



**THE  
BODY  
ELECTRIC**

# **Sustainability Guide**

## **2026 Plan**

*Presented by FRC Robotics Team 1389*



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# Introduction

Team 1389, The Body Electric, is dedicated to sharing robotics and STEM knowledge with our team members and wider community and to helping cultivate the next generation of *FIRST* leaders. An important part of our mission is sustainability. Team 1389 has put into place strong practices to focus on our **people**, team's **prosperity**, and protecting our **planet**.

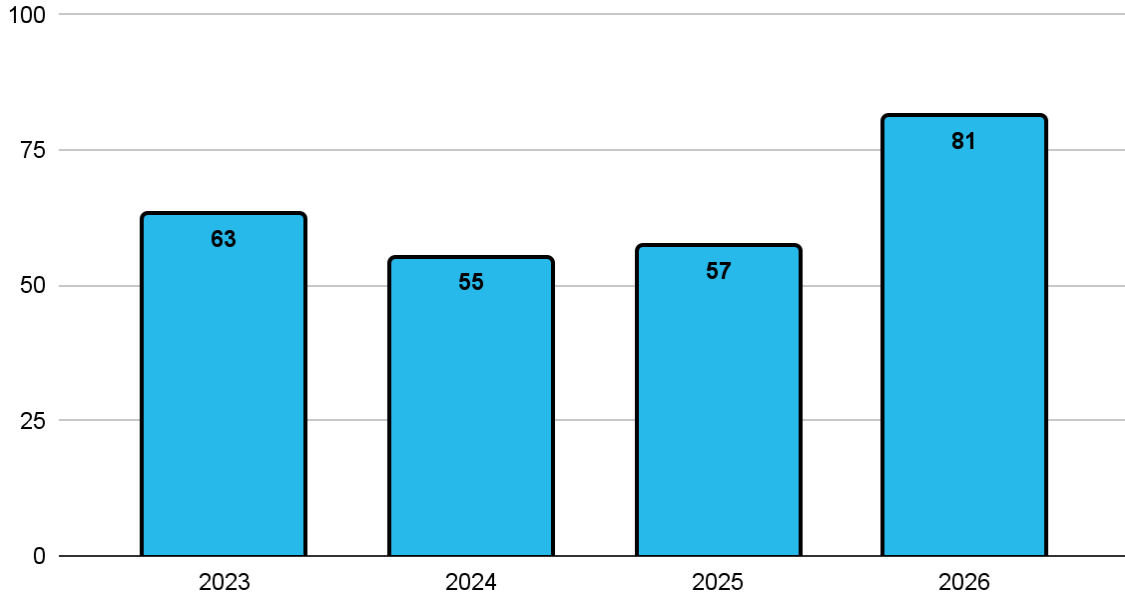
We prioritize our people by maintaining a strong organizational structure that passes down technical skills through hands-on mentorship and ensures an inclusive environment. To achieve prosperity, we build lasting partnerships with local sponsors and host community fundraisers that provide the financial resources necessary for our team to grow. Our commitment to the planet is reflected in our sustainable lab practices, from recycling retired robot components to our bi-monthly Adopt-a-Road cleanups. Through these combined efforts, we aim to provide a well-rounded STEM experience that promotes teamwork, sportsmanship, and service throughout our community. Learn more about our team by visiting our website <https://www.team1389.org/> or following us on Instagram @frc.team1389.

## People

### Team Growth

Team 1389, The Body Electric, is based at Walt Whitman High School in Bethesda, Maryland. Team 1389 was founded in 2004 by six students who had a passion for learning about engineering and robotics. Since then, through community outreach and active recruitment, the team has grown significantly, especially in recent years. Currently, the team has 81 students and twelve adult mentors, three of whom are alums of the team.

## Number of Students in Team 1389



The team used different channels to recruit, including open lab nights in the pre-season, which invites prospective members to observe workspace, see our robots, meet our team, and ask questions. In the fall, our school's Clubs Night is also a valuable way to generate interest and find new members. We operate one of the larger booths, showing off our previous year's robot, and explaining the team and the mission of *FIRST* to any interested students. Members are available to discuss anything, from electrical to business, with prospective members to ensure that they can find a place where they can be successful and grow on our team. We recruit roughly 60% of our new members from Clubs Night.

