



NAFEO Comments on the NSF Proposed Comprehensive Broadening  
Participation of Undergraduates in STEM Program  
July 28, 2010

The National Association for Equal Opportunity in Higher Education (NAFEO)<sup>1</sup> is pleased to submit these comments to the National Science Foundation (NSF) in response to its request for comments regarding its proposed new Comprehensive Broadening Participation of Undergraduates in STEM (CAP-US) Program. The program is designed to catalyze next generation capacity to produce a diverse STEM workforce with 21<sup>st</sup> century knowledge and skills. We are pleased to make this submission on behalf of the 105 Historically Black Colleges and Universities (HBCUs) and roughly 50 Predominantly Black Institutions (PBIs) that form the NAFEO membership base.

At the outset, we commend the National Science Foundation, the United States Congress and the Administration for continuing to grapple with the vexing challenge of how to prepare more, and more diverse, globally competitive and globally engaged students in the sciences, technology engineering and mathematics (STEM). We are especially grateful to Congresswoman Eddie Bernice Johnson, whose amendment to the America Competes Act continues support for the Historically Black Colleges and Universities Undergraduate Program (HBCU UP), the Louis Stokes Alliances for Minority Participation Program (LSAMP) and the Tribal Colleges and Universities Program (TCUP) as separate, complimentary programs at least through September 30, 2011; required the Director to develop the plan to which we are responding; and required the solicitation of comments from the public.

We appreciate that the proposed NSF actions to which we are responding are being recommended to meet the need to broaden substantially the breadth of the STEM workforce, as well as the racial, ethnic and gender diversity of the STEM workforce of today and tomorrow. NAFEO is pleased that NSF is proposing to undertake bold, innovative strategic actions to increase STEM participation by individuals from underrepresented racial, ethnic and gender groups. NAFEO and its member institutions share this goal. We also share and applaud the proposed new research strand that would focus on strategies for broadening participation and increasing the capacity of scholars in HBCUs and minority-serving institutions to

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<sup>1</sup> NAFEO is the nation's only 501 ( c ) ( 3 ) national membership association of the 105 Historically Black Colleges and Universities (HBCUs) and roughly 50 Predominantly Black Institutions (PBIs): 2- and 4-year, undergraduate, graduate and professional institutions in 35 states, the District of Columbia, and the Virgin Islands.

conduct this type of research. A vitally important component of this new research proposal must be providing the resources for building institutional infrastructure and capacity at the institutions that are graduating disproportionate percentages of African American and other traditionally underrepresented students in STEM. We believe that aspects of the proposed CBP-US, would unwittingly retard and reverse the progress that is steadily being made in increasing the numbers of African Americans and other traditionally underrepresented students in STEM. The proposed mergers of the Louis Stokes Alliance for Minority Participation (LSAMP) program, the Historically Black College and University Undergraduate Program (HBCU-UP), and the Tribal College Undergraduate Program (TCUP); and the inclusion of non-HBCUs/MSIs as primary grantees would likely annul the progress.

The Proposed merger would eliminate the complimentary, diverse approaches to increasing minority participation in STEM that has been yielding measurable results. The current, separate and distinct programs are targeted to meet and have been meeting the *unique needs of HBCUs, the unique needs of TCUs and other MSIs as well as the unique needs of the underrepresented student groups* currently provided for in the separate programs.

The LSAMP program has been subjected to both process and outcome evaluations over the years. The program has been found to meet and in some instances exceed its goals. A 2006 independent evaluation of LSAMP found, for example, that students who participate in LSAMP pursue post baccalaureate coursework, enroll, persist in and graduate from advanced degree programs at a significantly greater rate than national comparison groups. Roughly 80% of LSAMP students pursue post baccalaureate education; and 66% pursue masters, doctoral or professional degrees. (See, *Assessing Programs to Improve Minority Participation in STEM Fields: What We Know and What We Need to Know, October, 2006.*, Cheryl B. Leggon, School of Public Policy, Georgia Institute of Technology; Willie Pearson, Jr., School of History, Technology. and Society, Georgia Institute of Technology). An important ancillary outcome of the LSAMP program has been the building of capacity of the participant institutions. The reports of the HBCUs that have participated in the LSAMP program bear out this assertion.

