



The Vermont Space Grant Consortium

Manual of Operations

Effective July 1, 2022



Table of Contents

1 Mission, Goals, and Objectives	5
2 Research Programs	7
2.a The Small-Scale Research Grant Program.....	7
2.b The Pilot Research Grant Program.....	8
2.c Solicitation Process	8
2.d Review and Selection Process.....	8
2.e Program Management and Reporting.....	9
3 Graduate Fellowship Program	11
3.a Overview	11
3.b Solicitation Process	11
3.c Review and Selection Process.....	11
3.d Program Management and Reporting	13
4 Research Experience for Undergraduates (REU) Program	14
4.a Overview	14
4.b Solicitation Process	14
4.c Review and Selection Process.....	15
4.d Program Management and Reporting	15
5 Undergraduate Scholarship Program	16
5.a Overview	16
5.b Solicitation and Application Process.....	16
5.c Review and Selection Process.....	17
5.d Program Management and Reporting	18
6 Academic Affiliates	19
6.a Overview	19
6.b Affiliate Membership	19
6.c Management and Reporting	19
7 K–12 Education Projects	21
7.a Overview	21
7.b Current Affiliates.....	21
7.c Management and Reporting	23

8 Student-Organization Support	24
8.a Overview	24
8.b Current Organizations Supported.....	24
8.c Management and Reporting	24
9 Program Assessment and Improvement.....	26
9.a Overview	26
9.b Current Assessment Procedures	26
10 Diversity, Equity, Inclusion, and Accessibility (DEIA) Strategic Plan	27
10.a Overview	27
10.b Recruitment and Retention.....	28
10.c Transparent Reporting.....	28
10.d Strategic Plan to Bolster DEIA Activities.....	29
11 Marketing and Publicity Strategic Plan	34
11.a Overview	34
11.b Distribution Plan	34
11.c Marketing Materials	35
11.d Promotions & Retention Strategy	36
11.e Joint Ventures.....	37
11.f Accessibility Guide.....	38
12 Consortium Management.....	40
12.a History and Structure.....	41
12.b Board of Advisors	42
13 Budget Summary	47
14 Re-budgeting and Programmatic Revision Process.....	50

Appendices

Appendix A1: Research Program Sample Announcement	51
Appendix A2: Research Grant Review Template and Instructions	56
Appendix A3: Research Grant Sample Decision Letters	60
Appendix A4: Research Grant Progress Report Template	64
Appendix B1: Graduate Fellowship Sample Announcement	67

Appendix B2: Graduate Fellowship Review Template and Instructions	70
Appendix B3: Graduate Fellowship Sample Decision Letters	73
Appendix B4: Graduate Fellowship Progress Report Template	76
Appendix C1: REU Sample Announcement	78
Appendix C2: REU Learning-Outcomes Form	81
Appendix C3: REU Progress Report Template	83
Appendix D1: Undergraduate Scholarship Review Template and Instructions	85
Appendix D2: Undergraduate Scholarship Sample Decision Letters	88
Appendix E1: Academic Affiliate Member Statement of Work	91
Appendix W: VTSGC Strategic Plan	93
Appendix X: Staff Position Descriptions	96
Appendix Y: Student Longitudinal Tracking Survey	101

Preamble

This manual of operations outlines best practices for delivering programs administered by the Vermont Space Grant Consortium. It is intended to provide a general outline rather than a prescriptive practice. Depending on the specific situation in any given year, the consortium may undertake a modified approach provided that it continues to achieve the mission, goals, and objectives of the Vermont Space Grant Consortium and the national program.

1 Mission, Goals, and Objectives

The Vermont Space Grant Consortium (VTSGC) offers a variety of opportunities for scholarships, research grants, awards, and NASA Internship Programs that provide opportunities to work with NASA engineers and scientists at NASA centers across the United States.

The VTSGC is part of a national network of colleges and universities. The VTSGC works to expand opportunities for Vermonters to understand and participate in NASA's aeronautics and space projects by supporting and enhancing science and engineering education, research, and public outreach efforts. VTSGC funds NASA internships, fellowships and scholarships for students pursuing careers in science, technology, engineering, and mathematics (STEM), curriculum and faculty development, as well as informal education through our museum partners.

VTSGC Mission

To serve the citizens of the State of Vermont and the larger national community by fostering increased expertise in aerospace-related education, research, and public service. To provide a statewide network to enhance communication and interaction among Vermont organizations and individuals with interests in aerospace issues.

VTSGC Goals and Objectives

Goal 1.0: Expand scientific knowledge in areas consistent with NASA Mission Directorate challenges and Vermont scientific and technical strengths.

Objective 1.1: Vermont students and faculty perform research in STEM topics consistent with interests of NASA's Mission Directorates.

Objective 1.2: Research capacity and graduate programs of Vermont educational institutions is enhanced, enabling more competitive STEM research activities.

Goal 2.0: Build a diverse, skilled future STEM workforce in Vermont.

Objective 2.1: A broad and diverse set of students are attracted to STEM, with particular focus on aeronautics and space science.

Objective 2.2: Students, including those from underrepresented and underserved communities, explore and pursue STEM pathways through learning experiences with NASA's people and/or with NASA-related topics.

Objective 2.3: VTSGC engagement efforts result in alumni with undergraduate and/or graduate STEM degrees adequate to meet Vermont and national workforce requirements.

Objective 2.4: Strategic partnerships form between Vermont colleges and universities, industries, non-profit organizations, and K-12 educational institutions to enhance and extend efforts in STEM engagement.

Goal 3.0: Strengthen engagement in and support for STEM, space science, and NASA activities throughout Vermont.

Objective 3.1: Youth are inspired to pursue STEM education by exposure to space science and technology.

Objective 3.2: Students gain exposure to STEM careers through experiences with NASA's people and/or work on NASA-related topics.

Objective 3.3: The general public is inspired by NASA successes and advancement in aerospace sciences.

2 Research Programs

Facilitating the development of NASA-relevant research infrastructure in Vermont is a priority for the VTSGC, with particular focus on encouraging research projects of an interdisciplinary nature. The VTSGC offers two funding mechanisms to support early-stage research: the Small-Scale Research Grant program, which provides up to \$25,000, and the Pilot Research Grant program, which provides up to \$6,500. These programs are highly competitive, and proposals demonstrating interdisciplinary components will receive greater priority. Projects funded under these programs must be directly aligned with a new or continuing NASA Mission Directorate research priority.

The short-term goal of these research programs is to encourage more of Vermont's faculty researchers, and faculty at Vermont's predominantly undergraduate institutions, to consider research topics aligned with new and continuing NASA research priorities. The long-term goal is to develop strong and enduring collaborative research links between Vermont academic researchers and NASA. Based on experience, these awards sometimes provide some level of academic year support for graduate students and/or summer research experiences for undergraduate students.

These awards are given on a competitive basis to enable faculty researchers to initiate research aligned with new and continuing NASA Mission Directorate research priorities. Potential uses of these funds include seed money to explore initiating NASA-related research projects, bringing a distinguished visitor or research collaborator to Vermont for a short visit, summer support of an undergraduate or graduate student, or supplies necessary to perform preliminary support for a future NASA proposal.

All grantees will be required to leverage VTSGC funds by seeking matching funding from their own institution. The following sources are not permitted as sources of matching funds: other federal grants, waived or differential tuition, and unrecovered indirect costs. Faculty in-kind effort (i.e., academic-year research time supported by the institution's general-fund budget) devoted to the project is encouraged as a source of matching funds. Funding awarded under these programs cannot be used to purchase general-purpose equipment, such as computers, and cannot be used to purchase items classified as capital equipment (i.e., exceeding \$5,000). Foreign travel is not permitted.

Awardees are required to provide a final report within 30 days of the end of the award period. In limited circumstances, no-cost extensions are permitted.

2.a The Small-Scale Research Grant Program

The Small-Scale Research Grant program offers awards of up to \$25,000 in support of early-stage, NASA-aligned research. This grant program is intended to support research projects that already have some level of maturity as evidenced by preliminary work conducted by the principal investigator. Accordingly, applications for awards under this funding mechanism must include a letter of support from a NASA contact or collaborator.

Small-Scale Research Grants may include funding for project components such as, but not limited to, the following: summer support of faculty, graduate or undergraduate student research support, supplies, and domestic travel to a research conference or a NASA center.

2.b The Pilot Research Grant Program

The Pilot Research Grant program offers awards of up to \$6,500 in support of preliminary, NASA-aligned research. This grant program is intended to support novel research projects, typically from investigators having little to no prior NASA connections. The proposed research topic must be in an area aligned with a new or continuing NASA research priority; however, no preliminary data are required. Accordingly, applications for awards under this funding mechanism are not required to identify a NASA contact or collaborator.

Pilot Research Grants may include funding for project components such as, but not limited to, the following: graduate or undergraduate student research support, supplies, and domestic travel to a research conference or a NASA center. Awardees are strongly encouraged to visit a NASA center for the purpose of forming or solidifying research collaborations.

2.c Solicitation Process

Applications for the Small-Scale Research Grant program and the Pilot Research Grant program are solicited as part of a single competition. Appendix A1 contains an example announcement. The solicitation is typically released in mid-January and circulated by e-mail to all academic organizations within the consortium. The solicitation is also posted on the VTSGC website. The application deadline is typically in late March.

The solicitation includes detailed instructions regarding the application process and deadline. In addition, the solicitation provides the following information: a brief overview of the programmatic goals (background); descriptions of the two funding mechanisms; eligibility requirements; expectations regarding NASA alignment; awardee obligations; budget requirements, including the requirement of matching funds; and the review criteria.

All received applications are acknowledged by e-mail.

2.d Review and Selection Process

Following receipt of all applications, the VTSGC Director will initiate the review and selection process. The first step is to identify a panel of experts to constitute the Review Committee. The Director will select and appoint the members of the Review Committee based on the areas of expertise required to complete an informed review of each submitted application. In general, when appointing the Review Committee, the Director will take into account the major research areas aligned with the portfolio of applications. The Director will also seek to avoid conflicts of interest within the membership of the Review Committee.

In the second step, the Director will assign the individual applications to members of the Review Committee. At least two reviewers will be assigned to each application. Each committee member is provided with a reviewing template and instructions (Appendix A2). Reviewers are asked to assess the strengths and weaknesses of the proposed project in each of the domains scientific/technical merit, innovation, approach, NASA alignment and investigators. In addition, the reviewers are asked to provide an overall-impact score for each application. The overall impact score is the key review outcome and the main basis for a decision to advance an application for funding. The Director will collect the completed reviews.

The third step is to organize a meeting of the Review Committee. Just prior to the meeting, the Director will use the preliminary overall impact scores to identify any applications that may be triaged (i.e., not discussed at the committee meeting nor considered for funding). The Director will distribute all review materials (applications and completed reviews) to the entire committee along with a meeting agenda providing the order of review and discussion. The Director will also identify a chairperson for the meeting (the Director is permitted to fill this role).

During the committee meeting, the members will discuss each application on the agenda. The general flow is as follows. The primary and secondary reviewers will provide a brief overview of the project and their assessment of the strengths and weaknesses driving their overall impact scores. The chairperson will then open the floor for discussion. When this discussion is completed, the chairperson will ask the primary and secondary reviewers to restate their overall impact scores, providing a scoring range for the voting. The chairperson will ask whether any member wishes to vote outside this range. If a member so indicates, the chairperson will ask that member to state a brief rationale and their score. The scoring range will then be expanded accordingly. The chairperson will restate the applicant's name and the scoring range, asking each member to record their score.

Following discussion of all non-triaged applications, the chairperson will ask whether any committee member wishes to discuss any of the triaged applications. If any member so wishes, the committee will discuss those specific triaged applications using the same process as described above, including a vote on the overall impact score.

In the fourth step, the Director will collect the voted scores and average them according to application. Based on the strength of the average voted score, the Director will make the final decisions regarding selection. The Director should be strongly guided by the voted scores; however, the Director may factor other considerations into the selection process. For example, the Director may consider factors such as applicant's rank as a faculty member (to ensure equity across funded faculty members in varying stages of their careers) and the applicant's primary area of research (to enhance the multidisciplinary breadth of projects among those selected for funding). Additional factors that might be considered include linkages with other ongoing projects and the degree to which the project will build jurisdictional research capacity.

As the final step in the process, the Director will notify each applicant of the outcome in a formal letter. Each applicant will receive a copy of the (anonymous) reviews of their proposal. Where appropriate, the Director's letter will include additional clarification based on the Review Committee discussion. Appendix A3 contains example letters.

2.e Program Management and Reporting

Each award under this program will be set up as a subaward through the Office of Sponsored Project Administration, and (where applicable) at the PI's home institution.

The subaward PI will be responsible for ensuring that all expenditures are appropriate and allowable pursuant to federal regulations including NASA-specific regulations, institutional policies, and VTSGC terms and conditions. PIs are encouraged to seek approval from the Director for any expenditures where there is a question regarding whether such expenditures are allowable.

The VTSGC Office will seek a progress report from the PI of each project. A template for the progress report will be provided (Appendix A4). Each PI will be asked to provide a mid-year progress report for the first year of the project. These mid-year reports will be solicited in January with a due date approximately 30 days later. With this schedule, the mid-year progress reports will be available to inform the annual VTSGC progress report to NASA, which is due on or about April 5. PIs will also be asked to complete a final progress report within 30 days following the project's ending date.

No-cost extensions are permitted at the discretion of the Director.

3 Graduate Fellowship Program

3.a Overview

The VTSGC works to advance knowledge in STEM areas of interest to NASA Mission Directorates and to help meet the critical need for professionals with advanced training in aeronautics, space, and related STEM areas by offering annual Vermont Space Grant Graduate Fellowships. These fellowships are available to U.S. citizens pursuing a PhD or a MS degree in appropriate STEM fields at qualified Vermont colleges and universities. The fellowships have a strong research infrastructure component, as the students work directly with academic researchers on existing or developing research projects that are strongly aligned with NASA research priorities. Fellowships are also structured so that they promote the initiation or strengthening of connections for both the student and the faculty advisor to potential or existing collaborators at NASA Centers.

Graduate Fellowship awardees are identified following a competitive application process. Applications are written by the students, but the student's adviser must sign off on the proposal cover page. The proposal must clearly identify the research that is to be performed during the award period. The qualifications of the student, the potential benefits of the project to Vermont's research infrastructure and NASA research interests, and the potential for interaction with NASA personnel are considered in determining awards. The awards include a 12-month stipend, tuition coverage, and coverage of student fees (including health insurance).

3.b Solicitation Process

Applications for the VTSGC Graduate Fellowship program are typically solicited in early October, with a due date in mid-January. Appendix B1 contains an example program announcement. The announcement is circulated by e-mail using an extensive distribution list that includes all academic organizations within the consortium. The solicitation is also posted on the VTSGC website.

The program announcement includes detailed instructions regarding the application process and deadline. It also provides the following information: a brief overview of the programmatic goals; eligibility requirements; extent of support, including time frame and stipend amount; expectations regarding NASA alignment; and awardee obligations. The program announcement strongly encourages applications from women, members of underrepresented groups, and persons with disabilities.

All received applications are acknowledged by e-mail.

3.c Review and Selection Process

Following receipt of all applications, the VTSGC Director will initiate the review and selection process. The Director will perform a preliminary check of all received applications for eligibility and conformity to submission requirements; in particular, the identified students are verified US citizens eligible for VTSGC support.

The first step in the review process is to identify a panel of experts to constitute the Review Committee. The Director will select and appoint the members of the Review Committee based on the areas of expertise required to complete an informed review of each submitted application. In general, when appointing the Review Committee, the Director will take into account the major research areas aligned with the portfolio of applications. The Director will also seek to avoid conflicts of interest within the membership of the Review Committee.

In the second step, the Director will assign the individual applications to members of the Review Committee. At least two reviewers will be assigned to each application. Each committee member is provided with a reviewing template and instructions (Appendix B2). Reviewers are asked to assess the strengths and weaknesses of the application in each of the domains scientific merit (including the student's qualifications), and NASA relevance. They are also asked to provide an overall impact score, which becomes the primary basis for advancing an application for funding. The Director will collect the completed reviews.

The third step is to organize a meeting of the Review Committee. Just prior to the meeting, the Director will use the preliminary overall impact scores to identify any applications that may be triaged (i.e., not discussed at the committee meeting nor considered for funding). The Director will distribute all review materials (applications and completed reviews) to the entire committee along with a meeting agenda providing the order of review and discussion. The Director will also identify a chairperson for the meeting (the Director is permitted to fill this role).

