UNIVERSITY OF MASSACHUSETTS

Amherst • Boston • Dartmouth • Lowell • Worcester

Fiscal Year 2015 to 2019
Five-Year Capital Plan
December 2014

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Overview and 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 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 at its five campuses located in Amherst, Boston, Dartmouth, Lowell and Worcester. 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 which have a total replacement value of $10.0 billion over the five campuses of Amherst, Boston, Dartmouth, Lowell and Worcester (Medical School). The capital plan demonstrates planned five-year investments in campus facilities to support the University's mission, reduce maintenance costs and be environmentally responsible.

Per Board of Trustees Policy T93-122 (attached in Appendix D), 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.

Every two years, the University reviews and updates the overall five-year capital plan with the goals of updating the Board of Trustees on projects that are underway, identifying future needs and funding sources and developing a reasonable plan for making these investments over some period of time. The board approves the overall plan and projects slated for commencement over the next 24 month period are approved to begin.

			Estimated Cash Flow - Approved Projects				
Campus	**Total 5-Year Plan**	**Total Dec Approved Projects**	**FY2015**	**FY2016**	**FY2017**	**FY2018**	**FY2019**
Amherst	$ 2,582,836,000	$ 1,306,486,000	$ 237,831,000	$ 213,460,000	$ 129,256,667	$ 101,116,667	$ 44,400,000
Boston	$ 1,323,325,000	$ 967,875,000	$ 220,212,907	$ 192,695,065	$ 233,699,745	$ 107,000,000	$ 8,200,000
Dartmouth	$ 702,809,417	$ 268,838,512	$ 29,983,111	$ 39,844,952	$ 30,220,208	$ 61,983,966	$ 16,337,230
Lowell	$ 1,727,900,000	$ 666,600,000	$ 72,029,256	$ 134,555,000	$ 76,130,923	$ 63,400,000	$ 18,500,000
Worcester	$ 639,746,500	$ 179,740,000	$ 20,491,940	$ 22,950,000	$ 14,600,000	$ 61,600,000	$ 52,433,333
Total	**$ 6,976,616,917**	**$ 3,389,539,512**	**$ 580,548,214**	**$ 603,505,017**	**$ 483,907,543**	**$ 395,100,633**	**$ 139,870,564**
Projects	**208**	**108**					

Note: Projects that are approved by the Board of Trustees fall into two categories that are further described below. The first is a preliminary approval which an estimate of the total project cost. The project is then studied to determine the full project scope and cost and comes back before the board for a second vote for a full project approval before it enters the construction phase. This offers the Board the ability to review projects twice and ensures that the campus, the President's Office and the Building Authority have reviewed the project.

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

- Amherst Campus - 65% built in 1960's & '70's; 25% prior to the 1950's
- Boston Campus - opened in 1974
- Dartmouth Campus - core of campus opened in 1970's
- Lowell Campus - most buildings date to pre-1975 merger
- Medical School - core campus opened 1970

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. In Fiscal Year 2014, the University launched a new initiative to enhance accountability and transparency. Woven within each of our key performance categories is the need for appropriate physical assets to help achieve goals.

UMass Performance Accountable and On the Move:

- Student Experience & Success
- Educated Workforce and Engaged Citizenry
- World Class Research & Development Enterprise
- Enhanced Social Well Being
- Good Stewards of Resources
- Telling and Selling the UMass Story

The University's Fiscal Year 2015-2019 Capital Plan is an essential planning tool for each of our campuses but now more than ever serves as a critical planning document for our communication with the State on the University's capital needs over the next 5 years. As this document illustrates, the State has been a vital investment partner in making our campuses competitive specifically in the area of Life Sciences. Our campuses, through their own funding have worked to keep up by making investments not only in housing and dining but on the Academic side through deferred maintenance of existing facilities and building new facilities to accommodate the more than 20% enrollment growth since FY08. The investments since FY08 by both the State and the University were after years of neglect and therefore there is still much more work to be done to catch up and additional work to do to keep up with our strategic and master planning efforts. As you will see based on our financial plan, however, the University cannot make these investments alone without reaching irresponsible debt levels and therefore needs the State to continue to be a partner through the next iteration of the Higher Education Bond Bill.

Roles & Responsibilities

Commonwealth

In addition to providing critical funding for capital projects, the Executive Office for Administration & Finance (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.

In addition to the EOAF, 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 impacted campus and UMBA. This includes overall management of the project 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 based on a review of finances confirms the affordability of submitted plans. The President's Office works closely with the campuses to facilitate and coordinate the capital planning effort on an annual basis and for quarterly reporting purposes. The annual 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 and analyzed in an effort to ensure that it is complete as well as to provide summary information of the submissions 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 needs and experiences to develop a capital plan that reflects the strategic priorities for that campus. Per Board policy, each campus has developed a ten year capital master plan that is updated regularly and that then contributes to the five year plan that 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 source funds identified in the plan are available for capital purposes and can be used in support of the project 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 other facilities, 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

At its June 2014 meeting, the Board approved the revised *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). As a reminder, the standards state the following:

Biennial Capital Plan
Every two years, the University will work with each campus to refresh its Biennial Capital Plan which consists of this document, campus narratives describing campus priorities and an inclusive list of all projects both approved by the Board and those planned for the future on each of the campuses. The President's Office maintains a database of these projects which provides details of each of them including a description, a projected funding source including contingent if funds have not been identified for future projects and other key project elements. A list of elements are included in Appendix A of this report. The Biennial Capital Plan is used as a planning document and also for the University as an advocacy tool to work with our State partners to secure State bond funding in support of campus projects.

Preliminary Campus Estimate (First Vote)
Before a project can move from the Biennial plan 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 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 plans 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

Full Project Approval (Second Vote)
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):

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 5th construction phase, as defined herein, without receiving Full Project Approval.

