



UNIVERSITY OF MASSACHUSETTS

Amherst • Boston • Dartmouth • Lowell • Medical School

Fiscal Year 2017 to 2021

Five-Year Capital Plan

September 2016



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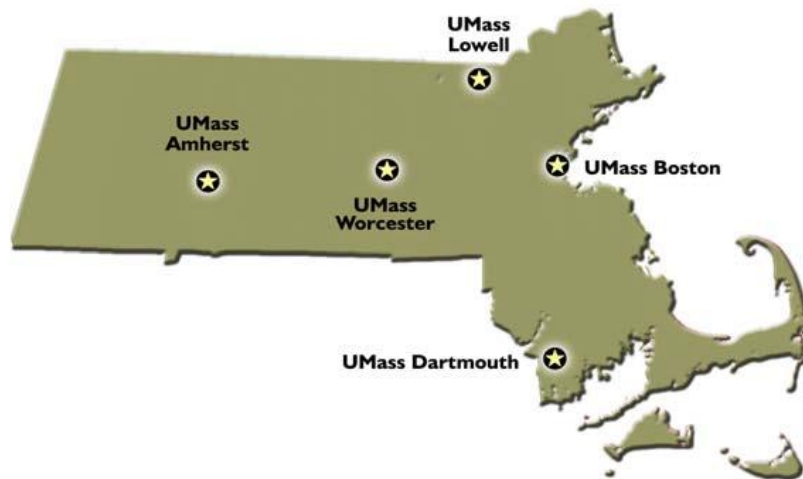


Introduction

The University of Massachusetts has been providing high quality educational opportunities for Massachusetts residents and for students and faculty from all over the world for over 150 years. The University's mission is to provide an affordable and accessible education of high quality and to conduct programs of research and public service that advance knowledge and improve the lives of the people of the Commonwealth, the nation, and the world. With five campuses located across the Commonwealth, the University is an economic engine and a catalyst for social development throughout the entire state.

The University was established in 1863 as the Massachusetts Agricultural College, located in Amherst. It became known as the Massachusetts State College in 1932 and in 1947 became the University of Massachusetts. The Worcester and Boston campuses were established in 1962 and 1964, respectively. The Lowell and Dartmouth campuses (previously the University of Lowell and Southeastern Massachusetts University, respectively) were consolidated into the University under Chapter 142 of the acts of 1991.

The University of Massachusetts is governed by a single Board of Trustees composed of 19 voting members and three non-voting members. The President of the University oversees the five-campus system and Chancellors manage the campuses located at Amherst, Boston, Dartmouth, Lowell, and the Medical School in Worcester.



University of Massachusetts funding sources are diverse and consist of the annual state appropriation from the Commonwealth of Massachusetts, student tuition and fee revenues and research grant funding from federal, state and private sources.

Each year the University of Massachusetts educates more than 71,000 students and confers over 16,000 degrees. The UMass campuses are noted for their diverse students and faculty and for their affordability in comparison with other institutions of higher education. Award-winning faculty members provide undergraduate and graduate students with research opportunities in a multitude of disciplines.



The University of Massachusetts is responsible for maintaining its physical assets across its five campuses which have a total replacement value of \$10.0 billion.

Every two years, the President's Office works with each campus to refresh the University's Capital Plan which consists of the following types of projects:

1. **Board Approved Projects** – Capital projects that have been approved by the Board and are reviewed on a quarterly basis. Each project is approved by the Board two times. This list contains projects that are underway or ready to begin in the next 24-36 months and have a funding source identified. The costs associated with these projects are included in the University's financial projections and state funded projects are approved on the most recent state plan.
2. **President's Approved Project List** – Capital projects that are reviewed and approved by the President on a quarterly basis. These are smaller projects, between \$2 million and \$10 million and are funded with campus operating funds. No borrowed funds are used for these projects. The costs associated with these projects are included in the University's financial projections.

Campus	BOT Approved		President Approved		Subtotal Approved	
	Projects	Project Cost	Projects	Project Cost	Projects	Project Cost
Amherst	19	\$716,250,000	4	\$23,400,000	23	\$739,650,000
Boston	17	\$889,150,000	0	\$0	17	\$889,150,000
Dartmouth	4	\$94,745,500	0	\$0	4	\$94,745,500
Lowell	11	\$326,000,000	5	\$31,000,000	16	\$357,000,000
Worcester	9	\$174,340,000	9	\$41,974,000	18	\$216,314,000
University	60	\$2,200,485,500	18	\$96,374,000	78	\$2,296,859,500

Table 1: Board and President Approved Projects

3. **Other Priority Projects** – Some campuses budgeted additional borrowing capacity in their five-year financial forecast so that they take on some additional priority projects. Other priority projects in this category require State support. In most instances these projects were included in prior State's capital plans, but were recently put on hold as the Administration evaluates its capital planning process for all of higher ed. All of the projects will require Board approval once the campus is ready to move it forward them.

Other Priority Projects		
Campus	Projects	Project Cost
Amherst	10	\$356,650,000
Boston	3	\$272,700,000
Dartmouth	1	\$75,000,000
Lowell	4	\$190,000,000
Worcester	1	\$48,500,000
Total	19	\$942,850,000

Table 2: Other Priority Projects



4. Pipeline of Future Projects - Consistent with campus master plans these projects are for future consideration. They all require Board approval once a campus has identified a funding source and budgeted for it in their financial projections. The projects have an estimated cost, which is very preliminary, and no identified funding source. They represent the future pipeline of projects and while some planning might go on with them they will extend beyond the five years of the current plan.

Pipeline of Master & Strategic Planning Projects		
Campus	Projects	Project Cost
Amherst	13	\$996,250,000
Boston	7	\$36,700,000
Dartmouth	13	\$337,436,969
Lowell	14	\$808,500,000
Medical School	19	\$262,032,500
Total	66	\$2,440,919,469

Table 3: Pipeline of Projects Informed by Master & Strategic Plans

With enrollment increasing by over 40% over the past two decades, the University’s campus infrastructure is important to both attracting and retaining students and faculty. Without investments to ensure deferred maintenance needs are addressed and state of the art safety, technology, teaching, and research needs are maintained, the University could fall behind its peers in many of the measured performance areas that it has invested so much to improve over the last several years. The capital spending program, which has seen more than \$4 billion invested by the University in its campuses over the past 20 years, has resulted in a reduction of the deferred maintenance backlog, the replacement of outdated science and academic facilities, and has made long overdue improvements to the University’s housing and dining facilities.

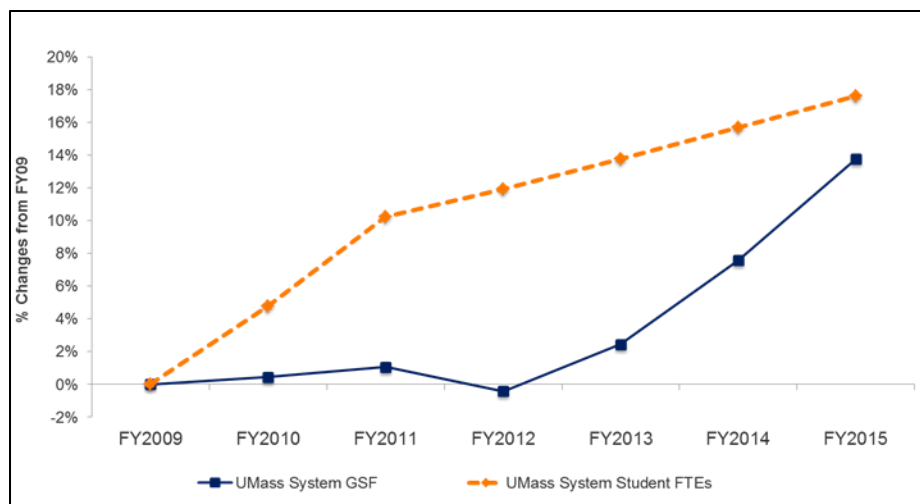


Figure 1: Gross Sq. Ft. vs. FTE Enrollment

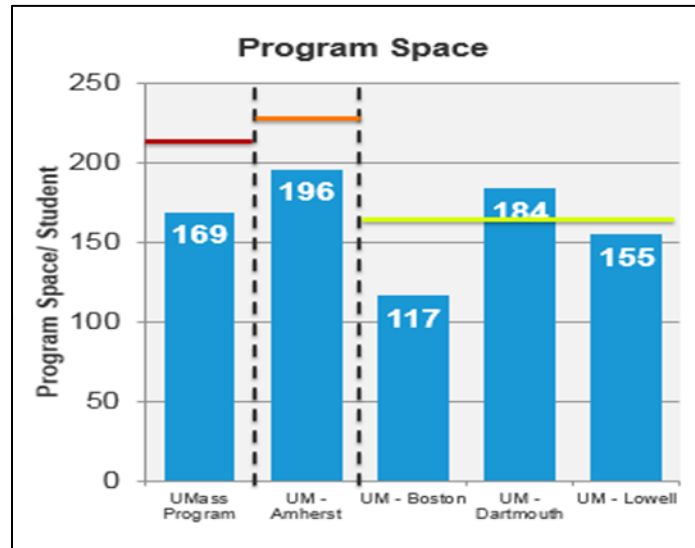


Figure 2: Program Space Density

The University’s Fiscal Year 2017-2021 Capital Plan is an essential planning tool for each of our campuses and serves as a critical planning document for our communication with the State on the University’s capital needs – specifically those underway during the next 24 months and those being considered for future investment over the next 5 years.

Brief History of Capital Investments

Despite annual investments in our facilities, the age of each campus alone demonstrates the challenge to maintain and upgrade our assets:

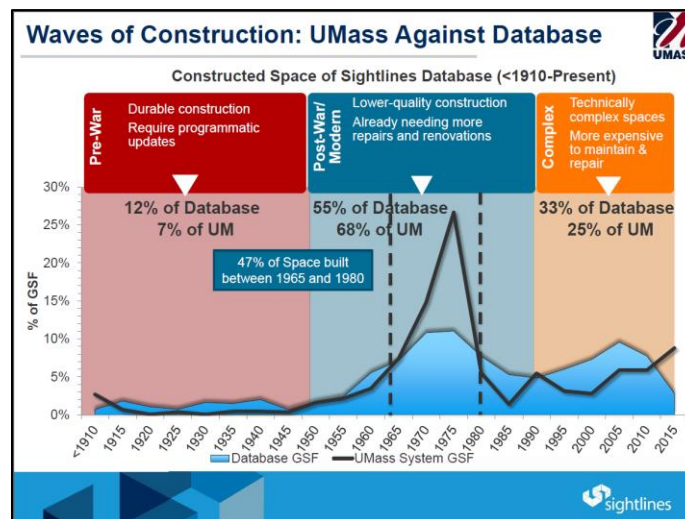


Figure 3: Construction Age (Source: Sightlines)

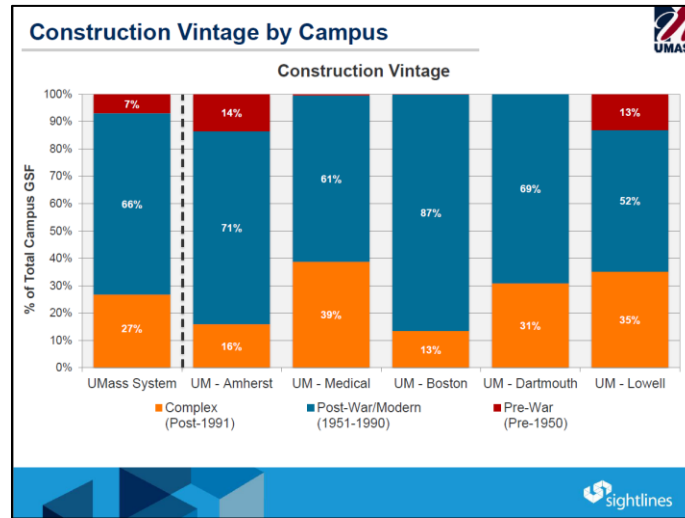


Figure 4: Construction Vintage % by Campus (Source: Sightlines)

Prior to 1995, the State was responsible for building non-auxiliary buildings (classrooms, laboratories, administration) and the University was responsible for building auxiliary buildings (dormitories, dining halls, parking garages, recreational facilities, campus centers). Of the total University space profile, 68% was constructed between 1950 and 1990 – the post war/modern time period classified by low-quality construction. Despite the fact that the quality of construction during that period would necessitate a higher degree of maintenance and repair, no State or University funds of any magnitude were dedicated to maintenance and repair through the 1990s.

Prior to 2008, three state bond bills were passed that benefitted the University in 1988, 1995, and 2002. Chapter 208 of the Acts of 1988 authorized funding to support economic development projects, science & technology buildings, classrooms, student and athletic facilities. Chapter 267 of the Acts of 1995 authorized funding for Title IX improvements, and science and technology facilities. Although the University was given over \$200 million in new legislative authorizations in FY 1996, the release of the funds was slow (around \$25M per year) due to competing capital projects within State government such as the “big dig” and repair of roads and bridges. Chapter 245 of the Acts of 2002 authorized funding to complete UMass Boston campus center. No funding of any significance was provided for in these bond bills to maintain and repair State or University facilities on the University campuses.

In the mid-1990s, the Board of Trustees, the President’s office, and campus leadership identified capital issues as among the biggest challenges facing the University. Image, reputation, capacity, and mission effectiveness would require modern and functional facilities, and a major commitment of University resources followed. The University understood that it faced an enormous challenge to maintain and upgrade its capital assets including its infrastructure, buildings, and grounds, and that no single source of funds had the capacity to address the vast capital needs of the University. Faced with a long period during which the State did not provide any meaningful capital investments and an ever-growing backlog in deferred maintenance, the University decided it could no longer wait for needed investment and made the decision to begin investing in its campuses’ physical assets.



In order to meet the needs of the Commonwealth and its students, in 1995 the University obtained an expansion of its statutory authority to develop capital facilities and engaged in a system-wide construction and renovation effort over the past two decades, transforming its five campuses to create the facilities the University needed to take its place as a national research and academics leader. While previously the University only constructed dining and dormitory facilities, for the first time in its history the decision made the University responsible for financing 100% of the costs of non-revenue producing buildings. In each case, these investments were made with the approval of Commonwealth officials.

During the mid-2000's, the University made an effort to secure a new Higher Education bond bill in order to acquire a greater funding commitment from the Commonwealth. In 2008, Governor Patrick proposed increasing the State's bond cap for higher education from 3% to 10%. In the summer of 2008, two important State initiatives provided a boost to the University Capital Program: Chapter 130 – the Life Sciences Industry Investment Act (Life Sciences Bond Bill) and Chapter 258 – the Higher Education Capital Improvement Act (Higher Ed Bond Bill). In June of 2008, authorization for bonds in support of the life sciences industry was passed. Among other initiatives relating to the Massachusetts Life Sciences Center, the legislation authorized borrowing \$500 million over a ten-year period to fund capital investments and infrastructure improvements throughout the State to support the Life Sciences Industry. Of the total, \$276.7 million had been earmarked for UMass and all of the funding has been programmed for specific projects.

In August of 2008, authorization for bonds in support of higher education including State and Community Colleges and UMass was passed. The legislation authorized \$2.2 billion for new buildings, renovation projects and other capital projects with \$1 billion dedicated for such projects at UMass. This authorization was amended by Chapter 237 of the Acts of 2014 which added an additional \$100 million to the bottom line to fund deferred maintenance needs at the University.

Despite the increase in state funding, over 75% of the University's Board approved capital project list is being funded by the University, 58% of which is from University borrowing. In FY16, the State released its capital spending plan which did not include certain University capital projects that were identified in the Higher Ed Bond Bill and were previously on the State plan. The University and the University of Massachusetts Building Authority (UMBA) reviewed the FY16 plan with the Division of Capital Asset Management and Maintenance (DCAMM), the Executive Office for Administration & Finance (EOAF), and the Executive Office of Education (EOE), and discussed the implications for these projects. The University was informed that any studies underway for these projects would be completed or stopped at an appropriate place and the projects would be put on hold.

As is the case with most of the projects on the University's capital plan, these projects address deferred maintenance in a significant manner. Whether the project involves fixing building system failures at Amherst and Worcester, restoring obsolete buildings to modern working condition at Lowell, or constructing new facilities in order to take down hazardous structures at Boston or provide swing space to take buildings in need of repair offline at Dartmouth, all of these projects will reduce the University's large deferred maintenance backlog. Much work and



preparation had gone into these particular projects and it is critical to both the University and the Commonwealth that they are brought to completion.

With the University's debt capacity approaching the 8% threshold, the University is looking to the State as a key partner in addressing its capital renewal needs going forward. The campuses have strategically built these projects into the capital plan and there is little room for additional borrowing to fund these projects. With the 2008 Higher Ed and Life Sciences Bond Bills being completely programmed, the University is hopeful that the EOE strategic planning efforts that are underway, including Higher Education planning which will focus on capital planning and reviewing and prioritizing capital projects, will result in these top priority projects being included on the State's capital plan.

Roles & Responsibilities

Commonwealth

The Executive Office for Administration & Finance (EOAF) is required to annually file a Capital Spending Plan for each fiscal year by July 1st. The funding for that plan is based on bond authorizations that were passed by specific legislation and signed into law. The authorization may include earmarks for specific projects or general authorization for capital needs. In addition to developing a statewide capital plan, the EOAF approves projects funded through the UMass Building Authority (UMBA). Prior to granting UMBA approval to undertake or finance a campus project, EOAF verifies that the project has been included on the University's Capital Plan.

The Executive Office of Education (EOE) leads initiatives to coordinate the sectors of public higher education and to coordinate higher education with other sectors of government as appropriate. This past year the Baker Administration launched a multi-phased strategic planning effort to focus on Economic Development, Workforce Development and Higher Education Capital Planning. This process is being coordinated through the *Strategic Framework for Massachusetts Public Higher Education* effort. The goals of the initiative are to:

1. Regional Collaboration
 - a) Understand existing collaborations and partnerships.
 - b) Promote new collaborations and partnerships.
 - c) Identify how regions can function as effective planning units.
2. Workforce and Talent Development
 - a) Ensure higher ed. plans and certificate/degree programs are aligned with regional workforce skills priorities and talent needs in key economic clusters.
 - b) Ensure higher ed. capital investment supports workforce skills development and regional and statewide employer needs both now and in the future.
 - c) Support expanded career pathways for HS / vocational / technical students.
3. Capital Investment
 - a) Maximize value and utilization of existing assets.
 - b) Design system for addressing renewal and deferred maintenance.
 - c) Create data-driven methodology for capital investment.
 - d) Explore options for public-private partnerships.

The University is an active participant in the Steering Committee overseeing this work and the various working groups established to gather and evaluate the details. This partnership



will be critical as its results will drive the State's next capital plan set to be released in July 2017.

The Division of Capital Asset Management and Maintenance (DCAMM), is a separate State Agency that reports to the EOAF and is responsible for managing State funded construction projects in collaboration with the campuses and UMBA. This includes overall management of the projects such as design, procurement, construction and budget management. In general, each project is assigned a DCAMM project manager to oversee all aspects of the project and to communicate with the designated campus contact. In addition to managing projects, DCAMM works with the President's Office and UMBA as part of the annual process to develop the capital plan submission to the EOAF for inclusion in the five-year capital plan. This includes reviewing current projects and projected authorizations in support of UMass projects.

University

Collaboratively, the University is responsible for developing the five-year capital plan which entails prioritizing projects, identifying funding sources and ensuring that strategic and campus priorities are being addressed.

President's Office

The President's Office is responsible for coordinating the overall capital plan for the University and confirming the affordability of submitted plans. The President's Office works closely with the campuses to facilitate and coordinate the capital planning effort on a biennial basis and for quarterly reporting purposes. The biennial effort begins with the issuance of guidelines to campuses to ensure that each campus is submitting consistent information that will aid in presenting the plan to the Board of Trustees. Once the information is submitted, it is reviewed to ensure completeness and summarized based on campus, funding source, and type of project. The President's Office also schedules on-site meetings with each campus to review the capital submission and to discuss priorities and how cost estimates were developed.

Additionally, the President's Office coordinates the quarterly capital update to the Board which provides a status on the funding and work plan for approved projects along with identifying changes in the overall cost and scope of projects.

In addition to coordinating with the campuses, the President's Office is also responsible for coordinating with DCAMM on the submission of UMass priorities to the EOAF and for working with them to ensure that authorized bond bill earmarks are funded.

Campuses

Each campus utilizes its own master and strategic plans to develop a capital plan that reflects the deferred maintenance needs, strategic priorities and unique needs for that campus. Per Board policy, each campus has developed a ten-year master plan that is updated regularly and informs the five-year plan which makes up the University capital program. The campuses must ensure that their capital plan is complete and that cost estimates used are conservative and comprehensive. In addition, each campus must evaluate its own operating budget to ensure that local funding sources identified in the plan are available for capital purposes and can be used in support of the projects identified in the plan.



University of Massachusetts Building Authority (UMBA)

UMBA works with the President's Office and each campus to issue debt to finance capital projects and to manage UMBA-financed and other capital projects in the capital plan. UMBA is a distinct, public organization established by the Massachusetts Legislature in 1960. Its mission is to build facilities on the University of Massachusetts campuses including student dormitories, dining facilities, parking garages, academic buildings, laboratories, athletic facilities, heating plants, and others, as well as providing funding for the repair and renovation of existing campus facilities. UMBA is responsible for completing an Executive Technical Review of each project prior to it being approved by the Board of Trustees in order to evaluate the project scope for feasibility and cost estimates for accuracy. UMBA is also responsible for the construction of facilities and hires architects, engineers and construction firms to design and build them. After the facilities are completed, they are used and maintained by the University while the Authority maintains ownership of the buildings.

Capital Planning Process

The capital planning process is governed by the Board's *Capital Planning and Land and Facilities Use Policy* and associated standards. The standards are intended to assist in the implementation of the Policy and they specify the review and approval process for capital projects. As explained in the standards, a project must first be approved by the President and/or the Board before a campus can proceed with the project. A project must go before the Board for an approval vote on two separate instances: the preliminary campus estimate (first vote) and the full project approval (second vote). The standards state the following:

Per Board of Trustees Policy T93-122, approval from the Board is required to initiate or finance any capital projects requiring University borrowing, and all capital projects over \$10,000,000 in cost. The President's approval is required for capital projects between \$2,000,000 and \$10,000,000 in cost.

The President's Office maintains a database of capital projects which contains project details including a description, funding sources, and other key project elements.

Board Approved Project List

The Board Approved Project list includes all projects that have been approved by the Board (by Vote 1 and Vote 2 described below) and are reported on quarterly at each Board of Trustees meeting. This list comprises projects that are underway or set to begin in the next 24-month period (before the next biennial Capital Plan update). Each project on this list has an identified funding source and in most cases has spending underway. The costs associated with these projects are included in the University's financial projections and state funded projects are approved on the most recent state plan.

President's Approved Project List

The President's Approved Project List includes capital projects that are reviewed and approved by the President on a quarterly basis. These are smaller projects, between \$2 million and \$10 million and are funded with campus operating funds. No borrowed funds are used for these projects. The costs associated with these projects are included in the University's financial projections.



Other Priority Projects

These are high priority projects that have not been approved, but have been incorporated into the University's five-year financial projections and campuses would like to start them during this five-year plan. In some cases, these projects were previously planned for funding from the State's capital plan but have been placed on hold as the EOE completes its strategic capital planning process.

Future Pipeline of Master and Strategic Planning Projects

Consistent with campus master plans, these projects are for future consideration that will all require Board approval. While some planning might go on for these projects, many of them will not come before the Board during this five-year plan.

It should be noted that the future pipeline of master and strategic planning projects currently have estimated costs but no identified funding source. These projects continue to be explored to determine funding including partnerships with the State, fundraising, alternative financing such as public private partnerships or campus funds.

The Future Pipeline of Master and Strategic Planning Projects is used as a planning document and an advocacy tool for the University to work with State partners to secure funding in support of campus projects. It should be noted that projects included on this planning list must go before the Board through its two-step voting process as established by policy.

Preliminary Campus Estimate (First Vote)

Before a project can move from the Future Pipeline of Master and Strategic Planning Projects list to the approved project list that is reviewed quarterly by the President and/or the Board, the following criteria must be met:

- a. A campus can request preliminary approval for a project at any time by notifying the President's Office. The request will be reviewed and approved on a quarterly basis corresponding with the quarterly Board schedule.
- b. The project is expected to begin within the next 24 months.
- c. The project is included in the University's five-year capital plan or, if it is not, an explanation as to why it has become a priority from the time the last five-year plans was approved is required.
- d. The funding source(s) needs to be identified for the total project cost.
- e. If the State is contributing to the project it needs to be:
 - i. Approved by the Executive Office for Administration and Finance.
 - ii. The project amount and authorization needs to be confirmed by the DCAMM.
- f. The project needs to be reflected in the campus operating budget projections.
 - i. Budget projections should be based, in part, on guidance issued by the President's Office and consistent with the University's policies and any other financial requirements.
- g. Debt affordability analysis must comply with the University's Debt policy.
- h. The campus must demonstrate how the project is addressing deferred maintenance.

Full Project Approval (Second Vote)

In order for a project to advance beyond the design phase and into construction, it must receive Full Project Approval (second vote). Before a project can receive Full Project Approval, the



President and/or the Board, the following additional criteria must be met, in addition to those required for preliminary approval (the first vote):

- a. UMBA will conduct an independent review and will confirm the total project cost.
- b. A project approval checklist will be signed off on by all parties certifying that the project has met all of the above criteria and is ready for approval by the University President or the Board.
- c. A project shall not be advanced beyond the 4th project phase (study/schematic design) without receiving Full Project Approval.

Changes to Project Costs

As part of the quarterly reporting to the Board, all project costs will be provided for each project on the approved list. Projects that have received the Full Project Approval (second vote) and have an increase in cost of 10% or more will require an additional approval from the Board.

Before the Board is asked to vote on a revised project cost, the project must meet the following criteria:

- a. A detailed description of the reason for the change in cost must be provided.
- b. The campus must identify funding for the additional amount needed.
- c. If the additional amount is being borrowed, the debt affordability analysis must comply with the University Debt policy.
- d. UMBA must review and sign off on the revised project cost estimate.
- e. If it is a State project, DCAMM needs to reflect the increased cost in their project list and EOAF must have it included in their latest capital plan.

Quarterly Reporting to the Board

The status of all capital projects on the Board Approved Project list is tracked and reported to the Board on a quarterly basis. In order to facilitate quarterly reporting to the University President and the Board, campuses use the capital project database to update project information, monitor approvals and request new projects. It is the responsibility of the campuses to ensure accuracy and to review each field in the project database to make sure the information is updated and accurate.

The chart below provides a comparison of the approved project list by project phase. As shown, the approved project list as of December 2014 had a substantial number of projects in the early phases. Over this 2-year period, significant work has been done to move projects through the various phases. As of September 2016, the updated plan shows fewer projects in the early phases and more completed as the projects move through the plan.

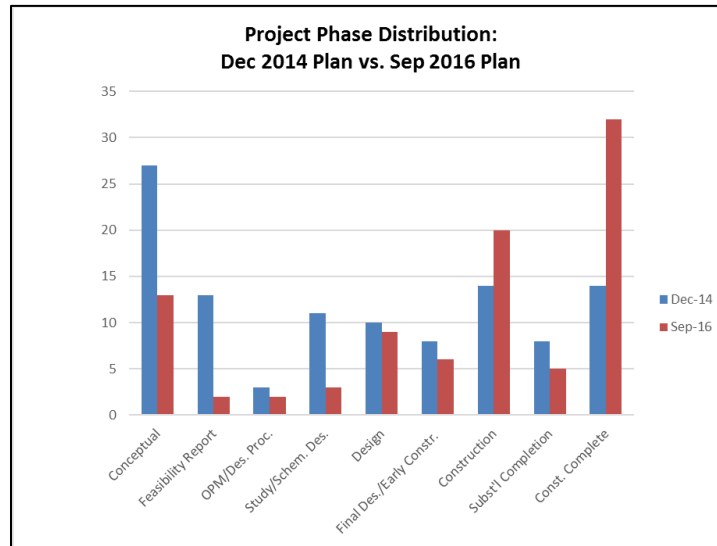


Figure 5: Project Phase Distribution

Financial Plan

The primary factor constraining investments in the capital plan is affordability. The funding sources available for capital investment which consist of University funds (including operating funds), donations, borrowing, and State funds, are limited.

There are five sources of funds that are used either individually or in combination with each other to support capital projects.

1. University – Local Funds – These are funds programmed within a campus’s operating budget and are generated at the campus level through tuition and fees. Since campus revenues are generally needed to support ongoing educational costs, this funding source is not widely available for funding capital projects. An example of a project funded significantly with University Local funds is the Parking Lot Maintenance project at the Medical School campus.
2. University – External Funding including Fundraising and Grants – These are funds generated at each campus through specific fundraising efforts or grant applications from federal, local or private sources. An example of a project funded significantly with University External Funds is Phase II of the Charlton College of Business at the Dartmouth campus.
3. University – Borrowing – UMBA / MHEFA / WCCC / Other – These are funds borrowed using UMBA, MHEFA or WCCC for which the borrowing campus is responsible for principal and interest payments annually. An example of a project funded significantly with University Borrowing is the construction of University Hall at the Boston campus.
4. State – GO Bonds, Life Sciences, Supplemental Appropriations – These are funds authorized, borrowed or appropriated by the State in support of capital projects. An example of a State funded project is the MLSC Life Sciences Facility at the Amherst campus.
5. Public Private Partnerships (P3) – These partnerships are contractual agreements between the University and a private entity to facilitate the construction, operation, and



financing of a capital project. This type of arrangement is typically used for auxiliary buildings such as housing, dining and parking.

Each year, debt affordability is evaluated by each campus to determine if and when additional debt can be issued to finance capital projects. The most common metric used to determine a campus's ability to finance debt is the debt service ratio, which compares debt service payments (interest and principal) to total operating expenditures. This indicator simply shows how much of the annual operating budget must be set aside for long-term debt payments. It is extremely important to creditors who are planning to lend UMass money, or to purchase UMass bonds. The bond rating agencies believe that committing more than 10% of current revenues annually for payments to bond holders or other creditors is very risky for creditors. From the University's perspective, a high debt service to operations ratio could impact the interest rate that the University pays for its long-term debt and reduce the availability of funds for other priorities. Per Board Policy, the maximum debt service to operating expenditures ratio allowed is 8%. Below is the calculation of the debt service to operating expenditures ratio as calculated for the University's most recent financial indicators analysis as of September 2016.

Debt to Operating Ratio	FY15 Actual	FY16 Projected	FY17 Projected	FY18 Projected	FY19 Projected	FY20 Projected	FY21 Projected
Amherst	6.4%	6.3%	6.5%	6.7%	6.8%	7.4%	7.5%
Boston	5.2%	5.3%	5.5%	5.9%	6.8%	7.7%	7.3%
Dartmouth	9.3%*	8.3%	7.5%	7.4%	7.2%	6.9%	6.8%
Lowell	7.6%	7.8%	7.4%	7.5%	7.5%	7.5%	7.8%
Medical School	6.1%	6.4%	6.3%	6.0%	5.8%	5.7%	5.5%
University	6.6%	6.5%	6.5%	6.5%	6.6%	6.9%	6.8%

Table 4: University Debt Ratio

Each year as the campuses are developing their budget estimates for the coming fiscal year, non-discretionary expenses including debt service must be considered before all other budgetary needs. Annually, campus operating budgets include interest payments for outstanding debt in the category of interest on indebtedness. Principal payments are recorded on the Statement of Net Position in the category of Bonds Payable.

Principal + Interest	FY15	FY16	FY17	FY18	FY19	FY20	FY21
	Actual	Projected	Budget	Projected	Projected	Projected	Projected
Amherst	\$ 68,087	\$ 70,432	\$ 78,227	\$ 83,876	\$ 88,085	\$ 99,775	\$ 103,356
Boston	\$ 19,812	\$ 21,381	\$ 23,620	\$ 26,019	\$ 32,111	\$ 37,797	\$ 38,022
Dartmouth	\$ 21,052	\$ 19,780	\$ 18,886	\$ 19,011	\$ 18,998	\$ 18,693	\$ 18,844
Lowell	\$ 29,330	\$ 32,847	\$ 33,102	\$ 34,810	\$ 36,335	\$ 38,053	\$ 41,228
Medical School	\$ 49,209	\$ 54,500	\$ 56,332	\$ 53,781	\$ 53,775	\$ 53,554	\$ 52,693
Central	\$ 2,997	\$ 1,269	\$ 878	\$ 881	\$ 891	\$ 906	\$ (679)
University	\$ 190,487	\$ 200,209	\$ 211,046	\$ 218,377	\$ 230,196	\$ 248,779	\$ 253,464

Table 5: University Debt Service

The University identified the borrowing needs for projects on its capital plan and issued debt through UMBA in multiple installments from 2009 - 2015. With most of the debt financing identified in the capital plan already borrowed, the University is planning this capital plan's final



tranche of borrowing in early calendar year 2017. In addition, UMBA established its \$200M commercial paper program in August 2013 to further the University's and UMBA's efforts to establish a "just in time" borrowing program to fund capital projects as needed during construction periods. With nearly two years elapsing between the most recent borrowing and the next one, campuses have utilized UMBA's commercial paper program as a bridge to fund ongoing capital projects until the upcoming long-term borrowing.

The implementation of the capital plan impacts the overall operating budget through increased expenses which will ultimately impact key ratios including the operating margin and debt ratio. Increased expenses include:

- Depreciation Expense – Since the University's budget is reported in a modified accrual-based format that matches our financial statements, the amount of debt service is not clearly reflected. However, as a proxy, our depreciation expense essentially accounts for the annual debt service and other capital expenditures made and recorded in Other Revenues, Expenses, Gains and Losses on the SRECNP. Existing buildings are currently included in the depreciation expense based on their useful life. Additionally, as capital projects are completed, a depreciation expense must be added into the budget. Given the amount of capital investment in recent years, this expense has increased significantly in support of that plan.
- Interest Expense – The interest on debt is included in the budget and changes based on new debt being issued, debt being retired and refinancing of existing debt. Based on the current borrowing plan, additional interest has been incurred in support of the recent and anticipated borrowings to support the capital plan.

Changes to the expenses such as those described above have impacts on the key financial ratios tracked by the University and its stakeholders such as the State and Rating Agencies. For example, the operating margin subtracts expenses from revenues to determine a surplus or deficit. As depreciation and interest expenses rise, in order to offset these costs, other areas of the budgeted expenses must be reduced to live within existing revenues if a positive operating margin is to be maintained.

The Commonwealth of Massachusetts plays an integral role in the capital process for the University in terms of both directly funding projects as well as approving projects funded by other sources. On an annual basis, the EOAF develops its own five-year capital plan and conducts an analysis of how much debt can be issued over the life of the plan to address capital needs while maintaining affordability standards. Annually, the EOAF will review its plan along with the amount of debt outstanding, interest rates and operating revenues to establish a bond cap or the amount of total debt that can reasonably be outstanding in a given year. If based on this analysis it is determined that additional debt is affordable, bonds will be issued in support of existing bond authorizations passed through legislation for specific purposes. Currently, the following capital authorizations have been passed by the Legislature and approved by the Governor:



University Bond Bills	Total Authorization	Spending (as of 6/30/16)
Higher Ed Bond Bill	\$ 1,001,500,000	\$ 525,513,141
Capital Supplement to HEBB	\$ 100,000,000	\$ -
Life Sciences Bond Bill	\$ 276,675,545	\$ 248,579,289
Transportation Bond Bill	\$ 75,000,000	\$ 25,000,000
General Gov't Bond Bill	\$ 26,600,000	\$ -
Environmental Bond Bill	\$ 55,800,000	\$ -
Total Bond Bills	\$ 1,535,575,545	\$ 799,092,430

Table 6: University Bond Bill Authorizations & Spending

- Higher Education – In August 2008, the Legislature passed the Higher Education Improvement Act, which authorized \$2.2 billion for capital improvement spending over ten years for higher education facilities in the Commonwealth, including more than \$1 billion of funding for University projects exclusively. This authorization was amended by Chapter 237 of the Acts of 2014 which added an additional \$100 million to the bottom line to fund deferred maintenance needs at the University. Of the total \$1.1 billion, \$525 million has been spent through June 2016 and all of the funding has been programmed for specific projects. Many of these projects have been put on hold as the EOE Strategic Planning initiative is being conducted.
- Life Sciences – In June of 2008, authorization for bonds in support of the life sciences industry was passed. Among other initiatives relating to the Massachusetts Life Sciences Center, the legislation authorizes borrowing \$500 million over a ten-year period to fund capital investments and infrastructure improvements throughout the State to support the Life Sciences Industry. Of the total, \$276.7 million has been earmarked for UMass and to date \$249 million has been spent.
- Environmental – In August 2014, the Legislature passed the Preservation and Improvement of Land, Parks, and Clean Energy Act to provide for a program of improvement and preservation of the energy and environmental assets of the Commonwealth, including earmarks for projects at the University totaling \$55.6M.
- Transportation – In August 2014, the Legislature passed the Financing Improvements to the Commonwealth's Transportation System Act to provide for a program of transportation development and improvements including \$75M for the Utility Corridor and Roadway Relocation project at UMass Boston.
- Economic Development – In August 2016, the Legislature passed the Job Creation and Workforce Development Act to provide for a program of economic development in the Commonwealth, including earmarks for projects at the University totaling \$101.8M.