During the committee meeting, the members will discuss each application on the agenda. The general flow is as follows. The primary and secondary reviewers will provide a brief overview of the application and their assessment of the strengths and weaknesses driving their overall impact scores. The chairperson will then open the floor for discussion. When this discussion is completed, the chairperson will ask the primary and secondary reviewers to restate their overall impact scores, providing a scoring range for the voting. The chairperson will ask whether any member wishes to vote outside this range. If a member so indicates, the chairperson will ask that member to state a brief rationale and their score. The scoring range will then be expanded accordingly. The chairperson will restate the applicant's name and the scoring range, asking each member to record their score.

Following discussion of all non-triaged applications, the chairperson will ask whether any committee member wishes to discuss any of the triaged applications. If any member so wishes, the committee will discuss those specific triaged applications using the same process as described above, including a vote on the overall impact score.

In the fourth step, the Director will collect the voted scores and average them according to application. Based on the strength of the average voted impact score, the Director will make the final decisions regarding selection. The Director should be strongly guided by the voted scores; however, the Director may also factor other considerations into the selection process. For example, the Director may consider factors such as applicant's progress in the degree program and the applicant's primary area of research (to ensure research-area diversity across the portfolio of funded fellowships).

As the final step in the process, the Director will notify each applicant of the outcome in a formal letter. Each applicant will receive a copy of the (anonymous) reviews of their proposal. Where appropriate, the Director's letter will include additional clarification based on the Review Committee discussion. Appendix B3 contains example letters.

The selection process should be completed by April 1, which provides adequate lead time to plan for research activities during the summer and the subsequent academic year.

3.d Program Management and Reporting

Management of the VTSGC Graduate Fellowship program is a collaborative activity between the consortium office and each student's primary faculty advisor. The day-to-day supervision of the student is the responsibility of the faculty advisor, while the VTSGC Office will address matters related to the student's appointment and funding. The Director must approve and sign all Fellowship appointment letters, which will be generated by the student's department.

In mid-May of each year, the Director will request a final progress report from each recipient of a Graduate Fellowship award. A template for the report will be provided (Appendix B4).

4 Research Experience for Undergraduates (REU) Program

4.a Overview

The VTSGC will both advance knowledge in areas of interest to NASA Mission Directorates and help meet the critical need for professionals with advanced training in aeronautics, space, and related STEM areas by offering Research Experience for Undergraduates (REU) awards to qualified undergraduate students at Vermont colleges and universities. These REU awards are intended to support a substantive 1-year research effort conducted by an undergraduate student over both the academic year and summer sessions, in close collaboration with a faculty adviser. In particular, the intent of these awards is to provide support for research leading to a clear and substantial academic accomplishment requiring significant student effort. Examples of such accomplishments include an undergraduate honors thesis or preliminary research for a Masters thesis for undergraduate students in an accelerated masters program. These REU awards are available only to U.S. citizens. The REU awards have a strong research infrastructure component, as the students will be working directly with academic researchers on existing or developing research projects that are strongly aligned with NASA research priorities. The overall structure of the REU program is similar to that of the Graduate Fellowship Program; however, many of the processes are made shorter since the REU awards are for considerably less funding. The awards include a \$6,000 stipend plus \$1,000 to support domestic travel to a conference or workshop in the student's area of academic study.

4.b Solicitation Process

Applications for the VTSGC REU program are typically solicited in mid-January, with a due date in late March. Appendix C1 contains an example program announcement. The announcement is circulated by e-mail using an extensive distribution list that includes all academic organizations within the consortium. The solicitation is also posted on the VTSGC website.

The program announcement includes detailed instructions regarding the application process and deadline. It also provides the following information: a brief overview of the programmatic goals; eligibility requirements; extent of support, including time frame and stipend amount; expectations regarding NASA alignment; and awardee obligations. The program announcement strongly encourages applications from women, members of underrepresented groups, and persons with disabilities.

All received applications are acknowledged by e-mail.

4.c Review and Selection Process

Following receipt of all applications, the VTSGC Director will initiate the review and selection process. A preliminary step consists of checking of received proposals for eligibility and conformity to submission requirements; in particular, the identified students are verified US citizens eligible for VTSGC support.

The review process for the REU program uses a streamlined approach. The Director first performs an initial internal review to ascertain the relative quality of the applications based on their responsiveness to the solicitation, identifying those applications that, in the Director's opinion, are not sufficiently responsive. If sufficient funding is available to support all of the remaining applications, then the Director may elect to support them, and no further review is necessary. Otherwise, the Director will initiate a full committee review in a manner similar to that described in Section 3.c for the VTSGC Graduate Fellowship program.

Director will notify each applicant of the outcome. The selection process should be completed by May 1, which provides adequate lead time to plan for research activities during the summer and the subsequent academic year.

4.d Program Management and Reporting

Each REU award will be processed as a paid learning experience for the student. In this way, the REU award will not count toward any financial aid received by the student. Accordingly, the student, in cooperation with their faculty advisor, must document the details of the work to be undertaken, including the student's responsibilities, a description of the training and supervision that will occur, and the specific learning outcomes. Appendix C2 contains a sample form for this purpose.

Upon completion of the REU, the student will be asked to furnish a progress report. A template for the report will be provided (Appendix C3).

5 Undergraduate Scholarship Program

5.a Overview

To encourage graduating high school seniors and students at Vermont colleges and universities to pursue careers in STEM areas of interest to NASA, the VTSGC offers its Vermont Space Grant Undergraduate Scholarship Program for eligible U.S. citizens. This program provides merit-based partial tuition scholarships to Vermont residents attending a Vermont institution of higher education. These scholarships are highly competitive, and are awarded based on academic performance, letters of recommendation, and an essay written by applicants that details career plans and establishes a clear connection to NASA. Scholarship awards are in amounts up to \$5,000.

Scholarship recipients must meet the following criteria:

- A Vermont resident and United States citizen
- A graduating senior in a Vermont high school, or a current undergraduate enrolled full-time in a degree program in a Vermont institution of higher education, with a GPA of 3.0 or above
- Planning to pursue a professional career which has direct relevance to the United States aerospace industry and the goals of the National Aeronautics and Space Administration (NASA). Such as studies in: Astronomy, Biology, Engineering, Mathematics, Physics, Aeronautical Engineering, and other basic sciences, including earth sciences, and Medicine. Cross-disciplinary and other areas of study may also apply.

5.b Solicitation and Application Process

Applications for the VTSGC Scholarship Program open on January 1 and close on March 1 of each year. The program is announced on the consortium website, and it is advertised in the *Scholarships for Vermonters* booklet published (online) by the Vermont Students Assistance Corporation, a public, nonprofit agency established in 1965 to help Vermonters achieve their education and training goals. Women, members of other underrepresented groups, and students with disabilities will especially be encouraged to apply.

Applications are submitted using the JotForm platform (www.jotform.com), a secure, web-based system for collecting information. The application form collects contact information, demographic data, and information regarding higher-education status and plans. Applicants must also upload a current academic transcript and provide essay answers to the following prompts:

- Provide a detail of your career goals and their direct relevance to the United States aerospace industry and the goals of NASA. (Add comments regarding academic research project involvement, if any, including project, advisor's name, and employer)
- Employment Goals: What type of employment will you seek after graduation? Will you pursue a career with NASA? (250 words or less)
- Tell us why you would be a good candidate for a scholarship or fellowship, or other comments on your eligibility. Include curricular activities, honors, and societies. (250 words or less).

Applicants are requested to obtain two recommendations from people familiar with their academic progress and capabilities. These recommendations are not seen by the applicant. They are also collected using the JotForm platform. Each recommender is requested to provide contact information, details about their professional position(s), and their relationship to the applicant. They are also asked to write a narrative addressing the applicant's strengths, academic excellence, evidence for research potential, basic intellectual capacity and work ethic.

5.c Review and Selection Process

Following receipt of all applications, the VTSGC Director will initiate the review and selection process. The Director will perform a preliminary check of all received applications for eligibility and conformity to submission requirements; in particular, the identified students are verified US citizens eligible for VTSGC scholarship support.

The Director will select and appoint the members of the Review Committee. The Review Committee will consist of faculty members who have some connection with the VTSGC (e.g., received VTSGC research support or mentored a VTSGC-supported student). The Director will strive to assemble a Review Committee that is diverse in terms of demographics, fields of study, and institutional affiliation. The Director will also seek to avoid conflicts of interest within the membership of the Review Committee. The review process will then proceed in a manner similar to that described in Section 3.c for the VTSGC Graduate Fellowship program. Appendix D1 contains the reviewing template.

Based on the recommendations of the Review Committee, the Director will make the final decisions regarding selection. The Director may also factor other considerations into the selection process. For example, the Director may consider factors such as applicant's major and year of study (to ensure diversity in these areas across the portfolio of funded scholarships).

The Director will notify each applicant of the outcome in a formal letter. Appendix D2 contains example letters. The selection process should be completed by April 1, which provides the student with adequate lead time to plan for the subsequent academic year. The applicant must indicate acceptance of the scholarship award by May 1.

5.d Program Management and Reporting

The scholarship awards are distributed through the Office of Student Financial Services (or equivalent) at the student's college or university. The awards are made in two installments—one for the fall semester and one for the spring semester. To receive the second installment, the student must provide an updated academic transcript, showing a GPA of at least 3.0, following completion of the fall semester.

The VTSGC Scholarship Program does not require recipients to provide progress reports.

6 Academic Affiliates

6.a Overview

The goal of the VTSGC's higher education programs is to promote workforce development, increase student interest in aerospace-related topics, promote interdisciplinary projects, and encourage college and university students to consider space-related careers by making connections with NASA. These higher education activities are of three types: (1) senior design project support, (2) mentored undergraduate intern support at undergraduate-focused Vermont colleges and universities, and (3) student organization support. To accomplish this goal, the VTSGC maintains active partnerships with several higher-education academic affiliates in Vermont. Each affiliate member receives a regular annual budget for mentored undergraduate research and is required to contribute 50% in cost share. The current base affiliate-member annual budget is \$12,500 in NASA funds plus \$6,250 in cost share. Additional funds (currently \$2,000) are provided to support one senior design team per year at each ABET-accredited institution (there is no cost-share requirement on this component).

6.b Affiliate Membership

The current VTSCG academic affiliates are:

- Middlebury College, Middlebury, VT
- Norwich University, Northfield, VT
- Saint Michael's College, Colchester, VT
- Vermont Technical College, Randolph, VT

The Burlington Technical Center's Aviation & Aerospace Technology School is an additional VTSGC academic affiliate.

Membership as an academic affiliate is open to accredited Vermont universities and colleges with interest in aerospace, space science, and space-related activities and wish to participate in the programs of the VTSGC. Any eligible institution may inquire about membership by contacting the VTSGC Director. Affiliate membership must be approved by NASA and the VTSGC Board of Advisors.

6.c Management and Reporting

Each affiliate member will have a specific statement of work and a subcontract detailing the annual budget. An example statement of work appears in Appendix E1. In addition, each affiliate member

will designate a point of contact (POC) who will be responsible for their institution's activities in relation to the subcontract. The POC must be a faculty member in a STEM discipline.

On an annual basis, the VTSGC Director will request a progress report from the POC of each affiliate member. The progress report will include the following information for each mentored student project: names and contact details for the involved students, title of the project, and a brief summary of the project outcomes. Similar information will be collected for engineering design teams supported by the VTSGC.

7 K–12 Education Projects

7.a Overview

The VTSGC engages in a number of efforts to advance STEM education for K-12 students. These efforts center around collaborations with affiliate organizations that engage in professional outreach directly to students and teachers. Examples include museums and other non-profit organizations that deliver educational programming across the state. The VTSGC provides direct support to these organizations and works with them to develop appropriate programming that aligns with the Space Grant priorities.

7.b Current Affiliates

The VTSGC currently has four museum affiliates and one observatory that are supported directly by the consortium. These affiliates are listed below along with brief descriptions of their missions and educational programs.

American Precision Museum

The American Precision Museum preserves the heritage of the mechanical arts, celebrates the ingenuity of our mechanical forebears, and explores the effects of their work on our everyday lives. The museum, housed in the original Robbins & Lawrence Armory, holds the largest collection of historically significant machine tools in the nation. The museum is home to a number of STEM learning opportunities. These opportunities include the Learning Lab, a space designed for all ages to introduce new ideas, to challenge and inspire, and to create opportunities to experience and have fun with all levels of technology from simple blocks and building kits for younger students, to 3D design, electronics and coding for the more advanced or ambitious. Additionally, the Innovation Station, a working machine shop, allows visitors to watch actual manufacturing processes. The Innovation Station also engages local high school students in manufacturing education. Students receive hands-on experience with machine tools, while learning about advancements in the field, and career opportunities. Outreach highlights include distributed STEM learning kits and digital learning resources. The museum is located in Windsor, Vermont.

ECHO, Leahy Center for Lake Champlain

The ECHO Leahy Center for Lake Champlain is a recent addition to the VTSGC affiliates. ECHO currently welcomes more than 167,000 visitors annually into a 34,500-square foot, award-winning LEED-certified facility. Through more than 100 interactive exhibits; 70 species of fish, reptiles, and amphibians; major changing exhibits; a 2,500-square foot early learning interactive space; ECHO encourages visitors to view the natural environment as part of their neighborhood and to explore, learn about, and consider opportunities for stewardship. This work is delivered by a dedicated team of 27 staff, 175 volunteers and interns who serve more than 16,000 volunteer hours per year, and more than 45 community partners. ECHO is home to a consortium of organizations working for public and academic engagement in science. ECHO maintains an extensive portfolio of outreach activities, including a virtual STEM academy, at-home learning, and school outreach. Affiliation with ECHO particularly aids VTSGC in promoting life-science aspects of STEM. ECHO is located in Burlington, Vermont.

Fairbanks Museum & Planetarium

The Fairbanks Museum, located in St. Johnsbury, Vermont, was founded in 1889 by industrialist Franklin Fairbanks. The museum houses an eclectic collection, emphasizing the natural sciences but also spanning history and anthropology. Specific exhibits include natural science specimens (mounted birds, mammals, reptiles and fish; insects; nests and eggs; shells; fossils; rocks and minerals; herbarium), historical artifacts (tools; toys; dolls; textiles; weapons; archival photographs and documents), and ethnological items representing Oceania, the Near East, Africa, Egypt, Japan and native North America. The facility also houses the Lymann Spitzer Jr. Planetarium, Vermont's only public planetarium, opened in 1961. The museum offers a wide range of learning activities through its STEM Lab for middle-school students. Outreach programs include direct outreach to schools with online resources, science kits, and homeschool instruction.

Montshire Museum of Science

The Montshire Museum of Science is a nationally recognized, hands-on museum in Norwich, Vermont. The museum is located adjacent to the Connecticut River and offers over 150 exhibits on nature, technology, astronomy, and the physical sciences. Exhibits and programming foster interactive discovery for people of all ages. Founded in 1974, the museum has grown substantially over the decades and is now one of the busiest museums in northern New England, welcoming 170,000 visitors annually and reaching 13,000 students in regional schools.

The museum provides a variety of STEM programming activities for families, teachers, and students with partial support provided by the VTSGC. Examples include a hands-on Science Discovery Laboratory with workshops on glaciology, meteorites, and climate. Special events include Sun-Earth Day and Astronomy Day. The museum hosts a summer camp program, focused on science education, for students from preschool to 9th grade. Additionally, the Montshire provides a series of virtual workshops designed to engage learners in hands-on inquiry at home. Participants each receive a kit of uniquely chosen materials and supplies that support weekly inquiry-based activities focused on a STEM content theme. Montshire educators provide live, on-screen engagement, where children are encouraged to share in their learning process and make discoveries with fellow learners. Finally, the Montshire offers a number of programs for teachers. These programs include a STEM Teacher-Leader Certificate Program, designed to create and support a network of classroom teachers who have the tools, knowledge, and passion to become leaders for STEM education in their schools, and a STEM Alliance School Partnership Program,

which supports local and regional teachers and schools in providing high quality science teaching and learning opportunities.

Northeast Kingdom Astronomy Foundation

The Northeast Kingdom Astronomy Foundation (NKAF) operates the Northern Skies Observatory in Peacham, Vermont, which is home to a 17-inch Planewave telescope, with the ability to be remotely operated for observing and imaging. The telescope is part of the Skynet Robotic Telescope Network operating out of the University of North Carolina at Chapel Hill. The NKAF works with schools in northern New England and organizations, such as the Governor’s Institutes of Vermont, to introduce students of all ages to the joys and wonder of astronomy.

