

## **APPENDIX A**

### **NASA Delaware Space Grant Consortium**

#### **Strategic Plan for the years FY15-FY18**

### **INTRODUCTION**

The Delaware Space Grant Consortium (DESGC) is part of NASA’s National Space Grant College and Fellowship Program, authorized by the US Congress in 1987. Consortia are now operating in all 50 states plus the District of Columbia and Puerto Rico. DESGC was formed in 1991 with the University of Delaware (UD) as the lead institution. Subsequently, our consortium expanded to include also Delaware State University, Delaware Technical and Community College, Wesley College, and Wilmington University. A minor component of Consortium funds also supports students at two undergraduate institutions in nearby south-eastern Pennsylvania where faculty members have overlapping research interests with UD faculty. Representatives from industry and from non-profit Outreach programs serve on the Advisory Board.

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### **PURPOSE**

This Strategic Plan sets forth the overall goals of the Delaware Space Grant Consortium (DESGC) for the three year period from July 2015 to June 2018.

## **II. GUIDING PRINCIPLES**

**Reason for DESGC’s existence:** to serve the people of the State of Delaware in ways which are consistent with NASA’s long-term goals.

**DESGC Vision No. 1:** to encourage a diverse sample of young people in the state of Delaware to consider careers in areas which will ensure that NASA will have access, in the years ahead, to a technically literate aerospace workforce.

**DESGC Vision No. 2:** independent of career choices, to enrich the education of students from kindergarten through college years, especially underrepresented minorities, females, and students with disabilities, with a broad understanding of science.

**DESGC Mission:** to take advantage of NASA funding to instill a spirit of wonder, exploration, and discovery in students, teachers, and citizens of the state through education, research, and public outreach in the areas of Science, Technology, Engineering, and Mathematics (STEM).

The present plan relates to the broad objectives of DESGC for the three year interval FY15-FY17. Specific plans for individual years during that time frame will be developed by the Director, with input from Affiliates, Associate Directors, and members of the Advisory Board when the budget call is announced for each program year.

### **III. GOALS, SPECIFIC ACTIONS, AND METRICS**

#### ***Category I: FELLOWSHIP/SCHOLARSHIP PROGRAM***

**Goal:** To administer a program which offers educational and research opportunities to college students in Delaware, undergraduate and graduate, including underrepresented minorities, who are pursuing degrees in areas which are related to STEM.

**Objective:** *Competitiveness and accessibility.* Ensure the fair distribution, in easily accessible form, of information about scholarships and fellowships to DESGC affiliate universities and colleges.

*Action 1:* An up-to-date website and an up-to-date facebook site have been developed for DESGC, so that there is the greatest possible chance that all students in the state of Delaware have easy access to information about DESGC.

*Metric:* By 2018, the current DESGC website and facebook site will be as user-friendly as possible to Delaware students.

*Action 2:* A centralized consortium-wide call for Undergraduate Academic Year Scholarship Applications will be sent out in December-February of each year to all undergraduate institutions in the state. Each scholarship award will be for up to \$3K with an option of matching funds from the institution.

*Metric:* We seek to have at least one undergraduate academic year scholarship awarded on each campus of the consortium, especially on those campuses which are MSI (DSU, DTCC, Wesley).

*Action 3:* In order to make the application process more user-friendly, we propose to continue to contract with the National Space Grant Foundation (NSGF) to handle applications by means of its on-line tool.

*Metric:* by 2018, the current DESGC application process, will rely entirely on the NSGF on-line application process.

