SCIENCE, AERONAUTICS AND TECHNOLOGY
FISCAL YEAR 1998 ESTIMATES
BUDGET SUMMARY

ACADEMIC PROGRAMS
MINORITY UNIVERSITY RESEARCH AND EDUCATION PROGRAM

SUMMARY OF RESOURCES REQUIREMENTS

MINORITY UNIVERSITY RESEARCH AND EDUCATION PROGRAM	FY 1996	FY 1997	FY 1998
Historically Black Colleges and Universities	28,000	31,300	25,500
University Research Center Awards	(4,100)	(2,100)	(400)
Institutional Research Centers Awards	(3,300)	(3,300)	(3,300)
Principal Investigator Awards	(6,900)	(7,900)	(5,700)
Math, Science, and Education Awards	(13,700)	(13,500)	(16,100)
Partnership Awards	(--)	(4,500)	(--)
Other Minority Universities	20,400	23,500	15,400
University Research Center Awards	(1,700)	(1800)	(400)
Institutional Research Centers Awards	(2,700)	(2,200)	(2,300)
Principal Investigator Awards	(6,600)	(7,300)	(4,800)
Math, Science, and Education Awards	(9,400)	(7,800)	(7,900)
Partnership Awards	(--)	(4,400)	(--)
Total	48,400	54,800	40,900

Distribution of Program Amount by Installation	FY 1996	FY 1997	FY 1998
Johnson Space Center	1,069	3,138	930
Kennedy Space Center	734	1,439	930
Marshall Space Flight Center	1,244	1,465	1,150
Stennis Space Center	267	1,514	900
Ames Research Center	647	4,241	3,300
Langley Research Center	1,991	2,524	1,680
Lewis Research Center	1,320	1,965	930
Dryden Flight Research Center	122	1,162	480
Jet Propulsion Laboratory	1,784	2,078	1,050
Goddard Space Flight Center	17,834	35,274	29,550
Headquarters	21,388	--	--
Total	**48,400**	**54,800**	**40,900**

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ACADEMIC PROGRAMS
MINORITY UNIVERSITY RESEARCH AND EDUCATION PROGRAM

PROGRAM GOALS

The Minority University Research and Education Programs (MUREP) focuses on expanding and advancing NASA's scientific and technological base through collaborative efforts with Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU), including Hispanic-Serving Institutions (HSI) and Tribal Colleges and Universities (TCU). NASA's outreach to HBCU's and OMU's in FY 1998 will build upon the prior years' investments in HBCU and OMU research and academic infrastructure. Through sufficient infrastructure-building support, exposure to NASA's unique mission and facilities, and involvement in competitive peer review and merit selection processes, HBCU's and OMU's will be able to contribute significantly to the Agency's strategic goals and objectives. These contributions include the education of a more diverse resource pool of scientific and technical personnel who will be well prepared to confront the technological challenges to benefit NASA

and the Nation. In addition to the Federal mandates for HBCU's and OMU's, the strategic goals that guide NASA's MUREP are: (1) To foster research and development activities at HBCU's and OMU's which contribute substantially to NASA's mission; (2) To create systemic and sustainable change at HBCU's and OMU's through partnerships and programs that enhance research and educational outcomes in NASA-related fields; (3) To prepare faculty and students at HBCU's and OMU's to successfully participate in the conventional, competitive research and education process; and (4) To increase the number of students served by HBCU's and OMU's to enter college and successfully pursue and complete degrees in NASA-related fields.

STRATEGY FOR ACHIEVING GOALS

NASA employs a comprehensive and complementary array of strategies to achieve these goals for both HBCU's and OMU's. These strategies include: (1) Working closely with NASA's Strategic Enterprises, other government agencies, and interested parties to develop new research and education collaborations and partnerships to build infrastructure in NASA-related research areas; (2) Providing annual opportunities for HBCU's and OMU's to participate in competitive peer review and merit selection processes for research and education awards; (3) Encouraging and providing opportunities for faculty to conduct NASA research early in their careers; (4) Providing incentives for students to enter and remain in mathematics, science and technology disciplines; and (5) Developing and implementing evaluations to assess the effectiveness of the programs and to improve program delivery and results.

A strategy used to expand HBCU and OMU involvement in competitive peer review processes and to ensure the relevance of research conducted by HBCU's and OMU's is to involve NASA Strategic Enterprises early in the development of announcements of opportunity (AO) for research. Once Headquarters issues the AO, NASA Installations are involved in providing advice to prospective grantees, in conducting peer reviews of proposals, and in providing funding recommendations to the Office of Equal Opportunity Programs (OEOP) and representatives from the Strategic Enterprises. Once Headquarters makes selections, the research is returned to the nominating NASA Installation(s) or Jet Propulsion Laboratory (JPL) for grant award and technical management of the award. OEOP provides policy direction, some funding, and oversight of the research conducted at HBCU's and OMU's.

The successful deployment of these strategies has resulted in the establishment of five different programmatic award categories which apply equally to the HBCU and OMU Programs. Selections for these awards are made mostly through the competitive peer review and merit selection processes. These awards include:

- University Research Center Awards;
- Institutional Research Awards;

- Individual Principal Investigator's Research Awards;
- Awards for Mathematics, Science, Engineering and Technology (MSET) Education Initiatives; and,
- Partnership Awards.

The Partnership Awards were established in FY 1997 in response to Congressional direction included in the Conference Report accompanying the FY 1997 VA-HUD-Independent Agencies Appropriation Law (P.L. 104-204) specifying that additional funds be used for "...education programs which expand opportunities and enhance diversity in the NASA sponsored research and education community...". Selections for the Partnership Awards will be divided equally between the HBCU and OMU Programs.

Efforts will continue to ensure that HBCU's and OMU's are knowledgeable of and responsive to the Agency's efforts to institute program performance reform, to set specific program goals, measure program performance against those goals, and report publicly on their progress. These efforts should continue to enable HBCU's and OMU's to institute more effective planning, budgeting, program evaluation and fiscal accountability for NASA awards and funding. These collaborative efforts should enhance the effectiveness of NASA's HBCU and OMU Programs, and improve program outcomes, service quality, and customer satisfaction.

NASA Strategic Enterprises and Program Offices continue to contribute financially and technically to the success of the Minority University Research and Education Program. In FY 1996 and again in FY 1997, they have made available $20.8M to support competitively selected research awards at HBCU's ($12.8M) and OMU's ($8.0M). Additionally, more than 98 technical personnel from across the Agency were involved in on-site reviews, informational forums and in providing on-site research activities for faculty and students from HBCU's and OMU's at NASA Installations and JPL.