The VTSGC also supports a variety of different types of outreach to K–12 students at various academic levels. One of our most important K–12 outreach programs is our partnership with the Governor’s Institutes of Vermont (GIV). The GIV is a program for high school students at Vermont schools, offering both summer and winter intensive residential learning experiences. The GIV offers seven different topics, but the VTSGC support is focused on STEM topics including Astronomy, Engineering, Mathematical Sciences, and Environmental Science. Each of these GIVs is offered for a one-week period at different colleges and universities across Vermont, during which time students reside on campus with other GIV students. NASA content in this activity has been particularly high with a number of VTSGC-related faculty and NASA researchers interacting with the students in past years.

The VTSGC also provides support for the Vermont Works for Women organization, hosts of the annual “Women Can Do (WCD)” event at Vermont Technical College in Randolph Center, Vermont. “Women Can Do” is Vermont’s largest one-day career immersion experience for high school girls and non-binary youth. It features dozens of hands-on workshops and action stations highlighting careers in the skilled trades and STEM fields. These activities are led mostly by female professionals. At WCD, students may operate an excavator, weld, climb a fire ladder, build a robot, design a 3D model, create an online game, wield a chainsaw, extract DNA from cells, or change a tire. The program is designed to safely introduce students to high-paying career pathways they might not have considered.

7.c Management and Reporting

For each affiliate organization, there will be a scope-of-work document and a subcontract for the financial support. Each affiliate organization will provide 50% matching funds. Membership as a K–12 educational affiliate is open to non-profit Vermont organizations that deliver STEM education within the state, have an interest in aerospace, space science, and space-related activities and wish to participate in the programs of the VTSGC. Any eligible organization may inquire about membership by contacting the VTSGC Director. Affiliate membership must be approved by NASA and the VTSGC Board of Advisors.

On an annual basis, the Director will request an activity progress report from each affiliate. These reports will describe the specific activities/programs, and their respective participant numbers, that were supported by the VTSGC in whole or in part.

8 Student-Organization Support

8.a Overview

This program element provides support to undergraduate student organizations working in NASA-related STEM activities. The goal of this program is to encourage student-led organizations to pursue projects that provide hands-on experience and projects in NASA- or aerospace-aligned areas. The student organizations supported by the VTSGC are also encouraged to undertake outreach efforts that will highlight their activities and encourage other students to join the group or otherwise pursue STEM-related learning experiences. Each student group typically receives between \$1,000 and \$1,500 annually. The funding may be used to purchase project supplies or to support STEM education-related events hosted by the student group.

8.b Current Organizations Supported

At present, the VTSGC supports three student groups, all at University of Vermont. The first group is the Alternative Energy Racing Organization (AERO), which is a student-run club that designs and builds electric and hybrid vehicles to compete at Formula Hybrid, an international collegiate competition. The second group is Girls Who Code, which is a student club organized in the UVM Computer Science Department to encourage computer literacy among women of all ages. The third group is the student chapter of the American Institute of Aeronautics and Astronautics (AIAA). The UVM AIAA chapter provides a community for students interested in aerospace and aerospace engineering, which provides connections into the aerospace field through projects and design competitions as well as furthering career opportunities through professional activities, including arranging tours of local aerospace companies, hosting aerospace speakers, and opportunities to travel to aerospace conferences. Current levels of support are \$1,000 annually to AERO and AIAA. The VTSGC provides \$1,500 annually to Girls Who Code.

8.c Management and Reporting

The leaders of each student team, in collaboration with their faculty advisor, will be responsible for developing a proposal to utilize VTSGC funds. Ideally, the group members should discuss and vote upon the expenditure. The leadership of the student group must contact the Director with a brief description of the planned expenditure and justification, and the Director must preapprove all expenditures. Where appropriate, the Director will advise the group leaders regarding allowable expenditures pursuant to the goals and mission of the Space Grant program.

The criteria for becoming a VTSGC-supported student group are as follows. The student organization must have...

- A STEM-area focus aligned with one or more NASA priorities, providing to the members a significant learning experience in that area
- A substantial and diverse membership consisting of students enrolled at one or more VTSGC academic affiliates
- A strong commitment to diversity, equity, inclusion and accessibility; and a strong commitment to outreach
- One or more faculty advisors.

Any eligible student organization may inquire about VTSGC support by contacting the Director. Financial support must be approved by NASA and the VTSGC Board of Advisors.

On an annual basis, the Director will request an activity progress report from each supported student organization. These reports will describe the specific activities/programs, and their respective participant numbers, that were supported by the VTSGC in whole or in part.

9 Program Assessment and Improvement

9.a Overview

Assessment and improvement procedures are currently in development, and a brief overview of current assessment practices follows. In brief, the VTSGC compiles a yearly report which notes whether goals and metrics have been met. Second, we conduct longitudinal tracking of significantly supported students, which includes feedback on the VTSGC. Third, we have partnered with Steckelberg Consulting, LLC to expand and enhance our program assessment and ultimately establish frameworks for improvement.

9.b Current Assessment Procedures

The VTSGC currently manages two procedures for program assessment:

Yearly Report

As per NASA requirements and best practices within the national Space Grant network, the VTSGC prepares a yearly report that assesses progress made and how it relates to predefined goals and metrics for success. This report is our main source of program assessment and provides valuable information on where improvements can be made.

Student Longitudinal Tracking

The VTSGC collects longitudinal tracking data from significantly supported students regarding their experiences with NASA and the VTSGC. Part of this yearly survey asks for feedback on their individual VTSGC experience and how it impacted their career goals and trajectory (Appendix Y). This free-response information provides valuable insights into the strengths and potential weaknesses of the VTSGC. VTSGC data collection and student demographic surveys are also currently being revised and updated.

The VTSGC also will be partnering with Steckelberg Consulting, LLC as of Fall 2022 to expand and enhance program assessment to include detailed surveys of all faculty, staff, students, researchers, and others who engage with VTSGC services. Steckelberg Consulting, LLC will also provide guidance on how to use assessment data to improve program services and engagement. This section will be updated and finalized with their help.

10 Diversity, Equity, Inclusion, and Accessibility (DEIA) Strategic Plan

10.a Overview

The White House Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government states:

It is therefore the policy of my Administration that the Federal Government should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our Government. Because advancing equity requires a systematic approach to embedding fairness in decision-making processes, executive departments and agencies (agencies) must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

This executive order calls on all programs under the federal government to assess their services and embed equity within their practices and opportunities. This has been a core goal of the VTSGC for many years and a pillar of our organization’s strategy moving forward. To exemplify our commitment to advancing DEIA within Vermont’s NASA programming, the VTSGC has maintained a DEIA statement that is publicly accessible on our homepage of the website. The statement reads:

The Vermont Space Grant Consortium (VTSGC) supports and upholds the NASA Diversity and Inclusion Policy Statement. “The National Aeronautics and Space Administration (NASA) is committed to a culture of diversity and inclusion, where all employees feel welcome, respected, connected, and engaged. As the world’s leader in aeronautics, space exploration, science, and technology, we embrace the critical importance of cultivating and empowering a diverse and inclusive workforce and work environment-enabling NASA to attract the widest and deepest pools of talent, leverage the capabilities of our exceptional workforce; and empower all personnel to be authentic, to participate, and to fully contribute. We understand this provides NASA access to the highest levels of knowledge, capabilities, creativity, problem solving, decision making, and performance. And this will enable NASA to achieve the greatest mission success.”

The VTSGC strives to align our Consortium policies, plans, and priorities with the Vermont Department of Education’s Equity Education for Vermont’s K-12 schools as well as each of our member institutions’ DEI plans: University of Vermont, St. Michael’s

College, Norwich University, Middlebury College, and Vermont Technical College. In addition, VTSGC works to provide an inclusive and interdisciplinary cohort of students, mentors, affiliates, and more and aligns those efforts with the Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government.

Additionally, our mission statement contains direct language identifying our commitment to DEIA and is available on the website. The statement reads:

The VTSGC is dedicated to encouraging students at all levels to take more mathematics and science courses and to consider careers in science, technology, engineering, and mathematics (STEM) areas. Through its activities, the VTSGC connects Vermont citizens to NASA and contributes to the development of the scientific and technical workforce that will be needed by NASA, its contractors, and the nation to remain competitive in the future. As a Capability Enhancement Consortium, the VTSGC emphasizes programs in Higher Education and seeks to increase Vermont's research infrastructure in areas that are a NASA priority. *In all of its programs, the VTSGC promotes diversity by actively encouraging the participation of women, members of underrepresented groups, and persons with disabilities.*

In order to achieve our mission and commitment to enhancing DEIA and representation in our programs, we employ several best practices regarding (1) Recruitment and Retention and (2) Transparent Reporting.

10.b Recruitment and Retention

To ensure that VTSGC activities equitably represent the diversity of our region, we:

- Continually expand our institutional partners and collaborations to provide VTSGC and other NASA opportunities to students and researchers at all levels across the state;
- Encourage applications from underrepresented individuals with specific statements in advertisements and application materials (for example, see Appendix D, Eligibility);
- Engage faculty advisors for all student-focused activities to ensure student participants have direct and sustained supports beyond the VTSGC Director and staff;
- Partner with DEIA-focused organizations, such as the Governor's Institutes of Vermont and Girls Who Code, to support and enhance education and STEM services targeted for rural and other underrepresented groups;
- Support investigators and projects which aim to engage underrepresented communities in their work, including rural communities, museum programs, neighboring Historically Black Colleges and Universities, technical and trade programs, and others.

10.c Transparent Reporting

The VTSGC maintains a rigorous data collection and management process that collects, analyzes, and maintains longitudinal data regarding all activities, participants, and collaborations. These data contain information regarding participant identities and life experiences, including race, ethnicity,

gender, veteran's status, disability status, education history, and employment history. They also collect information regarding the reach of outreach programs, such as those hosted by our museum affiliates, to include general counts and location of students, adults, and age groups engaged in each event or program. These data are collected and analyzed each year, and participants who received substantial funding from VTSGC (e.g., research awards, REUs, graduate fellowships, etc.) are longitudinally tracked well after their year(s) supported by VTSGC. These data provide a comprehensive view of the researchers, students, and community members actively engaged in the VTSGC at all levels as well as the short- and long-term impacts of the VTSGC and is transparently reported in annual reports, summaries, and site visits. In addition, VTSGC data collection surveys, including the demographics survey, are currently being revised and updated to better capture identity status of significant awardees. This process is expected to be finished in fall 2023.

10.d Strategic Plan to Bolster DEIA Activities

*Note: The following section contains ideas for potential actions VTSGC can take to improve DEIA activities within our consortium. This is not a concrete list of programs we will enact, rather a foundation for different actions we may take after exploring feasibility and other factors. (As of spring 2023, several of these ideas have been implemented.)

The state of Vermont is not considered a traditionally diverse region, with the United States Census Bureau reporting race and ethnicity demographics as 94.2% as white, 1.4% Black or African American, 0.4% American Indian or Alaska Native, 1.9% Asian, 2% two or more races, and only 2% Hispanic or Latino. Vermont does have a unique and diverse population when considering identities beyond race and ethnicity. Over 10% of Vermonters identify as having a disability, 60.3% have educational history less than a Bachelor's degree, 9.4% live in poverty, 17% without internet access and another 50% with less than 20 mbps internet service, and 64.9% live in rural areas. Vermont is also the home of the Abenaki Nation of Missisquoi and the Nulhegan Abenaki Tribe. The communities of Vermont are widely diverse in educational backgrounds, disability status, rurality, and more. This gives VTSGC the unique opportunity to focus on populations often overlooked in STEM programming, such as rural or disabled communities. As such, we have designed this strategic plan to help us identify and address the barriers to equitable STEM access faced by the unique and predominantly rural make-up of our state. This plan is a living document that will be routinely revisited and updated as we learn and progress in DEIA action. The VTSGC has three main goals that this plan addresses:

- 1) Identify the barriers faced by our unique communities to accessing VTSGC resources and programming.
- 2) Expand STEM educational programming and NASA-relevant engagement to rural and internet-limited communities who have less access to the resources provided in our urban and institutional centers.
- 3) Increase engagement and retention of underrepresented groups, particularly women and nonbinary individuals, persons with disabilities, first-generation scholars, and people living in rural areas.

Identifying Barriers

The first goal of the DEIA Strategic Plan is to “identify the barriers faced by our unique communities to accessing VTSGC resources and programming.” In order to identify barriers to accessing VTSGC resources across the state of Vermont, we could:

- i. Establish a Diversity, Equity, Inclusion, and Accessibility Committee that can advise VTSGC leadership on the needs of our state and effective approaches to meet those needs. This committee will consist of:
 - DEIA professionals from each of our institutional partners;
 - Community engagement staff from each of our museum partners;
 - Optional: Representatives from each of our industry partners.

The committee will meet with VTSGC leadership at a minimum of once per year to provide insights and recommendations regarding the barriers faced in the communities they represent and possible solutions to ensure VTSGC resources are equitably available across the state. At least 2 weeks prior to this meeting, VTSGC leadership will send a comprehensive report of the program’s impact and demographics of participants for the past year.

Metrics for success in this aim could include:

- A DEIA committee consisting of the members listed above is active and publicly listed on the website;
- VTSGC leadership and DEIA committee meet at least once per year;
- A DEIA-focused yearly report is compiled for distribution to the committee at least once per year. *(Optional: This report is published on the website for public view.)*

Expanding Access

The second goal of the DEIA Strategic Plan is to “expand STEM educational programming and NASA-relevant engagement to rural and internet-limited communities who have less access to the resources provided in our urban and institutional centers.” This will require a multi-modal approach that combines leveraging online resources and local connections, and the VTSGC currently maintains several useful partnerships for achieving this aim.

First, the majority of our museum partners are located outside of the main urban centers of Vermont and routinely engage members of some of our most rural communities, including those within the Northeast Kingdom. Second, we partner with the Governor’s Institutes of Vermont, an educational program providing advanced learning opportunities for high school students across the state, particularly in rural and economically disadvantaged areas. Our partnerships with all of these groups enable many of our rural communities to engage with STEM activities and NASA-relevant programming without the added burden of traveling to our urban centers. However, these programs are still largely geographically limited to the northeastern portion of the state and/or to students within specific age groups or abilities. In order to expand the reach of VTSGC programming and resources beyond our museums and high schools, we could:

- ii. Establish collaborations with the Community College of Vermont (CCV) system that will provide and advertise access to VTSGC programs and events to the wider post-secondary education system in the state. The CCV system has 12 educational centers located across the state such that nearly every household in Vermont is within 25 miles of a CCV campus or center. Community colleges also serve as a bridge between geographically distant and

economically disadvantaged students and the 4-year university system. Establishing a partnership with these colleges will allow VTSGC to engage a demographic of students typically absent from our current institutional partners and give us the opportunity to encourage the matriculation of these students into 4-year STEM programs or careers following their CCV degree.

- iii. Establish relationships with the local library system across the state of Vermont in the form of shared online resources, traveling VTSGC events hosted at libraries, and/or increased funding for local community-focused activities that are NASA/STEM-related. A study presented by the UVM Center of Research in early 2022 found that of the 54 towns surveyed, 29 spend more on their local library than police. Libraries are also occasionally one of few places in rural areas with publicly accessible and reliable internet access, making them a potential solution to reaching internet-limited areas. Libraries are a highly respected and valuable educational and community resource with strong infrastructure. Partnering with these community pillars could be done in various ways, such as:
 - Hosting a Story Series, which are accessible talks by STEM and NASA-related professionals on their personal journey in STEM who may have a personal connection to that community;
 - Hosting viewing parties for NASA-based events such as the recent 2022 Starliner launch or the upcoming preparations for the Artemis mission;
 - Sharing links and modules on NASA and VTSGC educational materials to provide on their websites and public computers for library visitors to use;
 - Providing funding opportunities for public libraries to deliver STEM and NASA-relevant programs.
- iv. Compile a freely accessible archive of digital engagement toolkits, lesson plans, and videos for libraries, educators, and households across the state to use. These would likely be housed on a specific section of the VTSGC website. The materials could include:
 - Demonstrations of STEM activities or experiments;
 - Descriptions of the resources and opportunities available for students, teachers, and young investigators through VTSGC;
 - Links to all of NASA’s online resources, activities, and more;
 - Interviews with NASA and other STEM professionals in Vermont.

Metrics for success in this aim could include:

- Specific number of events hosted in libraries, CCV centers, and/or rural schools per year;
- Specific number of new videos, interviews, and/or lesson plans added to the online archive per year;
- Specific number of viewing parties hosted per year;
- Specific number of libraries and/or rural schools who include VTSGC resources and links on their webpages.