*Action 4:* A call for Graduate Fellowship Applications will be sent out in January-February of each year to the two campuses of DESGC with graduate programs. The applications will be submitted through the NSGF on-line application process. Each fellowship will be for a full 12-month award. In the state of Delaware, DESGC believes that the graduate students are better served by winning an award of a complete stipend, rather than splitting up the funds into smaller units, which might serve as supplements to other awards. DESGC has identified amounts of up to \$27.6K in FY2015 as competitive with existing graduate stipends in various departments on the UD campus. Judicious increases in the level of the DESGC stipend will be made in the out years of this proposal, in order to retain competitiveness, depending on funding availability. Associate Directors and affiliate representatives will ensure that students in all relevant departments are aware of the opportunity. Successful fellowship applicants typically already have published papers, have an excellent GPA, are already working on a thesis, and must justify the relevance of their work in the context of NASA's mission. A Fellow may apply only once for a renewal: no student is to be awarded a DESGC Fellowship for more than two years.

*Metric:* We seek to have at least one Graduate Fellowship each year be awarded to students at each of the two research universities in the consortium.

*Action 5:* Applications for Fellowships and Scholarships will be due typically in March-April, depending on when DESGC receives a clear indication of its budget for the upcoming academic year. Applications will be reviewed by a panel consisting of members of the Advisory Board, the Associate Directors, and the Director. Each application will be reviewed by 4-5 members, and attention will be paid to avoiding conflict of interest in the process. Selections will be made by late April-May. US citizenship is required.

*Metric:* We seek to improve participation by panel members to 6 or more in order to ensure that the review is as well-informed, broad-ranging, and fair as possible.

*Action 6:* Calls for Application for summer research positions will be circulated consortium-wide as the opportunities arise. The DESGC AD contacts undergraduate advisors in UD's various STEM departments with the information that DESGC funds up to \$4K are available to support students who have secured approval from the appropriate faculty member for a summer research position in STEM-related areas. Announcements for summer research are circulated as soon as they are received to all affiliate representatives by e-mail and on the DESGC website, Facebook page, and Twitter. The DESGC Director appoints a committee of Associate Directors to rank order applicants for summer research funds.

*Metric:* We seek to have at least one student from each of the affiliate research campuses participate in summer research activities, either on his/her own campus, or elsewhere.

**Objective:** Student links to NASA centers

The goal of DESGC is to offer hands-on research experiences to students at undergraduate and graduate levels (including underrepresented minorities, and students with disabilities) at various programs in NASA centers.

*Action:* Calls for application to NASA for various summer research positions at Goddard Space Flight Center (e.g. NASA Academy) and other centers are announced each fall on the OSSI-SOLAR website. Information about these on-line opportunities are promptly circulated by e-mail to all affiliate representatives. Program managers at each NASA Center contact the DESGC Director if students from DE have been identified as suitable candidates. The available summer funds are then disbursed to as many students as can be supported. Each award is typically for \$6,000, with an additional \$250 for travel support.

*Metric:* DESGC hopes to support 2 DE students at NASA centers in the summer of 2016 and, due to reduced funding, 1 DE student in the summers of 2017-2018.

**Objective:** Development of technical communication skills.

*Action:* Require students who have been funded in research activities (both undergraduate and graduate) to present their results to their peers.

*Metric:* 100% of all students researchers funded through DESGC will present results each year at the Annual Research Symposium, typically held in the spring. The site for this Symposium will be rotated from one affiliate campus to another from one year to the next. In 2014, for example, the Symposium was held on the campus of DSU, Delaware's HBCU, in order to allow students on that campus the opportunity to see how their peers have benefitted from DESGC funding.

**Objective:** Diversity. Ensure funding for fellowships and scholarships to women, underrepresented minorities, and persons with disabilities.

*Action:* The Director and Associate Directors will ensure that administrators of minority programs on the campuses of affiliate colleges will publicize the scholarship opportunities which Space Grant offers, during the academic year and also during the summer.

*Metric:* DESGC seeks to have at least one graduate fellowship awarded annually to a student at the HBCU affiliate. DESGC seeks to have at least one underrepresented minority student receive funds for summer research.

**Objective:** Longitudinal tracking. All students who have received funding in excess of \$5K from DESGC will be subject to longitudinal tracking.

*Action:* Currently, DESGC relies on a web-based system run by EPSS to gather the information necessary.

