HBCU
ENGINEERING DEANS SUMMIT
2024

HBCU ENGINEERING DEANS SUMMIT REPORT

Forging Futures Together by Strengthening Collaborations

University of Michigan Provost Laurie McCauley introduces keynote speaker Gilda Barabino, president of Olin College of Engineering, on day two of the inaugural HBCU Engineering Deans Summit at Michigan Engineering in Ann Arbor on June 14, 2024.

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EXECUTIVE SUMMARY

Historically Black Colleges and Universities (HBCUs) and Research 1 (R1) institutions have long held complementary roles in growing the nation's engineering workforce. But together they haven't been able to provide HBCU students with equitable opportunities for graduate degrees and the influential roles they lead to in academia and beyond—roles that are instrumental in driving the U.S. scientific enterprise.

This gap has implications for individuals, communities and our nation as a whole. It contributes to Black students and other students of color remaining frozen out of a key sector, and to the development of science and technology advances that do not serve all populations. At issue as well is the future of American competitiveness—"an accelerating STEM talent crisis that increasingly puts our economic and national security at risk," the National Science Board warned earlier this year.

Minority Serving Institutions, particularly HBCUs, have always been a crucial locus for alleviating underrepresentation in the STEM workforce, and their role becomes even greater in light of the recent nationwide ban on consideration of race in university admissions.

All of these issues call for strengthening pathways for HBCU students, in particular students of color, into science and technology research careers, and for HBCUs to join the ranks of the R1s. In June 2024 the HBCU Engineering Deans Council held the first HBCU Engineering Deans Summit at the University of Michigan College of Engineering, and invited deans from a host of R1 universities to join. The charge was to forge connections and discuss how to partner in authentic and sustainable ways to support expansion of research programs at HBCUs.

We identified 4 key steps—Understand, Align, Partner and Sustain—that include 11 recommendations and numerous tactics to draw on.

1.) UNDERSTAND: SET A FOUNDATION FOR MEANINGFUL COLLABORATION.

- Deepen knowledge of one another.
- Spend time at each other's institutions.

2.) ALIGN: RECOGNIZE COMMON GOALS AND UNIQUE STRENGTHS.

- Find shared motivations.
- Leverage strengths from both sides.

3.) PARTNER: CREATE INNOVATIVE PARTNERSHIPS.

- Move in exciting new directions together.
- Collaborate on curriculum, teaching, advising, research.
- Make the case to HBCU students.

4.) SUSTAIN: BUILD INFRASTRUCTURE TO MAINTAIN PARTNERSHIPS.

- Advocate for equity in funding.
- Build bandwidth for true partnerships.
- Strengthen support of HBCU students at R1s.
- Enhance lab infrastructure at HBCUs.

Freeman A. Hrabowski, III, president emeritus of the University of Maryland, Baltimore County, delivers a keynote address at the 2024 HBCU Engineering Deans Summit.

We also engaged in critical conversations acknowledging bias and difference in areas including: the historical context that informs our disparate student support cultures, the persistent misperception that HBCU students are less capable, the need for R1s to adapt to better support students, HBCUs' worry that R1s will recruit away faculty, and how quantifying funding disparities helps clarify their magnitude and impact. Acknowledging these issues is part of the foundational process of understanding one another.

Federal agency program directors and U-M research leaders discussed several funding opportunities designed to build research capacity at HBCUs. NSF GRANTED, or Growing Research Access for Nationally Transformative Equity and Diversity, funds the research enterprise rather than research itself. NSF's HBCU-EiR, or Historically Black Colleges and Universities - Excellence in Research, aims to support HBCU faculty and strengthen connections between them and core NSF program directors.

Success means establishing robust research infrastructure and engineering Ph.D. programs at HBCUs. It means strong, lasting and flexible partnerships between R1s and HBCUs. But it doesn't mean all the programs we launch will be needed for posterity. Some programs may put themselves out of business. Ultimately we hope to look back at the 2024 HBCU Engineering Deans Summit as the start of a monumental shift. The Council aims to meet at least once a year among themselves, in a similar Summit, as well as with R1 leaders. Plans are underway for 2025.

