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NACME Board of Directors, inside back cover
Dear Colleague,

The 2011 NACME National Symposium, held on October 18-20, 2011, in St. Paul, Minnesota, assembled some of the world’s most notable leaders from the academy, business, K-12 education, and government to share promising and best practices in the effort to grow the number of underrepresented minority women and men in the science, technology, engineering and mathematics (STEM) fields of study and careers.

This unprecedented event, which was graciously hosted by 3M, was designed as a follow-up to the 2008 NACME National Symposium, during which a series of Calls to Action was issued. These Calls to Action were intended to challenge like-minded individuals to move beyond discussion and debate and to take action at the local, national, and global levels to proactively resolve The “New” American Dilemma: the relative absence of African Americans, American Indians, and Latinos in STEM study and careers, and the requirement to reverse this situation to better compete globally.

When we set out to organize the 2011 NACME National Symposium and the panel discussions, I was struck by not only the number of eager participants but also the broad range of perspectives and experiences they brought to our consideration of The “New” American Dilemma. Among the world-class roster of keynote speakers and panelists at this event were top officials from the Department of Defense; the National Academy of Engineering; college and university presidents; CEOs from corporations and like-minded organizations; and, of course, the White House Office of Domestic Policy.

The outcomes of the 2011 NACME National Symposium far exceeded my expectations. The insights and perspectives shared on moving the needle in terms of underrepresented minority participation in STEM education and careers were right on point. The personal stories were moving and motivational. During the Awards Dinner at the Science Museum of Minnesota, we were also privileged to hear from two outstanding students from Scotlandville Magnet High School in Baton Rouge, Louisiana. Scotlandville is one of the Academies of Engineering (AOEs), which are a part of the National Academy Foundation (NAF) network of career academies founded in conjunction with NACME and Project Lead The Way (PLTW). Schalyric Self and Keltrin Burrell captivated the audience at the Awards Dinner with their personal stories of resilience and commitment to becoming engineers. Schalyric’s gift of song was also a highlight of the evening.

The attached NACME Comprehensive Symposium Report features clear and compelling ideas and insights from symposium speakers and specific references to What You Need to Know to increase the representation of talented African American, American Indian, and Latino women and men in STEM education and careers. Our hope is that this report will inspire you to action. The time for doing—for taking action—is now.

Sincerely,

Irving Pressley McPhail, Ed.D.
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Myra Gordon, Ph.D.
Associate Provost
Diversity and Dual Career Development
Kansas State University
Session I
A Collaborative Model for Pre-Engineering Education

According to data from NACME’s 2008 report, Confronting the “New” American Dilemma, the gap between the number of African American, Latino and American Indian women and men graduating with bachelor’s degrees in engineering, and their white and Asian American counterparts, continues to widen. For example, non-Latino, white males still account for more than half (57.4 percent) of engineering undergraduates even though the group represents just 29 percent of all undergraduate students. On the other hand, underrepresented minorities (URMs) account for 34 percent of the U.S. population ages 18 to 24, and out of more than 68,000 bachelor’s degrees in engineering awarded in 2006, fewer than 8,500 went to URMs. In other words, while three out of 10 Americans identify as an underrepresented minority, only about one out of 10 members of this group becomes an engineer.

Following NACME’s 2008 National Symposium, Confronting the “New” American Dilemma, a series of calls to action for K-12 education were developed to increase student interest in STEM education and raise high school graduation rates. They included:

- Infusing STEM throughout the K-12 curriculum via active, hands-on, project-based learning and introducing students to STEM careers, starting in preschool with awareness activities
- Identifying and emulating model schools and best practices that show success with URMs
- Refusing to accept stereotypes that women and minorities are not as proficient in STEM disciplines
- Significantly improving guidance counselors’ knowledge of STEM careers and college programs and have them sending the message to students that STEM careers pay off in terms of salary, prestige and challenge
- Having genuinely high expectations for students of color and doing everything necessary to help students meet those expectations

In this first session on K-12 education, the message from the experts who spoke at NACME’s 2011 National Symposium was that STEM-driven curriculum programs they have put in place to answer these calls to action, such as Project Lead The Way (PLTW), are having a positive impact. Rex Bollinger, Senior Vice President and Chief Engagement Officer for Project Lead The Way, talked about the successes at Hawthorne High School in Los Angeles, Ruskin High School in Kansas City, Missouri, and Milwaukee Public Schools in Wisconsin. All the schools have high enrollment rates of underrepresented minorities and have seen:
- Improvements in increased attendance
- Increased interest in STEM careers
- Increased test scores
- Decreased dropout rates
- Increased college enrollment

Milwaukee Public Schools have also seen an elimination of the gender gap. According to Bollinger’s presentation, 90 percent of PLTW students surveyed at the end of their senior year said that they had a clear sense of the types of college majors and jobs they intended to pursue. What’s more, regions in which PLTW is part of their school’s curriculum are seeing economic growth.

“What we are seeing emerge from PLTW is much interest in economic development within state regions and within counties of states. PLTW as a driver for educational improvements is seen as directly related to economic development,” says Bollinger.

Elementary School Improvements
Two of the most successful programs for elementary students in the Charlotte-Mecklenburg School (CMS) system in Charlotte, North Carolina, is Engineering is Elementary, a national program designed to excite students and teachers about science, technology, engineering and math; and Camp Invention, a weeklong summer enrichment program for children entering grades one through six.

“In 2008, we had 14 elementary schools participating in Camp Invention,” says Ann Clark, Chief Academic Officer at CMS. “Today, we have 63 of our 106 elementary schools participating. While we are excited about the opportunity Camp Invention presents for our students, the program has resulted in some of the highest quality professional development for our teachers. They get incredible training and they take these strategies back into the classroom during the regular school year. When we looked at the test scores of our fifth graders in science over the last three years, our schools that had Camp Invention were sitting at 88 percent proficient compared to the district average of 79 percent. That’s a pretty significant change.”
“Successful programs do not exist in a vacuum. They exist when all of us, K-12 and higher education, business and industry leaders, come together and engage kids early so they can make decisions at an appropriate age and stay engaged.”
Brian K. Corpening, Assistant Provost for Diversity & Community Partnerships, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma

“Our approach to STEM education is that quality math and science instruction is Job One. We’re engaging school-based curriculum tied to college and career goals through programs such as Project Lead The Way.”
Laura L. Loyacono, Director, KC STEM Alliance, Kansas City, Missouri

A STEM education equals economic prosperity.
“Economic development and workforce development are real drivers for change in our community. We’ve gone from cotton mills to banking and finance and now our economy is driving us toward STEM-focused industries, including engineering, energy, defense, advanced manufacturing, information technology and the health sciences.”
Ann Clark, Chief Academic Officer, Charlotte-Mecklenburg Schools, Charlotte, North Carolina

“What I really want to impress upon you is the fact that it is so important that kids come to school every day and know they can depend on us. We’re the people who have to provide the opportunities for the kids to be successful.”
Verna Martin, Associate Director of Secondary Schools, Oklahoma City Public Schools, Oklahoma City, Oklahoma

“The basis for our success is built on the basic framework we created in our Academy of Engineering, which includes student and teacher cohorts. The teachers meet weekly to discuss student data, academic success and attendance and behavioral concerns. What we’re doing in essence is student chats and parent conferences. We want to make sure that the students understand their pathway and that the parents are part of our growth and our successes.”
Daniel Hennessey, Student Services Coordinator, Bay View High School, Milwaukee, Wisconsin

Daniel Hennessey
Student Services Coordinator, Bay View High School, Milwaukee, Wisconsin

Building a Successful School

Although Daniel Hennessey was a history major in college and planned on becoming a historian, a familial pull to a career in education turned out to be too strong to ignore. Hennessey’s grandfather, mother, aunt and four of his five sisters have all been teachers. So, “teaching was a natural fit for me,” says Hennessey. After serving several years as Assistant Principal and Director of the Academy of Engineering at Bay View High School, Hennessey is currently Student Services Coordinator.

