

Introduction

This year we are presenting a budget designed to consolidate the University's past innovations and ongoing strengths, rather than to launch a broad set of new innovations. This budget is designed to maintain the high quality of the University and to keep our most important directions and initiatives underway and on track in the face of a fiscal environment that is the most difficult that we have faced in many years.

Over the past four years, successions of relatively generous State appropriations increases have permitted a welcome succession of unusually small increases in tuition rates. The continuing partnership between the State and the University is well summarized as Exhibit One, which shows rates of tuition increase for resident undergraduates in LS&A and rates of increase in the State appropriation since Fiscal Year 1986-87.

Two features of the chart are striking: (1) There is an obvious negative correlation between growth in the State appropriation and tuition growth. 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 FY 97 shows much lower tuition growth than the preceding ten years. The record of the most recent period is one of which this administration, the State and this Board of Regents can be justifiably proud.

The tuition increase proposed in this budget is entirely consistent with the overall pattern shown in the chart. Unfortunately, due largely to economic and fiscal exigencies, this is a year in which the increase in the State appropriation that we currently expect will be relatively low—the lowest in percentage terms since FY 94.⁽¹⁾ The constraints imposed by the State appropriation, coupled with rapid growth—much higher than inflation—in costs in a variety of areas, lead us to propose a tuition rate increase of 6.5% for most programs. The proposed increase amounts to between \$209 and \$223 per semester for resident lower-division undergraduates.

At the same time that we seek approval from the Board of a 6.5% tuition increase for most programs, we are making substantial internal reallocations in order to maintain the strength of our faculty and sustain momentum in the key areas of life sciences, undergraduate education, distinguished scholarship and research, and the use and understanding of new information technologies. Our overall level of activity continues to rise, as well. In FY 02 we expect to teach more students and engage in more sponsored research than ever before.

In the State Budget Request submission for FY 02 that the Regents approved and that we sent to the State last October, we asked for a 6% increase in the State appropriation to support general operations, and an additional 1.1% of base support for ongoing initiatives in undergraduate education. At that time we said that this generous level of State appropriation would allow us to restrain tuition growth to 3% or less. We now know that State will be unable to come anywhere close to meeting our request. Moreover, we face challenges on the cost side that we could not have fully anticipated last fall that are equivalent to well over 4% of our State appropriation. The result is a difficult budgetary environment, one in which a 6.5% increase in tuition rates can justly be characterized as tuition restraint. Indeed, it is worth noting that our proposed growth in tuition rates is among the lowest in the Big Ten and in the State, continuing a four-year trend. Other institutions in the State and the region are facing much the same pressures that we are, and in general they are responding by increasing tuition rates quite sharply for the coming year.

Increased Tuition & Fees Cost to a First-Year Undergraduate at Big Ten Universities		
Institution	2001-02 % Increase Resident	2001-02 % Increase Non-Resident
Illinois	15.2%	9.1%
Minnesota	13.5%	11.4%
Iowa	9.9%	9.0%
Ohio State	9.2%	6.5%
Michigan State	8.8%	8.9%
Wisconsin	7.8%	12.6%

Penn State	7.9%	7.8%
Purdue	7.5%	7.5%
Indiana	7.5%	7.5%
Michigan	6.5%	6.5%
Northwestern	4.8%	4.8%

Tuition and Fee Increases at Michigan Public Universities	
Institution	2001-02 % Increase Non-Resident
Michigan Technology University	18.8%
Eastern Michigan University	14.6%
Ferris State University	11.8%
Western Michigan University	9.9%
Grand Valley State University	9.1%
Michigan State University	8.8%
Northern Michigan University	8.8%
Oakland University	8.4%
Lake Superior State University	8.0%
Saginaw Valley State University	6.7%
University of Michigan—Ann Arbor	6.5%
Central Michigan University	12.5%
Wayne State University	9.0%

Current Budgetary Challenges

Why is this such a difficult year? In addition to the cost drivers that we expect to see year in and year out, such as growth in faculty salaries and the cost of maintaining the physical infrastructure, this year provides some special challenges.

Natural Gas Prices. Natural gas prices more than doubled during the past year. Although prices have come down recently, they are still much higher than they were two years ago. The University's central power plant runs on natural gas, providing steam and electricity to the campus. We also use natural gas to heat a number of buildings that are not connected to the central steam plant. During FY 01 we spent over \$13.7 million more than we had budgeted on natural gas—nearly twice what we had expected—drawing down reserves in order to do so. For the coming fiscal year (FY 02), natural gas price increases have caused us to budget an increase of \$8.4 million in the General Fund relative to this year's (FY 01) budgeted amount. We believe that after a decade of low prices we are heading for a period of price volatility or even sustained upward trends in pricing, and we are taking action in the market to reduce our uncertainty about prices.