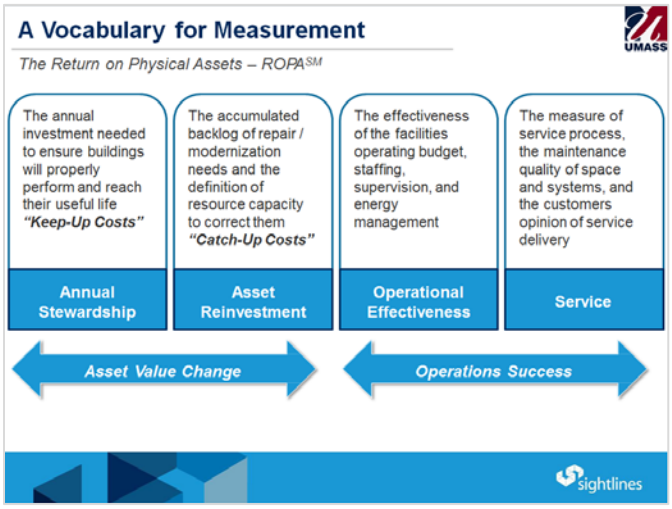
Quarterly Reporting to the Board
The status of all capital projects will be tracked and reported to the Board on a quarterly basis. In order to facilitate quarterly reporting to the University President and the Board, campuses will use the capital project database to update project information, monitor approvals and request new projects. 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.

Changes to Project Costs
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.

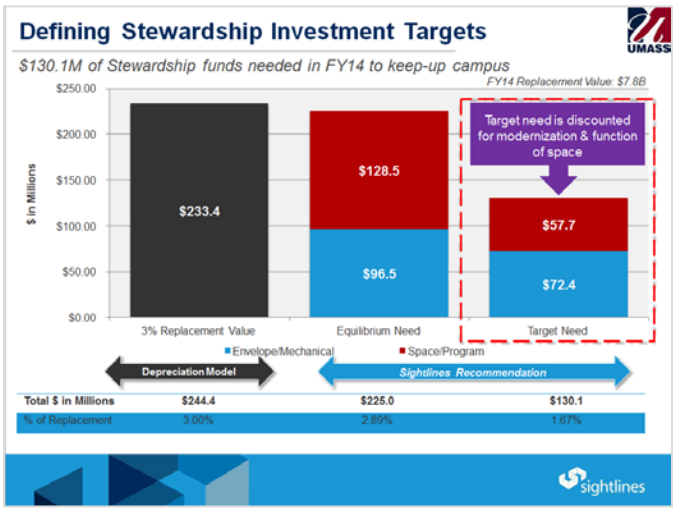
Before the Board is asked to vote on a revised project cost, the project must meet the following criteria:

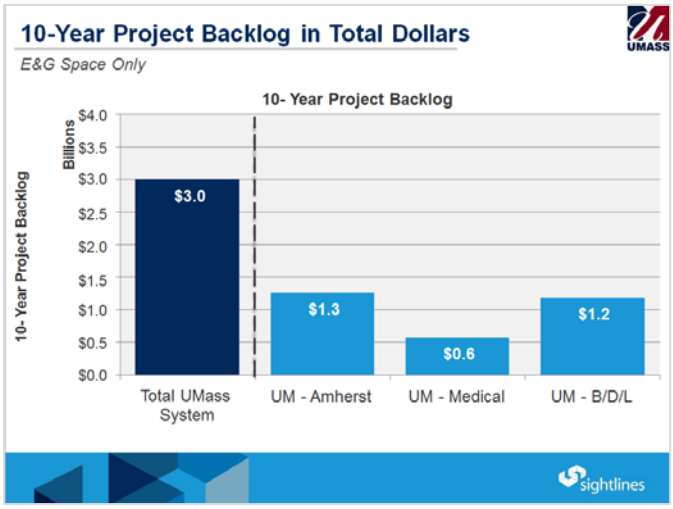
a. A detailed description of the reason for the change in cost
b. A campus must identify funding for the additional amount needed
c. If the additional amount is being borrowed the debt affordability analysis must comply with the University Debt policy
d. UMBA must review and sign off on the revised project 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.

Deferred Maintenance
The University has engaged Sightlines to conduct deferred maintenance analysis for the University campuses in order to define future capital investment needs and campus backlogs. Sightlines has collected information on capital investment and facilities operations for all five campuses dating back to 2003. Sightlines is using their Return on Physical Assets (ROPA) system, which includes a discovery process, a predictive life cycle process, and a key performance indicator process. This ROPA system will allow the University to forecast the future capital investment needs and assess the capital risk profile for each of the campuses. It will also create an opportunity for the University to develop measurement tools to enhance the prediction process by documenting the performance and implications of actions taken.



The Sightlines analysis has determined that a total of $130.1 M of stewardship funds would be needed in FY14 to keep up UMass system campus facilities. This is the annual investment needed to ensure buildings will perform properly and reach their useful lives. Sightlines has also identified a 10-year asset reinvestment backlog totaling $3.0 B. This is the accumulated backlog of repair and modernization needs and the definition of resource capacity to correct them. This $3.0B backlog consists of $1.9B of immediate need where the subsystem has already failed or is functioning with substantial degradation of efficiency and performing at an increased cost. The backlog also consists of $0.4B of infrastructure and modernization need and $0.7B of remaining renewal need. Over the past five years, the collective annual spending on stewardship and asset reinvestment for the UMass system has only been sufficient to sustain but not reduce the deferred maintenance backlog.





Sightlines has established the following strategies to address the University's deferred maintenance backlog:

- Set capital priorities that reflect an investment strategy spanning 7-10 years. Such an approach has proven highly effective at lowering the backlog needs in aging buildings that are determined to be critical to the mission and programmatic needs of universities. Make future project selection match identified needs.
- Sometimes less is more when it comes to addressing aging buildings with high backlogs. Consider eliminating or replacing aging space of certain construction vintages with more modern and more efficient facilities.
- Consider policies that result in minimal net new square footage until the backlog is reduced to manageable levels. New construction must support the master plan and future program needs of the university.
- Make annual stewardship (keep-up) investment a priority at every campus. The more the campus keeps up the greater chance of extending the life cycles.
- Incentivize facilities operators who make buildings run more efficiently (lower maintenance, custodial or energy costs) by reallocating the savings to increase annual capital budgets – stewardship. The payback in capital is three to four times the value of the savings reallocated.

Housing Strategy

Given the impact that Housing has on our each campus' overall Capital plan, the University is currently working to develop an overall Housing Strategy report; the following data is currently being collected and analyzed:

- Existing needs assessment plans undertaken by the campuses.
- Current inventory of on-campus housing including a list of facilities along with general information regarding room rates and the general composition of students (number of occupants, program or grade level specific if significant, location, etc.) in each facility.
- Current inventory of off-campus housing including a list of facilities that may or may not be exclusively used by students from your campus and any arrangements your campus has to provide an off campus housing option.

- Strategies around why increased and/or improved student housing is needed (ex. Safety of students, enforce code of conduct, etc.).
- Current projects under way or planned regarding housing.
- Housing needs for the next 5-10 years.
- Impediments to realizing additional housing stock is secured.

