



# Chairman's Submission

# CHAIRMAN'S ESSAY

Since 2006, Space Cookies Team 1868 has inspired and prepared the next generation of technology leaders. Founded by NASA and Girl Scouts, our powerful combination of technical expertise and community outreach spreads FIRST's value of STEM inclusiveness worldwide.

## FIRST + Space Cookies

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FIRST's emphasis on teamwork and mentorship, combined with Girl Scouts' foundation of strong role models, provides an ideal forum to cultivate girls' interest in STEM. Partnering with NASA, Girl Scouts, our sponsors, and our family/alumnae network, we foster a thriving community despite our 62 current members hailing from 22 different schools and a 40-mile radius. We have rocketed 152 women into the workforce and STEM community, fueled by technical training, professional development, and community engagement.

Our 15 directors and four captains plan everything from outreach events to robot design, guided by 17 mentors. This year, in response to the pandemic, we transitioned 32 workshops to virtual training sessions on mechanical, electrical, animation, programming, and business. Adapting our signature CAD, Cookies, & Cocoa evenings to a virtual format allowed girls to learn Onshape; our CAD Challenge focused on the Game Design Challenge field. Our Rookie Cookie program pairs veterans with rookies, resulting in lasting friendships. We moved to virtual game nights this year and substituted a gingerbread-house-at-home contest for our traditional Cupcake Wars.

Space Cookies pursue skills and interests gained through FIRST in their academic and professional careers. 100% of Space Cookies attend college and 85% pursue STEM majors. 46 alumnae have found jobs through our sponsor network, including NASA, Google, Lockheed Martin, and Apple. Alumnae remain actively engaged in FIRST by organizing and hosting community workshops, mentoring teams, and volunteering at FIRST events.

Our 2021 Innovation Project, focused on menstrual equity, reflects our commitment to girls. We are developing a mobile app to provide real-time information about availability of pads and tampons and working with numerous organizations to advocate for the availability of free products. No one should be unable to participate in an activity, including FIRST, because they are menstruating.

## FIRST + Community

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As an all-girl team, we advance FIRST's goal of STEM inclusiveness and Equity, Diversity, and Inclusion initiatives through extensive community engagement. Since 2016, we've dedicated 10,000+ hours at 150+ community events such as robot demos, STEM workshops, and other creative outreach. Through appearances at events like Maker Faire, Bay Area Science Festival, and Silicon Valley Fall Festival, we cultivate tangible enthusiasm for STEM and FIRST. In response to the COVID-19 pandemic, we assembled and donated face shields to St. Joseph's Medical Center and sewn masks to Daughters of Farm Workers, a Girl Scout program empowering girls from migrant farming communities to engage in STEM.

Advocating for STEM education, we wrote 123 letters to members of Congress to champion the new Christa McAuliffe coin that directly funds FIRST programs. Last year, we drafted a proposal for increased STEM funding for low-income youth—citing FIRST as a program of choice—and presented it to local members of Congress.

In the last two years, Space Cookies have organized and run 87 weeks of free STEM camps, workshops, and enrichment programs for 700+ kids in collaboration with family shelters, community centers, and universities. We charted a creative outreach path by writing, illustrating, and publishing three STEM children's books, each with a clear message that girls can change the world.

In response to the pandemic, we funded wifi hotspots for families and introduced virtual workshops using hands-on engineering kits distributed at a local library. We've found innovative ways to scale our reach and access potential students and mentors by appearing in sponsors' FIRST partnership videos, at corporate events, and through an enhanced online presence, showing that young women are highly capable engineers. We are working to ensure that free menstrual products are available at all our outreach events post-COVID.

## FIRST + Girl Scouts

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As the first FRC Girl Scout team, we work tirelessly on STEM programs for Girl Scouts and pilot new badges. We have run badge workshops for 700+ girls and organized badge activities each year at major events like World Thinking Day, Craftapalooza, and Golden Gate Bridging. Our badges have been completed by 3500+ Girl Scouts from 48 states, Japan, and Germany. We were honored to represent FIRST at the launch of Girl Scouts' groundbreaking STEM Pledge, an effort to introduce 2.6 million girls to hands-on STEM programs by 2025 and this summer, we will run robotics camps to introduce girls and families to FIRST.

To help Girl Scouts complete robotics badges, we hosted FIRST competition tours for 250+ girls in Canada, Los Angeles, Silicon Valley, Utah, and Houston. We empowered other FIRST teams to assist local Girl Scouts by developing and launching the FIRST STEM Pledge Kit, which provides everything needed to organize competition tours for Girl Scouts working on robotics badges—including a custom patch.

29 Space Cookies have earned the Gold Award—the most prestigious in Girl Scouts—a rate more than 4X the national average. Girls spend a full year working on a project with sustainable community impact; Gold Award projects include STEM camps, an FLL Quickstart Guide, STEM lesson plans for children with special needs, and bilingual STEM kits.