Designated as a School Identified for Improvement (SIFI) Level 5 under the No Child Left Behind Act for missing the adequate yearly progress (AYP) requirement for reading and mathematics for at least five years, Bay View has actually been a failing school for more than 10 years, Hennessey says. The last year, however, has seen a dramatic rise in not just student attendance—up 7 percent—but in academic achievement as well, with a 10 percent gain in math and an average gain of 3 percent in other core content areas, an accomplishment Hennessey attributes to the establishment of the Building, Architecture and Technology Academy (BATA) and the Academy of Engineering, both of which connect students with industry professionals and provide them with the tools they need to succeed.

“Within the engineering program we bring in outside experts so the students start to understand the application of the engineering program in everyday life,” says Hennessey. “We also bring in engineering students from our local community college, as well as from the Milwaukee School of Engineering, so we can help high school students make the connection between what’s going on in the classroom and how it’s applied in real life. They also see that getting to college based on this field is realistic.”

Incorporating Engineering Concepts Into the School Curriculum
The Academies also provide teachers with specific engineering curricula to integrate into each of their regular subject areas. “Each area focuses on the application of math and how it connects with other subjects being taught. So, it is trying to embed the concepts of math and the sciences into the curriculum. Students are learning the very important content that they have to have in general, but teachers are also anchoring the engineering concepts as they go through their day,” says Hennessey.
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Session II
Best Practices for Building Engineering Awareness With Underrepresented Minority Students

The second session on K-12 education dealt with the critical need to raise awareness among URM students, parents, educators and business leaders on how doing well in STEM studies can translate into a variety of engineering careers. The panelists also explored how to overcome some of the greatest challenges facing the country today, such as:

- **Raising reading, math and science scores.**
  U.S. students finished 15th in reading, 19th in math and 14th in science in the ranking of 31 countries by the Organization of Economic Cooperation and Development

- **Training more teachers in STEM education.**
  About one-third of high school math teachers did not major in the subject in college or are not certified to teach the course, and two-thirds of those enrolled in physical science have teachers who did not major in the subject in college or are not certified to teach the course

- **Encouraging more women to go into STEM careers.**
  While women make up about one-half of the U.S. workforce, they account for less than 20 percent of B.S. Engineering graduates

Panel members discussed the most promising best practices to achieve these goals resulting in greater participation by URM students in STEM fields, including:

- Creating environments in which students can learn about STEM career opportunities and showing students that they have a place in those careers
- Having role models in STEM fields that females and other underrepresented minorities can interact with so they can see themselves in those careers
- Providing students with the best school facilities and the best teachers trained in STEM education and who adopt an integrative, multidisciplinary approach to science and math classes
- Broadening the concept of what constitutes engineering professions to include any profession that is engaged in the conception, design, realization, implementation, operation and the maintenance and retirement of products, processes or services
- Supporting in-house student mentoring programs utilizing volunteers from engineering businesses and developing internal internship programs
- Fostering research on engineering education from K-12 to graduate school to understand the most effective ways students learn

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**What You Need to Know**

Panel participants offered the following advice to improve participation of underrepresented minorities in STEM studies and careers.

“We need to create an environment in our schools in which our kids can learn STEM fields in an engaging fashion. We need to create project-based, hands-on ways in which a mathematical formula comes alive through a digital-electronics project or a science experiment turns more into a design-based experiment where students can control their learning and where more of our children will be able to embrace math and science.”

Lauren Baker, Coordinator, Career & Technical Education, Milwaukee Public Schools, Milwaukee, Wisconsin

“Today in our country, there are two issues that are of greatest importance: STEM education and manufacturing. Both are now being talked about constantly by politicians and finally people are beginning to get it through their heads that STEM and manufacturing are things that must be taught and embraced in this country if we’re going to remain economically viable and provide good jobs and a good standard of living for our workforce.”

Bart Aslin, COO, Society of Manufacturing Engineers Education Foundation, Dearborn, Michigan

“We have to prepare students to be flexible and to be able to shift with the way the world is growing. My students know that high school is not going to do it. You have to have a post-secondary education. We talk a lot about two-year colleges and somehow two-year colleges are kind of the stepchildren and sometimes aren’t even called colleges by my colleagues. They refer to them as tech schools. No, that’s post-secondary education, that’s college. We have to change the way we talk to our kids about what’s happening after they leave high school.”

Melinda Wyant Jansen, Guidance Counselor, Escuela Vieau Middle School, Milwaukee, Wisconsin

“I work with the Texas High School Project and it’s a public-private partnership in which we work with the Texas Education Agency, as well as private foundations. We started out with 59 academies; now we’re scaling that to the school districts and working with those academies that are in are 9th – 12th grade schools. They said we have to work with our middle school teachers and we have to...”

Melinda Wyant Jansen, Guidance Counselor, Escuela Vieau Middle School, Milwaukee, Wisconsin
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school component and we said let’s see how we could do that. Now we have more schools that are doing a 6th- through 12th-grade model and all of our schools have to have a technical or a two-year college to put with it, as well as a four-year school, and the important component is they have to have business and industry partnerships to really engage the community. It’s very important that schools see themselves not as an isolated community but as a community of learners.”

Reo D. Pruett, Ed.D., Program Officer for T-STEM Academies, Texas High School Project, Texas STEM Academies, Dallas, Texas

“We partner in such a way that we want to have a connected strategy. We actually partner with the school districts so they have Project Lead The Way, Engineering is Elementary, and all the associated programs. We want to be involved with them to make sure that the programs are in line with the curriculum and with the strategy for the state, because we know that it’s a war for talent out there. In our company we have 10,000 technical employees. Within the next three to five years, over half of them will be eligible for retirement. And we can’t import enough labor, especially knowledgeable workers, because of immigration issues, export control and, for the defense industry, security clearances. We know that we have to get our talent at home. All states are experiencing a brain drain. We have to do whatever we can to keep our students here and create a pipeline for ourselves starting from pre-school through graduate school. We have to have a way that a person can go from kindergarten to graduate school and every step of the way have a program that supports him or her.”

Olester Benson, Jr., Ph.D., Corporate Scientist, 3M Corporate Research Process Laboratory, St. Paul, Minnesota

Norman Fortenberry, Sc.D.
Executive Director, American Society for Engineering Education, Washington, D.C.