Financial Plan

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' ability to finance debt compares Debt service payments (interest and principle) to total operating expenditures. This indicator simply tells us 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. 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 FY14.

Debt to Operating Ratio	**FY14 Actual**	**FY15 Projected**	**FY16 Projected**	**FY17 Projected**	**FY18 Projected**	**FY19 Projected**
Amherst	6.2%	6.4%	6.6%	6.9%	7.4%	7.2%
Boston	4.6%	5.0%	6.4%	7.1%	7.7%	7.9%
Dartmouth	8.5%	8.3%	7.7%	7.7%	7.4%	7.1%
Lowell	6.0%	7.1%	8.0%	7.9%	7.5%	7.2%
Medical School	5.6%	6.1%	5.8%	5.9%	5.5%	5.4%
University	**6.3%**	**6.6%**	**6.9%**	**7.1%**	**7.2%**	**7.1%**

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 Assets in the category of Bonds Payable. The FY15 budget includes principal and interest payments as follows for each campus:

Pricipal + Interest	**FY14 Actual**	**FY15 Projected**	**FY16 Projected**	**FY17 Projected**	**FY18 Projected**	**FY19 Projected**
Amherst	$ 62,787	$ 69,736	$ 76,514	$ 83,792	$ 94,213	$ 95,614
Boston	$ 15,829	$ 19,013	$ 25,922	$ 30,741	$ 34,862	$ 37,496
Dartmouth	$ 19,531	$ 20,235	$ 19,690	$ 20,426	$ 20,646	$ 20,637
Lowell	$ 20,978	$ 28,207	$ 34,486	$ 36,122	$ 36,041	$ 36,383
Medical School	$ 53,475	$ 53,305	$ 53,407	$ 55,299	$ 53,120	$ 53,156
University	**$172,600**	**$190,496**	**$210,019**	**$226,381**	**$238,883**	**$243,286**

Depending on the timing of starting new projects, funding source and the issuance of new debt, additional funds may be needed in the current year or will be budgeted for in subsequent years to meet capital funding needs.

There are four 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 whose source is 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 McGauvran Dining Conversion at the Lowell campus.
2. University – External Funding including Fundraising and Grants – These are funds generated at each campus through specific fund raising 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 / HEFA / WCCC / Other – These are funds borrowed using UMBA, HEFA 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 the General Academic Building 1 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.

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 funding 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, there are two major State bond authorizations in support of the University for which only some of the bonds have been issued:

- 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 $148 million has been spent. The following table summarizes the total earmarks and the spending to date in support of Life Sciences at UMass.

Campus	Earmark Amount	Spent to Date	Project
Amherst	$ 95,000,000	$ 11,927,681	Life Sciences Center
Amherst	$ 5,500,000	$ 2,178,803	Pioneer Valley life Sciences Incubator
Amherst	$ 4,540,000	$ 1,863,961	MGHPCC
Boston	$ 10,000,000	$ 1,828,744	Center for Personalized Cancer Therapy
Boston	$ 588,848	$ -	Venture Development Center
Dartmouth	$ 10,000,000	$ -	Marine Biological Lab, Woods Hole
Dartmouth	$ 5,000,000	$ -	Regional Life Sciences Incubation Center
Dartmouth	$ 11,400,000	$ 11,400,000	ATMC Acquisition
Dartmouth	$ 5,000,000	$ -	Taunton Life Sciences Incubator
Dartmouth	$ 20,600,000	$ 20,600,000	Bio-processing Center (MAB)
Dartmouth	$ 5,000,000	$ 20,000	New Bedford Incubator
Lowell	$ 10,000,000	$ 7,981,358	Nano and Biomanufacturing Facility
Lowell	$ 4,046,697	$ -	M2D2
Worcester	$ 90,000,000	$ 90,000,000	Albert Sherman Center
Worcester	$ 5,000,000	$ -	MassBiologics
TOTAL	**$ 276,675,545**	**$ 147,800,547**	

- Higher Education – In August of 2008, authorization for bonds in support of higher education including State and Community Colleges and UMass was passed. The legislation authorizes $2.2 billion for new buildings, renovation projects and other capital projects with $1 billion dedicated for such projects at UMass. The following table summarizes the total committed or to be committed by DCAMM from the higher education authorization legislation.

Campus	Earmark Description	Earmark	Earmark Amount Authorized by A&F:
UMA	New academic classroom building	$85,000,000	$65,000,000
UMA	New laboratory science building	$100,000,000	$100,000,000
UMA	Repairs to Machmer Hall	$12,600,000	$12,600,000
UMA	Repairs and renovations to Lederle Research Center	$41,250,000	$41,250,000
UMA	Repairs and renovations to Morrill Science Center	$51,300,000	$51,300,000
UMB	Stabilization of campus substructure & alternate prkg improvmts	$25,000,000	$25,000,000
UMB	Construction of a new academic building	$100,000,000	$100,000,000
UMD	Renovations & infrastructure repairs to the library	$8,000,000	$8,000,000
UMD	Major infrastr projects - New Charlton College of Business, a	$70,000,000	$70,000,000
UMD	Building & retrofitting of vacated spaces	$11,000,000	$11,000,000
UMD	Planning and design services (feasibility studies, cost estimates, construction drawings, surveys, etc.) for graduate student dormitories and artist loft dormitories	$250,000	$0
UMD	Classroom space upgrades	$6,000,000	$6,000,000
UMD	Air conditioning improvements to facilities	$2,100,000	$2,100,000
UMD	Portuguese-American Archives	$1,000,000	$1,000,000
UMD	Expansion, retrofitting, or renovation of the Center for	$500,000	$500,000
UML	New south academic building	$26,000,000	$26,000,000
UML	North quad modernization	$10,000,000	$10,000,000
UML	Storm water management	$1,500,000	$1,500,000
UML	Civic and athletic facilities	$10,000,000	$0
UML	Renovations to Olney Hall	$2,500,000	$2,500,000
UML	Capital improvements to Massachusetts Medical Device Development Center	$4,000,000	$4,000,000
UML	Deferred maintenance needs	$5,000,000	$5,000,000
UMMS	Repairs, renovations & improvmt to bldgs, systems and other facilities at the Medical School	$43,500,000	$0
UMMS	Improvements to the Medical School's Shriver Center facility in Waltham	$8,500,000	$3,500,000
UMMS	Expansion of the Medical School in Worcester	$3,682,500	$3,682,500
ANF	R&D Matching Grants	$25,000,000	$0
		$633,682,500	*$549,932,500*