Benefits. Total benefits costs for faculty, staff and retirees charged to the General Fund (excluding payroll tax increases) will grow by over \$7 million between FY 01 and FY 02. The principal cost driver is medical care, which is growing at double-digit rates, in part because of extremely rapid growth in prescription drug costs. The Provost and the Chief Financial Officer appointed a University-wide working group last year to consider broad options that could lead to better control over rising prescription drug costs. The issues raised in the working group's report are many and complicated—a key cost driver is the continued development of new products that improve the quality

of life, especially for the elderly. Still, we believe that there are actions that can be taken to reduce the rate of growth of prescription drug costs, and we look forward to making progress over the coming years.

Administrative Information Systems. Over the past several years, the M-Pathways project has revamped and modernized almost all of the University's administrative systems. As a result of these changes we are realizing new efficiencies in purchasing, financial administration and human resource administration, as well as in academic advising, where the new systems provide a more flexible and powerful set of tools for online course selection and registration, and have streamlined student billing and reduced errors (because of integration with financial administration). In addition, it is now considerably easier to enroll students—particularly undergraduates—in more than one unit, permitting students to take better advantage of the scale and scope of the University. The new systems also support applications for admissions over the web, an option that we expect to be chosen by increasing numbers of web-savvy future students. Web-based applications hold the promise of saving money and improving reliability. And, of course, the richer data structures in the new systems will also permit improved design and management of student-related programs.

As we move from the M-Pathways project structure—focused on design and initial implementation—to a mature production environment, we are also changing the budgetary arrangements that support these activities. Until this year, much of the production activity undertaken by Michigan Administrative Information Services (MAIS) was funded by one-time funds devoted to the M-Pathways implementation project. However, sound budgeting principles require that we recognize the ongoing costs of MAIS.

Maintaining Momentum

This budget, like its immediate predecessors, supports commitments in four broad areas of continuing priority, each of which is connected to the others. Three of these—the Life Sciences Initiative, the Undergraduate Experience, and the Information Revolution—have been the subjects of special commissions appointed by President Bollinger. The fourth—maintaining our excellence in research and scholarship—is a prerequisite for everything that a great university does. It requires, above all, a faculty that is no less than superb. In the context of a difficult budget year, maintaining momentum in these areas is especially challenging, yet we cannot afford to back away.

The Life Sciences. As of July 1, Professor Jack Dixon is officially serving in his new role as co-Director of the Life Sciences Institute, and is recruiting staff and making plans for the Institute's activities. Construction projects associated with the Life Sciences Initiative are easy to see—one need only drive through campus on Washtenaw and Huron. Additionally, the Medical School has embarked on a building and renovation program to provide the infrastructure needed for expansions in research in the life sciences. Less visible are the new team-taught, interdisciplinary undergraduate courses in the Life Sciences that will be offered next year. The initial three courses, "Law, Ethics, and the Life Sciences," "Brain, Learning, and Memory," and "Evolutionary Biology and Human Disease," involve faculty from several schools and colleges and will be taken by hundreds of our undergraduates.

The Department of Biology, subsequent to an extensive review of its activities, is in the process of transforming the study of the biological sciences within LS&A. A decisive first step has been to split the Biology Department into two departments: Molecular, Cellular and Developmental Biology on the one hand, and Evolutionary and Ecological Biology on the other. These changes were approved by the Regents in March 2001 and took effect on July 1, 2001. The re-engineering of Biology is a major multi-year initiative that will involve incremental faculty and staff, improved facilities and additional graduate support. This is essential both to the broader Life Science Initiative and to assuring that we are providing the best possible undergraduate education in this increasingly important field.

We are also making progress on the University's share of the infrastructure for the Life Sciences Corridor, a collaborative venture of the University of Michigan, Michigan State University, Wayne State, and the Van Andel Institute. It should be noted that our agreements with the State regarding the Corridor—which is a high priority of the Governor, the Legislature and the Michigan Economic Development Corporation—require substantial cost sharing on the part of the University—over \$1 million over the next two years.