Changing the System to Fit Student Needs

“When we talk about underrepresented minority participation in STEM studies, that has inherent value, because we need everyone to participate in engineering fields. Everyone should have that option. We need to make sure that we include people across the economic spectrum that have potential talent. They deserve a shot too,” says Norman Fortenberry, Sc.D. Dr. Fortenberry is a longtime national leader in engineering education and has held senior positions at the National Science Foundation and the National Academy of Engineering. Currently, Dr. Fortenberry is the Executive Director of the American Society for Engineering Education (ASEE).

To raise student awareness of engineering careers, ASEE provides a variety of resources for K-12 students and teachers, including TeachEngineering, an online digital library that showcases standards-based engineering content in science and math. ASEE also has a website (eGFI-k12.org) and magazine (Engineering Go For It!), which promote K-12 STEM and engineering education and include teacher and student newsletters. ASEE also collaborated on the development of Family Engineering, an online resource that provides informal engineering-learning experiences to elementary-age children and their families.

Succeeding in College

To ensure that all students as they move into college continue to get the necessary preparation to succeed in engineering careers, Dr. Fortenberry says colleges and universities need to adapt to the needs of the students instead of trying to fix the students to fit the environment. Dr. Fortenberry says, “students are coming in with different sets of characteristics. It doesn’t mean that they are inferior characteristics, they’re simply different, and to a large extent, engineering schools and engineering faculty continue to teach the way they used to teach with very similar methods and very similar content, and students today have a choice. We used to be able to sit back and say, ‘We’ll get the good students and they’ll come to us.’ That’s no longer true. We need to compete for them, so we can’t change the students to fit our system. We have to modify our system to make it more attractive to the students coming in.”
Session III
Creating Systemic Change in Recruiting, Enrolling, Educating, Retaining and Graduating Underrepresented Minority Students in Engineering

Over the last 37 years NACME has supported more than 24,000 URM students with $124 million in scholarships toward their undergraduate degrees. Between 1995 and 2010, 2,027 URMs have received Ph.D.’s in engineering through NACME’s Alfred P. Sloan Foundation Graduate Minority Scholarship Program.

Following NACME’s 2008 Symposium, Confronting the “New” American Dilemma, a series of calls to action for higher education were developed to increase the number of undergraduate and graduate URMs in engineering. They included:

- Removing systemic barriers to URM’s participation in college by addressing financial aid and admissions policies
- Fighting back against efforts to create “color blind” institutions by developing and implementing legal programs to admit and retain talented URMs
- Creating special programs for supporting and retaining URMs as they go through college; programs should make available peer groups, mentors and role models
- Making URM admissions and retention a primary metric of institutional success
- Using political capital to push government policies that open doors to postsecondary education for URMs

The panelists at the 2011 NACME National Symposium explained how they are successfully meeting these challenges at their universities using the following strategies:

- Implementing a mandatory first-year course in engineering for all transfer and first-year students to increase the retention rate of engineering students
- Adopting local middle and high schools to make URM students aware of STEM programs at nearby universities and assisting students in after-school engineering projects. Outreach programs to make students aware of STEM studies can be achieved through engineering camps for 7th- through 11th-grade students using counselors from multicultural engineering programs, engineering graduate students or staff members of the Society of Women Engineers; engineering family nights for K–8th-grade students; and Summer Bridge programs for students needing calculus instruction before entering college engineering programs
- Providing scholarships based not solely on financial need but on student merit, as well. “The American Indian Science and Engineering Society (AISES) is one of the few organizations that gives scholarships based on merit. And that’s a big distinction, because oftentimes not only is there too small of a population out there actually pursuing STEM degrees, but then we limit their access to resources by saying that they’re income-based. We’re too small of a population to be making those kinds of elimination categories. We need to fund any student who is willing and interested in pursuing a STEM degree,” says Pamela Silas, Chief Executive Officer of AISES
- Recruiting more Native Americans to STEM studies by understanding their culture and making them feel welcome — for example, by inviting Native American faculty members and students to speak on college campuses and establishing partnerships with tribal communities. Additional elements of successful strategies include linking curriculum and concepts to relevant real-world situations and connecting students with employment opportunities through internship programs and career development workshops
- Partnering with college admission offices through GoldShirt programs, like the one at the University of Colorado at Boulder, to select students who have demonstrated motivation for success but who lack enough math, science or humanities preparation before delving into a full undergraduate engineering curriculum
LaVerne Bitsie-Baldwin
Director, Multicultural Engineering Program, Kansas State University, Manhattan, Kansas

Increasing Diversity Enrollment in STEM

Teaching is in LaVerne Bitsie-Baldwin’s genes. Her father and two of her aunts are teachers, and after pursuing a teaching career, Bitsie-Baldwin has now turned her attention to the recruitment of URM students in Kansas State University’s Engineering program. Named Director of the University’s Multicultural Engineering Program in 2005, her efforts have resulted in skyrocketing increases in diversity enrollment in the College of Engineering, including:

- 78.1 percent increase in URM enrollment
- 140 percent increase in URM freshmen enrollment
- 123.6 percent increase in Hispanic/Latino enrollment
- 120.8 percent increase in multiracial enrollment

These accomplishments have garnered her the 2010 Outstanding Director Award from the National Association of Multicultural Engineering Program Advocates (NAMEPA). Bitsie-Baldwin credits the growth of Kansas State’s Multicultural Engineering Program with the inter-collegiate partnerships she’s forged among Kansas State’s Colleges of Agriculture, Business and Engineering and with funding from government agencies, foundations and corporations.

“Over the last five years we’ve gotten support from the National Science Foundation, NACME, ConocoPhillips, Cargill Corporation and Dow Chemical and that funding has enabled us to build a set of retention programs and implement a Summer Bridge program between high school and college and provide students with scholarships from NACME and Cargill,” says Bitsie-Baldwin.

Bringing Diversity to Campus

Cargill Corporation also supports Kansas State’s Multicultural Academic Program Success (MAPS), the Project Impact Summer Bridge Program, which provides a variety of benefits, including faculty and NACME’s scholar mentors and scholarship opportunities to multicultural students with majors in agriculture, business and engineering.

Another component of MAPS is outreach activities in Hispanic communities across the state. In conjunction with the Hispanic American Leadership Organization, Kansas State hosts a leadership seminar each fall to attract Hispanic students to the campus to experience college life and learn about STEM, as well as other academic majors.

“We usually have between 400 and 500 Hispanic students from around the state participating in the event. Nationally renowned speakers from the Hispanic community come and our different colleges are invited to give sessions on subjects such as marketing, agriculture and engineering,” says Bitsie-Baldwin.

Events like this, says Bitsie-Baldwin, help students get beyond the stereotypical image of careers in science and engineering.

What You Need to Know

Panel participants offered the following advice to improve participation of underrepresented minorities in STEM studies and careers.

