

2015 Legislative Testimony

University of Maryland, Baltimore County (UMBC)

FY 2016 Legislative Testimony

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February 2015

On behalf of UMBC's students, faculty, and staff, I would like to thank you for your sustained support of both UMBC and higher education in Maryland. My colleagues and I are responding by working to develop the brainpower and the research to push Maryland ahead in increasingly competitive global markets.

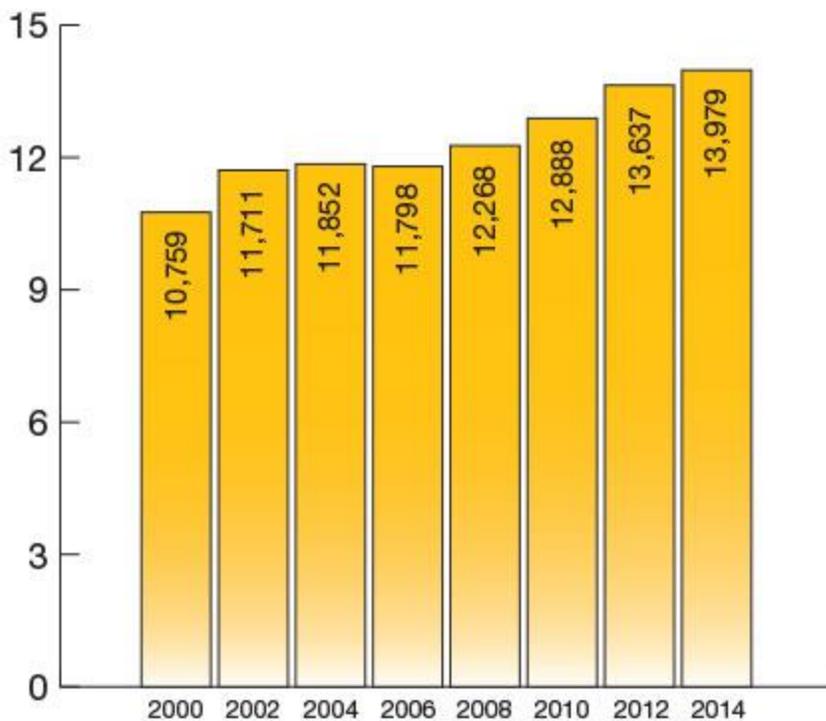
Public higher education institutions are partners with the State. UMBC and other University System of Maryland (USM) institutions are guided in this partnership by the USM strategic plan, which emphasizes higher education's contribution to Maryland's economy. UMBC strongly endorses the aims of the plan, including higher rates of college completion and an increase in research with marketable potential.

We especially appreciate that the Governor and the General Assembly are providing design funding for our new Interdisciplinary Life Sciences Building. The proposed building is an essential element of our plans to advance the state's biotechnology industry. We estimate that the research labs and expansion of program it makes possible could attract as much as \$12 million annually in outside research funding. The building, which features flexible learning spaces facilitating active learning, will also help us meet our classroom space needs and increase the number of science, technology, engineering, and mathematics (STEM) graduates. With your continued help, we begin design this year, start construction in 2017, and move into the building over the summer of 2019.

Success with Students

UMBC is on track to meet its college access and completion goals in the USM strategic plan.