Increasing Engagement

The third goal of the DEIA strategic plan is to “increase engagement and retention of underrepresented groups, particularly women and nonbinary individuals, persons with disabilities, first-generation scholars, and people living in rural areas.” Some of the suggestions listed under goal 2 (Expanding Access) could also pertain to furthering this goal, particularly increasing

engagement of rural communities. However, NASA-related STEM fields are still overwhelmingly dominated by men, especially within higher level positions. In order to create an equitable and representative work force, we need to both increase recruitment of underrepresented individuals and create healthy and equitable work environments such that there is strong retention of these underrepresented groups. In order to begin this process, we propose several possible actions that will be further explored for viability:

- v. To create targeted advertisements for our aforementioned underrepresented groups encouraging them to apply or engage with VTSGC and NASA programs. These will go beyond the standard sentence seen in Appendix D, Eligibility. Instead, we will ensure our adverts have a diverse representation of individuals, clear and prominent language encouraging applications and involvement by underrepresented groups, and accessible guides on how to access and complete these applications. We will also encourage applicants to contact the Program Administrator and/or Director for assistance with compiling their applications to bridge the gap between first-generation and more familiar students.
- vi. To establish a broader distribution of VTSGC announcements and opportunities. For example, the aforementioned advertisements will be distributed through our usual channels with the addition of several avenues that are more likely to reach historically excluded groups. At the University of Vermont, for example, this could include hanging flyers in the Mosaic Center, CAPS offices, Women and Gender Equity Center, Center for Health and Wellbeing, Center for Disability and Community Inclusion, and more. We will also ask these groups to include our advertisements and opportunities in their regular emails or newsletters to their listservs. A similar approach will be identified for each of our institutional partners and shared by the Program Administrator and/or Director.
- vii. To host a yearly STEM Career Fair on UVM's campus that highlights opportunities for Vermont students to enter the workforce in STEM and NASA-relevant careers right here in Vermont and/or with NASA partners.
- viii. To launch a mentorship program where students in middle school through graduate programs can be paired with a faculty member, researcher, or NASA professional as a mentor-mentee pair. Students will complete a form listing their desired attributes in a mentor, including their fields of interest and shared identities, and the Program Administrator and/or Director will work to identify and pair the student with a suitable mentor who fits the profile as closely as possible. Mentors will be required to meet (either in-person or virtually) with their mentee at least twice per year.
- ix. To establish a similar mentorship program for each of the REU and Graduate Fellowships in which students will be paired with an additional mentor other than their faculty advisor. The pairing will be identified by the Program Administrator and/or Director using the same form mentioned in point viii.
- x. To collect yearly surveys from all participants that assess levels of satisfaction and potential areas for improvement specifically regarding the climate within VTSGC programming. This feedback will be used to adjust recruitment and retention practices to ensure they are meeting the needs of all individuals and identities.
- xi. To establish and advertise a monthly "office hours" period with the VTSGC Program Administrator and/or Director during which anyone can come to learn about opportunities, get feedback or assistance with their projects/applications, or get connected with other members of the VTSGC and NASA communities. While anyone is welcome to call or visit

the VTSGC offices at any time, having clearly defined and advertised open hours has been shown to increase engagement of first-generation or other underrepresented groups who may not yet be comfortable asserting and initiating conversations.

Metrics for success in this aim could include:

- A defined increase in percentage of participants who identify as women and nonbinary individuals, persons with disabilities, first-generation scholars, people of color, and people living in rural areas;
- A defined number of mentor-mentee pairings and meetings formed each year;
- A defined response rate to the yearly survey described in point x.

11 Marketing and Publicity Strategic Plan

11.a Overview

Goals:

As per the 2020-2024 Proposal, the main goals of the VTSGC are to:

- Expand scientific knowledge in areas consistent with NASA Mission Directorate challenges and Vermont scientific and technical strengths.
- Build a diverse, skilled future STEM workforce in Vermont.
- Strengthen engagement in and support for STEM, space science, and NASA activities throughout Vermont.

This Marketing and Publicity Strategic Plan supports these goals by establishing standards for creating accessible and diversity-focused content (11.b & e), advertising VTSGC resources and opportunities to increase and retain engagement (11.a, 11.c, & 11.d), and amplifying the impact of our students, researchers, and partners through publicity and joint ventures (11.a & d).

11.b Distribution Plan

In order to broadly disseminate all types of materials and content, the VTSGC will regularly use a combination of virtual and in-person platforms for distribution. The VTSGC supports the entire state of Vermont and thus targets a broad and diverse population. In terms of VTSGC opportunities and resources, our target audiences can be separated into four key groups that each benefit from unique distribution modalities:

- *K-12 students, parents/guardians, and teachers*
 - Advertisements for relevant events and opportunities on local library websites and/or printed and hung in their facilities;
 - Advertisements for relevant events and opportunities on school bulletins, school announcements, and disseminated via the school newsletter;
 - Regularly scheduled (quarterly) email newsletters to school contacts;
 - Targeted social media posts;
 - Website section dedicated to communicating NASA-related content and events with K-12 schools, teachers, and parents.

- *College and graduate students*
 - Advertisements for events and opportunities included in the newsletters and email blasts of relevant institutional groups, such as the UVM College of Engineering and Mathematical Sciences;
 - Advertisements for events and opportunities included in the newsletters and email blasts of academic groups supporting our marginalized students, such as the UVM Mosaic Center for Students of Color, the Prism Center, Women and Gender Equity Center, and more;
 - Physical flyers hung in student centers on each of our institutional partner campuses;
 - Regularly scheduled email newsletter (monthly) sent to a broad listserv of interested STEM students, clubs, and faculty;
 - Tabling at student and graduate student-focused events such as the Research Resource Fair, Career Fairs, and more;
 - Targeted social media posts;
 - Website section dedicated to communicating NASA-related content and opportunities with students and graduate students.
- *Researchers, particularly early career scientists*
 - Advertisements for events and opportunities included in the newsletters and email blasts of relevant institutional groups, such as the faculty listserv for the UVM College of Engineering and Mathematical Sciences;
 - Physical flyers hung in STEM departments on each of our institutional partner campuses;
 - Regularly scheduled email newsletter (monthly) sent to a broad listserv of interested STEM students, clubs, and faculty;
 - Tables and/or presentations at STEM department events such as faculty retreats;
 - Targeted social media posts;
 - Website section dedicated to communicating NASA-related content and opportunities with faculty and researchers.
- *The general public*
 - Advertisements for relevant events and opportunities on local library websites and/or printed and hung in their facilities;
 - Advertisements for relevant events and opportunities on Vermont museum websites and/or printed and hung in their facilities;
 - Targeted social media posts;
 - Website section dedicated to communicating NASA-related content and engagement with the interested public.

11.c Marketing Materials

The VTSGC will use an array of digital and print media for marketing of opportunities, events, resources, and stories. We will create original content, as well as leverage existing content through NASA. Some examples of marketing materials are listed below.

- Advertisement flyers
- Member/Affiliate spotlights
- Video interviews/stories of consortium members

- Student profiles
- Researcher profiles
- Press releases regarding awards, publications, and grants within our network
- Interactive polls and quizzes shared via social media
- Regular digital newsletters
- Yearly digital report for public view (more magazine style than report)
- NASA-created videos and articles

11.d Promotions & Retention Strategy

The VTSGC will leverage three different styles of marketing strategies in order to promote and retain engagement with VTSGC and NASA content, opportunities, and events.

i. Needs-based marketing

- Needs-based marketing uses advertisements for resources and opportunities that fill a need within a specific community. For VTSGC, this would be our graduate student fellowships, research grants, and undergraduate research experiences. The need for graduate student funding, research funding, and/or student research opportunities is an existing market with well-established platforms on which individuals search for available resources. To increase applications and engagement with these programs, we must (1) design compelling and eye-catching advertisements and (2) establish a media presence regarding our resources that are each disseminated across these existing platforms. Examples include:
 - Advertising applications in college-level newsletters, via both faculty and student listservs;
 - Advertising opportunities in undergraduate Student Services newsletters;
 - Hanging flyers in student and relevant academic buildings;
 - Tabling at information/research fairs;
 - Frequent press releases on successful activities and awards in both college and local news outlets.

ii. Brand awareness

- Brand awareness marketing leverages an already established view of a brand to increase engagement. As a NASA partner program, the VTSGC can benefit strongly from this association. Thus, focusing marketing on our connection with NASA is likely to increase interest and engagement levels. The new VTSGC logo is a wonderful beginning, as it emulates the NASA logo. Additional ways we can increase awareness of the VTSGC status as a NASA program include:
 - Clearly advertising that VTSGC opportunities are NASA-funded;
 - Hosting events surrounding NASA activities, such as launch viewing parties, interviews with NASA professionals, NASA & aerospace career fairs, or special space phenomena events (e.g., eclipse watching parties);
 - Cross-sharing NASA content on our social media and website platforms;
 - Visually linking the VTSGC and NASA on advertisements and calls for applications by use of partner logos and other affiliated images.

iii. Gamification

- Gamification incorporates game mechanics into how users interact with a program or product to increase engagement and retention. This strategy takes advantage of our inherently competitive nature while providing rewards for engagement. This has become an increasingly effective promotion and retention strategy in the past decade. Some potential gamification strategies for VTSGC include:
 - Hosting social media quizzes that require knowledge of the content shared that month/week. The highest score receives a prize of NASA and/or VTSGC materials (e.g., NASA tote bag, sticker packs, VTSGC water bottle);
 - Launching a Space Passport (or some other name) system where individuals get a “stamp” for every VTSGC activity they engage with (e.g., attending a virtual NASA event, applying for a VTSGC program, visiting the VTSGC table at the research fair, doing the VTSGC social media quiz, visiting one of our museum affiliates, etc.). Collecting a certain number of stamps that year results in a prize of NASA and/or VTSGC materials;
 - Providing Space Bingo cards for the public, undergraduate/graduate students, and faculty researchers. Each bingo card will have a variety of ways the individual in that group can engage with VTSGC, NASA, and/or other relevant STEM content during a set time period. Those who can provide documentation showing a winning bingo (e.g., photos of them doing each activity, emails, certificates, etc.) receive a prize of NASA and/or VTSGC materials.

11.e Joint Ventures

To further boost our marketing and publicity impacts, the VTSGC will pursue several joint ventures to expand the reach of our content. Future joint ventures can be established at any time with the agreement of the partner organization and the VTSGC Program Administrator or Director.

Governor’s Institutes of Vermont (GIV)

The GIV maintains an online platform with over 2,800 followers, and this number grows each year. Their target audience is high school students, teachers, and parents/guardians, with particular focus on rural and socioeconomically underrepresented communities. As a GIV sponsor and partner, the VTSGC will be an occasional focus of GIV social media posts. The VTSGC banner will also be hung at a Summer Institute each year. The VTSGC will also routinely post and advertise GIV events and opportunities as part of our partnership and shared commitment to furthering STEM education equity in Vermont.

University of Vermont / College of Engineering & Mathematical Sciences

The University of Vermont and the UVM College of Engineering and Mathematical Sciences manage news pages and social media platforms that reach thousands of students, faculty, researchers, and general public across the country. As a UVM-affiliate, the VTSGC can request to publish press releases and announcements on these platforms in addition to our own website news page.

Vermont Museums

The VTSGC has 5 museum affiliates who engage thousands of students, teachers, and families each year. Public events supported, sponsored, and/or hosted by the VTSGC can be advertised

via hanging flyers on-site at the museums and/or on their websites. VTSGC will also have a museum-dedicated tab on our website to support our museum affiliates and strengthen our shared commitment to increasing interest and appreciation for STEM in Vermont.

11.f Accessibility Guide

As part of our dedication to diversity, equity, inclusion, and accessibility (DEIA), we ensure that all of VTSGC content, be it in person or virtual, is accessible. We test each graphic, press release, and advertisement for colorblindness compatibility, reader accessibility, and inclusive language. Below is a quick guide and list of resources for content accessibility best practices.

- i. Visual Accessibility: Content must have a colorblind-compatible color palette, comfortable contrast levels, and alternative text.
 - Colorblind compatibility test: This colorblindness simulator allows you to visualize any image file as it would appear across the colorblindness spectrum. <https://www.colorblindness.com/coblis-color-blindness-simulator/>
 - Use the I Want Hue tool to autogenerate color palettes that are colorblind compatible. You can set parameters, such as what shades or color groups you want included, and click the “Improve for colorblind” option to have accessible palettes designed for you. <https://medialab.github.io/iwanthue/>
 - Adequate color contrast makes content legible and visible for everyone, including those without visual disabilities. The simplest explanation is that it’s impossible to read white text displayed on a white background. This is because there is 0 contrast between the text and the background; in other words, the color contrast ratio is 1:1. The minimum contrast ratio for visual accessibility is 4.5:1. The WebAIM Contrast Checker Tool allows users to calculate the contrast ratio of their content and background colors. <https://webaim.org/resources/contrastchecker/>
 - Alternative text provides a brief description of images and other visual content that screen reading software detect and voice for visually impaired users. Alternative text is not meant to be descriptive, but rather provides the necessary and important information about the content. The UVM Web Accessibility Guide contains best practices for alternative text.
 - If visual content contains a significant amount of text (e.g., an advertisement flyer with event title, description, and dates), it should either be in a PDF or other screen reader-friendly format OR shared virtually alongside software-readable text containing the same information.
 - https://www.uvm.edu/drupalwebguide/web_accessibility_drupal
- ii. Reading Accessibility: Content must be at the appropriate reading level for the target audience, use accessible fonts, and be screen reader accessible.
 - Written content can be analyzed to have a calculable readability score. There are several different types of scores, and the Readability Analyzer tool can take any copy-pasted content and/or an uploaded file and calculate each of these scores. The tool also explains what each score means and where different reading complexities lie along the scale. <https://datayze.com/readability-analyzer>
 - Jargon also complicates readability. For content targeting a non-specialized audience, minimizing jargon helps improve accessibility. The De-Jargonizer tool flags uncommon

words within a passage and provides a general readability score. <https://scienceandpublic.com/>

- Font use impacts readability, with sans-serif fonts generally better for individuals with visual impairments or reading disabilities. However, simpler serif fonts are also highly rated for accessibility. The standard rule is to choose a font that is common, whose letters and numbers all look distinct, and whose typeface is not too “busy.” Recommended fonts are Arial, Helvetica, and Times New Roman.
 - Any text files are screen reader accessible. These include Word documents, Excel sheets, text files, and PDFs. Image files (.png, .jpeg, .tiff, .gif) are not screen reader accessible. A few tips to make content accessible for screen readers:
 - To ensure screen readers read the content within a PDF in the correct order, tag the PDF as accessible. You can find this option by clicking More Tools in the toolbar of Adobe Acrobat Pro.
 - Do not double space after sentences. Screen readers will ignore one space between sentences, but if there are two, it will read, “end of sentence one space space beginning of sentence two” rather than just “end of sentence one, beginning of sentence two.”
 - Use only one emoji/visual typeface at a time. Having many in a row, such as 😊😊😊, will read as “smiley face smiley face smiley face.” That redundancy can be frustrating for individuals trying to access content.
 - Always use alternative text for images (see 11.e.i.).
 - For text-heavy images, ensure the image is embedded in a text file (e.g., PDF or Word document) where the same information is provided in full within the text of the file. The alt text for that image can then be “null.”
- iii. Inclusivity: Content must use inclusive language and represent a diverse population equivalent to that served by VTSGC and exemplified in Vermont.
- The demographics and diversity of Vermont are detailed in Section 10. To ensure our content is representative and inclusive of the unique identities and experiences held by Vermonters, we will leverage inclusive language and visuals. This entails using gender-inclusive pronouns, visually accessible images and graphics, and a diverse cast of individuals in VTSGC original graphics.

12 Consortium Management

The management structure of the VTSGC includes a Director, a Program Administrator, and a Business/Accounting Specialist, who together monitor all consortium programs on a continuous basis, coordinate programmatic activities across the consortium, mount public service events across the state that raise awareness and connect local communities to NASA, and interact with affiliates, other organizations, and other consortia to advance Space Grant aims, coordinate the development of annual progress reports, and respond to requests from the National Program at NASA headquarters. These activities are performed in accordance with the VTSGC Strategic Plan (Appendix W). Affiliate representatives provide a physical presence for the VTSGC across the state. The committee structure of the VTSGC includes a Board of Advisors (BoA) that provides guidance to the Consortium Director as well as providing oversight of all consortium activities. At the central level, other standing VTSGC committees include a review committee that evaluates yearly applications for our Undergraduate Scholarships and review panels associated with our yearly Graduate Fellowship, Undergraduate Internship, and Faculty Research Grant competitions. At the affiliate level, local review committees evaluate proposals submitted by faculty for mentored undergraduate research projects.