*Metric:* Depending on availability of funds, it may be necessary in the out years of this proposal to have the AD handle the gathering of information relevant to longitudinal tracking.

**Category 2: RESEARCH INFRASTRUCTURE DEVELOPMENT (RID)**

**Goal:** To promote the improvement of research infrastructure and capabilities of affiliate members with an emphasis on NASA-related interest areas.

**Objective:** Leveraging opportunities emerging from the NASA/EPSCoR/RID program. DE is now considered as an EPSCoR state by NASA. In collaboration with Delaware's EPSCoR committee, the DESGC Director has become increasingly aware of multiple research opportunities at UD and at DSU which are aligned with NASA priorities.

*Action:* The amount of EPSCoR/RID funds which are supplied to the state of Delaware each year exceed by a factor of order 2 the largest amount which was ever awarded in any one year during the interval 2010-2015 to researchers under the DESGC/RID program. DESGC now considers that NASA's interests in RID in Delaware can be more effectively met by the NASA/EPSCoR/RID program, thereby freeing up more DESGC funds for scholarships and fellowships to STEM students, who have no other source of NASA funding in the state.

*Metric:* Continue to operate NASA/EPSCoR/RID in DE so that junior researchers in DE will continue to have access to RID funding to help jump-start their research program.

**Objective:** New research proposals. Increase the number of research proposals submitted by DESGC institutions in fields aligned with NASA's mission.

*Action:* Distribute announcements of NASA/EPSCoR Research/CAN so that more researchers in DE will be aware of opportunities for significant research funding in NASA-related fields to faculty at affiliate institutions.

*Metric:* At least one research proposal will be submitted each year from Delaware in response to NASA/EPSCoR research CAN.

**Category 3: HIGHER EDUCATION**

**Goal:** Use DESGC funding as leverage in academia to enhance the quality of course work in STEM-related fields on college campuses.

*Action 2:* Students can profit from the RockOn program at NASA/Wallops Flight Facility. DESGC will support attendance by Delawareans at the RockOn event each year.

*Metric:* At least 3 students/instructors should attend the RockOn program at NASA/Wallops each summer.

**Objective:** Undergraduate on-campus summer research program. Offer hands-on research opportunities to undergraduates on campuses of the DESGC. An important element in preparing

a student who may in future be interested to seek employment in a NASA-related position is to expose the student to the excitement of cutting-edge research in a STEM-G-related area. Summer programs, either on the local campus, or on another campus belonging to the DESGC, provide essential opportunities.

*Action:* Calls for Application for summer research positions are circulated consortium-wide as the opportunities arise

*Metric:* DESGC seeks to have at least one student from each of the affiliate research campuses, including our two affiliates in south-eastern PA, participate in summer research activities, either on his/her own campus, or elsewhere.

**Objective:** *Student research at NASA centers.* Exploit the high-quality research environment of a NASA center to offer hands-on research experiences in an off-campus setting to students at undergraduate and graduate levels.

*Action:* Calls for application to NASA for various summer research positions at Goddard Space Flight Center (e.g. NASA Academy) and other centers typically are announced by program managers at NASA in January. The response time is often short. Information about these will be promptly circulated by e-mail to all affiliate representatives, with a request that a ranked list of potential applicants be forwarded to the Director.

*Metric:* At least one student from Delaware should participate in a NASA center program each summer. 100% of all such students will report to the Annual DESGC Symposium.

**Objective:** *Student research at DE research centers.* Make available opportunities for students (undergraduate and graduate) to have hands-on research experiences at research centers in the state of Delaware.

*Action:* Calls for application for various summer research positions at Delaware Centers will be promptly circulated by e-mail to all affiliate representatives, with a request that a ranked list of potential applicants be forwarded to the Director. The DESGC Associate Directors and the Advisory Board will make the final selections. Each award is typically for \$4K.

*Metric:* At least one student from Delaware should participate in a DE Research center (Center for Composite Materials, Center for Remote Sensing, DE Biotechnology Institute) each summer. 100% of all such students will report to the Annual DESGC Symposium.