During FY 1998, NASA MUREP will continue to focus on its strategic goals and strategies to integrate mission-focused research, technology transfer, and education at HBCU's and OMU's. Increased emphasis will be placed on partnership awards that leverage NASA's total research investment in higher education institutions and aerospace industry. Plans for new awards within the other designated award categories are dependent upon the number of expiring awards. Consequently, it is forecasted that opportunities will be provided for new Individual Principal Investigator's Research Awards and Awards for MSET Education Initiatives. In FY 1998, program efficiencies in the math and science awards categories are expected to result in an increase in the number of students served. The financial investment of $20.8M by NASA Strategic Enterprises and Program Offices is expected to remain constant and their involvement and accountability for the research conducted at HBCU's and OMU's is expected to significantly increase in FY 1998.

MEASURES OF PERFORMANCE

Metrics for NASA Minority University Research and Education Programs are being continually improved. Evaluations of individual awards within competitive MUREP award categories and for unsolicited awards continue to be performed, as succinct metrics are being developed to measure program outcomes, that can be aggregated both across and within award categories for the HBCU and OMU Programs.

Since FY 1994, a key priority has been to move from collecting data on just individual grant awards, to establishing key outcomes and collecting relevant data on HBCU and OMU research and education activities to measure progress in achieving those outcomes. Data has been collected on the first competitively selected individual principal investigator award recipients, the first selected undergraduate student researcher award recipients, the 1995 graduate student researcher award recipients, and the 1994 and 1995 University Research Centers performance. Based on the experience gained from these instruments, a Uniform Outcomes Data collection process is being instituted in FY 1997 for all education and research awards. The objectives are to establish uniform metrics for all NASA MUREP awards and to provide compact instruments for uniform collection of data keyed to those metrics. These metrics will reduce the collection of data to the minimal amounts possible, emphasize outcomes over processes, and be applicable to any project. They will be aggregated both horizontally and longitudinally, and they will allow adjustable benchmarking standards to be applied. The data will be collected electronically using the Internet, and a single annual collection of data will be used to provide the information necessary for comparative assessments of HBCU and OMU projects, and annual MUREP performance reports, including those required by the White House Initiative Offices on HBCU's, Educational Excellence for Hispanic Americans, and Tribal Colleges and Universities. Two instruments have been devised, one for basic research awards and the other for education awards.

These metrics for research and education programs will clearly indicate the impact of NASA's MUREP on the scientific and technological base for NASA and the Nation, while the uniform outcomes approach to collecting data will minimize the reporting burden on award recipients.

HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

BASIS OF FY 1998 FUNDING REQUIREMENT (Thousands of Dollars)	FY 1996	FY 1997	FY 1998
University Research Centers	4,100	2,100	400
Institutional Research Awards	3,300	3,300	3,300
Principal Investigator Awards	6,900	7,900	5,700
Math Science and Education Awards	13,700	13,500	16,100
Partnership Awards	---	4,500	---
Total	**28,000**	**31,300**	**25,500**

PROGRAM GOALS

NASA's HBCU program is the Agency's direct response to Executive Orders 12232, 12876, and 12928, which require all Federal Agencies to strengthen the capacity of HBCU's to provide quality education, and to participate in and benefit from federal programs. This program aims to expand the research capabilities of selected HBCU's with emphasis on building research infrastructure and providing exposure to the NASA peer review process in order to increase opportunities for HBCU faculty and students to participate in and benefit from NASA's research and education programs.

STRATEGY FOR ACHIEVING GOALS

HBCU's were involved in NASA's mission before man set foot on the Moon in 1969. In 1980, President Jimmy Carter signed Executive Order 12232 which established a Federal program "...to strengthen and expand the capacity of HBCU's to provide quality education." Executive Orders issued by Presidents Ronald Reagan and George Bush strengthened this program. NASA's current initiatives for HBCU's are based upon two recent Executive Orders. Executive Order 12876, signed November 1, 1993, mandates that agencies "..advance the development of human potential, to strengthen the capacity of HBCU's to participate in and benefit from federal programs to achieve an increase in the participation by HBCU's in federal programs." Executive Order 12928, signed February 16, 1994, directs Federal agencies to promote procurement with "...Historically Black Colleges and Minority Institutions." NASA employs a comprehensive strategy to accomplish the HBCU program goals. This approach is

The NASA HBCU University Research Centers (URC) Awards began in FY 1991 with the establishment of seven HBCU Research Centers by the Headquarters Office of Space Science and Applications; the Office of Aeronautics; the Office of Space Flight; and the Office of Equal Opportunity Programs. The program goals are to achieve a broad-based, competitive aerospace research capability among the Nation's HBCU's that will: foster new aerospace science and technology concepts; expand the Nation's base for aerospace research and development; develop mechanisms for increased participation by faculty and students of HBCU's in mainstream research; and increase the production of students, who are US citizens and who have historically been underrepresented, with advanced degrees in NASA-related fields. Four additional HBCU Research Centers were added as a result of a second competition in FY 1996. The two groups of URC's are referred to as "Group 1" and "Group 2," respectively. Funding for the HBCU research centers is primarily provided by the Strategic Enterprises.

GROUP 1 HBCU Research Centers:

University	**Research Focus**	**Lead NASA Installation**
Clark Atlanta University	High Performance Polymers and Composites (HiPPAC) Center	Lewis Research Center
Fisk University	Center for Photonic Materials and Devices	Marshall Space Flight Center
Florida A&M University	Center for Nonlinear and Nonequilibrium Aeroscience	Langley Research Center
Hampton University	Center for Optical Physics	Langley Research Center
Howard University	Center for the Study of Terrestrial and Extraterrestrial Atmospheres	Goddard Space Flight Center
North Carolina A&T State University	Center for Aerospace Research	Langley Research Center
Tuskegee University	Center for Food and Environmental Systems for Human Exploration of Space	Johnson Space Center

GROUP 2 HBCU Research Centers:

University	Research Focus	Lead NASA Installation
Alabama A&M University	Center for Hydrology, Soil Climatology and Remote Sensing	Marshall Space Flight Center
Morehouse School of Medicine	Space Medicine and Life Sciences Research Center	Johnson Space Center
Prairie View A&M University	Center for Applied Radiation Research	Johnson Space Center
Tennessee State University	Center for Automated Space Science	Goddard Space Flight Center

In FY 1996, the Group 1 HBCU research centers were invited to propose for a second 5-years of funding at reduced levels. This opportunity to continue was offered in recognition of the experience gained from similar efforts at the National Science Foundation which showed that a 10-year period is necessary for new research centers to establish a base firm enough to become self-sustaining. It also allowed an opportunity to subject the Group 1 URC's to a substantial evaluation process by review teams of NASA technical managers and external university experts, who had not previously been directly involved in the URC Program. As a result, all of these HBCU research centers were deemed eligible to continue being funded for a second 5 years.