For the past four years (2020 excepted), we've promoted FIRST's relationship with Girl Scouts to sponsors and the broader community at the FIRST Championship Innovation Faire. Our team was featured on the Girl Scout website for our resilience and we are proud to have continued our work during the COVID-19 pandemic.

## FIRST + World

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We have started, mentored, and assisted 400+ teams by answering questions, organizing tool exchanges, and reviewing award submissions, organizing these efforts into Cookie Helpline, Cookie Tips, and Cookie Jar to scale our reach. Our Cookie Helpline offers 24/7 support to teams via video call and email exchange, assisting 35 global FRC teams from Mexico to Turkey. Cookie Tips has assisted 100+ teams by answering questions through our social media platforms. Cookie Jar matches traveling FRC teams with local teams who lend them equipment, tools, and batteries.

We started Mars Style—one of the 1st FRC teams in China—in 2014, and have mentored them ever since, reconnecting with them every year at the Silicon Valley Regional. Last year, we helped Mars Style start the Sugared Knights Team 8110, the 1st all-girls FRC team in Beijing. This season, we are presenting at a virtual conference hosted by 8110.

In 2018, we expanded our FLL program to rural India by starting 2 teams. We continue to mentor both and help plan team curriculum via video. This year, we are providing full funding to purchase EV3 kits for new teams in an even more rural area.

Last year, we were a part of the Compass Alliance, a consortium of teams from around the world building a FIRST help hub, dedicating 50+ hours of assistance to their call center and contributing to resources shared by the Compass Alliance.

## FIRST + Pathways

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The most impactful FIRST experience is a sustained pathway from elementary school to high school and beyond. In East Palo Alto (EPA), a local community underrepresented in the tech industry and where over 89% of students qualify for free or reduced lunch, we've constructed a FIRST pathway starting in 4th grade.

Most FLL teams exist for one season, but it's important for underserved kids to have a team they can rely on. Thus, 13 years ago, we started the Golden Surfers FLL team at an elementary school in EPA. To give Golden Surfers alumni the opportunity to continue with FIRST in middle school, we started the Phoenix Firebirds 4 years ago. Pre-pandemic, teams of 3 Space Cookie mentors traveled to EPA 4X per week to work with them; we cover all costs from registration and equipment to team shirts and meals.

To provide our mentee teams with a place to compete, we guarantee spots at the 14 FLL tournaments we've hosted and run; these are planned and staffed entirely by Space Cookies and their families. To prepare teams for competition, we've assisted 220+ FLL teams with technical, project, and presentation help.

Last year, to complete our FIRST pathway, we helped start Team 8048, the 1st FRC team in East Palo Alto, a culmination of many years of work to start a team in EPA, whose high school students spend up to 4 hours per day commuting for school and lack transportation that accommodates an FRC schedule. By helping them rebuild one of our robots and providing 200+ hours of mentorship, training, support, access to our fabrication resources, and a practice field, we successfully jumpstarted the team over the course of summer 2019. They were alliance captains at their 1st competition! We are continuing to mentor them and assist them financially this season.

Currently, we're building similar FIRST pathways in Union City and rural India; both are under-resourced areas where we've already established FLL teams. We are also providing financial support to FRC rookie teams 8091 and 8404. We're proud to use our resources to provide robotics pathways for underserved students around the world to experience sustained participation in FIRST. and a practice field, we successfully jumpstarted the team over the course of last summer. They were alliance captains at their 1st competition!

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Space Cookies has dedicated 15 years to extending FIRST's programs and message of STEM inclusiveness locally and internationally. We're transforming members into leaders, challenging perceptions of women, constructing STEM programs for Girl Scouts, creating global FIRST opportunities, and building sustainable FIRST pathways. We #BakeaDifference worldwide.

# EXECUTIVE SUMMARIES

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

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- In the last three years, 56 (100%) Space Cookies have pursued higher education, with 48 (86%) choosing STEM majors and 18 earning FIRST scholarships.
- FIRST participation has helped team members secure jobs/internships at sponsors including Google, NASA, Apple, NVIDIA, Lockheed Martin, and the US Air Force.
- 70% of alumnae remain engaged with FIRST, serving as mentors, event volunteers, college FIRST alumni club participants, and our new alumnae group on LinkedIn.

## Describe your community along with how your team addresses its unique opportunities and circumstances

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- Our area has a sharp divide in wealth and income; in neighboring East Palo Alto, per capita income is \$28K; just a few miles away, it is \$92K.
- We address this dichotomy in three ways: First, all girls can receive scholarships for team participation and travel. Second, we never charge for outreach/workshops/camps. Third, we focus outreach and mentorship in communities like the one mentioned above and have spent 12 years creating a pathway for students to join and stay in FIRST.

