

Virginia Space Grant Consortium

Presentation to
Senate Finance Committee

Mary Sandy
Director

August 20, 2013



VSGC Member Institutions

College of William and Mary

Hampton University

Old Dominion University

University of Virginia

Virginia Polytechnic Institute and State University

NASA Langley Research Center

NASA Goddard Space Flight Center's Wallops Flight Facility

State Council of Higher Education for Virginia

Virginia Community College System

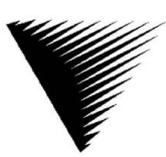
Virginia Department of Education

MathScience Innovation Center

Science Museum of Virginia

Virginia Air and Space Center

Center for Innovative Technology



America's Space Grant Program

52 Consortia:

Every state + D.C. and
Puerto Rico

1000+ Affiliates:

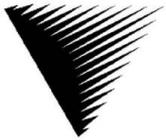
652 higher education
87 industry
83 governmental (state/local/federal)
76 museum/science centers
89 other local partners

Public/Private Partnerships

Established by Congress in 1987:
Public Law 100 - 147

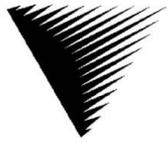


★ NASA Centers
★ Space Grant Colleges and
Universities



VSGC

- **Focus is STEM education, workforce development, and building research infrastructure at VSGC universities.**
- **NASA/State Public Private Partnership with State matching funds since inception in 1989**
- **Precollege, Higher Education and Informal Education**
- **More than 400 non-member organizations as project partners.**
- **Has worked with every Virginia university and community college and Virginia school district**
- **VSGC has received numerous grants and contracts from NASA, NSF, FAA, Department of Defense, Department of Energy, the U.S. Department of Education, the Commonwealth of Virginia, Virginia's Center for Innovative Technology and many other sources.**
- **NASA Space Grant Funding for FY 2012 leveraged \$8 to \$1.**



Program Areas

- **Scholarships/Fellowships/Internships.**
- **Workforce Development for the STEM Pipeline with strong focus on internships**
- **Higher Education.**
- **Precollege – Teacher Professional Development and Select Student Initiatives.**
- **Public Science Literacy/Informal Science Education.**
- **Student Research and Mission Opportunities.**
- **Building Research Capabilities/Research Partnerships.**

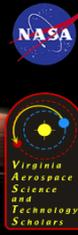
Virginia Aerospace Science and Technology Scholars



Virginia Space Grant
Consortium



*Explore Where
Science, Technology,
Engineering, and
Math
Can Take You!*



Virginia Aerospace Science and Technology Scholars

Explore where Science, Technology, Engineering, and Math can take you!

Promotes exploration of science, technology, engineering, and math (STEM) concepts using a Space Exploration theme

A statewide competitive program, free of cost, for high school juniors

Online course and Summer Academy at NASA Langley Research Center





Virginia Aerospace Science and Technology Scholars

Explore where Science, Technology, Engineering, and Math can take you!

VASTS Program Statistics

	2008	2009	2010	2011	2012	2013
Total Participants	48	118	347	420	467	520
Males (%)	77	68	68	67	65	62
Females (%)	23	32	32	33	35	38
Underrepresented Minorities (%)*	11	18	18	14	14	24
Career and Technical Education-track Students (%)	30	30	32	36	32	38
Virginia Senate Districts Represented (%)	65	90	100	100	100	100
Virginia House Districts Represented (%)	41	74	86	86	99	95

*Self reported; up to 5% of students typically indicate "other"



Virginia Aerospace Science and Technology Scholars

Explore where Science, Technology, Engineering, and Math can take you!

VASTS Growth and Longitudinal Tracking

Additional funding (\$100K + \$350K) from the Commonwealth of Virginia allowed for FY2013 program expansion:

- 520 students started online course in 2013
- 11.35% growth over 467 enrolled in 2012
- 95% House Districts Represented in 2013
- 100% Senate Districts Represented in 2013

- 95% of Alumni surveyed are pursuing STEM degrees
- 52% of Alumni surveyed are pursuing Engineering degrees
- 65% of Alumni surveyed are attending VA Colleges and Universities
- Alumni have attended International Space Olympics in 2011 and 2012
- 29 pair of siblings have enrolled in the course





Virginia Aerospace Science and Technology Scholars

Explore where Science, Technology, Engineering, and Math can take you!

