

# FY 2000-2001 General Fund Operating Budget

July 13, 2000

## Introduction

The budget that we recommend for Fiscal Year 2001 follows directly on last year's budget. It is built on an ongoing partnership between the University and the State, in which relatively generous State appropriations permit low tuition increases.

We anticipate an increase in the State appropriation of (5.7 percent) . This enables us to request a tuition increase for undergraduates of only 2.8 percent, which is slightly lower than anticipated consumer price inflation in Michigan.

The accompanying chart shows rates of tuition increase for resident undergraduates in LSA (which enrolls more than half of our undergraduates) and rates of increase in the State appropriation since 1986-87.

Two features of the chart are striking: (1) There is an obvious negative correlation between tuition growth and growth in the State appropriation. Over any contiguous set of years, when the State appropriation grows rapidly, tuition growth is relatively restrained, and vice versa. (2) The period starting in 1996-97 shows much lower tuition growth than the preceding ten years, even when adjusting for inflation.

## Fundamental Assumptions

Before going into the details of the proposed budget, I want to restate our fundamental assumptions about this University, and illustrate them with examples of some of the programmatic initiatives supported by this budget. As in years past, this budget is built to allow the University of Michigan to continue to be the great public research university that it is (with superb faculty, strong institutions of shared public culture, and learning that stretches well beyond the traditional classroom). The following are characteristic attributes of the kind of university that we strive to be.

**EXPLORATION.** A great university creates profound understanding of the human and natural world across the entire spectrum of intellectual and creative endeavor.

**EDUCATION.** A great university prepares students to excel and to lead in the world that awaits them. It responds to the increasing complexity and interconnectedness of that world.

**OPPORTUNITY.** A great university—especially a great public university—enables young adults with talent and industry, no matter the circumstances of their birth and family backgrounds, to become full participants in a world of unlimited horizons.

**PRESERVATION.** A great university conserves the world's intellectual and cultural treasures for all who will follow, actively facilitating the use of the past in understanding the present and creating the future.

**CHARACTER.** A great university nurtures in its community, and models for the world, an ethic of citizenship, participation, and service.

All of these elements exhibit two vital features of this university: They are enabled by the conjunction of large scale and high quality, and they are connected to each other.

The Boyer Commission, whose 1998 report was concerned with undergraduate education in research universities, put the case nicely: "Great research universities have 'more of everything—more students, more professors, more courses, more books in the library, more computers, more laboratories, more student activities'." Because we do (almost) everything (and do it well), we can make connections for our students in ways that other kinds of institutions of higher education simply cannot.

Exploration, education, opportunity, preservation and character are all connected to each other. Nowadays, the connections often involve the connectivity that goes with wiring and information technology. But the connectivity is much stronger than the particular media that are used for the connections—it comes from the intrinsic connectedness of ideas (across human time, physical space, and disciplinary boundaries) and of their acquisition (in corners of human experience beyond the traditional classroom) and their use (in bridging to a broader public world).

## Research and Teaching—Connected

Now I turn to some concrete examples of programs and people, some completely new and some existing but evolving, which will be supported by this budget. All of the examples discussed here have similar characteristics: Original research and creative activity of the kind that can only be led by a superb faculty leads to new fields of inquiry and of graduate and professional study, frequently involving the creation as well as the use of new technologies. Often, these new fields are interdisciplinary. Invariably, their development entails rethinking and reconfiguration of undergraduate curricula, and often precipitates the making of new connections to worlds beyond the campus. The process happens repeatedly at Michigan, and because of our quality and scale, it happens unusually rapidly.

**Biomedical Engineering.** Generally, biomedical engineering involves the tools of engineering combined with the basic principles of biology. The contributions of biomedical engineering include MRIs and synthetic heart valves, and the field is growing rapidly with the advance of technology. Starting next year, the Department of Biomedical Engineering will offer undergraduate programs. Graduates of these programs will be well positioned for employment and further training in a wide variety of emerging fields. Their training and their jobs are intrinsically interdisciplinary and involve applications that benefit the public, and can only be provided when current research is brought to the undergraduate curriculum.

**The Life Sciences Undergraduate Curriculum.** Much of our discussion of the Life Sciences Initiative has been about research, and about the principal building in which that research will take place. From the beginning, however, we have also talked about the ways in which the Life Science Initiative will affect life in the classroom. Just as the building is taking shape, so too are the initial stages of the curricular changes. In particular, we are asking the faculty to propose new interdisciplinary courses in issues related to the Life Sciences Initiative. Appropriate topics for these courses may include (but are not limited to ) biocomplexity, biotechnology, cognition, ecology, ethics, evolution, environment, genomics, health sciences, human values, learning and memory, neuroscience, public health, molecular biology, and social sciences.