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

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- We focused on STEM accessibility by developing virtual versions of all training workshops, designing kits for hands-on practice at home, and creating online robotics workshops that include virtual lab and FIRST competition tours.
- We published three children's books that show girls how they can be innovators.
- We scaled our signature FIRST competition tours by launching the FIRST STEM Pledge Kit so all teams can participate.
- We measure success in girls trained, teams impacted, and badges earned.

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

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- Our Cookie Helpline and Cookie Jar provide on-demand mentoring and tools/equipment to numerous teams.
- We ran a Chairman's Exchange at all competitions and were part of the Compass Alliance.
- We presented at the Capital City Classic, FRC Warmup, WRRF, and FIRST NorCal and HQ Innovation workshops.
- When the pandemic hit, we pivoted to producing PPE, assembling 200 face shields for a hospital short on supply and sewing 300 face masks for the Daughters of Farm Workers Girl Scout program.

### **Describe your initiatives to Assist, Mentor, and/or Start other FIRST teams**

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- We created a sustainable FIRST pathway in East Palo Alto, from elementary to middle school FLL and starting EPA's first FRC team.
- Over the summer of 2019, we helped Team 8048 rebuild a robot and prepare for their first competition—where they were semifinalists.
- In rural India, we started 2 award-winning FLL teams in an area that previously had no teams, mentoring them via video; we are now providing funding and mentorship as they start a team in an even more rural location.

### **What initiatives have you done to help inspire young people to be science and technology leaders and innovators?**

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“What you can't see, you can't be.” Research on gender equity shows that representation matters; young girls need to clearly see a place for themselves in tech. We are committed to providing visibility; in the last three years, we have contributed 3,500 service hours at more than 75 public events, showing that girls are capable of designing and building sophisticated robots. We are proud to have our work noticed and featured in Girl Scout recruiting and sponsor collateral.

### **Describe the partnerships you've created with other organizations and what you have accomplished together**

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- Our deep partnerships with NASA and Girl Scouts drive sustained impact.
- We are a face of NASA's commitment to FIRST, providing tours to senior management and assisting with many events at NASA Ames.
- In the last three years, we focused on advancing Girl Scout STEM initiatives, helping launch the Girl Scout STEM Pledge, speaking at fundraisers, and leading workshops and robot demos at all major NorCal events. Our work has helped thousands of girls engage with robotics.

### **Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, FIRST, and your communities.**

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- Inclusion and diversity in all forms are core Girl Scout values; we provide a safe, welcoming, and inclusive environment.
- We provide accommodations for girls with learning differences, build Quiet Room time into our competition rotations, and allocate significant funding to scholarships.
- All members can be themselves in our lab, regardless of their identity.
- Our 2021 Innovation Project focuses on ensuring that no one is ever unable to participate fully in FIRST because they are menstruating.

### **Explain how you ensure your team and the initiatives you have created with continue to run effectively**

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- Our business plan outlines goals in the critical areas of Membership, Mentorship, Marketing, and Money.
- 2,000 annual hours of training ensures that all girls have relevant FIRST skills.
- Our four captains and 15 directors collaborate and lead activities in the mechanical, programming, business, and outreach teams. We offer numerous leadership opportunities and build succession planning into our team constitution.
- Committed to our continuity, our lead mentors have both been with us for 8 years.

### **Describe your team's innovative strategies to recruit, and engage your sponsors**

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- We engage with sponsors through our parent network and FIRST and support them through presentations, demos, and programs.
- We run all children's activities at NASA's annual holiday party, do demos and workshops at major Girl Scout events, speak at GS fundraisers, support FIRST NorCal at corporate events, and represent sponsors at fairs and festivals.
- We acknowledge our sponsors through creative social media posts, an annual book, and personal notes from each girl at the end of the year.

### **Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.**

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- Keeping a large team engaged and busy with meaningful work is a major challenge. We are tackling this issue via strategic rightsizing, planning all meetings in detail, and using systems like Slack to keep everyone up to date.
- We are planning to use a strengths assessment tool in the future to ensure all girls understand their core talents and growth areas and to instill a strengths-based culture within our team.

### **Describe your team's goals to fulfill the mission of FIRST and the progress you have made**

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- Our goal is to inspire the next generation of STEM innovators by engaging with them directly.
- In the last 10 years, we have started and mentored 6 FRC, 4 FTC, and 21 FLL teams and assisted hundreds more.
- Space Cookies serve as tutors, run STEM camps, and volunteer at community organizations, contributing beyond their engagement with our team.
- Creative fundraising allows us to offer outreach at no cost, creating a flow of diverse participants and a pathway through FIRST programs.

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

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The Gold Award is the highest honor in Girl Scouting. We are proud that 29 Space Cookies have earned the Gold Award—a rate 4x the national average. Gold Award projects include developing FLL lessons for children with special needs, creating bilingual STEM kits used by children at an orphanage in Tijuana, and developing a toolkit to enable volunteers with no robotics experience to run programs in after school curricula.