Although the State has made a significant commitment and investment into the facilities on our campuses, the current State Capital Plan has been put on hold as the EOE Strategic Capital planning process is completed. Despite a modest increase in state spending in recent years, the University continues to bear the burden of financing the majority of its large capital needs.

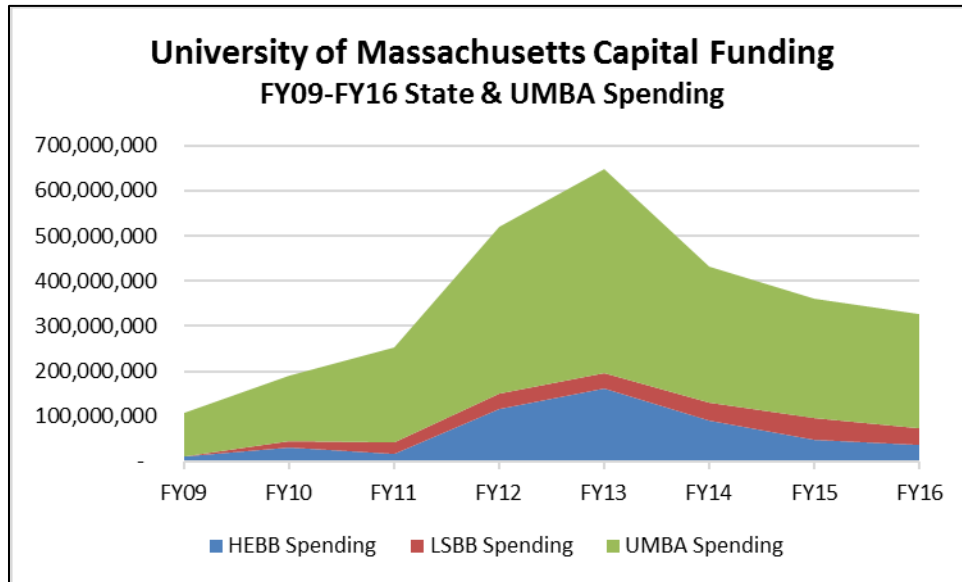


Figure 6: Historical Capital Spending

Deferred Maintenance

Over the past 20 years, the University has reduced its deferred maintenance backlog, replaced outdated science and academic facilities, and put in place reserves to fund the maintenance needs of any new facilities built by the University. Improvements have been made to housing and dining facilities across the campuses – facilities that generate revenue to cover the cost of operations, including the debt service associated with the buildings. These improvements have helped transform UMass.

In February 2016, a report was sent to legislative leaders and presented to the Board of Trustees highlighting the significant progress that has been made in the vital area of repairing and maintaining facilities across the UMass System. The report shows that the UMass system, with its flagship campus in Amherst leading the way, has taken and will continue to take the responsible course in this crucial area.

Recognizing the magnitude of its capital renewal needs and the importance of addressing them, the University engaged Sightlines to conduct deferred maintenance analysis in order to define future capital investment needs and campus backlogs. Sightlines has collected information on capital investment and facilities operations individually for each campus dating back to 2003. Sightlines began by using their Return on Physical Assets (ROPA) system, which included a discovery process, a predictive life cycle process, and a key performance indicator process.

In FY15, Sightlines established an annual stewardship target of \$115.7M for the University system. This is the amount of spending necessary to maintain buildings in their current condition. Sightlines also established an infrastructure target of \$14.2M in order to maintain the grounds and utility infrastructure. In total, the University's established spending target for FY15 was \$129.9M. The total actual spending in FY15, including recurring and one-time capital spent

in a given fiscal year as well as investment in outside building infrastructure totaled \$154.9M – over \$25M more than the established target.

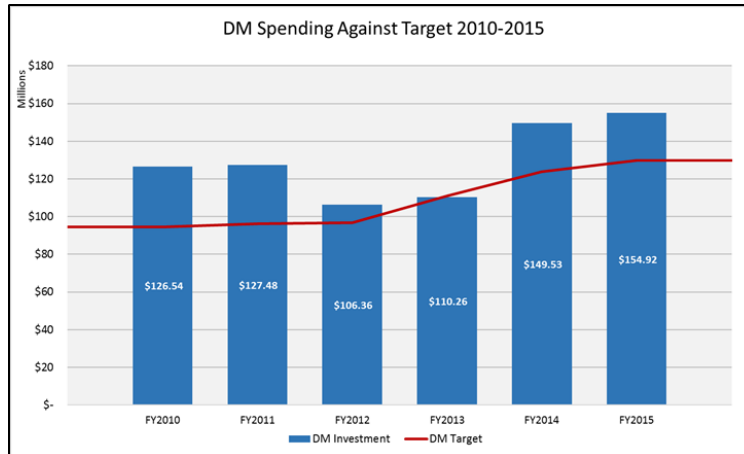


Figure 7: Historical Spending against Targets

With an established baseline of data, the University advanced its deferred maintenance analysis and planning efforts by utilizing Sightlines’ Business Portfolio Solutions (BPS) – a targeted, action-oriented planning engagement. Given that funding is constrained and capital renewal needs are ever-present, it is critical for the University to align resources by having an affordable multi-year investment plan that supports the institutional mission and mitigates risk. The BPS process will assist the University in shaping a multi-year investment plan reflecting financial investment and portfolio management, as opposed to arbitrarily choosing projects. This process will align investment needs to financial capacity and describe the rationale for the sequencing and timing of investments.

This process began with a comprehensive building assessment to generate a list of component conditions and deficiencies. The technical assessment is followed by four steps:

- Integrate Capital Needs - the technical assessment is supplemented with other existing studies, master plans, and modernization needs. Interviews with facilities staff and supervisors allow the integration of initiatives to reduce the overall capital needs. This step includes classification into the following project timeframes based on age, condition, and need:
 - A – 1-3 years
 - B – 4-7 years
 - C – 8-10 years
- Create Building Portfolios - developing building portfolios allows the formation of unique investment strategies that tie to institutional strategy. This step includes the assignment of projects into the following Investment Criteria to help the University understand the impact of a project:
 - Reliability - Issues of imminent failure or compromise to the system that may result in interruption to program or use of space.
 - Asset Preservation - Projects that preserve or enhance the integrity of building systems or building structure, or campus infrastructure.

- Safety/Code - Code compliance issues and institutional safety priorities or items that are not in conformance with current codes, even though the system is “grandfathered” and exempt from current code.
- Program Improvement - Projects that improve the functionality of space, primarily driven by academic, student life, and athletic programs or departments. These projects are also issues of campus image and impact.
- Economic Opportunity - Projects that result in a reduction of annual operating costs or capital savings.
- Develop Multi-year Capital Plan - with portfolios in place, resources will be allocated to create an investment plan. With an understanding of historical spending profiles, outcome-based strategies that balance asset preservation with program adaptation will be created.
- Project Selection

The Sightlines analysis has identified a 10-year asset reinvestment backlog totaling \$3.1 B. This is the accumulated backlog of repair and modernization needs and the definition of resource capacity to correct them. Of this total, \$1.41B is defined by Sightlines as “deferred maintenance”, consisting of Timeframe A projects with Investment Criteria of Reliability, Asset Preservation, or Safety/Code.

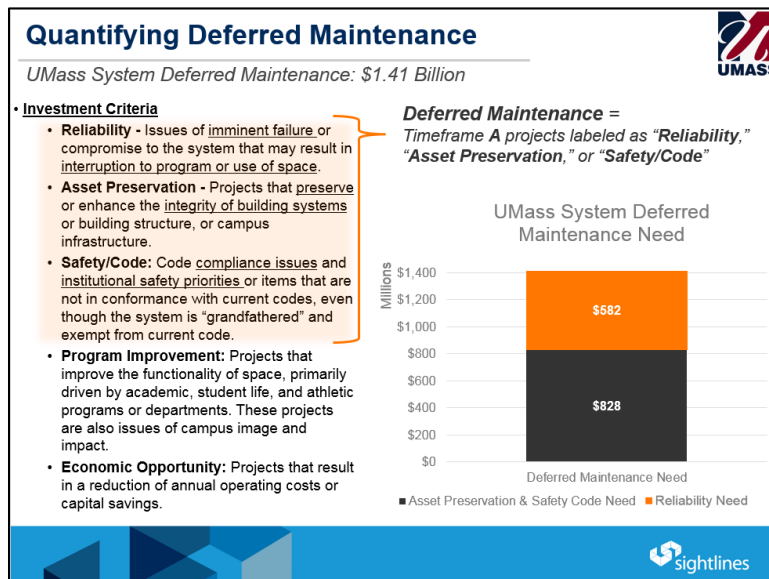


Figure 8: Deferred Maintenance Defined (Source: Sightlines)

The current annual spending on stewardship and asset reinvestment for the UMass system has been sufficient to sustain the backlog and prevent it from growing. In particular, the flagship campus at Amherst has experienced a \$450M decrease in deferred maintenance since 2005 during a period where most public universities have experienced an increase. Sightlines projects that by 2021, total deferred maintenance for the University system will be reduced by \$508M.

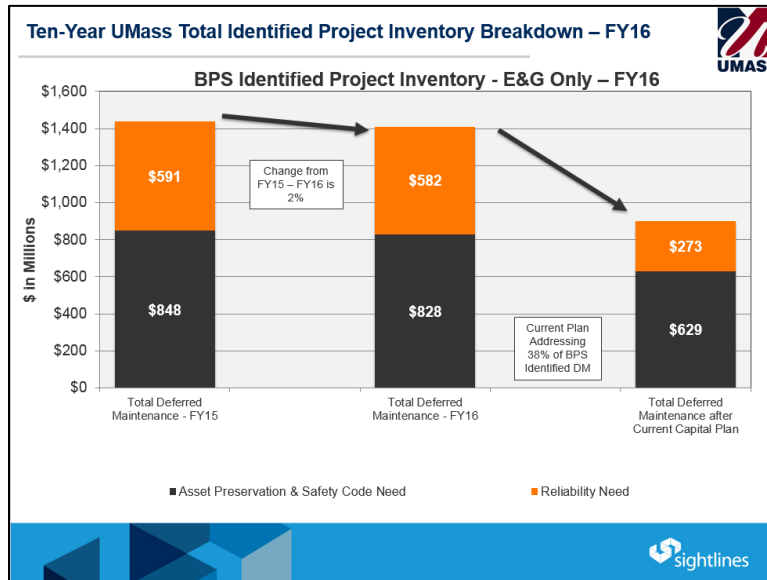


Figure 9: Capital Plan Impact on Deferred Maintenance (Source: Sightlines)

Approved Capital Plan Project Dashboards

In an effort to summarize the information included in the Capital Plan, specific dashboards have been developed which include:

Dashboard 1: FY17-21 Capital Plan

This dashboard shows the full list of projects that are currently built into the University’s financial projection.

Campus	BOT Approved		President Approved		Subtotal Approved	
	Projects	Project Cost	Projects	Project Cost	Projects	Project Cost
Amherst	19	\$716,250,000	4	\$23,400,000	23	\$739,650,000
Boston	17	\$889,150,000	0	\$0	17	\$889,150,000
Dartmouth	4	\$94,745,500	0	\$0	4	\$94,745,500
Lowell	11	\$326,000,000	5	\$31,000,000	16	\$357,000,000
Worcester	9	\$174,340,000	9	\$41,974,000	18	\$216,314,000
University	60	\$2,200,485,500	18	\$96,374,000	78	\$2,296,859,500

Other Priority Projects		
Campus	Projects	Project Cost
Amherst	10	\$356,650,000
Boston	3	\$272,700,000
Dartmouth	1	\$75,000,000
Lowell	4	\$190,000,000
Worcester	1	\$48,500,000
Total	19	\$942,850,000



Dashboard 2: Capital Plan Changes (Reported Quarterly) – 2 versions

- Version 1 – with the Approved Project List from the previous Biennial update to the 5-Year Capital Plan in December 2014 as the starting point, this table displays the quarterly changes to the project list, progressing toward the current project list as of September 2016. It describes any new projects being added, project cost increases/decreases, and project archiving due to completion.

Quarter	Vote 1	Vote 2	Completed and Archived or Other Adjustments	Total
December 2014	1,247,974,000	2,141,565,512		3,389,539,512
April 2015	No new projects	5 Projects shifting from Vote 1 to Vote 2, including a \$7M increase to the SMAST project.	No projects archived	
Total Added to Plan	-	7,000,000	-	7,000,000
Total Capital Plan	1,096,474,000	2,300,065,512		3,396,539,512
June 2015	No new projects	3 Projects shifting from Vote 1 to Vote 2, including a \$2.1M increase to the LSL Data Center fitout project	AMH: Lederle Basic Systems Upgrade; AMH: Morrill Complex Repairs & Renovations; AMH: Paige Lab Renovations; UMMS: Renovate & Expand BL3 Suite	
Total Added to Plan	-	2,100,000	(35,686,000)	(33,586,000)
Total Capital Plan	1,048,674,000	2,314,279,512		3,362,953,512
September 2015	1 Revised project; 1 Project moved from phase 5 to phase 4	1 Project shifting from Vote 1 to Vote 2, as well as three project cost increases totaling \$16.5M	AMH: Fine Arts Center Fire Protection; AMH: Lincoln Campus Center Improvements; AMH: Morrill Steamline (Moved to President list); DAR: MAB, Fall River	
Total Added to Plan	22,000,000	16,500,000	(62,500,000)	(24,000,000)
Total Capital Plan	1,120,674,000	2,218,279,512		3,338,953,512
December 2015	3 DAR projects removed	1 project cost increase totaling \$1M	No projects archived or other changes	
Total Added to Plan	(19,184,000)	1,000,000	-	(18,184,000)
Total Capital Plan	1,101,490,000	2,219,279,512		3,320,769,512
April 2016	1 new project totaling \$12M; 1 project cost increase totaling \$500k	1 project cost increase totaling \$1M; 3 project cost decreases totaling \$25.5M;	AMH: Lederle Window Encapsulation (archived); BOS: project MP.02.02 merged with project MP.02.01; BOS: project Bl.11.01 moved from Campus list and merged into project MP.02.01	
Total Added to Plan	12,500,000	(24,491,431)	(3,000,000)	(14,991,431)
Total Capital Plan	1,113,990,000	2,191,788,081		3,305,778,081
June 2016	1 new LOW project totaling \$20M; 2 LOW project decreases totaling \$14M (for creation of new vote 2 project)	2 projects shifting from Vote 1 to Vote 2, including the \$14M LOW Fox Hall Elevator project and a \$1.7M increase to the AMH DuBois project; 1 project cost decrease totaling \$135k	All projects in Phases 9A and 9B have been archived, totaling \$798.6M; 3 BOS projects removed from Approved list totaling \$20M (2 put on hold, 1 rescheduled beyond 24 months)	
Total Added to Plan	20,000,000	1,565,000	(818,557,581)	(796,992,581)
Total Capital Plan	1,093,990,000	1,415,195,500		2,508,785,500
September 2016	2 AMH DM project reconciliations totaling \$8.3M; 1 LOW IT project reconciliation totaling \$10M; 1 LOW cost increase totaling \$30M;	7 projects shifting from Vote 1 to Vote 2; 2 projects that received vote 2 approval in exec. Session; 7 project cost increases; 1 project cost decrease	11 projects moved to Biennial list; 4 projects partially moved to Biennial list; 8 projects removed from plan; 2 projects moved to President list; 2 projects completed	
Total Added to Plan	48,250,000	125,650,000	(482,200,000)	(308,300,000)
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500

- Version 2 – with the current Approved Project List as the starting point, this table is a template for how changes to the Capital Plan will be summarized over the next 2-year period.



**University of Massachusetts
Fiscal Year 2017 – 2021 Capital Plan
September 2016**

Quarter	Vote 1	Vote 2	Completed and Archived or Other Adjustments	Total
September 2016	236,090,000	1,964,395,500		2,200,485,500
December 2016				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
April 2017				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
June 2017				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
September 2017				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
December 2017				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
April 2018				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
June 2018				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500
September 2018				
Total Added to Plan	-	-	-	
Total Capital Plan	236,090,000	1,964,395,500		2,200,485,500

Dashboard 3: Project Phases

This dashboard displays the number of projects and total project cost by project phase for each campus and the University system as a whole. It also distinguishes between projects that have received preliminary approval versus secondary approval.

	Project Phase	Phase Code	UMA		UMB		UMD		UML		UMMS		University	
			#	\$	#	\$	#	\$	#	\$	#	\$	#	\$
Prelim. Campus Estimate (First Vote)	Conceptual	1	3	\$10,250,000	1	\$10,000,000	0	\$0	3	\$70,000,000	6	\$52,840,000	13	\$143,090,000
	Feasibility Report	2	1	\$9,000,000	1	\$5,000,000	0	\$0	0	\$0	0	\$0	2	\$14,000,000
	OPM/Designer Procurement	3	1	\$14,000,000	0	\$0	0	\$0	1	\$12,000,000	0	\$0	2	\$26,000,000
	Study/Schematic Design	4	0	\$0	1	\$27,500,000	0	\$0	1	\$10,000,000	1	\$15,500,000	3	\$53,000,000
	Subtotal		5	\$33,250,000	3	\$42,500,000	0	\$0	5	\$92,000,000	7	\$68,340,000	20	\$236,090,000
Full Project Approval (Second Vote)	Design	5	3	\$118,000,000	3	\$119,500,000	0	\$0	2	\$68,000,000	1	\$90,000,000	9	\$395,500,000
	Final Design/Early Constr. Pkgs.	6	0	\$0	5	\$156,950,000	0	\$0	1	\$74,000,000	0	\$0	6	\$230,950,000
	Construction	7	8	\$291,900,000	5	\$562,000,000	3	\$79,745,500	3	\$92,000,000	1	\$16,000,000	20	\$1,041,645,500
	Substantial Completion	8	3	\$273,100,000	1	\$8,200,000	1	\$15,000,000	0	\$0	0	\$0	5	\$296,300,000
	Subtotal		14	\$683,000,000	14	\$846,650,000	4	\$94,745,500	6	\$234,000,000	2	\$106,000,000	40	\$1,964,395,500
Total Sep 2016 BOT		19	\$716,250,000	17	\$889,150,000	4	\$94,745,500	11	\$326,000,000	9	\$174,340,000	60	\$2,200,485,500	

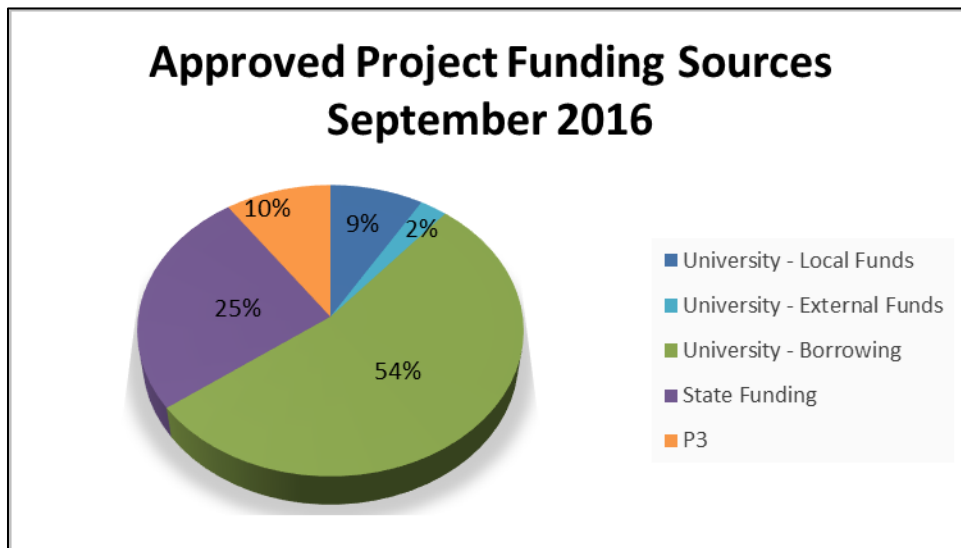


Dashboard 4: Funding Sources

The table in this dashboard displays the Approved Project List broken into its component funding sources. It also distinguishes between projects that have received preliminary approval and secondary approval.

Funding Source	Prelim. Campus Vote 1	Full Project Vote 2	Total BOT Approved	% Total
University - Local Funds	\$78,790,000	\$109,676,000	\$188,466,000	9%
University - External Funds	\$17,500,000	\$37,965,000	\$55,465,000	3%
University - Borrowing	\$112,300,000	\$1,070,479,500	\$1,182,779,500	54%
State Funding	\$0	\$559,675,000	\$559,675,000	25%
P3	\$27,500,000	\$186,600,000	\$214,100,000	10%
TOTAL Approved Projects	\$236,090,000	\$1,964,395,500	\$2,200,485,500	

The chart in this dashboard is simply a pie chart displaying the total Approved Project List by funding source.





Dashboard 5: Borrowing (to date, remaining, total) and Debt Ratio

In the first table, this dashboard displays the amount of borrowing identified for projects that have received preliminary approval and secondary approval, the total amount of bond proceeds already borrowed, and the amount required to be borrowed in the future.

Campus	Total Borrowing Need Vote 1 Projects	Total Borrowing Need Vote 2 Projects	Total Borrowing Need	Bonds Issued	Additional Bonds Required
Amherst	\$32,650,000	\$367,249,000	\$399,899,000	\$220,750,000	\$179,149,000
Boston	\$7,500,000	\$431,450,000	\$438,950,000	\$476,210,000	\$0
Dartmouth	\$0	\$61,380,500	\$61,380,500	\$35,518,500	\$25,862,000
Lowell	\$60,000,000	\$120,400,000	\$180,400,000	\$125,586,789	\$54,813,211
Worcester	\$12,150,000	\$90,000,000	\$102,150,000	\$0	\$102,150,000
Total	\$112,300,000	\$1,070,479,500	\$1,182,779,500	\$858,065,288	\$361,974,212

In the second table, the current and projected Debt to Operations ratios are displayed for each campus and the University system.

Debt to Operating Ratio	FY15 Actual	FY16 Projected	FY17 Projected	FY18 Projected	FY19 Projected	FY20 Projected	FY21 Projected
Amherst	6.4%	6.3%	6.5%	6.7%	6.8%	7.4%	7.5%
Boston	5.2%	5.3%	5.5%	5.9%	6.8%	7.7%	7.3%
Dartmouth	9.3%*	8.3%	7.5%	7.4%	7.2%	6.9%	6.8%
Lowell	7.6%	7.8%	7.4%	7.5%	7.5%	7.5%	7.8%
Medical School	6.1%	6.4%	6.3%	6.0%	5.8%	5.7%	5.5%
University	6.6%	6.5%	6.5%	6.5%	6.6%	6.9%	6.8%

*Dartmouth's debt ratio increased due to a reduction in expenses

Dashboard 6: Project Spending

Each quarter, total project spending for each funding source is reported, including borrowed funds, state funds, and local/external funds. Total spending for the Approved Project List is also displayed.

Campus	Capital Plan: Borrowing	Borrowed to Date	Spending to Date: Borrowing	% Spent	Capital Plan: State Funding	Spending to Date: State Funds	% Spent	Capital Plan: Local/External/P3 Funding	Spending to Date: Local/External/P3 Funds	% Spent	Total Capital Plan	Total Spending to Date	% Spent
Amherst	\$399,899,000	\$220,750,000	\$168,404,688	76%	\$281,500,000	\$178,107,634	63%	\$34,851,000	\$308,224	1%	\$716,250,000	\$346,820,546	48%
Boston	\$438,950,000	\$476,210,000	\$286,316,564	60%	\$214,975,000	\$132,456,090	62%	\$235,225,000	\$2,499,887	1%	\$889,150,000	\$421,272,541	47%
Dartmouth	\$61,380,500	\$35,518,500	\$33,824,781	95%	\$30,000,000	\$297,860	1%	\$3,365,000	\$0	0%	\$94,745,500	\$34,122,641	36%
Lowell	\$180,400,000	\$125,586,789	\$94,076,149	75%	\$33,200,000	\$8,294,120	25%	\$112,400,000	\$131,361	0%	\$326,000,000	\$102,501,630	31%
Worcester	\$102,150,000	\$0	\$0	0%	\$0	\$0	0%	\$72,190,000	\$5,500,000	8%	\$174,340,000	\$5,500,000	3%
Total	\$1,182,779,500	\$858,065,288	\$582,622,182	68%	\$559,675,000	\$319,155,704	57%	\$458,031,000	\$8,439,472	2%	\$2,200,485,500	\$910,217,358	41%

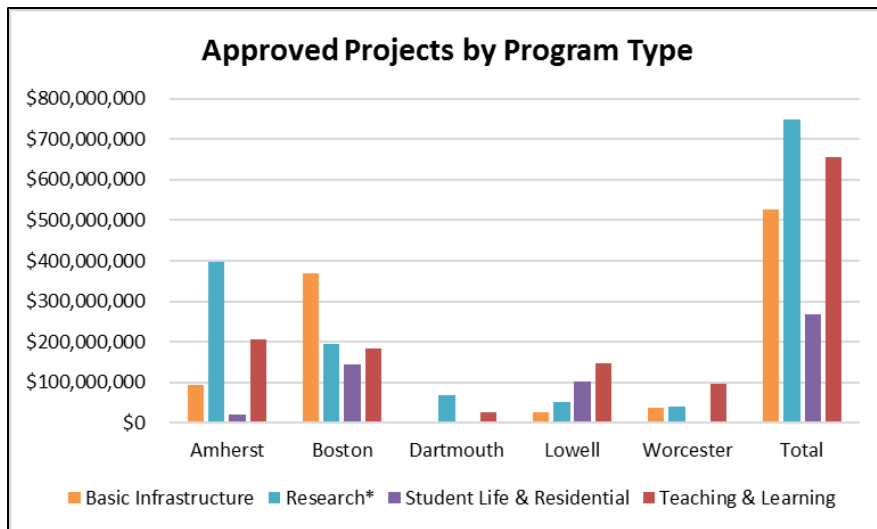


Dashboard 7: Program Type

Each project includes a category for program type in an effort to identify the campus program supported by the investment. The four programs include:

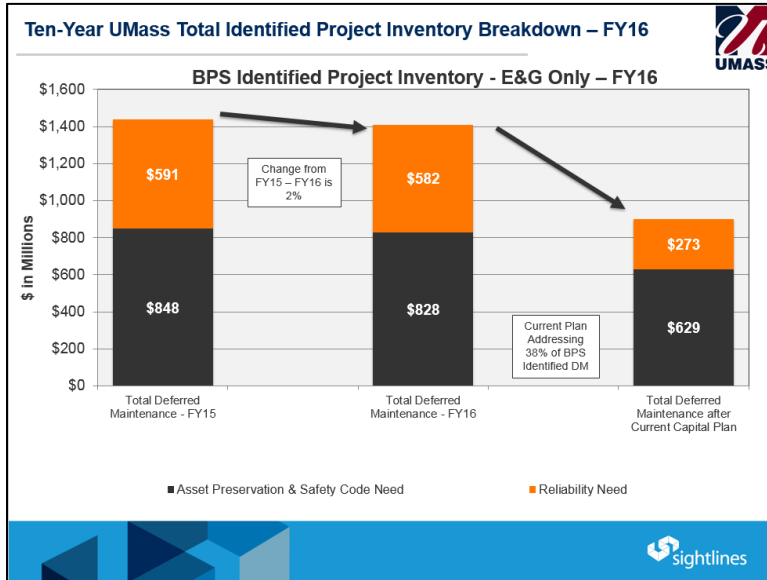
1. Basic Infrastructure - projects that benefit the entire campus and are critical to all operations. Steam lines, power plants, roadways, general public safety improvements such as fire alarm systems and hazardous waste removal systems, and administrative computing are projects that would fall into this category.
2. Research projects - new research building construction or renovations and improvements to existing research facilities as well as large acquisitions of lab equipment.
3. Student Life projects - improvements, renovations or the new construction of student centers, dining halls, recreation facilities, dormitories or other facilities that improve the student experience.
4. Teaching & Learning projects - improvements to or new construction of classroom facilities, auditoria, studios, library facilities and instructional equipment.

Sep 2016	AMH		BOS		DAR		LOW		UMMS		TOTAL	
Program Type	#	\$	#	\$	#	\$	#	\$	#	\$	#	\$
Basic Infrastructure	7	\$93,350,000	9	\$369,550,000	0	\$0	1	\$26,000,000	4	\$38,340,000	21	\$527,240,000
Research	5	\$396,800,000	3	\$194,000,000	2	\$68,305,500	1	\$50,000,000	3	\$40,500,000	14	\$749,605,500
Student Life & Residential	1	\$21,000,000	3	\$143,600,000	0	\$0	3	\$102,000,000	0	\$0	7	\$266,600,000
Teaching & Learning	6	\$205,100,000	2	\$182,000,000	2	\$26,440,000	6	\$148,000,000	2	\$95,500,000	18	\$657,040,000
Total	19	\$716,250,000	17	\$889,150,000	4	\$94,745,500	11	\$326,000,000	9	\$174,340,000	60	\$2,200,485,500



Dashboard 8: Deferred Maintenance Tracking

This dashboard compares the approved capital project list to the deferred maintenance needs of the campuses as reported through Sightlines. It serves to show how the capital plan continues to address the deferred maintenance of the campuses and progress toward reducing the backlog.





AMHERST





I. Introduction and Overview of Amherst Campus Capital Plan

The plan is focused on a five-year planning timeframe from FY17 through FY21 and is organized to identify approved funded projects by designated funding sources, and to describe planning in areas that may result in projects through the Biennial Plan.

The Amherst campus maintains an updated comprehensive database of facilities condition and space utilization information for the campus built environment. The campus relies on comprehensive academic program and space utilization studies of science, engineering, classroom and academic space to inform the implementation of the Master Plan and capital priorities. This capital plan provides new and modernized facilities to meet the demands of an increasingly competitive market in higher education. It also recognizes that our deferred maintenance backlog and growing inventory of obsolete space must be addressed to remain competitive as a leading public research university.

As the University's flagship institution, the Amherst campus has established a goal to become one of the best public universities in the country. Primary among the challenges is the need to maintain a strong, nationally competitive faculty in order to maintain top quality instructional and research programs that will in turn attract and retain top quality students. The Amherst capital plan is structured with priorities that support the strategic challenges and campus goals of being the destination of choice for the Commonwealth's talented students of all backgrounds and the investment of choice for the Commonwealth's and the nation's future. The underlying strategy of the plan is to 1) target investment in areas of the highest impact; and 2) balance investments across deferred maintenance, modernization, and new construction so as to achieve the greatest possible return on investment and broadest improvement in physical capacity.

In the past decade we have made impressive progress in modernizing the campus. Continued progress demands an aggressive funding strategy to complete high priority capital projects. The Amherst campus places heavy and growing reliance on expenditures from the campus operating budget to support capital improvements, especially in terms of borrowing through the UMBA. The approved project list includes projects for which debt has already been approved. Debt service rises from \$79 million in FY17 to \$93 million in FY21 as we borrow incrementally for on-going approved projects based upon cash flow schedules. New projects will be needed, however (summarized in the Biennial Plan), and absent state funding will add to that growth. Potential borrowing of approximately \$200 million for certain projects in the Biennial Plan would increase debt service to \$106 million in FY21. This burden is ultimately passed on to students and may not be sustainable.

This next generation of investments is at the center of our capital planning. Despite ongoing deferred maintenance challenges, the recent capital investment has enabled the campus to remain competitive with top-tier research universities as demonstrated in our increased university rankings. During the next phase of capital planning it is critical for the state to provide for the renovation and replacement of the remaining deferred maintenance obligation. Our capital planning is sharply focused on demonstrating why the state's capital investment in the Amherst campus is critical to meeting the needs of the Commonwealth. Additional projects to improve the student experience (student experience, housing, instructional facilities improvements, classroom technology improvements) will allow us to maintain our momentum in



the competition for talented students and deliver well-trained, innovative employees into the Commonwealth's workforce. Research and development capacity (STEM facilities renewal and data science) build on existing strengths and focus on economic development priorities for the Commonwealth. Of special importance is the adaptive reuse of existing but aging assets. The renovation/addition project for South College demonstrates how powerful and cost-effective this strategy can be — and how it impacts both deferred maintenance and modernization needs. Our Biennial Plan expands this approach, especially in the campus core.

The current capital plan includes state funding from the Higher Education Bond Bill and the Life Science Bond Bill to address important capital projects, including new construction and renovation. The state funded \$100 million towards the recently completed Life Science Laboratories, which is a key component in supporting the campus goal of increasing research and recruiting top faculty, and a \$95 million grant through the Life Science Bond Bill to fit out and equip the south portion of the Life Science Laboratories building for several new interdisciplinary translational research centers. The state also is funding \$85 million towards the Physical Sciences Building, which reduces deferred maintenance through the complete rehabilitation of the historic West Experiment Station. While these state investments are helpful, they only represent 34% of the current approved capital plan requiring the campus and its students to pick up the cost of the remaining academic and infrastructure needs.

In order to sustain and build upon our current momentum, the campus recognizes the need to seek additional funding from other sources including private donations, federal grants, state and through public-private partnerships. Currently, the Isenberg School of Management is undertaking a targeted fundraising campaign to support an addition. The campus continues to pursue private donations for new construction and renovations to Old Chapel. The campus is also seeking external funds through grants and private donations for fit-out of the remaining shell space in the Life Science Laboratories. Successful fundraising to support our capital needs remains a high priority. However, the scale and nature of the campus's needs go far beyond what can be raised through private giving. Expansion of state investment remains the key to our capital plan.

II. Project Status from FY15 plan

The campus completed or is nearing the completion of many major projects that provide modern facilities to support our teaching and research mission. Spending on projects exceeded \$1 billion in the last five years as we completed a number of high priority projects.

The previous plan spanning FY15-FY19 included significant work to revitalize the core of the campus and reduce deferred maintenance. The campus has completed a number of priority projects and continues in late stages of construction on a number of major priority capital projects.

The Furcolo Hall/Marks Meadow project was completed in FY16 and significantly reduced deferred maintenance at the new home of the College of Education. The project is also a major component in the strategy to enable the demolition of Hills House. The campus data center project was also completed during FY16 and responds to the campus information technology strategic plan.



The Design Building and South College Academic Facility will both be completed during FY17. The Design Building will provide a new home for Architecture, Landscape Architecture & Regional Planning, and Building Construction Technology, and enable the demolition of Hills House. The building also demonstrates the campus commitment to sustainable design with its state of the art wood structure, and the commitment to active learning with its exposed building systems. The South College Academic Facility renovates and constructs an addition to the historic South College building, thus providing the necessary replacement space to enable the required demolition of Bartlett. The project also completely eliminates deferred maintenance in historic South College.

The Physical Sciences Building, in construction, will be complete in Spring 2018. The project supports priority needs of Physics and Chemistry and eliminates deferred maintenance in historic West Experiment Station.

The renovation and revitalization of Old Chapel is nearing completion with a planned opening during the fall 2016 semester. The Old Chapel will soon be a vibrant hub in the core of campus with spaces for large gatherings, student activities and exhibits. The building, which has been vacant for decades, will be brought up to code and deferred maintenance will be eliminated.