INTRODUCTION

Historically Black Colleges and Universities (HBCUs) and Research 1 (R1) institutions have long held complementary roles in growing the nation's engineering workforce. But together they haven't been able to provide HBCU students with equitable opportunities for graduate degrees and the influential roles they lead to in academia and beyond—roles that are instrumental in driving the U.S. scientific enterprise. This gap has implications for individuals, communities and our nation as a whole.

HBCUs make up less than 3% of US colleges and universities, yet they produce nearly 25% of Black science, technology, engineering and math (STEM) bachelor's graduates, and they provide the undergraduate education for nearly a third of Black students who go on to earn STEM doctorates.

R1s provide the majority of those doctorate degrees—comprising the 20 institutions that awarded the most engineering PhDs to students from underrepresented groups, in 2022. In 2022, Black students received just 1.7% of engineering doctorates, according to the National Science Foundation. Likewise, Hispanic students received 8%.

These disparities have ripple effects. Black students and other students of color remain frozen out of a key sector, and our science and technology advances do not serve all populations. As a consequence, some of our technologies are deployed with racial inequity baked in, such as facial recognition software that misidentifies police suspects, medical algorithms that fail to suggest necessary care for Black patients, and pulse oximeters that don't work well on melanated skin. If we want change, we need representation.

At issue as well is the future of American competitiveness—"an accelerating STEM talent crisis that increasingly puts our economic and national security at risk,"the National Science Board(NSB) warned earlier this year, in its Talent is the Treasure policy brief. "We are not producing STEM workers in either sufficient numbers or diversity to meet the workforce needs of the 21st century knowledge economy, especially if STEM talent demand grows as projected."

Among the solutions NSB recommended is swifter action to recruit the "missing millions," and alleviate underrepresentation in the STEM workforce. Minority Serving Institutions, particularly HBCUs, have always been a crucial locus for this, but their role becomes even greater in light of the recent nationwide ban on consideration of race in university admissions. We anticipate enrollment growth at MSIs and HBCUs, and potential resegregation.

All of these issues call for strengthening pathways for HBCU students, in particular students of color, into science and technology research careers. They call for increasing the racial diversity of engineering professors, who can mentor and model the role for the next generation. They call for bringing more research and its associated experience and education to our students.

One way for HBCUs to help with the looming national workforce talent crisis is by focusing on the research enterprise. HBCUs need to join the ranks of R1s—universities that spend $50 million on research & development and produce at least 70 research doctorates per year, as described by the Carnegie Classification of Institutions of Higher Education. While 11 HBCUs are currently classified as R2s—with at least $5 million in research expenditures and 20 research doctorates per year—none are R1. "Yet," adds Joyce T. Shirazi, dean of the School of Engineering, Architecture and Aviation at Hampton University. She anticipates a shift to begin in 2025 when the new Carnegie rankings come out, with one or two HBCUs listed as R1 and several new ones achieving R2.

"HBCUs understand the importance of having the R1 Carnegie Classification—doctoral granting universities with the highest performance in key areas associated with research and development—because it impacts our availability to apply and receive funding for the cutting-edge research performed on our campuses," Shirazi said.

R1 institutions, by definition, take the lion's share of national resources in research funding. Last year, only 5.4% of federal science and engineering funding recipients were HBCUs, and together, they shared just 1.48% of that budget, according to the National Center for Science and Engineering Statistics.

Joyce T. Shirazi, dean of the School of Engineering, Architecture and Aviation at Hampton University co-chaired the 2024 HBCU Engineering Deans Summit.

The hope is that as HBCUs shift from teaching-centric institutions to more holistic enterprises that focus on both teaching and research, there will be a correlated shift in African American engineering doctoral degree recipients and faculty members.

Growing HBCU research programs will open new avenues of scientific inquiry, creating routes to STEM research careers for the highly diverse populations we serve.