Appendices (Beatriz Chu Clewell, Clemencia Cosentino de Cohen, Nicole Deterding, Lisa Tsui Urban Institute, 2006) concluded:

1. LSAMP met its stated goal of increasing the quality and quantity of students who successfully complete LSAMP-supported STEM baccalaureate programs. As the program expanded, the share of national URM undergraduate STEM degrees earned by LSAMP participants increased, coinciding with an increase nationally in the number of URM bachelor's degrees earned in STEM. On measures of undergraduate academic performance, LSAMP students were found to outperform national comparison samples.
2. LSAMP exceeded its stated goal of increasing the number of students matriculating in programs of graduate study in STEM. The LSAMP Program produced underrepresented minority students who enroll in and attain graduate degrees in STEM at a rate higher than that of both a national sample of underrepresented minority (URM) students and a national sample of white and Asian STEM baccalaureate degree recipients.
3. LSAMP's strategies and approaches constitute a discrete and identifiable program model, grounded in research and theory, which can be tested and replicated. The identification and description of this successful model signifies a critical advance in the knowledge base of intervention program models.

The Graduate Research Fellowship was evaluated externally. The final report included findings on outcomes of the program and made specific recommendations for the program. See: Goldsmith, Sharon S., Presley, Jennifer B., and Cooley, Elizabeth A., *National Science Foundation Graduate Research Fellowship Program Evaluation Report 2002*.

[www.nsf.gov/pubs/2002/nsf02080/nsf02080.pdf](http://www.nsf.gov/pubs/2002/nsf02080/nsf02080.pdf).

NAFEO was unable to find a research-based study of the HBCU-UP program, which is in its tenth year. NAFEO proposes to create an HBCU-led team to carry out the type of research needed to determine the effectiveness of the current portfolio of broadening participation programs. With a grant from year end FY 2010 funds, NAFEO would identify and engage the appropriate HBCU leadership team to conduct the evaluation. This team would be augmented by other researchers, perhaps from an independent company or association with a proven record of experience with such evaluations; by adding educational researchers at non-HBCUs and other independent evaluators. Guidance and perspective might also be sought from institutions like NAS, NAE, AAAS, ETS, and/or others.

With the above affirmative results and other affirmative actions HBCUs have been taking solo or in strategic alliances that they forge, HBCUs are leading in the preparation of African American and other traditionally underrepresented students in STEM.

HBCUs are a great national resource in producing not only black graduates but US citizens in STEM fields. HBCUs produce disproportionate percentages of blacks with undergraduate degrees in science and engineering (S&E): In 2008, according to NSF's WEBCASPAR database, there were 3194 US universities. According to the White House Initiative on HBCUs, there are 105 HBCUs. That means that 3.3% of US universities awarded 20.5% of all bachelor degrees earned by blacks and 21.8% of all S&E bachelor degrees earned by blacks. This share was once higher and dropped for some number of years beginning in the 1970s, but the figure has been rising slightly in the last ten years. *Role of HBCUs as Baccalaureate-Origin Institutions of Black S&E Doctorate Recipients*; NSF 08-319 August 2008; <http://www.nsf.gov/statistics/infbrief/nsf08319/> Among known U.S. baccalaureate-origin institutions of 1997–2006 black S&E doctorate recipients, the top 8 and 20 of the top 50 were HBCUs.

The proposed expansion of the combined program to include non- HBCUs and non-MSIs, even those with strong track records and great potential for producing underrepresented STEM graduates, would be inimical to the legislative history of the LSAMP, HBCU-UP and TCUP programs and contrary to compelling historic and contemporary reasons for investing more public dollars in the capacity building of HBCUs, TCUs, and other MSIs.

As NSF acknowledges, HBCUs and MSIs have and are continuing to educate disproportionate percentages of underrepresented students, especially in STEM with far fewer resources than their non-HBCU and non-MSI counterparts. HBCUs are doing the “heavy lifting” in preparing diverse students, especially African Americans, in STEM and they should be financially rewarded, supported and provided the financial wherewithal to do more. Service to low income students if it is to be enlarged should be incentivized.