Student impact and reflection statements:

“VASTS opened up a whole new path for my future.”

“I am definitely going to become an Aerospace Engineer. I will also encourage other people to attend the VASTS program because it changed my life.”

“I learned a lot about how collaboration and communication contribute to and are vital to the product of a team.”

External Evaluator, Dr. Art Johnson, findings:

“This program is a catapult for students.”

“Students enthusiastically continually engaged in fulfilling both independent and team responsibilities and participating in interactive, hands-on learning activities”

“Over the course of the week, students’ attitudes toward STEM study and careers, self-esteem, and team interaction were observed and heard to become increasingly more positive as they worked together to comprehend and make decisions about various components of the mission architecture”



Virginia Space Coast Scholars

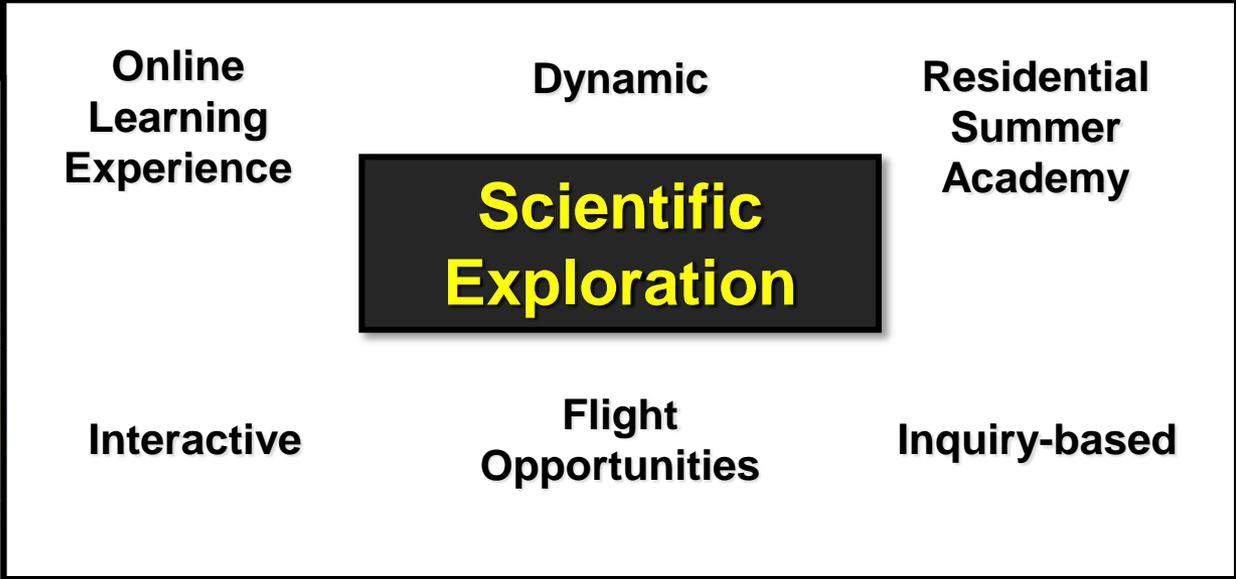
Launchpad to Study the Earth, Atmosphere, and Beyond

Who can apply?

- High-school **sophomores**
- Virginia and U.S. citizens
- 2.7 GPA
- Demonstrated interest in STEM