Additional major infrastructure projects are in construction throughout campus. The Morrill steam line replacement project, in construction, will be completed in FY17 and significantly reduces deferred maintenance in our underground utility infrastructure. The project also provides new accessible pathways around the Morrill Science complex. The campus will begin construction in FY17 on a major central chilled water upgrade project that serves the northern portion of campus and eliminates deferred maintenance in the existing plant that is beyond its useful life.

III. *Planning Needs & Priorities*

The Biennial Plan is the result of a thoughtful process of developing and reviewing capital priorities with campus stakeholders. The flagship campus, with approximately 13 million gross square feet of space, requires continued investment in order to maintain and improve upon its high national ranking. The plan is based upon input and findings from various planning exercises, including the master plan, science and engineering facilities study, instructional space assessment, public health & health sciences facilities study, energy master plan and the student experience master plan.

The plan continues our focus on key areas of impact including instructional facilities improvements, STEM facilities renewal, student experience, energy efficiency improvements, and continued targeted reductions to deferred maintenance.

The biennial plan recognizes the importance of investments in data science. The campus recently received a 10-year, \$15 million grant from the MassMutual Foundation aimed at driving education and economic opportunity in Western Massachusetts. The grant will be invested to hire additional faculty to support growth in the Center for Data Science which is already a leading destination for data science and related research, as well as support research education



at the campus' Cybersecurity Institute. The project will provide much needed space to accommodate the growth in these programs.

Housing and Student Experience areas continue to be a priority in capital planning for the flagship campus. The campus is finalizing a Student Experience Master Plan process that solicited student and staff input and will identify and make recommendations on the most impactful and cost effective improvements. The proven and established campus strategy of revitalizing core campus buildings will continue to provide impacts to the student experience and provide corresponding reductions to deferred maintenance in several post war era buildings.

The overall STEM facilities renewal plan also continues a program of renovations and upgrades to existing research and related spaces with significant corresponding reductions to deferred maintenance. A number of existing approved projects will create backfill laboratory and office space that can be more cost effectively renovated once vacant to resolve existing space deficiencies or accommodate faculty renovations. The campus also has one and one-half floors of shell space that will remain in the Life Science Laboratories once existing approved projects are completed and this space can be fit out to accommodate high priority needs.

The campus continues to complete a number of smaller energy efficiency related projects. The Biennial Plan identifies continued investments in larger projects to provide cost effective improvements to the campus utility and related infrastructure. The campus completed an energy master plan that helped identify the most important and impactful areas of investment including additional boiler or co-generation fit-out at the Central Heating Plant and energy efficiency improvements in existing buildings.

The Biennial Plan continues a focus on deferred maintenance and infrastructure in almost all projects as discussed in more detail below.

IV. Deferred Maintenance

The flagship campus has been focused on deferred maintenance in its capital planning process for over fifteen years. The campus continues to work with Sightlines LLC as a strategic advisor in the review and monitoring of deferred maintenance. The strategy has involved systematic reductions through new construction and demolition, adaptive reuse and specific projects directly targeted as deferred maintenance. The campus has reduced deferred maintenance by over \$400 million over just the last 5 years. The campus continues to utilize data from Sightlines to guide deferred maintenance decisions including recommendations from the most recent building portfolio analysis. The FY15 Sightlines report identified the top 10 buildings with the highest needs. Many existing and planned projects are aimed directly towards reductions in these buildings.

Although the campus has made significant progress in reducing the deferred maintenance backlog, total identified needs of Sightlines remains at a relatively high level of approximately \$1.6 billion including educational & general, housing and auxiliary building needs. The campus also has a greater percentage of identified needs in the 1-3 year timeframe than the University System and Sightlines database. Sightlines reports that nearly \$900 million or approximately 73% of Amherst campus identified needs are in the 1-3 year timeframe, compared to 67% and



51% for the University System and Sightlines building portfolio systems database, respectively. Although it is not financially feasible or reasonable for the campus to undertake projects to completely reduce this magnitude of deferred maintenance in a 3 year planning timeline, the campus would realize continued significant reductions to deferred maintenance through most projects on the biennial plan.

The most recent Sightlines report identified the top 10 highest need buildings. The existing approved projects or the priority projects included in our Biennial Plan address these top priority buildings. The DuBois Library has received over \$30 million of deferred maintenance work in recent years, with work continuing into FY17. These deferred maintenance projects enable more effective programmatic renovations to spaces in the library, for example the writing program and image library renovations that will be completed in FY17. Lederle and Morrill science complexes have received minimal debt funded upgrades to the most critical building system needs in recent years. However, state funding earmarked in the higher education bond bill for both complexes is critical to addressing top priority needs that are negatively impacting academic and research operations. A number of other buildings identified with top needs will be addressed through instructional facilities improvements and STEM facilities renewal projects. In addition, Bartlett Hall which has the fifth highest amount of deferred maintenance on campus, is planned to be demolished during this planning period. The Biennial Plan also addresses priority deferred maintenance in other buildings and in campus infrastructure. For example, Hills House will be demolished with a significant corresponding reduction to deferred maintenance.

With nearly one-third of the campus facilities in residential structures and much of it aging and programmatically obsolete, the campus is developing a strategy to move forward with a long term comprehensive upgrade for the campus' housing stock, including options for public/private partnerships. Housing continues to make relatively small investments in top priority deferred maintenance, but a larger systematic approach will be necessary.

The Biennial Plan includes a number of projects earmarked in the environmental bond bill, which support important field stations including the Cranberry Station and the Center for Urban Sustainability in Waltham. These projects would have a significant impact on deferred maintenance in these locations.

V. *Affordability*

All the approved capital projects are fully built into the five-year operating budget. Due to modest increases in the State Appropriation and the desire to keep student tuition low, there isn't enough room in the budget to fully fund the projects in the Biennial Plan without funding from the state. Projects have been built into the model through FY21 through a combination of funding from gifts, campus general operating funds, debt and the state.

The campus is required to produce a positive operating margin and the impact of depreciation and interest on the bottom line doesn't allow for many of the Biennial Projects to be completed without state support. The debt ratio increases to over 7.0% in FY20, but debt service is expected to peak in FY20 and then decline in FY21-23. The viability ratio and financial cushion remain steady throughout the five-year forecast as net assets, debt and expenses all increase at a similar rate.



VI. Other

The Amherst campus is working with UMBA to facilitate a request for information to solicit formal input from potential developers interested in providing public-private partnership services. The campus is interested in a variety of development opportunities that support the campus strategy objectives and capital planning needs and the request for information will identify key areas of interest from the market. Any potential project is expected to include some form of an on-campus mixed use facility. The respondents will be responsible for market research to determine the economic viability of each potential mixed-use component. The potential program includes student housing, retail and other revenue generating programs.



BOSTON





Section 1. Introduction and Overview of Campus Capital Plan

The University of Massachusetts Boston FY17-FY21 Capital Plan reflects the consistent effort to support the university's Strategic Plan both by implementing some of the major projects identified in the 2009 Campus Master Plan and through other capital projects designed to correct deficiencies in the campus facilities infrastructure. The Capital Plan embodies the university's best effort to balance the need to improve academic facilities for current students and faculty and reduce the high density of the campus; continue inroads into the daunting backlog of Deferred Maintenance needs; and provide a modern utilities infrastructure and surface improvements, in order to eliminate a major current risk to campus operations by relocating utilities from the Substructure, future development and to better integrate the university's campus into the wider Columbia Point community.

The 2009 Campus Master Plan was prepared under the auspices of the Division of Capital Asset Management and Maintenance (DCAMM) following a process involving many months of careful study of existing conditions and present and future requirements, deliberation over options, and consultation with a wide range of stakeholders. Key elements of the Master Plan, such as the decision to demolish and replace the Substructure and Science Center while endeavoring to prolong the useful life of other 1970s buildings and accommodate the construction of new academic and residential buildings, have guided all of the university's subsequent Capital Plans, including this one.

The most striking aspect of this Capital Plan is the extent to which it reflects the university's efforts to cope with unavoidable circumstances inherited from the past, rather than its efforts to pursue its chosen goals for the future. The legacy of issues surrounding the original construction of the campus (documented in the *Final Report to the General Court of the Special Commission Concerning State and County Buildings*, also known as the "*Ward Commission Report*") continues to impose enormous and complex burdens and consume an inordinate share of our capital resources: funds that should be available to improve and expand the teaching and research facilities that our students and faculty deserve instead continue to be diverted to addressing critical infrastructure issues created by fundamental problems with the design and construction of the campus in the 1970s, and the inadequate response to those conditions in subsequent years.

Paradoxically, with the passage of time the magnitude of this inherited burden has increased rather than decreased. To cite three primary examples:

- This Capital Plan envisions the need to spend at least \$150 million to demolish the crumbling two-level Substructure that underlies most of the original campus, along with the huge outmoded Science Center and the Clark Pool building.
- This Capital Plan incorporates a 31% increase in the \$177.7 million budget of the Utility Corridor and Roadway Relocation Project (Master Plan Phase I), or UCRR, bringing the total cost of this work—which is essential to avoiding catastrophic utility failure, enabling other building projects, and transforming the layout and appearance of the campus—to \$233.5 million. A significant portion of this increase is due to the discovery of asbestos in the soil on campus. This discovery means that much of the excavated soil that would have been used to backfill utility trenches cannot be reused for that purpose and must



be disposed of at a landfill facility specially designed to handle asbestos. New clean fill material must then be purchased to backfill the utility trenches.

- This Capital Plan proposes to spend \$93.7 million to Construct New Public Safety, Athletics, and Garage Facility (Master Plan Phase I), required primarily to replace parking capacity lost when the deterioration of the Substructure forced the closure of its garage 10 years ago, and the replacement surface parking lots subsequently had to be closed to accommodate the space needs of the UCRR and the siting of University Hall and Residence Hall 1

Not surprisingly, finding the resources to meet needs such as these has necessitated a severely restrictive approach to the other pressing claims on the university's limited capital resources:

- This Capital Plan reflects the decision to scale back by 40% the major project to repurpose and modernize teaching and other academic space in two of our original buildings, while still addressing some of those buildings' essential Deferred Maintenance needs in the process. The budget of the Renovations to Existing Academic Buildings (McCormack Hall and Wheatley Hall) (Master Plan Phase I), or REAB, project has been downsized from \$75 million to \$45 million, and as a result \$30 million has been made available for redeployment.
- This Capital Plan also downsizes or defers 11 smaller projects—ranging from \$450,000 for waterproofing the Plaza above the two lowest levels of the Healey Library building, to \$8.2 million for the installation of sprinklers and other fire protection improvements in Healey—and thereby allows for the redeployment of a total of \$24.75 million borrowed for these projects to help meet our most pressing infrastructure demands.

Moreover, the need to devote so much of the university's affordable debt service capacity now and for the next several years to UCRR and other infrastructure needs originating in the past has seriously diminished our ability to pursue plans to meet our future needs that were integral parts of the 2009 Campus Master Plan and previous Capital Plans. The State's commitment to constructing the \$100 million General Academic Building 2 (GAB 2)—whose modern classroom, laboratory, and academic office spaces were programmed in large part to enable the growing College of Nursing and Health Sciences to vacate the old Science Center—has been put on hold for the past two fiscal years. Now, in light of the potential cost of the demolition of the Substructure, Science Center, and Clark Pool—which also has been generally recognized as a State responsibility—the future of a State-funded GAB 2 seems even less certain. Yet the university's own ability to assume the funding burden for it is not such that we can include it in this Capital Plan as a university-funded project. This creates the potential for a crippling disruption of the university's plans to provide adequate facilities for its current enrollment, let alone begin to support the expanded enrollment on which our long-term financial solvency and institutional progress depend.

While we have left six presently de-funded projects on this Capital Plan in the status labeled "Contingent on Funding," we have withdrawn outright several other key future elements of the Campus Master Plan, including Parking Garage 2, Residence Hall 2, General Academic Building 3, and substantial renovations in the Healey Library and Quinn Administration buildings. Finally, it must be noted that the portion of the Campus Master Plan that has been



embodied in this and previous Capital Plans represents the first stage of our overall program to redevelop the campus, which concentrates on infrastructure, academic, and residential facility needs. The second stage, envisioned to concentrate on enhanced and expanded student life-related spaces, athletics facilities, and additional academic building to support increased enrollment and programmatic growth, is nowhere reflected in this Capital Plan. The university has budgeted just \$200,000 for a preliminary study of needs in this area.

The university's FY17-FY21 Capital Plan comprises 26 projects with a combined Total Project Cost (TPC) of \$1,198.6 million. We have broken out the projects into five categories intended to clarify the challenges to which the Plan's resources are devoted. Aggregating projects into these five categories, the following table provides a high-level summary display of the Plan's overall funding by source and spending by fiscal year.

**University of Massachusetts Boston
FY17-FY21 Capital Plan
Project Funding by Source and Spending by Fiscal Year**

Primary Category of Need Addressed by	Number of Projects	Projected Funding of Projects (millions), by Source of Funds						
		Total *	Local	External	Borrowed	State	Contingent on Funding	P3 *
Substructure and Related Issues	12	\$968.0	\$18.5	\$7.5	\$510.0	\$178.1	\$253.9	
Other Original Construction Quality Issues	2	\$11.7			\$10.4	\$1.4	\$0.0	
Other Life/Safety and Code Compliance Needs	4	\$16.7			\$2.5		\$14.2	
Other Deferred Maintenance Needs	2	\$13.6	\$3.3		\$8.6	\$1.6		
Other Teaching & Research and Student Life	6	\$188.6	\$17.0		\$28.5	\$10.0	\$17.5	\$115.6
Total *	26	\$1,198.6	\$38.9	\$7.5	\$559.9	\$191.1	\$285.6	\$115.6

Primary Category of Need Addressed by	Number of Projects	Projected Spending on Projects (millions), by Fiscal Year						
		Total *	Pre-FY17	FY17	FY18	FY19	FY20	FY21
Substructure and Related Issues	12	\$968.0	\$405.2	\$175.6	\$146.6	\$71.1	\$94.5	\$75.0
Other Original Construction Quality Issues	2	\$11.7	\$7.2	\$1.5	\$3.0			



Other Life/Safety and Code Compliance Needs	4	\$16.7	\$0.1	\$2.4		\$3.7		\$10.5
Other Deferred Maintenance Needs	2	\$13.6	\$0.2	\$4.6	\$7.5	\$1.2		
Other Teaching & Research and Student Life	6	\$188.6	\$9.3	\$53.0	\$87.9	\$21.0		\$17.5
Total *	26	\$1,198.6	\$422.0	\$237.1	\$244.9	\$97.0	\$94.5	\$103.0

* Includes \$115.6 million in P3 (public-private partnership)—not university—funding and spending for the New Residence Hall 1, to be located on the university’s campus but constructed and managed independently.

Projects Driven by Substructure and Related Issues

Twelve of the 26 projects that remain on the Capital Plan, and almost 81% of the spending (\$968 million), are devoted to addressing issues that derive directly or indirectly from the deterioration of the Substructure and the need to demolish it along with the Science Center and Clark Pool. The major projects are:

- Construct New Integrated Sciences Complex (Master Plan Phase I), or ISC This state-of-the-art scientific laboratory and academic office facility—the university’s first academic building to be constructed in 40 years—has had a phased opening starting in Spring 2015 as work to finalize construction has continued. It is allowing space to be vacated in the Science Center and also in Wheatley and McCormack Halls, which in turn should enable further Science Center space to be vacated. Targeted for completion September 2016.
- Construct New General Academic Building 1, University Hall (Master Plan Phase I) Our second new academic building, providing state-of-the-art performance, laboratory, classroom, and academic office space, has had a phased opening starting in Spring 2016 as work to finalize construction has continued. It is allowing space to be vacated in the Science Center and also in Wheatley and McCormack Halls and Healey Library, which in turn should enable further Science Center space to be vacated. Targeted for completion September 2016.
- Construct New Public Safety, Athletics, and Garage Facility (Master Plan Phase I), or PSAG This 1,400-space garage will provide the university’s commuter campus with replacement of a substantial portion of the parking capacity lost when the Substructure was forced to close 10 years ago, and the surface lots created then have subsequently been closed due to needs of UCRR and other construction projects. It incorporates new facilities for Public Safety, a multi-purpose space to function as an Emergency Operations Center and support events and meetings, and baseball locker rooms located near the new Monan Park field on the Boston College High School campus. The relocation of the Department of Public Safety is necessitated by the demolition of the Substructure, as it would be left in a location at least a floor above ground level with no direct vehicle or pedestrian access route. Cost estimated at \$93.7 million. Targeted for completion January 2018.



- Utility Corridor and Roadway Relocation Project (Master Plan Phase I), or UCRR This major public works project is the principal enabling effort to both protect campus operations from catastrophic utility failure due to the deterioration of the Substructure and allow for the Substructure's demolition, establishing a modern mechanism for providing utilities to all main campus buildings and building sites, completely revamping roadways and walkways, and opening and humanizing the campus. Revised cost estimated at \$233.5 million. Targeted for completion March 2018.
- Renovations to Existing Academic Buildings (McCormack Hall and Wheatley Hall) (Master Plan Phase I), or REAB This complex project will repurpose and upgrade portions of Wheatley and McCormack Halls, including space vacated as research and teaching lab and office functions have relocated to the ISC and University Hall, and will accomplish some related Deferred Maintenance work in these 1970s structures. Renovated space should enable additional Science Center space to be vacated. Revised budget of \$45 million. Targeted for completion September 2018.
- Construct New General Academic Building 2 (Master Plan Phase I) Planned to provide state-of-the-art classroom, laboratory, and academic office space, allowing space to be vacated in the Science Center, primarily by the growing College of Nursing and Health Sciences. Cost budgeted at \$100 million; previously committed State funding uncertain. Targeted for completion December 2019.
- Demolish Substructure, Science Center, and Pool (Master Plan Phase I) The demolition will remove a major risk to the safety and operation of the campus and provide the key step in transforming the campus by removing huge, deteriorated, outmoded 1970s structures and opening up the central quadrangle. The DCAMM study has yielded preliminary estimates for all work associated with this effort that exceed \$200 million. Stringent efforts to confine the scope to work essential to removing the old structures and providing the university with a usable vacated central quadrangle area fronted by structurally secured and properly enclosed buildings is expected to reduce the cost to \$150 million. Targeted for completion December 2020.
- Another five projects with a combined estimated cost of \$29.8 million are included in the Plan to:
 - enable the demolition by providing new facilities for the relocation of functions out of these two buildings (Relocate Pool Facility due to Demolition of the Existing Pool (Master Plan Phase I); Relocate Campus Greenhouse due to Demolition of the Science Center (Master Plan Phase I); Service and Supply Building: Reconfigure and Renovate to Increase Assignable Space; and
 - replace parking and athletic facilities lost due to the needs of UCRR and other demolition-enabling construction (Demolish UMass Bayside Buildings and Improve Parking Lot (Master Plan Phase I); Relocate Soccer/Lacrosse Field (Master Plan Phase I)).

Projects Driven by Other Original Construction Quality Issues

Two projects address long-standing needs that now present similarly to Deferred Maintenance, but which derive from problems with the original construction quality of this campus's buildings in the 1970s rather than the typical delayed reaction to building systems past their useful life having to be replaced. For example, during the current Healey roof and envelope project work to correct long-standing water intrusion problems plaguing the building, it was discovered that



none of the concrete masonry unit (CMU) walls of the four mechanical penthouses or the six- to ten-foot high parapet walls had ever been waterproofed.

- Healey Building: Roof Replacement and Building Envelope Repairs \$8.2 million project. Completion anticipated in September 2016.
- McCormack Hall: Roof Replacement and Building Envelope Repairs \$3.5 million estimated cost. Targeted for completion March 2018.

Projects Driven by Other Deferred Maintenance Needs

Two other projects to address significant Deferred Maintenance needs are now underway, under the management of the University of Massachusetts Building Authority (UMBA):

- Clark Athletic Center: Replace Gymnasium Roof and East Curtain Wall and Repair Rink South Façade This project will replace a long-outdated spray-on roof above the Gymnasium (whose floor and bleachers were replaced in FY14 at a cost of nearly \$2.5 million) and repair two deteriorating and potentially hazardous exterior wall areas of the Clark complex. Budgeted at \$5.25 million, including \$1.625 million in Deferred Maintenance funding from DCAMM. Targeted for completion August 2017.
- Elevator Renovations in Clark Athletic Center, McCormack Hall, Quinn Administration Building, and Wheatley Hall Four campus buildings still have their original passenger and freight elevators, which are long past their useful life and increasingly expensive and problematic to maintain, as many parts no longer are available from the manufacturers and must either be manufactured or scavenged from other locations. This project will replace these with safe, efficient, code-compliant new elevators. Revised cost estimate \$8.3 million; DCAMM Deferred Maintenance funding has been requested to help defray this. Targeted for completion August 2018.

Projects Driven by Other Life/Safety and Code Compliance Needs

Four projects in the Capital Plan are intended to address other life/safety and code compliance issues. Only the first of these is being pursued actively at this time; the others have been deferred temporarily, and any funds available for them have been redeployed to help meet other even more pressing needs.

- Fox Point Dock: Upgrades and ADA Accessibility This project will upgrade the Fox Point Dock to be fully accessible, and make other improvements to address issues that have led to storm damage in past weather events. It had been included in the FY14-FY18 Capital Plan, and was then moved to the university's pool of funding for projects each with estimated cost of less than \$2 million. Recent developments have increased its estimated cost to \$2.5 million, and because it utilizes borrowed funds, it now reappears in this Capital Plan.
- Healey Building: Install Fire Sprinklers and Replace Fire Alarm System and Fire Pumps The Healey Building (containing 12 occupied floors, devoted primarily to the university's Library, but utilized also for a wide range of instructional, research, and student life purposes) does not have a fire sprinkler system, and the fire alarm system is in need of an upgrade to an addressable system. It will not be possible to renovate space in



Healey Library without addressing the lack of fire protection. This project has been postponed indefinitely, and its \$8.2 million of borrowed funds redeployed.

- Clark Athletic Center: Install Fire Suppression System and Upgrade Fire Alarm System
The Clark Athletic Center does not have a fire suppression/sprinkler system and the fire notification/alarm system is in need of an upgrade to an addressable system. This project has been postponed indefinitely, and its \$3.7 million of local funds redeployed.
- Service and Supply Building: Install Fire Suppression System and Upgrade Fire Alarm System
The Service and Supply Building, which houses large storage areas, a vehicle garage, and the main loading dock, does not have a fire sprinkler system and the fire alarm system has reached the end of its useful life. As space within the building is repurposed to create new assignable space, upgrades to the fire protection systems will be necessary. This project has been postponed indefinitely, and its \$2.3 million of borrowed funds redeployed.

Projects Driven by Other Teaching & Research and Student Life Program Needs

This Capital Plan includes only six other projects intended to address the university's wide range of needs for improved and expanded physical resources in the areas of teaching and research and student life.

Two of these projects are among the ones that have been deferred temporarily, and any funds available for them have been redeployed to help meet other even more pressing needs:

- Campus Center: Build Out Parking Garage Space as Assignable Space (Master Plan Phase I)
A portion of the existing Campus Center garage was constructed in such a way as to be convertible to useable space. This area is seen as needed to increase assignable square footage and create space that will connect to the new campus quadrangle that will be completed with the demolition of the Substructure and Science Center. This project has been postponed indefinitely, and its \$5 million of borrowed funds redeployed.
- Healey Building: Renovations to Improve and Increase Student Learning Space, Phase I
This project will study and recommend ways to make the highest and best use of certain spaces in the Healey Library Building by renovating them for use as classrooms, specialized instructional spaces, study spaces, and other teaching, learning and research spaces; and will then design and undertake the renovations that are chosen. Preliminarily budgeted at \$12.5 million but not yet funded, this project has been postponed indefinitely.

Another project reflects continued utilization of State funding earmarked in the Life Sciences Bond Bill:

- Center for Personalized Cancer Therapy (Life Sciences Bond Bill Earmark) (Master Plan Phase I)
In conjunction with Dana Farber/Harvard Cancer Center, the Center for Personalized Cancer Therapy (CPCT), located in the Integrated Sciences Complex, focuses on creating individually crafted treatments for cancer patients. State funds are



being used to acquire specialized equipment and other resources needed by the CPCT. Budgeted at \$10 million.

The three remaining projects in this category are major integral aspects of the university's Campus Master Plan, intended to enhance the quality of the educational experience for students and increase enrollment by providing on-campus residential facilities, and to provide sufficient reliable utility capacity for those facilities and other campus buildings, both existing and new:

- Construct New Residence Hall 1 (P3 Project) (Master Plan Phase I) See Section 6 below for details of this project. Budgeted at \$115.6 million public-private partnership (not university) funds. Targeted for completion September 2018.
- Construct University Dining Facility in New Residence Hall 1 Located within the larger of the two buildings comprising the Residence Hall 1 complex will be a first floor commons that includes a dining facility serving the entire university community in addition to the residential students. This dining facility portion of the overall project is being university-funded separately from the public-private partnership (P3) project to develop and manage Residence Hall 1. The planned dining facility is intended to address university-wide food service demand that has surpassed the capacity of current campus facilities, as well as address food service needs associated with the addition of a residential cohort that does not currently exist on campus. Some of these additional needs include after-hours service, supporting meal plans to mitigate food-vulnerability, and cultivating community affiliation for first-year students living in residence. By being open to all faculty, staff, students, and campus visitors, this dining facility also will help to integrate the new residential cohort into the larger campus community. Cost estimated at \$18 million. Targeted for completion September 2018.
- Construct New Energy-Producing Facility (Master Plan Phase I) As part of the overall Master Plan process, DCAMM commissioned a Utilities Master Plan in order to identify the future utility needs of the campus. That report prepared in May 2010 and subsequent load calculations confirm that any new construction or major renovation after the completion of the ISC and University Hall will require the expansion of the university's centralized chilled and hot water capacity. As there is no available footprint in the existing Utility Plant to house this additional capacity, a new facility will be needed. The plant will utilize a natural gas fired combustion turbine generator (CTG) to produce approximately 5 megawatts of electricity to serve a portion of campus demand for electricity. This generating capacity will provide a second power source (in addition to the Eversource grid) to support critical electrical loads (e.g., research facilities, emergency response, housing, and dining facilities) during power outages or system failures in the distribution system serving the campus. Exhaust heat from the CTG produced as a by-product of electrical generation will be captured to produce hot water for distribution through the heating loop during the winter heating season and drive a steam absorption chiller to produce chilled water during the summer cooling season. Budgeted at \$27.5 million (not yet at phase 5 – Design). Targeted for completion September 2018.



Section 2. Project Status from FY15-FY19 Capital Plan

Projects Remaining on the FY17-FY21 Capital Plan

As described in the preceding section, 26 projects remain on the university's Capital Plan. Two of these technically are new projects, but actually represent work that had been reflected in the FY15-FY19 Capital Plan:

- Construct University Dining Facility in New Residence Hall 1 This work had been included as part of the overall project to Construct 1,000 Bed Residence Hall 1, including Dining Facility, but is now shown separately because the main project to Construct New Residence Hall 1 is being pursued as a public-private partnership in conjunction with Capstone Development Partners, LLC. The university will *not* be responsible for the development or management of Residence Hall 1, but *will* provide the funding for the university-wide dining facility planned to be located on the first floor of the larger of the two Residence Hall 1 buildings.
- Fox Point Dock: Upgrades and ADA Accessibility This work had been included in the pool of funding for projects each with an estimated cost of less than \$2 million. Recent developments have increased the estimated cost of this project to \$2.5 million, and because it utilizes borrowed funds it now appears in the Capital Plan.

Projects Removed from the FY17-FY21 Capital Plan

Twenty-seven projects included in the university's FY15-FY19 Capital Plan have been removed from this Capital Plan for the following reasons:

- Projects completed or substantially completed
 - Grounds: Sea Wall and Harborwalk Construction on North-Facing Shore
 - Secure or Demolish Bayside Expo Center Building and Initial Property Improvements (Master Plan Phase I)
 - Utility Plant System Expansion and Upgrades to Accommodate ISC and GAB Including New Chiller and Boiler (Master Plan Phase I)
 - Nantucket Field Station: Repairs to Field Station Buildings and Septic System and Gouin Village Apartment Repairs
- Projects no longer needed
 - Campus-wide: Information Technology Services Division Infrastructure Needs (addressed through operating budget)
 - Purchase or Lease Additional Swing Space to Accommodate Growth and McCormack and Wheatley Halls Renovations (Master Plan Phase I)
- Projects combined with or supplanted by other projects
 - Combined into Utility Corridor and Roadway Relocation Project (Master Plan Phase I):
 - Utility Plant Upgrades Related to Pumps, Controls, Heat Exchangers and Utility Corridor Reconfiguration (Master Plan Phase I)
 - Saltwater Pump House: Mechanical System Upgrades
 - Supplanted by project to Demolish Substructure, Science Center, and Pool (Master Plan Phase I):



- Central Quadrangle Development (Master Plan Phase I)
- New Public Art for Campus Green (Master Plan Phase I)
- Study New LL/UL Facades at Campus Center, Healey Building, McCormack Hall, Quinn Administration Building and Wheatley Hall, and Access to Buildings from Grade (Master Plan Phase I)
- Projects under \$2 million
 - Deferred Maintenance Projects Less Than \$2M Each (Aggregate)
 - Healey Building and Quinn Administration Building: Construct New Classrooms
 - McCormack Hall: Conversion of Vacant Cafeteria, Seryery, and Kitchen Space
 - Projects Other Than Deferred Maintenance Less Than \$2M Each (Aggregate)
 - Quinn Administration Building: Install Fire Suppression System and Upgrade Fire Alarm System
 - Relocate College of Science and Mathematics Machine Shop due to Demolition of the Science Center (Master Plan Phase I)
 - Relocate University Data Center due to Demolition of the Science Center (Master Plan Phase I)
 - Repair, and Study Replacement of, Catwalk (Enclosed Campus Walkway System) (Master Plan Phase I)
 - Study Substructure, Science Center, and Pool Demolition (Master Plan Phase I)
 - Substructure: Ongoing Inspection of Deteriorated Concrete and Temporary Remediation Measures
- Conceptual future projects without likelihood of funding within five years
 - Healey Building: Renovations to Improve and Increase Student Learning Space, Phase II
 - Construct +/- 1,200 Vehicle Parking Garage 2 (Master Plan Phase I)
 - Construct 1,000-Bed Residence Hall 2 / Development of Bayside (Master Plan Phase I)
 - New Academic Building 3 / Development of Bayside (Master Plan Phase II)
 - Quinn Administration Building: Renovations to Improve Building Space Efficiency
 - WUMB: Relocate WUMB Radio to New Facility

Projects with Cost Increases Exceeding 10%

This Capital Plan includes one project for which the current projected Total Project Cost exceeds by more than 10 percent the Total Project Cost that has received the full approval of the Board of Trustees. The cost of the Utility Corridor and Roadway Relocation Project (Master Plan Phase I), or UCRR, now is projected to increase from the approved level of \$177.7 million by \$55.8 million or 31%, to \$233.5 million.

UCRR is a complex horizontal construction project which, by its nature, possesses a number of characteristics which create significant potential for risk of delay and cost increases.

First, a major component of the project is the installation of a range of underground utilities (sanitary sewer, storm drainage, electrical service, tel/data duct bank, hot water and chilled water) involving deep excavation on a congested site. Unlike building construction, where construction risk generally is reduced as the building foundation is completed and construction



moves out of the ground, in this type of project the inherent risk of encountering unforeseen subsurface conditions remains throughout the duration of the project. This risk is further exacerbated by the presence of unsuitable and contaminated soils which are commonplace throughout the campus. Not only is much of the campus sited on urban fill, but portions of the site were once used as a land fill, containing contaminated and largely unsuitable material which cannot be re-used and requires specialized soil management.

Second, as the new utilities are installed they must be connected to existing utilities located underground or in the original campus buildings. The location of these utility connections has not been accurately known and/or the condition of the utilities has been far more deteriorated than anticipated, requiring additional scope to be added to the project. In addition, in order to make these utility connections in operating buildings, careful coordination with campus operations is required.

Third, the project possesses significant regulatory and permitting risk. The project is subject to extensive environmental permitting requirements, including Chapter 91, Conservation Commission, Public Improvement Commission, BWSC storm water discharge, as well as an array of Department of Environmental Protection regulatory compliance requirements related to the management of contaminated soils.

Fourth, because the project essentially encompasses the entire campus, it presents significant challenges related to the maintenance of existing operations. In building construction, it is typical for project boundaries to be defined and mitigation strategies established to provide the contractor with unimpeded access to the site. In the case of UCRR, this is a continuous process as the campus roadway and utility distribution systems have continuously been modified in various temporary configurations to permit construction to proceed. These temporary operations add cost and require careful coordination.

Finally, as the project experienced delays, development of the campus and adjacent properties—University Hall, Residence Hall 1, Edward M. Kennedy Institute (EMKI)—proceeded, and each of these development projects required modifications to the design of the UCRR, adding further costs and complexity.

Specific issues driving the delay and cost increase include:

- one-year delay associated with the shutdown of the project due to identification of asbestos fibers in soil, and delays in obtaining permits/regulatory approvals for certain elements of the project;
- significant increase in cost going forward to manage soils containing asbestos fibers, create final landforms on-site, and dispose of significant quantities of contaminated soils off-site that originally had been programmed to remain on-site in landforms; and
- change orders to accommodate a wide range of changed conditions, including unforeseen conditions encountered when connecting to existing campus utility systems, changes to accommodate EMKI, and changes and schedule acceleration to support the opening of University Hall.

The impact of future costs of management and disposal of soils still is not fully understood, but the current forecast is that project cost to complete will be approximately \$233.5 million



The university has responded to this unprecedented fiscal challenge by:

- applying \$50 million in State funding earmarked in the Transportation Bond Bill (St.2014 c.70) for transportation-related capital project work, including UCRR and HarborWalk, which represents \$25 million already received for pre-FY16 expenditures and \$25 million anticipated to be received in FY17 for pre-FY17 expenditures; and
- redeploying from other, less immediately critical projects, a total of \$20 million in borrowed funds, replacing \$14.2 million in planned Local funding and covering the remaining \$5.8 million gap in overall project funding.

Section 3. Planning Needs and Priorities

As noted in Sections 1 and 2, the FY17-FY21 Capital Plan proposes no substantively new projects.

Section 4. Deferred Maintenance

Sightlines' research during FY16 into the condition of the university's campus, which formed the basis of their subsequent Building Portfolio Solutions presentations, yielded a total of \$434 million in needs that met their definition of Deferred Maintenance, viz., work required for reasons of Reliability, Asset Preservation, or Safety/Code, and due presently or within three years.

As explained in the notes on individual projects in Sections 1 and 2, much of this Capital Plan is devoted to addressing these Deferred Maintenance issues. By definition, all but two of the 12 projects Driven by Substructure and Related Issues reflect spending that directly or indirectly contributes to the reduction of our Deferred Maintenance needs under the Reliability criterion. (Two of the projects Driven by Substructure and Related Issues have been indefinitely postponed, with their combined total spending of \$5 million now "Contingent on Funding.") The remaining 10 projects have combined total spending of \$963 million.

Five other projects also qualify under the Safety/Code or Asset Preservation criteria, with combined total spending of \$27.8 million:

- Healey Building: Roof Replacement and Building Envelope Repairs (\$8.2 million);
- McCormack Hall: Roof Replacement and Building Envelope Repairs (\$3.5 million);
- Clark Athletic Center: Replace Gymnasium Roof and East Curtain Wall and Repair Rink South Façade (\$5.25 million);
- Elevator Renovations in Clark Athletic Center, McCormack Hall, Quinn Administration Building, and Wheatley Hall (\$8.3 million); and
- Fox Point Dock: Upgrades and ADA Accessibility (\$2.5 million).

Thus a total of \$990.75 million, or almost 83%, of the spending in this Capital Plan, is for projects that directly or indirectly reduce our Deferred Maintenance burden.

The aggregate reduction in Deferred Maintenance need resulting from these projects is estimated at \$207.4 million, or approximately 48% of the total identified by Sightlines.



Section 5. Affordability

The university has made significant adjustments to planned capital activities, to ensure that our most critical projects remain on track and are sufficiently funded. Funds borrowed and local reserves previously slated for academic and athletic areas of the university have—reluctantly—been reallocated to extensive and expensive Substructure-related projects that have arisen in large part due to the adverse legacy of the campus’s original construction.