**Figure 1 Headcount Enrollment
Fall 2000 – Fall 2014**

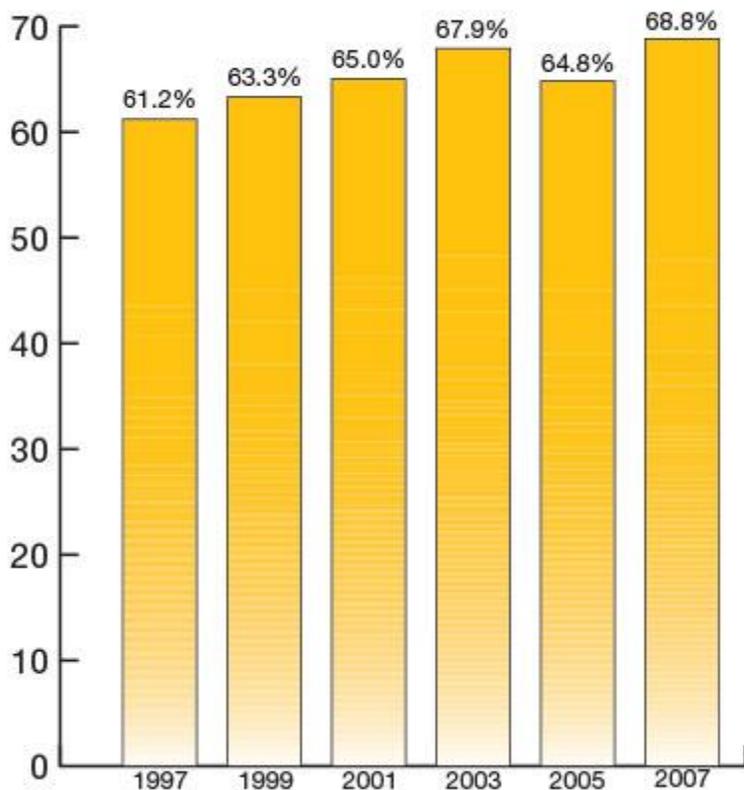


Source: UMBC REX- Student Term Table
Prepared by UMBC IRADS, February 2015

Our campus has seen steady enrollment growth, including in freshmen, transfer students, graduate students, and students in noncredit courses. Headcount enrollment among fall and spring semester students increased between 2000 and last year by 31 percent, from 10,759 to 13,979 students. The growth comes despite a drop off in enrollments nationally with the waning of the Baby Boom echo. In addition to those nearly 14,000 students, UMBC serves students in summer and winter programs, the English Language Institute, and the UMBC Training Centers for a total of about 20,000 students overall.

Our student body continues to reflect the diversity of the young people in Maryland. This year, 16 percent of our students are African American, 18 percent are Asian American and 6 percent are Hispanic or Native American.

Figure 2 Percent of First-time, Full-time Freshmen Graduating in Six Years (Cohorts Entering 1997-2007)

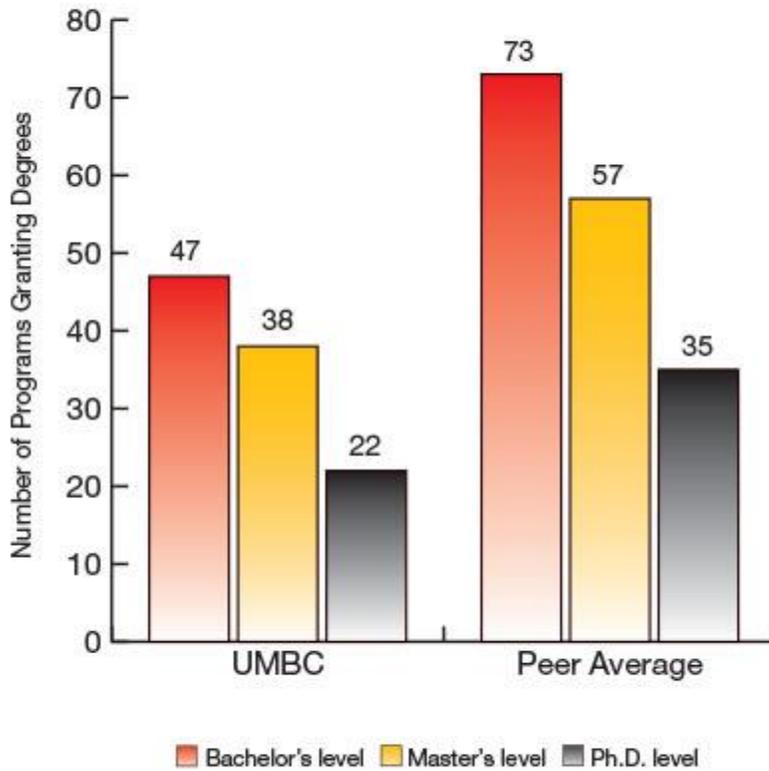


Source: MHEC Retention and Graduation Rate Reports
Prepared by UMBC IRADS, February 2015

UMBC's college completion rate is up significantly at a time when the job-market demand for college graduates is rising. Last month's unemployment rate for workers with a bachelor's degree or higher sank to 2.8 percent, the lowest since September 2008. We are supplying those in-demand workers.

