



University of Massachusetts

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Statutorily Required Funding Formula Fiscal Year 2017

The mission of the University of Massachusetts is to provide, within available resources, the highest possible quality of instruction, research and public service to the widest possible segment of the citizens of the Commonwealth. The University is committed to providing, without discrimination, diverse program offerings to meet the needs of the whole of the state's population. The University's five campuses and UMass Online are geographically dispersed throughout Massachusetts and possess unique and complementary missions.

The State's support of education and general costs is vital to the University's commitment to affordability. The State's commitment contributes to the overall success of the University and will allow the University's five campuses to continue to provide high quality and accessible education, cutting edge research, and valuable public service while driving economic development that benefits the whole Commonwealth.

Each year the University of Massachusetts is required by Massachusetts General Law (MGL Chapter 15A, Section 15B) to submit a formula-based budget to the Department of Higher Education, the Executive Office for Administration and Finance, and the Ways and Means Committees of both the House of Representatives and Senate. ***The submission of this formula calculation is for informational purposes and to comply with the current requirement, however, the University has submitted its formal budget request to the Governor, House and Senate Ways & Means in accordance with their own instructions and deadlines for FY17.***

Attachments - Required Funding Formula

Fiscal Year 2017 Funding Formula

Summary of FY2017 Formula Funding Results

For FY17 the current funding formula has determined that the total that should be available to deliver the core teaching, research and service mission need for the University is \$1,273.6 billion and would result in a total state funding gap of \$582.9 million.

I. TOTAL FORMULA FUNDING NEED	\$2,122,715,177
II. CURRENT NON-STATE REVENUES	
Tuition & Fees Revenue (net of scholarship allowances)	\$765,218,000
Other Non-Operating revenues (unrestricted)	\$83,805,078
TOTAL CURRENT NON-STATE REVENUES	\$849,023,078
III. NET STATE SUPPORT NEEDED (I-II)	\$1,273,692,100
IV. CURRENT STATE SUPPORT (FY16 est.)	
State Maintenance	\$531,333,373
Stimulus Funding	\$0
Fringe Benefits (FY2015 actuals)	\$159,403,000
TOTAL CURRENT STATE SUPPORT	\$690,736,373
V. ADDITIONAL FUNDING NEEDED -- "The Gap" (III.-IV.)	\$582,955,727
(less Strategic Priority Funding/Elimination of Stimulus Funding)	
State Budget Appropriation Increase to Close the Gap in 10 years	\$58,295,573

Fiscal Year 2017 Funding Description

Overview

The statutory formula for the University was initially developed in the early 1990s during the time when the University was coming together as a five campus system after the 1991 reorganization. The formula was used to inform the University's annual state budget request. Each component of the formula was initially built based on a review of practices, national norms, the experience of comparable institutions, as well as a review of formulas in place in other states during the early 1990s. Since then, the components of the formula have not been updated. Annually the verbiage are updated based on the review and expenses from the financials. The budget request generated to the State is a separate document looking at the overall need of the University.

The formula looks at activities funded from unrestricted sources of revenue (primarily state and student revenue) that are available to support core activities. The state share includes the state maintenance appropriation and fringe benefit support. Other unrestricted revenues include: student revenues from mandatory fees and credit for tuition waivers, research overhead funds, investment income, and other sources of unrestricted revenues. Other sources of funds are excluded from the formula including revenues from restricted sources such as grants and contracts and auxiliary operations.

Medical School funding is based on a similar formula. Costs of instruction and research per medical student are based on average comparable costs at other public medical schools nationwide. Other formula costs are calculated using the same methods as in the main formula.

The formula is made up of ten key components, the core of which is a set of standard activities defined by the federal government and used by all institutions of higher education in financial reporting. Several other components have been included that relate more particularly to features of higher education funding in Massachusetts, or to the structure of the University itself such as a separate formula calculation for the Medical School. The data used to prepare the statutory formula represents a combination of actual experience over the last three years, and comparative experience nationwide and at comparable public universities.

Fringe Benefits

Fringe benefits are counted both as a revenue and expenditure wherever appropriate. The overall fringe rate used is 30.83%, which includes the FY2016 Massachusetts fringe benefit rate of 29.18% and payroll tax rate of 1.65%.

