Washington NASA Space Grant Consortium
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PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The Washington Space Grant Consortium is a Designated Consortium funded at a level of $845,000 for fiscal year 2010.

PROGRAM GOALS

The overall objective of Washington NASA Space Grant Consortium is to provide high quality programs that align with the NASA Office of Education Outcomes and serve the needs of our state. WSGC seeks to enhance higher education opportunities for students seeking to pursue careers in the fields of science, technology, engineering and math (STEM); to enrich and improve STEM education at Washington's diverse pre-college, college, university and community learning centers; and to provide public outreach for NASA missions, and thereby strengthen the future workforce for NASA and our nation. To that end, our goals are as follows:

- To attract and retain high-achieving students, especially those underrepresented in the sciences, technology, engineering and mathematics, to space-related degree programs and career tracks supporting NASA's missions.
- To support the integration of research and education in NASA-related fields at the undergraduate and graduate levels.
- To support faculty interested in deepening ties to NASA research and the development of research infrastructure at consortium member institutions.
- To increase collaborative efforts of university scientists and students with industry leaders in aerospace-related programs.
- To enhance the teaching of science, technology, engineering and mathematics and to attract students to these fields of study through engaging informal and formal education programs based on NASA's missions on Earth and in space.
- To share the excitement and knowledge gained from NASA's missions with the general public.
- To strengthen collaborative efforts within the consortium as well as with industry, community, and governmental organizations to support NASA and WSGC goals and activities.

We provide here a narrative report on our progress toward last year's specific goals and metrics.

PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

OUTCOME #1: EMPLOY AND EDUCATE With the success of Whitworth University's WSGC summer internship program (the first two alumni from FY2008 are now pursuing graduate studies in mechanical engineering at the University of Washington), and the incorporation of WSGC-supported research on space propulsion into various courses, Whitworth faculty have gone on to use WSGC support to facilitate course development in engineering and physics. Last summer's interns installed an optics system on Whitworth's 14-inch telescope for use in introductory astronomy courses and student research. Through the new high-altitude balloon project, 16 students launched four science experiments to a height of 100,000 feet and incorporated the results into upper-division physics courses. Whitworth plans to utilize the balloon project and a WSGC-supported rocketry program in professional development for high school science teachers in underserved school districts in Eastern Washington.

OUTCOME #2: EDUCATE AND ENGAGE Since 2008, WSGC has supported Washington Aerospace Scholars (WAS), a statewide program for high school juniors, by recruiting students, mentors and teachers, providing student feedback from STEM professionals, and hosting university and college campus tours. The program engages students through an online NASA-designed curriculum and a six-day summer residency at the Museum of Flight, where students compete in hands-on engineering competitions and meet professionals in the field. In 2010, WSGC provided funding for 16 certified teachers to serve as year-round facilitators. WAS students and alumni who are now WSGC scholars met with NASA Administrator Charles Bolden during his 2011 visit to the Museum of Flight to talk about their experiences. Tracking shows WAS is successfully strengthening the state's STEM pipeline; when surveyed, more than half of the 167 responding alumni for the first two years were STEM majors attending a WSGC member school.

OUTCOME #3: ENGAGE AND INSPIRE Weatherfest, an interactive science and weather fair held in conjunction with the American Meteorological Society's annual meeting in January, provided WSGC with a unique chance to educate the public about the impacts of space weather through hands-on activities, instill a love for math and science in children of all ages, and connect the general public with NASA materials and opportunities. Through the Women of Weather (WOW) booth, we also supported hands-on activities aimed specifically at encouraging girls to pursue careers in science. Approximately 4,000 people attended the half-day event and 640 significant contacts were made with WSGC staff.

PROGRAM ACCOMPLISHMENTS

Outcome 1 Objectives: Higher Education contributions to the Development of STEM Workforce – Educate and Employ

SMART Goal #1: *Diversity - To attract and retain high-achieving students underrepresented in the sciences and engineering into higher education institutions statewide, to space-related degree programs and career tracks supporting NASA's missions.*

Metric 1.1: Award WSGC scholarships and research internships to minority students at or above 17%; enroll underrepresented minority students in higher education courses at or above the percentage of their undergraduate enrollment in the UW College of Engineering for the year.