The proportion of our first-time, full-time freshmen who graduated from UMBC or another Maryland public institution within six years increased by almost 4 percentage points over the past two years—to 69 percent. National Student Clearinghouse data show that 75 percent of our students completed their degrees at any U.S. institution within six years, and another 15 percent of those students are still enrolled in postsecondary education. This means that after six years, 90 percent of the individuals who started college at UMBC are either enrolled or have graduated. Recent improvements in our retention rate suggest that our graduation rate will continue to rise in the future. Just over 89 percent of first-time, full-time freshmen returned for a second year at UMBC in fall 2013, compared to 83 percent in fall 2007.

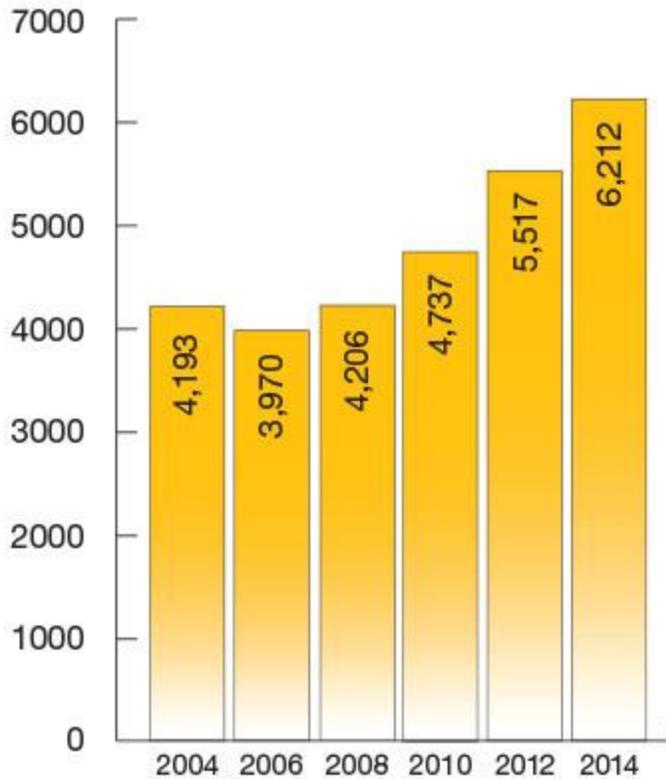
**Figure 3 Bachelor's, Master's, and Ph.D. Programs
UMBC and Peers
2013**



Source: IPEDS Data Center - Completions Survey, 2013
Prepared by UMBC IRADS, February 2015

Our growing enrollment and increased retention and completion rates are all the more noteworthy because of our narrow program base. UMBC offers a smaller number of bachelor's degree programs than its peers. As a result, it costs us more to increase enrollment because we have a smaller proportion of relatively low-cost programs to balance more expensive STEM majors. In addition, offering a broader range of programs would likely increase retention and graduation rates because students would be able to pursue the majors they want without having to transfer from UMBC.

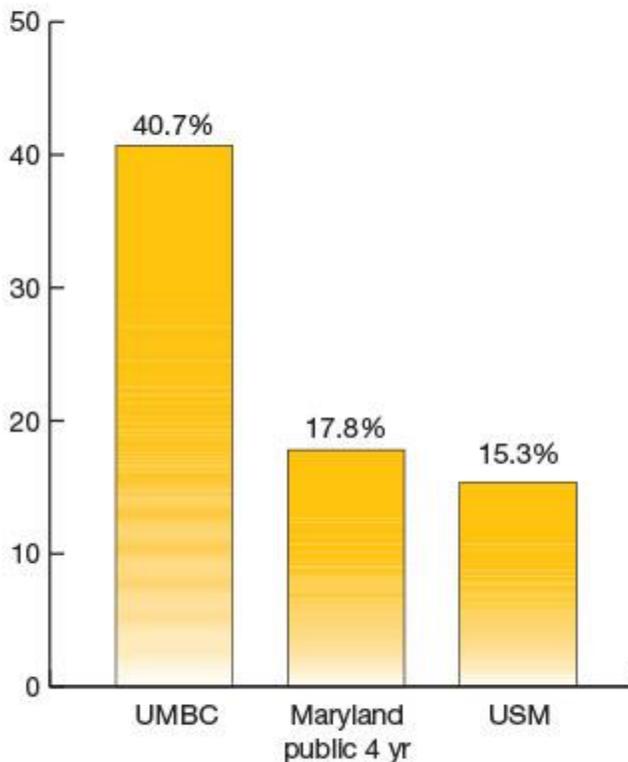
**Figure 4 Undergraduate STEM Enrollment
Fall 2004 - Fall 2014**