The recently passed General Government Bond Bill (Chapter 237 of the Acts of 2014) amended the 2008 Higher Education Bond Bill by adding an additional $100 million to the bottom line to fund deferred maintenance needs at the University. The General Government Bond bill (GBB) amended the 2008 HEBB by adding an additional $100 million to the bottom line (this was done for State and Community Colleges as well) to fund deferred maintenance needs at the University. The additional authorization is critical because it gives us the capacity to fund

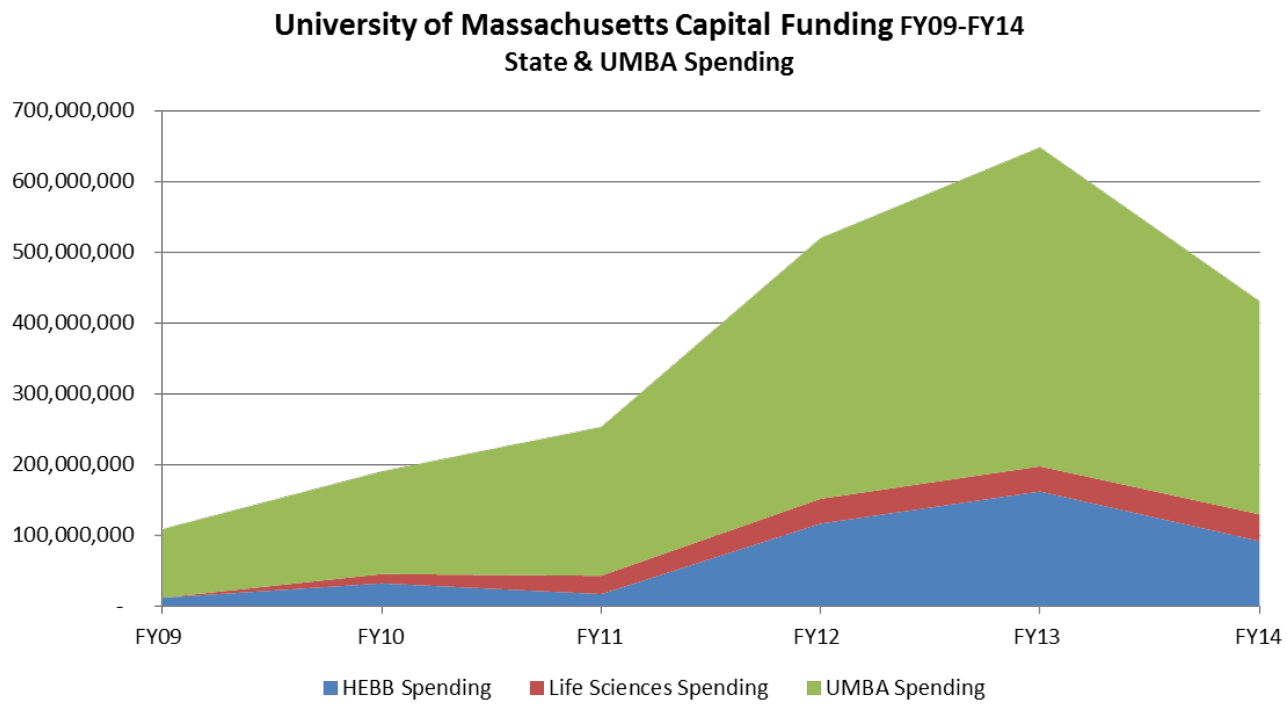
several deferred maintenance projects that would have otherwise displaced other priority projects at our campuses and supplemented other projects that have been included in the A&F plan for some time, but not at the correct total project cost. The Administration's capital plan that was issued in July does not reflect the additional authorization and did not adjust the total project costs for the projects listed in the table below. In addition to providing sufficient authorization for the projects below, the increased authorization will cover nearly $33 million of deferred maintenance projects as well as the $5.2 million needed to cover the grant for the Springfield Center.

Campus	Projects	Total Project Cost	Amount Short in A&F Capital Plan
Boston	Integrated Sciences Complex (ISC)	$ 182,000,000	$ 9,000,000
Boston	General Academic Building 2 (GAB 2) (1)	$ 100,000,000	$ 13,650,000
Dartmouth	General Academic Building	$ 75,000,000	$ 20,000,000
Lowell	Perry	$ 36,000,000	$ 16,000,000
Lowell	Olsen	$ 40,000,000	$ 15,000,000

(1) in order to complete construction of the Integrated Sciences Complex and to deal with the projects cost overruns, DCAMM agreed to borrow $13.6 million from the General Academic Building 2 (GAB2) to help fund a portion of the ISC. A portion of the $100 million will be used to restore the project back to the original estimate of $100 million

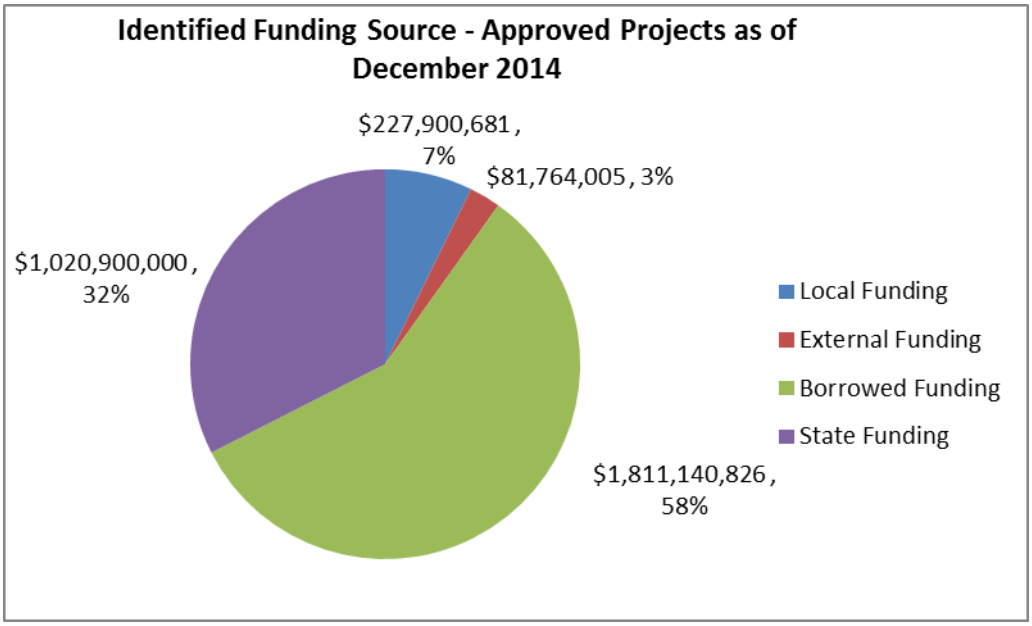
The University is requesting that the current A&F Capital spending plan reflect the total project cost as shown above. Again, all of these projects are already included in the A&F Capital plan but they are not showing the total project costs. The University continues to work with the State to adjust the State's capital plan to reflect these additional needs.