“We developed a new College of Engineering Success Center because students can’t learn calculus, chemistry and physics by themselves; they need study buddies. So, we were able to secure real estate from the university and an engineering library, study cubicles and a senior design room, and that really brought all the students together. Having the Center has helped our graduation rate grow 25 percent since 2008.”
Kendall T. Harris, Ph.D., P.E., Dean of Engineering, Prairie View A&M University, Prairie View, Texas

“To create a systematic change you have to incorporate three strategies into your plan. One is to have a five-year strategic plan for diversity that includes goals, actions and a metric for measuring success. Two is identifying resources for outreach, enrollment, retention and graduation, such as financial corporations, individual donors and grants. And third, you have to secure college-level support and recognize and appreciate faculty members devoted to the engineering education of underrepresented minorities and women.”
P. Simin Pulat, Ph.D., Associate Dean, College of Engineering, University of Oklahoma, Norman, Oklahoma

“When our Alaska Native Science & Engineering Program launched in 1995 there had only been three Native American graduates in engineering in the previous 15 years, and now we have 198 engineers and scientists. Generally, the people I meet in the state don’t think about Alaska Native people and other minority people as being engineers and scientists. So, we started running TV commercials to showcase our pre-college programs, including Middle School Academy, Computer Assembly, Acceleration Academy, Academies of Engineering, and Jump Start. We also have commercials for our Summer Bridge, University Success and Graduate Success programs. We just graduated two Ph.D.’s from our Graduate Success program last August.”
Herb Schroeder, Ph.D., Assistant Dean, University of Alaska Anchorage, Anchorage, Alaska
Session IV
Enhancing the Community College Pathway to Engineering Careers for Underrepresented Minority Students

One of the greatest challenges facing the economy today is the lack of a highly skilled and educated workforce to meet 21st century demands and global economic competitiveness. Community colleges are an increasingly important entry point to higher education for URMs and a critical component in returning the U.S. to its place as a global leader in higher education degree attainment. However, fewer than half of all students who enter community college with the goal of earning a college certificate or degree have reached that goal six years later. And even fewer numbers of URMs attain that goal.

Panel members at this Symposium session talked about the strategies they are employing at their community colleges to reverse this trend. They include:

- Expanding the national initiative Achieving the Dream, a program instituted to help more community college students succeed, especially URMs. Launched 10 years ago, Achieving the Dream is now part of 160 institutions in 30 states
- Raising student achievement in developmental mathematics by instituting math initiatives that offer community college students extended hours of instructional time with math tutors and provide additional support to students in self-paced math classes and an acceleration of developmental math sequence. For example, at Springfield Technical Community College, students have three hours of traditional mathematics instruction, including lecturing, problem-solving and textbook work, and three hours of group problem solving. Group projects are all engineering-based and include designing structures, such as a house or wind-mill using mathematical formulations
- Modifying course elements to suit the needs of community college students who often have to work while going to school. For example, offering supplemental instruction for math and science courses and providing students with a sense of connectivity when transferring from a community college to a four-year institution by developing a transfer process that is consistent and coherent
- Utilizing community college engineering students in mentoring K-12 students about the career opportunities that exist in engineering through one-on-one visits to middle and high schools, summer camps and events like Engineering Days and Women in Engineering Days
- Developing mentoring programs for specific minority groups. “We have a program for ethnic minority young men. If you look at the data, that group has the highest failure rate both at the high school and college levels. A mentoring program that brings in African American and Latino engineers, as well as business people, can be very successful,” says Ira Rubenzahl, Ph.D., President, Springfield Technical Community College
- Establishing an engineering study center on campus where science and math students and faculty can gather and break down the silos that prevent learning, establish a sense of teamwork and hone professional skills crucial for a successful career
- Encouraging on-campus visits by four-year college recruiters to help community college students feel valued and encouraged about transferring to a four-year college and beyond

What You Need to Know
Panel participants offered the following advice to improve the community college pathway for underrepresented minorities in engineering careers.

“Our mission is to help community colleges do better at what they have been doing well at for many, many years and that is to be an open access institution so that low-income students and students of color will have an opportunity to advance their educational experiences and learning. [However, research is showing] that the success rates of these students are unspectacular. We are working with partners to concentrate on areas that are of keen interest, including math, reading and writing. I know that we haven’t heard a lot about reading and writing, but in order for students to really function effectively as a math learner, they have to be able to get past the language issue so they can understand what it is that they’re doing in mathematical problem solving.”

William E. Trueheart, Ed.D., President and CEO, Achieving the Dream, Silver Spring, Maryland

“Seventy percent of our students place into at least one college course in English, reading or mathematics, but the biggest problem clearly is mathematics. The national statistics are that 60 percent of all community college freshmen, and a significant portion of four-year college freshmen, are not ready to do college-level mathematics. That is a huge roadblock to STEM fields. You cannot enter these fields, especially
“Two of the challenges our students faced were a lack of laboratory access and internship opportunities. We were able to look at getting our industry partners to invest in our community college early on and we started off with Hewlett-Packard (HP) and asked if they would be willing to give our students internships. At the time HP was competing with Google, Intel and Microsoft for the same talent pool once they graduated from a four-year institution and the company saw that there was a lack of laboratory access for our students. HP was one of the early pioneers in our partnership to say we'll partner early and give students access. Now we're able to get our community college students into labs earlier and I think that drives their interest, their awareness and exposure to STEM careers a little quicker.”

James Dorsey, Executive Director, Washington State Mathematics, Engineering, Science Achievement (MESA), Seattle, Washington

“We have difficulty making engineering attractive to students. When I do outreach to high schools in my area, students tell me that engineers are not hot and sexy. So, I ask them to take out their tech gadgets and ask them who they think designed those tech gadgets. And they slowly see the picture.”

Seti Sidharta, Ph.D., Director, Center for Science Excellence, Contra Costa College, San Pablo, California

Seti Sidharta, Ph.D., was attracted to teaching because she likes making complicated information easy to understand and is energized by the enthusiasm of her young students. “I started as a teaching assistant and I thought this is a great thing to do, because I liked the daily interaction with students, and teaching beat working in an office or alone in a research laboratory. So, when I finished my dissertation I jumped into teaching and I’ve never left,” says Dr. Sidharta.

Today, Dr. Sidharta heads the Center for Science Excellence (CSE), which provides financial and academic support to underrepresented students majoring in STEM studies through mentoring, workshops and tutoring programs; helps ease the transfer process to four-year colleges; and provides a variety of academic activities, including trips to places with a science and technology emphasis and seminars by professionals in their field. In 2001, CSE won the Presidential Award for its mentoring program in STEM fields, making Contra Costa College the first community college to receive the prestigious award.

A Bridge to a Four-Year Degree and Beyond
To help high school students transition to the more challenging college curriculum, Contra Costa College provides Summer Bridge, a six-week residential program in which students get to experience campus life and pre-calculus and calculus classes and pre-engineering workshops. Once students are enrolled, the next goal, says Dr. Sidharta, is to encourage them to complete not only their two-year degree but to pursue a four-year degree in engineering as well, a daunting prospect for many minority students and their families.

“In a community like ours, students don’t even think about going to college, let alone a four-year college, so we have outreach programs not just to help high school students see college as a feasible endeavor but to help their parents see it as feasible, as well through financial aid and student support programs. In my program, 94 percent of our students transfer to four-year colleges within two and a half years. And that’s quite a feat,” says Dr. Sidharta.
**KEYNOTE SPEAKER**

NELDA J. CONNORS

“Building Your Personal Competitive Advantage in a Global Economy”

Nelda J. Connors is currently the Chairman and Chief Executive Officer of Pine Grove Holdings, LLC, a Delaware-based company. She graduated from the University of Dayton with bachelor and master of mechanical engineering degrees. She was a Rotary International Japan Fellow where she attended post-graduate school at the University of Tokyo, studying International Finance and Economics. She has also held prominent positions with globally influential corporations including: Monsanto Corporation, Mogami Denki, Chrysler, Ford, Eaton Corporation and Atkore International.