HBCUs are sources of enormous innovation and leadership in STEM. Many have cutting edge programs in the sciences. NSF 2006 data indicate that the 105 HBCUs graduated nearly 22% of blacks who earn science and engineering degrees. 30.4% of degrees awarded to blacks at all institutions were science and

engineering. At HBCUs, the figure rose to 32.3%. HBCUs are the baccalaureate origins for 33% of African Americans who received PhDs in STEM areas in 2006 (ref: Role of HBCUs as Baccalaureate-Origin Institutions of Black S&E Doctorate Recipients; NSF 08-319 | August 2008; <http://www.nsf.gov/statistics/infbrief/nsf08319/>). It is estimated that upwards of 40 percent of all African Americans who pursue graduate education in science, technology, engineering and mathematics received their undergraduate degrees from HBCUs. Among known U.S. baccalaureate-origin institutions of 1997–2006 black S&E doctorate recipients, the top 8 and 20 of the top 50 were HBCUs.

Both public and private four-year HBCUs have a greater share of black students majoring in engineering and science than is true nationally among black students, especially comparing HBCUs to non-minority-serving institutions. For instance, among public four-year colleges, 31.1 percent of black students at HBCUs are majors in engineering or science compared to 25.9 percent at non-minority-serving institutions. Among private, not-for-profit, four-year schools, 27.0 percent of black students at HBCUs major in engineering and science compared to 20.8 percent at non-minority-serving institutions. (Dr. William E. Spriggs, Assistant Secretary, United States Department of Labor; Former Chairman, Department of Economics, Howard University in The State of America's Black Colleges 2008, National Association for Equal Opportunity in Higher Education [NAFEO]).

Not only does the production rate support the notion of investing disproportionate amounts of NSF research dollars in HBCUs and MSIs, but so, too, do the projected demographic shifts and the trends data relative to black college students. The data suggest that the growth in the numbers of black, brown, low-income and otherwise traditionally underserved students graduating from high school between now and 2020 will outpace the growth in the numbers of white-non-Hispanic students. NSF accepts these projections. The data suggest also that black college students tend to choose colleges with high minority student presence. In 2004, for example, 61 percent of black undergraduates attended a minority-serving institution: 13.4 percent attended a HBCU, 34.1 percent attended a black-serving non-HBCU institution, 10.4 percent attended an Hispanic Serving Institution and the remainder were spread among Asian and Native American serving institutions. (Dr. William E. Spriggs, in, The State of America's Black Colleges 2008, National Association for Equal Opportunity in Higher Education [NAFEO]). These trends are continuing today.

Because HBCUs and MSIs graduate disproportionate percentages of the target students in STEM, and because increasing the numbers of traditionally underrepresented students in STEM is an NSF and national priority of the highest order, HBCUs and MSIs--the institutions that prepare disproportionate numbers of the growth student populations in STEM, should be awarded the lion's share of NSF research dollars.

To be sure, there is an important role for non-HBCUs to play in continuing to prepare diverse students in STEM; and for HBCUs and MSIs to play in partnerships with non-HBCU and non-MSI institutional partners. Several HBCU-non-HBCU partnerships are having great success. Some should serve as models for other partnerships to prepare and graduate underrepresented students in STEM at all academic levels. The dual degree partnership between Clark Atlanta University, Spelman College, and Morehouse College with the Georgia Institute of Technology is just one of many examples of such partnerships. The Virginia-Nebraska Alliance (The Alliance) is another unique partnership between unlikely cohorts, to address the national need to diversify the healthcare and research workforce. <http://www.vanealliance.com/> These types of partnerships should be supported and encouraged by NSF as is proposed. Support for these types of partnerships should, however, focus on strengthening the pipeline by strengthening the institutions in which disproportionate percentages of the targeted students are enrolled and providing greater financial, academic, social and technical support for the students. The funds for such partnerships should be used to grow masters and doctoral programs in STEM at the leading HBCU producers of African American and other traditionally underrepresented students in these disciplines. The funds should not be placed at other than the HBCU or MSI partner institutions. The legislative, judicial, and administrative records upon which the federal designation of the class of institutions dubbed, "Historically Black Colleges and Universities," and other federal legislation to build the capacity of these institutions is grounded, support this recommendation.