Each year, we put a greater emphasis on recruiting more females and members of minority communities to join us. We want to reflect our diverse community, which is the largest school district in Maryland. More than 160 languages are spoken in Montgomery County.

Among our other strengths is the level of technical skill we have. This is thanks to a number of factors, including knowledgeable and enthusiastic mentors,

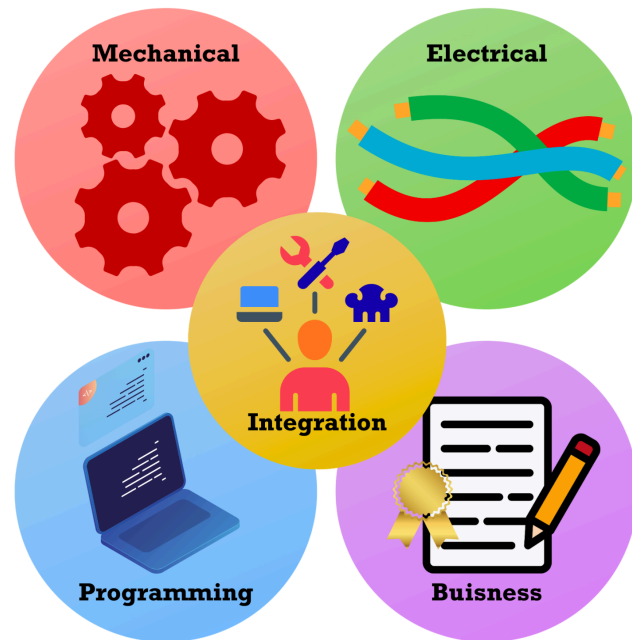
and the educational support we receive through Project Lead the Way (PLTW) engineering classes and resources available to us at Walt Whitman High School.

## Organization for Sustainability

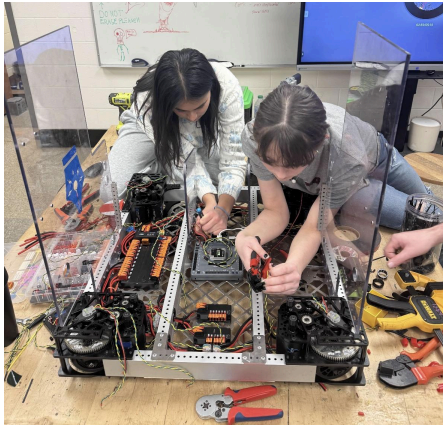
Over the last three years, the team has had a heavy focus on sustainability. Whether that means facilitating an efficient team structure or ensuring an organized lab, we are working to optimize the information team members learn to make our team environment more productive. We also aim to retain all of our members and our mentors as they are our strongest resources.

Our team consists of adult volunteer mentors, student leadership, and general members. Our twelve adult mentors oversee our work and guide our decision-making. They help organize and facilitate important team events such as kickoff and safety training. Nine of our mentors share their extensive knowledge regarding programming, engineering and *FIRST* competitions. On the business side, we have two mentors who teach us to communicate effectively, plan outreach events, and raise money. Each mentor works closely with their relevant team members through in-person meetings and announcements, team Discord chats, and leadership meetings.

The team is divided into 5 subteams: Mechanical, Programming, Electrical, Integration, and Business. Each subteam has one or two student leaders. The leads work with mentors to make attainable design and scheduling decisions. A main focus of our student leaders is to teach their teammates in grades below them to ensure



that the team can be successful for years to come, by teaching critical elements of



each specific subteam. Team members (including student leadership) are encouraged to participate in every part of the team. Individuals who are on technical subteams are also involved in awards, fundraising, community outreach and sponsor outreach throughout the year.