“Take your bright ideas to the organization that values them.”

**KEYNOTE SPEAKER**

RAY SUAREZ

“The Browning of America”

Ray Suarez is an author and the Washington-based Senior Correspondent for PBS’s The NewsHour. He came to The NewsHour from National Public Radio, where he had hosted the nationwide call-in news program Talk of the Nation since 1993. Prior to that, he spent seven years covering local, national and international stories for the NBC-owned station WMAQ-TV in Chicago.

His most recent book examines the tightening relationship between religion and politics in America, *The Holy Vote: The Politics of Faith in America*. Suarez also wrote *The Old Neighborhood: What We Lost in the Great Suburban Migration*. Suarez currently hosts the monthly foreign affairs radio program *America Abroad* for Public Radio International and the weekly politics program *Destination Casa Blanca* for Hispanic Information Telecommunications Network.

Suarez holds a BA in African History from New York University and an MA in the social sciences from the University of Chicago. He is a life member of the National Association of Hispanic Journalists and is a founding member of the Chicago Association of Hispanic Journalists.

“Can Americans wrap their heads around a future that makes this country still feel distinct from places everywhere, at the same time as it becomes more Latin, more Asian, more African?”
Dr. Aaron Thomas is an Associate Professor of Chemical Engineering at the University of Idaho. Dr. Thomas is noted as being only one of a small number of American Indians (Navajo) with their Ph.D. in engineering and is one of the first to become a tenured faculty member in engineering.

Dr. Thomas received a BS in Chemical Engineering in 1996 from Stanford University and received his Ph.D. in Chemical Engineering in 2001 from the University of Florida. His research topics include microfluidics and novel separation processes for gasses and biological materials. He is a recipient of the prestigious National Science Foundation CAREER and PECASE Award given to young faculty in science and engineering. In addition to his responsibilities as a faculty member in the Chemical Engineering department, he is also the director of the Idaho Space Grant Consortium and Idaho’s NASA EPSCoR program.

Dr. Thomas has demonstrated a willingness to share his academic experience with American Indian and Alaska Native students and has exemplified his outstanding contributions to the field of Chemical Engineering. He believes that in order to make change one must be the catalyst for change.

"We must build to our strengths. Use our diversity and freedom to our advantage."
In President Barack Obama’s State of the Union address two years ago, he called the need to reform our education system this generation’s “Sputnik moment” and vowed to devote more resources to improve educational outcomes. Later that month, President Obama signed the America COMPETES Reauthorization Act of 2010, which focuses on increasing the nation’s investment in science and technology and improving STEM education in order to remain competitive in the global economy. In addition to America COMPETES, in his 2012 budget, President Obama has proposed an investment of $100 million to STEM teachers and an additional $80 million to expand effective models of teacher preparation, which will help train 10,000 more effective STEM teachers per year. An additional $20 million has been earmarked for research to determine how best to recruit and prepare new teachers and retrain current teachers. However, demands from Congress to cut programs to reduce the federal deficit threaten to torpedo these efforts. Following NACME’s 2008 Symposium, Confronting The “New” American Dilemma, a series of government calls to action were issued. They include:

- Developing a national STEM workforce development policy that stretches from pre-school to the Ph.D. level
- Fighting back against attempts to make colleges completely “color blind” in admissions, financial aid and other areas
- Developing and passing legislation at the national and state levels to establish programs to increase URM participation in STEM education and careers
- Adopting policies to totally transform the education system to emphasize active, hands-on, project-based learning rather than lecture and rote memorization
- Recognizing that recruiting URMs into STEM careers is a key strategy for stemming the off-shoring of jobs and instead keeping them on American soil. Adopting the same strategy as a way to provide a workforce of American citizens for the defense industry

Panel members discussed how these calls to action could be answered given the reality of the current federal budget restrictions. They include:

- Raising awareness about how diversity improves the quality of the workforce and ensures American prosperity in the future. Research shows that “diverse groups come up with more and better solutions to problems,” says Charles Vest, Ph.D., President of the National Academy of Engineering
- Enlisting business leaders who understand the need for a skilled engineering workforce to appeal to Congress to not cut funding to STEM education and scientific research and development programs. Under the Budget Control Act, spending caps will be imposed over the next 10 years that cut $2 trillion, and possibly more, from federal investments across various agencies, including the National Science Foundation, the Department of Defense and the Department of Education. Business leaders and organizations like NACME need to reinforce how STEM education and careers are responsible for the creation of new innovations, new products, new businesses and new jobs and that investment in STEM fields will result in a stronger economy. Change the Equation, a network of more than 100 CEOs launched in 2010, has pledged to create widespread literacy in science, technology, engineering and math and move STEM education forward nationwide
- Engaging more students in STEM education and careers by converting the perception they have of people involved in STEM from nerdy to creative; primarily works with machines to works in teams; and from rigid to curious
- Challenging the federal government to protect its investments in advancing STEM education and careers and assuring a diverse science and engineering workforce through lobbying efforts
- Supporting education programs like Race to the Top, which allocates $4.35 billion in competitive grants to support education reform and innovation in classrooms, with a competitive preference priority in science, technology, engineering and math education
What You Need to Know
Panel participants offered these observations regarding the development of a national STEM workforce policy.

“If you look back 30 or 40 years ago, the United States, Japan and China all educated at the bachelor’s-degree level about the same number of engineers, about 70,000 per country. Over time, that number in the U.S. has been on a long, slow decline, whereas Japan and China have exceeded the number of bachelor-level engineers. When you look at the fraction of our graduates that are in fields like natural science, physics, chemistry, engineering and math and compare it to Asia and Europe, you find that in Asia more than 21 percent of all university degrees are in engineering; across Europe it’s around 12 percent and in the U.S. it’s 4.5 percent. That’s a big problem for us.”

Charles Vest, Ph.D., President of the National Academy of Engineering, Washington, D.C.

“The goal of the Department of Defense STEM program is to ensure that the department has access to a highly competent technical workforce to support research and development capabilities in existing and merging technical areas of need.”

Laura Adolphe, Ph.D., Director, STEM Development Office, Office of the Assistant Secretary of Defense for Research and Engineering, Washington, D.C.

“Because of a lack of diversity in engineering, we pay an opportunity cost. And it seems to me that in some places money would rather be invested in prisons than education, so there’s a dynamic going on across the country. And if we’re not looking at students of color and children of color, our statistics tell us that by 2050, 85 percent of the entrants into the workforce will be people of color and women. If we’re leaving them out of the mix, we might as well close up shop and just keep moving.”

Yvonne M. Spicer, Ed.D., Vice President, Advocacy and Educational Partnerships, National Center for Technological Literacy, Boston, Massachusetts

“The challenge at hand to this audience and to NACME is not only defending and protecting [federal] investment in STEM but enabling these investments to continue and grow. We need the business world and corporate leaders to play a key role in this effort, to change the conversation.”

Marilyn Berry Thompson, Executive Vice President and General Manager, MWW Group, Washington, D.C.