- **Engage**
- **Expose**
- **Inspire**
- **IGNITE**

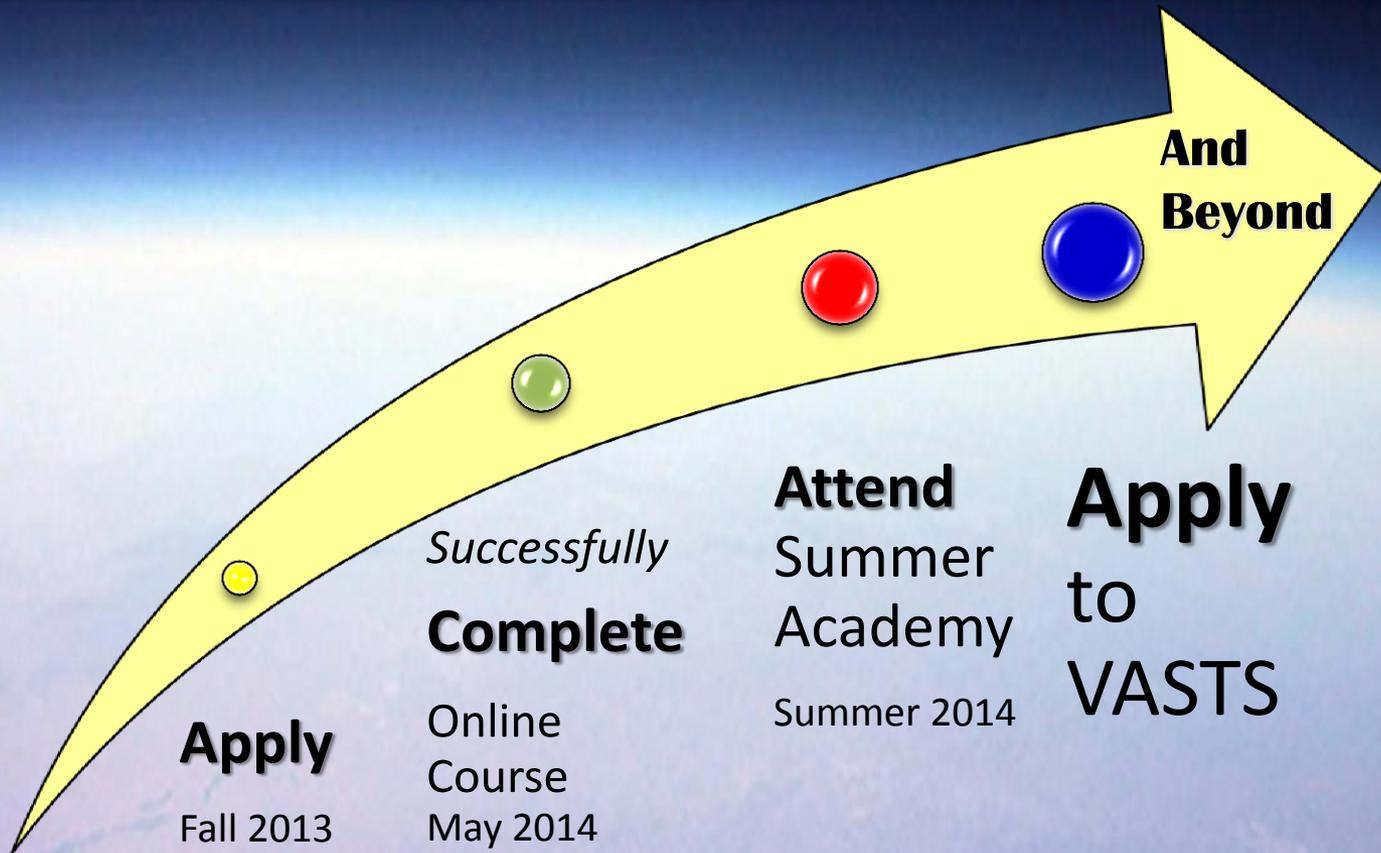
The Commonwealth of Virginia passed legislation to fund this program for FY 2013 and FY 2014





Virginia Space Coast Scholars

Launchpad to Study the Earth, Atmosphere, and Beyond



The logo features a stylized red and white arrow pointing upwards and to the right, with a red swoosh underneath it.

Virginia Space Coast Scholars

Launchpad to Study the Earth, Atmosphere, and Beyond

Data

- **467 Applications for Online Course**
- **141 Online Course participants (80 originally budgeted)**
 - **37% Female**
 - **63% Male**
 - **22% CTE-tracked students**
 - **32% Underrepresented Minorities**
 - **61% House Districts represented**
 - **77.5% Senate Districts represented**
- **Online Course closed on 5/4/2013**



Summer Academy

August 10-16 at NASA WFF

- **40 students participated in Summer Academy**
- **Focus on engineering design process and hands-on learning**
- **Throughout the week, students:**
 - **Designed a mission based on previous WFF-managed missions**
 - **Designed, built, flew scientific instrumentation for measurements**
 - **Explored different flight platforms (i.e., Balloon, rocket, UAV, manned aircraft)**
 - **Presented mission design process and analysis of data collected**

Planning Ahead for 2014

These future activities are made possible by additional funding by the General Assembly in FY2014

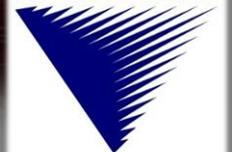
- Online program participation will increase to 200, Spring 2014
- Two academies for Summer 2014

Commonwealth STEM Industry Internship Program



**COMMONWEALTH STEM INDUSTRY
INTERNSHIP PROGRAM**

**Virginia
Space Grant
Consortium**



What is CSIIP?