Based upon multi-year financial projections provided to the System Office on Friday, August 12, 2016, including a planned \$83.7 million FY17 financing to construct PSAG, the university’s projected Debt Service-to-Operating Expense ratios will remain well below the 8.0% cap over the next 10 fiscal years. Please see the following table.

UMass Boston Projected Debt Service Coverage Ratios by Fiscal Year										
2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5.13%	5.32%	5.62%	6.50%	7.22%	7.05%	6.49%	6.45%	6.34%	5.99%	6.12%

In what amounts to a stress test of sorts, if the university achieved System Office financial targets for fiscal years FY17 and beyond entirely by means of expense reduction, revised Debt Service-to-Operating Expense ratios (including the \$83.7 million PSAG financing) would rise but remain under the 8.0% cap for nine out of the 10 years, reaching 8.0% only in FY20.

Please see the following table.

UMass Boston Projected Debt Service Coverage Ratios by Fiscal Year										
2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5.21%	5.76%	6.06%	7.15%	8.00%	7.60%	7.12%	7.00%	6.82%	6.14%	6.10%

Section 6. Other

The university's Strategic Plan identifies the addition of residence halls as a critical student success initiative, focused on improving student retention and graduation rates. The overall Residence Hall 1 project is being developed through an alternative procurement process, under a public-private partnership (P3) model. The competitive RFQ/RFP process to select a private developer for the project resulted in the selection of Capstone Development Partners, LLC (Capstone), a national leader in the development of student housing.

Since June 2015, UMBA and university personnel have worked with Capstone and its team, including Elkus Manfredi Architects and Shawmut Construction, to design and program an approximately 1,076-bed, 263,000-gross square foot residence hall project to be located on the university’s campus. In addition to 1,076 beds—provided in a mixture of unit types from single



to four-person, with private and community bathrooms—the project will house approximately 30,000 gross square feet of “commons” space on the first floor, which will include a dining hall (to be financed separately with University funds) and Living/Learning space. These “commons” facilities will be open to the entire university community, and are intended to enhance the sense of community as well as support the project goals of positively impacting resident students’ retention rates, academic progress, and overall well-being.

The P3-funded Residence Hall 1 project TPC is \$115.6 million, and the university-funded University Dining Facility TPC is \$18 million. Completion is targeted for September 2018.

The university will supply the facility with utilities; university Student Affairs staff, resident directors and resident assistants, will work and live in the facility to support our students; and the university’s Department of Public Safety will provide security support and emergency response services for the facility.

The project will be owned by Provident Commonwealth Education Resources, Inc. (PCER), a newly-formed Massachusetts not-for-profit corporation. PCER will enter into a long-term ground lease with UMBA for the property on which the project will be constructed. PCER will finance the Project via a tax-exempt, 30-year bond issuance by the Massachusetts Development Finance Agency (MDFA) and contract with Capstone to construct the project. PCER will engage an independent management company, Capstone On-Campus Management (COCM), to maintain and operate the facility. The debt issued to finance the Project will be an obligation solely of PCER, with no recourse to the university, UMBA, or UMass as a whole.



DARTMOUTH



I. Introduction and Overview of Campus Capital Plan



Figure 10 : Charlton College of Business Expansion

UMass Dartmouth is pleased to submit its FY17-FY21 Capital Plan, which identifies eighteen projects valued at \$513 million that are necessary to advance the university's mission of teaching, research and engagement.

This plan reflects the goals of the university's 2014 strategic plan, UMassDTransform2020:

Goal 1: Innovative and High-Impact Research and Academic Programs

Goal 2: Integrated Student-Centered Experiences

Goal 3: An Active and Engaged University Community Focused on Excellence in Research, Scholarship, and Innovation

Goal 4: Highly Productive Collaborations, Partnerships, and Community Engagement

Goal 5: Infrastructure and Processes in Support of Excellence

This plan presents a realistic approach to the university's ongoing challenges with restoring the physical assets of a campus that was nearly entirely built five decades ago, and is consistent with our goal to provide our students with the same high quality facilities that their peers at other campuses enjoy, and to equip our faculty with the world-class research resources that befit the university's recent ascension to doctoral research status.

This plan represents a more focused and entrepreneurial approach compared to previous plans by:

-- recognizing the urgency of repairing and modernizing existing core campus facilities, including classrooms, laboratories, student gathering places and campus life facilities.



- building on significant progress made over the last five years, including the renovation and expansion of the Claire T. Carney Library, renovations of science and engineering laboratories, addition of classrooms and lecture halls to the Charlton College of Business, and development of a co-generation power plant and related energy-saving projects.
- advancing enduring community partnerships that are a substantive part of our university's rich legacy as a regional anchor institution with an obligation to support the economic, social and cultural development of the region. Nowhere is this commitment more pronounced than in the \$55 million expansion of the School for Marine Science and Technology in New Bedford in collaboration with the state Division of Marine Fisheries.
- exploring the feasibility of public-private partnerships to ease the cost burden on students.
- focusing construction on projects with revenue generating potential either through increasing enrollment or provide the necessary swing space to allow renovation of existing facilities.
- maintaining our commitment to the safety of our students, faculty and staff.

II. Project Status Update from FY15 Plan

The campus has made significant progress on the projects prioritized in the FY 17 Capital Plan Update.

Completed / Substantially Completed Projects:

- **FY17 N/A - Energy / Water Savings Project (FY15 #3):** The \$40M Energy Performance Project implemented by NORESO and managed through the DCAMM was a two phased infrastructure upgrade program aimed at improving the performance and efficiency of mechanical, electrical and plumbing systems while reducing the University's operating expenses and carbon footprint.
 - Phase I – Included eighteen energy conservation measures to address energy and water savings opportunities, the retrofit of existing lighting fixtures with new energy efficient lamps and ballasts, HVAC system upgrades and replacements, installation of new building management controls and major improvements to the plumbing infrastructure. The phase of the project is complete and is now in the performance phase.
 - Phase II – The construction of the 1.67 MW Kawasaki gas turbine based cogeneration system. The gas turbine generator generates electricity to UMass-Dartmouth's electrical grid and hot gas exhaust to a Heat Recovery Steam Generator to produce steam for the campus.
- **FY17 #8 - Research Laboratory Improvements (FY15#4):** A \$13M program focused on upgrading existing research and teaching laboratories throughout main campus. The University needs to provide appropriate and flexible research space to support the strategic initiative of growing the research base and fulfill its' obligations to the Commonwealth and



region as the only research university south of Boston. Complete projects within this program include:

BioEngineering Teaching Labs – Textile 220 and 224 - \$1.2M Renovation: Constructed a 'Wet Lab' to provide instruction in areas using chemicals and biological elements and a 'Dry Lab' to provide instruction in advanced instrumentation and computational areas. **Completed in FY14;**

Biology Research Cold Lab – Violette 106 - \$281K Renovation: Constructed a refrigerated area to hold trout to support the Bromage research group's interest in immunological research in conjunction with the work performed in the newly renovated Biology Research Lab – SENG 327. **Completed in FY14;**

Computational Science Lab – Textile 105 - \$350K Capital renewal: The Center for Scientific Computing & Visualization Research focuses on computationally-driven research that addresses the pressing needs of modern engineering, mechanics, fluid dynamics and electromagnetics. **Completed in FY14;**

Elisabeth A. Pennington Simulation Laboratory - Dion 205 - \$1M Renovation: The new SimLab offers students and faculty in UMass Dartmouth's College of Nursing an experimental learning environment designed to prepare future nurses with the equipment and experience necessary to practice basic and advanced nursing skills. The lab contains hospital beds, advanced lab equipment, and adult and pediatric mannequins, including "SimuMan" who has a beating heart, bodily functions that can be measured, and who can be programmed by the faculty to do a variety of things that require expert nursing intervention. This variety of simulation equipment and mannequins allows for skill specific development, accompanied with technology capturing video footage for better instruction. **Completed in FY15;**

Biology Research Lab – SENG 327 - \$1.41M Renovation: Modern Biology research lab for the Silby research group that is primarily focused on microbial genetics and genomics research and the Bromage research group that is primarily focused on immunological research at the protein and genetic level. **Completed in FY15;**

Textile / SENG – Emergency Generator – \$745K Infrastructure Project: Installation of emergency power to support critical research infrastructure such as refrigerators, freezers, fume hoods, biological safety cabinets, emergency lighting, exhaust fans, animal facilities and environmental rooms. **Completed in FY15;**

BioEngineering Research Labs – Textile 229 and 230 - \$1.7M Renovation: Constructed in parallel with BioEngineering Teaching Labs to create a cluster focused on engineering sciences, life sciences, bioresearch and material design. The Brigham research group is focused on microbial biosynthesis of value added products and repurposing high carbon content waste streams, specifically agricultural and food processing effluents. The Vasudev research group interests are bioinspired nanomaterials, studying the interactions of nanostructures with biological materials, vapor phase deposition of



nanomaterials, real-time chemical and biological sensors and nanobioelectronics.
Completed in FY16;

Chemistry Research Lab – Violette 203 - \$1.65M Renovation: Constructed a modern Chemistry research lab. The Guo research group, is focused on the interface between chemistry, biology and medicine. Using a multi-disciplinary approach including molecular biology, protein chemistry, synthetic and electro-chemistry, spectroscopy (NMR, UV-vis, CD, fluorescent, etc), chromatography and X-ray crystallography to investigate the molecular basis of certain genes, proteins, metal ions and signal transduction pathways related to cancer, aging, infectious, cardiovascular diseases and neurodegenerative disorders. The research goal is to understand the molecular basis of these biochemical processes and to develop novel strategies for diagnostics and therapeutics. The Rasapalli research group, with research interests that lie in the general area of medicinal chemistry with a focus on the development of new strategies for the preparation of complex molecules possessing interesting biological properties. **Completed in FY16;**

Chemistry Research Lab – Violette 206|207|208 - \$1.8M Renovation: Constructed a modern Chemistry research lab. The Cappillino research group is interested in several areas of energy research including grid-scale energy storage, electrocatalysis, and heterogeneous catalysis. His areas of expertise include molecular and solid state inorganic chemistry, meso- and nanostructured materials, electrochemistry, surface chemistry, and bioinorganic chemistry. The Manke research group is a synthetic inorganic chemistry lab focused on the synthesis of solid materials for separations and discreet transition metal complexes for small molecule activation. The group emphasizes Schlenk & glovebox techniques, and solvothermal syntheses. **Completed in FY16;**

Textile 2nd Floor Laboratories Mechanical Infrastructure - \$462K Infrastructure Project: Installation of appropriate mechanical equipment to support the BioEngineering teaching and research laboratory cluster. **Completed in FY16;**

- **FY17 #9 – Classroom, Teaching Laboratory and Learning Space Improvements (FY15 #5):** A \$5M program to provide capital renewal to learning spaces. A task force compiled a prioritized list to address the largest in terms of capacity and most frequently used classrooms. Highlights of this program include:

Main Auditorium - \$310K Capital Renewal: Seat replacement. **Completed in FY14;**

Claire T. Carney Library Lecture Halls 205, 206, 207 - \$241K Capital Renewal: (3) large lecture halls included new seating, table tops, carpet and power to table tops. Facilities Operations installed new LED lighting. **Completed in FY15;**

LARTs Language Lab – \$250K Capital Renewal: Renovation of learning space module to a flipped learning environment. The Foreign Language Lab media center is committed to promoting and facilitating the acquisition of language skills by providing services and assistance that will foster the development of communicative competency in a foreign language. **Completed in FY15;**

SENG Lecture Hall 115 – \$62K Capital Renewal: 65 person tiered classroom to include new seating, table tops, carpet and AV technology. **Completed in FY15;**

CVPA Lecture Hall 153 – \$150K Capital Renewal: 200 seat amphitheater new seating and carpet. **Completed in FY16;**

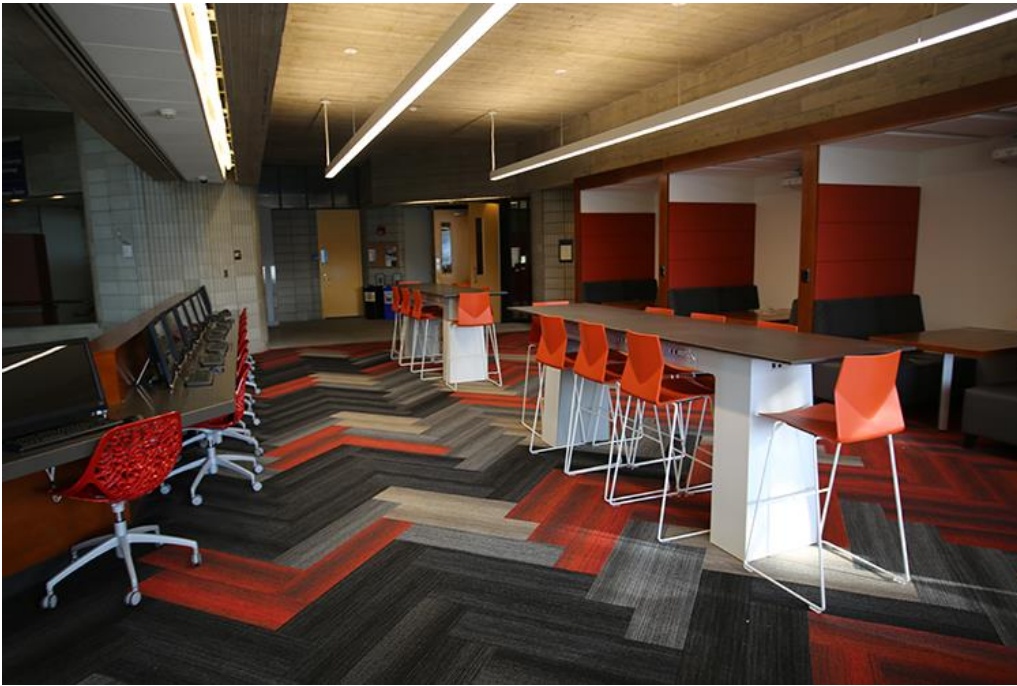


Figure 11 : LARTs Learning Commons

LARTs Learning Space Revitalization – \$1M Renovation: Several spaces in LARTs including the Reading / Writing Center and the development of a new Learning Commons. Incorporating lessons learned from the very successful Library renovation the new LARTs Learning Commons introduced collaborative and technology enhanced spaces into an unrestrictive student environment and has been well received. This included new space for the marketing department. **Completed in FY16;**

LARTs Lecture Halls 104, 117 – \$200K Capital Renewal: (2) large lecture halls included new seating, table tops, carpet and power to table tops. **Completed in FY16;**

SENG 311 – Chemistry Computational Lab - \$150K Capital Renewal: Provide students with sufficient information technology and software to be able to utilize modern computational tools and methods for design projects. Supports the Myes research group. **Completed in FY16;**

These types of projects make immediate gains in the student learning experience and classroom renovations result in better, more efficient classroom utilization.



Ongoing Projects:

- **FY17 #8 - Research Laboratory Improvements (FY15#4):** One additional project within this program is currently under construction:

Biology Research Lab – Violette Research Addition 209 - \$810K Capital Renewal: Modern Biology research lab for the Moisander research group that is primarily focused on Marine microbial ecology, diversity, distributions, and activity of marine microbes contributing to nitrogen fixation, and other microbially mediated transformations of nitrogen. Under construction scheduled for completion Fall-2016.

- **FY17 #2 – Charlton College of Business, Learning Pavilion (FY15 #7):** The Charlton College of Business 22,000 square foot 'Learning Pavilion' started construction in July of 2015, has proceeded on schedule and the project is projected to be in operation and in a position to host classes for Fall 2016. The new state-of-the art facility's design intention is to create a home for students and offer the best teaching and learning resources available. The expansion will serve the campus in providing the Charlton College of Business the capacity to fulfill classroom needs for current and future enrollment, undergraduate and graduate student lounge spaces and non-traditional learning style facilities. This facility contains critically needed space including classrooms, meeting spaces, an auditorium, and technology enhanced areas. The Learning Pavilion is to be an architectural 'gateway' providing a clear accessible entry point to the inner academic campus from the adjacent parking lots. The expansion will:
 - Promote a sense of community and enhance the overall student experience.
 - Encourage meaningful interactions between faculty and students via seminar rooms, public spaces, technology labs and general classrooms with proximity close to faculty offices.
 - Provide a front door to the existing facility which currently feels isolated and provide visibility for the Charlton College of Business.
 - Provide space for large meetings in an auditorium with a capacity of 150 people. This space will allow the Charlton College of Business to host events within its own building and meet a critical university-wide need for more rooms with a capacity larger than 100.
 - Elevate the college's standing among other academic institutions in the region, and in the eyes of potential students, parents, recruiters, and the business community.
 - Enhance the graduate programs by providing space that accommodates the particular needs of students such as teamwork space, expanded technology facilities and web-based data outlets.
 - Allow the University to maintain competitive positioning and meet increasing expectations from consumers and stakeholders. To stay competitive, business schools must pursue higher standards across all dimensions including those that are impacted by space and infrastructure.

The project was initiated with a gift from Chuck Charlton and the trustees of the Charlton Charitable Trusts. The total project cost is projected to be \$15 million.



This inspiring environment will not only help the Charlton College of Business maintain its internationally recognized accreditation but position the school to effectively compete with the top schools in the nation. The project team of Compass Project Management, Bruner/Cott, Architects and Planners has effectively managed this project toward final completion.

- **FY17 #3 – SMAST / DMF Expansion (FY15 #6):** The project includes the new and renovated facilities for the University of Massachusetts Dartmouth (UMD) School for Marine Science and Technology (SMAST) and the Division of Marine Fisheries (DMF). SMAST comprises the Marine Science campus of UMD, including the Department of Fisheries Oceanography (DFO) and Department of Estuarine and Ocean Sciences (DEOS). SMAST currently occupies approximately 32,500 gross square feet (GSF) in the existing SMAST facility (referred to as SMAST 1) in New Bedford, and approximately 12,000 GSF of leased space in Fairhaven, MA. The project will consolidate the two locations and create a cohesive campus for the SMAST programs.

The demolition of the Naval Reserve Center (NRC) building is completed and construction has started on a new 64,500 gross square foot “SMAST 2” building on the NRC site. The SMAST 2 facility will be composed of a two story laboratory wing fronting South Rodney French Boulevard, a three story office wing set back from the street, and a high-bay area (including Seawater facility) located behind the lab block, away from the residential neighborhood. The architectural design relates to the scale of the existing residential neighborhood and provides a suitable terminus to the Brock Avenue Development Corridor. The new 64,500 gross square foot SMAST 2 building at the NRC site includes:

- Flexible wet/dry research labs and researcher offices; Computational Research Labs
- Flexible classroom space that may also be used for SMAST public out-reach programs
- Seawater research facility
- SMAST Administration space
- DMF offices and dive-gear program

Additional project work includes:

- Provide limited, “high-priority” renovations at the existing SMAST 1 building
- Provide site/landscape and utility work required to combine the sites into an integrated SMAST campus. The proposed sitework includes work on City of New Bedford land between the SMAST 1 and SMAST 2 sites, requiring a City / National Park Service easement (in progress).

The established Total Project Cost is \$55,000,000. The current project schedule projects a 11-August-2017 substantial completion and a final completion date of 15-September-2017 of construction activities and SMAST 2 move-in. The project team of Hill International – Owner’s Project Manager, Ellenzweig Architects and Bond Brothers – Construction Manager is managing and constructing this project.

There were two initiating projects that were required before the project could start:



SMASST – Lab Renovation to accommodate the Division of Marine Fisheries BacT Lab from the Naval Reserve Center. \$200K Capital Renewal. **Completed FY15;**

SMASST – Acid Wash Room Renovation - \$470K Capital Renewal. **Completed FY16;**

III. **FY17 – FY21 Planning Needs & Priorities**

With UMASSTransform 2020 completed the Updated Campus Master Plan was to solidify the framework for projects and priorities for the FY17-FY21 Capital Plan Update, however the Baker Administration placed the Master Plan on hold while the Commonwealth proceeds with a 'Strategic Framework for Massachusetts Public Higher Education' that is described as:

“The purpose of this Study is to develop a strategic framework for prioritizing capital investment that supports a coordinated regional system of higher education and responds effectively to the Commonwealth’s priorities for economic and workforce development.”

Priority #1 for UMass Dartmouth is to address the \$491.4M Deferred Maintenance backlog that is addressed in Section IV.

Although the Updated Campus Master Plan has been placed on hold, the inclusive process identified several projects that have risen to a level that the campus has put a high priority on them and there still are many unrealized priority projects from previous masterplans and capital plan submissions that remain as unfunded mandates. These projects need to be moved forward and included in any new planning process:

- **FY17 #6 – Campus Entrance Building (Welcome Center) (FY15 #18):** Looking to improve the focus on recruitment and retention of potential students and to improve the safety of the university community, a Campus Entrance Building has been identified as a priority project. The current location of Admissions is difficult to find and does not have significant reserved parking for visitors. The campus understands a centralized Campus Entrance building is an important element of the University’s first impression. It is the opportunity for our prospective students and families to settle on the campus in a central location that enhances the campus experience. The Public Safety Department is currently located in two different buildings and its Dispatch Office does not meet electrical and fire protection standards for a function that must be operational during emergencies. As demonstrated by events that occurred in FY13 Hurricane Sandy, Winter Storm Nemo and the 19-April-2013 event related to the Boston Marathon tragedy, a functioning Emergency Operations Center is required for continuity of university operations and to provide the adequate command and control to ensure safety to the university community, residential or non-residential. The situation was also noted in The Report of the Special Task Force, stating “Finally, while it falls outside the scope of its charge, the Task Force could not ignore the situation regarding the building where DPS is currently located. The building is co-located with the university’s cogeneration facility and literally sits on top of several very large generators and next to several very large tanks of potentially flammable contents. Since the DPS is the heart of the university’s emergency response, an industrial accident at the power plant/police building could have serious adverse consequences regarding the university’s



emergency response capacity. Police facilities are expensive and it is understandable in times of shrinking fiscal resources that universities make do with existing facilities. However, the location of the UMass Dartmouth DPS in the same building as the campus power plant is extremely problematic from a strategic emergency management perspective and should be addressed as soon as possible.”¹ Correcting these problems in situ would cost nearly as much as co-locating these two groups in a highly visible new building at the campus entrance which would include ample parking for visitors. The programming of this building would provide ‘swing space’ to allow for the large renovation projects envisioned for the Science and Engineering Facility (SENG) and Liberal Arts Facility (LARTs)

- **FY17 #7 –New Academic Building (FY15 #8):** The University in conjunction with DCAMM started the planning for the Interdisciplinary Science and Engineering Building (iSEB). Funding was not included in the Baker Administration’s FY17 Capital Plan, however DCAMM is allowing the designer to complete the existing conditions and programming study of the (5) STEM facilities. We are continuing the programming and planning of the facility by ensuring placement of funding to do so on the Commonwealth’s 5 year capital plan. The designer Ellenzweig is currently in the programming and existing conditions study phase for DCAMM and UMass Dartmouth with a direction to complete a STEM Mini-Masterplan. From the direction this STEM Mini-Masterplan is taking it is readily apparent that the SENG facility requires a complete renovation.
- **FY17 #5 – Science and Engineering (SENG) Facility – Complete Renovation:** Completed in 1969, the 175,000 square feet consisting of classrooms, teaching and research laboratories as well as faculty and staff offices is in immediate need of a complete restoration. The University has outgrown these antiquated facilities. The classrooms, teaching and research laboratories are limited and are deficient to the point where the current state of the facility is limiting progress and inhibiting the ability to attract students and faculty. Our Biology and Chemistry teaching labs are well over 40 years old, located on the wrong floors if built to today’s building codes; and are outdated in terms of RCRA compliance, health and safety standards, aesthetics, and allowable occupancy for larger class sizes. The Mechanical Plant serving these labs is inadequately sized to handle additional fume hoods which need to be added to meet our needs for larger classes. Exterior envelope and water infiltration issues are numerous, with water pouring down the main stair like a waterfall during heavy rain. Exterior concrete block and poured concrete have spalled, exposing rebar in many locations. Exposed rebar has begun rusting.
- **FY17 #4 – Liberal Arts (LARTs) Facility – Complete Renovation:** The Liberal Arts Facility was constructed in 1966 as the first major academic building on the campus encompassing 112,000 square feet of classrooms and faculty / staff offices. Air conditioning was not installed as an amenity at that time. Since the building is now used throughout the year, air conditioning is seen as a necessity. To address this need, many small window units have been installed in faculty office areas and some administrative centers and computer labs have been provided with small split systems. These stop-gap measures are both unsightly and wasteful of energy. The mechanical and life safety systems are at the end of their

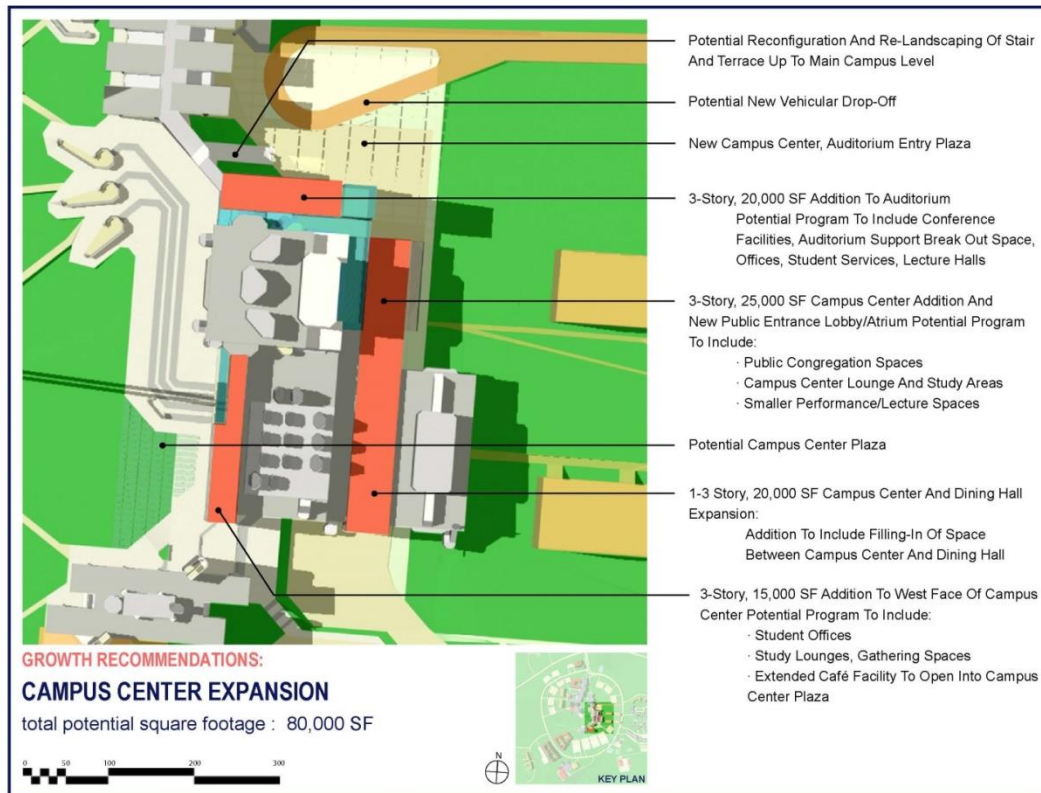
¹ Report of the Special Task Force “University of Massachusetts Dartmouth’s Response to Select Issues Related to Boston Marathon Bombing” (August 15, 2013)



useful life cycle. The building now has reached maximum electrical usage and the addition of any power-consuming equipment will require an upgrade to the electric service entrance and switchboard additions, emergency engine upgrades, and new distribution panels. Exterior envelope and water infiltration issues are numerous. Exterior concrete block and poured concrete have spalled, exposing rebar in many locations. Exposed rebar has begun rusting.

The LARTs facility houses the College of Arts and Sciences (CAS) with a large number of classrooms that do not meet the standard for today's learning environment.

- **FY17 #11 – Campus Center Addition (Student Union) (FY15 #14):** The 2005 campus master plan recommends the construction of additions to the Campus Center Building to accommodate the growing needs of our larger student population. Student unions continue to play a central role on college campuses as a gathering place. The most frequently reported reasons for visiting the union include eating, socializing with friends, studying independently, and obtaining information about campus events, using a computer or visiting a retail shop. Many work units serving students are scattered in classroom buildings or the Foster Administration Building. Some additional space recommended in the master plan would add to the building on the east side to accommodate student organizations that cannot currently be assigned dedicated space and to centralize class registration, student counseling, and other student-oriented functions in one building. Other additional space recommended in the master plan would add to the building on the west side to accommodate additional dining room space.



The addition of a Student Union has come through consistently as the number one priority identified by students through multiple surveys. The campus with UMBA is exploring if this project might be appropriate for a Public Private Partnership.

- **FY17 #12 – Central Administrative Services Building (FY15 #20):** Initially the plan calls for building two modular buildings (one for garage functions and vehicular and equipment storage, the second for the Print Shop, Mail Distribution Center, Facilities Shops, and administrative units) at the east end of the campus in an area not visible from the main academic buildings and Ring Road but close to the existing steam plant building. The work will include the construction of parking for assigned personnel and a new emergency egress road to Chase Road. The creation of the Chase Road Exit addresses the serious second egress issues raised in the campus 2005 Facilities Master Plan and The Report of the Special Task Force related to the Boston Marathon tragedy. The Chase Road Exit construction would entail a new two-lane roadway from the Ring Road to Chase Road on the eastern edge of the campus meeting all Massachusetts Highway Department standards including curbing and lighting. This road would provide access to the proposed Facilities Building site and would also provide a secondary vehicular egress from the campus in case of emergency evacuation of the site. After Auxiliary Services and Facilities functions are moved into the new building, the spaces they have vacated will be retrofit for use by academic units for research space, storage, offices and classrooms. In more a directive and deliberate manner, the University is seeking opportunities to create efficiency and effectiveness in our services. Our currently decentralized operational and administrative services create levels of redundancy. In proposing the centralization of services we seek



efficiencies in shared services with the campus allowing cross-functionality to service within one facility for the campus.

IV. Deferred Maintenance

UMass-Dartmouth continues to work with Sightlines, a facilities asset advisory firm, and in FY15 we collaborated on the Building Portfolio Solutions and Return on Physical Assets (ROPA+). Summary of Findings in these presentations were:

- Significant amount of need exists. An identified need of **\$491.4M**. This is due to an aging campus with limited historical investment.
- Funding at the current level will not be enough for the campus to sustain without additional support from external one-time sources of capital.
 - Large renovations should be funded by one time infusions from the State System Office;
 - UMass Dartmouth should focus on systematic building needs, especially those in the reliability category.
 - The largest portion of need \$278.9M occurs in years 4-7. Now is the time to plan and secure funding.

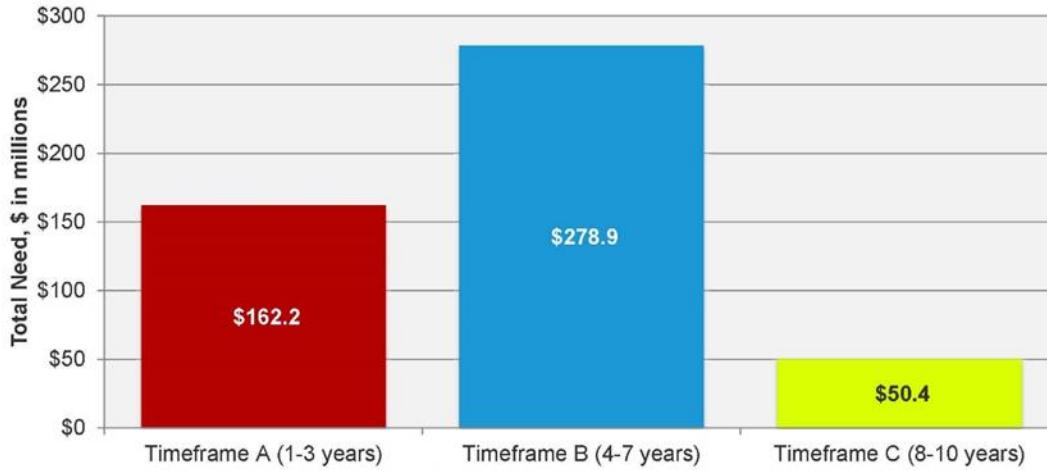
Capital Investment:

- FY15 Annual Investment Target : \$15.2M is needed annually to maintain current condition of campus. UMass Dartmouth should target \$24.6M annually to address more backlog needs moving forward.

Identified Needs by Timeframe – \$491.4M



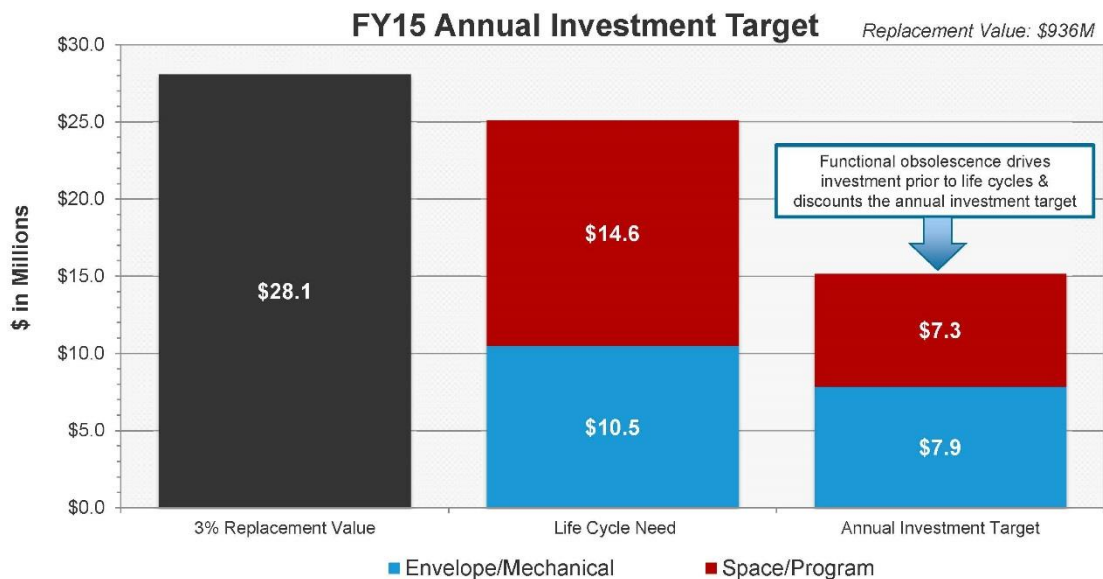
Timeframes A, B, & C only – excluding new construction and overlap
 Identified Needs by Timeframe



# of projects	1,106	493	426
Average cost per project	\$147K	\$565.6K	\$118.3K

Defining an Annual Investment Target

Annual Funding Target: \$15.2M



Operational Effectiveness:

- Operations are strained on resources with high deferred maintenance backlog driving higher operational costs. UMass Dartmouth is spending more than peers with less funding going towards Preventive Maintenance.
- Planned maintenance has decreased in the past two years.

Summary of Facilities Portfolio:

UMass Dartmouth is situated on a 710 acre parcel located equidistant between New Bedford and Fall River. The creation of the campus was driven by a master plan developed by Paul Rudolph, then Dean of the School of Architecture at Yale University starting in 1962. There are 15 main buildings in the academic core and 13 residence hall areas. The Dartmouth campus has over 2 million square feet at its main campus and the majority of the facilities were constructed before 1975. Satellite locations include the School of Marine Science (SMASST) in New Bedford, the College of Visual & Performing Arts (STAR Store) in New Bedford, the Center for Innovation and Entrepreneurship (CIE) in Fall River and the University of Massachusetts Law School located in Dartmouth.