In order to foster closer ties between the HBCU research centers and NASA, a Lead NASA Installation has been designated for each URC. Beginning with the FY 1997 renewals, the Lead Installations will become responsible for directly managing the URC's cooperative agreements, and for increasing the HBCU's involvement in ongoing NASA research and development activities. Collaborations with other NASA Installations, industry, and other universities will continue to be strongly encouraged. The HBCU Research Centers, along with the OMU research centers, have formed the National Alliance of NASA University Research Centers (NANURC). This Alliance has established an annual National Conference of the University Research Centers, created pathways for developing greater collaborations between the University Research Centers, and is exploring avenues for increasing the number of advanced degrees being awarded to underrepresented minority students. NASA is strongly supportive of this concept and is actively working with the Alliance to further develop and strengthen their organization.

The goal of the HBCU Institutional Research Awards (IRA) is to improve academic, scientific and technology infrastructure and broaden the NASA-related science and technology base at

IRA (Network Resources and Training Sites [NRTS]) were open to HBCU's. The IRA (NRTS) award is designed to improve the in-house capability of HBCU's to electronically access science data and computational resources; to develop mechanisms to support, sustain and evolve the network infrastructure of the targeted universities and colleges; and to make HBCU's more effective in the competitive process for NASA and other science, engineering and technology funding opportunities. IRA awards provide for the acquisition of research equipment and equipment essential to Internet connectivity.

The strategies for achieving the IRA (NRTS) goals include: (1) designating a lead HBCU as an NRTS; and (2) holding the lead HBCU accountable for providing internet connectivity to other HBCU's and/or OMU's and public schools, and for training students, faculty and teachers to build computers, maintain and effectively utilize the internet to compliment teaching and research collaborations and delivery. The lead NASA Installation, Goddard Space Flight Center (GSFC), manages the IRA (NRTS) under the auspices of GSFC's Minority University - Space Interdisciplinary Network (MU-SPIN) Program. The Offices of Equal Opportunity Programs, Space Science, and Mission to Planet Earth collaboratively provide funding and oversight for the GSFC MU-SPIN Program.

NASA Headquarters Program Offices, NASA Installations and JPL support IRA programs through direct funding, use of their facilities, and commitment of their personnel to serve on Technical Review Committees (TRC) and assist in other facets of program implementation. Students and principal investigators involved in IRA (NRTS) spend time on-site at the Installations and JPL throughout the year.

The goal of the HBCU Principal Investigator (PI) Awards for Research is to provide faculty at HBCU's early in their careers, with an opportunity to integrate the research and education components with the unique mission requirements of a specific NASA Installation or JPL. By involving HBCU faculty and students, the Agency hopes to increase the interest of traditionally underrepresented communities in the Agency's mission and enhance a broader array of America's citizenry in the NASA-sponsored research community.

The primary strategy for implementing the PI Awards for Research is through a competitive peer review and merit selection process in collaboration with the Strategic Enterprises, NASA Installations and JPL. Other strategies include: (1) Have discipline-related personnel at Headquarters and the NASA Installations and JPL be responsible for serving as points of contact for faculty interested in pursuing an award in this category; (2) Place responsibility for conducting the technical evaluations and making recommendations to Headquarters for funding consideration on the interested NASA Installation or JPL; (3) Provide funding to the nominating NASA Installation or JPL to make PI Awards for Research; and (4) Hold the NASA Installation or JPL responsible for managing the awards.

Under this category (PI), each fiscal year HBCU's are invited to submit proposals for the

Faculty Awards for Research (FAR). The FAR provides for competitive peer review selection of outstanding and promising engineering, physical and life science-tenured and tenure-track faculty at minority institutions early in their academic careers who are capable of contributing to the Agency's research objectives and who have limited past NASA research grant experience. This award provides faculty members with sufficient research support and exposure to the NASA peer review process to enable them to demonstrate creativity, productivity, and future promise in the transition toward achieving competitive awards in the Agency's mainstream research processes.

The HBCU Mathematics and Science Awards focus on strengthening the capacity of HBCU's to provide excellence in mathematics, science, engineering and technology (MSET) training while increasing the participation and achievement of disadvantaged students in MSET fields at all levels of education.

MSET Awards contribute to the national education goals by supporting educational outreach projects at HBCU's that increase the number and strengthen the skills, knowledge, and interest of students in mathematics, science, and technology-based academic programs. MSET awards, which consist of both unsolicited awards and solicited awards such as the NASA Precollege Awards for Excellence in Mathematics, Science, Engineering and Technology (PACE/MSET), will accomplish the following:

- Provide students with the necessary academic preparation and motivation to successfully complete challenging college preparatory MSET courses.
- Heighten students' interest and awareness of career opportunities in MSET fields.
- Expose students to the NASA mission, research and advanced technology through role models, mentors, and participation in research and other educational activities.
- Provide scholarships, fellowships, internships, research opportunities in NASA-related fields and other supportive services for undergraduate and graduate students, historically underrepresented in NASA related disciplines.
- Expand the number of teachers and strengthen their MSET skills to better prepare them to teach in middle and high schools that have substantial enrollments of disadvantaged students.

In addition to the award categories listed above, the OEOP has initiated a new program of Partnership Awards to "expand opportunities and enhance diversity in the NASA sponsored research and education community...(and) achieve a balance between the proportion of NASA funding received by minority institutions of higher education and other institutions of higher education." One of the goals of the Partnership Awards is to strengthen NASA Installations' and JPL's partnerships with HBCU's through projects which are unique and innovative, which fall outside of the usual MUREP competitive programs, and which have high potential for long-term support from other sources.

The NASA Installations and JPL have been invited to partner with Presidents of Minority Universities to submit concept papers to Headquarters for competitive review and selection in three different categories: research; education; or combination research and education. Selected concept papers are expected to culminate in an award to a HBCU. All concept papers must be responsive to the Agency's strategic direction; the Federal mandates related to HBCU's; and the NASA MUREP goals.