Source: UMBC REX - Student Term Table
Prepared by UMBC IRADS, February 2015

UMBC continues to widen the pipeline to the STEM workforce, which is so crucial for Maryland's economic growth. We excel at helping students of every background graduate with demanding STEM majors. Enrollment in STEM majors has increased 48 percent over the past decade, greatly outpacing UMBC's overall enrollment growth of 18 percent in the same period. In the past year alone, STEM majors increased by 6 percent, from 5,873 to 6,212 and now represent almost 55 percent of the majors being chosen.

Figure 5 Percentage of Bachelor's Degrees in STEM
(Science, Technology, Engineering, and Math)
2013



Source: IPEDS Data Center - Completions Survey, 2013
Prepared by UMBC IRADS, February 2015

Just over 40 percent of our degrees are in STEM, a higher proportion than at any other Maryland public institution.

Innovations in teaching and learning have been at the heart of our success with students. We are improving learning experiences across all fields of study at UMBC, as well as strengthening student supports. We have, with USM investment and our own funding, supported the redesign of introductory courses in English composition, psychology, chemistry, engineering, pre-calculus, sociology, and more. Data on successful completion of the “gateway” courses needed to enter particular majors show these efforts have paid off. The pass rate in Chemistry 101 has risen from a little over 70 percent to 86 percent. About two-thirds of the students in Psychology 100 used to pass the course; in recent years the number of students passing has increased to 90 percent. In Sociology 101, the proportion of students earning a passing grade has risen from three-quarters to about 90 percent.

To support student engagement and more active learning, we have designed flexible classroom spaces such as our Science Learning Collaboratory, funded by the Howard Hughes Medical Institute, our Chemistry Discovery Center, and the wonderful spaces

for arts and humanities teaching in our new Performing Arts and Humanities Building. We are also harnessing data analytics to track individual student progress in real time and pinpoint opportunities for intervention to get students back on track. Within all of this, we have an eye not only on the skills students will need in the workplace but also on the attributes they will need as citizens. Citizens need to be able to ask good questions and engage in thoughtful discussion of the challenges that face our State and nation. Our BreakingGround civic-engagement initiative views these skills and community exposure as integral to the educational experience of all students.

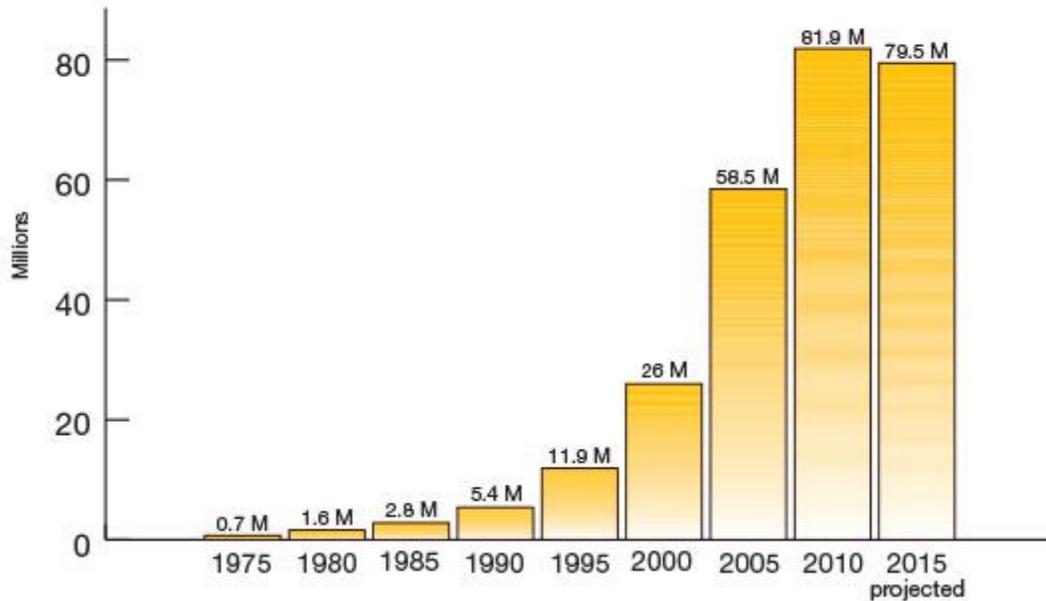
These innovations have brought UMBC and Maryland significant national recognition. U.S. News has ranked us a national leader in both innovation and undergraduate teaching for several consecutive years, including in rankings published this past spring. For focus on undergraduate teaching, we are in the company of Princeton, the College of William and Mary, and Stanford. As the top university for promising and innovative changes, we head a list that includes Arizona State University and the University of Southern California.

