

*Judges encourage creativity of expression, but the essay must clearly deliver information and facts describing what the team is all about. The essay should draw attention to the strengths of the team. This essay, along with the other information, will serve as the basis for the judges to make the decision on which team earns the Chairman's Award.*

*\*Adjectives\**

*10,000 Characters*

We are team 4499, The Highlanders: a group of 11 innovative engineers, future professionals, STEM ambassadors and driven leaders. Our ideas are persistent, our passions are incomparable, and our dedication is unique. The Highlander's journey is best summed up in four words: our mission, our community, our triumphs\_and our future. We are small, but we are mighty!

### **Our Mission**

Our mission is to provide youth the opportunity to explore science, technology, engineering, and mathematics—through hands-on experience and support in STEM. To accomplish our mission, we created a 501(c)3 non-profit company, Neaera Robotics. What began as a FIRST think tank in Northern Colorado has expanded to fund 10 FIRST teams in the past 7 years across the Front Range. Neaera Robotics brings today's opportunities to tomorrow's engineers.

Schools often lack a hands-on approach to education. The Highlanders remedy that. We take our academic knowledge in math, physics, engineering and entrepreneurship, and apply them in real life. We spread STEM awareness through support and mentorship of FIRST programs, community engagement and new business partnerships. Through our endeavors, we discover numerous ways to fail, but our successful solutions stick with us. We find this type of learning helps us in many aspects of our education, not just engineering.

We meet and partner with local businesses to make our aspirations a reality. 4499 has a culmination of stories, successes, failures and triumphs that define us. We believe FIRST is the doorway to a greater community – the professional world. Our partnership with one of our main sponsors, Neaera Consulting, is our best example of synergy. Team members have gone on to intern with them doing software development, working on one of the first USDOT Connected Vehicle Pilot projects and mobile application development. In the past 7 years, these interns have raised over \$100,000 in direct donations to our non-profit, all from the work done at Neaera Consulting. FIRST skills are valuable in all industries. Other alumni have or currently work with other companies such as Woodward Governor, Tesla, Xilinx and more to pursue professional employment.

### **Our Community**

4499 volunteers with unique and diverse communities along the Colorado Front Range. From our mentored FLL team at the Boys and Girls club in Loveland to an FLL club at a Title one School, Prescott Elementary, we engage with all populations.

We continue to find new and innovative ways to spread the word of FIRST. Working with youth, we were inspired to write three children's books to share FIRST's Core Values. Though our *Rocky the Robot series*, we provide both inspiration and fun for children through an entertaining story. These books allow us to express our team values and passions to a younger audience.

We demonstrate our robot at various events, including Fourth of July parades, Maker Fairs, Scouts of America, and exhibition contests. However, Halloween sparked our creativity with a new way to engage our community. We created spider and a dragon costumes for our robots and passed out candy to neighborhood kids. We brought them to HP's haunted house event and continue to share our prior year robots with community groups.

Expanding our outreach, we hosted The Highlanders RoboCamp, which brings in local 1st to 6th graders and teaches them about STEM and FIRST values, with the hope that they join a FIRST team in the fall. We design our programs to allow students a smooth transition into the FIRST community. One of our biggest perennial efforts to integrate FIRST into the community is the Liberty FLL Qualifier. We have run it for the past 9 years. Providing referees and judges, even Alumni return to put on this event. As always, we are ready to jump in and volunteer when other tournaments need a hand. This year, when the Weld County FLL Qualifier was running low on staff, we provided Judges, score keepers, and a head referee. 4499 has also assisted and demoed at the Northern Colorado FLL Jr. tournament for the past 3 years.

4499 opens our shop to many different teams in our area. During our current build season, an FTC team needed our assistance of our team, mentor and shop. We were happy to help, and they went on to win their regional!

We learn from our partners, increasing our own knowledge and our understanding of the real world. Many of our corporate sponsors invest their time to mentor us. Mentors Fleetwood and AMD have both aided in our learning process, and they are crucial pages in our story. Our partnerships with our sponsors are only the beginning of our exploration of the professional community. FIRST has given us lifelong skills that we are able to relay into internships and job opportunities. One member took his FIRST knowledge to create his own company that writes gaming apps for phones.

