

2008 Legislative Testimony

Freeman A. Hrabowski, III
President

University of Maryland, Baltimore County
February 2008

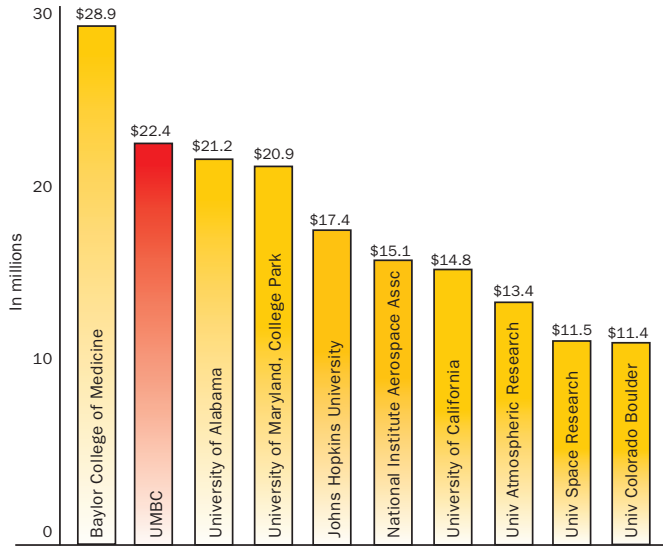
UMBC

AN HONORS UNIVERSITY IN MARYLAND

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KEY INDICATORS

**Figure 1 Assistance from NASA
FY2006**

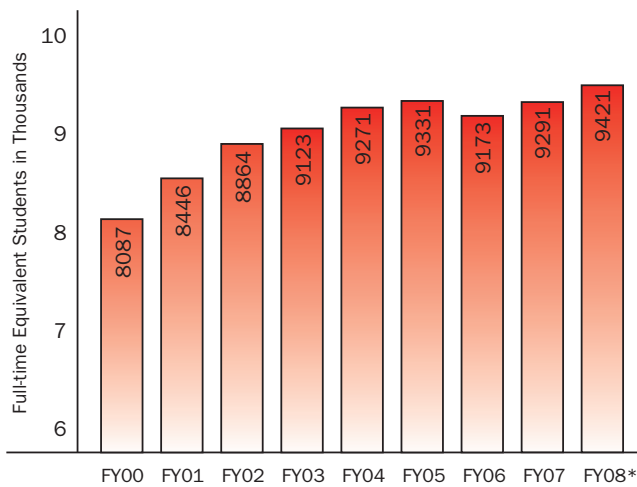


Source: FedSpending.org

Research Support from NASA

Over a number of years, UMBC has developed a multi-level partnership with NASA (National Aeronautics & Space Administration) that supports a variety of major research initiatives. UMBC ranks 2nd among the nation's universities in Federal assistance from NASA.

**Figure 2 FTE Enrollment
FY2000 – FY2008**



Source: UMBC Office of Institutional Research

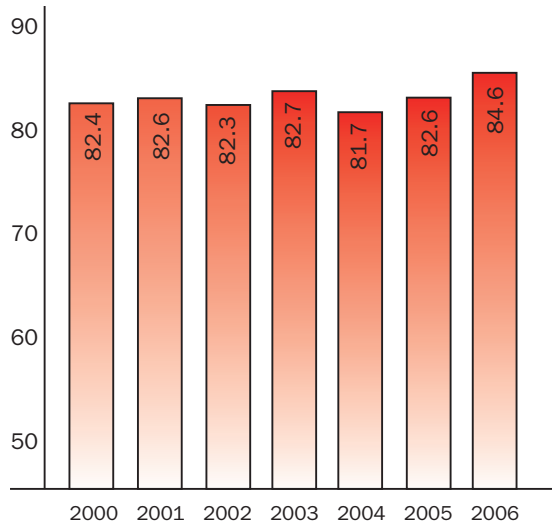
Enrollment

Since 2000, the campus has attracted 1,334 additional full-time equivalent students, increasing the need for faculty and staff, classrooms, lab space, housing, and library resources.

Our student body is among the most diverse in the nation, including 18 percent Asian, 15 percent African American and 4 percent Hispanic and Native American students.

**Exceeds budgeted enrollment by 52 FTE students.*

Figure 3 Percent of First-time Full-time Freshmen Retained After One Year 2000 – 2006

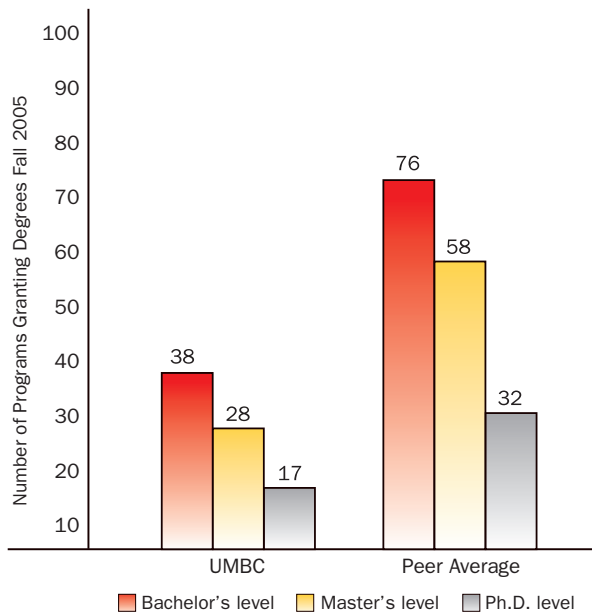


Source: UMBC Office of Institutional Research

Retention

The rate of students returning to UMBC in their second year is rising. Our freshman-to-sophomore-year retention rate for fall 2006 full-time freshmen was 84.6 percent, compared to 81.7 percent for fall 2004 freshmen. Our second-year retention rate for African American students (91.6 percent in 2006) is among the highest in the State for African American full-time freshmen.

Figure 4 Bachelor's, Master's, and Ph.D. Programs UMBC and Peers 2005



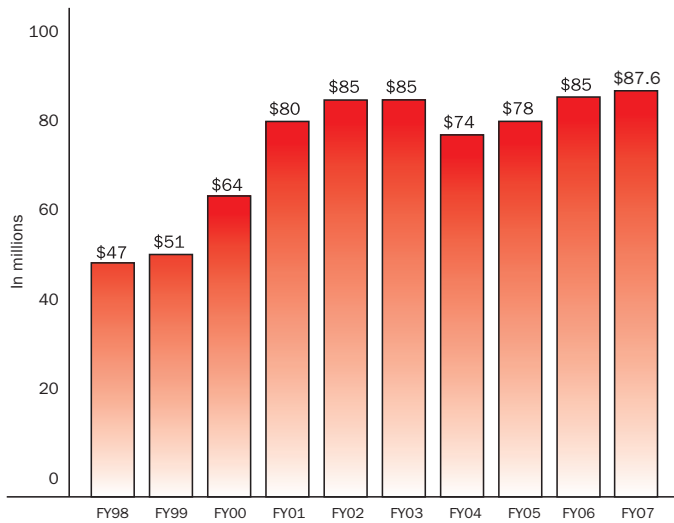
Source: IPEDS Peer Analysis System
U.S. Department of Education

Narrow Program Base

UMBC offers a much smaller number of programs at all levels than its peers. More than 50 percent of our undergraduate students select science and technology programs, which are costly to deliver.