Recent Projects Focusing on Deferred Maintenance:



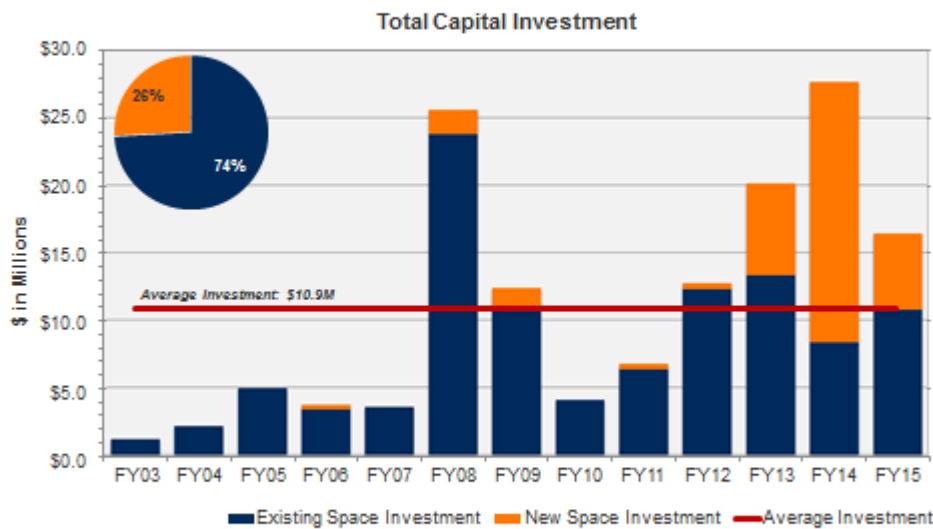
Figure 12 : Cressy Field Replacement

UMass Dartmouth continues to strategically address deferred maintenance needs while working to prioritize work for the future. These deferred maintenance projects included:

- Academic Quad – Steam & Condensate Replacement Phase II - \$1.9M:
 - MH2 to Residential Dining - **Completed FY16**;
 - MH3 to CVPA - **Completed FY16**;
 - MH6A to Dion Science & Engineering - **Completed FY16**;
- Academic Quad – Steam & Condensate Replacement Phase III - \$1.9M:
 - MH4 to MH5A – **Construction FY17**;
 - MH5A to MH6A – **Construction FY17**;
 - MH5A to Claire T. Carney Library – **Construction FY17**;
 - MH5A to Main Auditorium – **Construction FY17**;
- Academic Quad – Landscape Restoration - \$500K. **Design**;
- Athletic Fields Restoration Program
 - Baseball and Softball Fields Restoration - \$600K – **Completed FY16**;
 - Cressy Field Replacement - \$1M – **Construction FY17**;
- Cedar Dell Residences – Pump Station - \$260K. **Completed FY16**;
- Evergreen and Willow Residential Hall - Chiller Replacement - \$500K. **Construction FY17**;
- MacLean Campus Center – Construction of Freezer Building - \$390K. **Completed FY16**;
- MacLean Campus Center - Re-construction of the Loading Dock - \$610K. **Completed FY16**;
- Tripp Athletic Center - Roof Replacement - \$355K. **Completed FY15**;
- Violette Research - Electrical Infrastructure Upgrade - \$1.8M. **Substantially Complete FY16**;
- Violette Research - Installation of an Automatic Fire Suppression System - \$800K. **Completed FY16**;

The state of our facilities is nearly to the critical state where they can no longer just be maintained but need to have a full force capital renewal effort that transforms while preserves our core assets; modernizing the buildings to accommodate the differing needs of today's academic environment while reflecting on the institution's past. These include items of all facets that affect building performance, energy efficiency and how our buildings are utilized. Any discussion of deficiencies on campus must start with addressing the Basic Infrastructure needs. For this reason, the **Number 1 Priority of the FY17 Capital Plan Update continues to be Deferred Maintenance.**

Total Capital Investment





V. **Affordability**

The affordability of these projects is contingent on receiving capital appropriations from the Commonwealth. UMD has extinguished a significant amount of debt in the last year but reductions in expenditures to offset reductions in revenue has kept our Debt Service ratio above the 8% mark. Additionally, even if our debt service ratio drops below the 8% cap, we would not have the resources to pay for any additional debt service.

VI. **Other**

The University remains committed to developing a Public Private Partnership (P3) project and working through UMBA has focused on our Residence Halls in order to advance the capital program.

- **Residential Housing:** Planning discussions continue in FY17 to determine what direction to proceed with future work on the residential housing portfolio, particularly the first year housing structures built in the mid-70s. The first year residence halls are extremely important for the student experience and providing improved and appropriate residential facilities will help to increase recruitment and retention while decreasing deferred maintenance. The campus has selected Brailsford & Dunleavy to work with the University to develop a housing master plan and demand study; preparing the University for a student housing demand study, using a proprietary approach unique to the “Industry Demand-based programming”, to insure that the study takes into account current data; such as student preferences, the cost and availability of market units, and other relevant information. In addition, this will include the completion of a student housing business plan, highlighting the operational and financial parameters that such a program supports expanded operations. This study is scheduled to be completed in the Fall of 2016 and will be utilized to set the direction of campus residential facilities for the next twenty years.

This Housing Demand and Master Plan work is to be completed for the Fall of 2016. Working through this process the University would like to explore if this method would be acceptable in terms of both market interest and fiscal delivery options for the following areas:

- Part of our Residential Housing Strategy which would also explore the concept of a First Year Residential Village that is P3 developed, constructed and operated for a capacity of 1,000. This would create a vibrant and innovative mixed use of:
 - Residential Housing Options – including traditional first year housing – double loaded corridors and double rooms;
 - Market sounding is being utilized to confirm the correct mix of room type;
 - Residential Dining Facility to be the primary dining facility for the East Residential Area;
 - Include some Student Union (Services) like amenities:
 - Retail Options;
 - Recreational Facility;
 - Student Learning and Common Spaces;



- Academic Advising
- Faculty scholar in residence
- Student One-Stop Center

A review of current first year halls for redevelopment by P3 developer for renovation and operation is underway, with the goal of a 1,600 bed capacity in more traditional first year housing units.

- Chestnut – capacity : 440
 - Elmwood – capacity : 382
 - Maple Ridge – capacity : 382
 - Roberts – capacity : 388`
- Focus on the student life component of the main campus to increase and promote a sense of place and community. Two projects that have been included on the capital plan in the past would meet this intent:
 - **FY17 #11 – Campus Center Addition (Student Union) (FY15 #14):** Consistently the number one priority of students;
 - **FY17 #17 – Amphitheater (FY15 #26):** The focus of the proposed project would be to investigate the possibility of putting a tensile structure over the existing amphitheater to increase the viability of use. Currently commencement ceremonies have to be relocated from this area to indoor locations in inclement weather. This project would also expand the use of this area for University sponsored and external events.



LOWELL





Introduction and Overview of Campus Capital Plan

This document provides an update to the most recent Capital Plan for UMass Lowell for approval by the Board of Trustees for FY2017-FY2021. It reflects the priorities outlined in the UMass Lowell 2020 Strategic Plan. UMass Lowell's success in executing its Capital Plan will determine how successful it will be in meeting the ambitious goal of achieving national and international recognition as a world-class institution over the next decade.

The plan includes fourteen capital projects that exceed the \$10 million threshold for Board of Trustee approval. These projects total \$547 million. In addition, the campus has many other capital projects which were approved under the FY2015-FY2019 Capital Plan that are included in our facility master plans however they are contingent on funding. There are also numerous projects that fall below the \$10 million threshold. All campus projects costing more than \$2 million have been entered into the system database and are regularly reviewed as part of the quarterly capital plan update.

The funded projects included in the FY2017-FY2021 capital plan are affordable within the FY2017-FY2021 multi-year financial plan. New borrowing will not push the campus over the 8% debt ratio policy cap and the capital expenditures funded from campus operating funds and accumulated reserves also fit within the operating margin and primary reserve ratio targets included in the multi-year plan.

Our anticipated capital expenditures impact on a number and variety of our academic, research, student life, athletic, recreational and outreach programs and partnerships while concurrently addressing deferred maintenance. If we are to achieve our goals and aspirations, we must concurrently reduce our backlog of critical maintenance and our energy consumption while we create additional modern academic and research spaces, increase residential capacity, renew our existing buildings, develop new recreational opportunities, and add to our capacity to host a broad range of meetings and events – academic, entertainment and civic.

The Lowell campus consists of 3 major locations: North, South and East. The North and South campuses are primarily academic buildings with some residence halls and tightly constrained playing fields; the East campus is the location of the majority of our residence hall, the primary dining facility and a very popular Recreation Center. East also houses the Wannalancit facility, Lelacheur Baseball Park and is a short walk to the Tsongas Center. Each of the campuses is densely developed and bounded by fully developed residential and business properties. University Crossing (opened in Fall 2014) includes the majority of student focused services is centrally located among all three campuses.

The campus continues to partner with the University of Massachusetts Building Authority and DCAMM to plan, finance and implement our ambitious capital program. The partnership with DCAMM has resulted in a series of "rolling" capital plans for North and South campuses. These plans recognize our significant enrollment and research growth trends as well as projected future growth in academic programs, sponsored activity and enrollments.

Enrollments grew more than 50% between 2007 and 2015 and are projected to grow 2.8% per year through Fall 2020. UMass Lowell is expanding out-of-state and international enrollments,



Master's and on-line enrollments and most significantly, it has expanded its overall "market share" of Massachusetts' undergraduate students. This growth *has not* come at the expense of selectivity, quality or diversity. Sponsored research funding has increased 75%. The campus facilities master plans address the pressures of current and future growth including demand for new academic programs and residential and recreational facilities and the continued need to renew facilities with systems that show signs of obsolescence and address the backlog of deferred maintenance.

In February 2013, UMass Lowell joined NCAA Division I Athletics, which aligned the University with academic peer institutions. While UMass Lowell already has a state-of-the-art sports arena (Tsongas Center), the move to Division I will require the University to add basketball capability to the sports arena, to make ongoing improvements to the North Campus Costello facility, and to institute the use of the recently completed artificial turf for field hockey and Lacrosse.

Master Planning:

In cooperation with DCAMM, the master plan for North Campus Science & Engineering facilities was completed in 2010-2011. The recommendations focus on four initiatives, which are included in our capital plan. The projects include major renewal of Engineering, Olsen, Olney buildings, and similar renewals in the North Campus Quad. The positive space and programmatic impact of the pending new Pulichino Tong School of Business building is being coordinated as part of the North campus planning process. Additional renewals for Pinanski, Ball and Cumnock Halls are needed and are anticipated for funding in future capital plan updates. The master plan also envisions the need for a new academic building to accommodate the classroom and laboratory space needed for the projected enrollment growth on North.

The South Master plan includes a space renewal and reassignment plan, with accompanying individual capital projects for implementation as the buildings empty out. These include McGauvran and South Dining (completed), Mahoney, Dugan, and parts of O'Leary and Weed. The plan academically organizes the campus and addresses both additional programmatic space needs and critical maintenance priorities. Expanding and renovating Coburn Hall and a new academic building are part of this plan as well. This planning effort is a follow-on to the previous DCAMM-funded overall plan, and the Science & Engineering plan for North Campus.

Implementation of this plan will allow the campus to maximize and extend the value of investments in previous projects, and address the needs of these growing schools. Both schools actively support the university's growing research and economic development agenda, through both direct research and their vital role in the overall curriculum.

Project Status from FY2015-FY2019 Plan:

The following projects on the FY2015-2019 Capital Plan are **complete** and have been removed from the FY2017-FY2021 plan:

- University Crossing opened in 2014.
- McGauvran Dining and demolition of south dining/bookstore opened in 2015.
- Leitch & Bourgeois Residence Hall renovations were completed in 2014.



- Property acquisitions through FY2015.

The following projects included in the FY2015-FY2019 plan are **in progress** and are included in the FY2017-FY2021 Capital Plan:

- **Pulichino/Tong School of Business & Lydon Library** renovation project is currently under construction with a target opening date of March 2017.
- **Science & Engineering Master Plan – Perry Hall** is in design. The project is currently in study/schematic design phase. The project is expected to be completed by the Fall 2018.
- **North Quad Renewal (Phase 1 PODS)** will be completed in December 2016.
- The acquisition of the **Perkins property** adjacent to East Campus is complete. The Board approved a total project cost of \$80 million for a residential hall acquisition/construction project. The campus borrowed \$69 million for the purchase and initial costs to transform the facility into a residence hall. The campus will add \$5 million in loan pool funds for furniture, fixtures and equipment. It is expected that the facility will be ready for student residents in the Fall of 2017.
- **Energy & Powerplant Improvements including DCAMM AEP** is progressing well and is expected to be completed in the fall of 2017.
- The **Residential Hall Comprehensive Renewal Program** continues to move forward with the annual allocation of auxiliary service funds for renovation and repair to student housing facilities.
- **Science & Engineering Master Plan – Olsen Renovation** is in the study phase and will be brought forward to the Board at a later date for further review and approval.
- **Coburn Hall Renewal & Addition & Backfill** received initial approval from the Board of Trustees in June 2016. The project is currently in the conceptual phase and will be coming forward to the Board for further review and approvals in the future.

The following projects have received Board of Trustee approvals since the FY2015-FY2019 update and were added to the FY2017-FY2021 Capital Plan:

- **Fox Hall Elevators project** received secondary (Vote 2) approval by the Board of Trustees in June of 2016. **The Board of Trustees is being asked to increase the total project cost of this project from \$14 million to \$18 million.**
- **Pasteur Second & Third Floors-Comprehensive Renovation** was approved by the Board of Trustees in April of 2016 at \$12 million and is currently in the owner's project management/designer procurement phase. The project will come back to the Board in the future for further review and Vote 2 approval.

The campus is requesting that the following **new project** be added to the FY2017-FY2021 Capital Plan:

- **New Residential Hall (Dormitory Style)** The campus expects that it will require additional student residential hall beds towards the end of the five-year capital planning period to meet projected housing demand. The campus Housing Study included in the FY2015-FY2019 Capital Plan outlined the need for additional beds to improve the residential character of the campus. Adding basic dormitory style beds to the campus inventory is important to provide alternatives for students. Project cost is estimated at \$60 million to be funded with debt.



Finally, there are a number of other projects previously approved and included in the FY2015-FY2019 Capital Plan that are maintained in the University database. These projects have been identified in our Master Plans as necessary to meet future campus needs however funding remains unidentified at this time (e.g. project initiation is contingent on funding). Projects will be brought forward to the Board of Trustees for review and further approval as funding is secured.

Deferred Maintenance Status Report:

As reported to the Board of Trustees in April 2016 by Sightlines the Lowell campus has a \$640 million backlog of need for core academic, research and student space and infrastructure. There are additional deferred maintenance needs for campus residential and auxiliary facilities not included in the Sightlines review however the campus capital plan includes funding for repairs and renovations to these spaces.

This “Asset Reinvestment Backlog” includes projects that represent the most critical deferred maintenance needs; life cycle projects for systems that will be coming due in the next decade across 6 major systems (Exteriors, Roof, Interior, HVAC, Plumbing, Electrical); and additional building needs including modernization and safety/code as well as needs outside of the buildings such as grounds and utility distribution infrastructure. Other than the critical projects that should be addressed soon, Sightlines assumes a ten-year program to bring down the backlog.

The campus has incorporated these needs into the capital plan, and is addressing them through a variety of means and funding sources. Progress on the capital plan as currently proposed and planned can result in DM reductions. This is due in part to capital projects already planned, demolition, energy conservation projects and planned comprehensive renewals which incorporate the DM items.

The campus, through an “annual call” process, identifies and prioritizes smaller maintenance and repair, renewal and renovation projects into the following program categories:

- On-going Academic Modernization including Relocations: targets immediate needs of academic areas including renewal associated with space reallocation due to new facilities coming on-line and those planned for North and South campuses.
- Capital renewal/Deferred maintenance/Compliance: targets various projects designed to cut into the backlog identified in the facility conditions assessment.
- Residential Hall Comprehensive Renewal Program: projects that will reduce the deferred maintenance backlog in the residential housing area.
- Other program areas include: Athletics & Recreational spaces, Information Technology, and Parking and Transportation.

These deferred maintenance projects are to be funded through a combination of state deferred maintenance funds, campus budgeted general operating and auxiliary services funds, and accumulated fund balances.

Information Technology:



UMass Lowell IT has a multi-year program that includes a series of projects to fit the campus technology platform to meet expanding needs. Gaps in wireless access, network throughput, and core infrastructure necessitated this capital investment. Our remediation effort started in FY2013 with the design and installation of a new campus fiber network backbone. In FY2014, improvements to campus wireless began as did the development of an RFP to secure the next generation network for UMass Lowell.

The campus began installing the higher-capacity campus network in late 2014 as part of a three-year effort that will result in an infrastructure capable of meeting the high-bandwidth demands from any corner of the campus, and from any mode; connected or wireless.

Rounding out the IT Capital Plan is a new telephony platform, periodic refreshes of classroom technology, and investments in campus software, examples being; virtual terminals, CRM software, and faculty collaboration tools. Lastly, the UMass Lowell IT Capital Plan recognizes that spend on core network and wireless technologies are perpetual, requiring a regular investment to meet changing requirements.

Financial Planning:

This capital plan depends on funding from the state, private donors, granting agencies and debt supported by user fees, student charges and campus operating funds. The overall five-year plan is aggressive due to the investment needs and program emerging from the DCAMM Science & Engineering and South Campus master plans and the deferred maintenance needs identified by the Sightline report.

As previously noted, the projects included in the FY2017-FY2021 capital plan are affordable within the FY2017-FY2021 multi-year financial plan. New borrowing will not push the campus over the 8% debt ratio policy cap and the capital expenditures funded from campus operating funds and accumulated reserves also fit within the operating margin and primary reserve ratio targets included in the multi-year plan.

State Funds

The state is a critical partner in the success of our capital plan and by extension the realization of our strategic goal to achieve national and international recognition as a world-class institution over the next decade. Unfortunately, the state has implemented a near freeze in all capital spending until a comprehensive strategic plan is developed. The campus has therefore adjusted its financial and capital plans to remove the state funds previously committed.

The state has only committed capital funds for the new Pulichino/Tong School of Business building (\$28.2M) and the Accelerated Energy Program (\$5M). An additional \$700,000 in state deferred maintenance funds were allocated to the North Quad PODS project.

This state funding is significantly less than what had been committed in previous state capital plans which included \$36M for Perry Hall and \$40M for Olsen Hall as part of the Science & Engineering renewal and renovation program for Engineering, \$19M for the Coburn Hall Renewal and Addition project and \$30M for the Tsongas Center Extension.



New projects that are emerging from the North and South Campus master plans include the need for new Academic Buildings on both campuses to support the growth in enrollments and to provide additional classroom space. We included these projects for consideration since a new Higher Education Bond Bill is required.

In addition to the freeze in funding for larger capital projects, the state has been reducing funding for deferred maintenance projects. In FY12, the campus received approximately \$2 million annually for important deferred maintenance projects. In FY15 and FY16 this amount was cut to \$1 million and required a \$1 million campus match. There are no state funds for deferred maintenance in FY2017.

Campus Debt

The capital plan includes \$230 million of projects funded with debt; \$94 million of which has already been borrowed for the Pulichino/Tong building, Perkins acquisition, Fox elevator and North Quad POD projects. The remaining \$136 million planned will support the previously state funded Perry Hall, Olsen Hall and Coburn Hall renovation projects, additional funding for the Fox Hall elevator project and \$60 million for the new residential hall project. The campus previously had a relatively low debt to operations ratio of 5.9% in FY14. With the new borrowing we expect our debt ratio to increase to just under the 8% policy threshold. However, the borrowing program will increase our annual operating budget commitment to debt service that represents a significant reallocation of campus resources.

Campus Funds and Other Funding Sources

The campus is committing considerable annual operating funds and accumulated capital reserves towards the capital plan. More than \$75 million will be spent between FY2017 and FY2021 on the capital plan. The campus fully funds depreciation as part of our annual budgeting and multi-year financial planning processes. By doing so we generate sufficient cash flow and reserves to spend on our capital plan.

In addition, the campus will use \$68 million from a combination of private gifts, funding from our dining services vendor, savings from the campus utility budget and the system's equipment loan pool to fund other priority projects.



Priority	Project Name	Estimated Completion	Total Funding	Debt	Secure State Funds	Loan Pool	Raised Funds	Campus fund balances	Utility Budget	Other	Contingent on funding
1	Pulichino/Tong School of Business Building & Lydon Library Renovations	Spring 17	\$47.2	\$8.0	\$28.2	\$3.0	\$6.0	\$2.0			
2	Science & Engineering Master Plan-Perry Hall, Engineering Renewal	Fall 18	\$50.0	\$20.0			\$12.0	\$12.0		\$6.0	
3	North Quad Renewal (Phase 1 - PODS)	Fall 16	\$19.0	\$11.0	\$0.7			\$7.3			
4	Residence Hall Acquisition/Construction	Fall 17	\$74.0	\$69.0		\$5.0					
5	Fox Hall Elevators	Fall 17	\$18.0	\$12.0				\$6.0			
6	Pasteur 2nd & 3rd Floors – Comprehensive Renovation	Fall 18	\$12.0					\$12.0			
7	Science & Engineering Master Plan-Renovations Phase 2	Fall 20	\$86.0	\$10.0							\$76.0
8	Aiken Recreational Fields	Fall 17	\$6.0					\$6.0			
9	Coburn Hall Renewal & Addition & Backfill	Fall 20	\$69.0	\$40.0			\$10.0				\$19.0
10	Wannalancit, Cumnock, Central Services & Dining Facility	Fall 19	\$15.0					\$10.0		\$5.0	
11	Energy & Power Plant Improvements, incl. DCAMM - AEP	Fall 17	\$26.0		\$5.0				\$21.0		
12	Residential Hall Comprehensive Renewal Program - Phase 1: FY13-22		\$30.0					\$10.0			\$20.0
13	New Residential Hall (Dormitory Style)		\$60.0	\$60.0							
14	Tsongas Center Expansion/Renovation		\$35.0				\$0.0				\$35.0
15	Property Acquisitions		\$10.0					\$10.0			
	Subtotal		\$547.2	\$230.0	\$33.9	\$8.0	\$28.0	\$65.3	\$21.0	\$11.0	\$150.0



*University of Massachusetts
Fiscal Year 2017 – 2021 Capital Plan
September 2016*

MEDICAL SCHOOL





I. Introduction and Overview of Campus Capital Plan

The University of Massachusetts Medical School's (UMMS) 2017 Capital Plan is informed by two key institutional documents: 1) the UMass Medical School/UMass Memorial Academic Health Sciences Center Strategic Plan; and 2) the UMMS Master Plan.

"UMass 2020", the Academic Health Sciences Center Joint Strategic Plan, was developed in conjunction with the Medical School's clinical partner, UMass Memorial Health Care (UMMHC). The strategic plan outlines a path for the campus to advance the health and well-being of the people of the Commonwealth and the world through pioneering advances in education, research and health care delivery. Eight goals have been established in support of this mission.

"UMass 2020" Strategic Goals

1. Build a health care delivery and biomedical research work force that makes a lasting impact on human health.
2. Continuing to be a leader in Massachusetts life sciences research, enhance the basic science enterprise, drive intellectual excitement, create potential new therapies and long-term sustainability through the engine of discovery, and focus on areas of existing world-class strength.
3. Create a transformative research ecosystem that enables rapid development of products for clinical use.
4. Become the best academic health system in America based on measures of patient safety, quality, cost, patient satisfaction, innovation, education and caregiver engagement.
5. Establish an information technology environment that enables the best care and patient experience; educates the finest caregivers and scientists; and accelerates future therapies.
6. Attract, inspire and cultivate outstanding talent in science, medicine and health care to become one of the nation's most distinguished academic health science centers.
7. Provide a high value ecosystem that maximizes opportunities and optimizes outcomes for patients who seek prevention, treatments, and cures of cancer.
8. Transform shared service operations to better serve and support mission-based activities through alignment of purpose and integration of effort.

The strategic plan serves as a guidepost for campus operational goals and objectives, advancing exciting educational, research and infrastructure priorities.

The UMMS Master Plan, which was developed in collaboration with the Commonwealth's Division of Capital Asset Management and Maintenance (DCAMM), provides the campus with a functional and detailed blueprint for space planning and construction that is based on growth assumptions and institutional goals.

With these strategic documents as benchmarks, the UMMS 2017 Capital Plan is aligned with institutional strategic goals and responsive to operating realities. The common thread between these documents is an unyielding commitment to the tripartite mission of UMMS—education, research and health care delivery.



In total, the capital projects included in the plan, both those that are new and those previously approved but not completed, total \$557 million. These projects are highlighted by the planned construction of an Outpatient Clinic for the Department of Veterans Affairs; a focus on repurposing space in the Medical School Building made vacant by moves to the Albert Sherman Center; a documented need to create 180 new offices for clinical partner, UMMHC; deferred maintenance and improvement priorities in the Medical School Building; and infrastructure investments related to medical services and equipment in partnership with UMMHC.

In the past several fiscal years, UMMS has continued to fund significant deferred maintenance and renovation projects with internal capital in the absence of any state capital support. Although allocated over \$40 million for capital in the last Higher Education Bond Bill, UMMS did not receive any of the capital funds set aside for the campus. Internally funded capital projects include program changes, equipment purchases, facility renovations and the 'buy down' of the backlog of deferred maintenance and renewal projects. Although this work is a priority for the campus, current financial pressures will significantly impede the Medical School's ability to continue to invest its own resources to fund capital projects. Should this trend continue, the Medical School will be forced to defer or eliminate plans to "buy down" the deferred maintenance backlog or move forward with critical renovation, equipment and backfill projects.

II. Project Status Update from the 2015 Plan

In the spring of 2016, the Department of Veterans Affairs (VA) Office of Construction and Facilities Management issued a solicitation request for the construction of a new VA outpatient clinic in Worcester. The VA was seeking a partner for a 'build to suite acquisition through lease' facility project. The solicitation called for a 40,000 net usable square foot Community-based Outpatient Clinic (CBOC).

Given the Medical School's strategic partnership with the VA of Central and Western Massachusetts and its strong commitment to serving the veterans in the region, the campus initiated a process to formally respond to the VA's solicitation offer. Prior to officially submitting a response to the VA, UMMS first presented the outlines of the proposal to the UMass Board of Trustees at the Board's June meeting. The trustees approved the Medical School's planned response, allowing the campus to formally submit its proposal to the VA.

UMMS, acting through Worcester City Campus Corporation (WCCC), responded in late June with a proposal to construct a 230,000 square foot building on the south end of the campus. The Medical School's submission proposed that the VA CBOC would occupy the first level of the building, and the remaining floors would be available for other programmatic and space needs. The VA, through its competitive negotiation process, will render a final decision on the project by March 2017.

Constructing a new Community-based Outpatient Clinic on campus required complex and lengthy negotiations with the Massachusetts Department of Transportation (MassDOT), which currently operates its District Three Headquarters on the parcel of land selected for the new CBOC facility. Following the passage of land swap legislation, UMMS, through WCCC, entered into substantive negotiations with MassDOT to reach agreement on the relocation of MassDOT's District Three Headquarters to Plantation Parkway. The successful completion of the land swap project will



require some additional ancillary projects, including the demolition of existing buildings, site work and the expansion of the UMMS South Road Parking Garage.

In the fall of 2014, MassBiologics of UMMS (MBL) acquired oversight and operational responsibility for what was then referred to as the Massachusetts Accelerator for Bio-manufacturing (MAB) facility in Fall River. Initially conceived of as a “GMP like” teaching, research and training facility under the auspices of the UMass Dartmouth campus, the conceptual and programmatic design of the facility was substantially changed once MBL took ownership. After a thorough analysis, MBL determined that the building could and should be renovated into an FDA-accredited ‘Good Manufacturing Practices’ (GMP) processing facility. The \$13 million conversion project was completed in early 2016 and is undergoing validation and documentation in preparation for vaccine production.

MBL also completed the fit-out of the lower level of Building Two on its Mattapan campus to support a new \$6.5 million tetanus and diphtheria vaccine production and purification manufacturing facility.

III. FY17 – FY21 Planning Needs & Priorities

The priorities included in the 2017 capital plan are based on the Medical School’s evolving needs and commitment to maintaining its operational efficiency now and in the future. The ten projects included in the highest priority bracket total \$252 million. These important projects directly support current campus needs and specifically address the need to re-purpose space vacated in the Medical School Building as a result of the Sherman Center coming online; deferred maintenance and improvement priorities in the Medical School Building and for the campus energy grid; and infrastructure investments related to medical services and equipment in partnership with UMass Memorial.

The Basic Science and Student Lab wings of the Medical School Building have largely been vacated due to new space becoming available in the Sherman Center. The vacated space in the Medical School Building will be renovated to bring aging research labs up to current scientific standards and to make room for dry lab research and office space. These projects are critical to support research and academic programs that remain in the Medical School Building.

In addition, the backfill space will be used to support the movement and consolidation of key programs currently operating in off-campus sites managed by Worcester City Campus Corporation (WCCC). In turn, WCCC will reduce its inventory of property in and around the Worcester area. WCCC, for example, is planning the sale of the Century Drive property and, in March 2017, will vacate leased property in the state-owned Hinton Lab in Jamaica Plain.

As UMMS looks to consolidate some of its properties outside of Worcester, it will continue to work with DCAMM and other state agencies to formulate a long-term plan for the properties along the Belmont Street corridor of the campus. DCAMM has hired a firm to work with all state stakeholders around the Medical School campus and the new Worcester Recovery Center and Hospital to determine the best use of land and buildings in this area for the Commonwealth. The ultimate goal of this process is to implement the strategy contained in the UMMS Master Plan, which is to eventually acquire all abutting properties. Recently, DCAMM and the Commonwealth’s Executive Office of Administration and Finance developed a committee of local and state officials



to determine the viability of converting unused Worcester State Hospital land to a bio-manufacturing industrial park—a conversion that may impact the operations of the UMMS Brudnick Neurological Research Institute (BNRI) and Center for Comparative NeuroImaging (CCNI) facilities in that location.

IV. Deferred Maintenance

In addition to capital investment, UMMS remains committed to protecting its current inventory of buildings and actively manages the identification, prioritization, planning, funding and execution of deferred maintenance projects.

UMMS, similar to many universities and colleges, has a large backlog of deferred maintenance projects. A majority of the facilities on the campus were constructed in the 1970s. Due to the life cycle of the building systems, the stress of heavy utilization, changes in programs and reduced maintenance, there are many components that require replacement.

In December 2015, Sightlines reported through the Five Campus Building Portfolio Solutions initiative that UMMS had a total backlog of deferred maintenance and renewal projects of \$380 million, with about 60 percent due within the next 1-3 years. This detailed analysis reviewed all campus-based research, academic and educational facilities, but excluded health care delivery facilities and off-site WCCC properties. The largest item and highest priority is a \$35 million project to replace 30 air handling units that have exceeded their life expectancy.

UMMS monitors the list of deferred maintenance items and provides interim repairs as required to maintain operational requirements. The list is reviewed and prioritized as funding becomes available or a new project is initiated. The list is further reduced through the completion of new capital projects, utilization of operational funds, internally funded projects, parking trust fund revenues, review and disposal of unneeded systems and continued coordination of energy conservation funds from National Grid, the campus electrical supplier.

The Medical School's complex building infrastructure requires expert attention as well as significant resources. The hospital and biomedical research programs necessitate a substantial investment in numerous redundant building systems and, therefore, have a higher amount of deferred maintenance. These sophisticated building systems include those that support research laboratories and specialty areas such as biomedical research imaging, bio-containment and the vivarium. Other systems include enhanced lab plumbing for purified water, CO₂, air vacuum, natural gas and acid waste. In addition, the Medical School's research environment has strict requirements for air distribution. UMMS must operate a 100 percent outside air system, which includes specialty space pressurization, humidity control and high ventilation rates.

Over the past several years, UMMS has consistently invested in buying down deferred maintenance as the following examples highlight.

- Between 2007 and 2009, UMMS replaced all elevators in the main school building. The original (circa 1970) control systems, cabling, cabs and motors were all replaced. This led to increased reliability and increased occupancy and speed.



- In 2009, the fire alarm system was replaced throughout the Medial School Building. This was a critical life safety system that required significant system improvements to meet the current code.
- The Granite Replacement Project was jointly funded by UMMS and UMMHC and included repair and replacement of the exterior wall systems and roofs. This \$65 million project repaired a failing granite façade as a result of a poor original design.
- Through periodic DCAMM deferred maintenance funding, UMMS has been able to spend between \$500,000 to \$1 million annually to address backlog maintenance projects. Past projects include the replacement of domestic hot water heaters, roof replacements, electrical renovations, new fire pump controls and new air handling units for the animal quarters.

The Medical School will continue to reduce the deferred maintenance backlog by implementing the following strategies.

- Funding through the Higher Education Bond Bill—UMMS currently has an earmark of \$30 million in the bill for this project that will replace 30 air handling units.
- DCAMM Deferred Maintenance Program—UMMS has in the past several years been successful in receiving limited funding from the DCAMM Facility Maintenance and Management Department. UMMS will continue to coordinate closely with DCAMM, respond to all calls for funding and keep the CAMIS system updated.
- Eliminating redundant or obsolete systems—UMMS Facilities staff continues to analyze the requirements for various building and research specific systems to determine their viability and utilization. Should utilization decrease due to technology changes or the elimination of a program, the particular system will be surveyed and, if appropriate, removed.
- Trust Funded Operations—UMMS charges all employees, patients and visitors who park on the campus. The rates were established to cover the cost of operating two elevated parking garages and surface parking lots. The revenues cover the cost of the construction bonds, operations staff and future repair and renewal operations.
- Energy project rebates—UMMS has worked closely with Eversource/NSTAR and National Grid, to initiate, develop and construct several key energy saving projects that have led to rebates of up to 50 percent of the capital outlay. UMMS has replaced boilers, electrical drive chillers and lighting systems through this program.
- NIH Funded projects—UMMS has had previous success securing NIH grant awards that help with deferred maintenance issues. As an example, the completion of a new NIH funded BSL-3 and ASBL-3 research facility provided new space, as well as reduced the deferred maintenance backlog with the replacement and installation of new building systems.