### **Our Triumphs**

During the 2018 Season, 4499 had 6 team members, the smallest team in The Highlanders' history. Our team was worried that we could not fulfill 4499's yearly task with so few members: build a robot, engage in the community and support FIRST programs. What we did not realize was that, with such a small team, we had a chance to become leaders and work tightly together, along with mentors and alumni. The team's success was a combination of dedication, hard work and inspiration to, not just build a robot, but create friendships, partnerships and a tight-knit family. In addition to mentoring 2 FLL teams, team members volunteered as judges and referees at 3 FLL events during the off season. And in the 2018 season, we expanded our skill sets, building more than a just robot—we learned leadership and technical skills that will take us into our 2019 season and beyond. Today, we realize that anything is possible. It will go down as one of the most amazing seasons in our history.

### **Our Future**

While our past defines us, our future potential guides how we act and serve now. As each year passes, continue to expand our outreach far outside our local community, reaching further into the lives of youth, and creating opportunity for all. Each year builds upon what we've done, but it is our future ambitions that motivate us.

We are passionate about improving the communities we've grown up in and expanding FIRST's programs. In 2018, 4499 teamed up with Jefferson County, Colorado's second largest school district, for a six-month project working continuously with educators, principals, school board members and the Jeffco Applied Imagination STEM team in order to host a FIRST Lego League qualifier. 4499 planned and mobilized the majority of this event and found a calling to organize more FIRST events in the future. We intend to engage in more FLL tournaments at a higher level, help start new tournaments and reach out for FIRST leadership roles. Continuing our partnership with ColoradoFIRST, the Highlanders ran two FLL judge training calls during the FLL season with over 30 attendees each and will continue to do so in the future. In the coming years, we want to expand our involvement in FIRST FTC programs.

After overcoming a light membership in the 2018 season, we are proud to have 11 students. This includes 7 new team members, 5 whom are new to FIRST, and a 45% minority population. We will pass on our knowledge and work together to create new leaders, experts and committed members of FIRST.

We are a team that learns from our mentors, alumni and sponsors. Sometimes it comes in the form of designing a perfect part and sometimes failing. From failing, we have all learned so much that our next design, program or presentation is even better than imagined. FIRST has given us lifelong skills that we can take into our future. To us, FIRST is much more than robotics competitions. It's the program that gives us the chance to be who we want to be and to share our love of learning with others. Our inclination to serve our community has fundamentally developed us. Transferring our knowledge has created a foundation for the next generation. The Highlanders' progress isn't something we measure in awards or trophies; it's something we measure in our members, our community, and our stories.

Scrap Yard:

While our vision centers around FIRST, the Highlanders' outreach isn't limited here. We are passionate about improving the communities we've grown up in. Our community stands as a pillar on its own. The Highlanders have even earned a reputation in our educational circles. Jeffco School district, Colorado's second largest school district, has partnered with the Highlanders to host a FIRST Lego League qualifier. This resulted in the North Denver Our members, despite the intensity of build season, took time to offer advice and input. The passion for giving back to our community is now a part of each and every Highlander.

While our past defines us, our future potential guides how we act and serve now. With our Cycle of Success coming full circle this year, and a mission solidifying us to keep moving forward, our gears are set to reach unparalleled success. As each year passes we know the importance of grounding our outreach in a vision that encompasses expanding far outside our local community, reaching further into the lives of youth, and creating opportunity for all. Each year builds upon what we've done, but it is our future ambitions that motivate us.

Our mentors and alumni spend numerous hours teaching us, allowing us to fail, and help us learn from our mistakes in a positive and uplifting environment.

4499 had a great season, probably the most successful season in our history.

The question with a team that has transitioned with traditions from those who started to the new ideas of each new group of Homegrown leaders is how to refine who we are and create the opportunities for the next transition.