The addition of select, high-demand programs will enhance campus efficiency, retention and graduation rates, and future enrollment growth.

**Figure 5 Research Grants and Contracts
FY1998 – FY2007**

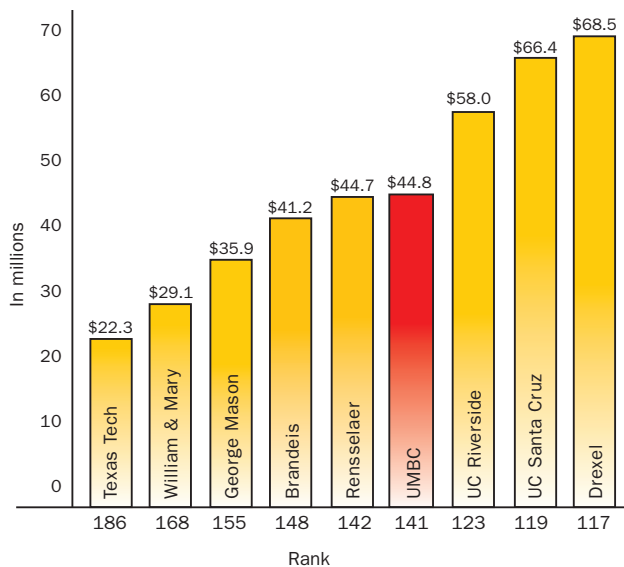


Source: UMBC Office of Sponsored Programs

Grants and Contracts

UMBC's grant and contract awards have nearly doubled since the late 1990s. Growth in research attracts national recognition for UMBC and the State, enhances opportunities for student exposure to cutting-edge research, and increases the potential for technology commercialization and economic development.

**Figure 6 Federal R&D Expenditures
2006**

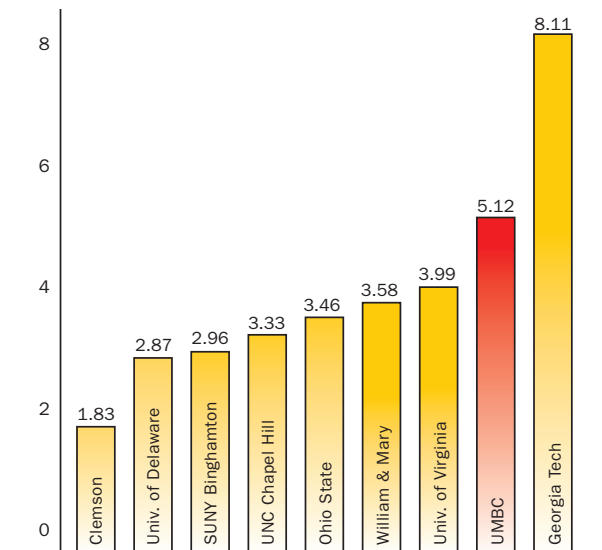


Source: National Science Foundation
2006 – Most Recent Data Available

Federal R&D Rank

UMBC's ranking by the National Science Foundation for Federal R&D expenditures for science and engineering rose from 200 in 1996 to 141 in 2006. This dramatic rise is especially impressive given that most other nationally ranked institutions are substantially larger and older (and often include medical centers).

**Figure 7 Average Awards Per Year Per 100 Faculty
2003 – 2007**

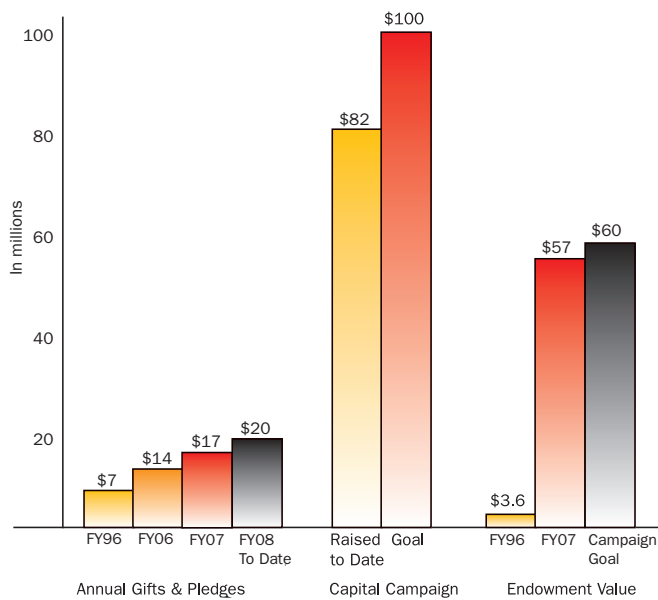


Source: University System of Maryland

Faculty Among the Best

One measure of the quality of our faculty is its impressive per-capita ranking for such competitive major awards as Fulbright and Guggenheim fellowships, National Endowment for the Humanities awards, and National Science Foundation Career development awards. UMBC faculty compare favorably in these areas with faculty from more established public institutions.

Figure 8 Private Support



Source: UMBC Office of Institutional Advancement

Fundraising Performance

Private fundraising support for UMBC has increased dramatically in the past decade. Although the campus recently marked only its 40th anniversary, our capital campaign goal of \$100 million is the third highest in the University System of Maryland. Major gifts received to date during the campaign include more than \$5 million for the Erickson School focused on aging studies, \$6.5 million for the Sherman STEM Teacher Scholars Program, and \$7 million for the Alex. Brown Center for Entrepreneurship, among others.

LEGISLATIVE TESTIMONY
Freeman A. Hrabowski, III, President
University of Maryland, Baltimore County (UMBC)
February, 2008

OUR VISION:
Academic Excellence, Economic Development, and Social Vitality

I am delighted to report to you on UMBC's progress and respond to questions you may have regarding our FY 2008 and FY 2009 budgets.

UMBC is a public research university, emphasizing graduate programs in the sciences, engineering, public policy, and human services, and building on a strong undergraduate liberal arts and sciences core. We are distinctive among the nation's research universities because of our emphasis on undergraduate education, reflecting our tradition of linking research and teaching. We are an exciting campus with a bold vision and entrepreneurial spirit. It is an amazing story that we have come so far so fast, in just 42 years. Your investment in us has generated a high return for the State, and we are determined to continue attracting and educating growing numbers of students who will enter Maryland's workforce and reflect the diversity of our State.

We also are recognized increasingly as a major resource for both building the State's economy and addressing its social concerns. We foster economic development primarily through (1) research and training-related contracts and grants; (2) technology development, including the activities of *bwtech@UMBC* Research and Technology Park; (3) partnerships involving continuing education and business outreach; and (4) workforce development.

We now enroll approximately 12,050 students (including 9,470 undergraduates and 2,580 graduate students); employ approximately 1,830 full-time and 365 part-time faculty and staff; have an operating budget of roughly \$331 million, including nearly \$88 million annually for research and training; and have more than 49,000 alumni, nearly three-quarters of whom live and work in Maryland and contribute to its economic and social vitality. We offer bachelor's and selected master's and Ph.D. programs in the physical and life sciences, social and behavioral sciences, engineering, mathematics, information technology, education, and the humanities and visual and performing arts.