Beyond our Programming, Electrical, and Mechanical subteams, we have our Business team, which is dedicated to community

outreach, communications, fundraising, and awards. This helps to ensure a broad set of skills and interests across the team, meaning there is a place for everyone on our team.

## **Knowledge Management and Transfer**

The main way we pass on knowledge to new members of Team 1389 is through teaching and hands-on experience. Older, more experienced students teach new members. Every team member starts with the basics of mentor-led safety training. This allows people to become familiar with the tools in the lab and gain the skills needed to operate them safely.

To ensure new team members grasp the more abstract concepts needed to build a successful robot, we



learn from our mentors and leads through our Fall Lecture Series. A rotating list of

mentors and team leads talk about their specialty, which could be anything from programming basics to robot mechanisms, to the electrical system and to fundraising. This year we had 12 student-led presentations which was a great opportunity for new members to learn the basics and the leadership team to refine their teaching skills. These presentations have been saved for future years so that the knowledge base can continue to grow. As we learn more, we become more focused on topics such as considerations for choosing the appropriate swerve module or the benefits and drawbacks of different gear ratios. The Fall Lecture Series is a great jumping-off point for all members of our team.

The next step for new team members is working on our romi and training robot. They are given a game from a game designed by *FIRST* in the past, then they work through the process of designing, building, and testing their robot. This is also a great opportunity for new leads to learn how to teach and guide new members to creative solutions to problems.

We work with new members to write basic swerve drive code as well as create electrical board diagrams and informational slides on different components. Having access to these will allow future team members the key knowledge and resources to start the season well. We also teach team members to record their successes and failures so that we can effectively learn from each other. This carries into the season so that we can look back on past robots to improve each year.

Our team leaders and mentors take every opportunity to teach novice students about engineering and robotics. Students are encouraged to experiment, test, and make mistakes so they can learn and make our team stronger.

# Prosperity

## Outreach

To ensure the long-term sustainability of our mission, Team 1389 founded and actively mentors FTC Team 27194, Chicken Nuggets Robotics. This partnership creates a vital pipeline, equipping middle schoolers with technical skills before they ever reach high school. Our team members learn how to teach robotics to this FTC team and apply those skills to teaching new members of our team. This relationship not only sustains the FTC team's success but also secures 1389's future by building a consistent, pre-trained talent pool ready to lead our FRC program.

## Marketing & Communications

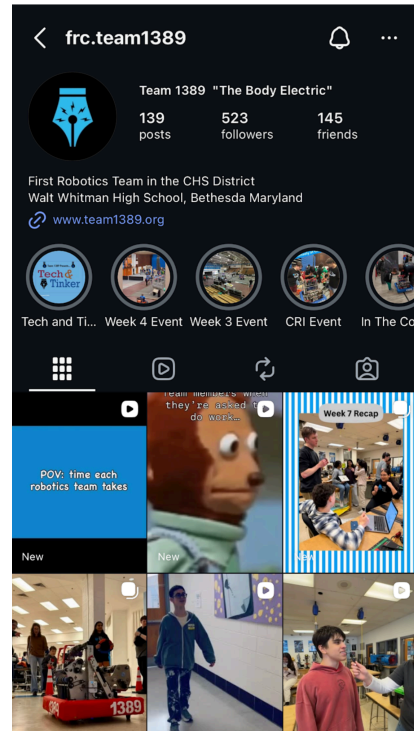
Our team's focus on branding has allowed us to have consistent designs across our advertising, communications, and other public-facing material. These tools include logos, letter templates, symbols, fonts, colors, and more all dedicated to cementing a standard aesthetic of Team 1389.

We also participate in yearly events that promote both our team and *FIRST* values. We demonstrate our robot at various elementary schools, middle schools and community STEM days to explain its mechanisms and design. These events promote the mission and encourage participation in We continue to do this throughout the season. We walk them through the engineering process from planning to design, and fabrication through operation. Some of our



current members first heard of the club through these demonstrations so we are excited to educate the next generation of *FIRST* leaders and new members.