We have become models for inclusive excellence. Interest in our work led the White House to invite us to co-host this fall a high-level workshop on fostering student success in STEM fields. And UMBC won \$18 million this fall from the National Institutes of Health to apply the work begun with our Meyerhoff Scholars and other STEM-success programs designed for high-achieving students to students in the mid-range of achievement.

Strides in Research and Marketable Innovation

Forty years ago, the funding for research at UMBC totaled about \$1 million. Today we are a thriving research university with nearly \$80 million spent on research that builds Maryland's economy. UMBC is classified as a high-research university by the Carnegie Foundation, and the Times of London has twice named it as one of the world's top young universities for strong research, innovation, and a global outlook.

Figure 7 Research Expenditure History



Source: UMBC Research Dashboard

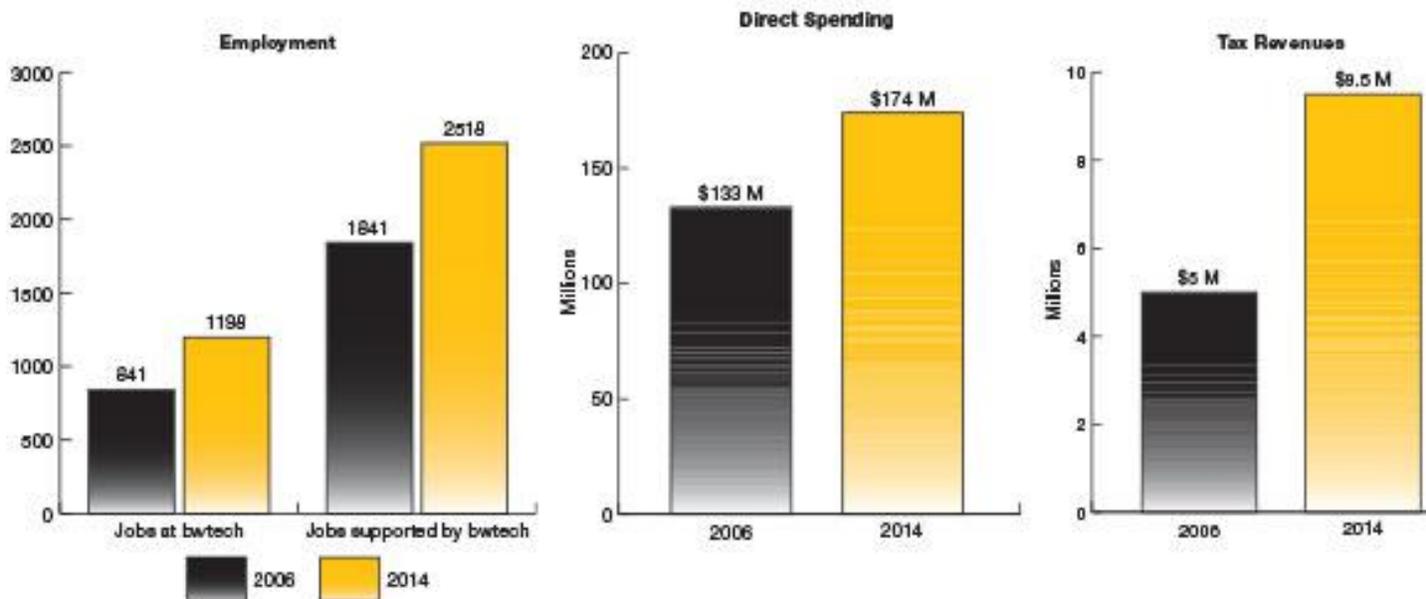
We are leaders in environmental research in key areas that include geographic information systems (GIS), marine biotechnology, climate change, and environmental policy. Over 70 of our researchers at the NASA Goddard Space Center are focused on earth sciences. Dr. Vanderlei Martins, one of our physics faculty, is working with students, professors, and NASA engineers to build a small satellite—called a CubeSat—that will investigate aerosol particles and clouds in the atmosphere. We have already had one mission in 2013 and anticipate more in the future. Our Center for Urban Environmental Research and Education is one of just two externally funded centers in the nation studying the impact of urban areas, such as Baltimore, on their surrounding watersheds.