We coalesced around three goals:

- Facilitate development of real, meaningful relationships between HBCUs and R1s.
- Build research capacity at HBCUs.
- Address disparities in funding between HBCUs and predominantly white institutions (PWIs)/ R1s.

We believe we've mapped a promising path forward. If we can follow it, we anticipate enhancing the nation's ability to educate its people, and developing a STEM research workforce that approaches the questions of the day in new, insightful, collaborative ways.

OUTSIZED IMPACT

HBCU COMPRISE JUST
3% of U.S. college and universities

THEY EDUCATE
25% of Black STEM bachelor's graduates

AND
33% of those who go on to earn STEM doctorates

SHOESTRING FUNDING

HBCU FACULTY RECEIVED
1.48% of federal science and engineering funding in 2022

Sources: White House Council of Economic Advisers, National Center for Education Statistics

ACKNOWLEDGING DIFFERENCE AND BIAS

The Summit sparked frank conversations that are critical to acknowledge as we work to understand and close gaps in how we train engineers.

HISTORICAL CONTEXT INFORMS DISPARATE SUPPORT CULTURES

In a general sense, HBCUs and R1s have vastly different educational support philosophies. HBCUs are welcoming, inclusive, nurturing environments that foster a formative approach to learning and growth. Historically, R1s are competitive, high-pressure environments.

The first HBCUs served the children of uneducated formerly enslaved people with a mission to shape disadvantaged youths into confident professionals. "We aim to transform, and we always have," said Lealon L. Martin, dean of the College of Sciences and Engineering at Southern University and A&M in Baton Rouge, Louisiana. This ethos is at the heart of their renowned educational excellence. In other words, HBCUs aren't better at educating Black people simply because most people there are Black.

R1s, on the other hand, include some of the nation's oldest private universities, and many were established to serve the privileged children of wealthy community leaders. From the start, admission was based on what students (or their families) had already achieved. Although many R1s are now large public universities committed to serving their states and communities, extreme selectivity and competitiveness continues, and the impacts extend beyond who enrolls where. Because one must be seen as worthy of a spot at an R1, the question of who deserves to be there perpetually lingers. This can hamper students' confidence, growth and learning.

HBCU STUDENTS ARE OFTEN STILL VIEWED AS LESS CAPABLE

Even among R1 leaders motivated to participate in the Summit, and who share the desire to establish meaningful partnerships, a number of HBCU deans in attendance sensed a troubling belief that their students were perceived as less capable. Many of these students were admitted to R1s and made the decision to attend an HBCU.

The deans also detected, in some cases, a lack of awareness of systemic factors that can make it difficult if not impossible for students from disadvantaged or historically excluded groups to succeed at R1s. These factors include, but aren't limited to, things like not having parents who went to college, access to advanced placement high school courses, and the ability to focus solely on school without having additional job or family responsibilities.

R1S MUST ADAPT TO BETTER SUPPORT STUDENTS

"As the costs of higher education continue to rise, parents and students alike will become increasingly less willing to pay to be brutalized," said Lola Eniola-Adefeso, associate dean for graduate and professional education at Michigan Engineering at the time of the Summit, and co-organizer. Couple that with younger generations' deep regard for mental health and balanced living—regardless of race—and it becomes clear that R1s must learn to support students better. Institutions that remain entrenched in elitism will increasingly find themselves at a disadvantage, as the students who prioritize well-being and holistic support will have greater influence in shaping campus policies and decisions in the coming decade.

HBCUS WORRY R1S WILL RECRUIT AWAY FACULTY

The higher salaries, more abundant resources and lighter teaching loads at many R1s can make them attractive to research-minded HBCU faculty. In turn, HBCU faculty from underrepresented racial backgrounds can be highly sought-after by R1s, who would benefit from increasing campus representation of historically excluded groups and broadening the lenses through which they do science and engineering. These realities can make HBCUs wary of partnering with R1s, even while no one wants to limit anyone's agency or opportunities for career development.