APPENDICES:

- a. Appendix A – Board Approved Project List
- b. Appendix B – Full FY17-21 Capital Plan List (by campus)
- c. Appendix C – Board Policies pertaining to Capital & Debt
- d. Appendix D – State Capital Authorizations & Earmarks
- e. Appendix E – Sightlines Building Portfolio Solutions (Presented April 2016)

Appendix A - Approved Project List

Campus	Priority	Project Name	Local Funding	External Funding	Borrowed Funding	State Funding	P3	Total Project Cost	Project Phase
AMH	AMH01	Life Science Laboratories	\$16,000,000	\$0	\$50,500,000	\$101,500,000	\$0	\$168,000,000	8 - Substantial Completion
AMH	AMH02	DuBois Library Electrical, Plumbing, Fire Suppression, Deferred Maintenance	\$0	\$0	\$25,000,000	\$0	\$0	\$25,000,000	7 - Construction
AMH	AMH03	MLSC Life Sciences Facility	\$0	\$0	\$0	\$95,000,000	\$0	\$95,000,000	8 - Substantial Completion
AMH	AMH04	New Faculty Hire Renovations	\$0	\$0	\$14,000,000	\$0	\$0	\$14,000,000	7 - Construction
AMH	AMH05	Life Science Laboratories, OIT data center fitout	\$2,100,000	\$0	\$8,000,000	\$0	\$0	\$10,100,000	8 - Substantial Completion
AMH	AMH06	Expand and Upgrade Central Chilled Water Plants	\$0	\$0	\$38,000,000	\$0	\$0	\$38,000,000	5 - Design
AMH	AMH07	Physical Sciences Building	\$0	\$0	\$16,800,000	\$85,000,000	\$0	\$101,800,000	7 - Construction
AMH	AMH08	Design Building - formerly Hills replacement Building	\$0	\$0	\$55,000,000	\$0	\$0	\$55,000,000	7 - Construction
AMH	AMH09	South College Academic Facility - formerly Bartlett Replacement Building	\$0	\$0	\$65,000,000	\$0	\$0	\$65,000,000	7 - Construction
AMH	AMH11	ADA Accessibility	\$600,000	\$0	\$1,400,000	\$0	\$0	\$2,000,000	1 - Conceptual
AMH	AMH12	Isenberg School of Management renovations and addition	\$0	\$16,000,000	\$46,000,000	\$0	\$0	\$62,000,000	5 - Design
AMH	AMH13	Old Chapel Renovations	\$0	\$0	\$21,000,000	\$0	\$0	\$21,000,000	7 - Construction
AMH	AMH16	Whitmore deferred maintenance	\$0	\$0	\$14,000,000	\$0	\$0	\$14,000,000	3 - OPM/Designer Procurement
AMH	AMH17	Marston Repairs and Renovations	\$0	\$0	\$6,000,000	\$0	\$0	\$6,000,000	1 - Conceptual
AMH	AMH18	Thompson Deferred Maintenance - formerly part of DM project 46 in prior year	\$0	\$0	\$2,250,000	\$0	\$0	\$2,250,000	1 - Conceptual
AMH	AMH19	Replace Oil Filled Transformers	\$0	\$0	\$2,000,000	\$0	\$0	\$2,000,000	7 - Construction
AMH	AMH20	Fine Arts Center renovations	\$0	\$0	\$9,000,000	\$0	\$0	\$9,000,000	2 - Feasibility Report
AMH	AMH21	Life Science Laboratories backfill renovations	\$0	\$0	\$18,000,000	\$0	\$0	\$18,000,000	5 - Design
AMH	AMH26	DuBois Writing Program & Image Library	\$151,000	\$0	\$7,949,000	\$0	\$0	\$8,100,000	7 - Construction
BOS	BOSMP.01.01	Construct New Integrated Sciences Complex (Master Plan Phase I)	\$0	\$0	\$52,000,000	\$127,000,000	\$0	\$179,000,000	7 - Construction
BOS	BOSMP.01.03	Center for Personalized Cancer Therapy (LSBB Earmark) (Master Plan Phase I)	\$0	\$0	\$0	\$10,000,000	\$0	\$10,000,000	7 - Construction
BOS	BOSMP.02.01	Utility Corridor and Roadway Relocation Project (Master Plan Phase I)	\$0	\$0	\$158,500,000	\$75,000,000	\$0	\$233,500,000	7 - Construction
BOS	BOSMP.02.03	Construct New Energy-Producing Facility (Master Plan Phase I)	\$0	\$0	\$0	\$0	\$27,500,000	\$27,500,000	4 - Study / Schematic Design
BOS	BOSMP.03	Construct New General Academic Building 1, University Hall (Master Plan Phase I)	\$13,000,000	\$0	\$124,000,000	\$0	\$0	\$137,000,000	7 - Construction
BOS	BOSMP.04	Construct New Residence Hall 1 (P3 Project) (Master Plan Phase I)	\$0	\$0	\$0	\$0	\$115,600,000	\$115,600,000	6 - Final Design / Early Constr.
BOS	BOSMP.04.01	Construct University Dining Facility in New Residence Hall 1	\$0	\$0	\$18,000,000	\$0	\$0	\$18,000,000	6 - Final Design / Early Constr.
BOS	BOSMP.05.01	Renovations to Existing Academic Buildings (Master Plan Phase I)	\$0	\$0	\$45,000,000	\$0	\$0	\$45,000,000	5 - Design
BOS	BOSMP.06.02	Relocate Campus Greenhouse (Master Plan Phase I)	\$0	\$2,500,000	\$2,500,000	\$0	\$0	\$5,000,000	2 - Feasibility Report
BOS	BOSMP.08	Construct New Garage Facility (Master Plan Phase I)	\$0	\$0	\$0	\$0	\$71,000,000	\$71,000,000	5 - Design
BOS	BOSMP.10.01	Demolish UMass Bayside Buildings and Improve Parking Lot (Master Plan Phase I)	\$0	\$0	\$9,800,000	\$0	\$0	\$9,800,000	6 - Final Design / Early Constr.
BOS	BOSMP.14	Relocate Pool Facility due to Demolition of the Existing Pool (Master Plan Phase I)	\$0	\$5,000,000	\$5,000,000	\$0	\$0	\$10,000,000	1 - Conceptual
BOS	BOSBI.02.03	Healey Building: Roof Replacement and Building Envelope Repairs	\$0	\$0	\$6,850,000	\$1,350,000	\$0	\$8,200,000	8 - Substantial Completion
BOS	BOSBI.02.05	McCormack Hall: Roof Replacement and Building Envelope Repairs	\$0	\$0	\$3,500,000	\$0	\$0	\$3,500,000	5 - Design
BOS	BOSBI.10	Elevator Renovations in Clark, McCormack Quinn, and Wheatley	\$0	\$0	\$8,300,000	\$0	\$0	\$8,300,000	6 - Final Design / Early Constr.
BOS	BOSBI.18	Fox Point Dock: Upgrades and ADA Accessibility	\$0	\$0	\$2,500,000	\$0	\$0	\$2,500,000	7 - Construction
BOS	BOSBI.25	Clark Athletic Center: Replace Roof and East Curtain Wall and Repair Façade	\$625,000	\$0	\$3,000,000	\$1,625,000	\$0	\$5,250,000	6 - Final Design / Early Constr.
DAR	DAR02	Charlton College of Business, Phase II	\$0	\$3,000,000	\$12,000,000	\$0	\$0	\$15,000,000	8 - Substantial Completion
DAR	DAR03	SMAST / DMF Expansion	\$0	\$0	\$25,000,000	\$30,000,000	\$0	\$55,000,000	7 - Construction
DAR	DAR08	Research Laboratory Improvements	\$0	\$165,000	\$13,140,500	\$0	\$0	\$13,305,500	7 - Construction
DAR	DAR09	Classroom, Teaching Laboratory, and Learning Space Improvements	\$200,000	\$0	\$11,240,000	\$0	\$0	\$11,440,000	7 - Construction
LOW	LOW1	Pulichino/Tong School of Business Building	\$4,000,000	\$6,800,000	\$8,000,000	\$28,200,000	\$0	\$47,000,000	7 - Construction
LOW	LOW2	Science & Engineering Master Plan-Perry Hall, Engineering, Renewal	\$18,000,000	\$12,000,000	\$20,000,000	\$0	\$0	\$50,000,000	5 - Design
LOW	LOW3	North Campus Quad Renewal Pod Project, Phase 1	\$7,600,000	\$0	\$11,400,000	\$0	\$0	\$19,000,000	7 - Construction
LOW	LOW4	Perkins Acquisition & Construction	\$5,000,000	\$0	\$69,000,000	\$0	\$0	\$74,000,000	6 - Final Design / Early Constr.
LOW	LOW5	Fox Hall Elevators	\$6,000,000	\$0	\$12,000,000	\$0	\$0	\$18,000,000	5 - Design
LOW	LOW6	Pasteur Second and Third Floors – Comprehensive Renovation	\$12,000,000	\$0	\$0	\$0	\$0	\$12,000,000	3 - OPM/Designer Procurement
LOW	LOW7	Science & Engineering Master Plan-Olsen Renovations 1	\$0	\$0	\$10,000,000	\$0	\$0	\$10,000,000	4 - Study / Schematic Design
LOW	LOW9	Coburn Hall Renewal and Addition	\$0	\$10,000,000	\$40,000,000	\$0	\$0	\$50,000,000	1 - Conceptual
LOW	LOW12	AEP	\$21,000,000	\$0	\$0	\$5,000,000	\$0	\$26,000,000	7 - Construction
LOW	LOW13	Residential Hall Comprehensive Renewal Program - Phase 1: FY13-22	\$10,000,000	\$0	\$0	\$0	\$0	\$10,000,000	1 - Conceptual
LOW	LOW14	Technology Infrastructure	\$0	\$0	\$10,000,000	\$0	\$0	\$10,000,000	1 - Conceptual
UMMS	WOR1A	VA-1 Mass DOT Building Demolition	\$0	\$0	\$2,000,000	\$0	\$0	\$2,000,000	1 - Conceptual
UMMS	WOR1B	VA-1 Worcester VA Community Based Outpatient Clinic - New Facility - Phase 1	\$0	\$0	\$90,000,000	\$0	\$0	\$90,000,000	5 - Design
UMMS	WOR1C	VA-1 Expansion to South Road Garage	\$0	\$0	\$10,000,000	\$0	\$0	\$10,000,000	1 - Conceptual
UMMS	WOR4	REN - 4 Basic Research and Student Lab Wing Improvements Floors 1 - 4	\$16,000,000	\$0	\$0	\$0	\$0	\$16,000,000	7 - Construction
UMMS	WOR11	Library repurposing and renovations	\$5,350,000	\$0	\$150,000	\$0	\$0	\$5,500,000	1 - Conceptual
UMMS	WOR17	Animal Quarters A Level Renovations (HVAC, Cage Wash, and Holding Rooms)	\$14,500,000	\$0	\$0	\$0	\$0	\$14,500,000	1 - Conceptual
UMMS	WOR18	Parking Lot Maintenance - Main Campus	\$10,840,000	\$0	\$0	\$0	\$0	\$10,840,000	1 - Conceptual
UMMS	WOR31	Departmental equipment purchases	\$10,000,000	\$0	\$0	\$0	\$0	\$10,000,000	1 - Conceptual
UMMS	WOR4A	REN - 4 Clinical Wing Lab to Office Conversions (Floor 2 - 7)	\$15,500,000	\$0	\$0	\$0	\$0	\$15,500,000	4 - Study / Schematic Design

Appendix B - Full Capital Plan

Campus	Priority	Project Name	AdjustedCost	Timeframe	Investment Criteria	Category
AMH	AMH01	Life Science Laboratories	\$168,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH02	DuBois Library Electrical, Plumbing, Fire Suppression, Deferred Maintenance	\$25,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
AMH	AMH03	MLSC Life Sciences Facility	\$95,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH04	New Faculty Hire Renovations	\$14,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH05	Life Science Laboratories, OIT data center fitout	\$10,100,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH06	Expand and Upgrade Central Chilled Water Plants	\$38,000,000	A (1-3 Yr)	Reliability	BOT Approved
AMH	AMH07	Physical Sciences Building	\$101,800,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH08	Design Building - formerly Hills replacement Building	\$55,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH09	South College Academic Facility - formerly Bartlett Replacement Building	\$65,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH11	ADA Accessibility	\$2,000,000	A (1-3 Yr)	Safety/Code	BOT Approved
AMH	AMH12	Isenberg School of Management renovations and addition	\$62,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH13	Old Chapel Renovations	\$21,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
AMH	AMH16	Whitmore deferred maintenance	\$14,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
AMH	AMH17	Marston Repairs and Renovations	\$6,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
AMH	AMH18	Thompson Deferred Maintenance - formerly part of DM project 46 in prior year	\$2,250,000	A (1-3 Yr)	Asset Preservation	BOT Approved
AMH	AMH19	Replace Oil Filled Transformers	\$2,000,000	A (1-3 Yr)	Reliability	BOT Approved
AMH	AMH20	Fine Arts Center renovations	\$9,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH21	Life Science Laboratories backfill renovations	\$18,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH26	DuBois Writing Program & Image Library	\$8,100,000	A (1-3 Yr)	Program Improvement	BOT Approved
AMH	AMH14	Permanent Liquefied Natural Gas Facility	\$5,000,000	A (1-3 Yr)	Reliability	President Approval
AMH	AMH15	Campus Center Parking Garage Repairs	\$4,500,000	A (1-3 Yr)	Safety/Code	President Approval
AMH	AMH24	Morrill Steamline	\$8,900,000	A (1-3 Yr)	Reliability	President Approval
AMH		Property Acquisitions	\$5,000,000	A (1-3 Yr)	New Construction	President Approval
AMH	AMH34	Deferred Maintenance	\$100,000,000	A (1-3 Yr)	Asset Preservation	In Projection, Not Approved
AMH	AMH35	Campus Infrastructure FY17-21	\$100,000,000	A (1-3 Yr)	Asset Preservation	In Projection, Not Approved
AMH	AMH36	Morrill Science Ctr Renovations	\$48,800,000	A (1-3 Yr)	Asset Preservation	In Projection, Not Approved
AMH	AMH37	Lederle Research Center Repairs and Renovations	\$41,250,000	A (1-3 Yr)	Program Improvement	In Projection, Not Approved
AMH	AMH38	Machmer Repairs	\$12,600,000	A (1-3 Yr)	Asset Preservation	In Projection, Not Approved
AMH	AMH41	Wareham Cranberry Station	\$5,000,000	A (1-3 Yr)	Program Improvement	In Projection, Not Approved
AMH	AMH42	Center for Urban Sustainability Waltham	\$20,000,000	A (1-3 Yr)	Program Improvement	In Projection, Not Approved
AMH	AMH43	National Aeronautics, Research, Development and Training Center	\$5,000,000	A (1-3 Yr)	Program Improvement	In Projection, Not Approved
AMH	AMH44	Energy Improvements	\$20,000,000	A (1-3 Yr)	Economic Opportunity	In Projection, Not Approved
AMH	AMH46	Water Technology Piloting Facility	\$4,000,000	A (1-3 Yr)	Reliability	In Projection, Not Approved
AMH	AMH10	Deferred Maintenance & Modernization Projects	\$36,750,000	A (1-3 Yr)	Asset Preservation	Pipeline of Strategic/Master Plan Projects
AMH	AMH11	ADA Accessibility - Contingent Portion	\$4,000,000	A (1-3 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects
AMH	AMH23	Campus Infrastructure	\$19,500,000	A (1-3 Yr)	Asset Preservation	Pipeline of Strategic/Master Plan Projects
AMH	AMH25	Academic/Classroom/Office Renovations Pool	\$21,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH27	Student Experience	\$160,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH29	Data Science Facilities	\$80,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH30	Stem Facilities Renewal	\$150,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH31	Instructional Facilities Improvements	\$25,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH32	Housing	\$150,000,000	A (1-3 Yr)	Asset Preservation	Pipeline of Strategic/Master Plan Projects
AMH	AMH33	Central Heating Plant Boiler/Co-Gen Fitout	\$20,000,000	A (1-3 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
AMH	AMH39	Public Health and Health Sciences building	\$175,000,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH40	Engineering Building	\$150,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
AMH	AMH45	Stockbridge School of Agriculture space and tech upgrades	\$5,000,000	A (1-3 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects

Appendix B - Full Capital Plan

Campus	Priority	Project Name	AdjustedCost	Timeframe	Investment Criteria	Category
BOS	BOSMP.01.01	Construct New Integrated Sciences Complex (Master Plan Phase I)	\$179,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.01.03	Center for Personalized Cancer Therapy (Life Sciences Bond Bill Earmark) (Master Plan Phase I)	\$10,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
BOS	BOSMP.02.01	Utility Corridor and Roadway Relocation Project (Master Plan Phase I)	\$233,500,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.02.03	Construct New Energy-Producing Facility (Master Plan Phase I)	\$27,500,000	A (1-3 Yr)	Program Improvement	BOT Approved
BOS	BOSMP.03	Construct New General Academic Building 1, University Hall (Master Plan Phase I)	\$137,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.04	Construct New Residence Hall 1 (P3 Project) (Master Plan Phase I)	\$115,600,000	A (1-3 Yr)	Program Improvement	BOT Approved
BOS	BOSMP.05.01	Renovations to Existing Academic Buildings (McCormack Hall and Wheatley Hall) (Master Plan Phase I)	\$45,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.06.02	Relocate Campus Greenhouse due to Demolition of the Science Center (Master Plan Phase I)	\$5,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.08	Construct New Garage Facility (Master Plan Phase I)	\$71,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.10.01	Demolish UMass Bayside Buildings and Improve Parking Lot (Master Plan Phase I)	\$9,800,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSMP.14	Relocate Pool Facility due to Demolition of the Existing Pool (Master Plan Phase I)	\$10,000,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	Bl.18	Fox Point Dock: Upgrades and ADA Accessibility	\$2,500,000	A (1-3 Yr)	Safety/Code	BOT Approved
BOS	BOSBl.02.03	Healey Building: Roof Replacement and Building Envelope Repairs	\$8,200,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSBl.02.05	McCormack Hall: Roof Replacement and Building Envelope Repairs	\$3,500,000	A (1-3 Yr)	Reliability	BOT Approved
BOS	BOSBl.10	Elevator Renovations in Clark Athletic Center, McCormack Hall, Quinn Administration Building, and Wheatley Hall	\$8,300,000	A (1-3 Yr)	Safety/Code	BOT Approved
BOS	BOSBl.25	Clark Athletic Center: Replace Gymnasium Roof and East Curtain Wall and Repair Rink South Façade	\$5,250,000	A (1-3 Yr)	Safety/Code	BOT Approved
BOS	MP.04.01	Construct University Dining Facility in New Residence Hall 1	\$18,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
BOS	BOSMP.06.06	Demolish Substructure, Science Center, and Pool (Master Plan Phase I)	\$150,000,000	A (1-3 Yr)	Reliability	In Projection, Not Approved
BOS	BOSMP.07	Construct New General Academic Building 2 (Master Plan Phase I)	\$100,000,000	A (1-3 Yr)	Reliability	In Projection, Not Approved
BOS	BOSMP.08	Construct New Public Safety and Athletics Facility (Master Plan Phase I)	\$22,700,000	A (1-3 Yr)	Reliability	In Projection, Not Approved
BOS	BOSMP.06.08	Relocate Soccer/Lacrosse Field (Master Plan Phase I)	\$2,800,000	B (4-7 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
BOS	BOSMP.09	Campus Center: Build Out Parking Garage Space as Assignable Space (Master Plan Phase I)	\$5,000,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
BOS	BOSBl.09	Healey Building: Install Fire Sprinklers and Replace Fire Alarm System and Fire Pumps	\$8,200,000	B (4-7 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects
BOS	BOSBl.14.02	Service and Supply Building: Install Fire Suppression System and Upgrade Fire Alarm System	\$2,300,000	B (4-7 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects
BOS	BOSBl.14.03	Clark Athletic Center: Install Fire Suppression System and Upgrade Fire Alarm System	\$3,700,000	A (1-3 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects
BOS	BOSBl.26	Service and Supply Building: Reconfigure and Renovate to Increase Assignable Space	\$2,200,000	B (4-7 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
BOS	BOSTR.05.01	Healey Building: Renovations to Improve and Increase Student Learning Space, Phase I	\$12,500,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects

Appendix B - Full Capital Plan

Campus	Priority	Project Name	AdjustedCost	Timeframe	Investment Criteria	Category
DAR	DAR02	Charlton College of Business, Phase II	\$15,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
DAR	DAR03	SMAST / DMF Expansion	\$55,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
DAR	DAR08	Research Laboratory Improvements	\$13,305,500	A (1-3 Yr)	Program Improvement	BOT Approved
DAR	DAR09	Classroom, Teaching Laboratory, and Learning Space Improvements	\$11,440,000	A (1-3 Yr)	Program Improvement	BOT Approved
DAR	DAR07	New Academic Building	\$75,000,000	A (1-3 Yr)	Program Improvement	In Projection, Not Approved
DAR	DAR01	Deferred Maintenance - Ongoing	\$4,229,469	A (1-3 Yr)	Asset Preservation	Pipeline of Strategic/Master Plan Projects
DAR	DAR04	LARTs Renovation	\$47,600,000	B (4-7 Yr)	Asset Preservation	Pipeline of Strategic/Master Plan Projects
DAR	DAR05	SENG Renovation	\$91,875,000	B (4-7 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects
DAR	DAR06	Campus Entrance Building	\$45,000,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR10	ADA Renovations Immediate Needs	\$2,184,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR11	Campus Center Addition (Student Union)	\$16,400,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR12	Central Administrative Services Building	\$12,690,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR13	Claire T. Carney Library Exterior Envelope Repair	\$14,000,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR14	Roadway Repairs	\$6,220,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR15	Law School - Deferred Maintenance	\$5,000,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR16	Multi Purpose Field House	\$20,800,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR17	Amphitheater Project	\$7,000,000			Pipeline of Strategic/Master Plan Projects
DAR	DAR18	Deferred Maintenance - Conceptual	\$64,438,500			Pipeline of Strategic/Master Plan Projects

Appendix B - Full Capital Plan

Campus	Priority	Project Name	AdjustedCost	Timeframe	Investment Criteria	Category
LOW	LOW1	Pulichino/Tong School of Business Building	\$47,000,000	B (4-7 Yr)	New Construction	BOT Approved
LOW	LOW2	Science & Engineering Master Plan-Perry Hall, Engineering, Renewal	\$50,000,000	B (4-7 Yr)	Program Improvement	BOT Approved
LOW	LOW3	North Campus Quad Renewal Pod Project, Phase 1	\$19,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
LOW	LOW4	Perkins Acquisition & Construction	\$74,000,000	B (4-7 Yr)	New Construction	BOT Approved
LOW	LOW5	Fox Hall Elevators	\$18,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
LOW	LOW6	Pasteur Second and Third Floors – Comprehensive Renovation	\$12,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
LOW	LOW7	Science & Engineering Master Plan Phase 1	\$10,000,000	B (4-7 Yr)	Program Improvement	BOT Approved
LOW	LOW9	Coburn Hall Renewal and Addition	\$50,000,000	A (1-3 Yr)	Asset Preservation	BOT Approved
LOW	LOW12	AEP	\$26,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
LOW	LOW13	Residential Hall Comprehensive Renewal Program - Phase 1: FY13-22	\$10,000,000	B (4-7 Yr)	Program Improvement	BOT Approved
LOW	LOW14	Technology Infrastructure	\$10,000,000			BOT Approved
LOW	LOW8	Aiken Recreational Fields	\$6,000,000	A (1-3 Yr)	Program Improvement	President Approval
LOW	LOW10	Property Acquisitions	\$10,000,000	A (1-3 Yr)	New Construction	President Approval
LOW	LOW11	Wannalancit	\$5,000,000	A (1-3 Yr)	Program Improvement	President Approval
LOW	LOW11	Central Services	\$5,000,000	A (1-3 Yr)	Program Improvement	President Approval
LOW	LOW11	North Campus Retail Dining Relocation/Expansion	\$5,000,000	A (1-3 Yr)	Program Improvement	President Approval
LOW	LOW7	Science & Engineering Master Plan Phase 2	\$76,000,000			In Projection, Not Approved
LOW	LOW19	New Residential Hall	\$60,000,000			In Projection, Not Approved
LOW	LOW30	Tsongas Center Expansion	\$35,000,000	B (4-7 Yr)	New Construction	In Projection, Not Approved
LOW	LOW31	Coburn Hall Renewal and Addition, Future Phases	\$19,000,000			In Projection, Not Approved
LOW	LOW13	Residential Hall Comprehensive Renewal Program - Future Phases	\$32,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW16	North Campus Sector Plan Academic Renewal	\$62,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW17	South Campus Master Plan - Initial Space & Mall Improvements - Phase 1	\$14,000,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
LOW	LOW18	Athletic (D1) and Recreational Facilities	\$64,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW20	Science & Engineering Master Plan-Olney Renovations (Phase 1)	\$55,500,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW21	Ball Hall Renewal	\$50,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW22	New South Campus Academic Building (South Campus Master Plan)	\$114,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW23	Pinanski Hall Renewal	\$50,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW24	Weed Hall Renewal	\$45,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW25	Science & Engineering Master Plan-Olney Renovations (Phase 2)	\$100,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW26	O'Leary Renewal	\$22,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW27	Durgin Hall Renewal & Addition	\$65,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW28	South Campus Central Services Addition, Power Plant & Infrastructure	\$30,000,000			Pipeline of Strategic/Master Plan Projects
LOW	LOW29	New North Campus Academic Building	\$105,000,000			Pipeline of Strategic/Master Plan Projects

Appendix B - Full Capital Plan

Campus	Priority	Project Name	AdjustedCost	Timeframe	Investment Criteria	Category
UMMS	WOR1A	VA-1 Mass DOT Building Demolition	\$2,000,000	B (4-7 Yr)	New Construction	BOT Approved
UMMS	WOR1B	VA-1 Worcester VA Community Based Outpatient Clinic - New Facility - Phase 1	\$90,000,000	B (4-7 Yr)	New Construction	BOT Approved
UMMS	WOR4	REN - 4 Basic Research and Student Lab Wing Improvements Floors 1 - 4	\$16,000,000	A (1-3 Yr)	Program Improvement	BOT Approved
UMMS	WOR1C	VA-1 Expansion to South Road Garage	\$10,000,000	B (4-7 Yr)	New Construction	BOT Approved
UMMS	WOR11	Library repurposing and renovations	\$5,500,000	A (1-3 Yr)	Program Improvement	BOT Approved
UMMS	WOR17	Animal Quarters A Level Renovations (HVAC, Cage Wash, and Holding Rooms)	\$14,500,000	A (1-3 Yr)	Asset Preservation	BOT Approved
UMMS	WOR18	Parking Lot Maintenance - Main Campus	\$10,840,000	A (1-3 Yr)	Asset Preservation	BOT Approved
UMMS	WOR31	Departmental equipment purchases	\$10,000,000			BOT Approved
UMMS	WOR4A	REN - 4 Clinical Wing Lab to Office Conversions (Floor 2 - 7)	\$15,500,000	A (1-3 Yr)	Program Improvement	BOT Approved
UMMS	WOR2	Campus IT Projects	\$14,974,000			President Approval
UMMS	WOR5	E/M DM - 5 School HVAC Upgrades / Replacements - Amphitheater Mechanical Systems and AHU	\$4,000,000	A (1-3 Yr)	Reliability	President Approval
UMMS	WOR5A	E/M DM - 5 School HVAC Upgrades / Replacements - Student Wing Mechanical Systems and AHU	\$4,000,000	A (1-3 Yr)	Reliability	President Approval
UMMS	WOR5D	E/M DM - 5 Campus Electrical Distribution Efficiency Improvements	\$2,500,000	A (1-3 Yr)	Economic Opportunity	President Approval
UMMS	WOR5E	Enhance chilled water loop pump/controls	\$3,000,000	A (1-3 Yr)	Economic Opportunity	President Approval
UMMS	WOR6	Land Acquisition, per Master Plan	\$5,000,000	A (1-3 Yr)	New Construction	President Approval
UMMS	WOR8	LRB Teaching and Learning Space - Backfill Project, Floor 1	\$2,000,000	A (1-3 Yr)	Program Improvement	President Approval
UMMS	WOR13	Integrated Learning and Teaching Center, Phase 2	\$2,500,000	A (1-3 Yr)	Program Improvement	President Approval
UMMS	WOR14	Install Chiller 6	\$4,000,000	B (4-7 Yr)	Asset Preservation	President Approval
UMMS		Deferred Maintenance Earmark	\$48,500,000	A (1-3 Yr)	Reliability	In Projection, Not Approved
UMMS	WOR5B	E/M DM - 5 School HVAC Upgrades / Replacements - Basic Wing Mechanical Systems and AHU	\$14,000,000	A (1-3 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
UMMS	WOR5C	E/M DM - 5 School HVAC Upgrades / Replacements - Clinical Wing Mechanical Systems and AHU	\$14,000,000	A (1-3 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
UMMS	WOR5F	E/M DM - 5 Replace School Electric Substations	\$9,900,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR7	Renovate 1st Floor Basic Wing	\$6,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR9	LRB Animal Quarters Robotics (Equipment Procurement / Installation)	\$2,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR10	Deferred Maintenance Projects - Level 2,3	\$35,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR13A	Biomedical Research Imaging and Scientific Core Building	\$150,000,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
UMMS	WOR13B	Pine Tree Lot Parking Garage	\$25,000,000	B (4-7 Yr)	Program Improvement	Pipeline of Strategic/Master Plan Projects
UMMS	WOR15	Balance of Plant Controls (BOP) Upgrade	\$2,257,500			Pipeline of Strategic/Master Plan Projects
UMMS	WOR16	South Road Pavement, Landscaping, Sidewalks and Lighting	\$2,500,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR19	LP Boiler Re-tubing	\$4,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR20	School Building Retro Commissioning, LEED EB	\$3,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR22	BNRI Upgrades	\$2,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR23	School Stairwell Fire Safety Improvements	\$2,500,000			Pipeline of Strategic/Master Plan Projects
UMMS	WOR33	Campus Electrical Loop Development	\$4,000,000	B (4-7 Yr)	Reliability	Pipeline of Strategic/Master Plan Projects
UMMS	WCCC2	South Street Building 1 Renovations	\$7,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WCCC3	South St. Deferred Maintenance	\$7,875,000			Pipeline of Strategic/Master Plan Projects
UMMS	WCCC4	South St. Bldg 2 Demo / Renovation	\$7,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WCCC5	Misc. Renovations WCCC	\$10,000,000			Pipeline of Strategic/Master Plan Projects
UMMS	WCCC6	Demo Worcester Foundation Buildings	\$2,500,000	A (1-3 Yr)	Safety/Code	Pipeline of Strategic/Master Plan Projects

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Revised 6/18/14

UNIVERSITY OF MASSACHUSETTS
CAPITAL PLANNING, LAND AND FACILITIES USE POLICY

PURPOSE

The *Capital Planning, Land and Facilities Use Policy* provides specific criteria relating to capital planning, land and facilities use and other related topics such as ongoing maintenance, acquisition of real property, disposition of real estate, and private use.

I. INTRODUCTION

Capital and facilities planning is an integral part of the long-range and strategic planning processes, as it affects all aspects of the University's programs and operations. Participants in this process should include, but not be limited to the strategic planning committees, facilities managers, physical plant directors, the Offices of Administration and Finance, and the University of Massachusetts Building Authority. While specific assumptions and criteria may vary for short-term and long-range projects, the long-range objectives of the University must underlie both. The goals and priorities in the campus master plans shall form the basis for all facilities planning and land use decisions, regardless of whether the University is contemplating changes in existing uses of facilities, the development of unused land, the acquisition of new property, the construction or renovation of facilities, or the transfer of property to an another party.

II. POLICY STATEMENT

A. CAMPUS LAND AND FACILITIES MASTER PLANS, CAPITAL PLANNING, PROJECT REVIEW AND APPROVAL

1. Each campus shall prepare and maintain a land and facilities use master plan which shall include, but not be limited to:
 - a. information about the campus' mission and goals;
 - b. an inventory and description of existing land and facilities, including a description of the possible new or revised use of existing land and facilities;
 - c. projections of future land and facilities' needs;
 - d. the assumptions and criteria used to identify the needs of the campus;
 - e. the plan shall be consistent with State requirements for facilities and land use master plans;
 - f. the campus master plan shall be consistent with the five-year capital plan and other capital planning and land use decisions;
 - g. the campus master plan shall be reviewed and approved by the University President;

- h. the plan shall be evaluated and updated on a periodic basis, including when substantial changes to the campus' mission statement for strategic goals have taken place.
2. Each campus shall develop and maintain a Five Year Capital Plan and shall include, but not be limited to:
 - a. A prioritized list of all campus capital projects over \$2 million in total project cost that are planned to be initiated over the next five years;
 - b. statement on how each project supports the mission and goals of the campus;
 - c. statement describing how the projects address the deferred maintenance of the campus;
 - d. five-year capital budget projection along with the revenue source(s) for each project;
 - e. the University President shall issue guidance as needed and may request additional information as needed;
 - f. the plan shall be updated biennially and shall require the approval of the University President and the Board of Trustees.
 3. Before a campus can proceed with a project it must receive approval. The following are the thresholds and delegation of approval:
 - a. Capital projects with a total cost between \$2 million and \$10 million will require the approval of the University President.
 - b. Capital Projects greater than \$10 million will require the approval of the University President and the Board of Trustees.
 - c. Capital projects with a total estimated cost greater than \$2 million that requires any amount of University borrowing will require the approval of the University President and the Board of Trustees.
 - d. Projects that have an increase in cost of 10% or more, as defined by the standards, will require an additional approval from the Board.
 - e. The University President shall issue guidelines detailing the approval process and the criteria that will be used for a project to receive approval. The University President may request additional information as needed.

B. RESERVES FOR RENEWAL AND FUNDING FOR ON-GOING MAINTENANCE OF FACILITIES

- a. Campuses shall set aside funds for the general renewal, replacement and renovation of campus facilities and shall fund the on-going maintenance of new facilities.
- b. The University President shall promulgate standards and guidelines for establishment and funding of reserves.

C. DISPOSITION OF UNIVERSITY REAL ESTATE

- a. Real estate (including land, buildings, air rights, water rights and mineral rights) owned by the University is the property of the Commonwealth of Massachusetts which has been entrusted to the University for stewardship. The University's role as steward of this property is crucial, since the prudent use of our limited resources is key to our ability to provide for our future needs and to meet our long-range commitments to the citizens of the Commonwealth.
- b. Disposition of Ownership. Ownership rights in surplus state owned University real estate shall not be conveyed or transferred without approval by the Division of Capital Asset Management and Maintenance (DCAMM), and/or the Legislature and the Governor of such

proposals. In order to allow for adequate review and analysis, campus proposals for such dispositions must be presented to the Board of Trustees for informational purposes at one meeting and presented at a later meeting for approval. Such proposals must be complete and contain particular findings as to why the property is surplus to both current and future needs of the University.

- c. Other Dispositions. When a proposed use involves a disposition of less than ownership of University real estate, to a Non-affiliate, final review and approval by the President is required in addition to the necessary campus approvals. However, leases or licenses which do not exceed five (5) years, including any optional extensions or renewals (“Short-term”), shall be exempt from the requirement of Presidential review and may be approved by the campus or systems office. Any campus seeking to lease or license University property to a Non-Affiliate for more than five (5) years (“long-term”) must use a public process to solicit competitive offers to assure best value for the University. Any long-term lease or license for University property must be reviewed and approved by the President.
- d. Negative Easements. In certain circumstances a Non-affiliate may request that a campus agree not to perform, exercise, use, or conduct a lawful activity on a portion of real property owned by the University. These easements shall be treated the same as any other disposition of University real estate to a Non-affiliate and subject to the same restrictions of duration and requirements for approval.
- e. When beneficial to a University campus, a Chancellor may enter into disposition agreements with public utilities and/or municipality service providers which allow limited use of University real estate. All such agreements shall be approved as to form by the General Counsel’s office prior to execution by the campus.

D. ACQUISITION OF REAL PROPERTY

- a. Any lease or license from an entity or person not affiliated with the University (“Non-affiliate”) that exceeds a term of 20 years, including any optional extensions or renewals, shall require final review and approval by the President in addition to the necessary campus approvals.
- b. Prior to the purchase or acceptance of a gift of real property, a due diligence review must be conducted. Such review shall include the anticipated cost based on recent appraisals, assessments and other available information; an environmental investigation confirming the environmental condition; an evaluation of all improvements; and an appropriate title search confirming the title for the property is in acceptable condition (i.e. no unduly burdensome encumbrances or restrictions).

E. PRIVATE USE

- a. Any facilities of the campuses that are purchased, constructed, renovated, rehabilitated, improved or otherwise funded by use of funds from a tax-exempt bond issue are subject to private business use limitations as described in the federal tax law. When proposing a substantive change in the existing use of a facility financed with tax-exempt debt, campuses should consider the private use implications of such a change. A change in existing use must not cause the University to be in violation of private use regulations.

F. DELEGATION

The President and Chancellors may delegate all or any part their authority set forth in this Policy in accordance with the University’s delegation policy.

G. STANDARDS

The President, in consultation with the Vice President(s) and Chancellors, will issue administrative standards to implement this policy.

**ADMINISTRATIVE STANDARDS FOR THE
CAPITAL PLANNING, LAND AND FACILITIES USE POLICY
(Doc. T93-122, as amended)**

I. INTRODUCTION

Capital Planning and Land and Facilities Use Standards are intended to assist in the implementation of the University's Capital Planning and Land and Facilities Use Policy. The policy provides a framework within which the University develops and reviews campus master plans, the development of the University's Five-Year Capital Plan and the review and approval of capital projects. It includes other related topics such as capital renewal, ongoing maintenance, acquisition of real property, disposition of real estate, and private use.