- An online brokering system matching **undergraduate STEM students to companies throughout Virginia that provide paid internship opportunities.**
- **Affords Virginia's industries with unprecedented access to qualified interns pursuing STEM-related careers.**
- A conduit between budding STEM talent and an industry workforce shortage.
- Seeks to keep STEM talent In Virginia!
- Companies select, hire and directly pay the interns.



STEM = Science, Technology, Engineering, Mathematics

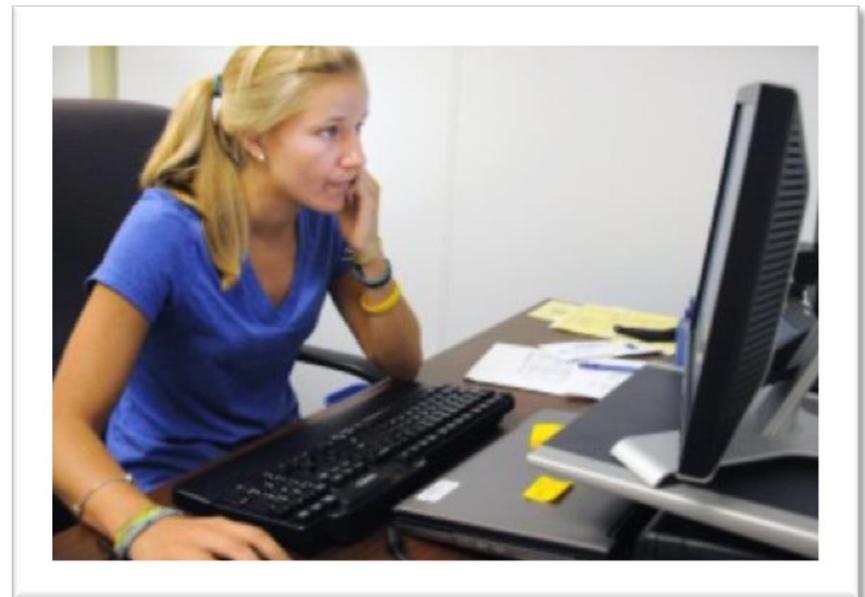
COMMONWEALTH STEM INDUSTRY INTERNSHIP PROGRAM



ONE APPLICATION - 90+ COMPANIES THROUGHOUT VIRGINIA

Student Eligibility Requirements

- At least 18 years of age and attending a Virginia university, college, or community college. Virginia residents attending accredited out-of-state colleges may also apply.
- A full-time undergraduate student, taking at least 12 credit hours per semester.
- Must have completed at least 30 or more post-secondary education credits and are at least at rising sophomore status prior to the internship. *Seniors graduating at the end of spring semester 2013 are also eligible to participate.*
- Majoring in a STEM related field.
- U.S. Citizen or Permanent Resident.
- Must have a GPA of at least 2.7 on a 4.0 scale.



CSIIIP Partners...

All ten Virginia's regional technology councils
Virginia Manufacturers Association
Virginia's Society for Human Resource Managers
sySTEMic Solutions

Collaboration with all accredited Virginia colleges, universities, and community colleges

Support from Governor McDonnell's office, including Virginia Secretaries of Commerce and Trade, Education, and Technology



How is it Funded?



Funding in the Virginia biennium budget of \$300K/year for the VSGC to implement, manage, and administer the program.



The online CSIIP system is free to use for students, companies, and colleges and universities.

Benefits to Participation:

Students receive:

- A convenient one-application process to reach many companies.
- Excellent hands-on experience related to their field of study.
- Certificate of Completion signed by Governor McDonnell.