Solomon Adera, assistant professor of mechanical engineering at U-M (center left) and Samual Graham, dean of the A. James Clark School of Engineering at the University of Maryland (center right) discuss the path forward with others.

To address these concerns, faculty and leaders at both types of institution can strive to build relationships out of a motivation to establish strong partnerships, and not as a pathway to faculty jobs. And for sustained change, the purpose of partnerships should be to develop HBCUs' research infrastructure and resources so that faculty—and graduate students—can flourish there long-term.

QUANTIFY FUNDING INEQUITIES TO MAKE THEIR TRUE IMPACTS VISIBLE

It was noted that some state-supported HBCUs consistently receive lower levels of funding in comparison to their state-supported PWI counterparts. While some of these funding disparities can be attributed to enrollment, the differences in some instances can be as great as an order of magnitude or more. Even with increases in HBCU state budgets over time, the amounts are rarely sufficient to cover significant infrastructure enhancements or deferred maintenance costs.

Ultimately, this creates a strain in HBCUs' ability to provide transformative educational experiences to their STEM students in the wake of leaps in technological advancement and discovery. HBCU faculty at the Summit also noted the plaques around the University of Michigan's campus that acknowledge naming gifts to labs, buildings and outdoor spaces—a testament to the way well-resourced institutions have a leg up in generating more resources.

From left, Dean of the Hampton University School of Engineering, Architecture and Aviation Joyce T. Shirazi, Olin College of Engineering President Gilda A. Barabino, and then Michigan Engineering Associate Dean for Graduate and Professional Education Lola Eniola-Adefeso at the Summit.

RECOMMENDATIONS

Summit attendees identified 4 key steps and 11 recommendations:

1. UNDERSTAND
Set a foundation for meaningful collaboration

2. ALIGN
Recognize common goals and unique strengths

3. PARTNER
Create innovative partnerships

4. SUSTAIN
Build infrastructure to maintain partnerships

1.UNDERSTAND

Set a foundation for meaningful collaboration

DEEPEN KNOWLEDGE OF ONE ANOTHER

For HBCUs and R1s to effectively pool their expertise to diversify the research workforce, they first need to better understand one another, both categorically and as individual institutions. Primarily, R1s and predominantly white institutions (PWIs) should strive to close knowledge gaps and abandon misguided assumptions. Additionally, deans from both types of institution underscored the tremendous variability among their ranks as they urged each other not to paint with broad brushes.

Actions for all

- Avoid generalizing. Each HBCU and R1 has unique attributes, challenges and priorities.
- Communicate with clarity, transparency and empathy. For R1s, one key aspect is developing understanding and relationships before soliciting a "partnership." For HBCUs, this could involve making expectations and needs known.

Actions for R1s

- Recognize that HBCU faculty have a higher teaching load—4-4 (four courses in both semesters) on average vs 1-2 at R1s.
- Have a sense of a day in the life of an HBCU faculty member and the multiple hats they wear.
- Abandon biases and misperceptions about HBCU students. They are talented and capable, like their peers at R1s. Their socioeconomic status varies just as on any PWI campus. HBCUs are historically, not exclusively, Black.
- Stop underestimating HBCUs. While there will be needs as their research programs grow, the perception of deficit leads to inequitable partnerships.
- Be aware of institutional barriers, such as: HBCUs won't have high research administration support at the outset. This can impact student/faculty access to funds even after they're awarded. Remember: funders consider whether institutions are set up to manage an award.

SPEND TIME AT EACH OTHER'S INSTITUTIONS

In-person visits, whether for an afternoon or a semester, are the best ways to deepen understanding and build trust. HBCU deans underscored the need for R1 leaders and faculty members to come to their campuses to experience their students, culture and opportunities first-hand.

Actions for all

- Spend sabbaticals at one another's institution.
- Teaching exchanges.
- Post-doctoral researcher exchanges.
- Travel funding, especially for new faculty, to cultivate relationships.
- R1s opening access to research facilities ahead of formal partnerships.
- HBCU faculty involvement in Research Experience for Undergraduate projects at R1s, many of which bring students from marginalized groups, among others, to R1 campuses to work in labs.