**Arts of Citizenship.** The Arts of Citizenship Program aims to promote collaboration not only among faculty and students in the arts and humanities, but also between the university and "culture-makers" in our larger community: arts and cultural institutions, teachers, civic groups, and public agencies. One goal of the program is to address the divide between the research university and its various publics, a divide that is intolerable, especially for a public university.

### Community Service and Learning.

- The Edward Ginsberg Center for Community Service and Learning sponsors dozens of programs. The most venerable is Project Community, which allows more than 400 students to work on problems such as illiteracy, homelessness, and domestic violence, both in the community and in the classroom.
- The School of Information sponsors the Alliance for Community Technology (ACT), in which students and faculty from the School work with various communities to use insights and techniques from information sciences to improve community wellbeing. ACT focuses on disadvantaged communities and provides service while enabling professional training in the information sciences.
- Students and faculty in the School of Dentistry provide dental care to thousands of Michigan residents at over thirty sites across the State, with particular emphasis on providing service to populations and locations that are generally underserved. Connection with the broader public began when the mayor of Ann Arbor invited participation in conversations about the reconstruction of a local bridge and its surrounding neighborhood. In the program's "Emerging Voices" project, students from the University's Residential College have been interviewing elders in Detroit—in churches, senior citizen centers, neighborhood centers, and private homes—about what it has been like to come of age as a teenager in Detroit over the past 75 years. The resulting life-stories will, in turn, be transformed into theater pieces by Detroit's renowned Mosaic Youth Theater for the celebration of the city's 300th anniversary in 2001.

**Technology and New Areas of Knowledge.** Modern understandings of the world are understandings infused with technology, both information technology and other kinds of technology. As the workplace is transformed by technology, our students (and indeed our faculty!) need increasingly to be fluent and facile at increasingly higher levels. And we need to remember that technology is not always in cyberspace. Technology is something that allows us to see and appreciate parts of the world that we can't easily see or appreciate directly.

- A faculty member in biology, working with a design team from our information technology division, has created a program called "Cyberfly" that she uses to teach genetics to undergraduates. This program is a kind of "virtual breeding"—it allows students to do genetic cross-breeding of fruit flies and visualize the results, all within the time constraints of a semester-long course.
- With support from the Mellon Foundation we are currently adding 13,000 volumes (3 million pages) to the Making of America file. The Making of America is a digital archive that has made millions of pages of deteriorating and inaccessible historical material widely available. It is accessed online about 250,000 times a month.
- Our recently approved Bachelor of Science in Sound Engineering, offered by the School of Music, combines the resources of the School of Music and the College of Engineering with the physical facilities and technological infrastructure of our Media Union to offer an education designed to link an aural experience and the artistic dimension with the requisite theoretical and technical knowledge. CourseTools, developed in the Media Union over the past year, provides a versatile and user-friendly system for faculty to use the Web in their courses.
- CourseTools keeps track of the students who are enrolled in a course, allows faculty to make material available to those students on the Web, and provides a virtual location in which students, faculty, and GSIs can discuss academic material with each other. Hundreds of faculty used CourseTools during the pilot year of 1999-2000, with great success. We expect many hundreds more courses to use the program this year. Meanwhile, we continue to improve the program to keep up with the ideas and demands of our students and faculty.

Thus far, all of the examples have referred to programs and programmatic initiatives. Our last example refers instead to a person. In teaching, research, and involvement with the community, Professor Susan Alcock draws upon both the scale and connectivity of the University. She teaches a large course—Introduction to Roman Archaeology—in which she uses the connectivity of the Web to provide her students with opportunities for individual creation and criticism. She employs classical methods and computer-based methods (of spatial analysis and geographical information systems) in her archaeological work. She has works on exhibit for the public at the Kelsey museum, both physical and virtual (including websites on food and displays of death in the ancient world). She works with students and colleagues in her own field, in history, in anthropology, in landscape architecture, and in classics. She has received our highest undergraduate teaching honor—an Arthur F. Thurnau professorship. And she has received a MacArthur Foundation "genius" award.

We cannot say that Sue Alcock is typical of our faculty. But we can say that she is exemplary of our faculty at its best—combining old and new methods, teaching and learning at all levels, using public goods to reach out to a broader public, drawing upon the knowledge of many disciplines, times and places to advance our understanding and that of our students.