Brainpower and talent are fueling discoveries and innovation on campus, and increasingly we are building on these strengths in collaborations with others. We are creating multi-level partnerships that connect faculty and students with companies, agencies, foundations, and school systems – and these partnerships enable us to leverage State funds. For example, we have been able to develop major new research centers with support from NASA (we now rank second among the nation's universities in NASA funding – *Figure 1*) and from IBM, Lockheed Martin, Northrop Grumman, Wyeth Pharmaceuticals, the Department of Defense, the National Security Agency (NSA), and other organizations. Other partnerships with Federal and State agencies have allowed us to leverage State funds and contribute to the policy arena in gerontology (through the Erickson School for Aging, Management, and Policy), the environment (through our Center for Urban Environmental Research & Education-CUERE), health care (through the Center for Health Policy Development & Management), and teacher education (through the Center for History Education).

A particularly exciting recent partnership with IBM establishes UMBC as a center of excellence in cell computing. This initiative is only the second such center in the nation (the first was at Georgia Tech). The center positions the campus as a research and education leader for the next generation of high-performance computing and enhances our ability to attract top science and technology talent. The center also increases our capacity to support high-performance computing needs of companies and State and Federal agencies, including especially those coming to Maryland through the BRAC process.

Two other exciting partnerships reflect our growing strength and national reputation in earth and environmental science. The first, a recent \$3-million grant from the National Oceanic and Atmospheric Administration, provides real-time, wireless, online monitoring of Baltimore's

Gwynns Falls watershed. The grant expands upon research and fieldwork by CUERE in partnership with the U.S. Geological Survey, Lawrence Livermore National Laboratory, and Princeton University.

The second, a \$2.9-million NSF grant, establishes a new doctoral training program in “Water in the Urban Environment.” The funding, from NSF’s highly competitive Integrated Graduate Education and Research Traineeship (IGERT) program, will support 20 Ph.D. students working with more than 30 faculty from nine UMBC departments and six partner institutions on the ecological, economic, engineering, public-health, and policy-related impact of urbanization on the Chesapeake Bay region’s water resources.

We also are excited about having raised more than half-a-million dollars to complement a recent \$2-million investment by the Ewing Marion Kauffman Foundation in UMBC’s Alex. Brown Center for Entrepreneurship, which enables us to infuse innovation and leadership throughout our curriculum. The Kauffman Foundation is working to cultivate entrepreneurship in settings outside of business schools, and UMBC was one of only nine campuses selected, along with Arizona State, Brown, Carnegie Mellon, Georgetown, NYU, Purdue, Syracuse, and the University of Wisconsin, Madison. More than 300 students a year participate in the Alex. Brown Center’s courses and programs.

Another exciting entrepreneurship initiative is ACTiVATE, our applied training program for women seeking to become technology entrepreneurs. It has been instrumental in increasing the number of women entrepreneurs commercializing groundbreaking research developed in labs throughout Maryland and starting new businesses. ACTiVATE has trained 70 women and launched 12 companies based on technology developed at Maryland universities and Federal labs. The program, established in 2005 with a three-year, \$600,000 NSF grant and support from the Maryland Technology Development Corporation (TEDCO) and corporate sponsors, recently received the Association of University Research Parks’ 2007 Innovation Award, in addition to the U.S. Association for Small Business and Entrepreneurship’s award for Best Specialty Entrepreneurship Education Program.

THE STATE OF THE UNIVERSITY: FACING CHALLENGES FROM A POSITION OF STRENGTH

We continue our rapid development as a major research university. In fact, NSF ranks UMBC 141st nationally in Federally funded research in science and engineering, up from 200th in 1996 and 147th a year ago (*Figure 6*). This leap is especially significant because most other nationally ranked institutions are substantially larger and older (and often include medical centers).

We also are among a relatively small number of colleges and universities with a Phi Beta Kappa chapter (we were one of the youngest campuses ever to earn this distinction), reflecting our strength in the liberal arts. We remain the only public campus in Maryland with a Howard Hughes Medical Institute Investigator and are a two-time recipient of the *U.S. Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring*. We also have been designated by NSA as a Center of Academic Excellence in Information Assurance. Further, we are among a small number of universities to have received both a multi-million-dollar NSF ADVANCE grant, in recognition of our strengths in preparing women in science and engineering (we also were named one of the “Best 50 Colleges for Women” by *CosmoGIRL!* magazine), and a major grant through NSF’s Alliances for Graduate Education and the Professoriate (AGEP) program to prepare more minority Ph.D.s in science. We have become a national model for preparing students of all backgrounds in science and engineering, including especially minorities and women, at a time when the nation is focusing intensely on securing and strengthening its position in the global economy and when America’s demographic profile is shifting dramatically.

While our State-supported budget has grown, overall, in recent years, so too has the campus. Since 2000, the number of full-time-equivalent students increased from nearly 8,100 to 9,421 (16.3%) (*Figure 2*); sponsored contracts and grants grew by more than a third, from \$64 million to almost \$88 million (*Figure 5*); total degrees conferred per year increased from

approximately 1,800 to about 2,450 (36%); and the number of students living on campus increased 62% – from 2,350 to 3,800 – and from one-third to nearly half of our full-time undergraduate population, including nearly three-quarters of our freshmen.

While these kinds of changes have contributed to UMBC's continuing transformation, they also have generated new demands on our operations that seriously tax our capacity to respond. One way the campus has responded is by emphasizing efficiency and effectiveness measures through business improvements, outsourcing, energy management, external partnerships, and new revenue generation. Relying on these measures, over the past five years, we have reduced or avoided costs by \$28 million.

Our current strengths and solid foundation reflect the efforts and commitment of State leaders, our faculty, staff, and students, and years of careful thinking, ambitious planning, and hard decisions, with support from the University System and the Board of Regents and our Board of Visitors. We have managed for results, and the State's investment and confidence in us have yielded solid returns.

THE UMBC COMMUNITY: QUALITY, ACHIEVEMENTS, CONTRIBUTIONS

STUDENTS

Our student body is among the most diverse nationally (37% minority, including 18% Asian, 15% African American, and 4% Hispanic and Native American). The freshman class of 1,439 students includes hundreds of valedictorians, 4.0 students, and students with SAT scores at the highest end (above 1550), demonstrating our increasing attractiveness to high-achieving students and the success of our special scholars programs—the Humanities Scholars, Linehan Artist Scholars, Sondheim Public Affairs Scholars, Meyerhoff Scholars, and Center for Women & Information Technology Scholars programs.

The graduate population of approximately 2,580 students includes increased numbers of domestic students (84% of our graduate enrollment), women (55%), and minorities (20%). Our doctoral enrollments remain strong, and we continue to attract large numbers of working professionals to master's programs responsive to the growing needs of businesses, school systems, and other employers.

Our total headcount enrollment of 12,041 represents an increase of 243 students above our headcount total a year ago and has produced an annual FTE enrollment of 9,421 in FY 2008, 130 above our total in FY 2007 and 52 above our budgeted FY 2008 FTE enrollment of 9369. Among our challenges in continuing to build enrollment are UMBC's relatively small program base (*Figure 4*), fluctuations in the information technology market, and higher out-of-state tuition costs. The campus's aggressive response to these challenges has resulted in our exceeding projected enrollments this year, with applications for fall 2008 also up substantially.

