



**TEAM 5401**

**FIRST<sup>®</sup>  
ROBOTICS  
COMPETITION**

# **2020 BUSINESS PLAN**

## MISSION STATEMENT

- We enhance students' interest in STEM and business fields by engaging them with experienced mentors that challenge them with real-world situations that build character and foster a lifelong appreciation for teamwork.
- We believe that everyone is welcome on this team, no matter their ability or interest they can find it in something we do.
- We are not just an after-school club. We are a professional organization and competitive sport, preparing the next generation of engineers, entrepreneurs, and leaders.
- We choose to be a self-funded team so we are not a strain on our school district's financial resources. Additionally, we collect no dues from our team members because, as a Title 1 eligible school district, we do not want financial constraints limiting participation.
- We are committed to promoting and supporting STEM education at all levels both in our school district and in our community as a whole.
- We participate in community service and outreach to show our team spirit, introduce others to FIRST, and give back to the community that supports us.
- We will grow, mentor, and sustain a family of FIRST teams at all levels throughout Bucks County.

## TEAM HISTORY & GROWTH

Based out of Bensalem Township in Bensalem, Pennsylvania, we formed in 2014, with a group of 19 students and 3 mentors. Over the past 6 years, our team has grown significantly. The most growth we've had as a team was this year, where we have reached a count of 59 active team members and 14 mentors. Our founding students and mentors set forth several goals they hoped the team would accomplish by its 5th Anniversary. Three of those goals were to grow, mentor & sustain a family of FIRST teams here in Bucks County, to host an FRC District Event and to be a competitive team on Einstein at FIRST Robotics World Championships. During our 2018-2019 off-season, we began a pilot program in which we created two FLL teams at two of our local elementary schools. This pilot program was so successful that this year, we expanded to eight FLL teams at ALL six of our elementary schools and started two FTC teams at both of Bensalem's local middle schools. Over the last 6 years, our team has faced many setbacks, both on and off the field. From the sudden tragic death of a teammate in 2017 to 2018 where a robot so beset by failures that it was rebuilt numerous times before ultimately falling apart beyond repair, thus ending our season unceremoniously. Despite these setbacks, we still pushed onward to complete our 5-year goals. Last season, in our 5th year, we managed to complete them all--capping it off with our Tesla Division win at FIRST Detroit World Championships. As we look forward to a new season and a new decade, we plan to expand our horizons by adding more FLL Jr. teams and helping to create more FRC teams in any dead zones we come across in our efforts to grow as a team.

## FINANCIALS

Our team's two major sources of income are fundraisers and Community Partners. We hold one major fundraiser in the fall, our Designer Handbag Bingo, which raises over \$5,000 for the team. In addition, we have 19 community partners that generously support our team through monetary and in-kind donations that total over \$50,000. For example, one of our major community partners, Pennsylvania Steel donates all the aluminum that we use for our robot. When recruiting community partners, we look for those that help us share our mission of spreading FIRST in Bucks County so that the FIRST teams we establish can start their rookie seasons with some financial assistance. In particular, we helped establish Team 6808 at William Tennent HS and shared two community partners with them, Boeing and DoD STEM, whose generous grants fully covered their registration fees. Additionally, all eight of our FLL and our two FTC teams have received funding from three of our Community Partners: Dow, DOD STEM, and Verizon. This funding has also fully covered their registration fees and enabled them to purchase needed supplies for their rookie seasons. The funding we receive from Community Partners doesn't just go to help build our robot, we also use it to fund our free summer camp and to help our FLL and FTC teams purchase much-needed items. Each community partner is categorized into one of five levels-named after all of our past robots. Ranging from Raptor to Mr. Krinkle, each level recognizes the amount our community partners are donating and gives them complimentary perks and benefits based on that. We also have a Community Partnership packet that goes into more detail about these levels, as well as who we are and what we do.

## MARKETING

As a team, we promote our brand by participating in community outreach initiatives. Last year was our most successful year to date. We were able to make a greater impact in our community by making more people familiar with who we are and what we do. Hosting our first District Event made a huge impact towards promoting ourselves as well as the FIRST program in our community. Various members in our community participated in volunteering at the event and even more came where they were able to gain a deeper understanding of the FIRST program. This became the gateway for us to start different FIRST programs throughout our school district as people were excited about finding a way to be involved in the program. Students in our elementary and middle schools were able to see how exciting FIRST is and the interest in having teams of their own was sparked. This year, we mentored 8 FLL and two FTC teams, which helped our community be more exposed to FIRST robotics. We always open up our lab to potential sponsors, members of our community, and anyone interested to see the various things our team is working on. We also make it a point to attend all of our school districts' back to school nights and events such as our open houses and Education EXPO. Thanks to our amazing successes this year, both on and off the field, multiple local news outlets did feature segments and articles about us. For example, 6 ABC news came to send us off on our bus ride to World Championships in Detroit with good spirits. PBS 39 did a featured segment on our team and the amazing work we are doing here in Bensalem. Additionally, representatives from our team and members from each of our FLL teams appeared on the Fox29 Good Day Philadelphia show to explain to Bob Kelly how our robots were designed and built. At the end of our season, we were recognized for the culmination of our hard work when we were invited to the Pennsylvania House and Senate. While there, we were recognized by State Senator Tomlinson and State Representative DiGirolamo on the achievements that we have accomplished.

