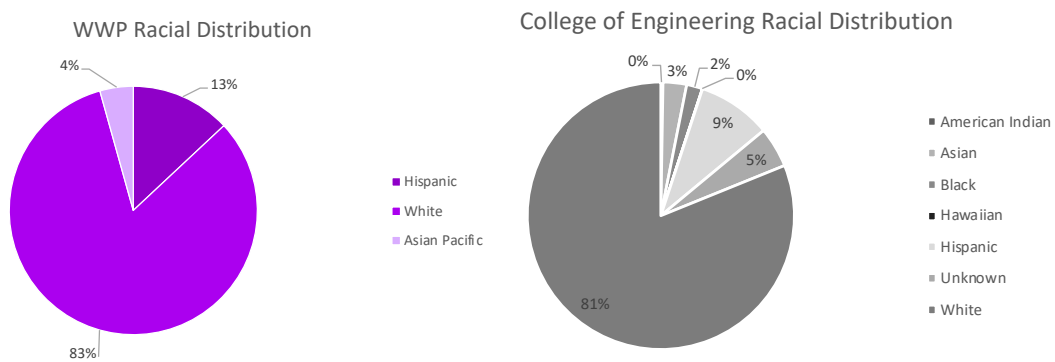
*Figure 10 - WWP Grade Distribution*



*Figure 11 - Student Member Major Distribution*



*Figure 12 - Comparison of CoE and WWP Gender Distribution*



*Figure 13 - Comparison of CoE and WWP Racial Distribution*