Companies receive:

- Excellent free PR through the CSIIP.
- A large pool of quality students to meet their internship opportunities.
- Opportunity for finding potential future full-time employees. Several 2013 interns offered a permanent full-time position.
- Plaque from the VSGC signed by Governor McDonnell



CSIIP

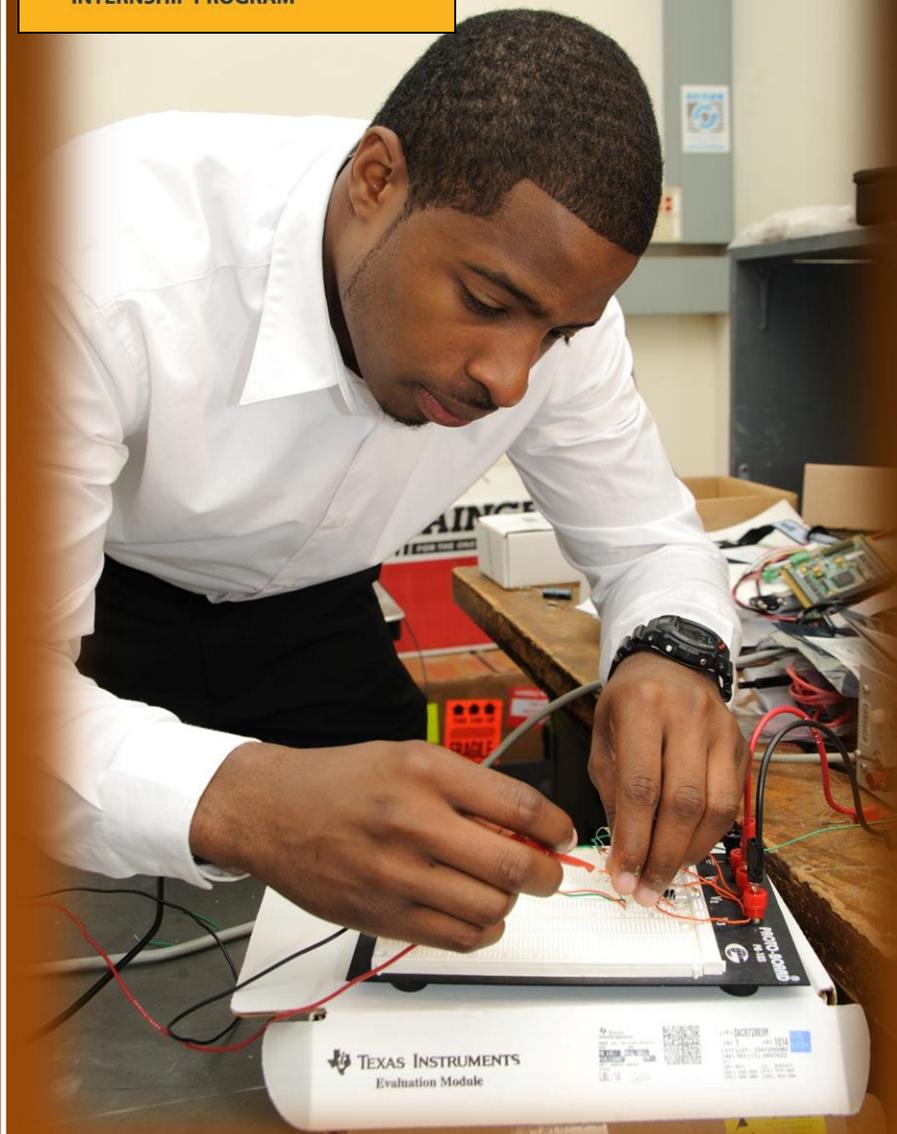


COMMONWEALTH STEM INDUSTRY
INTERNSHIP PROGRAM

Pilot Year Results:

First year results good for pilot year.

- 95 companies, so far, throughout Virginia have registered with the CSIIP.
- Over 500 students were prescreened and ready for internship placement.
- This pilot year, we placed 53 interns in paid positions with 29 companies.
- Ran into issues with companies concerned about sequestration and the economy.