Our promotional work extends to social media, particularly Instagram. On this platform, we have consistently documented team events and progress as a means of leaving a visual and public record of this season. Our viewership has grown vastly in the past year. In just the last 90 days our profile visits have increased 222.8%. We have reached more than 107,000 accounts in just the last 3 months. The overwhelming majority of our viewers are not followers so we have been able to reach people outside of our community and share what we have learned as a *FIRST* team. Further, we have used the platform to build awareness of our team in the Walt Whitman High School community and as a way of maintaining connections with past alumni and fellow FRC teams. (follow us @frc.team1389)



## Financials

Building a robot is expensive. To ensure we have the funds needed each season, our team actively pursues grants at the national level and partnerships with local companies and businesses. (See Appendix 1 for our budget.) Strosnider's Hardware, Minuteman Press, Office IT Solutions, and Mamma Lucia are four local businesses that donated in kind. All monetary funding goes directly into raw materials for the robot. We recognize our sponsors by including their names and logos on all of our team branding. For

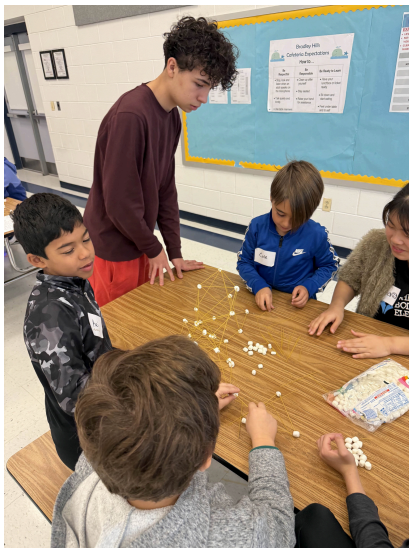


example, they are displayed on the front page of our website, on the backs of our t-shirts, event signage and the robot itself. In addition, we also invite them to events so they can see the impact that their contribution is making. In recent years we have been successful raising money through grants. This year we brought in a total of \$2500 from grants. We are grateful to Lockheed Martin and Intuitive Foundation for their support of our team.



We have held 4 fundraisers this season, raising over \$22,796. for our team. This includes donations from families, Tech & Tinker day camps, concessions at competition, and partnerships with local businesses. These events were entirely self-promoted with flyers, school-wide announcements, posters, and member outreach all of which were consistently upheld to branding standards.

Our most successful fundraiser this year was Tech & Tinker raising \$3,400. This was a team member-led day camp for students in third through fifth grade. We



taught them about the process we use to design our robot and applied that to STEM challenges. We encouraged collaboration and creativity through hands-on projects like building rockets and designing circuits.

Another successful fundraiser this year allowed team members to tap into their family and friend network to raise money for the team. We utilized the website GiveButter to extend our reach to our team members' wider networks raising a total of \$6,741. A large portion of our founding also comes from corporate matching funds through parents' companies. Through this fundraiser, we managed to generate a record-breaking fundraising profit for our team.



At the beginning of the year, the team asks each family to donate \$475.00 to the operation of the Body Electric. However, if a family finds this amount to be a financial burden, we have funds set aside to assist. We do this to ensure that every student with an interest in STEM can be a part of the team.

We make sure funds are properly spent by holding frequent discussions regarding our order lists, and having several people review the lists each time we have to create a new one. The adult mentors help ensure that the money is being spent responsibly and that we aren't buying in excess. Our current costs and income are listed in tables in the Appendix.