Steven Robinson, Ph.D.
Special Assistant for the White House Domestic Policy Council, Washington, D.C.

Realizing the Dream of Education for ALL

An educator who has taught biology, chemistry and other science classes in middle and high school and at the college level, Steven Robinson, Ph.D., was hired by Education Secretary Arne Duncan in 2009 as a special advisor on K-12 and higher education STEM issues and is now Special Assistant for the White House Domestic Policy Council on STEM education. Dr. Robinson spoke at NACME’s 2011 National Symposium about the need to foster STEM studies in early and higher education not just because the U.S. needs more scientists and engineers but also because of the recognition that all students will need a basic understanding of science, technology, engineering and math to have any job in the 21st century.

STEM education is so important to President Barack Obama’s Administration that for the first time, science, technology, engineering and math education was a top priority in the Department of Education’s Investing in Innovation (i3) competition, which provides funding to school districts and nonprofit organizations nationwide to develop new approaches to improving K-12 achievement and decreasing dropout rates. As a result, five of the 23 grants awarded will address the critical areas of STEM education and include programs devoted to:

■ Expanding student access to STEM Advanced Placement courses
■ Creating an “innovation ecosystem” that identifies barriers to success in STEM courses and connects schools with instructional designers to help overcome them
■ Developing a robotics program to help reduce summer learning loss in middle school

Another key priority for 2012 is the Administration’s $150 million request for the Fund for the Improvement of Postsecondary Education to support the First in the World competition, which would be modeled after the Investing in Innovation competition for K-12 education.

“The idea from the President is that we really have to create a ‘cradle to career’ system, with lots of support for early education and lots of support for Pell grants [for higher education]. How to be innovative in higher education is something we’re thinking about. But we really have to think together about how we can answer the President’s call for ‘all hands on deck.’ How can we make sure that we’re all working together smartly and effectively as advocates for what’s really important? And what’s really important is, as we move forward, as our population changes, as we have to think about and effectively bring about significant changes in the education system, that the promise and the dream of education for all is finally realized,” said Dr. Robinson.
Session VI
Leveraging Support for the Career Preparation of Underrepresented Minorities in STEM

This session focused on how to remain competitive in a global economy. According to the Organization for Economic Cooperation and Development Program for International Student Assessment, American students rank 17th in science and 25th in math, far behind countries such as China and Korea. And the link between education and prosperity has never been greater. The White House Council of Economic Advisors found that education was responsible for up to one-third of the productivity growth in the U.S. from the 1950s to the 1990s. It's projected that over the next 10 years, half of all the new jobs will require postsecondary education and that half of today's 30 fastest growing job opportunities require at least a four-year college degree. There's no question that those jobs will be filled. The question is, will those jobs be filled in the United States or in other countries?

Following NACME's 2008 National Symposium, Confronting the “New” American Dilemma, a series of calls to action were issued to the business community. They included:

- Forming partnerships with K-12 schools to promote STEM careers and education to URM students, including providing STEM employees to serve as role models and mentors, offering on-site internships to students and teachers and providing access to the latest equipment and software
- Using political capital to prompt government to address The “New” American Dilemma, and to institute policies that support the education and career preparation of URMs
- Including recruiting URMs as part of the workforce development and hiring strategies and broadening college recruiting efforts to include institutions that traditionally enroll large numbers of URMs
- Making diversity a basic part of the company values and supporting diversity through company policies and systems
- Recognizing the demographic changes in the American population and preparing to develop a workforce that is increasingly made up of women and people of color

Panel members discussed some of the issues confronting the country and their best practices in developing greater participation by URMs in STEM careers and in hiring professionals from these groups. They include:

- Acknowledging the impact the aging workforce will have on the economy and tapping into the graying labor pool—those workers 55 and older—who will account for 90 percent of the increase in the labor market between 2008 and 2018, according to research by the Council on Competitiveness. The Department of Labor Aging Worker Initiative, a program designed to identify skills, needs and job opportunities for mature workers, is currently in place in 10 sites nationwide. The program is meant to help small- and medium-size companies that cannot afford highly skilled labor to benefit from the expertise retired engineers bring to their company. The skills older workers have can also be utilized in university settings as educators in STEM studies and as trainers for small companies
- Forming partnerships between business leaders, educators and government agencies to connect underrepresented minority students, especially younger students, with scientists and engineers and each other and connecting teachers with scientists and engineers to create an awareness and interest in STEM studies and careers
- Creating strong company feeder pools to increase diversity in the engineering ranks and in entry-level positions by teaming with different student organizations to host technology information sessions with URM students so they can interact with company engineers and scientists
- Partnering with universities to sponsor student attendance at technology conferences and supporting company internship programs to increase the number of diverse employees
- Encouraging employee mentoring programs for outreach to K-12 schools to run technology workshops, engaging in activities such as taking apart popular electronic devices so students can see how they are made and sparking curiosity about technology
- Funding core research in areas such as women in science, technology, engineering and mathematics to determine why so few women go into these fields and how to end gender bias and the environmental and social barriers preventing women from STEM careers
**What You Need to Know**
Panel participants offered this advice on how to ensure a skilled STEM workforce.

“We need to make sure that we have a very robust education system that is preparing students for science and engineering careers. The U.S. ranks 17th in reading, math and science, according to the Organization for Economic Cooperation and Development. Shanghai-China is first. We determined that Shanghai’s educational system has a much more collaborative and hands-on learning environment [than the U.S. does] and that students are more engaged. We know that collaboration and creative learning are key [to success].”

Cynthia McIntyre, Ph.D., Senior Vice President, Council on Competitiveness, Washington, D.C.

“At 3M we’re doing a lot of community outreach at the local level to connect kids in the lower grades with our scientists and engineers. And that’s resulting in more than half of the kids we’re able to interact with are engaged in STEM studies. I’m spending more time in Washington lobbying for STEM education. If we as an industry don’t partner with educators and government to find ways to [increase the STEM workforce], it won’t get done. The U.S. has a bright future. Some of the best companies in the world are here and we can make a difference.”

John K. Woodworth, Senior Vice President, 3M Corporate Supply Chain Operations, St. Paul, Minnesota

“We want to bring our technology, our talent, our resources, our funding and our networks into communities to help them grow stronger. We are using 25 percent of our annual grant’s funding for programs that are less than two years old because we want to force innovation out into the community and we’re promoting the networking of our employees with communities and with grantees. The hope is that if we build these foundations in communities, we will grow students who want to come work for us and bring diverse thoughts to our organization.”

Nicole Colen, Director of Global Diversity, Compliance & Employee Relations, Motorola Mobility, Inc., Chicago, Illinois

“Research by the Catalyst Group compared Fortune 500 companies that have a significant number of women in senior ranks and Fortune 500 companies with fewer women in senior ranks and compared the profits of each company over a number of years. The research found that the return on investment was 35 percent higher for those firms with a significant portion of women in senior ranks. The shareholder value return was 34 percent higher. So, you can see that there is a business case to be made [for having women in senior positions].”