Although the State has made a significant commitment and investment into the facilities on our campuses, the current authorizations through the Life Sciences and Higher Education bond bills have been almost completely committed. At this time, the University does not have any available bond authorizations and any new projects going forward will need to be accompanied with additional bond authorizations. Without a successor bond bill, many campus projects will be stalled until future funding is approved.


University of Massachusetts Capital Funding FY09-FY14
State & UMBA Spending
700,000,000
600,000,000
500,000,000
400,000,000
300,000,000
200,000,000
100,000,000
-
FY09
FY10
FY11
FY12
FY13
FY14
HEBB Spending
Life Sciences Spending
UMBA Spending

Capital Plan - Categorized

In an effort to summarize the information included in the Capital Plan, each project has been assigned certain categorizations including funding source, project type and program type. As previously described, there are four sources of funding for capital projects. The chart below summarizes the funding sources for projects:



Each project includes a category for project type which include:

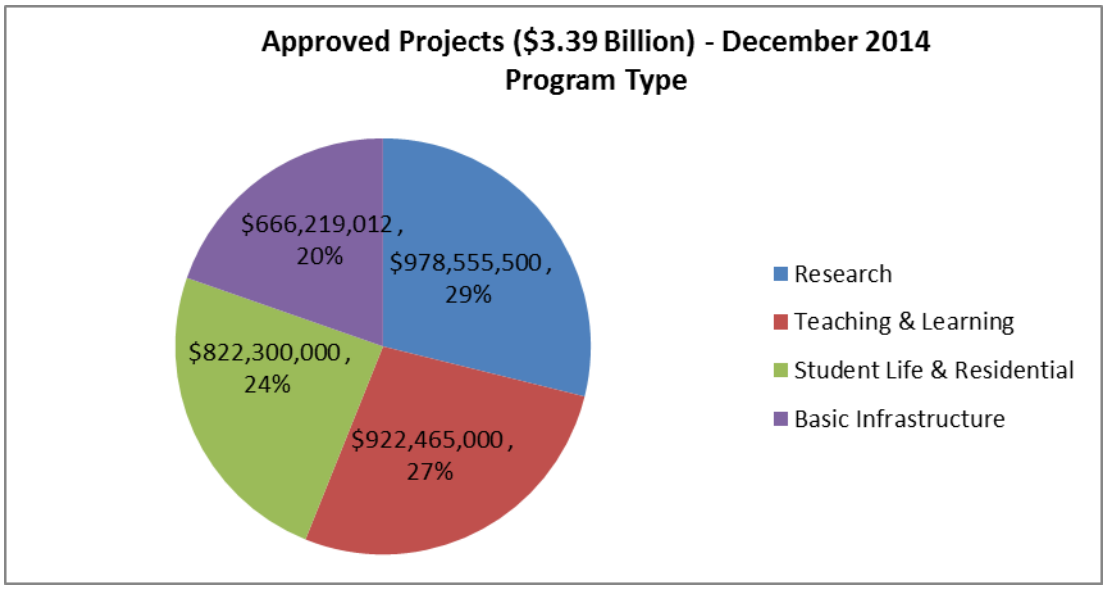
1. New Construction
2. Equipment and Information Technology
3. Other Capital Projects
4. Renovation and Renewal

Project Type	Total 5-Year Plan	Approved Projects	Projected DM and Acquisitions	President	%DM	$DM
Other	$ 420,859,012	$ 234,009,012	$ 26,500,000	$ 19,850,000	32%	$ 139,016,555
Renovation & Repair	$ 2,046,443,905	$ 846,080,500	$ 426,594,905	$ 25,300,000	55%	$ 1,128,005,155
Equipment & IT	$ 82,974,000	$ 43,000,000	$ 37,974,000	$ -	60%	$ 50,500,000
New Construction	$ 4,426,340,000	$ 2,266,450,000	$ -	$ 17,500,000	10%	$ 460,260,000
TOTAL	**$ 6,976,616,917**	**$ 3,389,539,512**	**$ 491,068,905**	**$ 62,650,000**	**25%**	**$ 1,777,781,710**

Lastly, 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.



AMHERST CAMPUS

Introduction and Overview of Campus Capital Plan

The Amherst campus capital plan is focused on a five-year planning timeframe from FY15 through FY19 and is organized to identify funded projects by designated funding sources, and to describe planning in areas that may result in projects.

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. This plan describes projects for which debt has already been approved. Debt service rises from $73 million in FY15 to $97 million in FY19 as we borrow incrementally for on-going approved projects based upon cash flow schedules. New projects will be needed, however (summarized in the list of projects in planning and conceptual stages), and absent state funding will add to that growth. 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 building boom demonstrates how critical new construction is to our competitive position. Projects now in the pipeline are critical, but our attention must now turn to building support for a next wave of state investment. It is our obligation to demonstrate why such an investment makes sense — both for us and the Commonwealth — and our capital planning is sharply focused on making that case. Additional projects to improve the student experience (student center/student experience study, housing renewal study, classroom technology improvements) will allow us to maintain our momentum in the competition for talented students. Research and development capacity (public health, data science, materials engineering, cognitive science) builds on existing strengths and focuses on

economic development priorities for the Commonwealth. Of special importance is building on recent success in innovative, 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 next generation strategy expands this approach, especially in the campus core.

The current capital plan also includes state funding from the Higher Education Bond Bill and the Life Science Bond Bill to address several important capital projects, including new construction and much needed renovations. The state funded $100 million cost 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 contributed $65 million to the Integrative Learning Center which opened for the fall 2014 academic semester. In addition, the state approved a $95 million grant through the Life Science Bond Bill for the design, construction, development and related infrastructure improvements of a life science laboratory research center complex on the UMass Amherst campus. Among other things, this initiative will fit out and equip the south portion of the Life Science Laboratories building for several new interdisciplinary translational research centers.