#### ***Category 4: K-12 (PRE-COLLEGE) EDUCATION***

**Goal:** To increase student awareness and access to education and career opportunities in aerospace, earth science, and supporting STEM disciplines.

**Objective:** *Contribute to professional development of K-12 teachers.*

*Action 1:* DESGC is committed to continuing support of a broad spectrum of teacher development programs which operate under the aegis of DASEF (Delaware Aerospace Education Foundation), founded and operated by Dr. Stephanie Wright.

*Action 2:* DESGC is committed to supporting teacher development programs at the University of Delaware in STEM-related fields. Significant leveraging of DESGC funds in this area is expected by collaborating NSF-funded projects on campus under the leadership of Associate Director Harry Shipman.

#### ***Category 5: GENERAL PUBLIC***

**Goal:** Support outreach activities which convey to the public, using the many successful programs that NASA operates, a sense of wonder about the universe in which we live.

**Objective:** *Build on the strengths of existing outreach programs*

Under the aegis of DASEF and ITEC, Dr. Stephanie Wright operates a number of successful outreach programs in the state of Delaware.

*Action:* DESGC is committed to increasing, to the extent possible at a time of reduced budgets, the funding support of DASEF and ITEC activities.

*Metric:* During FY2015-2018, DESGC will strive to achieve each year an increase in the annual funding to Dr. Wright's activities.

#### ***Category 6: EXTERNAL RELATIONS***

**Goal:** enhance the connections between the academic members of DESGC and other stakeholders in the educational enterprise in the state of Delaware.

**Objective:** *Expand contacts with industry*

DESGC has had working contacts with the E. I. DuPont Company, as well as with ILC Dover, since DESGC began. Expansion to include other industrial contacts would be helpful to DESGC, and to the students we serve. The Director of DESGC is committed to establishing contacts with industrial companies with the assistance of affiliate representatives.

*Action:* The DESGC Director has recently, with the assistance of Outreach Coordinator Dr. Stephanie Wright, established links with ATK Mission Defense and Controls, a company which makes engines for NASA rockets, and which has a plant that is only a few miles from the UD campus.

*Metric:* The DESGC Director will endeavor to incorporate at least one new industrial partner in the DESGC roster during the years 2015-2018.

#### **IV. MANAGEMENT**

The day-to-day running of the DESGC is shared by the Assistant to the Director (AD) and by the DESGC Director. Members of the Consortium meet once a year for an overview of the accomplishments and plans for future activities. Details of the matching funds which have been committed by each affiliate institution are provided to the AD in a timely fashion to assist in budget preparation each year.

The Director, the AD, and/or at least one of the Associate Directors, and/or a member of the DESGC Advisory Board, will attend every National Directors meeting, and every Mid-Atlantic Regional Meeting.

In the course of the current 3-year plan (2015-2018), there are no plans for DESGC to host the Mid-Atlantic Regional Space Grant meeting. According to present schedules, the next Regional meeting to be hosted in DE will not occur until 2020.

The Director's central emphasis for the 3-year interval 2015-2018 will be as follows:

- i. Continue to encourage and fund the excellent programs that are already in place in Delaware in areas of higher education, teacher development, and research;
- ii. Increase the participation in DESGC by all 2-year and 4-year colleges; throughout the state, by means of regular personal visits to faculty and administrators;
- iii. Continue to build on Delaware's successes as a NASA/EPSCoR state;
- iv. Raise the awareness of DESGC among minority programs on all affiliate campuses by personal visits to the administrators of those programs
- v. Continue to improve contacts between DESGC and members of the Delaware Department of Education to ensure that DESGC goals are aligned with state educational planning
- vi. Establish and/or broaden contacts with industrial enterprises whose goals overlap the NASA mission
- Vii. During the first year, request the guidance of the Advisory Board to select a new Director. The current Director will complete two 5-year terms of service in December 2015, and will step down so that new ideas can be imported into DESGC.