Although administration of the VTSGC is centralized at the University of Vermont, all affiliates participate fully in developing programs and policies and responding to requests made by the National Program. Despite differences in the size, type of organization, and mission of our affiliates, our BoA is fully inclusive. Each affiliate appoints a representative to the BoA, and this representative also usually serves as a local point of contact at their home location. VTSGC policies, procedures, and programs are developed through a collaborative process that involves discussion and final ratification by the Board and puts a premium on achieving a consensus.

The main VTSGC office complex is located in Mansfield House (25 Colchester Ave., 2nd floor) on the campus of the University of Vermont, the lead institution in our Consortium, in UVM's College of Engineering and Mathematical Sciences. The staff based at UVM includes the Director, the Program Administrator, and the Business/Accounting Specialist. Levels of effort are approximately 40% for the Director, 50% for the Program Administrator and 50% for the Business/Accounting Specialist. The Consortium Director is intrinsically involved in all aspects of consortium operations, dividing effort nearly equally between management and administrative tasks, resource and project development, and oversight of project implementation. The Program Administrator divides time equally between management and administrative tasks with a strong focus on programmatic activities. The Business/Accounting Specialist focuses on the financial aspects of VTSGC operations. Appendix X contains position descriptions for the Program Administrator and the Business/Accounting Specialist.

12.a History and Structure

The VTSGC was formed by founding Consortium Director William Lakin in 1992 and joined the National Space Grant College and Fellowship Program that same year as a Capability Enhancement Consortium. Darren Hitt assumed the position of Consortium Director in 2013 upon the retirement of Dr. Lakin. Dr. Hitt died in May 2019, and the Consortium was headed by Interim Director Jeffrey Marshall from May 2019 to October 2019. Bernard Cole became director in November 2020.

The University of Vermont (UVM) in Burlington is the VTSGC's Lead Institution and acts as our fiscal agent. With 9,500 undergraduates, 1,300 graduate students, a medical school, and 90 major fields of study, UVM is the state's only comprehensive "National University" granting a full range of undergraduate and advanced degrees in STEM disciplines.

VTSGC academic affiliates include Middlebury College in Middlebury, a "National Liberal Arts College" with 2,580 students in over 70 programs; Norwich University in Northfield, a "Regional University" with 3,236 students offering both military and traditional tracks in 25 undergraduate and 12 master's degree areas; St. Michael's College in Colchester, a predominantly four-year "National Liberal Arts College" with approximately 1,537 undergraduate students in 42 majors; and Vermont Technical College (VTC) in Randolph, with an auxiliary campus in Williston VT. VTC is a part of the Vermont State College System, listed as a "Regional College" with 1,815 students in 52 bachelor and associate degree programs, with one master's degree recently added. Quotation marks above denote categories in the annual US News and World Report rankings of colleges and universities. The Burlington Technical Center's Aviation & Aerospace Technology School is an additional VTSGC academic affiliate. This school offers a specialized program of study that allows graduates from the BTC Aviation and Aerospace Training program the option of attending their satellite facility at the Burlington airport to continue their training and obtain their A&P Certificate (Airframe and Powerplant Mechanic Certificate).

The Franklin Northwest Supervisory Union Indian Education Office is a component of the Northern Vermont Abenaki Tribal Council that plays much the same role in our Consortium as a Tribal College. In addition to our academic and educational organization affiliates, the VTSGC has six industrial affiliates. Triangle Metal Fabrication in Milton VT, Benchmark Space Systems, Inc., in Williston VT, Archimedes Aerospace, LLC in Montpelier, Liquid Measurement Systems in Fairfax, Mansfield Heliflight in Milton, and LORD MicroStrain Corporation in Williston, VT, have helped the VTSGC leverage available resources by providing support for VTSGC-sponsored teams of engineering students participating in NASA-related programs. Five informal education providers are also VTSGC affiliates, including the Fairbanks Museum & Planetarium, the Montshire Science Museum, the American Precision Museum, the ECHO lake Aquarium & Science Center, and the Northeast Kingdom Astronomy Foundation.

All affiliates have at least one point of contact (PoC) that provides a local physical presence for the VTSGC and promotes NASA interests. At academic affiliates, this PoC is a faculty member who is responsible for the on-campus distribution of information about consortium-wide activities, such as our Undergraduate Scholarship Program, and the coordination of local programs, such as his or her institution's implementation of our Mentored Undergraduate Research Program. The PoC provides a conduit between faculty and students interested in NASA's mission and the central VTSGC office. Responsibilities of our academic PoCs also include responding to requests from the Consortium Director to provide accurate information for our yearly data submissions to the National Program as well as narratives describing local program implementation for our Annual

Progress Report. VTSGC PoCs at non-academic affiliates include the Chief Meteorologist at the Fairbanks Museum, the Director of Education at the Montshire Museum, the retired Chair of the Governors Commission on Native American Affairs, the CEO of Benchmark Space Systems, Inc., and the Presidents of Triangle Metal Fabrication and LORD Microstrain. Since all PoCs are also members of our BoA, these local representatives are familiar with the full range of opportunities provided by VTSGC programs as well as best practices developed by other affiliates.

12.b Board of Advisors

The committee structure of the VTSGC includes a Board of Advisors (“Board”) that provides guidance to the Director as well as providing oversight of all consortium activities. The Board consists of representatives of all VTSGC affiliates as well as other appropriate institutional officials. The Board meets formally once each year; however, the Director may engage the Board at any time to provide updates or obtain recommendations on an as-needed basis. Board members are encouraged to contact the Director regarding any matter that they consider relevant to the VTSGC mission. At the annual Board meeting, the Director will provide the members with a comprehensive update of VTSGC activities and progress during the previous year.

The Board consists of the Director (ex officio), one representative for each affiliate organization (academic affiliates and museum affiliates) and one representative for each industrial partner. Additionally, the Director may appoint as a Board member one representative from any other organizations having a significant partnership with the VTSGC. Finally, the Director may appoint as Board members one student representative and one community representative (both positions are currently vacant).

Although administration of the VTSGC is centralized at the University of Vermont, all affiliates participate fully in developing programs and policies and responding to requests made by the National Program. Despite differences in the size, type of organization, and mission of our affiliates, our Board is fully inclusive. Each affiliate appoints a representative to the Board, and this representative also usually serves as a local point of contact at their home location. VTSGC policies, procedures, and programs are developed through a collaborative process that involves discussion and final ratification by the Board and puts a premium on achieving a consensus.

The role of the Board is to function as an advisory body to the Director. The primary duties of the Board are to (i) review progress of the VTSGC and make recommendations to enhance or expand VTSGC programs, and (ii) ratify changes to VTSGC policies, procedures and programs. Where appropriate, a recommendation from the Board may be put to a vote of its members. Such a vote will be conducted by e-mail for a period of 7 days. As an ex officio member of the Board, the Director is not a voting member. The Board shall have opportunity to provide input into the selection and appointment of a new VTSGC Director.

The Chair of the Board will be elected from its members for a 2-year term. The Director may not serve as Chair of the Board.

Board members are expected to be active participants in VTSCG activities and to attend the annual meeting of the Board. Inactive members may be dismissed at the discretion of the Director.

VTSGC Board of Advisors

Member	Additional Contact
<i>VTSGC Office</i>	
Bernard F. Cole Director and Professor Department of Mathematics and Statistics University of Vermont Burlington, Vermont bernard.cole@uvm.edu	Ellen K.W. Brennan Program Administrator Vermont Space Grant Consortium University of Vermont Burlington, Vermont ellen.brennan@uvm.edu
<i>Academic Affiliates</i>	
Susan Watson Professor Department of Physics Middlebury College Middlebury, Vermont swatson@middlebury.edu	
R. Danner Friend Professor Department of Mechanical Engineering Norwich University Northfield, Vermont rfriend@norwich.edu	
Greta Pangborn Associate Professor Department of Computer Science Saint Michael's College Colchester, Vermont gpangborn@smcvt.edu	

VTSGC Board of Advisors (continued)

Member	Additional Contact
<i>Academic Affiliates (continued)</i>	
<p>Carl Brandon Professor Department of Science Vermont Technical College Randolph, Vermont carl.brandon@vtc.edu</p>	
<i>Museum Affiliates</i>	
<p>Steve Dalessio Executive Director American Precision Museum Windsor, Vermont steve@americanprecision.org</p>	<p>Alice Cable Associate Executive Director American Precision Museum Windsor, Vermont acable@americanprecision.org</p>
<p>Nina Ridhibhinyo Director of Strategy & Programs ECHO, Leahy Center for Lake Champlain Burlington, Vermont nridhibhinyo@echovermont.org</p>	<p>Elizabeth Nuckols Group Programs Manager ECHO, Leahy Center for Lake Champlain Burlington, Vermont enuckols@echovermont.org</p>
<p>Mark Breen Senior Meteorologist, Educator Fairbanks Museum & Planetarium St. Johnsbury, Vermont mbreen@fairbanksmuseum.org</p>	
<p>Lara Litchfield-Kimber Executive Director Montshire Museum of Science Norwich, Vermont lara.litchfield-kimber@montshire.org</p>	<p>Katie Price Grant Projects Manager Montshire Museum of Science Norwich, Vermont katie.price@montshire.org</p>
<p>William Vinton President and Educator Northeast Kingdom Astronomy Foundation Peacham, Vermont will@nkaf.org</p>	

VTSGC Board of Advisors (continued)

Member	Additional Contact
<i>Industrial Partners</i>	
John Hanning Chief Executive Officer Archimedes Aerospace Montpelier, Vermont jhanning@archimedes-aerospace.com	
Ryan McDevitt Chief Executive Officer Benchmark Space Systems Burlington, Vermont rmcdevitt@benchmark-space.com	
Martha Hanson Chief Human Resource Officer Liquid Measurements Systems Georgia, Vermont martha.hanson@liquidmeasurement.com	
Steven Mundell Engineering & Operations Manager, Sensing LORD Corporation–Vermont Williston, Vermont steven_mundell@lord.com	
Tina Lindberg Mansfield Heliflight Milton, Vermont tina@mansfieldheliflight.com	Eric Chase Mansfield Heliflight Milton, Vermont eric@mansfieldheliflight.com
Yancy Martell President Tri-Angle Metal Fab Milton, Vermont yantz@trianglemetalfab.com	Dylan Martell Sales Representative Tri-Angle Metal Fab Milton, Vermont dylan@trianglemetalfab.com

VTSGC Board of Advisors (continued)

Member	Additional Contact
<i>Other Partners</i>	
<p>Jeff Benay Director of the Indian Education Programs for Franklin County and Vice-Chair of the Vermont Commission on Native American Affairs Swanton, Vermont jeffbenay@fnwsu.org</p>	<p>Jason Cooper Burlington Technical Center/Aviation Technology School Burlington, Vermont jcooper@bsdvt.org</p>
<p>Moses Daly Director Burlington Technical Center/Aviation Technology School Burlington, Vermont mdaly@bsdvt.org</p>	
<p>Elizabeth Frascoia Executive Director Governor's Institutes of Vermont Winooski, Vermont elizabeth@giv.org</p>	
<p>David Hathaway Executive Director Vermont State Mathematics Coalition Underhill Center, Vermont david.hathaway.78@gmail.com</p>	

13 Budget Summary

The total budget for VTSGC operations during Year 3 (June 6, 2022 – June 5, 2023) of the 2020–2024 grant cycle is \$860,000 in NASA funds plus \$527,900 in cost share. These amounts are total funding, including indirect costs. The sources of cost-share funding include in-kind faculty effort, graduate-student tuition, unrecovered indirect costs, and affiliate-member subcontracts (affiliate-member subcontracts typically require a 50% cost-share contribution). Federal funds from other sources may not be used as cost share.

As lead institution for the VTSGC, the University of Vermont charges indirect costs on modified direct costs at a reduced rate of 8% (whereas the federally negotiated rate is 56%). NASA funds directed toward participant costs (internships, fellowships, etc.) are excluded from the calculation of indirect costs. The University of Vermont also charges indirect costs on subcontracts at the rate of 8% on the first \$25,000 of each subcontract. The difference between the federally negotiated indirect cost rate and the 8% rate is counted as cost share (unrecovered indirect costs).

The total amount in NASA funds for Year 3 includes \$685,000 from the original award, plus \$175,000 from three augmentations, consisting of \$85,000, \$30,000 and \$60,000, respectively. The cost-share amount of \$527,900 is the minimum required by NASA. It consists of \$506,900 from the original award and \$21,000 from the most recent augmentation. No cost sharing was required on the two other prior augmentations.

As noted above, a \$60,000 augmentation is available for Year 3. The original budget for these funds did not include an external evaluator. The VTSGC will therefore request a re-budgeting of the augmentation funds so that they may be used to cover the costs of an external evaluator. The budget table that follows reflects the re-budgeted \$60,000 augmentation.

Year 3 Budget Table

	NASA Funds	Cost Share	Total
A. Personnel / Direct Labor			
1. Consortium Director	45,350	69,269	114,619
2. Program Administrator	23,774		23,774
3. Business/Accounting Specialist	37,198		37,198
A. Subtotal	106,322	69,269	175,591
B. Fringe Benefits			
1. Consortium Director	22,324	34,097	56,421
2. Program Administrator	11,703		11,703
3. Business/Accounting Specialist	17,739		17,739
B. Subtotal	51,766	34,097	85,663
C. Equipment			
D. Materials and Supplies			
E. Services	17,000		17,000
F. Domestic Travel	13,780		13,780
G. NASA Internships and Fellowships			
1. Internships	71,800		71,800
2. Fellowships	323,862	79,572	403,434
3. Scholarships	37,500		37,500
4. Research Experience for Undergraduates	35,000		35,000
G. Subtotal	468,162	79,572	547,734
H. Aeronautics Mission Directorate Projects			
1. Senior Design (UVM)	2,000		2,000
2. AIAA Student Group Support	1,000		1,000
H. Subtotal	3,000		3,000
I. Human Exploration Mission Directorate Projects			
None			
J. Science Mission Directorate Projects			
1. Governor's Institute Astronomy	3,000		3,000
2. Governor's Institute Mathematics	3,000		3,000
J. Subtotal	6,000		6,000

	NASA Funds	Cost Share	Total
K. Space Technology Mission Directorate Projects			
1. AERO Hybrid Racing Group	1,000		1,000
2. Girls Who Code Student Group	1,500		1,500
3. Governor's Institute Engineering	3,000		3,000
4. Teacher of the Year Space Camp	3,000		3,000
5. "Women Can Do" Event	1,500		1,500
6. Summer Programs	10,000		10,000
K. Subtotal	20,000		20,000
L. Competitive Projects			
1. Research Pilot Projects	39,000	32,500	71,500
2. Small-Scale Faculty Grants	50,000	50,000	100,000
L. Subtotal	89,000	82,500	171,500
N. Subcontracts			
1. Norwich University	14,500	6,250	20,750
2. Saint Michael's College	12,500	6,250	18,750
3. Vermont Technical College	12,500	6,250	18,750
4. Montshire Museum of Science	6,000	3,000	9,000
5. Fairbanks Museum and Planetarium	6,000	3,000	9,000
6. American Precision Museum	4,000	2,000	6,000
7. ECHO Leahy Center for Lake Champlain	3,000	1,500	4,500
8. Northeast Kingdom Astronomy Foundation	1,000	500	1,500
N. Subtotal	59,500	28,750	88,250
O. Total Direct Costs	835,530	294,188	1,129,718
P. Indirect Cost	24,470	233,712	258,182
Q. Total Costs	860,000	527,900	1,387,900

14 Re-budgeting and Programmatic Revision Process

The VTSGC complies with all federal regulations and institutional policies regarding the re-budgeting of extramural awards. In general, NASA approval will be needed for any re-budgeting across major categories of spending. When in doubt, the Director will confer with Sponsored Project Administration to ascertain whether sponsor permission is required for a specific budgetary change. The general process of re-budgeting will consist of the following:

- The Director will prepare a written summary and justification of the need for re-budgeting, including the dollar amounts involved and the time frames.
- The Director will seek approval from the appropriate NASA Program Officer.
- Upon receipt of NASA approval, the Director will notify Sponsored Project Administration.

The same process as outlined above must be followed for any programmatic change whether or not any re-budgeting is necessary.