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 and the state. Currently, the Isenberg School of Management is undertaking a targeted fund-raising campaign to support an addition, and the Champions Center project for Men's and Women's Basketball includes fundraising of over $14 million. The campus continues to pursue private donations for new construction. 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 this capital plan.

Project Status from FY2014 Plan

The campus has completed or is nearing completion of several major new projects that will provide modern facilities to support our teaching and research mission. Many more projects are underway and many of the previously funded major projects are in the construction phase. At the end of FY14, capital expenditures exceeded $200 million per year in each of the past three years, with total expenditures of approximately $700 million. The priorities in the current plan are highlighted below.

- **Reduction of deferred maintenance/code compliance**: The reduction of deferred maintenance and upgrades to address code compliance and safety continues to be a high priority in the Amherst campus capital plan. Our capital plan addresses deferred maintenance in several ways; reduction of DM through building repairs, reduction of DM through modernization of outdated facilities and reduction of DM through demolitions enabled by new construction. In the past year the campus completed over $50M of projects that reduced our deferred maintenance and code compliance backlog with several other projects on-going in the planning, design or construction phase. With the assistance of Sightlines Facility Asset Advisors, the campus maintains a comprehensive

database of critical facility repair needs that guides the prioritization of capital projects. This data also allows the campus to track progress in reducing our DM liability, and indicates that significant progress has been made in reducing our deferred maintenance liability through capital expenditures over the last three years. However, the campus must continue to address deferred maintenance and this year's capital plan continues to place a high priority on DM.

- **New Construction:** Construction of the new Integrative Learning Center is complete and opened for the fall 2014 academic semester. The ILC is a state-of-the-art classroom and academic space for the Amherst Campus including 173,000 sq ft and 2,000 seats of new classroom space as well as space for several academic departments including Communications, Journalism, Linguistics, and Film Studies. The new building is transforming the undergraduate learning experience at UMass.

  The Integrated Design Building and South College Academic Facility will both move into construction during fiscal year 2015. The IDB will provide a new home for Architecture, Landscape Architecture & Regional Planning, and Building Construction Technology, and enable the demotion of Hills building. The SCAF will renovate and construct an addition to the historic South College building, thus providing the necessary replacement space to enable the required demolition of Bartlett. After exploring numerous scenarios, it was determined that the best solution was to construct SCAF at a size that will accommodate all the Humanity and Fine Arts programs in SCAF, versus finding and renovating existing space. This requires increasing the budget to $65 million.

  Construction is complete on improvements to McGuirk Alumni Stadium. The University's football program recently began a new era as a full member of the Division I Football Bowl Subdivision of the National Collegiate Athletic Association. This project supplements the existing stadium by adding a football performance center, press & skybox complex, along with a terrace overlooking the field. The Champions Center for men's and women's basketball (supported by a bequest of $10M) is in construction and is scheduled to open later this fiscal year.

  The design for a new Physical Sciences Building, which will support a portion of Physics and Chemistry, is in process in conjunction with DCAMM. This project will go into construction later this fiscal year.

  The Massachusetts Life Sciences initiative is fitting out most of the shell space in the Life Science Laboratories for research and partnership with industry.

- **Renovations/Modernization:** In the past year, the campus completed renovation/modernization projects to support new faculty hires in several laboratory buildings. A building-wide renovation project was completed at Paige Laboratory. We are proceeding with designs for several other important renovations to support new faculty hires and research activities in various academic programs. These and other renovations are part of the campus strategy to upgrade existing facilities and provide modern laboratory and teaching space, while reducing deferred maintenance.

The campus is working with the UMBA on the schematic design for the renovation and revitalization of the iconic Old Chapel. The Old Chapel will become a vibrant hub in the core of the campus with spaces for large gatherings, student activities and exhibits.

The campus is also working with the UMBA to renovate Furcolo Hall/Marks Meadow, which will consolidate the School of Education and enable the demolition of Hills House. The campus increased the funding by $1.1 million for mechanical upgrades to existing spaces in Furcolo Hall.

The campus is working with the UMBA on the designer selection for the campus data center fit out, located in the Life Science Laboratories. Recent studies have resulted in an increased cost estimate due primarily to escalation combined with an increase in the costs of the infrastructure to provide the necessary redundancy for the campus as well as the disaster recovery location for Shrewsbury and the Office of the President.

- **Energy Performance/ Sustainability:** The campus has completed several projects that improved energy performance in facilities on the Amherst campus in the past several years with a remarkable return on investment. These efforts have reduced steam, water and electric consumption at the same time we have added new facilities. The campus is committed to an on-going strategy of achieving significant energy performance improvements in existing and new facilities. The campus recently completed construction on a major infrastructure project in the central campus core that replaced deteriorated infrastructure and provided reliable and efficient utility connections for the Integrative Learning Center, the new Commonwealth Honors College Residential Complex, and other buildings including the Dubois Library, Hasbrouck Laboratory, Machmer Hall and South College. The campus also recently completed a similar University Drive infrastructure project that improves service to the southern portion of campus. The campus has a Green Building Design Committee to provide leadership in sustainability efforts for the built environment. This committee published Green Building Design Guidelines for new construction and sponsored a pilot project to establish a program for retro-commissioning existing buildings to reduce energy usage. The campus is in the early stages of construction of a new electric substation that will result in annual utility savings of approximately $1,000,000. The campus is also proceeding with the installation of solar canopies over the visitor's center parking lot to be installed in fiscal year 2016. The campus is also working with the State DEP to study the installation of an anaerobic digester on campus. This facility would reduce the organic waste stream on the campus and surrounding communities while also generating electricity that can be put back into the grid. Numerous smaller, self-funded energy reduction projects are also under way.

- **Campus Master Plan Update:** A new Campus Master Plan was completed in April of 2012. It was developed through a participatory process with input gathered from a diverse constituency of campus and community groups in over 100 meetings held throughout the previous year. The goals highlighted in the updated master plan include:

    - Addressing the programmatic needs of the Amherst campus
    - Providing up-to-date facilities

- Integrating a large campus with overlapping neighborhoods
- Strengthening campus open spaces
- Improving campus connections
- Creating a compact, vibrant and sustainable campus

FY15 – FY19 Planning Needs and Priorities

The projects included in the FY15-19 capital plan reflect the following strategic goals and priorities of the campus master plan:

- **Teaching and Learning:** The campus constructed two pilot team-based learning classrooms in the Dubois Library and Goodell Hall, which shaped design of similar rooms in the new Integrative Learning Center. ILC provides a mix of state-of-the-art classrooms and specialized academic spaces — including state-of-the-art broadcast teaching studios — to improve our inventory of campus teaching and learning space. The planned new academic buildings to replace Hills and Bartlett and renovations to Furcolo are part of our strategy to improve the teaching and learning experience on campus. These new facilities are carefully targeted to support our "destination of choice" strategy.