II. STANDARDS STATEMENT

Definitions Used in the Capital Planning Process

- A. Five Year Capital Plan – The University's five-year capital plan contains priority projects that a campus plans on starting over the five-year planning period. The plan is updated biennially and is informed by the campus master plan. Sources of funding for some projects may not be identified in the five-year plan. Official studies on project costs may not be complete and the total project costs are to be considered preliminary. Projects on the five year plan must be reviewed and approved before a campus can move forward with a project. The goal of the five-year plan is to ensure that campuses are planning for future capital needs and are implementing the campus master plan. The five year capital plan also serves as prioritized list to advocate and seek funding for projects and other capital support.
- B. Approved Capital Project List – A list of projects reviewed and approved by the University President or the Board of Trustees and reviewed quarterly.
- C. UMBA Capital Project Review – This review conducted by University of Massachusetts Building Authority will evaluate the scope and cost of each project. The goal is to have an independent review of the proposed scope and cost of each project to ensure rationality and feasibility in an effort to avoid unforeseen cost increases.
- D. Approval of the Preliminary Campus Estimate (first vote) – Preliminary approval is granted to a project that meets the criteria listed below and secures the President's and/or the Board approval. Preliminary approval is one of two required votes and allows a campus to proceed with a project. The campus will work with UMBA and other professionals to complete all the necessary studies and designs and develop a more complete project scope and cost estimate.
- E. Full Project Approval (second vote) – Full Project Approval is granted to a project that has completed the UMBA review process and has a confirmed project cost estimated. Once a project has reached the fourth construction phase or has completed the UMBA project review it is eligible for Full Project Approval by the President and or the Board. A project shall not move beyond the fifth project phase unless it has secured the Full Project Approval.
- F. Project Phases – There are nine (9) pre-defined project phases ranging from conceptual design to completion. Campus will categorize and track projects using the following phases:

- 1) Conceptual
- 2) Feasibility Report
- 3) OPM / Designer Procurement
- 4) Study / Schematic Design
- 5) Design
- 6) Final Design / Early Construction Packages
- 7) Construction
- 8) Substantial Completion
- 9) Complete

A. CAMPUS LAND AND FACILITIES MASTER PLANS; CAPITAL PLANING AND PROJECT REVIEW AND APRPOVAL

1. Development of the Land and Facilities Master Plan

The campus land and facilities use master plan is for the purpose of establishing a framework for orderly growth and development of capital improvements that is responsive to a campus' current and projected needs and sufficiently flexible to accommodate changes that can be expected to occur in a dynamic environment. The plan describes the optimal development of available space consistent with the approved mission statement of the campus. The plan is a working document that will require evaluation and updating periodically to ensure its consistency with revised mission statements and with other circumstances. The plan does not constitute a commitment to a specific timetable for the completion of projects. A land and facilities use master plan is a component of the overall planning responsibility of the campus and the System. The University President will work with Chancellors and the Board of Trustees to ensure consistency with this policy and with other University policies and standards and with the System wide strategic priorities established by the University President and the Board of Trustees.

Each campus shall prepare and maintain a land and facilities use master plan which shall include, but not be limited to the following information:

- a. Information about the campus' mission and goals;
- b. An inventory and description of existing land and facilities, including a description of the possible new or revised use of existing land and facilities;
 - (1) In assessing proposals for a change in the use of existing facilities and/or land, campuses should additionally consider the following:
 - (a) The short-term and long-range cost implications must be beneficial to the University.
 - (b) There should be no adverse legal implications for the University.
 - (c) Compliance with Private Use requirements.
- c. Projections of future land and facilities' needs;
- d. The assumptions and criteria used to identify the needs of the campus;
- e. The plan shall be consistent with State requirements for facilities and land use master plans;
- f. The campus master plan shall be consistent with the five-year capital plan and other capital planning and land use decisions;
- g. The campus master plan shall be reviewed and approved by the University President;
 - (1) The President in collaboration with the Chancellor shall determine the most appropriate review and approval time for the plan and consider issues such as rolling planning processes.
- h. the plan shall be evaluated and updated on a periodic basis, including when substantial changes to the campus' mission statement or strategic goals have taken place.

2. Development of the Five-year Capital Plan

Each campus shall develop and maintain a Five Year Capital Plan, which shall be informed by the campus master plan and be submitted to the University President and the Board of Trustees for review and approval. The University President shall establish and maintain guidelines to be followed by campuses in preparing the capital plan and will issue specific instructions and make additional requests as needed from time to time. The guidelines shall include but not be limited to statements of how the new project fits with the campus master plan, plans for construction funding, operating funds for the project when completed and sources of revenue including detailed debt service schedules, if necessary. Approvals for such projects will be subject to the capital approval process and be contingent on the general requirements that any new building must be consistent with the strategic plans and priorities of the University and the campus, and projects requiring new borrowing should be in compliance with the University's Debt Policy.

The Five Year Capital Plan shall include, but not be limited to the following:

- a. A prioritized list of all campus capital projects over \$2 million in total project cost that are planned to be initiated over the next five years;
- b. Statement on how each project supports the mission and goals of the campus;
- c. Statement describing how the projects address the deferred maintenance of the campus;
- d. Five-year capital budget projection along with the revenue source(s) for each project. Revenue sources shall be tracked as follows;
 - i. University Local Funds (operating and plant funds)
 - ii. Private Fundraising and Grants
 - iii. University Financing through UMBA/M DFA/ or some other entity
 - iv. State Appropriated – G.O. Funds or Supplemental Funds
 - v. Projects with no identified funding source should be listed as Contingent on Funding
- e. The plan shall be updated biennially and shall require the approval of the University President and the Board of Trustees.
 - i. The vote will clearly stipulate that approval of the five-year plan does not constitute project approval and that projects are required to follow the capital approval process.

3. Capital Project Review and Approval Process

Frequency: Quarterly

Before a campus can proceed with a project the project must receive approval by the University President and/or the Board. The following are the thresholds and delegation of approval:

- a. Any capital project with a total cost between \$2 million and \$10 million will require the approval of the University President.
- b. Any capital project greater than \$10 million will require the approval of the University President and the Board of Trustees.
- c. Any capital project with a total estimated cost greater than \$2 million that requires any amount of University borrowing will require the approval of the University President and the Board of Trustees.
- d. The status of all projects will be tracked and reported to the Board on a quarterly basis.

Approval of the Preliminary Campus Estimate (first vote) and Full Project Approval (second vote):

Before a project can receive Approval of their Preliminary Campus Estimate (the first vote) by the President and/or the Board, the following criteria must be met:

- a. A campus can request preliminary approval for a project at any time by notifying the President's Office. The request will be reviewed and approved on a quarterly basis corresponding with the quarterly Committee and Board schedule.
- b. Project is projected to begin within the next 24 months.
- c. Project is included in the University's five-year capital plan or, if it is not, an explanation as to why it has become a priority from the time the last five-year plan was approved will be required.
- d. Funding source(s) needs to be identified for the total project cost
- e. If the State is contributing to the project it needs to be:
 - i. Approved by the Executive Office for Administration and Finance
 - ii. Project amount and authorization needs to be confirmed by the DCAMM
- f. Project needs to be reflected in the campus operating budget projections
 - i. Budget projections should be based, in part, on guidance issued by the President's Office and consistent with the University's policies and any other financial requirements.
- g. Debt affordability analysis must comply with the University's Debt policy
 - i. Debt affordability projections must be calculated using guidance issued by the President's Office.

Before a project can receive Full Project Approval (the second vote) by the President and/or the Board, the following additional criteria must be met, in addition to those required for preliminary approval (the first vote):

- h. UMBA will conduct an independent review and will confirm the total project cost. This process is described further in the Appendix A – The UMBA Review Process.
 - i. All cost reported shall include hard and soft costs associated with the project.
- i. A project approval checklist will be signed off on by all parties certifying that the project has met all of the above criteria and is ready for approval by the University President or the Board.
- j. A project shall not be advanced beyond the 5th construction phase, as defined herein, without receiving Full Project Approval.

The Review and Approval process shall not be applied to projects that received Full Project Approval on or before June 18, 2014.

- a. Projects that are in the late phases of construction, or near completion, will not be subject to the additional review needed to secure the second vote granting Board Approval.

Project Initiation

Frequency: On-going

Once a project receives approval by the President and/or the Board, the following will occur:

- a. If a campus requires borrowing for one or more projects, it will submit a request to the President's Office requesting the amount to be borrowed along with any additional information required by the President's office.
- b. President's Office will request that UMBA initiate project management and financing, when appropriate, on behalf of the University in accordance with the Board's authorization to give this authority to the University President or his designee.
- c. If it is a DCAMM project, the University enters into the proper agreements with DCAMM.

- d. UMBA is required to seek the approval of the Executive Office for Administration and Finance to issue debt to finance any campus project. Per guidance issued by the Executive Office for Administration and Finance, UMBA will provide the following information:
- e. The project is added to the approved capital projects list and reviewed quarterly.

Quarterly Reporting to the Board

Frequency: Quarterly

- a. The status of all capital projects will be tracked and reported to the Board on a quarterly basis.
- b. In order to facilitate quarterly reporting to the University President and the Board, campuses will use the capital project database to update project information, monitor approvals and request new projects. Instructions will be sent out each quarter and will be updated as needed. It is the campuses responsibility to ensure accuracy and shall review each field in the project database to make sure the information is updated and accurate.

Changes to Project Costs

Frequency: Quarterly

As part of the quarterly reporting to the Board all project costs will be provided for each project on the list. Projects that have received the Full Project Approval (second vote) that have an increase in cost of 10% or more will require an additional approval from the Board.

Before the Board is asked to vote on a revised project cost, the project must meet the following criteria:

- a. A detailed description of the reason for the change in cost
- b. A campus must identify funding for the additional amount needed
- c. If the additional amount is being borrowed the debt affordability analysis must comply with the University Debt policy
- d. UMBA must review and sign off on the revised project cost estimate
- e. If it is a State project, DCAMM needs to reflect the increased cost in their project list and the Executive Office for Administration and Finance must have it included in their latest capital plan.

B. RESERVES FOR RENEWAL AND FUNDING FOR ON-GOING MAINTENANCE OF FACILITIES

- a. One and one half percent (1.5%) of the total construction cost of all new construction projects shall annually be set aside in a reserve fund to provide funding for the general renewal, replacement and renovation of campus facilities.
- b. Alternatively, a campus may satisfy the above requirement by fully funding depreciation through budgeted capital expenditures or by funding reserves as long as it can be audited for compliance.
- c. In addition, an amount equal to three and one half percent (3.5% - may revisit this percentage) of the total construction cost of all new construction projects shall be expended annually for the operational and maintenance expenses, excluding utilities, of the campus facilities; and campuses shall prioritize such spending so as to provide the maximum useful life of all new construction projects.

C. DISPOSITION OF UNIVERSITY REAL ESTATE

- a. Real estate (including land, buildings, air rights, water rights and mineral rights) owned by the University is the property of the Commonwealth of Massachusetts which has been entrusted to the University for stewardship. The University's role as steward of this property is crucial, since

the prudent use of our limited resources is key to our ability to provide for our future needs and to meet our long-range commitments to the citizens of the Commonwealth.

- b. Disposition of Ownership. Ownership rights in surplus University real estate shall not be conveyed or transferred without approval by the Division of Capital Asset Management and Maintenance (DCAMM), and/or the Legislature and the Governor of such proposals. In order to allow for adequate review and analysis, campus proposals for such dispositions must be presented to the Board of Trustees for informational purposes at one meeting and presented at a later meeting for approval. Such proposals must be complete and contain particular findings as to why the property is surplus to both current and future needs of the University.
- c. Other Dispositions. When a proposed use involves a disposition of less than ownership of University real estate, to a Non-affiliate, final review and approval by the President is required in addition to the necessary campus approvals. However, leases or licenses which do not exceed five (5) years, including any optional extensions or renewals (“Short-term”), shall be exempt from the requirement of Presidential review and may be approved by the campus or systems office. Any campus seeking to lease or license University property to a Non-Affiliate for more than five (5) years (“long-term”) must use a public process to solicit competitive offers to assure best value for the University. Any long-term lease or license for University property must be reviewed and approved by the President.
- d. Negative Easements. In certain circumstances a Non-affiliate may request that a campus agree not to perform, exercise, use, or conduct a lawful activity on a portion of real property owned by the University. These easements shall be treated the same as any other disposition of University real estate to a Non-affiliate and subject to the same restrictions of duration and requirements for approval.
- e. When beneficial to a University campus, a Chancellor may enter into disposition agreements with public utilities and/or municipality service providers which allow limited use of University real estate. All such agreements shall be approved as to form by the General Counsel’s office prior to execution by the campus.

D. ACQUISITION OF REAL PROPERTY

- a. Any lease or license from an entity or person not affiliated with the University (“Non-affiliate”) that exceeds a term of 20 years, including any optional extensions or renewals, shall require final review and approval by the President in addition to the necessary campus approvals.
- b. Prior to the purchase or acceptance of a gift of real property, a due diligence review must be conducted. Such review shall include the anticipated cost based on recent appraisals, assessments and other available information; an environmental investigation confirming the environmental condition; an evaluation of all improvements; and an appropriate title search confirming the title for the property is in acceptable condition (i.e. no unduly burdensome encumbrances or restrictions).

E. PRIVATE BUSINESS USE

- a. Any facilities of the campuses that are purchased, constructed, renovated, rehabilitated, improved or otherwise funded by use of funds from a tax-exempt bond issue are subject to private business use limitations as described in the federal tax law. Excessive private business use of facilities financed with tax-exempt bonds may cause the interest on the tax-exempt bonds to become taxable to the holder of the bonds.
- b. Private business use is defined as direct or indirect use of the tax-exempt bond financed facilities in any activity carried on by a nonqualified user.
- c. A qualified user is a state or local governmental unit or, in certain circumstances, a nonprofit, charitable organization described in Section 501(c)(3) of the Internal Revenue Code using

facilities in furtherance of its tax exempt purpose. The federal government is not a qualified user for the purposes of private business use.

- d. For financings by state and local governments or their agencies, private business use related to the qualifying use of the proceeds or facility is limited to 10% or less of the proceeds of facilities financed with tax exempt bonds. Private business use unrelated to such qualifying use of the proceeds or facility is limited to 5% or less of such proceeds.
- e. Common instances of private business use of facilities may include, but not be limited to:
 - Ownership
 - Actual or beneficial use pursuant to:
 - Leases
 - Management or service contracts
 - Research agreements
 - Take and pay (output) contracts
 - Special legal entitlements (for example, priority rights)
 - Special economic benefit to a nonqualified user (if the facilities is not available for use by the general public)
- f. The Vice Chancellors for Administration and Finance will ensure that the campuses comply with post-issuance procedures to prevent exceeding limitations of such private business use of the facilities financed with tax-exempt bonds. If a campus has any questions or concerns as to the existence of a private business use, it will consult with the President's Office, the UMBA, issuer of the tax exempt bonds, and bond counsel regarding the impact of any proposed or existing use of the facilities on the tax-exempt status of the bonds.

APPENDIX A

<p style="text-align: center;">University of Massachusetts Building Authority Review</p>

PURPOSE

The purpose of the Capital Project Review process is to: (1) provide guidance to the University's campuses on project approval from the Board of Trustees; and (2) provide a uniform method for documenting the full capital spending requirements so that capital activity can be effectively communicated and monitored.

The UMass President's Office requires all campuses to complete a Five-year Capital Plan. In addition, the Board has adopted an approval process focusing on projects that will be starting over the succeeding 24 month periods. To aide in that process, the President's Office and UMBA will work collaboratively with campuses to provide assistance and appropriately review any proposed capital project.

The Capital Project Review Process will:

- Review Campus study documentation
- Analyze externally (consultants) produced project information
- Review documented deferred maintenance reports
- Consider hazardous materials in the building or on potential sites
- Examine the proposed project schedule
- Consider enabling projects
- Review the existing project scope given the allocated funding limits and test the project design and construction cost projections
- Assess whether all of the relevant project cost components have been accounted for
- Assure the Campus approvals are in place

It is understood that estimating the cost of proposed capital projects is dependent upon the ability to identify, quantify, and estimate the costs of all of the various elements in a project. Since the Project Review will be conducted in most cases in advance of the design process, the campuses should provide, to the extent possible, applicable documentation that demonstrates the basis of the project.

I. GENERAL INFORMATION

- **Campus:**
- **Project Name:**
- **Capital Plan Reference:**
- **Identify Enabling Projects and critical timing implications:**
- **Project Delivery Method:**

- **Gross Square Footage:** State the estimated gross square footage of the total project. Explain this projects impact on the Campus's overall space inventory including any plans to reprogram, abandon or demolish existing space.
- **Project Description:** Briefly describe the project and its general use. If the project includes a mixture of new construction and renovation work, describe the amounts in each portion of the project. State any unique design objectives for the project that may affect project costs in the areas of appearance, use, or construction methods. Indicate if the project is expected to be less expensive, of average cost, or more expensive than comparable facilities.

II. PROJECT JUSTIFICATION

- **Justification:** Briefly justify the need for this project. Reference the campus strategic plan and/or campus master plan as appropriate. Discuss the alternatives considered and why they were rejected. Provide a statement on the campus's realistic expectations for funding. Explain the consequences if the project is not approved.
- **Facility Purpose/Use:** Briefly describe how this facility will be used once it is complete.
- **Site Description:** Provide a general street address or basic description of location. If appropriate, describe any external factors influencing the cost of construction on the site such as existing streets and roads, parking areas, vehicular access, adjacent construction, drainage, above and below ground utilities, easements, etc.

III. Project Schedule

- System Office Review and Approval Target: _____
- Board Approval vote target: _____
- Design Start: _____
- Construction Start: _____
- Operational Occupancy: _____

IV. FINANCIAL PLANNING

- **Sources of Project Funding:** Identify the funding sources
- **Income Projection:** For projects with an associated revenue stream, provide a five-year forecast of the project's operating revenues and expenditures from the date of completion of the project. All assumptions should be specified in the forecast.

V. ESTIMATED TOTAL PROJECT COST

- Planning Costs: \$ _____
- Architectural & Engineering Fees: \$ _____
- Acquisition/Demolition Costs: \$ _____
- Site or Facility Availability Costs (envir, haz, geotech, etc.): \$ _____
- Site Work/ Infrastructure (utilities, landscaping, signage, etc.): \$ _____
- Project Management Costs: \$ _____
- Construction: \$ _____

- Contingency: \$ _____
- Furniture/Equipment Estimate: \$ _____
- Other Anticipated Costs: \$ _____
- Total*** \$ _____

VI. PERTINENT CAMPUS APPROVALS

Facilities Leadership: _____ Date: _____

Programmatic Beneficiary: _____ Date: _____

Vice Chancellor for Administration & Finance: _____ Date: _____

Appendix D - Bond Bills

Campus	Bond Bill	Project	Earmark / Programmed Amount	Spent as of 6/30/16
Amherst	HEBB	Academic Classroom Building	64,450,000	59,202,594
Amherst	HEBB	New Lab Science Building	100,482,500	96,799,322
Amherst	HEBB	Physical Sciences Building	84,660,000	15,761,771
Amherst	HEBB	Machmer Hall Renovation	12,600,000	-
Amherst	HEBB	Lederle Graduate Research Center Modernization	41,250,000	-
Amherst	HEBB	Morrill Science Center	51,180,000	2,505,736
Amherst	HEBB	Springfield Satellite Center	5,200,000	3,548,550
Amherst	HEBB	Other Projects	20,830,832	20,624,008
Boston	HEBB	Substructure Stabilization	25,428,157	23,929,615
Boston	HEBB	Integrated Science Center	132,430,654	125,622,555
Boston	HEBB	Substructure Demolition	1,585,000	1,018,000
Boston	HEBB	New Academic Classroom Building	100,000,000	760,000
Boston	HEBB	Other Projects	3,170,600	3,007,395
Dartmouth	HEBB	Carney Library Renovation	46,284,377	45,424,966
Dartmouth	HEBB	SMAST	20,415,000	297,860
Dartmouth	HEBB	New Academic Classroom Building	75,000,000	163,125
Dartmouth	HEBB	Other Projects	40,498,641	40,498,641
Lowell	HEBB	South Campus Academic Facilities	36,130,000	35,802,446
Lowell	HEBB	Perry Hall	36,000,000	286,433
Lowell	HEBB	Pulichino Tong	28,110,000	15,221,012
Lowell	HEBB	ETIC	50,000	-
Lowell	HEBB	Olsen Hall	40,000,000	-
Lowell	HEBB	Coburn Hall	19,000,000	-
Lowell	HEBB	Other Projects	12,226,085	9,582,420
UMMS	HEBB	Shriver Center Renovation	8,380,000	488,583
UMMS	HEBB	Other Projects	3,720,525	3,720,525
UMMS	HEBB	Earmark for UMMS Deferred Maintenance	43,500,000	-
Lowell	HEBB	Earmark for Civic and Athletic Facility Improvements	10,000,000	-
Dartmouth	HEBB	Planning & Design Services for Graduate Housing	250,000	-
System	HEBB Supp	Earmarks Additional \$100 for DM	100,000,000	-
Lowell	GGBB	Earmark for Demolitions	1,600,000	-
Lowell	GGBB	Earmark for Tsongas	20,000,000	-
System	GGBB	Earmark for EMKI	5,000,000	5,000,000
System	EnvBB	Earmark for water transportation service at Fallon pier	8,000,000	-
System	EnvBB	Earmark for water innovation	4,000,000	-
System	EnvBB	Earmark for Strategic Framework for Climate Resilience	5,000,000	-
System	EnvBB	Earmark for resiliency measures	5,000,000	-
Amherst	EnvBB	Earmark for the Center for Urban Sustainability at Waltham	20,300,000	-
Amherst	EnvBB	Earmark for the Stockbridge School of Agriculture	5,000,000	-
Amherst	EnvBB	Earmark for the Cranberry Reseach Station Wareham	5,500,000	-
Amherst	EnvBB	Earmark for the Timber Frame Demonstration Project	3,000,000	-
Boston	TransBB	UCRR	75,000,000	25,000,000
Amherst	LSBB	Life Sciences Center	95,000,000	95,000,000
Amherst	LSBB	Pioneer Valley life Sciences Incubator	5,500,000	5,500,000
Amherst	LSBB	MGHPCC	4,540,000	4,540,000
Boston	LSBB	Center for Personalized Cancer Therapy	10,000,000	1,828,744
Boston	LSBB	Venture Development Center	588,848	588,848
Dartmouth	LSBB	Marine Biological Lab, Woods Hole	10,000,000	-
Dartmouth	LSBB	Regional Life Sciences Incubation Center	5,000,000	-
Dartmouth	LSBB	ATMC Acquisition	11,400,000	11,400,000
Dartmouth	LSBB	Taunton Life Sciences Incubator	5,000,000	-
Dartmouth	LSBB	Bio-processing Center (MAB)	20,600,000	20,600,000
Dartmouth	LSBB	New Bedford Incubator	5,000,000	75,000
Lowell	LSBB	Nano and Biomanufacturing Facility	10,000,000	10,000,000
Lowell	LSBB	M2D2	4,046,697	4,046,697
Worcester	LSBB	Albert Sherman Center	90,000,000	90,000,000
Worcester	LSBB	MassBiologics	5,000,000	5,000,000



Committee of the Whole

University Capital & Deferred Maintenance April 12, 2016

UMass Capital Plan

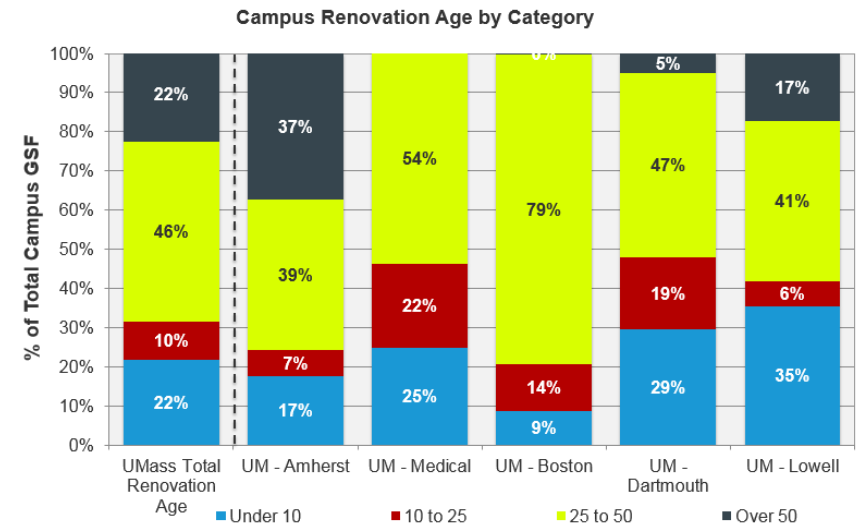
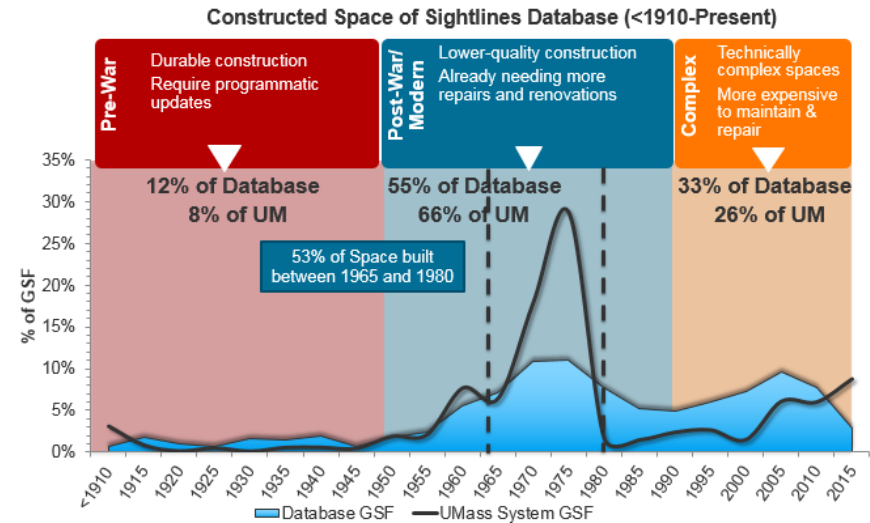
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- ❑ The University's capital program has been critical to our ability to step forward and emerge as a great public university.
- ❑ Enrollment has soared by more than 40 percent over the past two decades; we were recently named one of the *World's Most Innovative Universities*; and there is widespread recognition of the pivotal role UMass plays in the state's economy.
- ❑ Major State investment has helped create science and technology centers at all five campuses.
- ❑ Our construction has brought signature campus centers to Boston and Lowell, and new student housing to Amherst, Lowell and Dartmouth. And UMass Boston, for the first time in its history, now sees student housing on the horizon.
- ❑ Our construction and renovation efforts have employed thousands and have contributed to the \$6 billion annual economic impact that UMass provides across the Commonwealth.

Age of Facilities

3

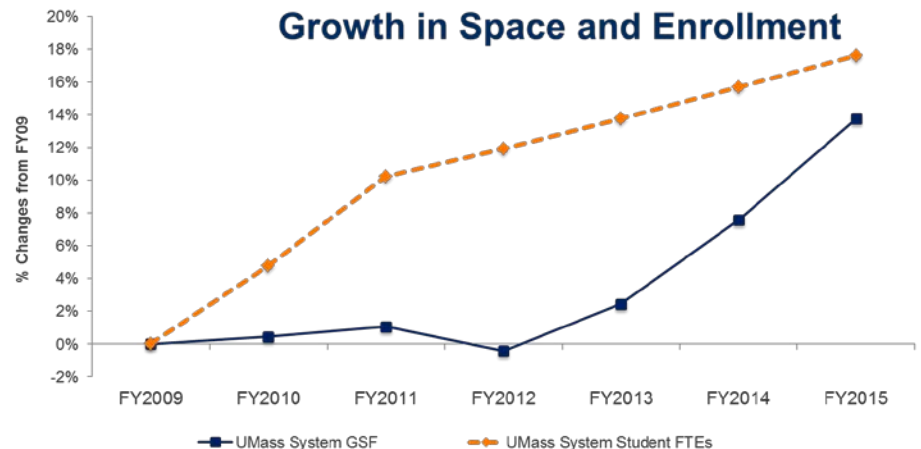
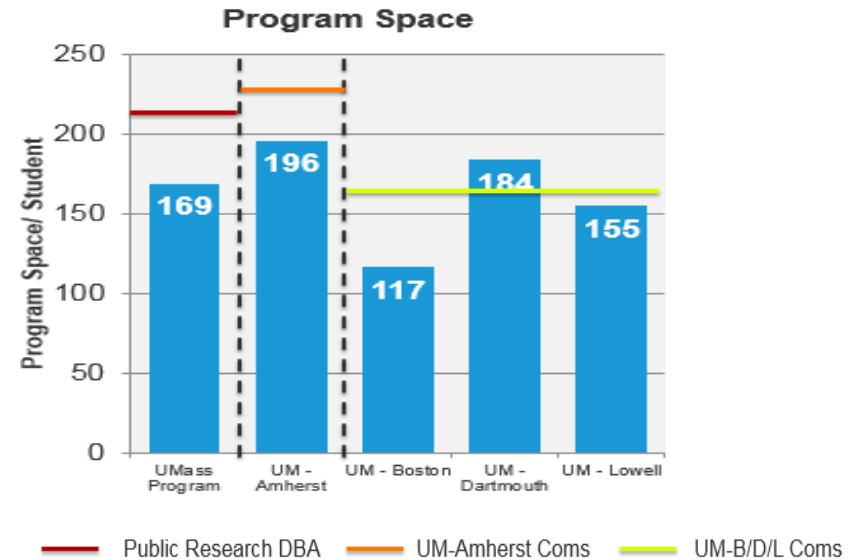
- ❑ The UMass Board recognized the need to repair facilities that had aged over the years.
- ❑ UMass sought guidance of one of the top facilities management firms, Sightlines. They work with more than 400 colleges and universities across the nation and in Canada – including 14 public university systems like UMass.
- ❑ Sightlines focused on Backlog – those facilities projects that should be handled over the next decade – and Deferred Maintenance – needs that must be addressed within three years.



Enrollment & Density

4

- ❑ Enrollment continues to outpace square footage growth. The University does not take an “if you build it they will come” approach to building.
- ❑ UMass campuses are below other peers in program space per student.
- ❑ The investments made have allowed us to address the needs of students while addressing our deferred maintenance.



Addressing the Backlog

5

- ❑ Amherst has had a \$450 million decline in their deferred maintenance since 2005. The vast majority of public universities experienced an increase in their deferred maintenance estimates over this same period .
- ❑ This decline could only have been accomplished by investing significant capital into existing space.
- ❑ Since 2011 Amherst has eliminated 105,000 square feet of building space which accounted for a reduction in their deferred maintenance of \$21.1 million.
- ❑ Amherst's annual investments have allowed them to avoid growth in their backlog while reducing it at the same time.
- ❑ In the case of Boston, once the new buildings are completed nearly 938K GSF will be demolished significantly reducing their deferred maintenance.

Addressing the Backlog

6

- ❑ In addition, based on the current levels of spending campuses are meeting their annual targets, established with the help of Sightlines, avoiding growth in the backlog.
- ❑ Investments by campuses (not including the flagship) have avoided nearly \$85 million in growth in the backlog.
- ❑ Going forward we will be able to use Sightlines data to benchmark our progress to monitor the results of our continued investments in deferred maintenance.

Identifying University Needs

7

- ❑ Of the \$3.3 billion capital plan, 70% or \$2.3 billion is addressing deferred maintenance.
 - ❑ In BPS: projects included in the Sightlines BPS analysis
 - ❑ Completed: projects that address deferred maintenance but are excluded from BPS because they are substantially complete
 - ❑ Auxiliary: auxiliary projects that address DM but are excluded from BPS because BPS is E&G only
 - ❑ Overlapped: projects that address deferred maintenance as a part of a major renovation and overlap with other projects included in BPS

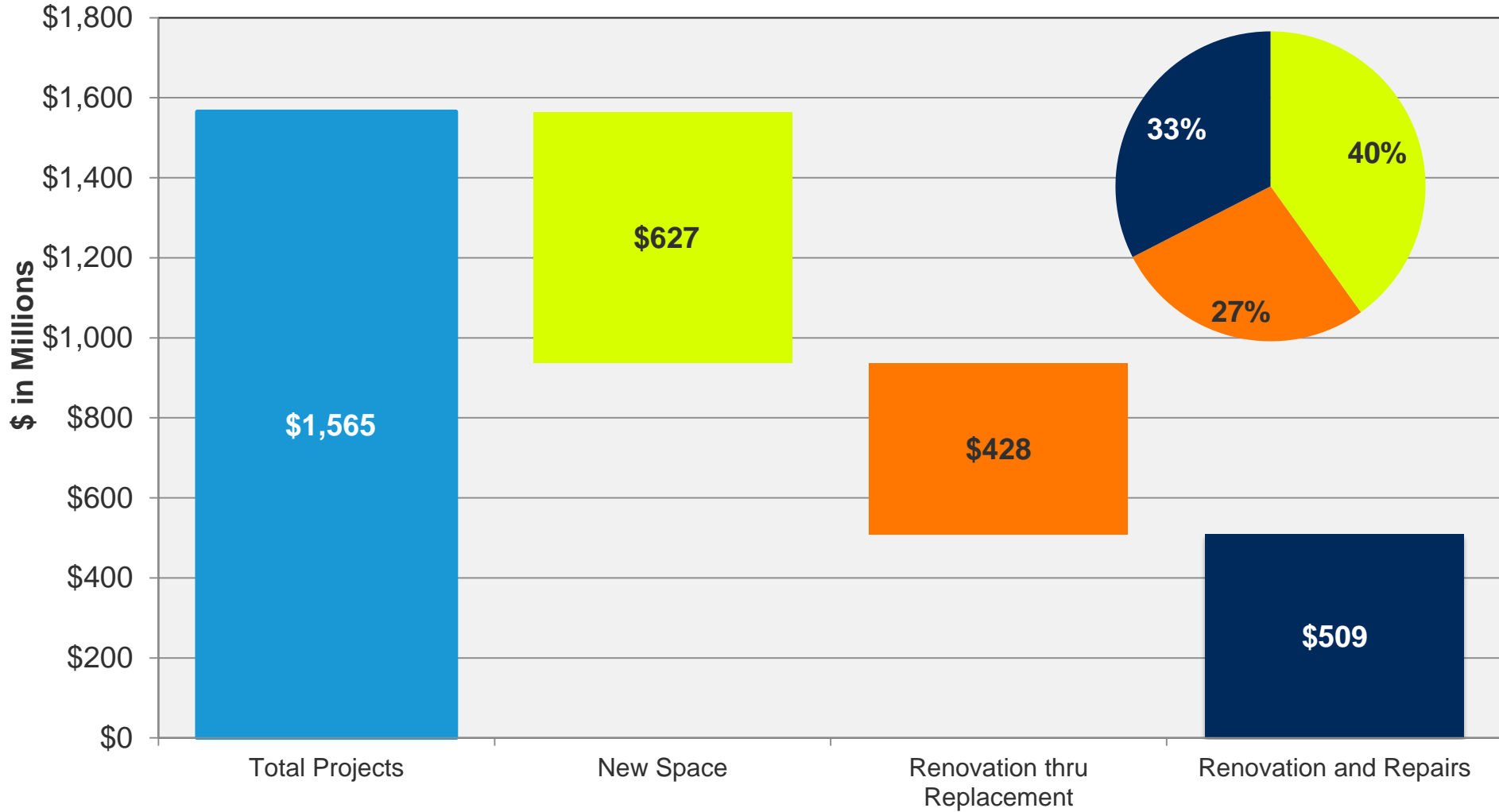
Capital Plan Category	Project Cost
Approved Project List	3,320,769,512
OF THE APPROVED CAPITAL LIST:	
In BPS	1,565,000,000
Completed	547,454,506
Auxiliary	81,150,000
Overlapped	127,510,500
TOTAL DM	2,321,115,006
% of Capital Plan	70%

Note: The \$1B not directly addressing deferred maintenance is composed of portions of DM projects that are not directly addressing plus some other projects including ETIC, Residence Hall, Tsongas Center Expansion, Champions Center, Commonwealth Honors College and equipment purchases, among others.