2.ALIGN

Recognize common goals and unique strengths

FIND SHARED MOTIVATIONS

As cornerstones in US higher education, HBCUs and R1s have many of the same goals. Recognizing common objectives can help build momentum and trust. As University of Michigan Provost and Executive Vice President for Academic Affairs Laurie K. McCauley remarked at the Summit, "The boundaries of our institutions don't matter as much as our drive for a life-changing education and for the generation of new knowledge. That is the core of what we're all here for."

Both HBCUs and R1s are striving to:

- Grow and diversify the ranks of STEM professionals and professors.
- Expand student opportunities with access to programs not offered at their home institutions, including in experiential learning.
- Build U.S. research capacity, especially in key areas such as advanced manufacturing, cybersecurity, quantum science and semiconductors.
- Push past the plateau in domestic students entering engineering programs to educate a future U.S. national security workforce.
- Serve their states' technology workforce and economy.
- In the wake of the ban on considering race in university admissions, develop resilient and sustainable pathways in particular for Black students and students of color.

LEVERAGE STRENGTHS FROM BOTH SIDES

Research collaborations have historically had a hub-and-spoke structure, as Gilda A. Barabino, president of Olin College, described in her Summit keynote. In that model, the more resourced, predominantly white, research intensive institutions are the central hubs, with spokes going out to partner institutions in other categories. The mindset doesn't lend itself to equitable partnerships that benefit from everyone's expertise.

To move toward that goal, Barabino recommends a "constellation model" instead, inspired by the way stars of different sizes together represent one unique picture. Ideally, partnerships should bring together high levels of support, expectations and resources, as well as expertise in both conducting research as well as teaching students who come from a variety of backgrounds.

Key HBCU strengths

- They uphold a culture of high educational support, where students are expected to succeed, rather than expected to struggle. HBCUs know how to nurture students to thrive.
- Their communities often shine light on understudied problems. Students from marginalized backgrounds, many of whom attend HBCUs, are often drawn to fields where they can make an impact on their own communities.

Key R1 strengths

- Their vast research infrastructure, in funding, facilities, operations and administrative support, provides faculty and students with cutting-edge tools and resources.
- Innovative courses, often with industry collaboration, are more common as faculty have a lower teaching load and more bandwidth to develop them.

3.PARTNER
Create innovative partnerships

MOVE IN EXCITING NEW DIRECTIONS TOGETHER

Research collaborations between HBCUs and R1s are uniquely suited to challenge the status quo, disrupt counterproductive norms and reveal critical gaps. The diversity of perspectives inherent in these partnerships can drive innovation. By bringing our complementary strengths to bear towards shared goals, we can move science forward for everyone.

Actions for all

- Identify non-traditional disciplines in which to explore and co-create curriculum. As the University of Michigan's Robotics Department demonstrated when it was established in 2021—people don't want to think in silos.
- Look for needs that partnerships are well-positioned to fill. For example, very few HBCUs have biomedical engineering programs despite the field's potential to address health challenges that disproportionately affect Black communities. Similarly, disciplines such as nuclear engineering or naval architecture and marine engineering, which are critical for our nations' future energy strategy and national security, are usually only found in select R1 schools, locking out students who opt to attend HBCUs.

COLLABORATE ON CURRICULUM, TEACHING, ADVISING, RESEARCH

This recommendation achieves several others—leveraging strengths from both sides and deepening knowledge of one another. In addition to alleviating burden for HBCU faculty with high teaching loads, these approaches can foster faculty knowledge sharing and relationship building, and give students the best of both worlds. They can also expand perspectives and broaden participation in R1 labs.

Actions for all

- Work together to create curriculum that can be taught or co-taught from both sides.
- Co-create modules for K-12 outreach.
- Co-develop scalable modules that offer badging and certificates in critical areas like cybersecurity, semiconductors and manufacturing.
- Identify opportunities for co-advising PhD students.
- Build cross-campus 3+2 bridge-to-doctoral programs in disciplines where the masters is the highest degree conferred at the HBCU, providing students more mentorship and time to adjust to research work on the HBCU campus. The additional collaboration between HBCU and R1 faculties could also provide more continuity in HBCU faculty's research workforce, which is often limited to 2-year master's students.