UMBC is also developing a strong health science capability. In collaboration with the University of Maryland, Baltimore (UMB), our investigators are working on alleviating artery blockage in limbs, better understanding the pathophysiology of migraine headaches, and improving health assessment for senior citizens with leukemia. UMB and UMBC recently awarded a second round of collaborative grants pairing UMBC researchers with researchers from the UMB schools of Medicine, Pharmacy, Dentistry, and Nursing. The ultimate goal of these institutional grants is stimulating joint grant proposals for external funding by federal agencies and philanthropic foundations.

UMBC has become a powerhouse in the burgeoning field of cybersecurity. We learned this fall that we will play a major role in strengthening cybersecurity infrastructure through a new Federally Funded Research and Development Center with headquarters in Rockville. UMBC is a lead university on the \$5-billion contract won by the MITRE Corporation to establish the center. Last year we also launched an international

cybersecurity partnership with Kyushu University in Japan. Our research and technology park, bwtech@UMBC, houses 45 cybersecurity companies, 35 of which are in our cyber incubator. This is the largest cluster of early-stage cybersecurity companies at a university-affiliated park in the nation.

Figure 6 Impacts of bwtech@UMBC



Source: bwtech@UMBC: Impacts and Opportunities, Sage Policy Group

With its corporate and government partners, bwtech@UMBC—the first university-affiliated research park in Maryland—fosters new technologies and commercialization, nurtures entrepreneurs with nontraditional backgrounds, and adds millions of dollars to Maryland’s bottom line. A recent report by the Sage Policy Group led by Anirban Basu found that the returns to Maryland from bwtech have increased dramatically since 2006. Employment at companies in the park grew by nearly 30 percent in eight years that included the Great Recession, and jobs supported by the park increased by 40 percent—to more than 2,500. Spending in Maryland stemming from park tenants’ jobs and activities increased by 31 percent to \$174 million in 2014. Finally, income and property tax revenues going to the State rose by 90 percent over the eight years, with \$9.5 million in revenues generated last year.

Powerful Partnerships

UMBC leverages its resources through strong public and private sector partnerships, which produce greater returns on the State’s investment in the campus. Appreciating that a Maryland public university builds on the educational efforts of the State’s school districts and community colleges, we have extensive preK-12 education collaborations.

Several of these are focused on STEM, such as the Sherman Scholars program preparing high-quality STEM teachers for low-income schools, the outreach activities of our Center for Women in Technology, and the work we do to support 150 Maryland middle and high schools in offering engineering courses. We are excited about the more recent t-STEM project, supported by the Gates Foundation, where we partner with the community colleges in Anne Arundel, Baltimore, Howard, and Montgomery counties, to ensure that STEM students transfer successfully to UMBC and earn the STEM degrees they seek. Our STEM transfer students last year graduated in the same proportion as transfer students seeking degrees in non-STEM fields.

UMBC's business and government collaborations build the State's economy directly. We are a prime source of new talent for the National Security Agency (NSA), the Social Security Administration, the Navy, and private companies including GE, Northrop Grumman, Lockheed Martin, T. Rowe Price, and Morgan Stanley. Our students benefit by getting great jobs, and the organizations are strengthened by well-prepared employees. We have more than 1,000 alumni working at the NSA. With the help of our business partners, we also nurture entrepreneurs from nontraditional backgrounds—including women, minorities, and newly minted Ph.D.s—who are interested in turning university discoveries into start-up companies.