NASA has established Technical Review Committees (TRC) to provide technical guidance and on-site reviews to recipients of Institutional Research Awards and Research Center awards. NASA promotes collaboration between its HBCU-funded programs, the Installations and JPL; and with entities outside of NASA. Institutions are encouraged to seek funding through NASA's traditional opportunities, as well as other government agencies and private sources. This is done in an effort to promote future sustainability. Research Centers, IRA's and PI awards require substantial undergraduate and graduate student involvement in research projects. The mathematics and science awards are normally managed by personnel at the NASA Installations and JPL.

NASA Headquarters Program Offices, NASA Installations and JPL support the HBCU program through direct funding, use of their facilities, and commitment of their personnel to serve on TRC's and assist in other facets of program implementation. Numerous students and PI's from HBCU's spend time on-site at the Installations and JPL throughout the year.

MEASURES OF PERFORMANCE

Progress towards achieving HBCU program goals is monitored through assessing the research involvement and productivity of faculty and students in NASA programs at HBCU's. The following data reflects participation in NASA's MUREP for FY 1995 awards:

- 339 faculty-level investigators were involved in NASA-related research awards for Research Centers, Institutional Research Awards, Faculty Awards for Research and other awards to individual principal investigators;
- 291 graduate and 489 undergraduate students were involved in NASA-related research;
- 212 refereed papers or book chapters were published and 382 presentations at research conferences or seminars;
- $10.6 million of research funding was obtained from other sources by the seven HBCU Research Centers; and
- 6,700 teachers and students in summer MSET enrichment and prefreshman activities, and in Saturday Academies during the academic school year.

The metrics devised for the Uniform Outcomes Data instruments previously described were modeled on the outcomes data instruments developed for monitoring URC performance. Summary performance data is collected annually using these instruments. Each URC is

monitored by a NASA TRC which makes an annual site visit to the university campus. For the Group 1 URC's, special review teams were assembled during FY 1996 to perform independent evaluations in conjunction with the URC 5-year continuation proposals. These teams were uniformly enthusiastic about the quality of research work being conducted and the level of student achievements.

A final summary of accomplishments over the first 5 years is not yet available; however, during the first 4 of those 5 years, the accomplishments included the following:

GROUP 1 URC's: 4-Year Outcomes (FY 1992 - FY 1995)	**HBCU's (7 Institutions)**
STUDENT OUTCOMES (Underrepresented Minority Students Only)	
Bachelor's Degrees	87
Master's Degrees	44
Doctoral Degrees	8
RESEARCH OUTCOMES	
Refereed papers published or accepted	365
Funds leveraged from other sources	$41.7M
Funds leveraged per $1 of NASA MUREP funding invested	$1.13
Patents applied for or awarded	7
Commercial Products developed	0

Not all metrics are reported, as data collection is currently underway.

The Group 2 URC's showed substantial productivity during their first year of funding (FY 1996), including:

GROUP 2 URC's: First-Year Outcomes (FY 1995)	HBCU's (4 Institutions)
STUDENT OUTCOMES (Underrepresented Minority Students Only)	
Bachelor's Degrees	8
Master's Degrees	4
Doctoral Degrees	4
Undergraduate Students Supported	90
Graduate Students Supported	21
RESEARCH OUTCOMES	
Refereed papers published or accepted	50
Funds leveraged from other sources	$0.9M
Funds leveraged per $1 of NASA MUREP funding invested	$0.17
Patents applied for or awarded	0
Commercial Products developed	0

Second-year performance data for Group 2 is being collected during FY 1997, but is not yet available.

The metrics devised for the Uniform Outcomes Data instruments described above for the URC's will be used as the outcomes data instruments for the IRA (Research) performance beginning in FY 1997. Summary performance data will be collected annually using these instruments. Each IRA (Research) is monitored by a NASA TRC which makes an annual site visit to the university campus. Additionally, special review teams will be assembled during FY 1997 to perform independent comprehensive evaluations for each project.

Additional metrics for the Institutional Research Award (NRTS) will be designed to capture the technology and education focus of these awards. Specific metrics will include:

(refereed publications, leveraged funding, patents, and commercial products). Vital process information, such as numbers of faculty and students supported, and the gross categories in which funds are spent, will also be collected. This will allow the formation of reports using benchmarking divisors (e.g., numbers of degrees awarded per dollar spent on students, or number of publications per faculty investigator).

HBCU Mathematics and Science Awards are continually evaluated through analysis of performance reports and on-site assessments conducted by external reviewers. Data on precollege program outcomes is gathered through an annual survey entitled, "Precollege and Bridge Programs Performance Report." Data gathered for education projects emphasize improvements in student performance. Short-term metrics will track increases in pre/post-test scores and increases in enrollment in mathematics and science preparatory courses for students in NASA programs. Long-term metrics will track the rates at which K-12 students in NASA programs enter college and obtain advanced degrees. In addition, data on the numbers of students and institutions supported will continue to be collected and reported.

ACCOMPLISHMENTS AND PLANS

The special review teams assembled in FY 1996 to evaluate the first group of HBCU Research Centers returned reviews which exceeded expectations. The reviewers consistently cited high quality research work and exceptional student performance. As a result, all seven of these HBCU Research Centers will be funded for an additional 5 years (FY 1997 - FY 2001). For the first 5 years, each HBCU research center received up to $2M per year. These funds were deemed necessary to establish a research infrastructure capable of spawning long-term success in their research and education efforts. For the second 5 years, the funding will be reduced to a maximum of $1M per year per Research Center. This reduced funding level recognizes and encourages the movement of the HBCU Research Centers towards self-sufficiency through other funding sources.

The second group of HBCU Research Centers will enter their third year of funding during FY 1997. This group is funded at a maximum of $1.5M per year per Research Center for their first 3 years (including FY 1997). The planned funding will then drop to a maximum $1.0M per year per Research Center in FY 1998 and FY 1999.

The NASA Enterprise Program Offices provide base funding of $16.0M per year for the HBCU Research Centers. The funding levels shown for HBCU Research Centers under the minority university research and education line reflect only the amounts which MUREP must add to the Program Office base in order to meet the HBCU Research Center program requirements. This funding decreases by $2.0M in FY 1997 due to the decrease in funding levels for the first group of HBCU Research Centers as they enter their second 5 years. The funding decreases again by $1.7M in FY 1998 due to the planned decrease in funding levels for the second group of HBCU Research Centers as they enter their fourth year. The URC's

have demonstrated substantial successes thus far; it is imperative to continue their funding in order to maximize the return on NASA's investment in these institutions.