Finally, research in the life sciences will require increased expenditures and expanded activity of institutional review boards that monitor compliance with federal regulations governing research on human subjects. This budget supports growth in compliance expenditures, and we predict that these expenditures will continue to grow in the future.

The Undergraduate Experience. Improving the undergraduate environment, and extending the boundaries of the traditional classroom, have been at the center of our programmatic initiatives for each of the past four years. Earlier this year, we reported on a number of assessments that show that we are among the strongest of our peer research universities in this area. Provost Cantor chaired a Commission on the Undergraduate Experience, appointed by President Bollinger. The commission's report will provide a blueprint for continuing improvements and innovations in undergraduate education and undergraduate life more generally. It is both the continuation of a trend and a call to accelerate our objective of engaging undergraduates with the unique strengths of a great public research university, including the ability to learn through community service. The Commission's report promises to add to the array of remarkable opportunities that our undergraduates enjoy:

- LS&A is initiating a transformed undergraduate concentration in Organizational Studies, which includes investment of faculty lines, new staff, space and facilities. The faculty will come from internal re-allocation of faculty lines, and this new concentration will include cross-disciplinary courses taught by faculty in LS&A, the School of Business Administration and the School of Information.
- The Global Change Program represents interdisciplinary, inquiry-based teaching at its best. These team-taught courses use faculty from the College of Engineering, LS&A, the School of Natural Resources and Environment, and other schools and colleges to explore themes of ecological interdependence, sustainability, and the effects of human culture and policy-making on natural resources. These courses combine problem-based pedagogy and sophisticated web-based instructional software to effectively communicate ideas in a large introductory class.
- The College of Engineering is creating a new office of instructional technology to improve faculty use of the new technologies in the classroom. Engineering is also expanding peer mentoring programs, especially in the core undergraduate courses.
- The Undergraduate Research Opportunities Program (UROP) continues to enable more than a thousand undergraduates each year to collaborate on cutting-edge research with top scholars from across the University. UROP places emphasis on peer-mentoring and the participation of historically underrepresented students which make it a national model for the integration of inquiry-based learning, student leadership, and commitment to diversity.
- The Global Intercultural Experiences Program will enable students and their supervising faculty to pursue summer opportunities for research, work-study, and travel internships in international and intercultural settings. This program integrates Michigan's commitment to international study, multicultural pedagogy, and experiential learning.
- The Health Sciences Scholars Program will begin with a pilot year in Fall 2001. The program will offer a broad perspective on the most pressing issues facing health care professionals from multiple disciplines including LS&A and the Life Sciences, Nursing, Medicine, Pharmacy, Dentistry, Public Health, Kinesiology, Social Work, and Engineering. The goal of the program is to bring together faculty, students and professionals from a range of disciplines and backgrounds in academic, residential, and real-world settings to explore a broad range of health care issues.

Note that in this discussion we group the Health Science Scholars with other developments in the undergraduate experience and we put the life sciences courses in the life sciences, but they could as easily be interchanged. This is a simple illustration of the ways in which teaching and cutting-edge research are inextricably intertwined in this University. Thus, even in a tight budget year we continue to make progress in integrating undergraduate education and research, and fostering collaborations among academic units to improve undergraduate education.

Information Technology. Information technology appears in almost every part of this document. It will come as no surprise that it is an area where rapidly-increasing use leads pervasively to costs that rise more rapidly than the general rate of 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.

The Report of the President's Information Revolution Commission was released this spring. It contains a number of themes for the University's engagement with changes in information technology and its use, and many of these have substantial budget implications that will continue into the future. The report begins by documenting the essential fact that information is the foundation of knowledge and hence is at the heart of a university's mission: the generation, preservation, dissemination and application of knowledge. Some examples include the following:

- Professors of the Classics have created a lively, interactive guided tour of the evolution of biblical text and images over the course of 16 centuries.
- Faculty in the Department of Physics have developed the Computer Aided Physics (CAP) system to provide a unified gateway to course materials and grading for all large introductory classes. CAP also provides students with individualized homework via the web by allowing students to submit their answer to the CAP system and receive immediate feedback in the form of hints and encouragement.
- The Medical Center and the Department of Emergency Medicine are developing a highly realistic virtual reality medical theater that immerses interns into the chaotic, fatigue-laden environment of a real-life emergency room and tests their ability to rapidly develop a plan of action and carry it out.

Because the information revolution is radically altering our world at an ever-accelerating pace, and because it touches every aspect of university life, we must rapidly and continuously adapt to this revolution or run the risk of failing to sustain our mission.