Instruction

The instruction component represents a major portion of the formula, reflecting as it does one of the highest priorities of the University. It includes costs of all instructional activities and programs. Instructional costs have been built into the formula in four major areas:

Faculty Resources

The instruction component begins by calculating the number of instructional lines needed to carry out the basic mission of the institution at each level of instruction (lower division and upper division undergraduate; masters and doctoral). Initial guidelines for differentiating the number of faculty needed at each of these levels were based on the advice of the National Center for Higher Education Management Systems (NCHEMS), when the formula was originally developed in the 1990s. These guidelines were based on a broad understanding of standard practice at universities nationwide.

The ratios for each level of instruction were applied to the annual student credit hour enrollments to yield the total number of instructional lines needed.

The dollar need for faculty resources was determined by multiplying the number of faculty lines needed by the average faculty salary. An additional 30.83% was added to this amount for fringe benefit costs.

Teaching Assistants

In addition to full and part-time faculty, a significant role in any research university is played by teaching assistants (TAs). The formula determines needs for teaching assistants by maintaining the current ratio of TAs to faculty, even though graduate activity is increasing university-wide. TAs currently make up approximately 10% of total instructional lines at the University, therefore 10% of the need for instructional lines as determined by the formula was assumed to be covered by TAs. Costs for TAs were calculated by taking the full-time equivalent value of an average TA stipend and multiplying that amount by the total FTE TA lines needed. The total cost of supporting TAs includes tuition and fee waivers as well as stipends. Therefore the average cost of providing waivers was also added to the total TA cost.

Support Staff

In addition to looking at an adequate level of instructional positions for the number of students we serve, the formula looks at an average ratio of support staff to instructional personnel. The support staff ratio is calculated at 27% of the total FTE instructional personnel needed. This percent is based on an estimate used in previous formula assessments at the University. The number of FTE support staff determined in the formula is multiplied by the average University support staff salary. An additional 30.83% of salary cost was added to cover fringe benefit costs.

Equipment/Supplies/Other Support Costs

The final area of funding for instruction is the calculation of other instruction related costs: equipment, supplies, and other support costs (these include cost of student workers and other non-benefited employees who are not counted elsewhere). The rate per FTE instructional line was calculated based on FY2015 audited financial expenditures.

Research

Research is a unique University mission, in terms of the scope and breadth of activity. A senior level university's research programs advance knowledge, understanding, and quality of life, thereby addressing a wide variety of social and economic needs. Funding from this component will serve to support current and future research activity including supplies, equipment, lab technicians, computer programmers, grant development personnel, administrative costs and other related costs that involve research. The research component is comprised of two factors: one that provides support to campuses already strong in generating externally sponsored research dollars, and one that supports non-sponsored research along with the development of new research activities.

The first factor provides a modest match of sponsored funds at the rate of \$.15 for each sponsored dollar brought into the University (15% of total grant and contract revenues less indirect costs recovery funds). The second factor is calculated by taking 3% of the dollars generated in the instruction component of the formula and is aimed at providing support of non-sponsored departmental research as well as developmental funds for future research. Both of these were standard methods used for calculating support of research activities in formulas in place elsewhere in the country at the time when the formula was initially developed.

Public Service

Public service is another key area of activity for the University. It includes use of University expertise and personnel to provide service to the state and the communities and regions immediately surrounding our campuses, and is part of the historical tradition of Public Land Grant Universities. Support for public service is calculated in the formula by taking 3% of the total generated in the instruction component of the formula.

Academic Support/Student Services

Academic support and student services have been combined into a single component. This includes support of libraries, computer labs, and student services key to successful retention and graduation of students. The combined rate per headcount student was determined by looking at equivalent average expenditures for groups of comparable peer institutions.

Plant Operations and Maintenance

Plant operation and maintenance is an area of particular concern because of the need to improve and maintain our assets. The calculation of costs for the plant component has several factors: utility costs, costs of maintaining buildings and grounds, and renewal and adaptation of plant. None of the calculations for the plant component includes the cost of maintaining properties used to run auxiliary operations such as dormitories, dining halls, or bookstores. It is assumed that the revenues from these operations cover maintenance costs. Also not included in the formula, but clearly a growing cost for the University, is the cost of debt service that supports the University's non-auxiliary capital program.

Utility costs are calculated by taking a three-year average of actual expenditures. The purpose of averaging is to avoid large swings in expenses reflective of climatic differences from one year to the next. Costs of maintaining buildings and grounds were determined using industry standards of the time of the formula development that approximate salary and supply costs needed per gross square foot for buildings (\$4.39 per GSF) and per acre (\$6,944 per acre) for grounds maintenance.