## RISK ANALYSIS

### STEM/FIRST Outreach - Strength

As a team, we are committed to promoting and supporting STEM education at all levels, both in our school district and in our local community as a whole. In our district, we mentor eight FLL teams and two FTC teams. We make it mandatory for our students to contribute and assist the teams that we are mentoring through our STEM Ambassadors program for more hands-on experience and responsibility. Additionally, we host a free summer camp for middle school students in our district where they take part in an FRC style season and competition using Vex Robotics. In our community, we utilize a unique method for starting FRC teams at nearby high schools. Our strategy is to take a group of students and teachers from a local high school and have them join our team, where they help design and build our robot. The following year, with continued help and support from us. This method is especially helpful in combating the lack of FRC in our, the FIRST "dead zone", and has proved successful with Team 6808- William Tennent Robotics.

### Communication Within and Between Sub teams - Weakness

One of the challenges our team faces is communication. Different branches of the team fail to communicate with each other and they struggle internally with vague and infrequent communications. It is not uncommon to see groups of students going off in their corner to work on CADD or programming in silence. We want to focus on communicating with the entire team what we are working on. Using delegation and task tracking through Slack- a messaging app for professional organizations- as well as our custom made PDM (Project Data Management) tool, communication within and between subteams can become a strength.

### Member/Family/Community Engagement - Opportunity

We want to become more assertive in how we communicate the importance of engagement with the team to our member's parents. In our community, we plan to use our District event to boost community engagement and increase the number of community partners we have.