IRA (NRTS) - 5 HBCU's received renewal awards in FY 1996 for NRTS. These NRTS encompass seven regions that cover the 50 states, Puerto Rico and the Virgin Islands. A minimum of two faculty/teacher/student regional training workshops per institution were held this year.

University	Research Focus	Lead NASA Installation
Prairie View A&M University	Regional NRTS	Goddard Space Flight Center
Elizabeth City State University (ECSU)	Regional NRTS at ECSU	Goddard Space Flight Center
Morgan State University (MSU)	NRTS at MSU	Goddard Space Flight Center
South Carolina State University	NRTS	Goddard Space Flight Center
Tennessee State University (TSU)	NASA/TSU NRTS	Goddard Space Flight Center

The PI Awards for Research at HBCU's increased to 149 awards between FY 1996 and FY 1997. FY 1997 funding for PI's at HBCU's will support nine third-year and 15 second-year FAR awards and continue NASA Installation PI awards. Ten new FAR awards will be selected.

Efforts will continue to have the majority of HBCU research selected for funding to be made through competitive peer review and merit selection processes. Through more involvement in processes similar to FAR, it is expected that opportunities for participation in the Agency's mainstream research will expand as recipients' research capabilities are enhanced through interaction with NASA researchers and faculty. Additionally, the pool of disadvantaged and disabled students with research experience and interest in pursuing advanced degrees in the fields of science, engineering, and mathematics will increase through faculty support.

In FY 1996, NASA outreach programs at 21 HBCU's involved 6,700 students in MSET enhancement activities. FY 1996 precollege awards increased significantly over FY 1995, with plans to continue to expand in FY 1997 and a decline in FY 1998. NASA MSET awards to HBCU's support partnerships with elementary and secondary schools, and industry. Through these partnership arrangements, disadvantaged precollege students are stimulated and challenged to excel in mathematics, science, engineering, and technology-based college preparatory courses.

In FY 1996, 177 students were supported through graduate researchers awards; 33 of those attended HBCU's. This included support for two new programs at Florida A&M and North

Carolina A&T State Universities, supporting 30 graduate students in engineering. These numbers are expected to remain constant through FY 1997. In FY 1998, these numbers are expected to decline as support for students at non-minority institutions is phased out.

In FY 1996, 300 students were supported through undergraduate scholars awards; 140 of these attended 12 HBCU's. The pipeline of undergraduate students majoring in the physical and life sciences and engineering coming from this program is expected to substantially and positively impact NASA's and the aerospace industry's human resources needs. These students are also being targeted for graduate level studies and research careers in the fields of science and engineering. The recipients of undergraduate awards are expected to feed into the graduate researchers programs, especially considering the relationships the students develop with the NASA Installations and JPL as a result of being an undergraduate scholar. Each year the graduating class will be replaced by new selections, thereby keeping the total number of participants fairly constant over the next several years.

In FY 1996, NASA supported 5 MASTAP awards at HBCU's for $200,000 each. During FY 1997, 8 MASTAP (5 HBCU's) and 17 PACE Awards (9 HBCU's) are expected to receive continuation funding. No new PACE or MASTAP Awards will be made in FY 1997. In FY 1998, 8 MASTAP (5 HBCU's) and 17 PACE (9 HBCU's) will receive the planned third and final year of funding. Competitive opportunities for new FY 1997 educational awards will be provided under the announcement of opportunity for Partnership Awards.

OTHER MINORITY UNIVERSITIES

BASIS OF THE FY 1998 FUNDING REQUIREMENT (Thousands of Dollars)	FY 1996	FY 1997	FY 1998
University Research Centers	1,700	1,800	400
Institutional Research Awards	2,700	2,200	2,300
Principal Investigator Awards	6,600	7,300	4,800
Math Science and Education Awards	9,400	7,800	7,900
Partnership Awards	--	4,400	--
Total	20,400	23,500	15,400

PROGRAM GOALS

The goal of NASA's OMU program is to increase the opportunities for HSI's, Tribal Colleges and educational organizations serving substantial numbers of people with disabilities to participate in and benefit from NASA's research and education programs.

STRATEGY FOR ACHIEVING GOALS

In the House and Senate Reports accompanying the FY 1985 VA-HUD-Independent Agencies Appropriations Act (P. L. 98-371), Congress established building relationships between NASA and minority institutions of higher education as a priority. Language included in both reports (House Report 98-803 and Senate Report 98-506) directed NASA to "...review institutions of higher learning having significant minority enrollments to find ways to build closer relations with such schools, meet NASA's research objectives and increase the number of individuals from underrepresented groups in the pool of graduate researchers...build a closer relationship with institutions serving significant numbers of minorities..." To provide greater emphasis on this congressional mandate, NASA established the OMU Program in 1991. Since that time, Executive Orders and congressional reports have provided additional guidance to the Agency to strengthen its research and education programs with other minority universities. In 1994, Executive Order 12900 (February 22, 1994) mandated that agencies increase Hispanic American participation in Federal education programs where Hispanic Americans currently are underserved, and Executive Order 12928 (September 16, 1994) directed Federal agencies to promote procurement with, ."...Historically Black Colleges and Minority Institutions." Congress directed funding increases for the HSI's. Additionally, congressional direction was provided to NASA in the Conference report accompanying the FY 1995 VA-HUD-Independent Agencies Appropriations Act (P.L. 103-327) to establish NASA research centers at the HSI's.

NASA responded to the early congressional and Executive Branch direction by formulating a 5-year plan for the OMU program in FY 1991 to strengthen the Agency's research initiatives at other minority universities. This plan consists of three phases:

(1) individual principal investigator research awards; (2) institutional research awards; and (3) teacher training and student programs focusing on NASA-related disciplines. The plan addressed all institutions with significant minority populations other than HBCU's. The OMU plan was expanded in FY 1993, when the NASA Administrator signed a plan to strengthen the Agency's relationships with HSI's. The direction received from Congress and the Executive Branch is reflected in the current program plan for OMU's.

President Clinton signed Executive Order 13021 "Tribal Colleges and Universities," on October 19, 1996, to strengthen the relationship between Federal agencies and Tribal Colleges and Universities. In response to the Tribal Colleges Executive Order, NASA will be developing a 5-year plan of action and will submit annual accomplishment reports to the White House Initiatives Office.