CSIIP



COMMONWEALTH STEM INDUSTRY
INTERNSHIP PROGRAM



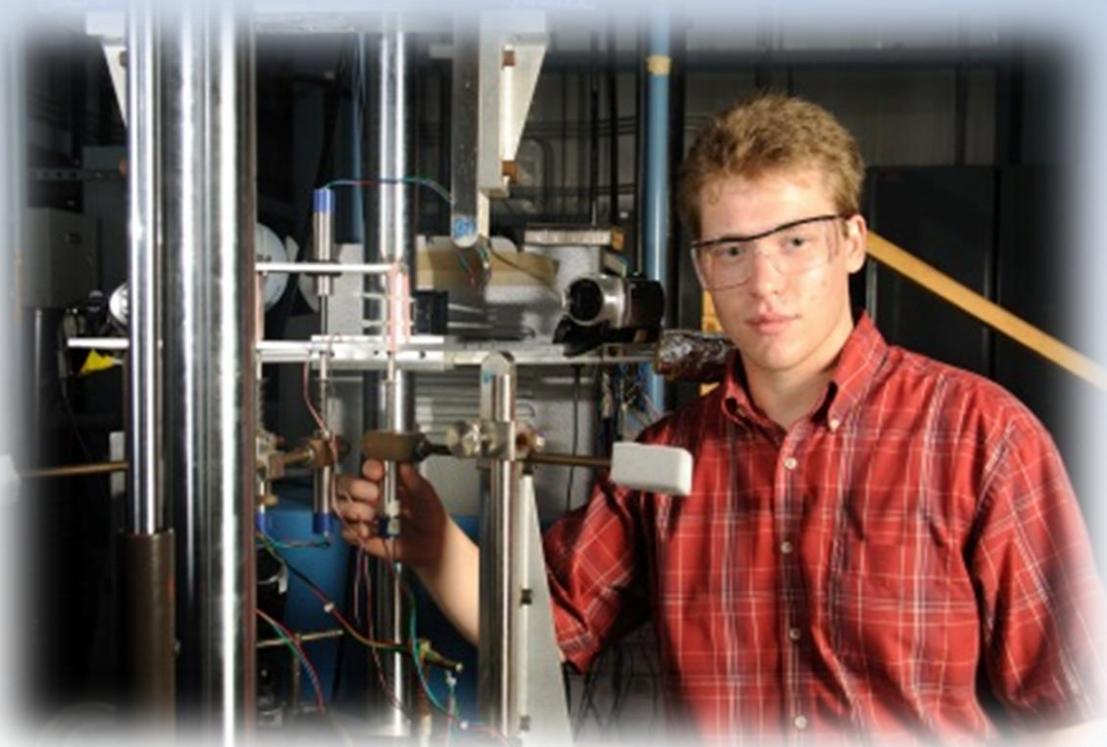
CSIIP Web Forums

- VSGC partnered with the IALR and NASA to produce 6 webcasts available at csiip.org.
- Overall Theme: “Building Skills and Exploring Workforce Opportunities in STEM”: Titles include:
 - Pursuing STEM Careers — Transitioning from College to the Workforce
 - Interviewing and Sealing the Deal
 - Advanced Science and Technology Careers in Manufacturing
 - NASA and Aerospace Career Pathways in Virginia
 - Pathways to Success: Your Guide to Virginia Space Grant Consortium Scholarships, Internships, and More
 - Linking Your Future to Virginia Emerging Economic Sectors

Next Steps for 2013 - 2014:



- Student application database opened year-round.
- Options for spring, fall and summer placements.
- Even more sophisticated search tool for Boolean searches and searches by geographic radius from a company or residence





Free, three-day, on-campus residential experience at UVA for **158** rising freshmen and sophomore high school students. Two sessions held in July 2013.

Spark interest in STEM through innovative, hands-on activities led by UVA faculty and staff. **214** applications received from targeted regions (Southwest, Piedmont, Richmond and Charlottesville).

Funding maximized to add 20 students per session over budgeted amount

2014: One session at University of Virginia and two at Virginia Tech.