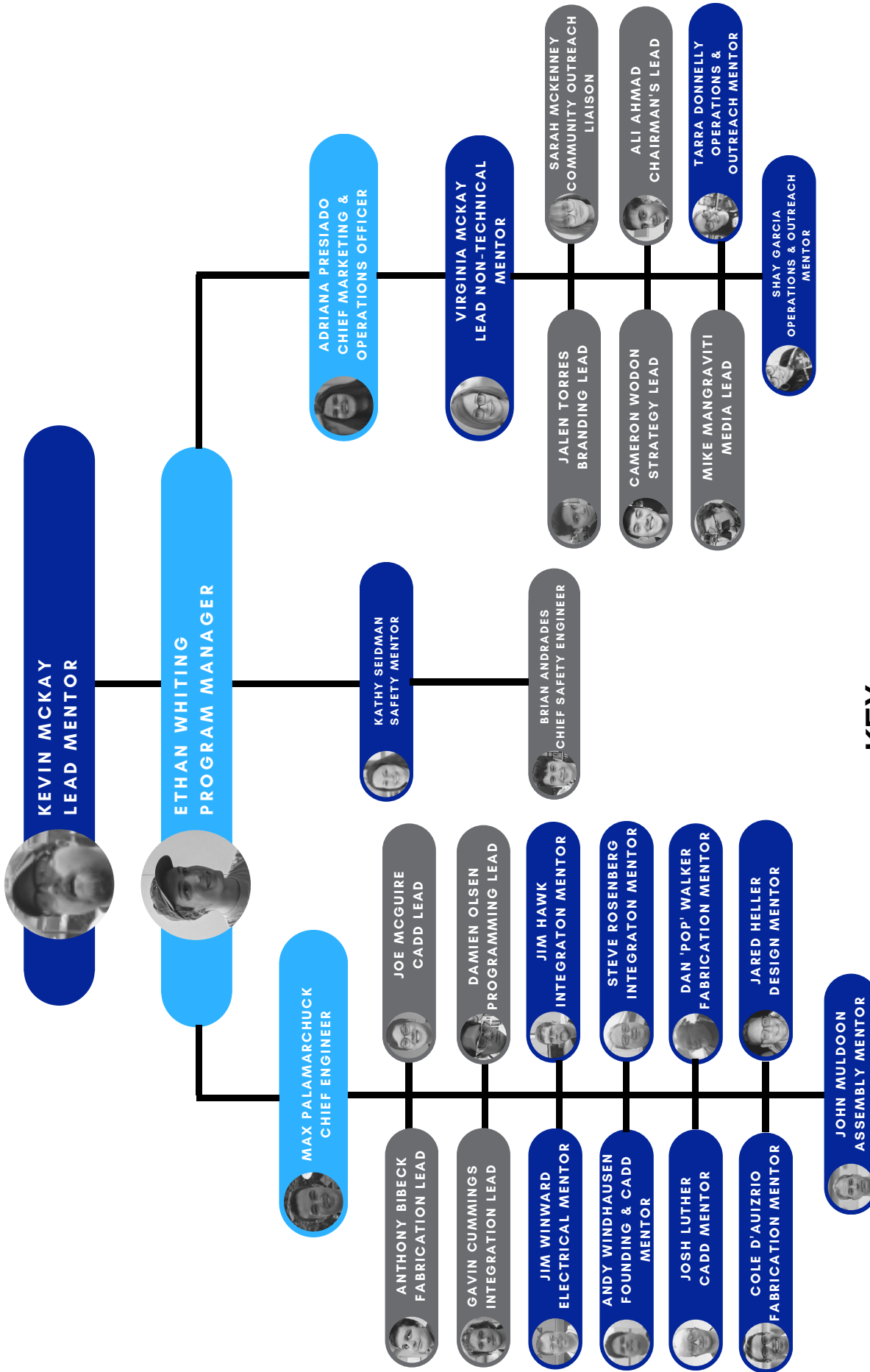
### Loss of Significant Mentors- Threat

Despite having a large number of mentors, our team relies heavily on a few key mentors that provide valuable knowledge that would be challenging to replace. For example, last year one of our lead mechanical mentors missed most of the build season and this had a significant negative impact on our team. To prevent this from happening, our team is going to break down these knowledge silos by transitioning knowledge from our existing mentors to our newer mentors. By accomplishing this, all mentors on the team are equally capable of leading this team to success. Also, we are going to recruit additional mentors to our team that have mechanical skills or prior FIRST experience. We have already recruited an additional Mechanical Engineer as a mentor and are recruiting others with the FIRST experience.

## ORGANIZATIONAL STRUCTURE

Our Leadership Team includes three student leaders; Program Manager, Chief Marketing & Operations Officer, Chief Engineer; and 15 mentors. Our goal is to be a student-run team, with mentors there to guide as needed. Our team holds weekly meetings throughout the off-season, including summer, and meets four times a week through January-April. Outside of meetings, our team utilizes collaborative communication tools like Slack and Google Drive to receive and share information. Our summer camp, which we are expanding this year to include FLL, feeds our FLL/FTC programs which in turn feeds our team. Now that we've started these programs at every school in our district, they will fuel our continued growth and expansion. Over the next two years, we expect to have an 8% growth rate on our team from the students we've mentored on the middle school FTC teams.

Students who participate in these programs choose to be actively engaged in extracurricular STEM activities for 4 years prior to coming to BHS and as a result, they will be eager to join our team and become mentors for the FLL and FTC teams they were once a part of. This way, our influx of new students will continue to increase and it won't be extremely detrimental to our team when we have a large graduating class of Seniors.