The Highlanders leverage their members to provide an outsized influence to many children across Colorado. In addition to mentoring teams, team members decided to support qualifiers across Colorado. One of our team members served as the FIRST Lego League regional judge advisor. The Highlanders lead two judge training calls and supplied core values tasks to each event, but the impact didn't stop there. We also hosted the annual Liberty Qualifier, supplying referees and judges. The Highlanders did a six month project working continuously with educators principals and school board members and the APPLIED STEM team in Jeffco which resulted in second largest district in Colorado to create their inaugural district sponsored qualifier where one of our students was also the Tournament Director.

We've opened our shop facilities to a variety of robotics teams. We taught a local FTC team how to fabricate basic parts, which allowed them to construct their practice field. FTC teams across our community have used the machining capabilities of our shop to make parts for their competition robots.

In our rookie year, we joined with another FRC team to mutually assist each other. In consecutive years, we partnered with an old friend to further the mission of FIRST. Starting in South Dakota, and following into Wyoming, we helped start two new FRC teams through writing grants, setting up a team foundation, and donating parts. In past years, we took an all-girls FRC team, St.Mary's, under

our wing as we mentored them through a challenging rookie year, sharing our bus to the World Festival to save money for both teams.

**The team in wyoming is 5657**

**The team in south dakota is 4593**

What is FIRST?

We are FIRST.

We are its mentors, volunteers, competitors, and alumni.

We are the Highlanders, team 4499.

FIRST is powered by volunteers. While in the traditional sense the first people pictured are Judges and Referees, by extension, so are the coaches and mentors. That's why these volunteers are celebrated in mentor lines and we clap for them. That's why the woodie flowers award and volunteer of the year awards exist. People return to volunteer when they have a good experience. Due to that, the Highlanders, team 4499, decided to change how they spread FIRST's mission. While continuing to mentor the teams we started, we wanted to be volunteers and help from the inside. And what we learned

The Highlanders thought their impact could best be felt inside the organization. In addition to mentoring teams, team members decided to support qualifiers across Colorado. One of our team members served as the FIRST Lego League regional judge advisor. The Highlanders lead two judge training calls and supplied core values tasks to each event, but the impact didn't stop there. We also hosted the annual Liberty Qualifier, supplying referees and judges. The Highlanders did a six month project working continuously with educators principals and school board members and the APPLIED STEM team in Jeffco which resulted in second largest district in Colorado to create their inaugural district sponsored qualifier where one of our students was also the Tournament Director.

By making FLL a better experience for Coaches and students, they are more willing to go on to FTC and FRC.

Our steps?:

- NEAERA
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By inspiring them at a young age, will stop at nothing to continue their Journey with FIRST.

The highlanders are a team of ten students from across Colorado spanning a radius of 60 miles. We are small, but we are mighty!

This year alone we volunteered at X events, as Judges, Referees, and stuff. Even our alumni in South Dakota volunteered.

This year we decided to make yo-yos to practice on the lathe, and like the yo-yo, for the amount of distance we stray from the finger, we return, and this can be seen with all aspects of our team.

“A small team can have a big impact if you leverage their skillsets.”

The Highlanders did a six month project working continuously with educators principals and school board members and the APPLIED STEM team in Jeffco which resulted in second largest district in Colorado to create their inaugural district sponsored qualifier. At the qualifier a board member observed and we are continuing to work to spread FIRST in the district. After three years of mentoring FLL teams within the district, in the last year.

While we continue to work with individual FLL teams we've noticed the need to support the infrastructure of FIRST Lego League within the state of Colorado. In an attempt to have an outsized influence/result on the lives of students, we moved from 3 years ago sponsoring one tournament and providing student members as judges and refers at state to this year sponsoring one tournament and providing student members as judges to tournament director and as the Colorado state regional judge advisor. Our members put on conference calls and training for judges across the state.

As a team we have a goal to give back to the program and we all individually in our lives to promote FIRST, Gracious Professionalism, and STEM

Grew from 5 students and hit the ground running