Progress to date: Partially met. Of the 251 significant awards for scholarships and research internships, 14.11% went to underrepresented minority students, based on the number of the students who chose to indicate race. While we did not meet our goal of 17% enrollment in scholarships and research internships, we did match the enrollment percentage for our state, as per the National Center of Education Statistics Digest. Of the 809 students who were enrolled in our higher education courses, 14.31% were students who identified as underrepresented minority students, greatly exceeding our target of matching UW College of Engineering's 6.3% minority enrollment for the year.

Metric 1.2: Award WSGC scholarships and research internships to women undergraduates at or above 40%; enroll women in higher education courses at or above the percentage of their undergraduate enrollment in the UW College of Engineering for the year.

Progress to date: Met. Women undergraduates received 47.86% of our 234 significant awards to undergraduates for scholarships and research internships. Enrollment of women in our higher education courses was 33.75%, greatly exceeding the 19.5% enrollment of women in the UW College of Engineering.

Metric 1.3: Foster strong programs at our minority serving institutions including partnerships with other affiliates so they may tap into the state's research colleges while developing more opportunities for their students to participate in hands-on research.

Progress to date: Met. See below for Program Contributions to PART Measures: Minority-Serving Institutions.

SMART Goal #2: *Scholarships & Fellowships - To attract and retain high-achieving students statewide, especially those underrepresented in the sciences and engineering, to space-related degree programs and career tracks supporting NASA's missions.*

Metric 1.4: Continue WSGC's undergraduate scholarship program through its academic affiliates and partners with an increase of 30 scholarships to students statewide, raising the total number of participants from 60 to 90.

Progress to date: Met. In 2010, WSGC awarded 129 significant scholarships and fellowships at eight affiliate institutions: UW, WSU, CWU, NWIC, SCCC, WWU, EdCC and EvCC. Many of the awards included research participation.

Metric 1.5: Continue WSGC's graduate fellowship program at the state's two primary research universities (UW and WSU), with an increase of fellowships from four to seven.

Met. In 2010, WSGC awarded 17 graduate fellowships at UW and WSU.

Metric 1.6: Enhance support for students in community colleges and/or community college students with associate degrees transferring to four-year colleges, increasing from 10 to 20 scholarships to community college students.

Progress to date: Met. In 2010, WSGC awarded 27 scholarships to students at community colleges or transferring to four-year colleges, including 12 scholarships at our two new community college partners, Edmonds CC and Everett CC.

Metric 1.7: Achieve 95% retention in STEM disciplines of all scholarship awardees by 2010.

Progress to date: Met. Of the students who received significant support and were successfully tracked and took their next step in 2010, 97.14% remained in STEM fields Of the students who received significant support spanning FY2006 to FY2010 and who were successfully tracked, 95.66% are in STEM fields.

Metric 1.8: Establish regular communication with WSGC scholarship and fellowship alumni from all consortium institutions through our longitudinal tracking system and social networking sites. Target: 65% alumni tracked by the end of FY2014.

Progress to date: Met. WSGC continued its partnership with the National Space Grant Foundation to locate and track alumni from all of our higher education institutions. NASA requires tracking of all significant award recipients after 2005 and we have achieved nearly 98% compliance in this group. However, in an effort to more accurately ascertain the next step taken by our awardees after graduation, we have attempted to track alumni from 1991-2005 as well. In 2010, total active tracking participation peaked at a little over 50% before declining to the current level of 42.5%. This surge was due to strong one-time responses from pre-2006 alumni. To encourage continued alumni contact, we maintain a listserv (NASAlumni) specifically for distributing alumni news and career opportunities, publish a regular alumni update column in our newsletter and are reaching out through our Facebook page.

SMART Goal #3: *Research Infrastructure - To expand participation in existing WSGC-sponsored undergraduate research and NASA internships; to increase collaborative efforts of university scientists and students with industry leaders in aerospace-related program by establishing summer industry intern programs among all members of the consortium; to support the expansion of research opportunities for graduate and undergraduate students to work with STEM-field faculty across the state of Washington, particularly women and underrepresented minority students and faculty, as well as early career faculty; and to support teams in NASA-sponsored and/or aerospace activities and competitions.*

Metric 1.9*:* Continue to support an active WSGC-sponsored undergraduate research program within our higher education affiliates, increasing the number of undergraduate researchers from 60 to 90.