## Cost Drivers

As we consider these programs and people that make UM special, it is also important to consider a set of cost drivers that are integral to their success and that tend to be growing at relatively fast rates. Therefore, before turning next to the proposed budget, I want to briefly consider some of the cost drivers we face and how they relate to General Fund growth.

**Innovating and conserving.** In the light of these programmatic initiatives and the creativity of our faculty, students, and staff, we have a challenge, as do most institutions of higher education, to be able to innovate continually, while also fulfilling our role as conservators of knowledge and culture. Therefore, the first of our cost drivers is innovation itself.

**Retaining Faculty and Staff.** We also represent a very labor intensive enterprise (even in the face of, and, in some instances as a result of, technological innovation) and we face severe competitive pressure on the wages and working environments of faculty and staff. Salaries of faculty nationwide rose by an average of 4.8 percent last year (according to the Chronicle of Higher Education) and salaries at the best universities have been rising at five percent a year and more.

At the same time, our staff are recruited from a pool of skilled labor in a market—southeast Michigan—that is suffering from (or enjoying, depending on perspective) a labor shortage and rapid growth of wages. We are expecting staff salaries to rise by about four percent next year, just to keep up with the market.

**Information Technology.** Information technology (part of the connectivity theme) appears in almost every part of this document. It will come as no surprise that it is an area where costs are rising much more rapidly than general inflation. There is no alternative to embracing the new information technologies and to using them throughout the academic enterprise. Our students, our faculty, and the evolution of human knowledge itself require that we do so. In its mundane details, the requirement of increased quality and quantity of connectivity on campus implies new and better wires and cables, hubs and routers, software, and people to maintain and make usable the hardware and software. The 24 by 7 production environment for CourseTools, for example, will cost close to one million dollars per year.

President Bollinger recently appointed a Commission to advise him on the implications of the revolution in information technology for the University. The compass of the Commission's mandate is broad, ranging from an examination of information technology and its effects as subjects of research and teaching to the implications of information technology for the ways in which we study and teach other subjects, to distance learning and interactions with the broader world. The Commission will be working over the coming year, but already it is clear that providing the infrastructure for both information technologies and for other technologies essential to our mission presents a continuing budgetary challenge.

**Investment in Development.** As has been the case for the past two years, the overall percentage increase to the academic units exceeds that for the administrative units. The administrative side of the budget shows one major increase, namely in the budget for Development. It is no secret that the University is gearing up for a major development campaign, and we view the increase in the operating budget of the Vice-President for Development as an investment in future gifts to the University. Indeed, the Schools and Colleges view investment in development activities the same way, and they are all intensifying their staff commitments in this arena in order to work jointly with the central development office. Gifts provide the critical margin that allows this University to be among the great universities of the Nation and world, and to provide our students with the kinds of educational opportunities that we have been discussing in this document.

**Federal Compliance.** Increased federal scrutiny of research involving human subjects has led to increases in the scale of operation of institutional review boards on university campuses across the country. Although the total bill is not yet in, we expect that we will soon be spending over a million dollars a year more than we did last year.

**Size and Age of Campus.** Finally, it is worth recalling that our campus is large and old, and every year we are faced with many major maintenance projects in order to keep the physical structures safe and productive. We have been adding to the recurring flow of resources available for maintenance and renovation, and we must continue to do so.

## Prospectives on General Fund Growth

With these cost drivers in mind, it is important to consider the proposed General Fund growth of 5.7% in light of expected increases in activity and inflationary cost increases. With a proposed general fund increase this year of 5.7%, once we account for the increase in the number of students (500 more than last year), the increase in the volume of research (and associated indirect costs) and the increase in financial aid necessary to meet the need of all resident undergraduates, the General Fund budget increase is just large enough to cover the increase in faculty and staff salary costs and general inflation.

Thus, our program enhancements (what we do over and above what we did last year), including the substantially increased support for information technology, are largely being funded by reductions and reallocations relative to activity levels in FY 2000, and by fundraising. Especially important among these is a reduction in utility costs, effected by the Chief Financial Officer and the Utilities Dept., of nearly \$2 million.