KEY

- Mentor
- Student Leadership
- Sub Team Captain/Committee Lead



Team 5401 Financial Statement- Fiscal Year to Date  
July 2019 to Present

Category	Income			Notes
	Current Fiscal Year	Last Fiscal Year	YTD Change	
<b>Sponsors</b>				
Boeing	\$ 18,500.00	\$ 11,250.00	64.44%	
Verizon	\$ 10,000.00	\$ 10,000.00	0.00%	
Bader Grant	\$ 7,259.34	\$ -	n/a	FLL/FTC Registration
Slack	\$ 6,000.00	\$ -	n/a	Donated service
Pennsylvania Steel Company Inc.	\$ 4,000.00	\$ 4,000.00	0.00%	Donated aluminium
Tuck-Williamson Family Grant		\$ -	n/a	CNC Router
Camilla's Pizzeria	\$ 3,000.00	\$ -	n/a	Donated Pizza
Dow	\$ 2,764.00	\$ -	n/a	
DoDSTEM	\$ 2,500.00	\$ 7,500.00	-66.67%	
Google	\$ 2,500.00	\$ 2,500.00	0.00%	
Hagen Construction	\$ 2,000.00	\$ 2,933.70	-31.83%	
Lockheed Martin	\$ 2,000.00	\$ 7,500.00	-73.33%	
Comcast	\$ 1,000.00	\$ 2,365.00	-57.72%	
Trident Plastics	\$ 1,000.00	\$ 1,000.00	0.00%	Donated lexan
NAVMAR Applied Sciences	\$ 1,000.00	\$ -	n/a	
Shenandoah Biotechnology	\$ 500.00	\$ -	n/a	
HM Royal	\$ 500.00	\$ 500.00	n/a	
John Kennedy Ford	\$ 500.00	\$ -	n/a	
AI Automotive	\$ 250.00	\$ -	n/a	
Ken & Diane Hudson Harris	\$ 250.00	\$ -	n/a	
Magid Glove & Safety	\$ 250.00	\$ 250.00	0.00%	Donated PPE
<b>Sub Total</b>	<b>\$ 65,773.34</b>	<b>\$ 49,798.70</b>	<b>32.08%</b>	
<b>Fundraisers</b>				
Designer Handbag Bingo	\$ 13,100.47	\$ 16,144.89	-18.86%	
Dine to Donate	\$ 50.29	\$ 453.66	-88.91%	
Bling for Bots	\$ -	\$ 402.82	n/a	
31 Days of 31	\$ -	\$ 453.66	n/a	
Online Store	\$ -	\$ 8.28	n/a	
District Event Proceeds	\$ -	\$ 11,110.36	n/a	
<b>Sub Total</b>	<b>\$ 13,150.76</b>	<b>\$ 28,573.67</b>	<b>-53.98%</b>	
<b>Donations</b>				
Donations	\$ 529.48	\$ 1,481.82	-64.27%	
<b>Sub Total</b>	<b>\$ 529.48</b>	<b>\$ 1,481.82</b>	<b>-64.27%</b>	
<b>Reimbursements</b>				
Refunds	\$ 346.70	\$ 170.15	103.76%	Returned Merchandise
Travel & Team Gear	\$ -	\$ 18,013.25	n/a	Students & Mentors Reimbursing Team
Cash Back Bonus	\$ 217.10	\$ -	n/a	
<b>Sub Total</b>	<b>\$ 346.70</b>	<b>\$ 18,183.40</b>		
<b>Totals</b>	<b>\$ 79,453.58</b>	<b>\$ 114,012.23</b>	<b>-30.31%</b>	