Appendix A1

**Research Program Sample
Announcement**

Call For Proposals



Vermont Space Grant and
Vermont NASA EPSCoR Program



2022 Faculty Research Competition

Proposal Deadline: March 24, 2022 at 11:59 PM

BACKGROUND: Key goals of the Vermont Space Grant Consortium (VTSGC) and Vermont's NASA EPSCoR Program are to build research infrastructure and help Vermont's academic faculty establish ties to NASA and become nationally competitive for external research funding. To support these goals, VTSGC and VT-NASA EPSCoR Program will hold a competition to award Research “Pilot Grants” and “Small-Scale” Grants.¹ Proposed research projects must be strongly aligned with new and/or ongoing NASA research priorities or technology needs and should have the potential to link Vermont faculty to NASA colleagues at NASA Centers and must align with new and continuing NASA Mission Directorate priorities.

WHO IS ELIGIBLE: Eligible principal investigators are those persons who are full-time faculty members at any of Vermont’s higher educational institutions. *Note:* All support from VTSGC-based funding is strictly restricted to US citizens only, both faculty and any involved students; NASA EPSCoR funding does not carry this restriction.²

AREAS OF INTEREST AND NASA LINKS: Proposed research projects must be in an area that is strongly aligned with a new or continuing NASA research priority or technology need, and the proposal packet must make an explicit connection with NASA. The proposal should also detail plans for establishing and/or strengthening links with NASA researchers. If contact has been established with colleagues at a NASA Center or Mission Directorate, a letter or email of support for the project from a NASA contact will significantly strengthen the case for funding. For Small-Scale Grants, a significant degree of NASA contact, including a NASA visit, is expected and should be fully detailed in the proposal package.

TYPES OF GRANTS AVAILABLE: Support may be requested for the following funding mechanisms:

- **Research Pilot Grants (VTSGC).** Awards of up to \$6,500 will provide seed money to explore a new research project in an area aligned with a new or continuing NASA research priority. As part of that \$6,500 funding, the Research Pilot Grant has embedded \$1,500 to fund travel by the faculty member to visit a NASA Center, for the purpose of forming or solidifying research collaborations.
- **Small-Scale Research Grants (VTSGC and VT NASA EPSCoR).** For more established research projects, the VTSGC and VT NASA EPSCoR Programs offer Small-Scale Grants of up to \$25,000. Small-Scale Grants may include funding for project components such as, but not limited to, the following: summer support of faculty, graduate and undergraduate student research support;

¹ The availability and number of these awards are subject to annual NASA funding allocations.

² Standard restrictions on any ITAR-related research still apply.

supplies and small-scale equipment items; domestic conference travel and travel funds to visit collaborator(s) at a NASA Center. Small-Scale Grant budgets will ordinarily include travel funds to visit a NASA Center. Small-Scale Grant applicants must have an existing NASA contact/collaborator who will provide a letter of support for the project.

Funding awarded in this competition cannot be used to purchase general-purpose equipment, such as computers, and cannot be used to purchase items classified as capital equipment (i.e., exceeding \$5,000 including shipping). Foreign travel is not permitted; note that NASA classifies Canada as foreign travel.

OBLIGATIONS WITH AWARDS: All awardees will be required to provide a final report within 30 days of the end of the award period. Additional research progress update(s) may be requested by the VTSGC / VT NASA EPSCoR Director during the award period to address any and all reporting requirements to NASA.

REVIEW CRITERIA: Projects chosen for awards will be in research areas that strongly align with new and/or continuing NASA research priorities and technology needs and will translate into long-term research capabilities. Moreover, these research projects should have a strong potential to become nationally competitive for follow-on extramural funding. Successful proposals will have a clearly described plan to establish or strengthen links with potential NASA collaborators.

Priority consideration will be given to meritorious proposals that:

- Budget support for undergraduate or graduate student involvement and/or
- Are submitted by junior tenure-track faculty, and/or
- Are submitted by investigators who have not previously received support under Vermont NASA programs.

BUDGET AND MATCHING FUNDS: A detailed budget request and narrative should be part of the proposal package. All budget items should be fully explained. Lump sum dollar requests for expense categories are not acceptable, and detailed breakdowns must be provided to the extent possible. The budget request should contain only direct costs.

For projects that propose graduate student support, the salary rates must mirror the current guidelines set by the institution and account for any fringe costs. Similarly, undergraduate research support must follow institutional salary guidelines and account for fringe costs (if applicable).

Matching funds are required for proposals to be eligible for this competition. Funding requested from the VTSGC and VT-NASA EPSCoR must be matched 1:1 by local non-federal funding. Common sources of matching funds include in-kind cost-sharing, such as designated research effort during the academic year. Waived or differential tuition is not an acceptable form of cost share. If awarded, the investigator will be required to provide a letter of commitment from the official responsible for each source of the matching funds.

PROPOSAL PACKET FOR UVM FACULTY: The completed proposal packet shall include the following items:

- Cover Page
- Project narrative (limit of five pages for *Small-Scale Grant*; three pages for *Pilot Grant*,

exclusive of references)

- A short section explicitly detailing NASA alignment (limit of one page)
- Letters of support (electronic is acceptable) from NASA collaborators (mandatory for small-scale grant applications; strongly encouraged for pilot grant applications)
- A detailed budget request with detailed justification and matching plan
- If applicable, a signed letter of commitment from the appropriate institution or other official responsible for the source of the match
- Two-page CV's for any faculty participant(s) and other key project participant(s)

PROPOSAL PACKET FOR NON-UVM FACULTY: In addition to the above list of documents needed, a non-UVM principal investigator will need to submit a subrecipient monitoring form. This document can be found at:

<https://www.uvm.edu/sites/default/files/Sponsored-Project-Administration/subrecipientcommitmentform.pdf>

ELECTRONIC APPLICATION PROCEDURE: All proposal applications must be submitted electronically to the VT Space Grant Office. The electronic submission must be made no later than 11:59 PM on March 24, 2022. The proposal packet described above must be saved as a single PDF file and emailed to SG.Director@uvm.edu.



Proposal Cover Page



Vermont Space Grant and Vermont NASA EPSCoR Program 2022 Faculty Research Competition

Proposal Deadline: March 24, 2022 at 11:59 PM

Name and Title of Faculty Applicant: _____

Project Title: _____

Faculty Affiliation: _____

Faculty E-mail: _____ Phone number: _____

Grant Type (Check One):

Small-Scale Grant ___ VTSGC (June 2022 – May 2023)

Pilot-Grant ___ VTSGC (June 2022 – May 2023)

Small-Scale Grant ___ VT NASA EPSCoR (October 2022 – September 2023)

Signature:

Faculty Member: _____
Print Sign Date

Checklist: COMPLETE APPLICATION DUE BY 11:59 p.m. on March 24, 2022:

UVM Faculty

1. Cover Page _____
2. Project narrative (limit of five pages for *Small-Scale Grant*, three pages for *Pilot Grant*, exclusive of references) _____
3. A short section explicitly detailing NASA alignment (limit of one page) _____
4. Letters/emails of support from NASA contacts or collaborators (mandatory for Small-Scale grant applications, strongly encouraged for Pilot grant applications) _____
5. A detailed budget request with detailed justification and matching plan _____
6. If applicable, a signed letter of commitment from the appropriate institution or other official responsible for the source of the match. _____
7. Two-page CVs for any faculty participant(s) or other key project participant(s) _____

Non-UVM Faculty (additional documentation needed)

In addition to the above list of documents needed, a non-UVM principal investigator will need to submit a subrecipient monitoring form. This document can be found at:

<https://www.uvm.edu/sites/default/files/Sponsored-Project-Administration/subrecipientcommitmentform.pdf>

The complete application must be saved as a single PDF file and emailed to the VT Space Grant Office (SG.Director@uvm.edu).

Appendix A2

**Research Grant Review Template
and Instructions**

Vermont Space Grant Consortium Faculty Research Competition Proposal Review

Instructions

Please provide your assessment of the strengths and weaknesses of the proposed project in each of the domains overall impact, scientific/technical merit, innovation, approach, NASA alignment and investigators. We are looking for your general impressions in each domain area along with your assessment of the project's potential for success as pilot or small-scale research (i.e., to have a reasonable likelihood for generating useful preliminary findings). A copy of your review will be provided to the applicant; however, your identity as a reviewer will be kept strictly confidential.

Your overall impact score is the key review outcome and the main basis for a decision to advance an application for funding. Your overall impact score should be guided by your assessments of the individual domain areas; however, it need not represent an average of these. You are free to weigh the different domains as you see fit in deriving your score. Note that an application does not need to be strong in all categories to be judged likely to have significant scientific impact and thus, deserve a high impact score. Please use the following scale for your overall impact score (whole number only).

Overall impact strength	Score	Descriptor
High	1	Exceptional
	2	Outstanding
	3	Excellent
Medium	4	Very good
	5	Good
	6	Satisfactory
Low	7	Fair
	8	Marginal
	9	Poor

VTSGC Faculty Research Competition Proposal Review

Title of application:

Principle Investigator:

Overall impact: Rate the proposed research in terms of its likelihood to generate preliminary findings that could reasonably lead to subsequent, extramural funding.

Overall impact score (whole number only): _____

<p>Comments: describe the main considerations driving your score.</p>
--

<p>1. Scientific/technical merit: Assess the significance of the project in terms of its feasibility and potential to address important scientific/technical challenges in the field.</p>
<p>Strengths</p> <ul style="list-style-type: none">•••
<p>Weaknesses</p> <ul style="list-style-type: none">•••

<p>2. Innovation: Assess the degree to which the project utilizes novel theory, methodology, or instrumentation.</p>
<p>Strengths</p> <ul style="list-style-type: none">•••
<p>Weaknesses</p> <ul style="list-style-type: none">•••

3. Approach: Assess the overall strategy, methodology, and analyses proposed and the degree to which they are sufficient for accomplishing the specific aims of the project.
Strengths <ul style="list-style-type: none"> • • •
Weaknesses <ul style="list-style-type: none"> • • •

4. Alignment with NASA priorities: Assess the degree to which the application clearly describes current NASA priorities and how the proposed project aligns with and will advance those priorities. Your review in this area may be based solely on the strength of the applicants' description and any relevant letters of support (i.e., you need not seek from other sources information regarding NASA priorities).
Strengths <ul style="list-style-type: none"> • • •
Weaknesses <ul style="list-style-type: none"> • • •

5. Investigators: Assess the appropriateness of the expertise areas represented by the research team.
Strengths <ul style="list-style-type: none"> • • •
Weaknesses <ul style="list-style-type: none"> • • •

Appendix A3

**Research Grant Sample Decision
Letters**



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Department]

[Institution]

Dear [Name],

Thank you for your application to the 2022 Vermont Space Grant Consortium (VTSGC) and Vermont NASA EPSCoR Faculty Research Competition.

I am pleased to inform you that your application entitled “[Title]” was selected for funding in the full amount requested under the VTSGC Small Scale Grant Program. Attached for your reference are peer-reviews of your application. I encourage you to modify your research plan as appropriate in response to the peer reviews.

The start date of this award will be June 1, 2022, with a 12-month period of performance, ending May 30, 2023. The total amount of the award is \$[amount] in NASA funds.

Also attached is a document describing the terms and conditions of this award. Please review this material and indicate your acceptance of the award under these terms and conditions by signing this letter below and returning the signed letter to me. Note that **salary and fringe benefits under this award are restricted to U.S. citizens only**. If you have any questions about this award, please let me know.

Congratulations on your award and best wishes for a successful project.

Sincerely,

Bernard F. Cole, Ph.D.

Accepted by:

Signature and date

Vermont Space Grant Consortium
Terms and Conditions of Small-Scale and Pilot Research Grants

Period of Performance

The period of performance, provided in the award letter, describes the dates during which the project may be conducted. The funding will expire on the ending date of the award. A no-cost extension (NCE) may be requested by the Principal Investigator no later than 30 days prior to the award ending date. Please note that in some cases, an NCE might not be possible pursuant to the terms of the NASA award providing the funding.

Expenditures

All expenditures must directly support the awarded project and must be allowable pursuant to federal regulations and institutional policies.

Purchases

Purchases may be made through your department and charged to the grant. The purchase of capital equipment (equipment costing over \$5,000) is not allowable.

Travel

The cost of domestic travel may be coordinated through your department and charged to the grant. Pursuant to NASA policy, the funding of international travel (including Canada) is not permitted.

Eligibility of Salary Support

Funding derived through the main Vermont Space Grant (i.e., VTSGC Small Scale and VTSGC Pilot grant awards) is restricted to supporting the salary and fringe benefits of U.S. citizens only, including faculty and students. Funding derived through NASA EPSCoR grants does not carry this same constraint.

Reporting Requirements

All awardees will be required to provide progress report(s) to the VTSGC office for purposes of annual reporting to our stakeholders (Board of Advisors, Technical Advisory Committee and NASA). This information will take the form of data collection and a short progress narrative. Reports are due within 30 days following the award ending date unless an NCE is requested. If requesting an NCE, the progress report must be submitted no later than 30 days before the award ending date.



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCOR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Department]

[Institution]

Dear [Name],

Thank you for your application to the 2022 Vermont Space Grant Consortium and Vermont NASA EPSCoR Faculty Research Competition.

I regret to inform you that your application entitled “[Title]” was not selected for funding in this round. Attached for your reference are peer-reviews of your application. Although your application was considered potentially meritorious, a number of significant concerns were raised during the review process, leading to a ranking that fell outside the fundable range.

During discussion of your application, the committee expressed concern that the application was [additional concerns].

I strongly encourage you to consider reapplying for consideration in the next round of funding. I would welcome a revised application from you that addresses the concerns raised during the review process.

If you have any questions, please let me know. Thank you again for your interest in the VTSGC Faculty Research Competition.

Sincerely,

Bernard F. Cole, Ph.D.

Appendix A4

**Research Grant Progress Report
Template**

Vermont Space Grant Consortium Research Progress Report

Version
5.31.2022

Note: This form is used for progress and final reports. Enter data in all applicable cells as it relates to the funded project including anecdotes and narratives at the bottom.

Submission or Report Date:		Annual Progress or Final Report (FY2022)		Award Date:		Amount:	
PI Name (last, first):				PI Email:			
Reporting Period:	10/1/2021 to present			Telephone:			
Project Name:							

For funding submissions, save the document as: **PI Last name_SubmDate_PRJ_dataform.xls**

Instructions: Add rows to tables as necessary. Fill in all that applies to your project. Please do not add columns.

NASA Alignment - Select the NASA Mission Directorate to which this project most closely aligns:

Directorates		Check applicable box
Aeronautics Research Mission Directorate (ARMD)	http://www.aeronautics.nasa.gov/	<input type="checkbox"/> ARMD
Science Mission Directorate (SMD)	http://science.nasa.gov/	<input type="checkbox"/> SMD
Human Exploration and Operations Mission Directorate (HEO)	http://www.nasa.gov/directorates/heo/home/	<input type="checkbox"/> HEO
Space Technology Mission Directorate (STMD)	http://www.nasa.gov/directorates/spa/ctech/home/	<input type="checkbox"/> STMD

Research/Project Participants:

Researcher (Last name, First name)	Institution	Role (PI, Co-I, collaborator, advisor, etc.)	Gender M / F	Ethnicity Hispanic or Latino? Y / N	Race Designate one or more of the following races: AN = American Indian or Alaskan Native A = Asian B = Black or African American PI = Pacific Islander W = White	U.S. Citizen Y/N	Documented Disability Y/N	U.S. Military Veteran Y/N

Student Participants:

Student: (Last name, First name) Please include approx. contact hours behind student's name.	Institution and STEM major or area of study	Level P = Post Doctoral G = Graduate U = Undergraduate	Gender M/F	Ethnicity Hispanic or Latino? Y/N	Race Designate one or more of the following races: AN = American Indian or Alaskan Native A = Asian B = Black or African American PI = Pacific Islander W = White	U.S. Citizen Y/N	Documented Disability Y/N	U.S. Military Veteran Y/N

Institutional Collaborators: All institutions must appear in either Research Participants or Student Participants above.