As this analysis suggests, by necessity, given the budgets they receive and their operating costs, the academic units continually reallocate from areas of lower priority in order to support areas of higher priority and programmatic innovations. Especially important in this respect are the continual shifts that the schools and colleges make in the allocation of faculty and graduate instructional staff effort and their processes for the allocation of replacement positions when individuals leave or retire from the University. For example, Engineering has shifted the effort of faculty in EECS from the electrical engineering side to the computer science side to meet their commitment to enhancing computer science offerings, and they have also reduced the faculty size of Naval Architecture and Marine Engineering in the service of adding to EECS. Similarly, faculty in Naval Architecture and in Nuclear Engineering are helping with the teaching of introductory courses, especially introductory computer programming courses, in Curriculum 2000, also in the service of taking some of the burden off of the computer

science faculty who are in such high demand. Computer science is also an area of intensive fundraising effort on the part of the College.

Similar redeployment of faculty and graduate instructor effort occurs in LSA, as, for example, faculty whose specialty is rare languages also take on teaching assignments in heavily-enrolled English Department courses, and Graduate Student Instructor positions are moved from departments with falling enrollment to those that are particularly popular right now (LSA moved over \$1,000,000 in GSI resources in the period of 1996-1999). In the last two years, LSA executive committee has paid special attention to the authorization process for replacement faculty positions, moving lines from one department to another in order to support growth in areas of high priority for the College. Again, these efforts to enhance selected areas are also complemented by intensified fundraising efforts in those areas.

Our recommended budget includes a recommendation of a tuition increase of 2.8 percent for all undergraduates and 3 percent for most graduate students. I want to share a few perspectives on the undergraduate tuition increase.

In historical context, this is a low rate of tuition growth. Indeed, it is somewhat lower than the anticipated growth in the Detroit CPI over the coming year. As can be seen on the accompanying chart, the contrast of the past four years and this year's recommendation, compared to the preceding decade, is striking.

A second comparison is with the rest of the Big Ten. Only Wisconsin's growth is lower than ours, and their increases last year were 9.7 percent for residents and 12.6 percent for nonresidents. The State of Wisconsin is providing a special appropriation increase to compensate for the low tuition growth. Again, we are delighted that our generous anticipated State appropriation allows us to keep tuition growth so low.

Increased Tuition & Fees Cost To a First-Year Undergraduate At Big Ten Universities		
Institution	2000-01 % Increase Resident	2000-01 % Increase Non-Resident
Illinois	4.7%	4.9%
Indiana	3.6%	3.9%
Iowa	6.9%	5.0%
Michigan	2.8%	2.8%
Michigan State	3.5%	3.5%
Minnesota	4.9%	5.3%
Northwestern	4.9%	4.9%
Ohio State	6.0%	5.3%
Penn State ( <i>estimated</i> )	6.5%	6.3%
Purdue	4.0%	4.5%
Wisconsin	1.4%	8.7%

## The Value of Higher Education

Finally, I believe it is worth noting that the value of higher education has never been greater. In straightforward economic terms, the return to a college education is at its highest levels since economists started making such calculations. Less tangibly, but at least as important, education is the key instrument for understanding, engaging with, and negotiating in, an increasingly complicated and interesting world. The best universities, including the University of Michigan, return the greatest value, both economically and more generally.

I want to reemphasize that part of our value comes from the sheer size and scale and quality of the intellectual and social and technological resources that we bring to bear in educating our students and in conserving and innovating. We see the benefits of scale and quality everywhere one explores (virtually and physically) on this

campus—from the laboratories in biomedical engineering to Professor Alcock's website at the Kelsey Museum on food in the ancient world, from the sounds produced in the Media Union laboratory by students in the new Sound Engineering degree program to the nascent interdisciplinary undergraduate life sciences courses. And we know that we have a responsibility to nurture and preserve, indeed to enhance, the territory for exploration and education at the University of Michigan.

Part of our value comes from the opportunities made possible, for students who were citizens and for citizens who become students, when we connect these resources to the challenges of the world beyond our campus. When exploration and preservation come together in the Arts of Citizenship's "Emerging Voices" collaboration with Detroit's Mosaic Youth theater. When the School of Information makes virtual connections with under-served communities through the Alliance for Community Technology and the School of Dentistry makes real connections in dental clinics around the State. When 400 students each year learn about themselves and, to use an old-fashioned term, strengthen their character, by engaging the issues of neighboring communities in the Ginsberg Center's Project Community. As we continuously improve the connectivity within our campus and then use this power to engage the world, we demonstrate the intrinsic value of a great public research university. Institutions such as ours help to prepare society for the future by doing what we do best—being a place of opportunity where we use our minds to connect to others and to build a thoughtful world.

Once again, our State has recognized the value of higher education, enabling a partnership to promote these instrumental, intrinsic and societal returns of an education at the University of Michigan. That is what this budget is intended to do.