Financial Stewards

UMBC is focused on being a responsible steward of our resources. In the past fiscal year, we realized more than \$3.5 million in savings and avoided costs as part of our participation in USM's Effectiveness & Efficiency Initiative—almost 30 percent of that due to leveraging technology. For the past five fiscal years, UMBC has achieved a total of \$19.4 million in efficiencies. This includes \$13.4 million in savings and over \$1 million in revenues related to business practices. We have also fared well on USM and legislative audits. Our energetic fundraising efforts have continued to increase our endowment.

We want our students to be responsible with their own money, too. In addition to the high priority we place on financial aid for students from low-income families, we are mindful of the financial worries that come with attending college for many students and their families. Through a dedicated website, course modules for undergraduates, and financial literacy workshops, we help our students learn how to finance their educations and manage what they earn and owe after graduation.

Conclusion

With the approach of our 50th anniversary in 2016, we are looking forward but also looking back. It was a little more than 50 years ago that the General Assembly approved the establishment of a completely new university in our State, one of a class of universities founded to educate people of all races and all economic backgrounds. We exist because the people of Maryland, speaking through the General Assembly, saw the

value of such an institution. A generation later, we are proud to embody that vision of inclusive excellence. It gives us a unique relationship to this legislature, and it represents the very best of America.

I have enjoyed reporting to you on UMBC's progress and will be happy to respond to any questions you have about our FY 2015 and FY 2016 budgets.

Summary of FY 2016 Budget Request

Operating Budget

The Governor's proposed FY2016 budget recommends a budget allocation for UMBC of \$411.5 million, representing an increase of \$1.4 million in State funding and a \$5.0 million increase in tuition and fees – a total of \$6.4 million. Mandatory costs at UMBC, primarily fringe benefit increases for employees, financial aid to assure access for our neediest students, and utilities, are going up by about \$7 million. That FY2016 funding gap is compounded by the \$3.6 million base reduction made to our FY2015 working budget in early January.

We understand that we must play our part in addressing State revenue shortfalls, and are prepared to do so. It is important to note, however, that this will require UMBC to make hard choices and implement difficult cuts. We can also anticipate the reductions will negatively impact our progress in key areas, notably graduation rates and serving more students in STEM fields. We are particularly challenged as our enrollment continues to grow, and we are pressed to offer more courses to keep our students on schedule to graduate in a timely way. We would ask that, should a supplemental budget be possible, the legislature consider further investment in UMBC and other USM institutions so we can continue to build on our progress in advancing the State economy and quality of life.

Capital Budget

UMBC's FY 2016 budget request of \$6.7 million provides for continuation of design of our Interdisciplinary Life Sciences Building. The new Interdisciplinary Life Sciences Building will seamlessly connect teaching and research activities to enhance and further stimulate collaborative approaches to advancing the State's biotechnology industry and increasing the number of STEM graduates.

Approximately eight new active learning classrooms, four seminar rooms, four multi-disciplinary teaching labs, a good manufacturing practice facility, and collaborative project team rooms will support an additional 1,800 FTE STEM students. Flexible and adaptable research labs and core facilities will provide opportunities for as many as 45 principle investigators and their graduate assistants and undergraduate students

opportunities to engage in interdisciplinary research focused on advancing the State's biotechnology industry.

Responses to Legislative Analyst's Questions

Page 17: The President should comment on institutions' priorities when determining how reductions will be allocated over the program areas, in particular, minimizing the impact on financial aid.

As a campus, we agree on two guiding principles when we face significant budget challenges as we do this year. Our first priority is to support our students, and the faculty and staff responsible for their education and well-being. Second, we do all that we can to protect the quality of our academic programs.

We will do what we can to maintain the current level of financial aid, including working to identify funds to increase aid to cover the tuition rate increase. We are also committed to doing what we can to avoid eliminating jobs. Our success will depend on the magnitude of the reductions we face.

As you've heard in my earlier testimony, UMBC's enrollment growth has been remarkable in recent years. Without the ability to hire additional faculty, it will become increasingly difficult to offer courses our students need to make timely progress toward their degrees. This is especially the case in the STEM fields. We anticipate this will be the case, given the budget cuts we are being asked to make.

We have limited choices when determining where to make these significant cuts, and hard choices will have to be made. We are prepared to make them, but we recognize that there will be a cost associated with them, in terms of our institutional success and that of our students. Here are examples of our planning.