Progress to date*:* Met. WSGC made 118 research awards to undergraduate students at nine academic affiliates (UW, CWU, SCCC, SU, UPS, WWU, Whitman, Whitworth and WSU Vancouver). These include placements in private industry and at NASA Centers.

Metric 1.10: Continue support of our summer industry internship program with local companies involved in STEM research and expand the program when opportunities arise, with a target of four internships.

Progress to date*:* Met. In FY2010, we awarded three WSGC summer internships at Aerojet and one at Woodruff Scientific Inc.

Metric 1.11: Foster closer ties with our private sector partners through participation in at least one research symposium.

Progress to date*:* Met. All industry partners sent representatives to the WSGC annual reception and poster session. Simon Woodruff, founder of Woodruff Scientific Inc., presented the awards for participants in summer internships in private industry and at NASA centers. WSGC leadership continues to collaborate with Eagle Harbor Technologies on their two successful NASA Phase I SBIR proposals for the development of a micro-thruster for formation flying of multiple spacecraft and for space debris mitigation. In 2011, this collaboration will be expanded to include two new private industry internships.
Metric 1.12: Continue support of a summer NASA internship program and ensure access to students. Increase six NASA interns from partial to full funding**.**
Progress to date*:* Partially met. In FY2010, six students from WSGC higher education affiliates participated in research internships at NASA Centers. Five students were fully funded; for the sixth, we leveraged funding with the host center. Our annual NASA internship recruitment information session was attended by over 120 students in 2010 and included videoconferences with internship program representatives from Johnson Space Flight Center and NASA Academy-Ames Research Center.

SMART Goal #4: *Higher Education - Provide NASA competency-building education and research opportunities for faculty, researchers, and post-doctoral fellows; develop and expand participation in NASA-related courses for integration into STEM disciplines; provide NASA competency-building education and research opportunities to individuals to develop qualified undergraduate and graduate students who are prepared for employment in STEM disciplines at NASA, industry, and higher education.*
Metric 1.13: Support the integration of NASA-related research and education at the undergraduate and graduate levels through three or more classes that focus on results from NASA missions or provide experiential learning opportunities in aerospace. [Target: Develop 2 new courses for a total of 5 courses.]
Progress to date*:* Met. In FY2010, UW ESS 102 (Space & Space Travel) was offered in Fall and Winter Quarters; ESS 205 (Access to Space) was offered in Spring Quarter. Enrollments were 372 and 43 respectively. ESS 472/575 (Rockets and Instrumentation), was offered Winter Quarter, with an enrollment of 31. UW ESS 106 (Living with Volcanoes), a new WSGC collaboration, was offered Winter Quarter with an enrollment of 179. At Whitworth University, PS 353 (Advanced Dynamics), a course utilizing data from their WSGC-supported rocketry program, was added Fall Semester.
Metric 1.14: Augment the opportunities for students at minority serving institutions and community colleges to participate in opportunities at state's larger colleges including hands-on courses/research internships and the NWIC rocket program. [Target: 4 MSI students in hands-on research annually].
Progress to date*:* Met. As detailed in Program Contributions to PART Measures: Minority-Serving Institutions, WSGC supported the NWIC rocket team's development of entries for and participation in two competitions and a NASA workshop. SCCC, a community college and majority-minority institution, placed nine students in undergraduate research experiences.
Metric 1.15: Support at least one undergraduate team activity each year, on average, over the five–year period**.**
Progress to date*:* Met. In FY2010, we co-funded two teams in the 2010 Microgravity University Reduced Gravity Student Flight Opportunities Program. One was from a WSGC member school; the other was coordinated by NASA's Motivating Undergraduates in Science and Technology (MUST) project, a joint partnership among the Hispanic College Fund, the United Negro College Fund Special Programs and the Society for Hispanic Professional Engineers.

Outcome 2 Objectives: Elementary and Secondary Schools attract and retain students in STEM Disciplines – Engage and Educate.