Higher retention rates, of course, contribute to strong enrollments, and we are excited that our retention rates are rising. In fact, our overall freshman-to-sophomore-year retention rate (2006 to 2007) for full-time freshmen was 84.6 percent, compared to 81.7 in fall 2004 (*Figure 3*). It is particularly noteworthy that the freshman-to-sophomore retention rate (2006 to 2007) among African American students – 91.6 percent – is even higher than our overall rate, and is among the highest for African American students in the State. In addition, our overall fall-to-spring semester freshman retention rate increased from 91.9 percent (fall 2005 to spring 2006) to 94.2 percent (fall 2006 to spring 2007).

Transfer student enrollment growth (10 percent this year) also has contributed to healthy enrollments. Our primary feeder schools continue to be Montgomery, Anne Arundel, and Howard Community Colleges and the Community College of Baltimore County. To recognize the academic achievement of our transfer students, we have begun Maryland's first chapter of the national honor society, Tau Sigma.

We also anticipate considerable growth over the next few years at Shady Grove, where we offer four undergraduate programs in social work, psychology, political science, and history, and a new graduate degree in industrial and organizational psychology. This fall we will launch a graduate degree program in Geographic Information Systems.

Producing well-prepared graduates for Maryland's workforce is one of UMBC's most important and lasting contributions to economic development. Graduates move easily into the workforce in areas related to their majors – from engineering and IT firms to public and social service agencies and public school systems throughout the State.

Student Scholarship, Achievement, and Intellectual Competition

Providing undergraduates with wide-ranging opportunities for research, creative achievement, and intellectual competition both on and off campus is a vital part of our culture. As a result, the student body includes *Gates Cambridge*, *Goldwater* and *Jack Kent Cooke Scholars*, *Merck*, *NSF GEM*, *Department of Energy Computational Science* and *Bell Labs/Lucent Technologies Fellows*, several *Fulbright* winners, and a *National Geographic* intern. Other students have received prestigious awards from the American Mathematics Society, the Center for Medieval Studies at the University of York (England), and the American College Theatre Festival. UMBC's National Society of Black Engineers chapter recently won the national Academic Technical Bowl Competition for the third year in a row. And this past December, our much-heralded Chess Team placed second in the Pan-Am Intercollegiate Chess Championship and advances to the "Final Four" of college chess, which UMBC will host in April. This past year, the women's basketball team made its first appearance in the NCAA Division I championships, and our men's basketball team is currently in first place in the America East conference. Finally, the NCAA's most recent Academic Progress Report ranked our women's swim team and men's basketball and cross country teams in the top ten percent of colleges and universities nationally.

Well-Prepared Graduates

Thousands of area physicians, attorneys, teachers, scientists, engineers, IT workers, artists, policy-makers, and other professionals are among UMBC alumni. The NSA, for example, employs hundreds of UMBC math, computer science, and language graduates. The campus will continue producing large numbers of graduates in these and other areas responsive to Maryland's and the nation's workforce needs, including many graduates who are active in business start-ups and work in local entrepreneurial ventures. Our graduates contribute directly to the quality and supply of the State's workforce, two of the most critical factors in relocation decisions by companies.

Particularly noteworthy are data from the American Society for Biochemistry and Molecular Biology (ASBMB) showing that UMBC recently ranked first nationally in the total number of undergraduate biochemistry degrees awarded to African Americans (18 degrees in 2005). The ASBMB also ranked UMBC seventh nationally in overall biochemistry degree production (63 degrees) and fourth nationally in the total number of biochemistry degrees awarded to Asian Americans (23 degrees). UMBC also ranks second in IT degrees awarded by major U.S. research universities according to *Computing Research News*.

UMBC is partnering with the State in connection with the Base Realignment and Closure (BRAC) Enrollment/Research Business Plan to address the need for more university-level academic programs in northeastern Maryland. We will offer undergraduate, graduate, and non-credit programs in the classroom and online through our partnership with Cecil Community College. In addition to existing courses and programs in administration and management, business technology administration, engineering, information systems, and project management, the University has created new bachelor's degree programs in Communications Engineering and Biotechnology, as well as a Contract Administration certificate.

Our Erickson School, highlighted this week in the *Wall Street Journal*, is the first professional school in the nation to integrate the study of business management, public policy, and human aging. We are grateful for the State's start-up support, which matched a \$5-million gift

from our founding donor, John Erickson. The Erickson School is now fully operational with students in both undergraduate and graduate programs. This fall, we launched our Management in Aging Services master's program, while our Aging Services undergraduate program is in its second year with nearly 300 students. The School's Executive Education Program now offers 11 courses, and our Center for Aging Studies has attracted \$8 million in research funding.

This April, we will celebrate the 20th anniversary of the Meyerhoff Scholarship Program, now a national model for preparing high-achieving students from all backgrounds in science and engineering and increasing the numbers of underrepresented minorities pursuing research careers in these fields. In fact, UMBC is among the nation's leading universities in graduating African Americans who go on to complete Ph.D.s in science and engineering. We will recognize the achievements of hundreds of program graduates, half of whom have earned Ph.D., M.D./Ph.D., M.D., or M.S. degrees and are serving in faculty and post-doctoral research positions at universities throughout the country – from Harvard to the University of Michigan – or working as researchers in companies ranging from Wyeth Pharmaceuticals and Becton Dickinson to Rohm & Hass.

Among the by-products of the Meyerhoff Program has been the development on our campus of a community of scholars and a climate of success benefiting all students. In fact, UMBC ranks nationally in awarding undergraduate degrees to minority students in the following areas: in Computer and Information Sciences, 3rd among Asian American, 8th among all minorities, and 19th among African Americans; and in Biological Sciences, 22nd among African Americans and 36th among all minorities.

FACULTY

UMBC has 473 State-supported full-time faculty members who teach and conduct research, 227 full-time research faculty funded from contracts and grants, and 292 part-time faculty. They are dedicated to their students and their work, and our full-time instructional faculty are accountable through a rigorous process of review for promotion and tenure. Because of our emphasis on hands-on experiences for students, faculty work to connect to students not only through teaching, but also in their research. These experiences lead to substantive faculty-student interaction in labs, studios, and other settings, and to student internships.

Awards & Recognition

Another measure of the quality of our faculty is its impressive per capita ranking for such major competitive awards as *Fulbright*, *Guggenheim*, and *National Endowment for the Humanities Fellowships*, comparing favorably, for example, with William & Mary, the University of North Carolina-Chapel Hill, and the University of Virginia (*Figure 7*). In fact, UMBC has recently had several *Fulbright Scholars*, an *NIH Presidential Early Career Award for Scientists and Engineers* winner, a *U.S. Department of State Jefferson Science Fellow*, a *Mellon Research Fellow*, a *Woodrow Wilson Career Enhancement Fellow*, a *National Endowment for the Arts Fellow*, an *American Association for the Advancement of Science Mentoring* awardee, an *Optical Society of America Fellow*, an *IBM Faculty Award* winner, an *American Society of Engineering Education Sharon Keeler Award for Women in Engineering Education* winner, and the *Maryland Chemist of the Year*. UMBC faculty members also are consistently among recipients of the prestigious *NSF Career Awards* for young scientists. During 2003-07, our faculty held more career awards than colleagues at the University of North Carolina-Chapel Hill, Georgetown, Cal Tech, Brandeis, and Tufts. Faculty members also have won a variety of major awards and distinctions from leading professional and disciplinary organizations.