Five-Year UMass System Capital Plan- 2016Q2 Capital Data



UMass System Current Capital Plan Projects



April 12, 2016

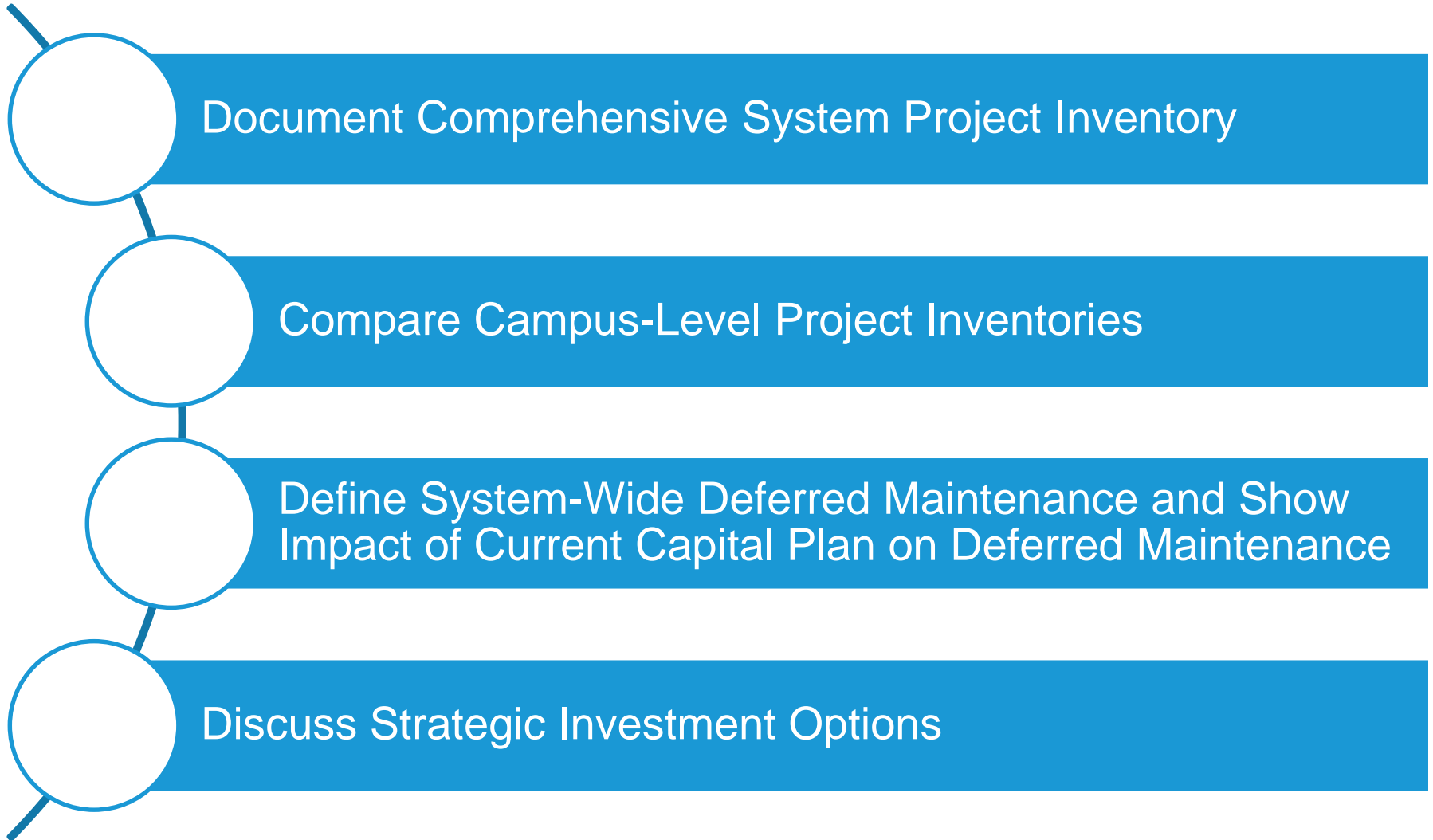
UMass Building Portfolio Solutions FY15

UMass - Amherst
UMass – Boston
UMass – Dartmouth
UMass – Lowell
UMass - Medical

Presented by:

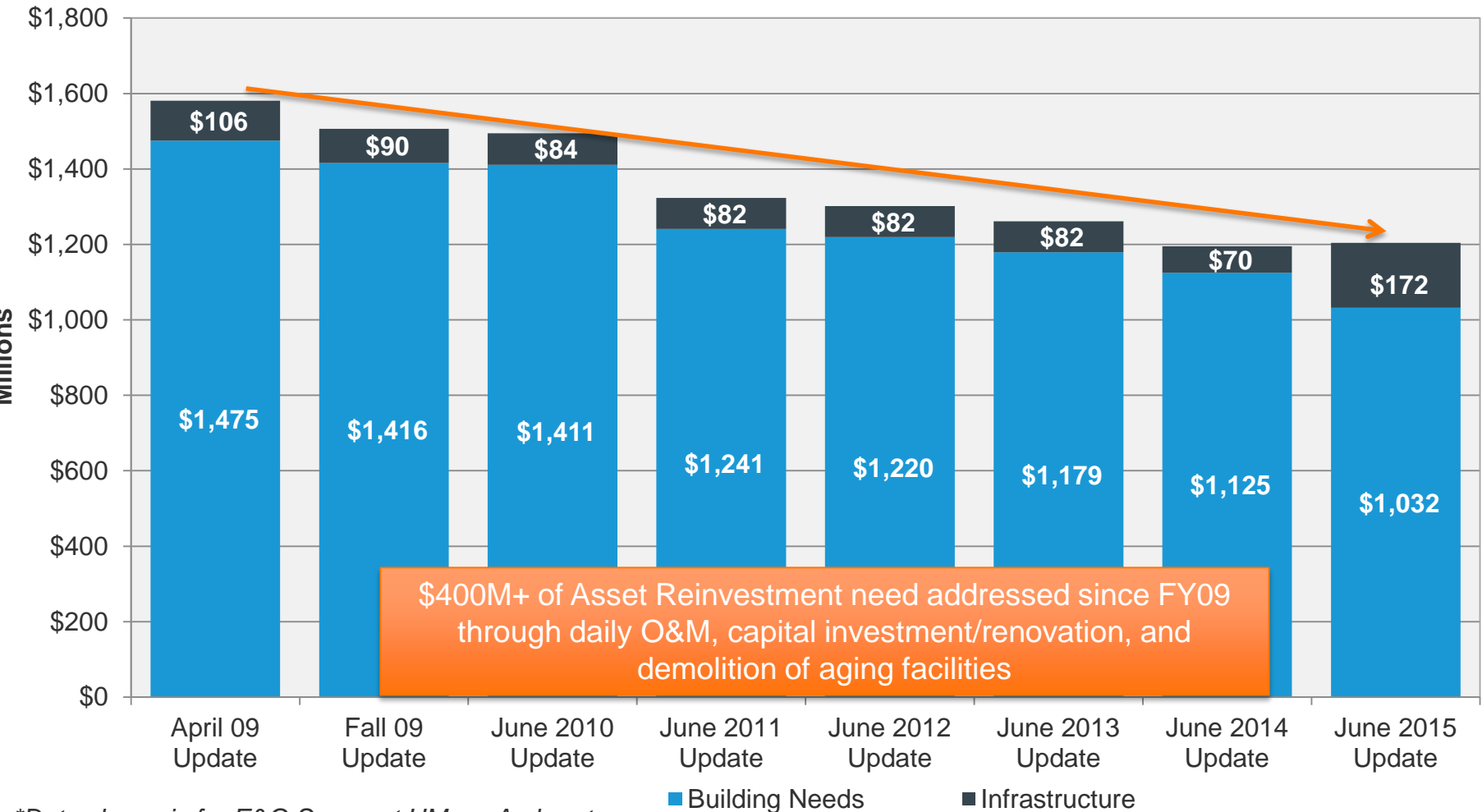
Jim Kadamus, Senior Advisor
Jonathan King, Associate Director
Brendon Martin, Account Manager





Asset reinvestment progress at UMA since 2009

Needs in existing space reduced by 30% - over \$400 million reduction

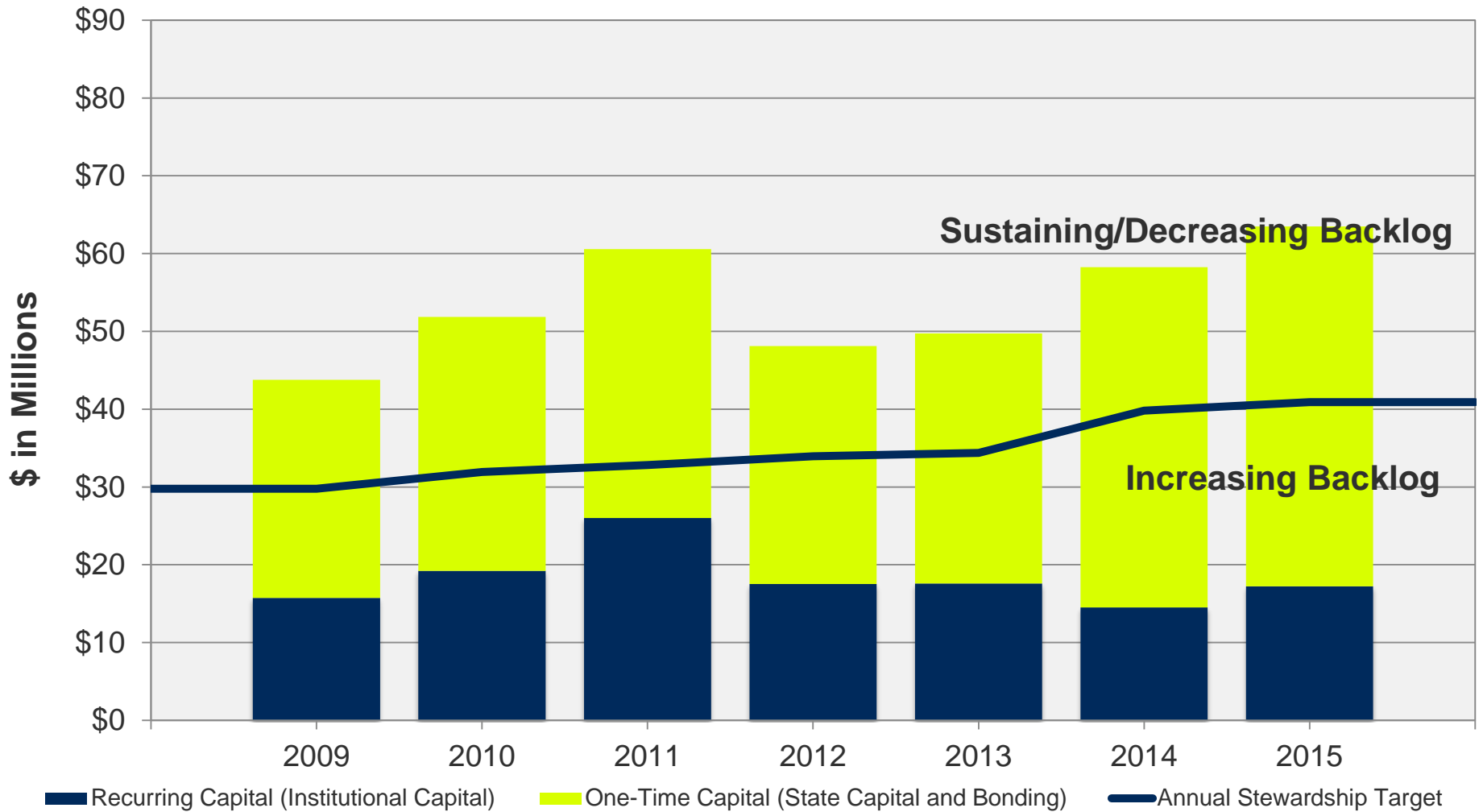


*Data shown is for E&G Space at UMass Amherst

U Mass Amherst Spending Against Target: 2009-2015



Strategic project selection has enabled UMA to decrease backlog over time

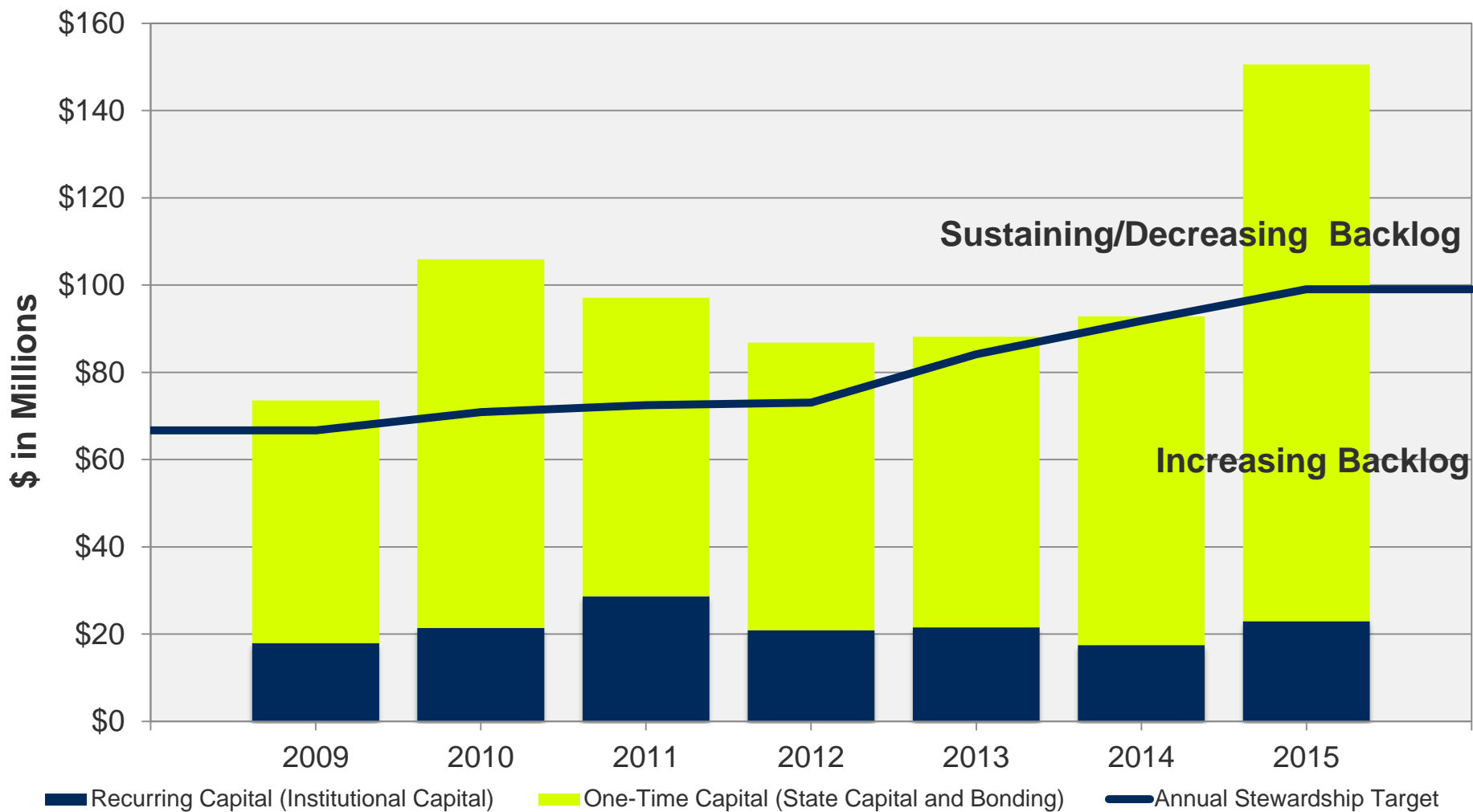


**Data shown is for E&G Space*

Spending against Target: 2009-2015 excluding Flagship



Historic spending close to or met annual targets



**Data shown is for E&G Space*

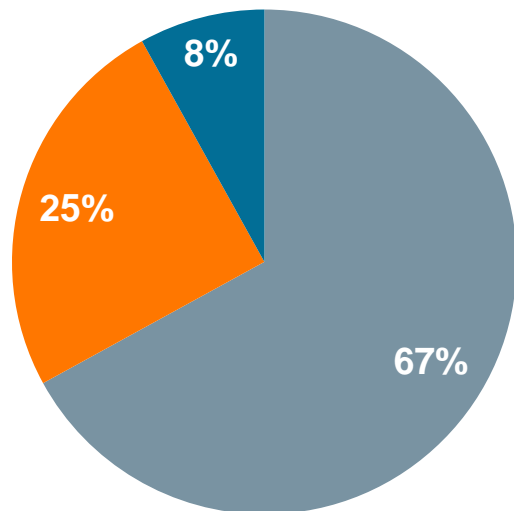
- **Defining the 10-Year Comprehensive System Project Inventory**– The grand total System inventory is \$4.65 Billion; split between \$1.45 Billion of new construction (renovation thru replacement space and new programming space) projects and \$3.20 Billion of existing space projects.
- **Quantifying the Deferred Maintenance Need**– \$1.44 Billion of the \$3.20 Billion of existing space projects are considered “deferred maintenance.”
- **Consolidating Project Inventory through Building Portfolios**– The BPS identifies 5 primary building portfolios for strategic planning: 1.) Building Renovation 2.) Maintain 3.) Repurpose/Alteration 4.) Campus-Wide 5.) Transitional.
- **Modeling a Capital Planning Strategy to Improve System Net Asset Value** – A coordinated capital investment strategy totaling \$3.2 Billion over 10 years has the potential of increasing the UMass NAV from 56% to 74%; which approaches the peer public research campus average.

UMass Existing Space Projects by Timeframe and Investment Criteria



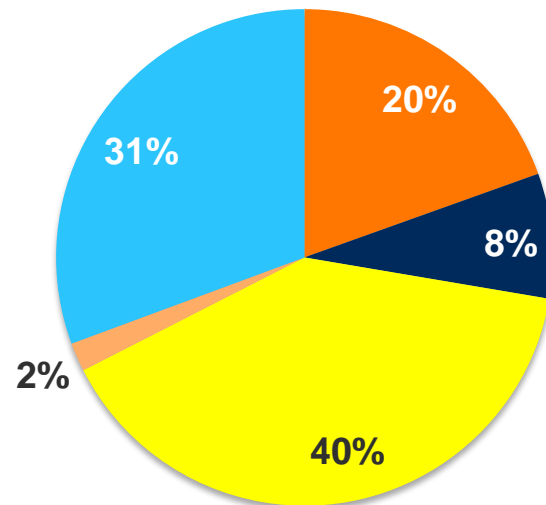
Excludes New Construction and Overlap

BPS Identified Project Inventory - \$3.2 B



- Timeframe A (1-3 years)
- Timeframe B (4-7 years)
- Timeframe C (8-10 years)

BPS Identified Project Inventory - \$3.2 B

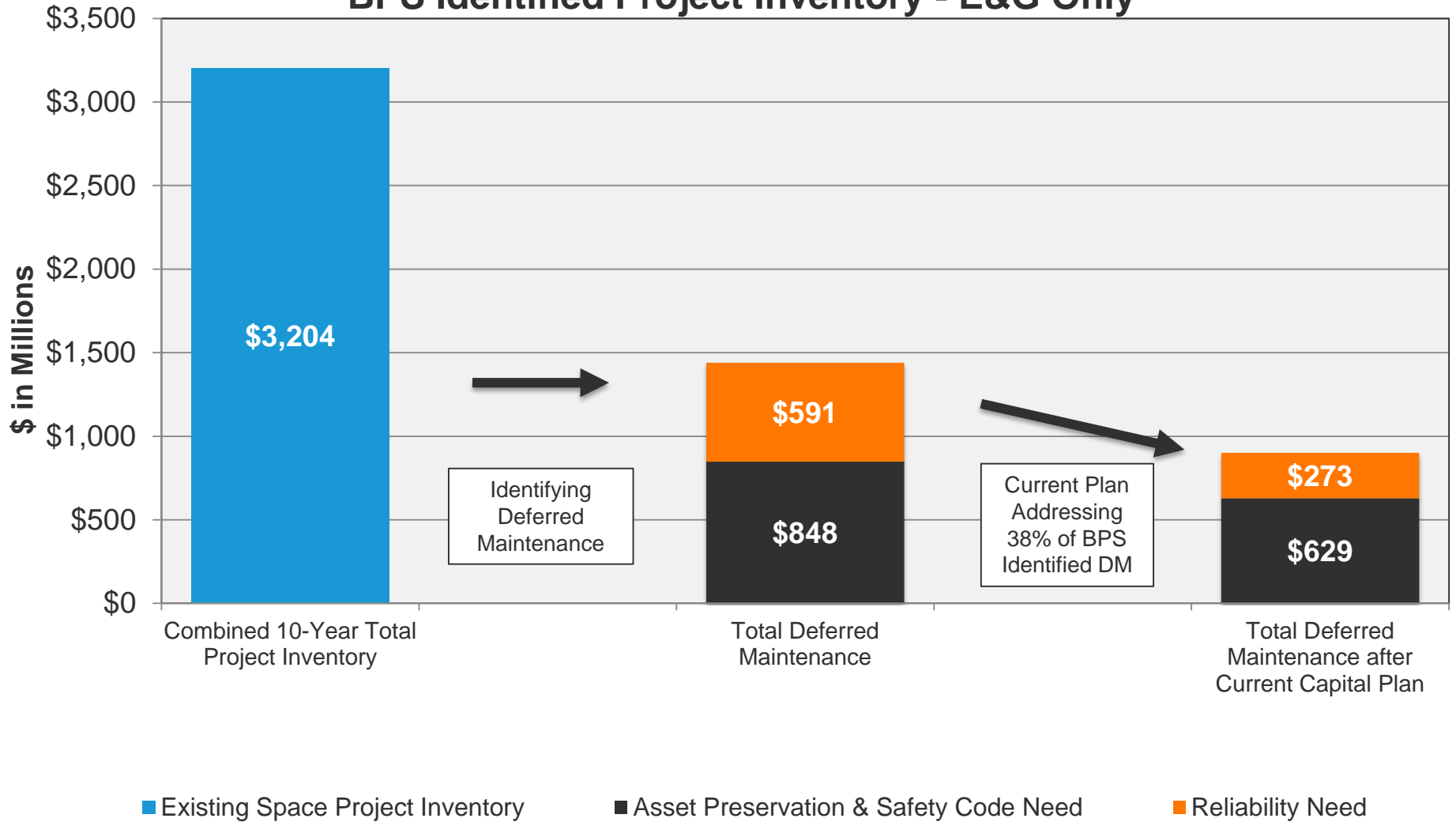


- Reliability
- Asset Preservation
- Program Improvement
- Safety/Code
- Economic Opportunity

Ten-Year UMass Total Identified Project Inventory Breakdown



BPS Identified Project Inventory - E&G Only



Quantifying Deferred Maintenance

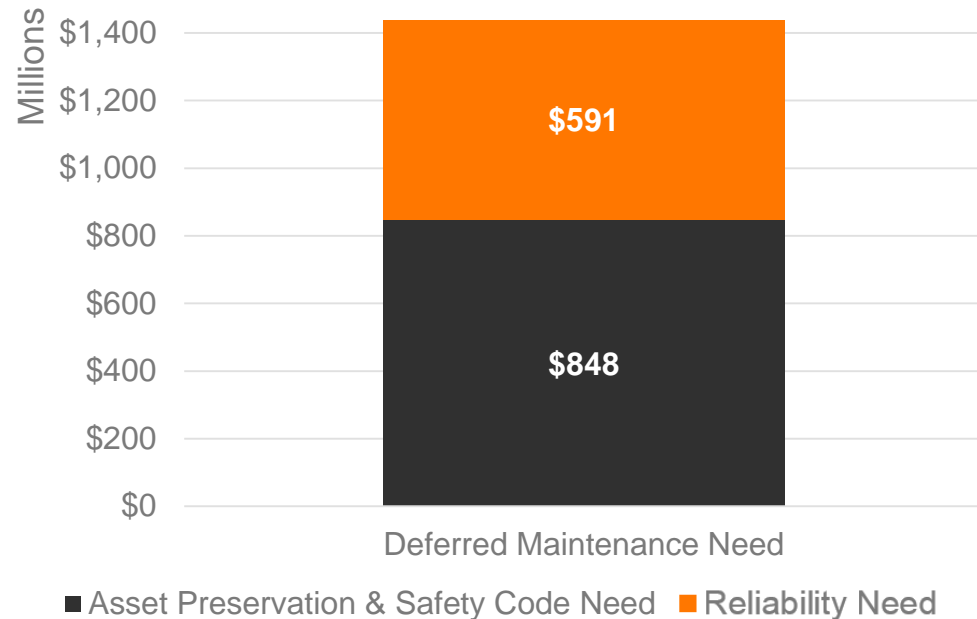
UMass System Deferred Maintenance: \$1.44 Billion

Investment Criteria

- **Reliability** - Issues of imminent failure or compromise to the system that may result in interruption to program or use of space.
- **Asset Preservation** - Projects that preserve or enhance the integrity of building systems or building structure, or campus infrastructure.
- **Safety/Code:** Code compliance issues and institutional safety priorities or items that are not in conformance with current codes, even though the system is “grandfathered” and exempt from current code.
- **Program Improvement:** Projects that improve the functionality of space, primarily driven by academic, student life, and athletic programs or departments. These projects are also issues of campus image and impact.
- **Economic Opportunity:** Projects that result in a reduction of annual operating costs or capital savings.

Deferred Maintenance =
Timeframe A projects labeled as “**Reliability,**”
“**Asset Preservation,**” or “**Safety/Code**”

UMass System Deferred Maintenance Need

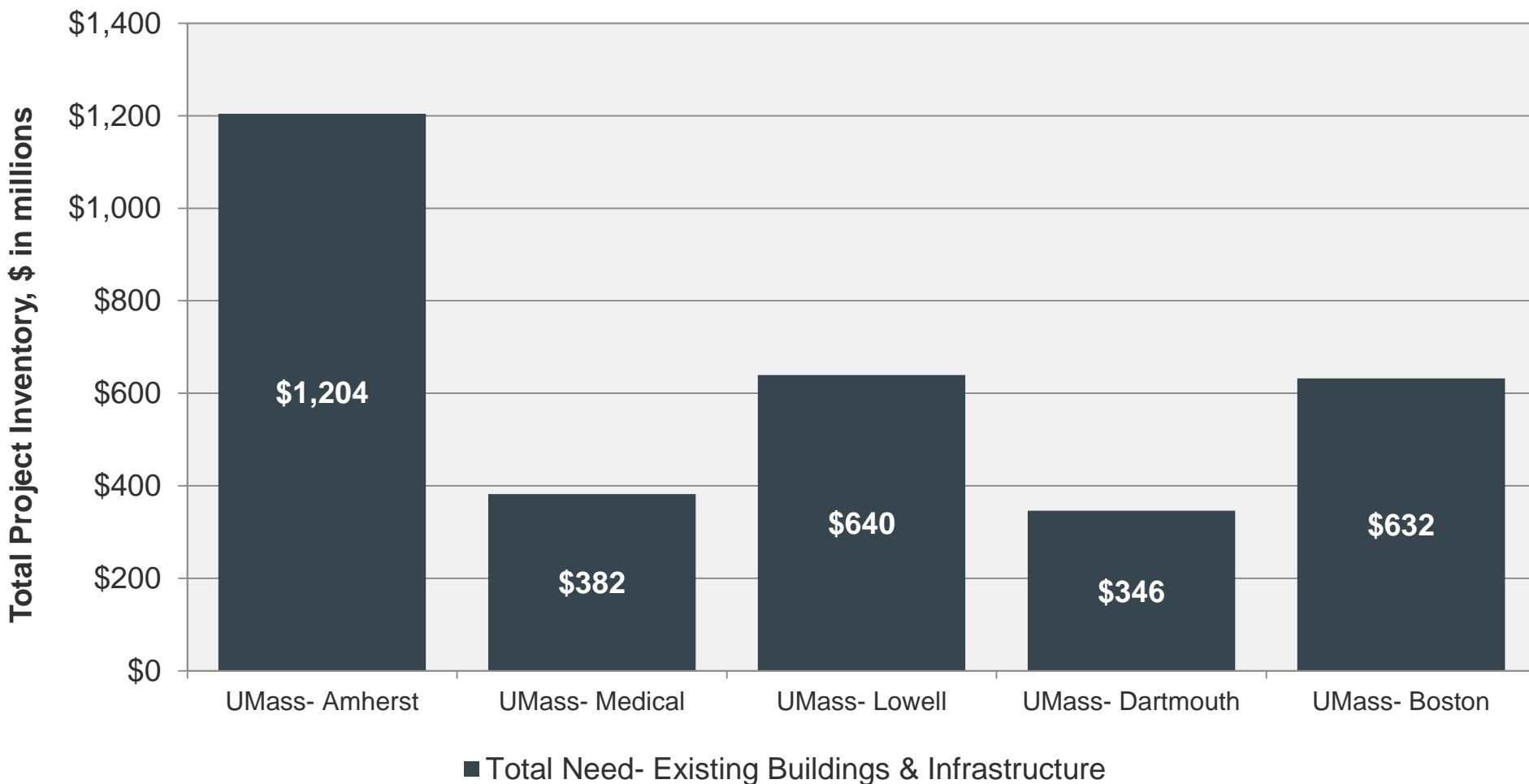


Total Existing Identified Project Inventory by Campus, Total Dollars



Excludes New Construction

Identified Project Inventory by Campus

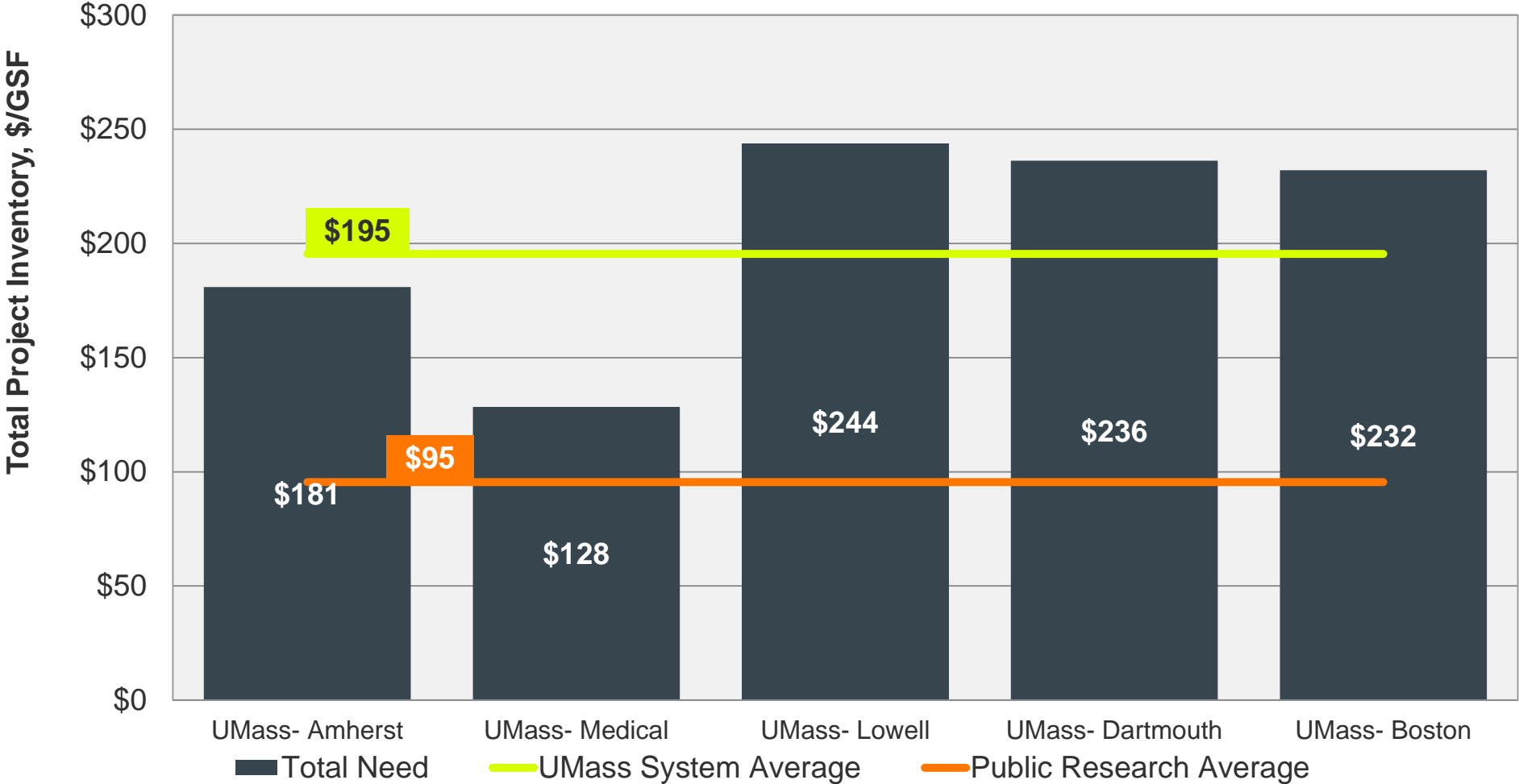


Total Identified Project Inventory by Campus, \$/GSF



Excluding New Construction

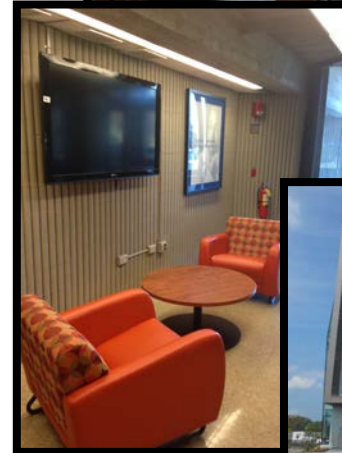
Identified Project Inventory by Campus



Identifying Building Portfolios

Diversify needs, understand risk and manage investment

- ◆ Not all buildings are created equal.
- ◆ Campuses are too complex to manage by a single strategy. There is a need to make the “problem” smaller.
- ◆ Break down the included buildings into “building portfolios” that are reflective of the program’s mission and strategic directions.
- ◆ Guide investment to portfolios in a multi-year strategy, as opposed to “pay-as-you-go” project by project investment.



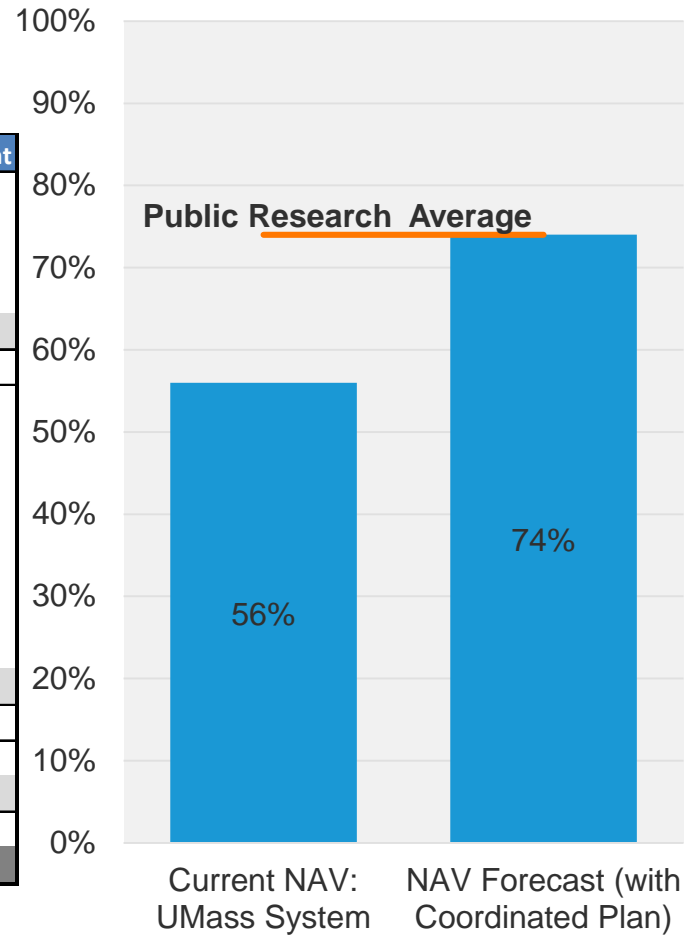
Example of Combined Funding Strategy



Capital funding plan increases System NAV from 56% to 74%

UMass System- 10-Year Capital Plan Example	Total Identified Needs	Funding Strategy	Percent
Board Approved Projects			
New Construction	\$ 627,454,299	\$ 627,454,299	100%
Renovation Thru Replacement	\$ 428,075,236	\$ 428,075,236	100%
Renovation & Repairs	\$ 509,231,254	\$ 509,231,254	100%
Sub-Total	\$ 1,564,760,789	\$ 1,564,760,789	100%
Additional Campus Needs- Capital Plan Example			
New Construction	\$ 553,020,012	\$ 138,255,003	25%
Campus-Wide Projects	\$ 278,279,216	\$ 149,004,035	54%
Building Portfolios			
Maintain Portfolio	\$ 455,939,319	\$ 322,895,686	71%
Building Renovation Portfolio	\$ 1,198,657,691	\$ 536,930,086	45%
Repurpose/Alteration Portfolio	\$ 242,008,845	\$ 114,776,461	47%
Transitional Portfolio	\$ 356,329,000	\$ 17,816,450	5%
Sub-Total	\$ 3,084,234,083	\$ 1,279,677,721	41%
Contingency		\$ 309,136,914	
Sub-Total		\$ 309,136,914	
Grand Total	\$ 4,648,994,873	\$ 3,153,575,424	68%

NAV Forecast



Questions & Discussion