SMART Goal #5: *To enhance teaching of STEM topics at a K-12 level and attract students to these fields through engaging informal and formal education programs based on NASA themes and materials; to provide courses and workshops to improve teachers' mastery of STEM disciplines and through those projects help Washington students (especially those from underserved communities) meet state and national standards; to provide hands-on research experiences for pre-service teachers in STEM fields.*
Metric 2.1: Support an additional 10 technical or professional development workshops for in-service teachers, for a total of at least 31 workshops, with at least one workshop in a rural area serving a traditionally underserved population.
Progress to date: Met: To date, forty-three professional development workshops have taken place and additional workshops are scheduled before the end of the grant year. NCESD conducted 34 professional development workshops in underserved rural communities with high Hispanic and Native American populations, reaching 346 in-service teachers, with 60% of the workshops aimed at middle school teachers. Other workshops for teachers were offered through WSTA, MoF and PSC's Space Odyssey van.
Metric 2.2: Provide research experiences for a minimum of seven pre-service teachers in STEM fields each year.
Progress to date: Met. Future K-12 teachers in the Science, Mathematics, and Technology Education (SMATE) Program at Western Washington University complete both a major in their STEM disciplines and either the elementary or secondary education program. The eight participants created a poster describing their research and participated in a seminar to discuss how their research experiences will improve their inquiry-based educational methods and how it will relate to their future teaching.
Metric 2.3: Collaborate with the Washington Aerospace Scholars (WAS) program to expand opportunities for high school juniors with STEM career interests and enhance program capacity by supporting the training of 16 in-service teachers/mentors to remain with WAS year-round.
Progress to date: Met. In FY2010, we supported the recruitment of 11 state certified teachers to mentor 287 students in the WAS program's online NASA curriculum. The teachers have completed WAS facilitator training and will serve as year-round mentors to the participants. An additional five teachers will complete training and be added to the program as it gears up for the summer residency session at the Museum of Flight.
Metric 2.4: Support teacher participation in national conferences focused on NASA science mission results or participation in

NASA-sponsored science competitions. Support up to five in-service teachers/K-12 teacher-student teams, an increase of three.
Progress to date: Met. WSGC supported two teacher-student teams and three professional development opportunities in FY2010. We co-funded a team from Ballard High School in Seattle to fly an experiment aboard the Shuttle Endeavour as part of the Student Spaceflight Experiments Program and a rocket team from Ingraham High School in Seattle to compete in NASA's Student Launch Initiative. We continue to support professional development at Key Peninsula Middle School, the state's first NASA Explorer School. In FY2010, we co-funded attendance for five teachers at two professional development workshops on space-related topics. We also provided travel funds for a teacher to accept a NASA invitation to attend the STS-133 launch and pre-launch education activities.
Metric 2.5: Produce an electronic newsletter twice monthly during the school year to connect educators, informal and formal, with relevant NASA-related materials, curriculum ideas, Internet links and other STEM resources.
Progress to date Met. The WSGC e-letter reaches 938 subscribers, including secondary distribution networks such as the Washington Science Teachers Association listserv (1,600 subscribers) and the Edmonds Homeschool Resource (130 subscribers).

Outcome 3 Objectives: Informal Education – Build Strategic Partnerships and Linkages.