As State support for higher education has fluctuated over the years, chiefly because of changes in the economy, faculty hiring also has fluctuated and has not been commensurate with enrollment increases, new programs, and institutional plans and aspirations. The size and quality of UMBC's faculty will largely determine for many years our level of success as a research university. We must continue to hire outstanding faculty to meet enrollment shifts, replace retiring

faculty, and replace faculty we lose to other universities and corporations with whom we compete intensely.

It is important not only to build our faculty complement, but also to retain faculty by providing the necessary support structure for research and teaching and competitive salaries. Faculty drive the campus's research enterprise, attracting revenue-generating grants and contracts, creating research opportunities for graduate and undergraduate students, and developing new knowledge and innovations leading to technology transfer. Retaining faculty is important also because of the costs associated with replacing them.

Research

We help to anticipate and shape the future by producing new knowledge through our faculty's research – either individually or through partnerships with corporations or public agencies. The authors of *The Top American Research Universities, An Annual Report from The Lombardi Program on Measuring University Performance* (2004), state that research institutions change very slowly over time; yet their data on Federal research expenditures show that among major research universities in the nation, UMBC's rise in the rankings exceeded that of all other institutions between 1993 and 2002. Our research is important, in part, not only because it addresses scientific, technological, and public-policy issues facing society, but also because it gives our undergraduate and graduate students opportunities to work with us on these issues – from AIDS and computer security to Medicaid policies and the K-12 academic achievement gap. Faculty members also publish cutting-edge articles and books across the academic spectrum.

In fact, faculty research in the geosciences was ranked third nationally for citation impact (the number of times peer professors cite UMBC faculty work in their own research papers) by *Science Watch*. According to *Science Watch*, the only other U.S. universities with more frequently cited research on the environment, water, soil, atmosphere, pollution and climate change were Harvard and Georgia Tech. The Departments of Information Systems and Public Policy were ranked eighth and tenth respectively in their fields by the 2007 Faculty Scholarly Productivity Index, which measures the number of books and journal articles written by faculty members, the number of times other scholars have cited these publications and the grant monies, honors and awards the faculty members received. UMBC historians have a long record of excellence in scholarly research and publication. Within the past decade the department (with an average of just 16 full-time tenured and tenure-track faculty) has produced more than 50 books. Their publishers include many of the most prestigious university presses (e.g., Oxford, Princeton, Harvard, University of North Carolina, University of Illinois, Johns Hopkins).

One reason for the faculty's rising productivity has been the creation of several research centers. For example, UMBC is collaborating with Princeton, Rice, Johns Hopkins, and Texas A&M Universities on an Engineering Research Center (ERC) on Mid-Infrared Technologies for Health and the Environment funded by NSF. The Center is developing engineering technologies using light for ultra-sensitive chemical sensing that will have important public-health and environmental applications. The ERC's work, involving our Center for Advanced Studies in Photonics Research (CASPR), whose Director serves as the consortium's Deputy Director, is creating opportunities for undergraduate and graduate students, and its work will likely yield new product lines and markets. Other major research initiatives are being conducted by our Center for Urban Environmental Research & Education (CUERE), Howard Hughes Medical Institute Laboratory, Goddard Earth Sciences & Technology (GEST) Center, Joint Center for Earth Systems Technology (JCET), Center for History Education, Center for Art, Design, and Visual Culture, and the Maryland Institute for Policy Analysis & Research (MIPAR). NASA's support continues to grow, including a five-year cooperative agreement establishing the Center for Research & Exploration in Space Science & Technology this past year. This partnership links UMBC, the University of Maryland-College Park, the NASA Goddard Space Flight Center, and the Universities Space Research Association in astrophysical exploration.

PROFESSIONAL EDUCATION, TRAINING, and SERVICE

Consistent with our mission, we also serve as a center of professional development, working with agencies and business and industry in the Baltimore-Washington region. Some of our major partners include school systems in the Baltimore-Washington corridor, Lockheed Martin, Northrop Grumman, Maryland's Department of Business & Economic Development (DBED), and NSA. Through our Division of Continuing & Professional Studies, we offer individuals and organizations customized credit and non-credit certificate, training, and graduate programs on-campus, on-site, online, and at the Universities at Shady Grove in Rockville.

We are especially committed to supporting the University System of Maryland's initiative to graduate more students qualified to teach science, technology, engineering, and math (STEM) in Maryland schools. One such initiative is a \$10-million, multi-year STEM Education Project involving UMBC, the Baltimore County Public Schools, and NSF to strengthen student achievement and teacher proficiency in STEM fields in selected high-needs elementary, middle, and high schools. This work has now been expanded and strengthened through a \$5-million gift from George and Betsy Sherman establishing the Sherman STEM Teacher Scholars Program at UMBC. The program will dramatically increase the number of UMBC STEM graduates who move immediately to public school teaching careers. Another example is the continuing work of our Center for History Education, which has won approximately \$5 million in grants from the U.S. Department of Education in conjunction with public school systems in Baltimore City, Anne Arundel, Baltimore, and Howard Counties, among others, to help strengthen history instruction in elementary, middle, and high schools.

In STEM education, we also serve as the Statewide affiliate for two key initiatives for generating excitement among K-12 students in STEM disciplines. We were approached by the Maryland State Department of Education to become the university affiliate for *Project Lead the Way*, in which 25 schools in Maryland have begun teaching engineering courses. *Project Lead the Way* provides innovative programming for K-12 students, including "Gateway to Technology" courses for middle school students and "Pathway to Engineering" courses for high school students. UMBC provides a Professional Development Summer Training program for current high school teachers interested in participating in teaching the *Project Lead the Way* curriculum at their schools. UMBC also hosts the FIRST (For Inspiration & Recognition of Science & Technology) Lego League Competition, where 600 middle school youth from across Maryland match wits in hands-on, research-based competition using state-of-the-art Robotic Lego kits, and creating excitement about basic physics and engineering principles. We partner with Northrop Grumman Corporation to sponsor the event and support creation of 10 new LEGO teams at middle schools serving low-income families in the greater Baltimore area.

Other examples of outreach in support of professional development include our partnerships with both the Anne Arundel and Howard County Public Schools to provide training programs for scores of teachers in mathematics, science, English, and ESOL, and the work of our Center for Art, Design, & Visual Culture, which works with area schools to strengthen arts education for K-16 students. The Center's most recent project, entitled "Mapping the Community," placed UMBC cartography and graphic design students from our Geography and Visual Arts Departments as mentors to elementary and high school students from Baltimore City and County, helping the students conduct research and create maps focusing on important issues in their communities. Some of the students' mapping projects will be exhibited at the Walters Art Museum this April. Also, we continue to partner with the Montgomery County Public Schools and Montgomery College to support the Institute for Global & Cultural Studies at Wheaton High School. The program not only challenges students to deepen their understanding of the world, but also builds students' college-readiness skills in reading, writing, and research. Qualified students may enroll in free college courses offered at Wheaton and earn guaranteed admission to UMBC and Montgomery College.