# 2020 BUSINESS PLAN - TEAM 5401

## Team 5401 Financial Statement- Fiscal Year to Date July 2019 to Present

Expenses				
Category	Current Fiscal Year	Last Fiscal Year	Fiscal YTD Change	Notes
<b>General Team Expenses</b>				
Miscellaneous Team Supplies	\$ (1,535.14)	\$ (1,494.52)	2.72%	Quickbooks, Domain Registration & Web Hosting
Pit Storage	\$ (949.17)	\$ -	n/a	
Field Elements	\$ (298.55)	\$ (276.00)	8.17%	
Food	\$ (177.39)	\$ (1,146.93)	-84.53%	
Software & Web-Site	\$ (50.00)	\$ (85.34)	-41.41%	
Summer Camp	\$ (35.00)	\$ (654.72)	-94.65%	
Team Spirit & Gear	\$ -	\$ (3,266.24)	-100.00%	
<b>Sub Total</b>	<b>\$ (3,045.25)</b>	<b>\$ (6,923.75)</b>	<b>-56.02%</b>	
<b>FLL &amp; FTC</b>				
FLL Registration Fees	\$ (5,925.80)	\$ (1,442.00)	310.94%	For current FY covered by Bader & Verizon Grants
iPads	\$ (3,798.62)	\$ -	n/a	
FTC Registration Fees	\$ (2,190.30)	\$ -	n/a	For current FY covered by Bader & Verizon Grants
Laptop Chargers	\$ (381.48)	\$ -	n/a	
<b>Sub Total</b>	<b>\$ (12,296.20)</b>	<b>\$ (1,442.00)</b>	<b>752.72%</b>	
<b>STEM &amp; Robot Supplies</b>				
Vex Robotics	\$ (8,969.16)	\$ (5,196.00)	72.62%	
McMaster Carr	\$ (4,695.68)	\$ (6,757.55)	-30.51%	
AndyMark	\$ (3,264.55)	\$ (1,327.89)	145.84%	
Avid CNC	\$ (2,208.75)	\$ -	n/a	
Airline Hydraulics	\$ (1,858.78)	\$ -	n/a	
Rev Robotics	\$ (1,569.41)	\$ (71.67)	2089.77%	
Cross The Road Electronics	\$ (1,037.88)	\$ (247.82)	318.80%	
West Coast Products	\$ (655.68)	\$ (1,862.66)	-64.80%	
Armbot	\$ (591.00)	\$ (42.00)	1307.14%	
Miscellaneous Supplies	\$ (513.96)	\$ (600.00)	-14.34%	
The Robot Space	\$ (502.51)	\$ (1,673.69)	-69.98%	
Automation Direct	\$ (338.14)	\$ -	n/a	
Quick220	\$ (272.25)	\$ -	n/a	
Servo City	\$ (230.16)	\$ -	n/a	
Igus Bearings	\$ (209.83)	\$ -	n/a	
Digi-Key	\$ (167.68)	\$ -	n/a	
Powerwerx	\$ (148.31)	\$ (694.39)	-78.64%	
SDP SI	\$ (133.76)	\$ -		
Allegheny Education	\$ -	\$ (555.00)	-100.00%	
RoboPromo	\$ -	\$ (228.19)	-100.00%	
<b>Sub Total</b>	<b>\$ (27,367.49)</b>	<b>\$ (19,256.86)</b>	<b>42.12%</b>	
<b>General Shop &amp; Lab Supplies</b>				
Miscellaneous Supplies	\$ (3,417.06)	\$ (1,983.88)	72.24%	
Shars Tool Company	\$ (1,453.80)	\$ -	n/a	
Lowe's	\$ (522.84)	\$ (76.81)	580.69%	
Hench Manufacturing Company	\$ (489.50)	\$ -	n/a	
Home Depot	\$ (411.68)	\$ (231.14)	78.11%	
Harbor Freight Tools	\$ (307.91)	\$ (148.67)	107.11%	
Pneumadyne	\$ (262.92)	\$ -	n/a	
Northern Tool	\$ (53.48)	\$ -	n/a	
Parts Warehouse	\$ (26.44)	\$ -	n/a	
<b>Sub Total</b>	<b>\$ (6,945.63)</b>	<b>\$ (2,440.50)</b>	<b>184.60%</b>	
<b>Fundraisers</b>				
Handbag Bingo Fundraiser	\$ (6,209.22)	\$ (4,863.35)	27.67%	
31 Days of 31	\$ -	\$ (671.71)	-100.00%	
Bling for Bots	\$ -	\$ (544.69)	-100.00%	
<b>Sub Total</b>	<b>\$ (6,209.22)</b>	<b>\$ (6,079.75)</b>	<b>2.13%</b>	
<b>Laptop Program</b>				
Power Cords & Hard Drives	\$ (750.86)	\$ (208.72)	259.75%	
Shipping	\$ (733.61)	\$ (383.45)	91.32%	
Stickers	\$ (28.99)	\$ -	n/a	ID the laptops as donations from BEF
<b>Sub Total</b>	<b>\$ (1,513.46)</b>	<b>\$ (592.17)</b>	<b>155.58%</b>	
<b>Registration Fees</b>				
FMA District Events	\$ (5,000.00)	\$ (5,000.00)	0.00%	
Duel on the Delaware	\$ (275.00)	\$ -	n/a	
FMA Championship	\$ -	\$ (5,000.00)	-100.00%	
FIRST World Championships	\$ -	\$ (5,000.00)	-100.00%	
Ramp Riot	\$ 500.00	\$ 250.00	100.00%	
<b>Sub Total</b>	<b>\$ (4,775.00)</b>	<b>\$ (14,750.00)</b>	<b>-67.63%</b>	
<b>Travel</b>				
SEPTA	\$ (90.00)	\$ -	n/a	Train tickets for FIRSTWorkshop
Greektown Casino	\$ -	\$ (13,145.64)	n/a	Housing in Detroit
Bus	\$ -	\$ (11,000.00)	n/a	Team transport to Detroit
Lehigh Valley Hotel & Convention Center	\$ -	\$ (7,844.49)	n/a	
Enterprise Car Rental	\$ -	\$ (794.23)	n/a	Robot transportation to Detroit
Gas & Tolls	\$ -	\$ (537.40)	n/a	Tolls to Detroit
<b>Sub Total</b>	<b>\$ (90.00)</b>	<b>\$ (33,321.76)</b>	<b>-99.73%</b>	
<b>Totals</b>	<b>\$ (46,900.80)</b>	<b>\$ (76,441.04)</b>	<b>-38.64%</b>	





Future FROs building at our 2019 Free Summer Camp



Mr. Krinkle on display at our annual Bag Bingo Event



FRO member speaking for our PBS interview



Talking with judges in our pit area at our Bensalem District Event



Neshaminy High School students who were mentored by our team



Hanging out with Bob Kelly on Good Day Philadelphia on Fox 29



5401 members getting awarded at the Bensalem Township Meeting



FRO members getting recognized at our state capital