Inspired by
Delegate Joe
May





158 participants

Males.....87

Females.....71

Minorities.....41

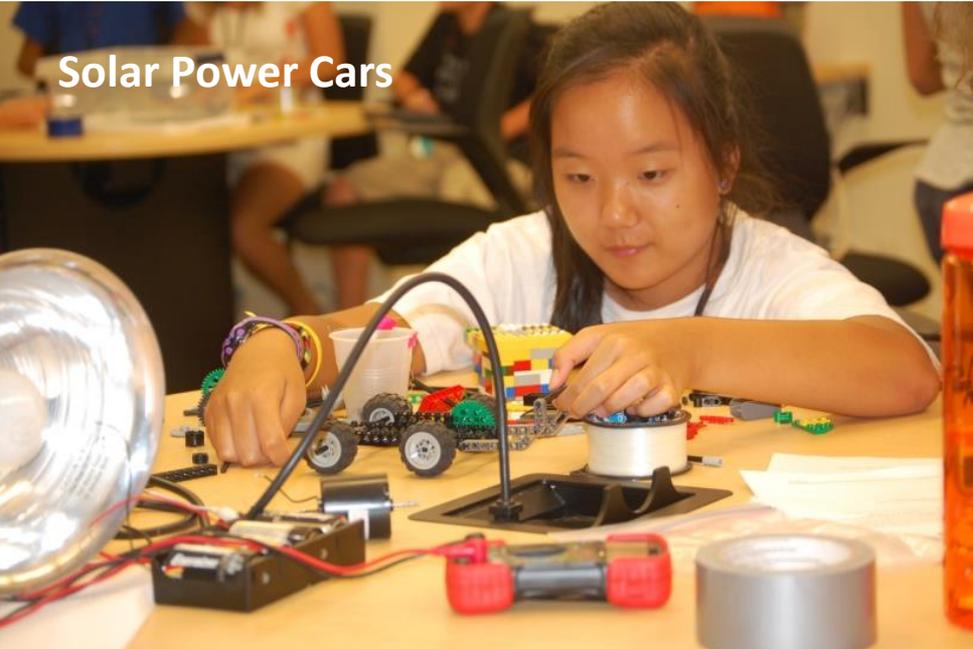
Virginia Senate Districts
Represented.....33

Virginia House Districts
Represented.....22

BLAST Student Comments



Solar Power Cars



“I really enjoyed how everything was a hands-on experience and not just watching.”

“I was never really interested in robots or building anything in Mechanical Engineering until this program.”

“It has opened my eyes to the huge and growing world of STEM careers.”

Mars Yard



Chemistry Challenge





Poisoned Kool Aid Challenge



Habitat for Penguins



Kathryn Thornton,
former astronaut

VSGC Scholarships/Fellowships

- All programs are merit-based and highly competitive
- **Graduate Research Fellowship**
 - \$5,000 Fellowship for research of interest to NASA
 - Must have faculty mentor. Renewable for one year
 - Requires university match of at least \$5,000
- **Undergraduate Research Scholarship**
 - Up to \$8,500 for junior and seniors conducting research of interest to NASA
 - Must have faculty mentor





- **Undergraduate STEM Bridge Scholarship**
 - \$1,000 award to underrepresented minorities majoring in STEM and interested in NASA and research
 - Renewable for one year
- **Community College STEM Scholarship**
 - \$2,000 to sophomore students majoring STEM

VSGC Scholarships/Fellowships

- Since 1989, the Commonwealth of Virginia has provided \$3,538,370 in matching funding to support the Scholarship/Fellowship program
 - These funds count as the required match by the state
- 100% of these funds are awarded directly to students. No funds go to administrative or other costs.



VSGC Scholarships/Fellowships



- State contribution for scholarships/fellowships as been a line item of \$170,000 through SCHEV since 2002
- State funding is highly leveraged by matching funds from NASA Space Grant, university, and industry match by at least \$3 to \$1

VSGC Scholarships/Fellowships

- Since 1989, the VSGC has awarded \$5,682,803 in NASA and state support to 1,358 students at Virginia's Space Grant institutions.
- Undergraduate Research Scholarships -- \$1,798,914 to 249 students (\$8,500 award)
- Graduate Research Fellowships -- \$3,376,389 to 677 students (\$5,000 renewable award)
- Teacher Education Scholarships -- \$161,000 to 161 students
Community College Scholarship -- \$215,000 to 139 students (\$2,000 award)
- Undergraduate STEM Bridge Scholarship -- \$131,500 to 132 students (\$1,000 renewable award).

Scholarship/Fellowship – Longitudinal Tracking

- Students are tracked to their next step—academic career or employment
- 98% of alumni responding to survey are working in STEM or still enrolled in STEM
- 18 employed by NASA
- 37 employed by STEM aerospace contractor
- 52 employed in a STEM non-aerospace field
- 256 graduated and pursued advanced STEM degree
- 95 employed in STEM academic field
- 54 employed in other STEM career