In addition, our Center for Health Program Development & Management is a multi-faceted health services research organization. Under contract with Maryland's Department of Health and Mental Hygiene (DHMH), the Center has become nationally recognized for its work in helping

Maryland control costs and improve the quality of healthcare in the State. The Center works with DHMH and other public and private organizations in developing and evaluating healthcare programs and policies. Similarly, our Shriver Center continues to provide applied experiences each year for more than 1,200 students through internships, co-ops, and community service positions in more than 500 organizations in the U.S. and abroad. The Center has attracted millions of dollars in grants and contracts in recent years from national and State agencies and foundations, and is serving hundreds of at-risk youth through its nationally acclaimed Choice Program.

TECHNOLOGY DEVELOPMENT

Over the past 20 years, we have been a model for developing partnerships focused on technology development and commercialization, and our *bwtech@UMBC* Research and Technology Park supports these growing activities. – and our faculty, staff, and students work actively with business, industry, and government in combining our public responsibility with our technical expertise.

bwtech@UMBC includes two sites: one houses a 41-acre research park, while the other houses a 30-acre business incubator and accelerator. The research park, located on our campus, currently includes three major facilities and has development commitments for its two remaining sites. Existing facilities include the 62,500-square-foot RWD Technologies' Applied Technology Lab, with its staff of 250; a 60,000-square-foot multi-tenant building, completed in fall 2004; and the 23,500-square-foot U.S. Geological Survey regional water science center, completed in spring 2007 and occupied by more than 60 USGS scientists and support staff. Two facilities soon to be added include a 110,000-square-foot multi-tenant building developed by Corporate Office Properties Trust, and a \$20-million building being constructed by Erickson Retirement Communities to house its Retirement Living cable television channel and IT division.

Our business incubator and accelerator are located at UMBC's South Campus, overlooking Interstate 95, just minutes from both our central campus and BWI Airport and within view of thousands of north- and southbound travelers daily. The site includes five buildings housing approximately 165,000 square feet of research, office, and conference facilities. We lease space to more than 30 early-stage biotech and IT/engineering-related firms employing hundreds of workers. For the incubator companies, we provide a variety of university resources, including low-cost office/lab space, shared administrative services, access to UMBC's library and computing resources, access to faculty expertise, and availability of business, legal, marketing, and technical advice. The General Assembly, DBED, and Baltimore County all strongly supported UMBC's efforts to acquire these facilities (originally a Martin Marietta Research lab site), which are an excellent example of UMBC's collaboration with business and government in the interest of economic development and enhancing the region's quality of life.

A recent, independent study (by the Sage Policy Group, Inc.) of the economic impact of *bwtech@UMBC* reports that nearly 850 jobs are located in the facilities, and that these employees are engaged in work that has produced more than 2,000 additional jobs Statewide. The study also reports an \$11 return in tax revenue on each State dollar invested. Moreover, *bwtech@UMBC* emphasizes tenant interaction with faculty, staff, students, and alumni producing research collaborations, employment, and internships.

Our Office of Technology Development works closely with tenant companies and faculty, pursuing strategies for commercializing faculty inventions and technology transfer designed to contribute to economic development and garner new resources for the campus. Increased emphasis on identifying applied uses of faculty research and on faculty collaboration with industry has resulted in increased invention disclosures. In fact, *The Business Gazette* reported that UMBC has "fared better than the industry standard, receiving one invention disclosure for \$1.45 million of research." Success also with our licensing efforts has increased our licensing revenue over the past few years. Examples of faculty research with potential commercial applications range from developing technologies to fight AIDS and cancer to creating a lightweight "skin" that protects aircraft from shrapnel.

PRIVATE GIVING

I am delighted to report that our fundraising efforts continue to be very successful. We completed our first capital campaign in June, 2002, raising \$66 million (and surpassing our five-year, \$50-million goal by nearly a third). In September, 2006, we announced a \$100-million capital campaign. Although we are the youngest member of the University System of Maryland, our fundraising goal is the third highest in the System, and we have already raised \$82 million toward that goal. Our current endowment (as of June 30, 2007) exceeds \$57 million, a dramatic increase over the past decade when our endowment totaled only \$3.6 million. Major gifts by corporations, foundations, alumni, faculty, and staff have built endowment support (*Figure 8*) for student scholarships, faculty research, endowed professorships, faculty and staff development, and other programmatic initiatives ranging from the sciences and engineering to teacher preparation, the arts, and community service.

Our success in fundraising is particularly significant because Maryland, unlike other states (e.g., Virginia, North Carolina), has not enjoyed a long tradition of private giving to public institutions. (In fact, before 1990, the campus had never raised a million dollars in any year.) We consistently set aggressive fundraising goals and have worked especially hard to surpass them. We have consistently demonstrated that top-flight programmatic initiatives – led by faculty and staff – can attract donors, and our successes have helped the public understand the difference that private giving and endowment can make. Alumni, corporations, and all Maryland citizens can take pride in our privately supported achievements.

SUMMARY OF FY 2009 BUDGET REQUEST

Operating Budget

UMBC's FY 2009 budget request of \$343.2 million reflects an increase of \$12.1 million (3.7%) over FY 2008. The change is due primarily to a \$4.3-million increase (5.2%) in the State General Fund appropriation and \$3.3 million from the new Higher Education Investment Fund. Tuition revenue is generated by a budgeted enrollment of 9,465 FTE students, which reflects a 0.5% increase over our FY 2008 actual enrollment of 9,421 FTE students and a 1.0% increase over our budgeted enrollment target for FY 2008 of 9,369 FTE students. Auxiliary and self-supporting operating-unit revenue increases \$1.5 million (2.9%), in part through direct sales by various units, and by fee increases identified in the tuition and fee schedule. Resources will be allocated to expand summer and winter course offerings, and to continue enhancing student life outside the classroom.

The FY 2009 funding increases are required to meet such mandatory expenses as wages and fringe benefit increases; higher utility, facilities renewal, insurance, and debt-service costs; and need-based financial aid responsive to access initiatives. The Higher Education Investment Fund provides much needed funding to support record-breaking numbers of students at UMBC; to enhance research facilities to allow for continued growth in externally funded research on the campus; and to cover the portion of our mandatory cost increases that would normally come from an undergraduate tuition rate increase.

Capital Budget

UMBC is not requesting any capital funds in FY 2009. The funds provided in FY 2007 and FY 2008 for planning and design of a Performing Arts and Humanities Facility are sufficient to complete this process. We are grateful to the Governor and the General Assembly for their continued support of this important building. The facility will provide space to meet the current and

future curricular, research, and student-life needs of the UMBC community and will house the Departments of Theater, Music, Dance, Ancient Studies, English, Philosophy, and our Center for the Humanities. (It is significant that the plans for the new facility proved instrumental in a half-million-dollar gift this past year to name and expand the role of the Center for the Humanities.)