SMART Goal #6: *To share the excitement and knowledge gained from NASA's missions with the general public; to strengthen collaborative efforts within the consortium as well as with industry, community, and governmental organizations to support NASA and WSGC goals and activities; to provide informal education support resources that use NASA themes and content to enhance participant skills and proficiency in STEM disciplines and inform participants about STEM career opportunities; and to support Washington's museums and science centers in their efforts to engage the public in major NASA events*.
Metric 3.1: Utilize print and electronic publications to generate excitement about NASA's missions, publicize scholarships, fellowships and research opportunities, and foster collaboration among consortium institutions.
Progress to date: Met. One newsletter was printed during FY2010 and distributed to approximately 5,000 subscribers. In keeping with our increased emphasis on electronic publishing and social networking sites, we launched a redesigned website in February 2011. We also continue to relay NASA-related opportunities to our members and targeted groups (students, alumni, the general public, etc.) via e-mail lists, Facebook and our regular e-letter for educators.
Metric 3.2: Work with informal organizations such as museums to provide at least one relevant science activity each year at a major event or exhibit.
Progress to date: Met. Two years ago, WSGC successfully collaborated with UW's Applied Physics Laboratory on an E/PO proposal to NASA's Science Mission Directorate for support for Polar Science Weekend at the Pacific Science Center. During the four-day event in March 2011, WSGC maintained an exhibit highlighting STEM careers and providing information regarding NASA and Space Grant sponsored opportunities for Washington state students. Approximately 334 significant contacts were made. Other collaborations are listed below under Metric 3.3.
Metric 3.3: Provide materials for museum and public events that showcase NASA missions at least once a year and regularly publicize NASA-related programs at WSGC museum affiliates via our newsletter, educator e-letter and mailing lists to students. Provide materials for at least one new informal education event.
Progress to date: Met. Materials were distributed at the Museum of Flight's Educator Open Houses, Astronomy Night and Space Camp; PSC's Polar Science Weekend; Expanding Horizons and IGNITE (events that encourage middle school students and girls to pursue STEM careers); and Seattle CityClub's STEM-related panels. Materials were also provided to the Louis Stokes Alliance for Minority Participation (LSAMP) conference at Washington State University. Through the WSGC and WOW booths at Weatherfest, the interactive science and weather fair held in conjunction with the American Meteorological Society meeting, we distributed more than 300 CDs and DVDs such as Journey to the Stars, as well as NASA curriculum packets (for homeschool families and teachers), posters, lithographs and STEM career information. In March, NASA/WSGC materials were distributed among the 160 participants at the 2011 National Association of Rocketry Conference (NARCON), which included as keynote presenter astronaut Hoot Gibson.
Metric 3.4: Work more closely with consortium members to assure coherence in WSGC programs, to share expertise and resources, and to bring together students and faculty from all institutions to present their research. [Target: One face-to-face meeting annually.]
Progress to date: Met. In FY2010, members collaborated in selecting candidates for internships, advertising student opportunities and events, developing curriculum and other WSGC projects. Members also collaborated on additional funding opportunities such as a NASA Summer of Innovation proposal. Our annual reception and poster session drew participation and/or attendance by students and faculty from more than half of WSGC's higher education affiliates, with a display of 75 posters by WSGC student researchers, graduate fellows and interns. A statewide planning meeting for WSGC partners and members was held January 31at the Museum of Flight and an intranet was included in the new website to encourage further conversation among the membership.

PROGRAM CONTRIBUTIONS TO PART MEASURES

- **Longitudinal Tracking:** Current data for FY2010 show that WSGC made 256 total awards. Of those, 251 were significant awards, including 129 significant awards in the Fellowship/Scholarship category and 122 in the Higher Education/Research Infrastructure category. Of the students who chose to indicate race, 34 are from underrepresented groups. During the FY2010 program year, 35 students supported from FY2006-FY2010 funds took their next step: 20 went to graduate school in STEM disciplines, 1 accepted a STEM position at a NASA contractor, 9 accepted STEM positions in industry, 1 accepted a STEM position in K-12 academia, 3 accepted STEM positions in academia and 1 went into a non-STEM field. For all students who were significantly supported in the period spanning FY2006-FY2010, 84 went to graduate school in STEM disciplines, 7 accepted STEM positions at NASA contractors, 38 accepted STEM positions in industry, 1 accepted a position at NASA, 5 accepted a STEM position in K-12 academia, 19 accepted STEM positions in academia and 7 went into non-STEM fields.
- **Course Development:** In FY2010, WSGC supported revisions to one UW course and four Whitworth courses. The three-credit UW introductory course, ESS106 (Living with Volcanoes), now utilizes online volcano monitoring data from a NASA/USGS

collaboration, the Volcano Exploration Project: Pu`u `O`o (VEPP). WSGC provided funding for the instructor to attend VEPP course development training. At Whitworth, the results from student-built, high-altitude balloon experiments supported by WSGC have been incorporated into the following four-credit, upper division physics classes: PS 353 (Advanced Dynamics); PS 363 (Thermodynamics); and PS 451 (Electricity & Magnetism I). Data from the WSGC-supported rocketry program is also incorporated into PS 353 (Advanced Dynamics). These revisions are intended to introduce upper-level physics students to the interdisciplinary areas of atmospheric and near-space science.