The final factor in the plant component is renewal and adaptation. A continuous program of repair, rehabilitation and adaptation of our existing physical assets is critical to the overall success of the University. In previous years, the annual cost factor for adaptation and renewal was calculated based on 10% of the total replacement value of the physical plant estimated at \$136.38 per square foot. For the FY2017 formula, the annual cost factors changed from a 10% annual cost factor for adaptation and renewal to a 3% cost factor for adaptation and a 2% for cost factor for renewal. These percentages are based on the total replacement value of the physical plant estimated at \$292.00 per square foot. This change in the calculation is used by the Board of Higher Education in its funding formula and is based on an industry standard. For both the FY2016 and this year's formula, the renewal and adaptation factor was again calculated based on the 3% and 2% figures.

Financial Aid

The Scholarships and Fellowships component is calculated by taking 20% of total billed tuition plus mandatory fee revenues. This is comparable to methods used in formulas in place elsewhere. The percentage used is also an estimate of costs of providing financial aid to current students and is, we believe, a reasonable calculation of funding needs relative to the state's access mission for public higher education. This calculation does not include the cost of providing mandatory tuition waivers.

Institutional Support

Institutional support includes the overhead/management costs of operating the University. This component is calculated by taking 6% of the total of all other components (not including strategic priority funds). This method is also used in other formulas elsewhere in the country, and is considered a reasonable means of calculating the cost of providing all other services and programs that make up the balance of the formula.

Medical School Funding

The University of Massachusetts Medical School has produced a parallel formula to that for the rest of the University, which incorporates national information on expenditure levels for instruction and research at public medical schools. Data are gathered from other public medical schools in the United States and are reflective of the average instructional costs per medical student at those schools. The remainder of the Medical School formula mirrors the methods used in calculating costs for the rest of the University.

The following table summarizes the results of the running the funding formula.

UNIVERSITY OF MASSACHUSETTS
 FY2017 STATUTORY BUDGET FORMULA: COMPONENT ANALYSIS OF TOTAL FORMULA NEED (IN MILLIONS)
 (INCLUDING MEDICAL SCHOOL)

Formula Component	Total Need	% of Total	Method of Calculation
INSTRUCTION Includes salaries and fringe benefits for faculty and instructional support staff, and costs for teaching assistants. Also includes funds for instructional equipment, supplies, and other support costs.	\$934.2	44.0%	FTE students/staffing ratios=FTE instructional lines (faculty and TA's) FTE faculty X average salary = faculty salary costs FTE faculty x fringe rate ('16) = faculty fringe costs FTE TA lines x average stipend = TA stipend costs FTE TA lines x average waiver = TA waiver costs Instructional lines x support staff ratio = FTE support staff FTE support staff x average salary = support staff salary costs FTE support staff x fringe rate ('16) = support fringe costs Instructional lines x average actual cost per instructional line = equipment/supplies/support costs
PLANT OPERATION AND MAINTENANCE Includes expenditures for building and grounds maintenance and utilities as well as funds for renewal and adaptation of plant.	\$404.4	19.1%	Utilities: actual costs (3-year average) Building Maintenance: \$4.39 per GSF Grounds Maintenance:\$6,944 per acre Renewal Costs: 3% of estimated replacement cost Adaptation Costs: 2% of estimated replacement cost
ACADEMIC SUPPORT/STUDENT SERVICES Includes support for libraries, computer centers, AV services, as well as expenditures for admissions, registrar, student counseling, etc.	\$374.4	17.6%	\$ 2,851 to \$4,621 per HC student (CAMPUS peer averages)
FINANCIAL AID Includes support of financial aid programs except mandatory tuition waivers.	\$172.8	8.1%	20% of sum of total fiscal year billed tuition and mandatory fee revenues
INSTITUTIONAL SUPPORT Includes campus and system administrative costs: fiscal operations, data processing, personnel, legal counsel, etc.	\$120.2	5.7%	6% of all other component costs (Instruction, Research, Public Services PO&M, etc.)
RESEARCH Provides matching support of current sponsored research activity plus support of non-sponsored departmental research and start-up costs for new research.	\$88.8	4.2%	15% of sponsored research dollars (3-year average) 3% of Instruction
PUBLIC SERVICE Supports non-instructional services to groups and individuals outside the University.	\$28.0	1.3%	3% of Instruction
TOTAL FORMULA NEED	\$2,122.7	100%	

TOTAL CURRENT NON-STATE REVENUES	-	\$849.0
NET STATE SUPPORT NEEDED		\$1,273.7
CURRENT STATE SUPPORT	-	\$690.7
ADDITIONAL FUNDING NEEDED -- "The Gap"		\$583.0