We contemplate that the next few years will bring broad access to massive datasets and large-scale multimedia communication; convergence of the Internet, broadcasting, and telecommunications; extensive wireless communications and computing; mobile, embedded, and wearable computers; smart houses, smart buildings, smart transportation and much more.

The University of Michigan has the wherewithal not only to adapt, but to shape the nature of the revolution itself. The University can build on existing strengths and achieve new levels of excellence in developing, deploying, and exploring innovative uses of technology-mediated research environments; expanding the definition of an educated person in the information age; integrating information and communication technologies throughout the University and across the curriculum; extending learning opportunities to communities beyond the traditional boundaries of the University.

All of these enhanced activities will require an initial expenditure of tens of millions of dollars on the campus data network in order to enable the maximum use of new technologies in teaching and research. This budget contains a modest beginning on those required expenditures, both centrally and by schools and colleges, notably in the College of Engineering, which is spending over \$2.5 million on improving its data network. In addition, the Media Union budget shows a \$1.1 million increase in order to provide a stable production environment for the University of Michigan developed CourseTools software, which provides the kind of high-quality web-based learning environment that the students of today require, and that a majority of our courses are now using.

Retaining Faculty and Maintaining Scholarly Excellence. The quality of our faculty and their work can be documented in many ways, including the extraordinary growth in the research that they undertake and the extraordinary efforts that other institutions make to bid them away. Research expenditures are estimated to be \$582.8 million in FY 01, a growth of 6.8% over FY 00, with ICR growing by 10.2%. The volume of research is likely to grow even more in FY 02, based on the projected growth in ICR of over 18%.

We continue to face severe competitive pressure on the wages and working environments of faculty. Salaries of faculty nationwide rose by 5.3% last year and salaries at the best universities have been rising even more sharply. At the University of Michigan, faculty salaries rose by an average of 5.1% during FY 01, implying that we are not quite keeping up with the competition. Thus it is not surprising that our deans repeatedly tell us that their highest priority for incremental funds is to shore up the salaries of those faculty most vulnerable to outside offers.

We also face increasing competition for improved facilities, especially in the sciences. It is not uncommon for universities to provide newly-recruited scientists with laboratory equipment and renovations costing a million dollars and more. These facilities are essential to effective research in the sciences, and are essential to the development of the kinds of research programs that attract major external support. If Michigan is to maintain and improve the quality of its faculty and programs in the sciences, we must provide the level of facilities that are being provided elsewhere. If we fail to do so, we will miss out on the leading research of the future, with its benefits for our students, our State, and society at large. Our commitment to the sciences, which is driven by a powerful vision of the best possible University of Michigan in the future, will demand continuing upgrades in facilities.

Continuing Budgetary Pressures

Physical Infrastructure. Facilities upgrades in the sciences are but one instance of a more general set of cost pressures arising from the need for facilities renewal. Our campus is large and old, and every year we engage in major maintenance projects that are necessary to keep the physical structures safe and productive. Although a

good deal of our infrastructure maintenance is undertaken in conjunction with major renovations, such as those of the Rackham Building and Hill Auditorium, we still need substantial recurring resources for maintenance and renovation. We have been adding to those resources and we must continue to do so.

Conservation and Innovation. We are often asked why higher education does not simply take more costs out of its cost structure. One reason is that higher education is highly labor-intensive, with the result that it cannot take full advantage of productivity-enhancing innovations to the same degree as the economy as a whole. Another reason that costs in higher education tend to rise more rapidly than consumer price inflation is that we must engage in material programmatic enhancements in order to keep up with a changing world. In many areas of human endeavor, this would present no special problem - one would stop doing the old thing and use the old resources to support the new activities. In the University this is not so simple, because of our essential role as a conservator. Thus, even as we digitize parts of library collections, making them available more widely and permitting research that uses them in ways that were not possible before, we must still provide archives of original materials.

It is instructive that schools of music are often called "conservatories." They do not abandon old music for new, but add to the repertory as it grows over time. The same is true in virtually every area of academic inquiry. As our understanding of the world changes we must preserve our knowledge of how things have been understood, from archaic languages to discredited scientific theories. Thus, our role in society as a conservator of knowledge and human experience constrains our ability to innovate by substitution. We must both innovate and conserve.