Planned additional investments in fundraising capacity will be delayed, and current resources jeopardized, making it even more difficult to meet our aggressive fundraising goals. We have worked hard to leverage state funds with private gifts to meet our very expensive mission.

We anticipate having to make reductions in financial and business management resources – including those dedicated to compliance, mitigation of audit risks, business process improvements, and sound financial practices. We are worried about negative fall-out from such actions.

Student support services will face reductions, a considerable challenge when we know we are already unable to deliver the services needed due to lack of resources. Further reduction is especially worrisome in light of increasing requirements for Title IX (sexual assault) implementation, and growing needs for counseling and behavioral assessment services.

Page 21: The President should comment on the relatively low portion of institutional aid going toward need-based aid and if financial literacy or other programs are offered to students to educate them about options and implications of using various methods to finance their college education.

Eight years ago, UMBC made a commitment to annually increase our institutional need-based financial aid budget by at least 5% more than the annual tuition rate increase. Our goal in this plan has been to expand access for our neediest students. Over this period, we have almost tripled our need-based aid awards to \$3.6 million, increasing the number of students receiving need-based aid by over 82% to 2,152 students. During this same period, our need-based aid increased on average 17% annually, compared to the average annual tuition increase for Maryland undergraduates of 2%.

Many of our merit recipients come from low-income families. Of the 62% of our merit recipients who filed the Free Application for Federal Student Aid (FAFSA), over 71% were determined to be eligible for need-based aid.

It should be noted that UMBC employs over 2,500 students – about 18% of all students – in part-time jobs across the campus. This is another way we are able to help students financially. In addition, over 650 graduate assistants are engaged in teaching and research, and are supported financially at UMBC.

UMBC began in 2012 to develop a comprehensive financial literacy program, with the goal of preparing all students at UMBC to graduate as well-prepared to manage their budgets, bank accounts, assets and debt as they are to master their academic pursuits. A survey of undergraduate students found that over 75 percent of respondents would enroll in a dedicated financial literacy course, if offered. Educational programming, resources and tools to increase financial skills have been deployed, including a [financial literacy website](#), new education modules added to Student Orientation and special first year courses, and specific programming targeting the needs of graduate students. Since its launch last spring, the website has had close to 12,000 hits with 3,200 unique visitors. A database of training resources is in development, as well as an expansion of educational workshops in collaboration with our external partners (PNC Bank and others).

Page 23: The President should comment, with grant funding coming to an end in fiscal 2015 and given the current budget situation, how the initiative plans to maintain momentum in developing a national STEM transfer model.

The STEM Transfer Student Success Initiative (t-STEM) is an innovative inter-institutional collaboration to support the successful transition to UMBC by STEM students from Anne Arundel Community College, Community College of Baltimore County, Howard Community College and Montgomery College. The initiative's goal is leveraging the benefits of technology, face-to-face interaction, relationship building and effective collaboration to build inter-institutional networks of support for transfer students, staff, and faculty. It is a working model through which to develop a national

model for the collaboration of two- and four- year institutions seeking to enhance the success of transfer students in STEM fields.

We believe the most fundamental result of this work has been to strengthen the partnership between UMBC and our community college partners around a common goal of a student-centered approach to supporting transfer students through their entire college experience. Together we have gained valuable insight into the challenges faced by transfer students and the support mechanisms they need, many of which we have piloted.

For the past four years this initiative has been supported by a grant from the Bill and Melinda Gates Foundation and the annual expenses are approximately \$400k, split across the five partner institutions. We have completed and established foundations for future growth and development including tools for inter-institutional course alignment that reach beyond articulation. We have also implemented pre- and post-transfer seminars, interactive modules that include subject matter content review, strategies and practices for academic success (such as time management, financial aid guidance and campus involvement). We are also about to execute data-sharing MOUs among the partners that support continuous improvement through effective tracking of the success and progress of transfer students. These were designed as sustainable components and will continue in place at the end of the Gates funding.

Using Gates funds we have also supported personnel to act as points of contact for transfer students with pre-transfer advisors, peer mentors and t-STEM staff both pre- and post-transfer. These personnel costs have been approximately \$350k per year, shared among the five partners. While we cannot comment on the future financial commitments of our community college partners and we will actively seek new grant funding to continue these activities, it is likely we will need scale back these components of the t-STEM initiative when the grant funding ends at the end of this year.