Intended primarily as a facility for teaching and research in the arts and humanities, the Performing Arts and Humanities Facility will play a large and essential role in our required general education curriculum. It is so central to our academic mission that virtually every undergraduate will use the facility's classroom and spaces. Maryland employers often remind us how important it is that our graduates, whether in science and engineering or the liberal and fine arts, be able to think and communicate clearly – writing, speaking, problem-solving, and thinking critically and creatively. Our arts and humanities departments and programs provide such a foundation for all of our students, in the process educating well rounded citizens and strengthening Maryland's workforce. In fact, we have increased the writing requirements in our General Education Program (mandatory for all undergraduates), responding in part to industry's needs for highly literate employees. These revisions to our General Education Program make arts and humanities courses even more available and appealing to students in all fields, thereby increasing the demands on those departments that will be housed in the new facility. The facility also will be one of UMBC's most public buildings, unique in southwest Baltimore County and the surrounding area, serving the needs of the Greater Baltimore community through performances and outreach activities. Indeed, the facility will be instrumental in creating a regional and national appreciation of UMBC as a cultural destination.

RESPONSES to LEGISLATIVE ANALYST'S COMMENTS on UMBC

Let me begin by reemphasizing some of the points made by the Chancellor and other colleagues regarding two specific recommendations made by the DLS analyst that are of great concern to UMBC: (1) a proposed additional budget cut, and (2) building an annual 1% efficiency and effectiveness reduction into our base budget.

In response to the DLS recommendation for an additional \$6.8 million reduction in the USM budget, it is important to consider how each of our campuses has been asked to reduce already, both this year and next, at a time when enrollment and related expenses are growing. This past summer, for example, following the legislative session, the USM was asked to cut \$12 million – UMBC's share of that reduction was \$1.0 million. As we developed the FY 2009 budget, UMBC was asked to reduce mandatory expenses by slightly more than \$800,000 in order to meet an efficiency and effectiveness target of 0.5 percent of State appropriations and tuition budgets. Further, as our budget was finalized through the Governor's recommendation, an additional \$657,000 were deducted from our budget. All of these reductions, now totaling more than \$2.5 million, are seriously limiting our ability to meet the demands of larger enrollments on our campus.

In response to the DLS recommendation that the USM permanently incorporate the one-percent efficiency and effectiveness savings into its current services budget, UMBC would be harmed by further reductions. The campus has worked diligently to identify targets for cost savings, greater efficiency and productivity, and improved effectiveness. In fact, since FY 2006, we have specifically reduced our annual current services budget by nearly \$5.5 million. These reductions occurred during a period in which the number of UMBC students served rose by nearly 400 headcount and 250 FTE students. Our challenge is to continue delivering the quality of education that our students expect despite fewer resources. We request that no further reductions be imposed, and that the authority to determine future efficiency and effectiveness initiatives rest with the Board of Regents.

OPERATING BUDGET & PERFORMANCE ANALYSIS

Enrollment in Teacher Education Declines While Graduates Employed in Maryland Schools Increase

- . *The President should comment on efforts to increase enrollment and retention in the teacher training program.*

Campus Response:

The campus is implementing major initiatives supported through private fundraising and grant writing that are designed to increase the numbers of students entering and graduating from teacher education/training programs. In recent years, we have raised approximately \$10 million in private support from the Gudelsky, Rouse, and Sherman Family Foundations to recruit and support students planning to become teachers. The majority of these funds (including George and Betsy Sherman's recent \$5-million gift) will support students committed to teaching math and science in public schools, particularly in challenging school settings. Also in recent years, we have attracted more than \$15 million in grants from NSF and NASA to offer graduate-level teacher education. We are using these grant funds both to prepare current science-and-engineering professionals to earn master's degrees and transition into teaching careers, and also to provide many veteran elementary and middle school STEM teachers with professional development opportunities designed to strengthen their instructional skills. We are working particularly closely with Baltimore and Anne Arundel Counties on these major grant-supported professional development efforts.

In addition to these initiatives, we also are focusing on curricular initiatives to increase enrollment and retention in the teacher training program. Because we do not have a major or minor in Education (instead, students major in a content area and separately earn a teaching certificate), we are developing content courses and degree opportunities in various disciplines (particularly STEM fields) tailored for prospective teachers. A bachelor's degree program for prospective teachers in physics is the first such program, and plans are underway for similar bachelor's programs in chemistry and math. In biology, we have a special break-out group for undergraduates with an interest in teaching and offer them opportunities to work in after-school programs in structured and supportive environments.

Besides these STEM-related initiatives, we also are working to attract and retain teachers in other disciplines. For example, as the site for Maryland's Center for History Education, UMBC is offering professional development for history teachers, and we also have instituted an accelerated pathway into our Master's of Arts in Teaching (MAT) program by allowing bachelor's degree recipients to apply nine of their undergraduate courses toward their graduate teaching degree requirements.

Retention Rate of African American Students Exceeds All Students; Gap in Graduation Rates Increases

- . *The President should comment on the factors contributing to the success in retaining and graduating students.*

Campus Response:

Student success is among our highest priorities and at the core of our campus culture – and we give special emphasis to high academic achievement. For example, we have instituted a variety of special scholars programs across disciplines for talented minorities, women, and students in general – in science and engineering (Meyerhoff Scholars Program), the arts (Linehan Artist Scholars Program), public affairs (Sondheim Public Affairs Scholars Program) information technology (Center for Women & Information Technology Scholars) and the humanities (Dresher Humanities

Scholars Program). These and other programs have attracted millions of dollars of private support for our endowment and student success. We have been working to give all students with the kinds of support we provide to students in our special scholars programs.

Our efforts to create a student-centered environment – academic and student-support – that promotes students’ retention and graduation are wide-ranging. For example, we have created new academic programs in response to student demand and workforce needs, hired professional advisors in high-volume majors, and engaged students in applied experiences including research, internships, service-learning, and study abroad. We also have made our business functions available online, expanded our co-curricular opportunities, invested in new residence halls, and increased tutoring across disciplines.

Moreover, because national and UMBC data indicate that substantive first-year experiences are critical to student success, we have worked to be particularly supportive of students in their first year. All new freshmen and transfers have the opportunity to enroll in an academic First-Year Seminar and our Introduction to an Honors University Seminar. We also have created several Living-Learning Communities so that students with common interests can live and study together in our residence halls. We have initiated the New-Student Book Experience, which brings new students together in small groups with faculty and staff to discuss a common reading at the beginning of the academic year. Data show that these efforts, coupled with an “early-warning” system for students earning below a grade of C at midterm, careful advising, and academic support in the form of peer mentors, certified tutors, and online tutorials have had a very positive impact on student success.

Regarding our graduation rates, we are very proud of the success of our African American students and note that the recent gap (less than 2%) between the graduation rates of African Americans and all students reflects no more than a few students. Further, the retention rates of African American students in the next cohort (2001) are at an all-time high, suggesting that the six-year graduation rate for these students will be even higher.

Research and Development Expenditures Continue to Increase, Exceeding the Target

- . *The President should comment on the efforts to maintain or increase the amount of research funding in light of the expected decrease in federal research funding.*

Campus Response:

Our most effective strategy for continuing to generate substantial research funding is to continue attracting some of the very best faculty in the country. This strategy has resulted in stunning research productivity in recent years. As noted earlier, we now rank 2nd among the nation’s universities in funding from NASA, our largest Federal funding source, followed by NSF and the National Institutes of Health (NIH). We believe we have the necessary brainpower and entrepreneurial spirit to continue succeeding in attracting research contracts and grants – despite the anticipated decrease in Federal research funding. These contracts and grants can also help in building the State’s economy and training scientists, engineers, and other professionals. One of our greatest challenges is the shortage of research space on campus.