NASA strategies for achieving the goals of the OMU Program reflect those established in the HBCU Program. However, because of the differences in the evolution of minority institutions

and the particularities of Federal mandates for HBCU's Hispanic Americans, and Tribal Colleges and Universities, NASA's approach and implementation plan have been adjusted to take these factors into consideration. For example, the Federal mandate for Hispanic Americans directs Federal agencies to "....improve educational outcomes for Hispanic Americans participating in Federal education programs...". The Executive Order on Tribal Colleges and Universities reaffirms the special relationship of the Federal Government to American Indians and Alaskan Natives, and outlines six specific areas of emphasis for Federal Agency's attention. As a result, the Agency has placed greater emphasis on mathematics and science awards than on institutional research awards. The strategies for achieving goals under NASA's OMU program are identified below in priority order:

1. Mathematics and Science Awards;

2. Partnership Awards;

3. Individual Principal Investigator Awards;

4. Institutional Research Awards; and

5. Research Center Awards.

The NASA OMU University Research Centers Awards program began in FY 1995 with the establishment of three OMU Research Centers designed to achieve a broad-based, competitive aerospace research capability among the Nation's OMU's that will: foster new aerospace science and technology concepts; expand the Nation's base for aerospace research and development; develop mechanisms for increased participation by faculty and students of OMU's in mainstream research; and increase the production of students, who are U.S. citizens and who have historically been underrepresented, with advanced degrees in NASA-related fields.

Funding for the OMU research centers is primarily provided by the Strategic Enterprises.

OMU Research Centers:

University	Research Focus	Lead NASA Installation
University of New Mexico	Center for Autonomous Control Engineering	Ames Research Center
University of Texas at El Paso	Pan American Center for Earth and Environmental Studies	Goddard Space Flight Center
University of Puerto Rico at Mayagüez	Tropical Center for Earth and Space Studies	Goddard Space Flight Center

In order to foster closer ties between the OMU research centers and NASA, a Lead NASA Installation has been designated for each URC. Beginning with the FY 1997 renewals, the Lead Installations will become responsible for directly managing the URC's cooperative agreements, and for increasing the HBCU's involvement in ongoing NASA research and development activities. Collaborations with other NASA Installations, industry, and other universities will continue to be strongly encouraged.

The OMU Research Centers, along with the HBCU research centers, have formed a National Alliance of NASA University Research Centers (NANURC). This Alliance has established an annual National Conference of the University Research Centers, created pathways for developing greater collaborations between the University Research Centers, and is exploring avenues for increasing the number of advanced degrees being awarded to underrepresented minority students. NASA is strongly supportive of this concept and is actively working with the Alliance to further develop and strengthen their organization.

The goal of the OMU Institutional Research Awards (IRA) is to improve academic, scientific and technology infrastructure and broaden the NASA-related science and technology base at OMU's. Two awards with different focus areas have been made under this category. The first IRA (Research) award was made in FY 1994 and was limited to only OMU's. The second IRA (Network Resources and Training Sites [NRTS]) were open to both OMU's and HBCU's. The objectives of the IRA (Research) are: to strengthen and improve core research areas of significance to the NASA mission; to increase the number of students who are U.S. citizens conducting space research and working in NASA-related disciplines; and to strengthen the research environment of eligible institutions and the capability of individuals by supporting

funding opportunities. IRA awards provide for the acquisition of research equipment and equipment essential to Internet connectivity.

The strategies for achieving the IRA (Research) goals include: (1) strengthening and improving core research areas of significance to the NASA mission; (2) increasing the number of students who are U.S. citizens conducting space research and working in NASA-related disciplines; (3) strengthening the research environment of eligible institutions and the capability of individuals by supporting the institutional infrastructure (through the acquisition of research equipment), faculty research, disadvantaged U.S. citizens who are undergraduate and graduate student researchers; and (4) technology transfer to the market place and to minority communities. To enhance the achievement of the above strategies, NASA has established an Agency-wide TRC for each of the selected IRA (Research) award recipients. The NASA TRC's are responsible for providing technical guidance to IRA (Research) recipients. NASA promotes collaboration between its funded IRA institutions, the Installations, JPL, and with entities outside of NASA. Institutions are encouraged to seek funding through NASA's traditional opportunities, as well as other government agencies and private sources. This is done in an effort to promote future sustainability. IRA awards require substantial undergraduate and graduate student involvement in research projects.

The strategies for achieving the IRA (NRTS) goals include: (1) designating a lead OMU as an NRTS; and (2) holding the lead OMU accountable for providing internet connectivity to a minimum number of other OMU's and public schools, and for training students, faculty and teachers to build computers, maintain and effectively utilize the internet to compliment teaching and research collaborations and delivery. The lead NASA Installation, Goddard Space Flight Center (GSFC), manages the IRA (NRTS) under the auspices of GSFC's Minority University - Space Interdisciplinary Network (MU-SPIN) Program. The Offices of Equal Opportunity Programs, Space Science, and Mission to Planet Earth collaboratively provide funding and oversight for the GSFC MU-SPIN Program.

NASA Headquarters Program Offices, NASA Installations and JPL support both IRA programs through direct funding, use of their facilities, and commitment of their personnel to serve on TRC's and assist in other facets of program implementation. Students and principal investigators involved in both the IRA (Research) and IRA (NRTS) spend time on-site at the Installations and JPL throughout the year.

IRA (Research)

Program	University	Research Focus	Lead NASA Installation
OMU	California State University - Los Angeles	The Use of Decentralized Control in Design of a Large Segmented Space Reflector	Jet Propulsion Laboratory
OMU	Florida International University	High Performance Database Management with Application to Earth Sciences	Goddard Space Flight Center
OMU	University of Puerto Rico-Rio Piedras	Land Management in the Tropics and Its Effects on the Global Environment	Marshall Space Flight Center
OMU	The City College of New York	Tunable Solid State Laser and Optical Imaging	Langley Research Center
OMU	New Mexico Highlands University	Alliance for Nonlinear Optics	Marshall Space Flight Center

IRA (NRTS)

Program	University	Research Focus	Lead NASA Installation
OMU	The City College of New York	An Urban Collaboration for Network Connectivity and Internet Access	Goddard Space Flight Center
OMU	University of Texas at El Paso (UTEP)	UTEP NRTS	Goddard Space Flight Center

The goal of the OMU Principal Investigator (PI) Awards for Research is to provide faculty at OMU's, early in their careers, with an opportunity to integrate the research and education components of their careers with the unique mission requirements of a specific NASA Installation or JPL. By involving OMU faculty and students, the Agency hopes to increase the interest of traditionally underrepresented communities in the Agency's mission and enhance a broader array of America's citizenry in the NASA-sponsored research community.