MAKE THE CASE TO HBCU STUDENTS

Doctoral degrees aren't popular pursuits, with just 2.1% of the U.S. population age 25 and older having earned one, according to Census Bureau's most recent survey of educational attainment in 2022. Among Black Americans, that number was 1.4%, making them even less likely to have a family member with a Ph.D. If the goal is for more HBCU students to pursue careers in research, they have to first know it's an option, and then consider it an attractive choice. Achieving this involves efforts throughout their educational journey.

Actions for all

- Start early in encouraging students to explore research careers.
- Place undergraduates in research labs through REUs and summer projects to show them what's possible.
- Let students know that graduate school can open up exciting opportunities in industry—not everyone becomes a professor.
- Consider framing undergraduate research opportunities as "hands-on experience" or "industry collaboration" for broader engagement.
- Show intersectionality to set a tone that's inclusive and empowering. Highlight how scientific research can address complex societal issues, as well as how your campus values students' multifaceted identities.

Actions for HBCUs

- Enable academic credit for summer research.

Actions for R1s

- When HBCU students are on campus for REUs, plant the seeds for graduate school.
- If your institution has a research facility that offers remote access, such as a nanofabrication lab, or U-M's Mcity 2.0, explore expanding remote capacity and offering programs that involve HBCU students.

Arunasalam Rahunanthan, Interim Dean of John W. Garland College of Engineering, Science, Technology, and Agriculture at Central State University, taking part in day two of the inaugural HBCU Engineering Deans Summit on the North Campus of the University of Michigan.

4.SUSTAIN

Build infrastructure to maintain partnerships

ADVOCATE FOR EQUITY IN FUNDING

Federal agencies spent a total of $44.6 billion on science and engineering activities at 1,089 higher education institutions in 2022, according to the National Center for Science and Engineering Statistics. Of that total, 59 HBCUs shared just 1.48%, which is, remarkably, a 19% increase over the previous year. It's no secret R1s get the lion's share of funding from federal and state agencies, private donors and corporate sponsors. That's due in part to their structural advantages, including sophisticated research administration offices that support faculty throughout the process, said Arthur Lupia, University of Michigan interim vice president for research and innovation, at the Summit. "At U-M, we have a lot of resources to help people at every level. Not everyone has that. But a lot of places have amazing people with unbelievable ideas," said Lupia, who served a term as head of the National Science Foundation's Directorate for Social, Behavioral, and Economic Sciences.

Actions for all

- Request to serve on federal agency review panels to bring additional lenses to funding decisions.
- Push corporate sponsors to be equitable in funding projects.
- Leverage industry funding as glue to co-create research programs. Identify shared sponsors and approach them together with joint proposals.
- Keep this alliance between HBCU and R1 deans going, inviting more funding agencies to future gatherings.

Actions for HBCUs

- Develop proposals for programs like NSF GRANTED, which builds capacity for research administration, including refining & managing awards.

Actions for R1s

- Balance the marketing scales. Brand individual partnerships in public-facing ways to showcase the value of distinct collaborations. Make HBCUs visible in promotional materials about partnerships.
- Encourage communications staff to use your megaphones to share stories and content from HBCUs on social media, etc.

BUILD BANDWIDTH FOR TRUE PARTNERSHIPS

To establish and maintain real, impactful partnerships, faculty and institutional leaders need time, patience, energy and intentionality on an ongoing basis. The work can't be done well if the expectation is that it be done quickly, and on top of everything else. Institutions or faculty members should set up structures and processes that allow and encourage this work to be prioritized.