It should be noted that the President’s proposed 2009 Federal budget shows a reduction in funding for the Science Division at NASA. In an effort to diversify funding opportunities, our faculty have begun developing collaborative research efforts with NSF (whose budget the President has recommended increasing), the National Oceanic & Atmospheric Administration (NOAA), and the National Institute of Standards & Technology (NIST). Should NASA’s budget be reduced, these collaborations will help mitigate possible funding losses. Proposed increases to NSF’s budget should be very helpful to our faculty in engineering and the physical sciences. Also, if the America Competes Act is funded, it will provide competitive funding in areas consistent with UMBC’s priorities, including STEM education, graduate student assistantships, and interdisciplinary research in the physical sciences, IT, and engineering.

Out-of-State Tuition and Fee Revenue

- *The President should comment on when the university estimates that out-of-state enrollment will stabilize, plans for out-of-state tuition increases, and efforts to recruit and increase enrollment and out-of-state undergraduate students.*

Campus Response:

As noted in DLS's analysis, the campus has experienced a decline in the numbers of out-of-state undergraduate students in recent years. The "good news," however, is that our overall enrollments have remained robust because of healthy increases in the numbers of Maryland residents we have enrolled. The other "good news" is that we continue to attract large numbers of applications from out-of-state, and growing numbers of these out-of-state applicants are admissible because they have strong academic backgrounds.

The 33% increase in out-of-state undergraduate tuition and fees the past four years – from \$13,086 in FY 2003 to \$17,354 in FY 2007 (not including room and board) is the leading factor contributing to the decline in out-of-state undergraduate enrollment. Needless to say, we have been concerned about the lost tuition revenue (as well as the impact on our diverse learning environment). In response to this challenge, we hope that by freezing out-of-state undergraduate tuition both this year and next, and by determining the extent to which we need to provide a "discount" to out-of-state students, particularly high-achieving students, families will increasingly choose UMBC over their own in-state institutions. We know, for example, that large numbers of students from New York consider UMBC, but face much lower in-state tuition and fees. The differential is substantial, for example, between in-state expenses at SUNY-Binghamton (whose strong academic reputation is similar to UMBC's) and UMBC's out-of-state tuition and fees – approximately \$11,200 vs. \$26,300 (including room and board).

I should add we are hopeful that as our intercollegiate athletic teams (e.g., men's and women's basketball and men's lacrosse) continue to improve, our national visibility will increase. We are encouraged by the fact that a year ago, our men's lacrosse team advanced to the NCAA quarter finals, and our women's basketball team won the America East Conference tournament and went to "the dance" (the NCAA's championship tournament). Moreover, our men's basketball team is currently in first place in the America East.

ISSUES

Resident Undergraduate Tuition Frozen; Minimal Fee Increase

- *The President should comment on the tuition and fee schedule and the impact on affordability.*

Campus Response:

In recent years, our students and the campus have benefited from the allocation of additional State appropriations in lieu of increases in undergraduate resident tuition rates. Given UMBC's concentration of expensive programs in the sciences and technology, as well as our mission as a public research university, it is reasonable that our costs – and therefore our price through tuition – are at the high end among Maryland's public campuses. Affordability will be influenced in the future to the extent that additional State support can be provided to help cover unavoidable cost increases and to provide aid to our students with financial need.

Distribution of Types of Institutional Aid

- *The President should comment on the amount of merit and mission aid awarded and the amount awarded to students who had not demonstrated financial need. The President should also address plans to award more aid to students with greater financial need as well as whether a student's EFC is a factor in what type of aid is awarded.*

Campus Response:

It is important to point out that in FY 2008, we are awarding far more undergraduate financial aid, both merit- and need-based, than the \$19.4 million in institutional aid noted in DLS's analysis. The following examples reflect additional need-based aid. Through the National Science Foundation's S-STEM (Scholarships for Science, Technology, Engineering & Mathematics) Program, we received two grants totaling \$1 million, which we are using to provide financial aid to 40 low-income, talented students in STEM fields. Also, through the Gates Millennium Program, we received \$130,000 to provide financial support for four years to two additional high-achieving, low-income undergraduates in science. In addition, a portion of the millions of dollars we receive each year from national agencies and private foundations to support students in the Meyerhoff Scholars Program (also not reflected in the \$19.4 million total) covers tuition for low-income students. These funds – all from non-State sources – are critical to our mission and efforts to produce large numbers of scientists and engineers, including especially underrepresented minorities and women. As a result of the Meyerhoff Program (a national model often compared to the Jefferson Scholars Program at the University of Virginia and the Morehead Scholars Program at the University of North Carolina-Chapel Hill), UMBC is among the nation's leading institutions in graduating African American students who go on to complete Ph.D.s, M.D.s, and M.D./Ph.D.s. The program also can be credited with keeping many high-achieving college students in Maryland.

More generally, we have increased the base of our need-based financial aid funding by a minimum of 10% per year since FY 2006. We have met this commitment despite frozen tuition rates and minimal increases in fees. In recent years, we also have been providing more merit-based support for transfer students – our population with the greatest financial need – including a new Transfer Recognition Award to high-achieving transfer students with demonstrated financial need.

Finally, in FY 2006, approximately 23% of our students who received merit, mission, or athletic aid demonstrated need. Currently, only 50% of our students receiving institutional aid of any sort filed the FAFSA in 2006. We continue to encourage students to maximize their funding resources by completing the FAFSA each year.

Facilities Renewal

- *The President should comment on the efforts to address the maintenance backlog and keep pace with ongoing maintenance requirements.*

Campus Response:

UMBC recognizes that the funding allocated each year to cover major facilities repairs and renewal is insufficient to keep pace with growing needs. We are very grateful to the Board of Regents for establishing a policy that requires systematically increasing this investment over a period of years to reach a target of annually spending 2% of the current replacement value of our buildings for facilities renewal. Further, reflecting leadership by the Governor and General Assembly, this increased investment has been funded in FY 2007 and FY 2008, and is included in the Governor's recommendation for FY 2009. Only because of this increased investment by the State have we been able to make dramatic strides in annual spending on facilities renewal. It is important to note, however, that we started this process with a very small base – our total facilities renewal funding in FY 2006 was \$118,000, while the replacement value of our buildings totaled more than \$600 million.

Taking into account only our most critical needs, we estimate that our current deferred maintenance backlog totals \$32 million. We are working to address this challenge through several strategies. First, we strongly support continued growth in State funding for this purpose. Our internal facilities renewal fund in FY 2008 is \$1.3 million, and the USM provides an additional \$1.3 million in bond funding annually for this purpose. Two percent of the current replacement value of our facilities is estimated to be more than \$14 million.

In the meantime, we are evaluating the possibility of entering into an energy performance contract that would result in an external party implementing a number of facilities modifications that would generate energy savings that would be sufficient to repay the cost. We believe there are many such opportunities at UMBC that would also address deferred maintenance items, including new roofs, windows and building envelopes, replacing aged mechanical and electrical systems with more energy efficient models, and more. We are also attempting to accumulate additional funds to add to our pool by recapturing unanticipated savings across the campus, adding \$200,000 to \$300,000 annually.