The primary strategy for implementing the PI Awards for Research is through a competitive

conducting the technical evaluations and making recommendations to Headquarters for funding consideration on the interested NASA Installation or JPL; (3) Provide funding to the nominating NASA Installation or JPL to make PI Awards for Research; and (4) Hold the NASA Installation or JPL responsible for managing the awards.

Under this category, each fiscal year OMU's are invited to submit proposals for the Faculty Awards for Research (FAR). The FAR provides for competitive peer review selection of outstanding and promising engineering, physical and life science-tenured and tenure-track faculty at minority institutions early in their academic careers who are capable of contributing to the Agency's research objectives and who have limited past NASA research grant experience. This award provides faculty members with sufficient research support and exposure to the NASA peer review process to enable them to demonstrate creativity, productivity, and future promise in the transition toward achieving competitive awards in the Agency's mainstream research processes. In FY 1996, these awards were expanded to include funding to support graduate and undergraduate students to become involved in the research projects.

The OMU Mathematics and Science Awards focus on strengthening the capacity of OMU's to provide excellence in mathematics, science, engineering and technology (MSET) training while increasing the participation and achievement of disadvantaged students in MSET fields at all levels of education.

MSET Awards contribute to the national education goals by supporting educational outreach projects at OMU's that increase the number and strengthen the skills, knowledge, and interest of students in mathematics, science, and technology-based academic programs. MSET awards, which consist of both unsolicited awards and solicited awards such as the "NASA Precollege Awards for Excellence in Mathematics, Science, Engineering and Technology " (PACE/MSET) , will accomplish the following:

- Provide students with the necessary academic preparation and motivation to successfully complete challenging college preparatory MSET courses.
- Heighten students' interest and awareness of career opportunities in MSET fields.
- Expose students to the NASA mission, research and advanced technology through role models, mentors, and participation in research and other educational activities.
- Provide scholarships, fellowships, internships, research opportunities in NASA-related fields and other supportive services to Graduate and Undergraduate students historically underrepresented in NASA-related disciplines..
- Expand the number of teachers and strengthen their MSET skills to better prepare them to teach in middle and high schools that have substantial enrollments of disadvantaged students.

In addition to the award categories listed above and consistent with congressional direction and

funding, the OEOP has initiated OMU Partnership Awards to "expand opportunities and enhance diversity in the NASA sponsored research and education community...achieve a balance between the proportion of NASA funding received by minority institutions of higher education and other institutions of higher education." One of the goals of the Partnership Awards is to strengthen NASA Installations' and JPL's partnerships with OMU's through projects which are unique and innovative, which fall outside of the usual MUREP competitive programs, and which have high potential for long-term support from other sources.

The NASA Installations and JPL have been invited to jointly submit with Presidents of Minority Universities concept papers in three different categories: research; education; or combination research and education to Headquarters for competitive review and selection. Selected concept papers are expected to culminate in an award to an OMU. All concept papers must be responsive to the Agency's strategic direction; the Federal mandates related OMU's; and the NASA MUREP goals.

NASA has established Technical Review Committees to provide technical guidance and on-site reviews to recipients of Institutional Research Awards and Research Center awards. NASA promotes collaboration between its OMU-funded programs, the Installations and the Jet Propulsion Laboratory (JPL); and with entities outside of NASA. Institutions are encouraged to seek funding through NASA's traditional opportunities, as well as other government agencies and private sources. This is done in an effort to promote future sustainability. Research Centers, IRA's and Principal Investigator (PI) awards require substantial undergraduate and graduate student involvement in research projects. The mathematics and science awards are normally managed by personnel at the NASA Installations and JPL.

MEASURES OF PERFORMANCE

Progress towards achieving the OMU program goals is monitored through assessing the research involvement and productivity of faculty and students in NASA programs at OMU's. The following data reflects participation in NASA's MUREP for FY 1995 awards:

- 95 faculty-level investigators were involved in NASA-related research awards for Research Centers, Institutional Research Awards, Faculty Awards for Research and other awards to individual principal investigators;
- 104 graduate and 125 undergraduate students were involved in research activities at OMU's;
- More than 117 referred papers or book chapters were published and 140 presentations were made at research conferences or seminars;
- 32,886 precollege teachers and students, including students with disabilities challenged to excel in mathematics and science courses offered through precollege educational awards.

The metrics devised for the Uniform Outcomes Data instruments previously described were modeled on the outcomes data instruments developed for monitoring URC performance. Summary performance data is collected annually using these

instruments. Each URC is monitored by a NASA Technical Review Committee which makes an annual site visit to the university campus. The OMU URC's showed substantial productivity during their first year of funding (FY 1996), including:

GROUP 2 URC's: First-Year Outcomes (FY 1995)	**OMU's (3 Institutions)**
STUDENT OUTCOMES (Underrepresented Minority Students Only)	
Bachelor's Degrees	29
Master's Degrees	5
Doctoral Degrees	0
Undergraduate Students Supported	65
Graduate Students Supported	43
RESEARCH OUTCOMES	
Refereed papers published or accepted	45
Funds leveraged from other sources	$1.4M
Funds leveraged per $1 of NASA MUREP funding invested	$0.34
Patents applied for or awarded	1
Commercial Products developed	0

The metrics devised for the Uniform Outcomes Data instruments described above for the University Research Centers (URC's) will be used as the outcomes data instruments for the IRA (Research) performance beginning in FY 1997. Summary performance data will be collected annually using these instruments. Each IRA (Research) is monitored by a NASA Technical Review Committee which makes an annual site visit to the university campus.

Additional metrics for the Institutional Research Award (NRTS) will be designed to capture the technology and education focus of these awards. Specific metrics will include:

1.) the number of OMU's and public schools connected to the Internet;

2.) the number of persons gaining access by such connections; and

3.) the number of faculty, teachers and students trained to utilize the Internet to enhance research and educational outcomes.

During the first-year IRA (Research) period of performance, FY 1995, 44 faculty-level researchers, 19 graduate and 29 undergraduate U.S. citizen students were involved in NASA-related research with the six IRA's. The number of investigators remained fairly level in FY 1996, the number of students increased (27 graduate and 33 undergraduate), and more than 70 refereed papers and/or book chapters were published and more than 80 presentations were made at research conferences and seminars (the first year this data was compiled). There were 2 OMU IRA (NRTS) renewal awards in FY 1996 for NRTS. These NRTS encompass seven regions that cover the 50 states, Puerto Rico and the Virgin Islands. During the first year of this award, more than 56 higher education institutions are supported directly through this award and 24 partner public schools. A minimum of two faculty/teacher/student regional training workshops were held this year.

