



## The Highlanders Executive Summaries

### **Briefly describe the impact of the FIRST program on team participants within the last five years**

The FIRST program crafts problem solvers. The Highlanders(4499) scaffold skill development through real world experiences. Highlanders transform their communities and continue to do so as alumni. Current Highlanders intern at Lockheed Martin Space, Woodward Governor, Landcraft LLC Survey and Neaera Consulting. After graduation, 92% of alumni attend college and pursue STEM majors, 8% join the Army, 67% return to assist 4499, 50% registered mentors, 50% FIRST volunteers, 8% in graduate programs.

### **Describe the impact of the *FIRST program on your community within the last five years***

4499 attended 79 events—totaling to approx. 77500 people, with many from underprivileged populations. We support flood victims, toy drives, Title One School outreach, and donate to a foster family organization. Colorado is our expanded community. We have assisted 33 FLL/FLL Jr. events and ran 7 FLL events, launched FLL judge training calls on behalf of ColoradoFIRST, and presented an ambassador program at the FLL Power Up. 4499 runs 2 annual FLL Qualifiers, one of which for over ten years.

### **Describe the team's methods for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative**

4499 brings today's opportunities to tomorrow's engineers. We dress up our robots for Halloween, create and distribute FIRST themed activity books, publish children's books and volunteer locally. We spread FIRST's message with a student member of ColoradoFIRST planning committee, running FLL events and volunteering ourselves. Working with the Jeffco school board (2nd largest school district in CO) we started and ran the first FLL qualifier in Jeffco since 2013, running it for the past 2 years.

### **Describe examples of how your team members act as role models and inspire other FIRST team members to emulate**

4499 embraces Core Values, engaging with the community and FIRST teams. At competitions, 4499 pass out rookie survival kits, SPORRAN safety kits, lend out tools and assist teams in need. We share our TARTAN Leadership and KILTS Program online. In the off-season, we participate and host a mentor support group and run lessons in CAM & carbon fiber design. We volunteer and assist with state-wide FLL event planning and our alumni continue volunteering with FIRST long after graduating from the team.

### **Team's initiatives to help start or form other FIRST Robotics Competition teams**

In the spirit of cooperation, 4499 offers resources, supplies and training to many FRC teams at tournaments and teams who reaches out. We assisted in writing rookie grants(5318,5657) and business plans(8250). We encourage FRC teams to visit our shop to work on CNC equipment, learn carbon fiber manufacturing and produce their own parts. We assist local FRC teams(159,4388) and those up to 70 miles away(4550,1339,4418,1410). We are always eager to guide those interested in FIRST to start FRC teams.

**Describe the team's initiatives to help start or form other FIRST teams (including FIRST LEGO League Jr., FIRST LEGO League, & FIRST Tech Challenge)**

4499 believes inspiring future engineers at a young age encourages them to grow and continue with FIRST. We started 15 FIRST teams, 6 FLL Jr., 8 FLL and 1 FTC across the Colorado Front Range. Through our 501(c)3 non-profit, Neaera Robotics, we funded and assisted 49 FIRST teams over our team history. We ran an FLL coach's training night, with those coaches going on to form 3 FLL teams of their own. Many of our summer camp attendees go on to join FIRST teams afterwards.

**Describe the team's initiatives on assisting other FIRST teams (including FIRST LEGO League Jr., FIRST LEGO League, & FIRST Tech Challenge) with *progressing through the FIRST program***

We engage with youth through volunteering and mentorship. As MCs, TDs, Judges, and Referees - 4499 are kilt-donned FIRST ambassadors. Having run 9 FLL Qualifiers and assisted 8 FLL Jr. Events, over 63% of current Highlanders progressed through FIRST, some from mentored teams and camps. Local FIRST teams benefit from our unique shop capabilities(carbon fiber,3D printing,CNC Mills). We leverage student drive and imagination to facilitate a sustainable progression of the FIRST program and culture.

**Describe how your team works with other FIRST teams *to serve as mentors to younger or less experienced FIRST teams (including FIRST LEGO League Jr., FIRST LEGO League, & FIRST Tech Challenge)***

4499 mentored 11 FLL Jr., 3 FTC & 7 FLL teams, working 6 years with Boys & Girls clubs and 4 years with a community-based team 60 miles away. We assisted 4 FLL, 5 FTC and 39 FRC teams and countless others at events-helping with supplies, coding, building and bumpers. We taught FRC teams 159 and 4388 CAM software at our "How to run a CNC mill" workshop. We published our TARTAN Leadership Initiative online, detailing our internal team leadership, student development, and community outreach models.

**Describe your Corporate/University Sponsors**

Financial corporate sponsors: Neaera Consulting, Lockheed Martin, Constant Contact, Keysight, US Engineering, Intuitive Foundation and Metal Distributors. Mentorship/supply donating corporate sponsors: Front Range Powder Coating (FRPC), Xylinx, Fleetwood and AMD. Utility Kilt Sponsors: TechPoint LLC., Damn Near Kilt 'Em(DNKE). As a community-based team, we rely on synergetic partnerships with our sponsors; with their support, we excel.

**Describe the strength of your partnership with your sponsors within the last five years**

Our sponsors share our vision. 4499 give presentations, visit facilities, demo, and send newsletters. Our primary sponsor, Neaera Consulting, hires team members and alumni as interns. A portion of profits from intern work is donated back to 4499, totaling to over \$150,000 in financial support. DNKE donated

several kilts and will publish a 4499 Kilt Clan Profile on their website. Since 2014, FRPC has powder coated our robot. They love to see and drive the finished “comp bot” after the season.

**For FIRST Robotics Competition teams older than 5 years, briefly describe your team’s broader impact from its inception**

4499 began as a small, community-based team focused on local outreach -in 8 years- our impact has grown past Colorado to the world stage. Highlanders lead, serving as referees, head judges and a Tournament Director in fields primarily dominated by adults. Alumni volunteer with FIRST in many states and the Houston Champs. As FIRST ambassadors, 4499 brings FIRST to many communities, collaborating with local school boards and international orphanages. After all: we may be small, but we are mighty!

**Describe how your team would explain what FIRST is to someone who has never heard of it**

Are you kilted to build a robot? FIRST stands for “For Inspiration and Recognition of Science and Technology”. We compete with teams from all over the world in an atmosphere where we promote each other’s success and build lasting friendships. It creates opportunities to work with local business leaders in the community, and improve skills in engineering, communication, leadership, and teamwork. FIRST provides exciting challenges and is the only High School sport where everyone can go pro.

**Briefly describe other matters of interest to the FIRST Judges, if any**

4499 span 6 schools 75 miles apart. As a 45% minority, student-led team, our model cultivates trailblazers. It means an 8th grade vision code lead travels to an Indian orphanage to share STEM, a sophomore build lead teaches upperclassmen the HAAS CNC and a Junior leads adults as the Colorado FLL Regional Judge Advisor. We share our model with our TARTAN Leadership, SPORRAN Safety, and KILTS programs. Our outsized impact means a team of 11 leave their mark locally, statewide, and across the globe.