- **Research:** The plan includes the development of new research support facilities and quality research space in the Life Science Laboratories. This project focuses directly on applied life sciences work at the core of our partnership with the state, and exemplifies our "investment of choice" strategy. The plan includes future development of additional research space within the Life Science Laboratories, and renovations of backfill spaces resulting from LSL and the new Physical Sciences Building.

- **Campus Life:** The new Commonwealth Honors College Residential Complex is an exciting new development that provides a high quality living/learning environment for existing students and supports the expansion of the Honors College program and enrollment growth in general. It is a cornerstone of the campus's increasingly successful competition for highly qualified students and of our overall "destination of choice" strategy. In addition, on-going minor renovations and deferred maintenance projects in the existing residence halls will improve the student housing experience. The Lincoln Campus Center Concourse has been transformed into a state-of-the-art dining and retail experience and the $15 million renovation of the Hampshire Dining Commons has been completed.

The Amherst campus is committed to protect its investment in new facilities as they are constructed. The campus sets aside 1.5% of the construction cost/year for all newly constructed facilities to fund long-term maintenance needs. This represents our on-going strategy to provide funding for facility renewal over the life cycle of the facility and prevents the deferral of required maintenance. In addition, we budget 3.5% of the construction cost/year for operational and routine maintenance required to keep buildings in good shape. These budget amounts are consistent with industry standards in facility management aimed at providing the appropriate stewardship of our new facility assets.

The FY15-19 capital plan represents a continued major investment in the future of the Amherst campus. It reflects the established goals of the campus and strategic priorities of the University through a balanced investment program that addresses critical repairs, maintains health and safety standards, provides new and modern teaching and research facilities and improves student life.

Deferred Maintenance

The reduction of deferred maintenance (DM) on the Amherst campus has been a high priority for over fifteen years. A comprehensive facilities condition assessment completed in 1998 documented the deferred maintenance deficiencies for all campus buildings. This assessment showed that 25% of the campus space was in deficient condition. Subsequently, the campus leadership established a capital pool from the campus operating budget to provide annual funding to address this deferred maintenance. In addition to this pool, there have been several one-time allocations to fund the reduction of DM and the percentage of our borrowing dedicated to DM reduction has grown. Working with Sightlines Facilities Asset Advisors, the campus established a program to track the results of our investments in DM reduction. Physical Plant personnel identify and enter new deficiencies in the database as they are found in the field. As deficiencies are corrected through repairs, renovations, demolitions or new construction, the database is updated by removing the deficiencies.

Facilities Portfolio

The Amherst campus has over 11 million gross square feet of building space on the 1,400 acre main campus. A large infrastructure network including roadways, walkways, steam, water, electric, sewer and drainage systems support the campus buildings. The facilities portfolio is comprised of diverse building types and space ranging from simple office space to complex research laboratories. The campus has 500 buildings ranging in age from 1-year to 160 years old. Approximately 80% of our campus buildings are over 25 years old and approximately 53% are over 40 years old. Typically, at the age of 25 years many building systems and components are worn out and should be replaced. At the age of 40 years most major building systems have reached the end of their useful life and should be replaced. The failure to replace systems at these intervals results in a deferred maintenance backlog. The deferred maintenance backlog on the Amherst campus is estimated at approximately $1.5 billion.

Deferred Maintenance Projects

The campus has a significant volume of projects focused on DM that are at various stages of completion. The total value of the investment in these projects is over $100 million. These projects span a large cross-section of campus buildings and infrastructure including multiple projects in Lederle Graduate Research Center, Morrill Science Complex, Dubois Library, Goessmann, numerous residence halls and others. Major infrastructure projects include the Central Campus and University Drive Infrastructure projects. In addition, we have many renovation/modernization projects that will also correct DM deficiencies. These include renovations in Marks Meadow, Paige, Lincoln Campus Center Concourse, Goodell and various residence halls.

Campus Long-term Strategy for DM Reduction

- **Construction Strategy:** The reduction of DM on the Amherst campus is a large scale and complex problem. It took a long time to accumulate this DM backlog and it requires a multi-faceted approach over a long period of time to reduce it. Our strategy places a high priority on targeting critical repair projects that not only correct deficiencies but also eliminate or prevent collateral damage in buildings. For example, building roof and envelope repairs/replacements are targeted as a high priority to prevent water/weather damage to building interiors which can be more costly to repair than the building envelope. Building mechanical/electrical/plumbing system and infrastructure repair/replacement is a high priority to improve operational efficiency and reduce energy consumption. All of our large renovation and modernization projects reduce DM by replacement of obsolete building systems as well as code compliance improvements. Renovations also increase the value of our facilities by making functional improvements. In smaller renovation projects we proactively look for opportunities to correct building deficiencies and provide adequate project budgets to address DM while contractors are working in a building. DM reduction is also targeted through new construction. With the completion of the Bowditch Greenhouse project, the French Greenhouses that are deteriorated beyond repair were demolished. Our plan includes the replacement and demolition of Hills and Bartlett buildings. As we build and occupy new buildings, the reuse of the vacated space is targeted for its highest and best use. The campus has developed general building design guidelines and green building design guidelines that set standards for new construction and renovations. The purpose of these standards is to increase longevity and reduce life-cycle costs of our buildings.

- **Financial Strategy:** At the completion of all new buildings, the campus allocates 3.5% of the construction cost to the Physical Plant operating budget. This funding is dedicated to the routine operations and maintenance of the new building. In addition, the campus sets aside 1.5% of the construction cost for long-term maintenance and repairs. We have significantly increased our reliance on borrowing dedicating a considerable investment in reducing DM through building repairs, renovations and new construction. We have an on-going E+ program whereby the campus provides funding for projects that can generate operational/energy savings to pay for themselves in seven years or less. Revenue operations on the campus maintain R&R funds for routine and long-term maintenance needs. Although we face challenges in obtaining the funding required to address all of our needs, the capital plans target a 21% reduction of DM by FY16. The following chart illustrates how we plan to achieve the reduction.