In FY 1995, an outcomes survey of all (FAR) award recipients (which includes some IPI awards) was conducted. Based on the experience gained with this survey, a Uniform Outcomes Data collection process is being instituted in FY 1997. All MUREP-funded individual research awards must be responsive to metrics that track research outcomes (refereed publications, leveraged funding, patents, and commercial products). Vital process information, such as numbers of faculty and students supported, and the gross categories in which funds are spent, will also be collected. This will allow the formation of reports using benchmarking divisors (e.g., numbers of degrees awarded per dollar spent on students, or number of publications per faculty investigator).

OMU Mathematics and Science Awards are continually evaluated through analysis of performance reports and on-site assessments conducted by external reviewers. Data on precollege program outcomes is gathered through an annual survey entitled, "Precollege and Bridge Programs Performance Report." Data gathered for education projects emphasize improvements in student performance. Short-term metrics will track increases in pre/post-test scores and increases in enrollment in mathematics and science preparatory courses for students in NASA programs. Long-term metrics will track the rates at which K-12 students in NASA programs enter college and obtain advanced degrees. In addition, data on the numbers of students and institutions supported will continue to be collected and reported.

ACCOMPLISHMENTS AND PLANS

The OMU research centers will enter their third year of funding during FY 1997. This group is funded at a maximum of $1.5M per year per research center for their first 3 years (including FY 1997). The planned funding will them drop to a maximum of $1.0M per year per research center for FY 1998 and FY 1999.

The NASA Enterprise Program Offices provide base funding of $2.6M per year for the OMU research centers. The funding levels shown for OMU research centers under the minority university research and education line reflect only the amounts which MUREP must add to the Program Office base in order to meet the OMU research center program requirements. The funding decreases by $1.4M in FY 1998 due to the planned decrease in funding levels for the OMU research centers as they enter their fourth year.

IRA (Research) - six OMU's were selected to receive the first IRA (Research) awards in FY 1994. One OMU award was canceled when substantial changes was made in the scope and direction of their selected research. The continuing IRA (Research) recipients will be subjected to a comprehensive peer review during FY 1997. This review will be conducted on-site by internal and external peer reviewers to collect not only the quantitative data but to also ascertain the qualitative results achieved. It is planned that all will be eligible for continuation funding in FY 1997 and FY 1998.

Program	University	Research Focus	Lead NASA Installation
OMU	California State University - Los Angeles	The Use of Decentralized Control in Design of a Large Segmented Space Reflector	Jet Propulsion Laboratory
OMU	Florida International University	High Performance Database Management with Application to Earth Sciences	Goddard Space Flight Center
OMU	University of Puerto Rico-Rio Piedras	Land Management in the Tropics and Its Effects on the Global Environment	Marshall Space Flight Center
OMU	The City College of New York	Tunable Solid State Laser and Optical Imaging	Langley Research Center
OMU	New Mexico Highlands University	Alliance for Nonlinear Optics	Marshall Space Flight Center

IRA (NRTS) - 2 OMU's received renewal awards in FY 1996 for NRTS. These NRTS encompass seven regions that cover the 50 states, Puerto Rico and the Virgin Islands. A minimum of two faculty/teacher/student regional training workshops per institution were held this year.

Program	University	Research Focus	Lead NASA Installation
OMU	The City College of New York	An Urban Collaboration for Network Connectivity and Internet Access	Goddard Space Flight Center
OMU	University of Texas at El Paso (UTEP)	UTEP NRTS	Goddard Space Flight Center

The PI Awards for Research at OMU's increased slightly in FY 1996 to 116 awards which included 15 third-year, three second-year, five new FAR awards and a continuation of other PI's. FY 1997 will increase to 126 awards, which include three third-year, seven second-year, 10 new FAR awards, and a continuation of other PI awards at OMU's.

In FY 1998, efforts will continue to have the majority of OMU research selected for funding to be made through competitive peer review and merit selection processes. Through more involvement in processes similar to FAR, it is expected that opportunities for participation in the Agency's mainstream research will expand as recipients' research capabilities are enhanced through interaction with NASA researchers and faculty. Additionally, the pool of disadvantaged and disabled students with research experience and interest in pursuing advanced degrees in the fields of science, engineering, and mathematics will increase through faculty support.

In FY 1996, 177 students were supported through graduate researchers awards; 20 of those students attended 4 OMU's. These numbers are expected to remain constant through FY 1997. In FY 1998, these numbers are expected to decline as support for students at non-minority institutions is phased out.

In FY 1996, the NASA Hispanic Education Program has impacted over 7,500 Hispanic students through programs at 23 Hispanic-Serving Institutions (HSI). These programs form an educational pipeline providing a broad range of opportunities for students to participate starting in grades K-12, and continuing to precollege, college, graduate school and to major research centers conducting NASA-related studies. In FY 1996, NASA added five new institutions to the Hispanic Education program and three states where it did not have programs before. Also in FY 1996, NASA initiated a very meaningful relationship with the Hispanic Association of Colleges and Universities (HACU) by initiating *Proyecto Access*, a consortium which brings HACU the preeminent organization representing HSI's together with seven institutions of higher education to conduct 8-week summer programs.

OMU's for $200,000 each. During FY 1997, 8 MASTAP (6 OMU's) and 17 PACE Awards (8 OMU's)are expected to receive continuation funding. No new PACE or MASTAP Awards will be made in FY 1997. In FY 1998, 8 MASTAP (3 OMU's) and 17 PACE (8 OMU's) will receive the planned third and final year of funding. Competitive opportunities for new FY 1997 educational awards will be provided under the announcement of opportunity for Partnership Awards.

In FY 1996, NASA increased support for Tribal Colleges and Universities by over $300,000 through three new initiatives and expanded outreach to nine Tribal Colleges. NASA has initiatives with 10 mainstream universities for the purpose of increasing the number of Native American students enrolled in MSET curricula. In FY 1996, NASA provided outreach to over 3,000 Native American students from kindergarten through graduate school. Enrollment and retention rates have risen significantly in NASA-supported programs.

In FY 1998, efforts will continue to have the majority of OMU education awards selected for funding to be made through competitive peer review and merit selection process.