Collaborations with NASA Centers:	Collaborations with Other Federal agencies:	Collaborations with Industry:	Collaborations with Academic Institutions:	Collaborations with State agencies:	Collaborations with Others:

Patents Pending:

Application Number	Date Submitted	Title	Inventor(s) (Last name, First name)

Patents Awarded:

Patent Number	Date Issued	Title	Inventor(s) (Last name, First name)

Products from research efforts funded by the VTSGC:

Publications in Peer Reviewed Journals - Please note: Researchers submitting NASA-funded articles in peer-reviewed journals shall make their work accessible to the public through NASA's PubSpace at: <https://www.ncbi.nlm.nih.gov/pmc/funder/nasa/>

Title	Author(s) (Last name, First name)	Status A = Accepted/Published S = Submitted/In Review	Journal citation, including date

Conference Proceedings, Books and Chapters, Reports, Unrefereed Manuscripts - Please note: Researchers submitting NASA-funded articles in papers from conferences shall make their work accessible to the public through NASA's PubSpace at: https://www.ncbi.nlm.nih.gov/pmc/funder/nasa/						
Title	Author(s) (Last name, First name)	Type R = Refereed U = Unrefereed	Venue/Citation, including date			
Professional Meetings: Keynote address, Oral Presentations, Poster Presentations (self-submitted):						
Title	Author(s) (Last name, First name)		Venue/Citation, including date			
Other Professional Presentations: Panel Member, Session Chair, Invited Presentations:						
Title	Author(s) (Last name, First name)		Venue/Citation, including date			
New or Revised Courses that Target STEM Skills:						
New or Revised	Course title	Course Number	Institution	Department	Number of Participants	
Grants as a result of VTSGC award and/or research project:						
Grants submitted (title) as a result this VTSGC funding	PI Name, then Co-Is (Last Name, First Name)	Funding Entity	Amount Requested or Awarded	Amount of matching funds	Duration (month/yr to month/yr)	Status - Use appropriate line: A, P, N
Total Awarded \$0						A = Awarded
Total Pending \$0						P = Pending
Total Attempted \$0						N = Not Awarded
Anecdotal illustrations: (expand row height as needed)						
Provide input regarding your research and educational experiences from the current grant. Please include significant student achievement/s resulting from project involvement. Consider a quote mentioning how this funding helped to enhance your research, and/or a quote from your student/s that highlights his/her accomplishments.						
Narrative for progress and/or final reports: (expand row height as needed)						
Provide at least one paragraph describing accomplishments for your program this year with respect to goals in the proposal.						

Appendix B1

**Graduate Fellowship Sample
Announcement**

Vermont Space Grant Consortium
Call for Applications



**GRADUATE FELLOWSHIPS
2022–2023**

Submission Deadline:
January 15, 2022 at 11:59 PM

The Vermont Space Grant Consortium (VTSGC) is pleased to announce a competition for Graduate Fellowships for the twelve month period July 1, 2022 to June 30, 2023. This competition is open to U.S. graduate students enrolled in master and doctoral programs in science, technology, engineering, and mathematics (STEM) disciplines within the State of Vermont.³

I. Program Overview

The goals of this program are two-fold: (1) to help prepare the next generation of researchers in STEM disciplines; and (2) to provide the graduate student a research experience that strongly aligns with NASA research priorities and technology needs. The application for a VTSGC Graduate Fellowship shall be written *by the graduate student* with collaborative support by a faculty mentor. Awards will be made *directly to the student*.

II. Eligibility

Per NASA requirements for the National Space Grant Program, graduate students funded by this competition must be U.S. citizens and enrolled full-time in a graduate program within a STEM discipline. Female students, members of underrepresented groups in STEM disciplines, and/or persons with a disability are especially encouraged to apply. Faculty serving as research mentors will be full-time faculty in STEM disciplines.

III. Amount and Period of Support

Subject to the timely arrival of NASA annual funding installments, these awards will provide the graduate fellow a stipend for a maximum of 12 months anticipated to span from July 1, 2022 to June 30, 2023. For University of Vermont graduate fellowship recipients, the projected 12-month stipend is \$32,000. The award also includes up to \$12,294⁴ for tuition costs and \$2,694³ for health insurance. For non-UVM graduate fellowship recipients attending another Vermont institution, the (projected) total amount of the stipend/funding is \$46,988.

IV. The Application Packet

The completed application packet must include the following items:

¹The availability and number of these awards are subject to future NASA funding.

²Amount is based on 18 credits at current in-state tuition rates. This amount could change.

³Health insurance costs have not been set for 2022–2023. This amount could change.

1. **Signed Cover Page.** Use the form included with the call for applications.
2. **Project Narrative** (limit of four pages, exclusive of citations). A narrative providing a description of the research to be undertaken, its significance, methods and expected outcomes. Include any relevant prior work done by the student and/or the faculty mentor's research group.
3. **NASA Relevance.** (limit of one page, exclusive of any external letters/emails) Provide evidence that the proposed research is aligned with a new or continuing NASA research priority or technical need. For example, the applicant may cite a current or pending NASA Research Announcement (NRA) or include an email of support from a NASA researcher to demonstrate NASA interest.
4. **Student Resume** (limit of two pages).
5. **Student Academic Transcript.** Established graduate students shall provide a copy of their graduate transcript; first year graduate students shall also provide a copy of their undergraduate transcript. An unofficial transcript is acceptable.

V. Electronic Application Procedure

The application packet must be submitted electronically to the Space Grant Office no later than 11:59 PM on **January 15, 2022**. The application packet described in Section IV must be saved as a single PDF file and emailed to the Space Grant Office (sg.director@uvm.edu).

VI. Obligations Associated with Funding

Recipients of the fellowship, in collaboration with their faculty mentor, will be required to provide written progress updates to the Space Grant Director during the award period as needed to comply with NASA reporting requests. A final report will be due within thirty (30) days of the end of the award period. Students will also have to complete a Vermont Space Grant Student Profile Form. This information will be used to complete a mandated report for the NASA Office of STEM Education.

Please contact Prof. Bernard F. Cole, Director of the Vermont Space Grant Consortium, (802-656-0054 or bfc@uvm.edu) if further information is required.

Appendix B2

Graduate Fellowship Review Template and Instructions

Vermont Space Grant Consortium Graduate Fellowship Review

Instructions

Please provide your assessment of the strengths and weaknesses of the proposed project in each of the two domains (1) scientific merit, and (2) NASA relevance. We are looking for your general impressions regarding strengths and limitations in each domain area along with your assessment of the project's overall impact.

Your overall impact score is the key review outcome and the main basis for a decision to advance an application for funding. Your overall impact score should be guided by your assessments of the individual domain areas; however, it need not represent an "average" of these. You are free to weigh the different domains as you see fit in deriving your score. Please use the following scale for your overall impact score (whole number only).

Overall impact strength	Score	Descriptor
High	1	Exceptional
	2	Outstanding
	3	Excellent
Medium	4	Very good
	5	Good
	6	Satisfactory
Low	7	Fair
	8	Marginal
	9	Poor

Vermont Space Grant Consortium Graduate Fellowship Review

Applicant name:

Overall impact: Rate the proposed research in terms of its potential to make a significant contribution that aligns with NASA priorities.

Overall impact score (whole number only): _____

1. Scientific merit: Assess the proposed research in terms of its feasibility, method and potential to address important scientific/technical challenges. Include strengths and limitations of the student's ability to undertake the proposed research based on their academic accomplishments.
Strengths • • •
Weaknesses • • •
2. NASA relevance: Assess the degree to which the application clearly describes current NASA priorities and how the proposed research aligns with and will advance those priorities. Your review in this area may be based solely on the strength of the applicants' description (i.e., you need not seek from other sources information regarding NASA priorities).
Strengths • • •
Weaknesses • • •

Appendix B3

Graduate Fellowship Sample Decision Letters



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Department]

[Institution]

Dear [Name],

Thank you for your application to the 2022–2023 VTSGC Graduate Fellowship Competition. I am pleased to inform you that your application has been selected for funding for the period from July 1, 2022 until June 30, 2023. Total compensation will consist of a stipend of \$32,000, with tuition of up to 18 credits plus student health insurance through your institution. This support is contingent on receipt of NASA funds under our Space Grant award.

To initiate the funding process, please coordinate with your advisor (i.e., the faculty member who will be responsible for directing your research efforts) to provide the necessary information. Specifically, I ask that your advisor e-mail the following to the CEMS Dean's Office (cemsdo@uvm.edu) with the subject line "NASA GRF":

- Student name
- Project title
- Project period (July 1, 2022 to June 30, 2023 or a shorter period within that year)
- Name of departmental administrator who handles GRA letters/appointments

The CEMS Dean's Office will then coordinate with your department to process the necessary paperwork for this appointment. Please accept my congratulations on your selection for this award and my best wishes for a successful and productive research effort.

Sincerely,

Bernard F. Cole, Ph.D.

cc: [Advisor name]



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Department]

[Institution]

Dear [Name],

Thank you for your application to the 2022–2023 VTSGC Graduate Fellowship Competition. We received a total of 19 applications. The level of competition was very high for the limited number of awards that can be funded by the Vermont Space Grant Consortium. I regret to inform you that your application was not selected for an award this year. Please note that while the selection committee was impressed with your submission and the proposed research, it was felt that other applications in the pool were either more mature in terms of progress or had stronger alignment with NASA priorities.

If appropriate for your circumstances, please consider applying again next year. I thank you and your advisor for the effort put into your application, and I wish you the best for the coming school year.

Sincerely,

Bernard F. Cole, Ph.D.

cc: [Advisor name]

Appendix B4

**Graduate Fellowship Progress
Report Template**

VTSGC Graduate Fellowship Annual Report 2021–2022
(Please do not exceed two pages in length)

Title of project:

Your name:

Your advisor's name:

Your institution/department:

Project goals

Briefly state the overall project goals

Activities

Provide a summary of the research activities that you conducted during the reporting period

Outcomes

Summarize the outcomes of your work, including any key findings. You may include a photo or graphic

Outputs

List any relevant presentations, reports, published articles, etc.

Bio

Please write a few sentences about yourself and your plans for the next year. Optionally, you may include a photo of yourself

Appendix C1

REU Sample Announcement



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

Announcement Research Experience for Undergraduates

Application deadline: 11:59 PM on March 25, 2022

Program Overview

The Vermont Space Grant Consortium (VTSGC) is pleased to announce the Research Experience for Undergraduates (REU) program. REU awards are competitive and intended to support a substantive research effort, conducted by an undergraduate student mentored by a faculty adviser, in an area aligned with NASA priorities. The expectation is that the research will lead to a clear and substantial academic accomplishment requiring significant student effort. The goals of this program are two-fold: (1) to help prepare the next generation of researchers in STEM disciplines; and (2) to provide the undergraduate student a research experience that strongly aligns with NASA priorities.

Eligibility

Pursuant to NASA requirements for the National Space Grant Program, undergraduate students funded by this competition must be U.S. citizens and enrolled full-time in an undergraduate program within a STEM discipline at a Vermont college or university. Faculty serving as research mentors will be full-time faculty in STEM disciplines.

All eligible applicants will receive consideration without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, protected veteran status, or any other category legally protected by federal or state law. The VTSGC encourages applications from all individuals who will contribute to the diversity and excellence of the program.

Amount and Period of Support

Subject to the timely arrival of NASA annual funding installments, these awards will provide a stipend of \$6,000 for a maximum of 12 months anticipated to span from June 2022 to May 2023. The award also includes up to \$1,000 for research-related travel. Awards will be made directly to the student.

Application Packet

The application for a VTSGC REU award shall be written by the student with collaborative support from a faculty mentor. The completed application packet must be typed (using an easily readable, 12-point font) and include the following items:

- Signed Cover Page. Use the form included with this announcement.
- Project Narrative (limit of two pages, exclusive of citations). A narrative providing a description of the project to be undertaken, its significance, methods and expected outcomes. Include any relevant prior work done by the student and/or the faculty mentor's research group.
- NASA Relevance (limit of one-half page). Describe how the proposed project is aligned with a new or continuing NASA research priority or technical need. For example, the applicant may cite a current or pending NASA Research Announcement and the Mission Directorate the research will be targeting. (See below list of Mission Directorates.)
- Student Resume (limit of two pages).
- Student Academic Transcript. An unofficial transcript is acceptable.

Electronic Application Procedure

All applications must be submitted electronically to the Space Grant Office. The electronic submission must be made no later than 11:59 PM on March 25, 2022. The application packet must be saved as a single PDF file and emailed to the Space Grant Office to Ms. Debra Fraser (dfraser1@uvm.edu) with CC to Director Bernard Cole (SG.Director@uvm.edu). Incomplete proposals will not receive consideration.

Obligations Associated with Funding

Recipients of the REU award, in collaboration with their faculty mentor, will be required to provide written progress updates to the Space Grant Director during the award period as needed to comply with NASA reporting requests. A Final Report will be due within thirty (30) days of the end of the award period. Students will also have to complete a Vermont Space Grant Student Profile Form. This information will be used to complete a mandated report for the NASA Office of Education.

For More Information

Please contact Prof. Bernard Cole, Director of the Vermont Space Grant Consortium (802-656-1429 or SG.Director@uvm.edu) with any questions regarding this announcement.

The current NASA mission directorates are as follows:

- Aeronautics Research - <http://www.aeronautics.nasa.gov/>)
- Human Exploration Operations - <http://www.nasa.gov/directorates/heo/home/index.html>
- Science - <http://science.nasa.gov/>
- Space Technology- <http://www.nasa.gov/directorates/spacetech/home/index.html>

Appendix C2

REU Learning-Outcomes Form

**RESEARCH EXPERIENCES FOR UNDERGRADUATES
LEARNING OUTCOMES**

Student Name: _____

Department: _____

Faculty Sponsor: _____

Internship Responsibilities:

Description of Training and supervision:

Learning Objectives/outcomes:

As per the Research Experience for Undergraduates Announcement:

Obligations Associated with Funding

Recipients of the REU award, in collaboration with their faculty mentor, will be required to provide written progress updates to the Space Grant Director during the award period as needed to comply with NASA reporting requests. A Final Report will be due within thirty (30) days of the end of the award period. Students will also have to complete a Vermont Space Grant Student Profile Form. This information will be used to complete a mandated report for the NASA Office of Education.

Appendix C3
REU Progress Report Template

VTSGC REU Progress Report 2021–2022
(Please do not exceed two pages in length)

Title of project:

Your name:

Your advisor's name:

Your institution/department:

Project goals

Briefly state the overall project goals

Activities

Provide a summary of the research activities that you conducted during the reporting period

Outcomes

Summarize the outcomes of your work, including any key findings. You may include a photo or graphic

Outputs

List any relevant presentations, reports, published articles, etc.

Bio

Please write a few sentences about yourself and your plans for the next year. Optionally, you may include a photo of yourself

Appendix D1

Undergraduate Scholarship Review Template and Instructions

Vermont Space Grant Consortium Undergraduate Scholarship Review

Instructions

Please provide your assessment of the strengths and weaknesses of the scholarship applications in each of the two domains (1) student qualifications, and (2) alignment with aerospace/NASA. We are looking for your general impressions regarding strengths and limitations in each domain area along with your assessment of the application's overall merit.

Your overall merit score is the key review outcome and the main basis for a decision to advance an application for funding. Your overall merit score should be guided by your assessments of the individual domain areas; however, it need not represent an "average" of these. You are free to weigh the different domains as you see fit in deriving your score. Please use the following scale for your overall merit score (whole number only).

Description	Overall merit score	
Excellent (or better) STEM student. Strong, demonstrated aerospace/NASA alignment, including relevant experience.	1	Exceptional
	2	Outstanding
	3	Excellent
Satisfactory (or better) STEM student. Interests are strongly aligned with aerospace/NASA; however, relevant experience is minimal.	4	Very good
	5	Good
	6	Satisfactory
Satisfactory (or better) student. STEM and/or Aerospace/NASA alignment is weak.	7	Fair
	8	Marginal
	9	Poor

Important Note Regarding Confidentiality

The materials that you are receiving include protected student information. These materials, especially the identities of the applicants and their transcripts, must be kept strictly confidential. Please store them in a secure location and do not circulate them to anyone. You may download these materials only to a password-protected and encrypted device. You must also delete these materials once the review process is complete.

Vermont Space Grant Consortium Undergraduate Scholarship Review

Applicant name:

Overall merit: Please rate the scholarship application in terms of the student's potential to make a significant contribution that aligns with aerospace/NASA.

Overall merit score (whole number only): _____

<p>1. Student qualifications: Assess the student's qualifications based on the application materials, including the student's responses to the questions, the student's transcript, and the letters of recommendation.</p>
Strengths
<ul style="list-style-type: none">•••
Weaknesses
<ul style="list-style-type: none">•••
2. Alignment with aerospace/NASA: Assess the degree to which the student's career plans align with aerospace/NASA. Include in your assessment how well this alignment is evidenced by the student's course of study and any relevant learning experiences (e.g., internship or project) the student has undertaken.
Strengths
<ul style="list-style-type: none">•••
Weaknesses
<ul style="list-style-type: none">•••

Appendix D2

Undergraduate Scholarship Sample Decision Letters



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Address]

[City], VT [ZIP code]

E-Mail: [e-mail address]

Re: VTSGC 2022–2023 Undergraduate Scholarship

Dear [Name]:

I am pleased to inform you that you have been selected as a Vermont Space Grant Consortium scholarship recipient. This scholarship award is in the amount of \$5,000 and is available for the 2022–2023 academic year at a college or university within the State of Vermont and will be paid in two installments of \$2,500 each—one in the fall semester and one in the spring semester. We will arrange for these payments to be made directly to the Vermont institution you are attending.