Sarah Shortreed, Vice President of Planning, Research in Motion (RIM), Ontario, Canada

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**John K. Woodworth**
Senior Vice President, 3M Corporate Supply Chain Operations, St. Paul, Minnesota; a member of NACME’s Board of Directors; and host of this year’s Symposium

**Stemming an Engineering Workforce Gap**

Although 3M Corporation has programs in place to provide support for URM students interested in STEM careers, such as Optimized Operations (O2), which invites new college graduates in engineering to temporarily work in a 3M business and summer internships for college students, Woodworth says that interest in STEM studies and careers has to be cultivated much earlier.

“We’ve learned that if you wait until high school to get kids interested in engineering and science, it’s too late. So, we have a program called Visiting Wizards in which we take 3M engineers and scientists into elementary schools near our facilities nationwide and do various experiments. We’ve also partnered with Minnesota public television to develop a new series of educational programs in science and technology that could be accessed both on TV and online,” says Woodworth. “We try to make the experience positive and fun and, let’s face it, science is very exciting.”

**Maintaining Global Competition**

Getting students interested in STEM studies at a young age and then helping shepherd them successfully through high school and college is crucial to stemming an engineering workforce gap that’s widening as Baby Boomers retire, says Woodworth.

“Manufacturing doesn’t take place in the U.S. anymore, and it’s not just because of cheap labor in China. It’s because there literally are not enough engineers [being produced in the U.S.].” Plus, says Woodworth, the skills needed in today’s high-tech manufacturing environment are different from the assembly-line production model of the past.

“In some cases, products can’t be made by hand anymore. When you look at the iPad, for example, it can’t be done by hand, so products are going to become even more automated as things move forward. The U.S.’s disadvantage isn’t really in labor cost but in the lack of technical support for high-tech manufacturing,” says Woodworth.

The lack of highly skilled engineers doesn’t just augur continued high unemployment in the manufacturing fields but a reduction in the U.S.’s ability to compete in the global marketplace as well.

Instead of making products and shipping them around the world, “we’ll be buying them [from China and India],” says Woodworth.
Since its founding in 1974, the National Action Council for Minorities in Engineering, Inc. (NACME) has emerged as the largest private provider of scholarships in engineering for underrepresented minority students. NACME is a leading supporter of minority higher education in STEM fields. NACME is also actively engaged in the formulation of policy positions for improving opportunities for minorities in the STEM fields.

The organization has supported more than 24,000 underrepresented minority students with $124 million in scholarships toward their undergraduate degrees. Beyond the provision of scholarships, NACME seeks to build an integrated strategy of engineering education nation-wide.

NACME is supported by generous corporations, foundations, individuals and universities. NACME is distinguished by the 40 executives from leading Fortune 500 companies and academic organizations that serve on its board of directors.

Our Mission
NACME’s mission is to ensure American competitiveness in a “flat” world by leading and supporting the national effort to expand U.S. capability through increasing the number of successful African American, American Indian, and Latino women and men in science, technology, engineering and mathematics education and careers.

Our Vision
NACME’s vision is an engineering workforce that looks like America.

Our Beliefs
Our aim is diversity with equity, our metric is parity in the workforce, and our methodology is the formation of partnerships with those corporations, educational institutions, foundations, nonprofit agencies, and government bodies that share a commitment to these aims.

Academy of Engineering
The Academies of Engineering (AOEs), a National Academy Foundation network of career academies, are small learning communities for 9th- through 12th-grade students in urban school districts across the country. Built around a broad STEM core curriculum, the initiative is designed to help meet the increasing demand for qualified employees in the high-tech workforce by focusing high school students on careers in STEM fields. The AOEs feed into NACME’s scholarship strategy through the implementation of the NACME STEM Integration Model (NSIM) Linkage Strategy. The goal of the NACME STEM Integration Model Linkage Strategy is to facilitate a comprehensive pathway of URMs to engineering careers beginning in middle school. NACME will launch NSIM Linkage Strategy as a pilot in New York City during the fall of 2012.

NACME STEM Urban Initiative
In partnership with PLTW, the NACME STEM Urban Initiative supplements the provision of the Pathway to Engineering curriculum in urban school districts nationwide, preparing students for higher education and introducing them to a variety of exciting engineering paths. NACME provides a comprehensive infrastructure of support to enhance math and science proficiency, inspire engagement on the engineering pathway, encourage innovation in engineering education, and promote readiness for college engineering study. The pilot site in the Milwaukee Public School system reaches more than 3,500 underrepresented minority students in 25 middle and high schools.

Community College
Community colleges are increasingly important as an entry point to engineering education and careers for minority students. NACME facilitates cooperation between public school districts and local community colleges to better prepare students to succeed via concurrent enrollment. High school juniors and seniors can also gain college credits by taking advanced mathematics courses at local community colleges.

Research, Program Evaluation, and Policy
NACME continues to foster research-based changes in policies and practices to raise awareness and promote the discussion of diversity with equity in STEM education and careers. All of NACME’s programs include careful program evaluation and assessment to ensure effectiveness and impact. Careful attention to reliable data is a critical part of NACME’s data-driven decision-making processes.

Our Beliefs
Our aim is diversity with equity, our metric is parity in the workforce, and our methodology is the formation of partnerships with those corporations, educational institutions, foundations, nonprofit agencies, and government bodies that share a commitment to these aims.
In addition to its Board of Directors, NACME is guided and supported by 50 of the nation’s top educational institutions:

**Midwest**
- Illinois Institute of Technology
- Kansas State University
- Kettering University
- Milwaukee School of Engineering
- Missouri University of Science and Technology
- Purdue University
- Rose–Hulman Institute of Technology
- University of Akron
- University of Illinois at Urbana-Champaign
- University of Missouri, Columbia
- University of Missouri, Kansas City
- University of Oklahoma

**Northeast**
- Bucknell University
- Cornell University
- Drexel University
- Fairfield University
- New Jersey Institute of Technology
- Polytechnic Institute of NYU
- Rochester Institute of Technology
- Rutgers, The State University of New Jersey
- Stevens Institute of Technology
- Syracuse University
- The City College of New York
- University of Bridgeport
- University of Maryland, Baltimore County

**Southeast**
- Florida A&M University
- Florida International University
- Georgia Institute of Technology
- Louisiana State University
- North Carolina A&T State University
- Polytechnic University of Puerto Rico
- Tennessee Technological University
- Tuskegee University
- University of Arkansas
- University of Central Florida
- University of Kentucky
- Virginia Polytechnic Institute and State University
- West Virginia University

**Southwest**
- Northern Arizona University
- Prairie View A&M University
- University of Houston
- University of Texas, El Paso
- University of Texas, San Antonio

**West**
- California State University, Los Angeles
- California State University, Sacramento
- University of Alaska Anchorage
- University of California, San Diego
- University of Colorado, Boulder
- University of Southern California
- University of Washington

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### NACME’s Partner Institutions

#### NACME’s Partner Institutions

- Midwest
  - Illinois Institute of Technology
  - Kansas State University
  - Kettering University
  - Milwaukee School of Engineering
  - Missouri University of Science and Technology
  - Purdue University
  - Rose–Hulman Institute of Technology
  - University of Akron
  - University of Illinois at Urbana-Champaign
  - University of Missouri, Columbia
  - University of Missouri, Kansas City
  - University of Oklahoma