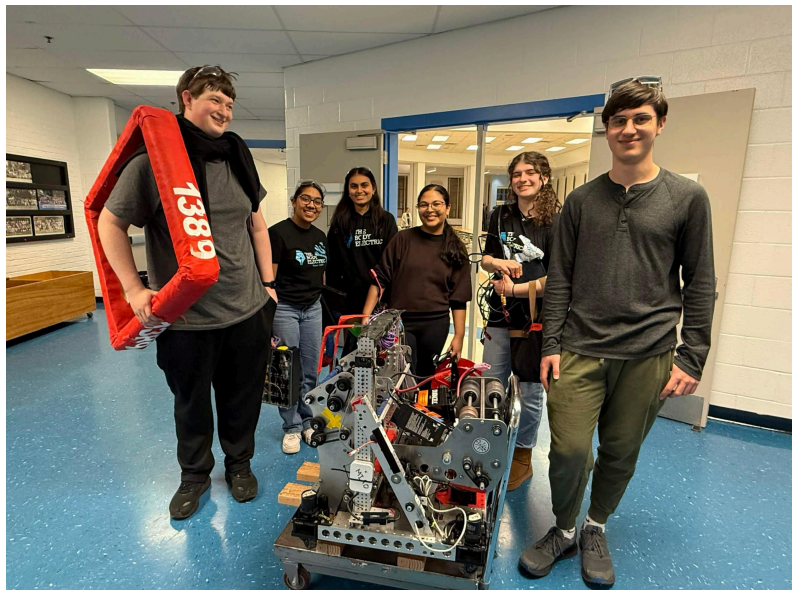
## **Risk Analysis**

Our leadership team systematically reviews risks and opportunities beginning with our kick-off meeting at the start of build season. We routinely weigh the risks of each design option, reviewing opportunities for success as well as weak points. This in-depth risk analysis allows us to create the most efficient ratio between the dedicated resources (time, effort, materials, etc.) spent on a component or feature and its value. This analysis assists with budget planning and identifying fundraising goals. (See Appendix 3 for SWOT analysis.)

This starts on kick-off day by listing all possible game approaches. We ensure that all voices and experience levels are involved in these discussions. We narrow down those possibilities and organized them into a layered system of

design goals (primary, secondary, and tertiary) that we have in our design and implemented in our robot's modifications throughout the season.

In addition to risk analysis for our robot, we reflect after competitions and the end of the season to improve for the future. We learn from past missteps and grow from them each season to become a more successful team. From these experiences, we aim to start troubleshooting earlier on in the build so that similar issues do not arise again. Learning from our mistakes is a valuable tool and engaging in practices that mitigate those risks pushes our team further.



# Planet

## Environmental Sustainability

At Team 1389, we believe it is important to contribute to the movement toward a greener future. This commitment begins with our Adopt-a-Road initiative, where we have pledged to maintain a .79-mile stretch of road in our community. We implement a plan to clean this area monthly, removing all trash and



debris to ensure our local environment stays pristine; in our most recent visit alone, our team successfully collected 4 full bags of trash.



We also want to maintain our existing tools and resources. We must take care of our tools to ensure



that they last for many more robotics seasons. We ensure that all team members are trained on how to take care of tools by keeping them clean and teaching them to notice any possible mechanical difficulties that need to be addressed.

This philosophy of preservation extends to our robots as well. During this past pre-season, we dismantled three of our retired robots. We carefully sorted every component, properly recycling materials that were no longer viable while salvaging high-quality parts to be repurposed for our training robots next fall. By doing this, we give our hardware a second life as educational tools rather than allowing them to become waste.

In addition, this year we repurposed last year's robot into a full time demonstration robot at our outreach events. This helps us to reuse parts and use the maintainment of the demo bot to teach new members.

From pre-season until the end of the build season, we receive approximately 70 cardboard boxes. We make sure that the packaging from all of these boxes is disposed of correctly at local recycling centers. We categorize and organize all items being disposed of to increase convenience and efficiency for our local sanitation workers.

We also reuse materials year to year - meaning that we dispose of a minimum amount of items. This includes batteries, scrap metals, and plywood. In regards to plywood and metal, we use pieces to their full capacity, often taking apart old prototypes to be used in new robots. When these materials are no longer usable to our team, we donate them to a local metal reconciling center along with any other unfixable tools.



This year our team reached out to local IT companies to inquire about new laptops. Our old laptops were over a decade old and the team was looking to buy. However, in order to be more sustainable, instead we asked IT companies to donate old laptops. Our gracious sponsor, OfficeITSolutions, donated old client laptops that were going to a landfill. This allowed us to recycle unused computers and reuse them.