Please contact me at the above e-mail address **by May 1, 2022** to confirm that you will be accepting this scholarship. Soon thereafter, my office will contact your college/university to advise them of this award. If your plans for the 2022–2023 academic year change from what you indicated on your scholarship application, please let me know so we can make the proper arrangements for your award.

A requirement of this award is that you maintain a GPA of 3.0 or above throughout the academic year. If you have any questions regarding this scholarship award, please let me know.

Congratulations!

Sincerely,

Bernard F. Cole, Ph.D.
Director, Vermont Space Grant Consortium



**VERMONT SPACE GRANT CONSORTIUM
& VERMONT NASA EPSCoR**

Bernard F. Cole, Ph.D.
Director, VTSGC and Vermont NASA EPSCoR
University of Vermont
Burlington, VT 05405
Tel: 802.656.0054
Email: bfc@uvm.edu

[Date]

[Name]

[Address]

[City], VT [ZIP code]

E-Mail: [e-mail address]

Re: VTSGC 2022–2023 Undergraduate Scholarship

Dear [Name]:

Thank you for your application to the Vermont Space Grant Undergraduate Scholarship Program. Each application was evaluated by a panel of faculty from academic institutions across the state and scored on the strength of: (1) academic record, (2) letters of reference, (3) essays, and (4) NASA/aerospace alignment. Unfortunately, I must inform you that your application was not selected for a VTSGC scholarship this year.

The selection committee was impressed with your application and encourages you to continue your studies in STEM areas. Please note that the selection process was highly competitive, with a limited number of awards available. The decision regarding your application was driven mainly by the overall quality of the applications in the pool, which was especially high this year, rather than any specific limitation identified in your application. As a general rule, the winners of a VTSGC scholarship tend to have an exceptional academic record combined with significant extracurricular learning experiences having a direct alignment with aerospace.

On behalf of the selection committee, I wish to thank you once again for your interest in the VTSGC and NASA-sponsored programs. If applicable to your situation, I encourage you to apply for this scholarship again in the future. For further information, please feel free to contact me or access our webpage at: <http://www.vt-spacegrant.org/>.

Sincerely,

Bernard F. Cole, Ph.D.
Director, Vermont Space Grant Consortium

Appendix E1

Academic Affiliate Member Statement of Work

Statement of Work

[Institution]
[Point of Contact]

Vermont Space Grant Consortium Mentored Undergraduate Research

Objectives of Mentored Undergraduate Research. Mentored Undergraduate Research Grants at [institution] provide superior students an opportunity to work in close collaboration with a faculty mentor on a project relevant to the mission of NASA. The goal of the experience is to excite students about research and prepare them for graduate study and careers in STEM fields. The specific projects will be determined by an annual internal solicitation of research proposals from student/mentor teams and a review/selection process by a panel of STEM faculty.

Budget and Justification. [institution] will receive **\$50,000** in Years 1–4 of the grant (\$12,500 annually.) These funds will be used to support mentored undergraduate research experiences during the summer months or during the academic year in each year of the grant. Primary use of the funds will be to provide a stipend to the participating undergraduate students. Secondary use of the funds will include a modest stipend for the faculty mentors; funds for supplies and materials necessary for the student research and to promote the program; funding for travel to a NASA facility or a conference for purposes of presenting the research; materials and supplies for supporting additional NASA related projects that occur both in the summer and during the school year. It is expected that the allocated funds will be able to support two summer research students each year in Years 1–4.

Matching Funds. [institution] will commit matching funds in the amount of \$25,000 in Years 1–4 of the grant (\$6,250 annually). The match source includes the value of the PIs time (including salary, fringe benefits, and associated indirect costs) in their role of coordinating and overseeing the project at [institution].

Appendix W
VTSGC Strategic Plan

VTSGC Strategic Plan

Goals of the Vermont Space Grant Consortium include the following: promoting the enhancement of Vermont's STEM educational base; encouraging Vermont students to consider careers in scientific and technical fields, including potential employment at NASA and its affiliates; increasing Vermont's aerospace-related research infrastructure; and sponsoring and/or supporting programs that connect Vermont's citizens at all levels to NASA and its STEM priorities.

All programs and activities are intended to contribute directly and/or indirectly to realizing Outcomes #1 "Employ and Educate", #2 "Educate and Engage" or #3 "Engage and Inspire" of the NASA Education Strategic Framework that guide NASA's Education Portfolio. The following methods will be used to achieve these goals in the areas of education, research, and public outreach:

Education

- Fund competitive proposals from faculty mentors for Graduate Research Fellowships to support graduate students who are involved in research projects in areas that align with new and continuing NASA research priorities. In addition to training the next generation of scientists and engineers, the research component of these fellowships should have the potential to increase Vermont's research infrastructure.
- Conduct annual scholarship competitions to award merit-based VTSGC Undergraduate Scholarships to Vermont students in STEM disciplines attending Vermont academic institutions.
- Provide funds to support Vermont students to participate in NASA internships and center-based competitive programs as well as National Space Grant Consortia sponsored activities, workshops and programs.
- Fund competitive Undergraduate Program Proposals to encourage new degree programs, curriculum development, and new courses in aerospace disciplines at Vermont's academic institutions.
- Fund student teams mentored by VTSGC-associated faculty that compete in national engineering competitions sponsored by NASA or other appropriate organizational sponsors.
- Work through VTSGC affiliates to support K-12 STEM initiatives, including support for STEM teacher professional development.
- Participate in the activities of the Vermont-NASA Educational Cooperative (VNEC).

Research

- Fund competitive proposals from Vermont academic researchers for VTSGC Research Small Scale and Mini-grants to promote research aligned with new or continuing NASA research priorities, build research infrastructure in aerospace disciplines, and establish/strengthen ties between individual researchers and NASA.
- Fund travel grants to allow Vermont faculty researchers to visit NASA centers and explore potential research collaborations with NASA researchers.
- Promote links between Vermont colleges and universities and NASA Centers and Mission Directorates.
- Fund competitive proposals for mentored graduate researchers and mentored research projects in NASA-related areas.
- Provide funding to encourage faculty research and mentored undergraduate summer research activities in NASA-related disciplines at Vermont's primarily undergraduate academic institutions.

Informal Education and Public Outreach

- Work with Affiliates that are recognized providers of quality informal education to promote these activities and to ensure that these resources and opportunities are communicated to Vermont students and the general public.
- Promote strategic partnerships and linkages between formal and informal STEM education providers that promote STEM literacy and awareness of NASA's mission and goals.
- Fund competitive proposals from Affiliates and other Vermont organizations for science communication projects
- Maintain a presence, via exhibits and/or presentations, at appropriate meetings, activities and conferences across the state that highlights VTSGC activities and NASA programs.
- Conduct an annual "Awards Night" to honor VTSGC Scholars and Fellows and showcase VTSGC and NASA-related projects and activities in Vermont. Invitees will include students, parents and teachers, representatives of all VTSGC affiliates, state government officials, educational officials, and an invited NASA representative.
- Participate in the activities of the Vermont Aerospace & Aviation Association and the Vermont Civil Air Patrol and continue to be involved in state policy issues associated with civil aviation.

Revised: February 2015

Appendix X
Staff Position Descriptions

VTSGC Program Administrator

Provide program administration and coordination for all extramurally funded projects for the Vermont Space Grant Consortium (VTSGC) and Vermont NASA EPSCoR. As part of the CEMS Dean's Office, provide primary support to the Director in delivering programs, developing and implementing strategic planning goals, completing programmatic requirements, overseeing external communications with key internal and external constituents, to ensure program success. Work with the CEMS grants management team and UVM's Office of Sponsored Project Administration (SPA) to provide first-line financial guidance for the administration complex extramural awards. Coordinate outreach activities with constituents across the State of Vermont, including affiliate organizations. Function as a representative of the VTSGC and VT NASA EPSCoR within the national community of Space Grant consortia and the national NASA EPSCoR program. Provide high-quality support in a dynamic, high-volume, deadline-driven environment that includes frequently changing work and administrative demands.

25% Program Administration and Coordination

Work independently and with the VTSGC Director to administer and coordinate all VTSGC and VT NASA EPSCoR programs, including the Small-Scale and Pilot grant programs, graduate fellowships, the Research Experience for Undergraduates program, NASA internships, the VTSGC scholarship program, NASA travel grants, the Burlington Technical Training Scholarship program, and the Undergraduate Mentored Research Program. Manage affiliate partnerships across the State of Vermont, including museum affiliates and college affiliates. Provide administrative support for all VT NASA EPSCoR awards (e.g., Rapid Response Research [R3] grants, NASA EPSCoR faculty research grants, and specialized research grants such as the ISS flight opportunity program). Specific activities include developing and distributing solicitations and calls for proposals, assisting with review and selection processes, monitoring and documenting progress, and management of new awards.

25% Documentation and Communication

Serve as programmatic expert for internal and external constituents, address inquiries, and provide guidance, referrals, and information specific to the VTSGC and VT NASA EPSCoR. Interpret and communicate program, resource, and procedural information relative to NASA requirements. Act as liaison with University departments, subcontracting partners, consortium members, and federal sponsors. Attend Space Grant Directors' and NASA EPSCoR bi-annual meetings as a representative of the Vermont office. Participate in meetings with NASA Office of STEM Education representatives. Network with other consortia and NASA officials regarding aspects of promoting, engaging, and fulfilling the obligations of the VTSGC office within the State of Vermont. Advance VTSGC's outreach mission by working with affiliate organizations to deliver STEM education programs. Work to advance program visibility and marketing.

Serve as the primary resource for the coordination and management of complex financial and programmatic records. Assist in the preparation of communications. Maintain program documents.

Prepare annual NASA progress reports for active awards and final reports for completed awards. Assist in the development of new proposals, augmentation proposals, and renewals. Complete highly complex and confidential reporting as required by NASA's Office of STEM Engagement.

Successfully complete training as required by NASA and/or UVM.

25% Financial Management

Provide the primary financial oversight of all VTSCG and Vermont NASA EPSCoR awards. Provide expertise, support, and guidance regarding financial management of complex awards, including extramural grants in collaboration with SPA. Work with department administrators, grant administrators, and the CEMS Dean's Office in the appropriate use of grant funds as well as the accuracy and integrity of financial data. Demonstrate working knowledge of applicable federal, state, local, sponsor, and institutional regulations, policies, and guidelines regarding the use of grant funds to ensure compliance. Manage financial benchmarks and milestones as outlined by the sponsors' requirements. Monitor expenditures and coordinate re-budgeting when necessary.

Reconcile account data using University accounting and payroll systems; monitor and assist in resolving exceptions and errors. Work with SPA, CEMS Departments, and CEMS Dean's Office to coordinate budget change orders and expense transactions. Work with educational affiliates and museum partners who have VTSGC subawards to ensure compliance with Federal Cost Principles (Uniform Guidance), which includes but is not limited to, drafting and reviewing documents to facilitate the setup of these subawards, reviewing and processing invoices and working with the subawardees to ensure the funds are utilized in accordance with all applicable regulations and policies.

25% Extramural Activity Support

Work with the VTSGC Director to develop new grant proposals focused on research infrastructure development and educational initiatives across the State of Vermont. Work with research-active faculty to encourage the development of new grant proposals with a specific research focus in accordance with NASA opportunities. Serve as a primary resource for the effective use of extramural funds. Analyze and communicate sponsor and University requirements and policies for implementation. Act as an informational resource for policy and regulatory information and advise on practices for financial management of extramural funds.

CEMS Research Centers Business Specialist (Working Title)

Business/Accounting Specialist (Business Title)

Perform business operation and financial support functions for the NASA's Vermont Space Grant Consortium/NASA EPSCoR Office and the Vermont Complex Systems Center within in the CEMS Dean's Office. Implement organizational processes and act as primary financial support. The Vermont Space Grant Consortium (VTSGC) is an organization consisting of academic institutions, private industry, and public entities funded by NASA's National Space Grant College and Fellowship Program. Its primary mission is to strengthen the statewide network of colleges and universities, industries, and other organizations, including informal education providers, interested in promoting STEM so as to increase interest and capabilities in aeronautics, space and related fields in the State of Vermont. The Vermont Complex Systems Center is a research center focusing on the study and graduate level instruction of complex systems and data science supported by the National Science Foundation, the National Institutes of Health, CA Technologies, MassMutual, Google, the Sloan Foundation and other funders.

25% Financial and Program Reporting Support

Serve as the primary resource for the coordination and management of financial and programmatic files and records. Assist in the preparation of communications and schedules using standard and specialized software applications i.e., NASA's Office of Education Performance Measurement System which is a centralized collection point for the collection and reporting of Office of Education performance measurement data. Maintain, input and track account data using University accounting and payroll systems. Monitor and assist in resolving exceptions and errors. With SPA staff and CEMS Dean's Office initiate and coordinate the request for budget change orders and expense transactions. Act as a source of comprehensive knowledge regarding both University policies, Federal guidelines, and sponsor expectations.

25% Transactional Support

Support faculty travel, faculty purchasing, faculty discretionary account reconciliation, sponsored projects management, restricted and unrestricted endowments including making purchases and cost-transfers in collaboration with the Dean's Office finance team. With the Dean's Office, coordinate personal services agreement to support consulting services. Initiate transactions using eProcurement, check requests, and expense report documentation. Oversee and reallocate all center and consortium purchasing cards. Ensure timely completion of cost transfers when reallocation is necessary. Reconcile purchases to ensure completion and ensure all necessary documentation is retained for central Purchasing and Disbursement unit audits. Resolve issues in purchasing with Dean's Office and partner units on campus. Serve as primary transactional support staff member.

25% - Budget Support & Management

Provide and support the provision of budget reports to academic administrators, faculty, and staff regarding general funds, income expense funds, restricted and unrestricted gift funds, and sponsored projects. Provide budget and administrative assistance to Center and Consortium leadership. Work with SPA and CEMS Dean's Office to review sponsored project, restricted, and unrestricted budget development, budget set up, and budget management, ensuring appropriate distribution of Center and Consortium funds.

25% - Event Support and Coordination

Provide programmatic support and administrative responsibilities for the delivery of workshops, short-courses, seminars, and non-degree instruction programs provided by Vermont Complex Systems Center, the VT Space Grant Consortium, and external partners. Provide administrative support of instructional events including venue selection and set up, coordinating travel and lodging arrangements and reimbursements, and providing logistical and organizational support. Provide administrative and logistical support to Center and Consortium Directors and associated team members.

Appendix Y:
**Student Longitudinal Tracking
Survey**



Vermont Space Grant Consortium



Welcome to the Vermont Space Grant Longitudinal Tracking Program. NASA has requested that we gather data on the education and employment history of current and former participants in our programs. This enables us to improve our programs and assists us in seeking new funding to conduct additional programs. The information that you provide here will be kept private and not shared with anyone except NASA, our sponsor.

Join our group [in](https://www.linkedin.com/groups/4919417/) (<https://www.linkedin.com/groups/4919417/>)

Personal Information

Name: _____
 e-mail: _____
 Phone: _____
 Mailing Address: _____

Employment History

Employer	Position	Start	Stop	State	Aero/Space Related	STEM Related
				▼	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
				▼	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N
				▼	<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N

NASA Program History

Please list the NASA programs that you have been involved with as a participant, mentor, or staff member.

Year	Program	Location	Participation Type
▼	▼		▼
▼	▼		▼
▼			▼
▼			▼

Comments

Impact: How did participation in the Vermont Space Grant impact your education and life?

Aerospace Career: What role have you played in the aerospace industry since graduation?

Education

Please list the degrees that you currently hold or are pursuing. You may also indicate if the degree is related to the aero/space field. If you participated in a NASA program while in high school, please also list your high school and year of graduation.

Educational Institution	Major	Degree	Date	Aero/Space Related	
		▼		<input type="radio"/> Y	<input type="radio"/> N
		▼		<input type="radio"/> Y	<input type="radio"/> N
		▼		<input type="radio"/> Y	<input type="radio"/> N
		▼		<input type="radio"/> Y	<input type="radio"/> N

Survey Interval: approximate number of months until next survey request is emailed

Submit

STEM Related: If your position is related to Science, Technology, Engineering, or Mathematics NASA considers it STEM related. For example, if you work for a bank as a computer programmer your position is related to technology and is therefore STEM related. If you work for Boeing Aerospace as an Administrative Assistant your position is not STEM related but it is Aero/Space related.