The General Fund increase proposed in this budget falls far short of providing for a limited set of incremental expenditures to which we are firmly committed. These expenditures include the additional cost of paying faculty and staff and supporting required changes in the tools available to them, covering mandatory benefits increases, covering increased acquisitions costs for the library, meeting our financial aid obligations, meeting the special budgetary challenges discussed earlier in this document, and covering inflation on the rest of our expenditures. Because the increase in our budget is not sufficient to cover this set of increased expenditures, it follows that the principal source that will make up the difference is reallocation away from existing activities.

In short, notwithstanding our commitments to preservation and conservation, and the cost drivers we have discussed above, we will support our most essential activities by substituting away from less essential ones. In recent years, substitution of this kind has provided the margin that has allowed us to innovate. This year, it merely allows us to maintain our current momentum. No matter how we look at it, FY 02 presents difficult budgetary challenges.

Cost Reductions and Other Sources of Revenue

Some of the ways in which we are finding resources to cover our highest priorities are large and easily visible, some are less so. Here are some examples:

- We have renegotiated our contract with Ameritech for local phone service, and will save about \$1 million per year.
- By purchasing electricity from Engage Energy, we estimate that we will save approximately \$1.3 million per year.
- LS&A is economizing on staff by using shared staff in its smaller units.
- The University has been able to leverage university-wide purchasing dollars by negotiating prime vendor contracts which enable an average of 13% savings over the previous purchase price. The estimated cost savings as a result of lower unit pricing is in excess of \$3 million dollars. Also, these prime vendor contracts provide for improved customer service levels, contract pricing and a reduction in overall transactions costs due to the use of online ordering methods and summary invoice payment. This improved service has reduced central stores inventory as well as the actual costs of obtaining the item.
- As a result of improved administration services, we can identify who is delinquent with their student fees. By sending admonishing letters, we raised \$1.7 million.
- Ongoing efforts of the Energy Star Program have resulted in the continued reduction of thermal energy loss. When comparing metered consumption within buildings that were converted to the Energy Star Program during the previous year, thermal energy loss was reduced by 9.7% in FY 00.

Most important is the general emphasis this year on consolidation rather than innovation. Our faculty and academic leadership are putting a great many plans on hold, and focusing their resources on doing what is essential to retain the faculty, teach the students, and meet our highest academic priorities.

As a general matter, this year's budget growth in all of our units is designed to (1) assure that the units can mount an adequate salary program for faculty and staff; (2) cover increased benefits costs; (3) make available the resources needed to cover changes in the activity levels of teaching and research; and (4) maintain momentum regarding the University's most essential priorities.

Notwithstanding the tightness of the budget, for the fifth year in a row, the growth in academic programs—where the teaching, research and service are accomplished—is greater than that in administrative expenditures.

Conclusion—Consolidation and Stewardship

We noted at the outset that this is a budget organized principally around consolidation of the progress that we have made in prior years, rather than new innovations. What we are consolidating is no less than the implementation of a powerful vision of the modern public research university and the roles that it can play in the education of undergraduates, the development of knowledge, service to society, and, vitally, the powerful interactions among these activities.

In previous messages on the budget, we have articulated at some length the ways in which we see research, teaching, and service as being inextricably intertwined in this University. To recapitulate briefly: Research develops new knowledge and new ways of knowing; it animates the faculty and graduate students, allowing us to bring the most current insights and knowledge to undergraduate education. This level of undergraduate education is only available at the great research universities. Similarly, the breadth of our academic compass—our scale and scope—enable this University to bring to bear an astonishing diversity of knowledge and points of view. Our schools and colleges, our departments and disciplines, our students and faculty at all levels, have a tradition of working together in the service of learning and teaching. Our size and scale enable this interdisciplinary and collaborative work. Our traditions and institutions make Michigan a place where we can take maximum advantage, in formal programs and informal interactions, of what our size and scale make possible.

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.

We have identified in this document four essential areas in which we must continue to make progress. Each is vitally important. Each is an element of the stewardship of this remarkable institution that all of us—students, staff, faculty, administration, and the Board of Regents must share.

Footnote

1. Our expectations regarding the State appropriation are based on a signed conference report on House Bill 4258, signed July 12, 2001. In the event that the conference report is not adopted and signed we would bring a revised budget back to the Board of Regents in the fall. There is also some possibility that the Legislature will repeal the Tuition Tax Credit, and apply the revenue to higher education. Should our State appropriation increase as a result of such action, we would ask the Board of Regents to consider a reduction in tuition rates.