Actions for all

- Accept that collaboration requires time, and work it into schedules intentionally.
- Ensure that partnerships are valued at all levels, from the individual faculty to institutional leaders. Don't rely on one person to carry the torch.
- Explore funding opportunities for planning grants to increase the likelihood of successful proposals.
- Identify ways R1s can support HBCU faculty that have higher teaching loads.

STRENGTHEN SUPPORT OF HBCU STUDENTS AT R1S

The summer lab experiences, exchange programs and graduate degrees that lead to careers in research are primarily offered at R1s today, and HBCU students who pursue them often encounter significant challenges when transitioning between institutions. Even those who thrived in HBCUs' nurturing, community-minded environments may struggle in R1s' high-pressure, competitive, predominantly white settings. For Black and Hispanic students, for example, academic stress can be compounded by experiences of bias and insecurity in new communities where very few people look like them. Robust student support cultures and structures are essential at R1s in order to provide HBCU students with equal opportunity to pursue research careers, and to fully leverage the nation's science and technology talent.

Actions for R1s

- Ensure that HBCU students have a cohort at the R1. Peers are critical for students' well-being.

- In 3-2 bridge programs, explore ways to integrate cohorts with the broader university to avoid "parachuting into the middle of a party."
- Create a circle of mentors for students.
- In exchange programs and summer opportunities, look for ways to alleviate economic hardship due to differences in costs such as tuition and housing. Make sure stipends or allowances are enough.
- Practice the intersectional philosophy that was exhibited to attract HBCU students to research careers. Value students' multifaceted identities and unique contributions, and show them you do.

ENHANCE LAB INFRASTRUCTURE AT HBCUS

State-of-the-art labs seed and cultivate research, and even contribute to the local economy (if they are user facilities available to industry). Advanced facilities at HBCU engineering schools are essential to expanding their research portfolios, growing their graduate programs and bridging the technology knowledge gap for undergraduates. They also signal long-term commitment and investment. At the same time, they're difficult to get off the ground. Generally grant funds aren't permitted to be spent building or maintaining physical buildings.

Actions for all

- Locate large regional research facilities at HBCUs, creating a positive feedback loop.
- Solicit industry support through three-pronged partnerships with HBCUs and R1s.

Actions for HBCUs

- Approach your state to fund a research facility that can also propel workforce development in priority areas.
- Partner with other HBCUs in proposals to industry or government

Actions for R1s

- Support HBCUs in these efforts. Don't stand in their way.

University of Michigan Provost Laurie McCauley introduces keynote speaker Gilda Barabino, President of Olin College of Engineering, on day two of the inaugural HBCU Engineering Deans Summit on the North Campus of the University of Michigan in Ann Arbor.

RESOURCES

Yolander Youngblood, NSF program manager, and Oscar Barton Jr., Dean of the Clarence M. Mitchell Jr., School of Engineering at Morgan State University taking part in day two of the inaugural HBCU Engineering Deans Summit.

USEFUL GRANT PROGRAM

At the Summit, federal agency program directors and U-M research leaders highlighted several funding programs designed to build research capacity at HBCUs.

SUPPORT FOR RESEARCH ADMINISTRATION

Resource: NSF GRANTED, or Growing Research Access for Nationally Transformative Equity and Diversity

How it works: The unique program does not fund scientific research or education. It funds the research enterprise—people and processes that help faculty navigate the complexity of pursuing and managing externally supported activities. Essentially, it enables NSF-sponsored research offices that can support, for example, a region, a topic or a particular service.

From the funder: "Principal investigators from emerging and developing research institutions often lack the support to help develop meritorious ideas, contact federal program staff, keep updated on federal funding priorities, and assist in the pragmatics of grant submission and award management. This puts talented Principal Investigators (PIs) at these institutions at a disadvantage and prevents the nation from benefiting from numerous impactful scientific advances and the advancement of STEM talent." —GRANTED website

One win: With $14 million over five years, the Atlanta University Center Consortium of four HBCUs is establishing a consortium-wide Office for Research and Technology Commercialization. The hub could serve as a national model.

Fine print: No funding minimum or maximum. Proposals accepted on a rolling basis. PIs and Co-PIs could be research enterprise staff.