- Northeast
  - Bucknell University
  - Cornell University
  - Drexel University
  - Fairfield University
  - New Jersey Institute of Technology
  - Polytechnic Institute of NYU
  - Rochester Institute of Technology
  - Rutgers, The State University of New Jersey
  - Stevens Institute of Technology
  - Syracuse University
  - The City College of New York
  - University of Bridgeport
  - University of Maryland, Baltimore County

- Southeast
  - Florida A&M University
  - Florida International University
  - Georgia Institute of Technology
  - Louisiana State University
  - North Carolina A&T State University
  - Polytechnic University of Puerto Rico
  - Tennessee Technological University
  - Tuskegee University
  - University of Arkansas
  - University of Central Florida
  - University of Kentucky
  - Virginia Polytechnic Institute and State University
  - West Virginia University

- Southwest
  - Northern Arizona University
  - Prairie View A&M University
  - University of Houston
  - University of Texas, El Paso
  - University of Texas, San Antonio

- West
  - California State University, Los Angeles
  - California State University, Sacramento
  - University of Alaska Anchorage
  - University of California, San Diego
  - University of Colorado, Boulder
  - University of Southern California
  - University of Washington

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### 2010–2011 NACME Scholars

#### NACME Scholars by Ethnicity
- Latino: 53%
- African American: 41%
- American Indian: 4%
- Other: 2%

#### NACME Scholars by Gender
- Male: 67%
- Female: 33%

#### NACME Scholars by Academic Discipline
- Mechanical Engineering: 23%
- Other Engineering: 17%
- Electrical Engineering: 16%
- Civil/Environmental Engineering: 14%
- Chemical Engineering: 10%
- Computer Engineering: 7%
- Biomedical/Bio-Engineering: 5%
- Industrial Engineering and Operations Research: 5%
- Computer Science/Information Systems: 3%
At Chevron, you’ll join a team with the technology to take on big challenges, the integrity to do it responsibly, and the drive to keep the world moving forward. Are you up to the job?

Chevron is proud of our over 20-year association with NACME, and we’re honored to have sponsored the 2011 NACME Symposium.

Visit us online at chevron.com/careers
Investing in the next generation of American engineers. Now that’s smart.

The U.S. currently lags behind other developed countries when it comes to the percentage of undergraduates earning degrees in math, science and engineering. In fact, we’re ranked 14th in math, 17th in natural sciences and 25th in engineering. This has a direct impact on America’s technological and economic competitiveness.

That’s why, as one of the nation’s leading supporters of math and science education, ExxonMobil is proud to support the National Action Council for Minorities in Engineering (NACME). For over 30 years, this organization has worked to increase the representation of African American, Latino and Native American men and women in engineering and related careers. As we see it, helping America’s brightest minds get the support they need is vital. Because the further they go, the further we all do.

exxonmobil.com/mathandscience
Imagine students totally engaged: Hands on, actively collaborating with their teacher and fellow students in class or at home. Mobile learning solutions from AT&T can help transform the education environment by providing the tools to deliver a more personalized teaching and learning experience.

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Marathon Oil Corporation

Operating across the globe, Marathon Oil Corporation is an international independent energy company engaged in exploration and production, oil sands mining and integrated gas. Marathon Oil is applying innovative technologies to discover and responsibly develop valuable oil and natural gas resources to help meet the world’s growing demand for energy while delivering value to all of the Company’s stakeholders.

Marathon seeks to create sustainable value through a high performance team culture, nurturing a collaborative, supportive environment in which individuals and teams can perform to their fullest professional potential. Marathon’s culture is to respect the individual, treat each person with dignity, and value the diverse ideas and backgrounds of its employees. Above all, Marathon is a company where talented people strive to meet and exceed expectations for behavior and performance.
Diversity is more than a goal. It's a necessity. When facing down the most important projects in the world, every idea counts. Every viewpoint matters. That's why, at Lockheed Martin, we not only believe in diversity. We embrace it. Because diversity is the “how” that delivers the most innovative solutions to some of the most complex problems imaginable.
INNOVATION. DRIVEN BY DIVERSITY.

Meeting some of the world’s greatest technological challenges requires a diversity of talent, ideas, backgrounds, opinions and beliefs. That’s why Raytheon’s Employee Resource Groups advance diversity initiatives within the company and throughout our communities — and why we remain an innovation leader.
THE CLOUD IS DIVERSE

At EMC we live diversity. Our global talent pool is creating technology which will transform the world’s largest IT departments into private clouds. It’s the biggest technology shift in decades. Join us.

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Renewing America’s competitiveness requires an engineering workforce that reflects America. Dow is proud to partner with NACME to support increased minority participation in STEM to put our country’s brightest minds to work on developing solutions from alternative energy to clean water.

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Research In Motion believes in collaboration.

At Research In Motion®, we power mobile community by putting the power of many in the hands of one. Through real-time collaboration, BlackBerry® helps people make the most of every moment. Whatever it is that our customers want to achieve, whatever their success looks like, we enable them to collaborate and create, together, wherever they happen to be.

Research In Motion is proud to sponsor the 2011 NACME National Symposium.

BP is proud to sponsor the 2011 NACME National Symposium.
Through our K-12 Outreach Programs and as a member of the National Engineers Week Foundation Coalition, ASCE inspires children from pre K through 12 to pursue a career in engineering.

To learn more about 2012 Engineers Week activities, visit www.eweek.org. For more information on ASCE K-12 outreach programs, visit www.asce.org/kids.
Together, we can change the face of food

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At Cargill, we believe individuals with diverse perspectives and backgrounds can make our company smarter, more competitive and better prepared to meet the needs of the future. That’s why we encourage diversity in our employees and our suppliers. Consider adding your talents to the mix, and help us change the face of food.

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Broadcom Supports the Next Generation of Innovators

At Broadcom we engineer the impossible. Doing that requires the best talent from around the world. That’s why Broadcom invests in the next generation of innovators through STEM (Science, Technology, Engineering and Mathematics) programs for middle school children and internship and co-op programs for college and university students.

Learn more at broadcom.com

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When Shelley’s manager asked her to mentor a colleague, he thought she’d offer a little advice—not change lives. Shelley launched an ambitious career development program that improves her co-workers’ public speaking skills during weekly forums. And the colleague who inspired it all? She just won “Most Improved Employee.”

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<td>Xerox Corporation</td>
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Our Mission
To ensure American competitiveness in a flat world by leading and supporting the national effort to expand U.S. capability through increasing the number of successful African American, American Indian, and Latino women and men in science, technology, engineering and mathematics (STEM) education and careers.

Our Vision
An engineering workforce that looks like America.

Our Goal
Working with our partners to produce an engineering graduating class that looks like America.

Our Purpose
Our aim is to increase the proportion of African American, American Indian, and Latino graduates in STEM education and careers, our metric is parity in the workforce, and our methodology is connecting the network of like-minded individuals and organizations that share a commitment to these aims.

Our Beliefs
We believe in the concept of the “learning organization,” a community in which each member is encouraged and assisted to grow and develop. We support a NACME culture that is informed by our mission. We focus on the results—increasing the proportion of African American, American Indian and Latino graduates in STEM education and careers. We are active, optimistic and engaged. We are creative, innovative and disciplined in our approach. We strive to be effective team members who are committed to doing our best work and to delivering the best results for our partners along the continuum from middle school to workforce entry.