- **Matching Funds:** The ratio of funds leveraged by NASA funds, including only non-federal sources, is 1.01, higher than the required amount of 0.75. The ratio of funds leveraged by NASA funds, including both non-federal and other federal sources, is 1.06.
- **Minority-Serving Institutions:** WSGC's tribal college affiliate, Northwest Indian College, received $50,000 NASA funding and provided matching funds of $15,000 for scholarships and research projects, including support of their rocketry program. WSGC's majority-minority academic affiliate, Seattle Central Community College, received $25,000 NASA funding and provided matching funds of $25,000 for scholarships and research awards. These institutions have reported that 23 student awards were made with FY2010 funds. WSGC continues to concentrate on developing ways for its minority-serving institutions to tap into the state's research colleges while accomplishing our SMART goals of providing opportunities for hands-on research and fostering affiliate partnerships. In 2010, WSGC funded NWIC's participation in the NASA High Powered Rocketry workshop in Utah. Travel funds are being provided for their team to compete in the University Student Launch Initiative (USLI) in April and the 2011 First Nations Tribal College Rocket Competition. In our continuing effort to strengthen the STEM pipeline, WSGC coordinated the team's outreach participation in UW's Native Youth Enrichment Program for urban students in grades 7-10. A WSGC associate director also continues to serve on the oversight board for Seattle Central Community College's NSF-STEP-funded program, *Ready! Set! Transfer!*, which targets students in developmental math classes and through mentoring, tutoring and group activities, prepares them for STEM majors at four-year schools. The NWIC rocket team and two students enrolled in NWIC's bachelor of science degree program in Native Environmental Science presented the results of their research at the WSGC annual reception and poster session. Participants in SCCC Undergraduate Research Experiences (SURE) also presented at the UW Undergraduate Research Symposium.

IMPROVEMENTS MADE IN THE PAST YEAR

Over the last few years, WSGC has made efforts to expand participation in Space Grant across Washington state, and across all levels of higher education. In FY2010, Edmonds Community College and Everett Community College joined WSGC as partners, awarding a total of 12 scholarships their first year. Partners such as these participate in the support of a small number of students or teachers. Because the size or scope of the partner's program is limited, its funding is provided directly by the lead institution (no subcontract). Awards are based on a competitive process dependent on available funding. All educational partners (and their students) receive NASA mailings and are invited to participate in WSGC events. Partners who show a strong level of participation and commitment to NASA goals and objectives may be invited to become WSGC members. In an effort to increase communication among members and partners, an intranet was included in the redesign of the WSGC website. This new tool provides the WSGC community with a way to share resources such as recruiting materials and presentations. It should also streamline the reporting process,

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

WSGC is comprised of 14 member institutions and eight industry and educational partners, which are described below:

Higher Education

- *University of Washington*, the lead institution, is a major research university and receives over $1 billion annually in research grants and contracts.
- *Central Washington University*, a four-year public university serving Central Washington, with a main campus in Ellensburg and six off-site centers.
- *Heritage University*, a Hispanic-serving institution (HSI) located within the Yakama Nation reservation in central Washington.
- *Northwest Indian College* (NWIC), a tribal college in northern Washington,
- *Seattle Central Community College* (SCCC), an urban majority-minority institution.
- *Seattle University*, the largest independent university in the Pacific Northwest.
- *University of Puget Sound*, a four-year liberal arts college located in Tacoma.
- *Washington State University* (WSU), also a major research university and the state's land grant university.
- *Western Washington University*, home to the Science, Mathematics, and Technology Education (SMATE) program for pre-service teachers and education research.
- *Whitman College*, a private liberal arts school located in central Washington.
- *Whitworth University*, a private liberal arts school located in eastern Washington.

K-12

- *North Central Educational Service District* (NCESD), the largest ESD in the state, serving a mostly rural, Hispanic, and economically disadvantaged population.

Informal Education

- *Museum of Flight* (MoF), a provider of informal education and training for pre-college students and in-service teachers.
- *Pacific Science Center* (PSC), a provider of informal education and training for pre-college students and in-service teachers.

WSGC industry partners within the field of aeronautics and astronautics are Aerojet and Tethers Unlimited, Inc; partner Woodruff Scientific, Inc. is focused on new energy technologies. Educational partners are Edmonds Community College (EdCC), Everett Community College (EvCC), North Seattle Community College (NSCC), three two-year colleges serving north Seattle and the neighboring suburbs; Washington State University Vancouver (WSU Vancouver), a non-residential research university serving southwestern Washington; and Washington Science Teachers Association (WSTA), a nonprofit professional group dedicated to advocating and promoting quality secondary education in Washington.