The denial of comparable funding and other federal resources to HBCUs in relation to their Historically White Institution (HWI) counterparts was, to a great extent, the impetus for the programs currently under review. This failure of the federal government to support HBCUs and MSIs proportionate to the level of support for HWI, especially in the area of scientific research funding, has created the need for and indeed a federal imperative for NSF to invest in building the capacity of these institutions, while preparing in STEM more of the students who are the core constituents of these institutions and who will represent an increasing percentage of tomorrow's labor force.

The proportionately paltry funding for the LSAMP, HBCU-UP and TCUP programs or a program that would combine these programs, designated to increase the numbers of African Americans and other traditionally underrepresented students in STEM, should not be diverted from HBCUs and MSIs. Nor should the program place HBCUs and MSIs in competition with HWIs that are already receiving the lion's share of NSF research dollars. NSF notes, for example that six (6) of the top twenty (20) Historically and Predominantly White Institutions receive more federal funds for research than seventy-nine (79) HBCUs combined. The combination of the proposed programs and opening up the competitions to HWIs would surely exacerbate this disparity in funding and dilute the effectiveness of the current programs. These programs have proven effective and efficient. They can accelerate the production of African American and other traditionally underrepresented students in STEM if additional funding is provided for the students we are attempting to grow and the institutions that are growing and graduating the target students in disproportionate numbers.

Increasing the funding for the LSAMP, HBCU-UP and TCUP programs does not necessarily suggest an increase in the federal outlay for STEM. One adjustment NSF should consider to funding the referenced programs such that they would likely achieve our mutual goals of increasing the numbers of African Americans and other traditionally underserved students in STEM, is to reallocate NSF's combined funding such that disproportionate amounts of the dollars are made available to qualifying institutions in proportion to the *percentage* of African American, Hispanic, and other traditionally underserved students they graduate in STEM. This approach would incentivize institutions that are not enrolling and graduating large percentages of traditionally underrepresented students in STEM, to increase their efforts, and reward those institutions that are graduating disproportionate percentages of the target students in STEM without requiring a greater federal outlay during these austere times. A similar approach was considered favorably by a National Dialogue on Student Financial Aid that was convened by The College Board in 2002. The Dialogue was guided by a Blue Ribbon Panel of some of the nation's leading experts in finance, federal programs, education access and success.<sup>2</sup> This approach would be the logical and practical

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<sup>2</sup> *Challenging Times, Clear Choices: Strengthening the Nation's Investment in Higher Education, Creating Greater Value for America (The College Board 2002). Theme # 7:* There is a need for the federal government, states, and the private sector to invest more financial resources in those institutions

approach to accelerating an increase in the numbers of historically underrepresented minorities in STEM professionals among the nation's growing populations.

These are the preliminary thoughts of the National Association for Equal Opportunity in Higher Education about the proposed Comprehensive Broadening Participation of Undergraduates in STEM Program. NAFEO and its member institutions look forward to continuing to work with NSF, Members of Congress, the Administration, other policymakers, policy shapers and funders to identify the best approaches to increasing STEM participation by individuals from underrepresented racial, ethnic and gender groups. The nations' HBCUs and MSIs have a tremendous responsibility to continue doing the "heavy lifting" relative to preparing African American and other diverse students for growth and high need professions to assist in moving from 39% to 60% the number of Americans who have a 2- or 4-year degree by 2020, which is the national educational goal. It is required if the nation is to regain and maintain global preeminence .

HBCUs and MSIs are poised to continue doing disproportionately more than HWIs to prepare students who have traditionally been underrepresented and who remain underrepresented in STEM, today. To do so, they must have federal and other public and private dollars commiserate with the percentage of the target students they are graduating. The proposed mergers would be a step in the wrong direction.

We thank you again for affording NAFEO and other stakeholders this opportunity for comment. Should you have questions or desire additional information, please do not hesitate to contact us at (202) 552-3300.

Respectfully submitted,  
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President & CEO

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that educate disproportionate numbers of high needs students, including historically and predominately black colleges and universities, Hispanic-serving institutions, community colleges, and institutions serving rural and remote areas. There is also a need for the federal government, states, and the private sector to provide greater incentives for other institutions to enroll and graduate larger numbers of high need students.