When working long hours in the lab, food waste becomes a key aspect of our day-to-day waste management. Over the years, we have set up an organized system by which team members and their families volunteer to bring in home-cooked meals for all students. This means that we mitigate potential waste that could come from ordering food individually every day.

# Appendices

## 2025-2026 Annual Budget

Item	Annual Cost	Description
FIRST CHS District Registration Fee	\$6,000	The annual cost required for participation in the FIRST Robotics Competition
FIRST CHS District Championship Registration Fee	\$4,000	The fee for competing in the FIRST Chesapeake District Championship
Robot Supplies and Lab Expenses	\$24,000	Estimate of the annual cost of building a competitive robot
Tech & Tinker Costs	\$2,800	Estimate of the annual cost to host 2 Tech & Tinker events.
T-shirts and Sweatshirts	\$1,700	Estimate of the annual cost for necessary team logos, banners, t-shirts, and marketing materials
Whitman Event	\$3,500	Supplies and food for concessions stand at FRC district events.
Food Budget	\$3,000	Estimate of the annual cost of serving lunch and dinners to the team during the intensive build season
Financial Assistance	\$1000	Team 1389 sets aside approximately \$1,000 in need-based scholarships for its members who need financial aid.
Miscellaneous Expenses	\$3,500	Other expenses associated with the operation of Team 1389
Transportation fees	\$1,000	Cost of transporting the robot to and from competitions
<b>Total Annual Budget</b>	<b>\$50,500</b>	

## 2026 Funding

Item	Annual Fund	Description
Team Family Donations & Corporate Matching	\$33,500	Each student member is requested to donate at the beginning of the year
Intuitive Foundation	\$2,000	Grant for equipment and supplies.
Mariner Investment	\$1,000	Donation for equipment and supplies.
Lockheed Martin	\$1,500	Grant for equipment and supplies.
OfficeITSolutions	\$2,000	In kind donation of computer equipment.
Minuteman Press	In-Kind	Donation of discounted team t-shirts.
Strosnidars Hardware	In-Kind	Donation for popcorn machine rental for Whitman event concessions
Mama Lucia	In-Kind	Dinners for team members.
Tech & Tinker	\$3,400	Income from two Tech & Tinker day camp events.
Winter Fundraiser	\$2,000	A student-run online fundraiser where students reached out to their extended network
Sweatshirt & T-shirt Purchases	\$760	Sold team-branded sweatshirts and t-shirts.
Misc. Cash Donations	\$1,000	Donations are sent through our online donation link.
FRC Event Concessions	\$7,700	Income from selling concessions at the Week 3 FRC event we host at Whitman. *This is not every year.
<b>Total</b>	<b>\$54,860</b>	

## SWOT Risk Analysis for Team

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- Access to and training in a variety of hand tools and machines</li> <li>- CAD knowledge and experience</li> <li>- Strong budget earned through grants, sponsors, donations and fundraising</li> <li>- 8 technical mentors</li> <li>- 2 business mentors</li> <li>- 1 strategy mentor</li> <li>- Access to workspace 5 days a week with power tools</li> <li>- School programming and engineering coursework</li> <li>- Large member base</li> <li>- Diversity of thought</li> </ul>	<ul style="list-style-type: none"> <li>- No access to supplier who can help with manufacturing</li> <li>- Little experience in pneumatics</li> <li>- Lack of sufficient experience in manufacturing</li> <li>-Need for more consistency year to year in large sponsorships and grants</li> <li>-need for more outreach to local businesses for sponsorships</li> </ul>	<ul style="list-style-type: none"> <li>- Rehost district and FTC events</li> <li>- Start up and aid more local FTC Team</li> <li>- Furthering student, parent, and mentor involvement</li> <li>- Improving organization of materials and resources</li> </ul>	<ul style="list-style-type: none"> <li>- Loss of lab space</li> <li>- Loss of team leaders or critical mentors</li> <li>- Chance of major injury</li> <li>- Loss of sponsorships &amp; grants</li> <li>-Breakdown in communication</li> <li>- Over-enrollment and oversaturation of resources</li> </ul>