ON-RAMPS TO RESEARCH DOLLARS

Resource: NSF's HBCU-EiR, or Historically Black Colleges and Universities - Excellence in Research and related Planning Grants

How it works: The program aims to support faculty and strengthen connections between them and core NSF program directors. Any HBCU full-time faculty or researcher is invited to apply, especially those who have not yet successfully secured NSF funding. Separate planning grants can help with conceptualization.

Lealon Martin, Dean of the College of Sciences and Engineering at Southern University and A&M College (center), and his daughter (right), mingle at U-M's Ford Library during the first day of the Summit.

From the funder: "The average funding rate for proposals from HBCUs submitted directly to NSF's Engineering Directorate is 20%, based on 2022 data. The hit rate for those submitted through HBCU-EiR is 25%. That's a sizable difference. … Keep in mind that STEM education research can also count, and not just to build an education program. Tie your classes to your research and you can get more proposals funded." —Yolander Youngblood, NSF Program Lead

5-year impact: From 2018-2023, more than $120 million has been distributed to 51 HBCUs in more than 260 awards.

Fine print: The program is annual, with letters of intent due in July and full proposals in October. Up to 30% of the budget can be allocated for equipment. Planning grant maximum is $100,000.

WHAT SUCCESS LOOKS LIKE

Engineering leaders from HBCUs as well as R1s gathered for the first HBCU Engineering Deans Summit, held at the University of Michigan.

IF WE SUCCEED, THIS IS WHAT WE'LL ACHIEVE:

1.

ROBUST RESEARCH INFRASTRUCTURE AND ENGINEERING PH.D. PROGRAMS AT HBCUS

These can pave the way for diversifying and growing the nation's STEM workforce, and better serving communities that have historically been excluded from science and engineering.

2.

STRONG, LASTING—AND FLEXIBLE—PARTNERSHIPS

Collaborations with R1s can support HBCUs as they develop their research pillars. Much of this report addresses the how and why behind "strong" and "lasting" partnerships. Flexibility becomes important as wins begin to happen.

3.

SOME PROGRAMS MAY SUNSET, OR PUT THEMSELVES OUT OF BUSINESS

Eventually there may not be a need for as many bridge programs at R1s once labs and doctoral programs at HBCUs expand, for example. So partnership structures and collaborators must be capable of evolving in ways that continue to fortify the foundation of innovation that the nation is built on, as well as make it more level—equitable in terms of who is included in science and engineering and who those fields serve.

PARTICIPANTS

We hope to look back at the 2024 Summit as the start of a monumental shift.
The HBCU Engineering Deans Council aims to meet at least once a year among themselves in a similar Summit, as well as with R1 leaders. Plans are underway for 2025.

"As we embark on this promising path, the partnership between HBCUs and R1 institutions is not just about building bridges, but about reshaping the landscape of engineering education and research in the U.S.," said Dawit Haile, dean of the College of Engineering and Technology and interim vice provost for academic affairs at Virginia State University.

"All ABET (Accreditation Board for Engineering and Technology) HBCU deans are committed to leveraging this momentum to address disparities, foster genuine partnerships, and equip our students to be the leaders and innovators that drive the nation's STEM workforce forward."

HBCU ENGINEERING DEANS

Heshmat Aglan, Tuskegee University
John M. Anderson, Howard University
Oscar Barton, Jr., Morgan State University
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This report summarizes key discussions and insights shared during the 2024 HBCU Engineering Deans Summit, as observed by the report's authors. The document reflects the outcomes of the Summit and provides a summary of themes, suggestions and proposed actions discussed by participants. It does not represent formal endorsements or positions of all individual participants or institutions involved, but rather seeks to capture the essence of the collaborative dialogues aimed at strengthening partnerships. The University of Michigan, as the host institution, played a key role in organizing the Summit and compiling this report, gathering insights from Summit discussions, and encourages ongoing engagement and feedback to further refine the shared recommendations as we continue to build collaborative efforts.

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