Deferred Maintenance Roll Forward (FY12-FY16) - (in millions of $)

	FY2012	FY2013	FY2014	FY2015	FY2016	Totals
Total Starting Deferred Maintenance	**1,686**	**1,588**	**1,534**	**1,497**	**1,411**	
Spending on Deferred Maintenance projects				(50)	(50)	(100)

Spending on Deferred Maintenance in renovation projects				(40)	(40)	(80)
Deferred Maintenance escalator (1%)				14	14	28
Decrease in Deferred Maintenance from demolition				(10)		(10)
Total Ending Deferred Maintenance	**1,588**	**1,534**	**1,497**	**1,411**	**1,335**	
Percent Reduction from 7/1/11	(5.8%)	(9.0%)	(11.2%)	(16.3%)	(20.8%)	

Information Technology

The campus has four priority areas in the realm of Information Technology that are discussed here. Phase 1 of the Network Core Update, wired and wireless, is highly critical. The majority of the core infrastructure is fifteen years old and is failing regularly. All of our internet activity between buildings, to campus data centers, and to the internet is dependent upon the core. This request covers the most critical equipment. The network is essential for modern teaching, learning, and research. It supports curricular innovation, options for course delivery, and analytics to track educational outcomes. It supports connecting faculty, staff and students across buildings, between departments, and to distance learners and teaching resources. It supports prospective students and alumni as well as connections to the local, state, national and international community.

Data Center (DC) Modernization – DC equipment: The data center infrastructure is failing regularly, and the high risk is unacceptable. Critical systems are at risk including learning management, student, dining, building access and controls, university health services, police, department servers, and more. This request represents the gap investment to address the most critical needs.

Network Core Update - wired and wireless, Phase 2: Phase 2 of the project is important and dependent on Phase 1. Phase 2 will continue the work of reducing failures and risk. This phase addresses the networks within campus buildings, much of which is fifteen years old. From a wiring standards perspective, we are three generations behind an acceptable standard in more than half of our buildings and even more behind if we look at innovative capability. This bottlenecks the work of faculty, staff and students. This request will add to the capacity of the University to support curricular innovation, options for course delivery, and analytics to track educational outcomes. It will support improved connections for faculty, staff and students, and for distance learners and teaching resources. It will improve support to prospective students, alumni, and connections to the local, state, national and international community.

Instructional Technology Modernization: As the Commonwealth's flagship university and to remain competitive, UMASS Amherst seeks to lead innovative teaching and learning practices. As new instructional technologies emerge, this requires increased investment.

Housing Strategy

With nearly one-third of the campus facilities in residential structures and much of it aging and programmatically obsolete the campus is launching a housing study that will help the campus determine the best strategy to move forward with a long term comprehensive upgrade and new construction plan for the campus' housing stock, including options for public/private partnerships.

BOSTON CAMPUS

Introduction and Overview of Campus Capital Plan

The University of Massachusetts Boston FY15-FY19 Capital Plan reflects the consistent effort to support the university's Strategic Plan both by implementing the major projects identified in the 2009 Campus Master Plan and through other capital projects designed to correct deficiencies in the campus facilities infrastructure and to upgrade the IT infrastructure on campus. 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 to support current operations and future development.

Key Components of the Capital Plan

The Division of Capital Asset Management and Maintenance (DCAMM) conducted a multiyear project to provide interim stabilization for the campus's deteriorating Substructure and undertook some related essential infrastructure work, and is now about to study in detail the project to **Demolish the Substructure, Science Center, and Clark Pool**. The demolition will remove an ongoing 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 Utility Corridor and Roadway Relocation project, described in more detail below, is the primary enabling project for this effort. The demolition is targeted for completion in winter 2018-2019.

The **Integrated Sciences Complex, or ISC**, a state-of-the-art scientific laboratory and academic office facility—and the university's first academic building to be constructed in 40 years—is nearing completion, and is scheduled for phased opening during Winter and Spring 2015.

The **General Academic Building 1, or GAB 1**, providing state-of-the-art performance, laboratory, classroom, and academic office space, is targeted for completion in Fall 2015.

The **Renovations to Existing Academic Buildings project, or REAB**, repurposing and upgrading large portions of two of the 1970s academic buildings—space vacated as research and teaching labs and offices move into the ISC and GAB 1—to support 21st century teaching and learning, is targeted for completion in Fall 2016.

The **Energy-Producing Facility, or EPF**, providing essential additional hot water and chilled water capacity along with economical electricity cogeneration, is targeted for completion in Winter 2016-2017.

The **Utility Corridor and Roadway Relocation project, or UCRR**, the major enabling project 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, is targeted for completion in Spring 2017.

The **General Academic Building 2, or GAB 2**, providing state-of-the-art classroom, laboratory, and academic office space, is targeted for completion in Winter 2017-2018.

UMass Boston is investigating the use of Public-Private Partnership as a mechanism for financing two other projects that are vital components of the Master Plan, but for which borrowing does not currently appear to be affordable within the 8% DSOE ratio:

- **Residence Hall 1**, a 1,000+/- bed student residence hall, deemed essential to achieving planned enrollment growth, and which will include required additional food service capacity. TPC is projected at $118.0M (of which $1.0M has been borrowed to date).

- **Parking Garage 1**, a 1,200+/- vehicle garage, needed to replace surface lots used as building sites, and to provide the new home for the university's Department of Public Safety. TPC is projected at $45.0M.

The university also continues to explore options that might make borrowing within the 8% DSOE ratio feasible for Parking Garage 1.

Capital Plan Spending Summary
There are 41 projects in the Capital Plan with activity in the FY15-FY19 period; five-year total spending on these projects is projected at $792.3M. Fifteen of these projects are ongoing from prior fiscal years, and had pre-FY15 spending totaling $195.3M. Total planned spending on these projects from inception through FY19 is thus $987.7M. Of this total, $924.5M or 93.6%, will be spent on Campus Master Plan projects. It is estimated that $167.3M, or 16.9% of total spending, will help to reduce the Deferred Maintenance backlog.

Program Type	Projected Spending Inception - FY19 ($M)	% of Total Spending	Deferred Maintenance Component ($M)	Deferred Maintenance % of Total Spending
Basic Infrastructure	**344.4**	**34.9%**	**140.4**	**40.8%**
Master Plan projects	288.5		110.2	
Other projects	56.0		30.2	
Research	**195.0**	**19.7%**	**2.5**	**1.3%**
Master Plan projects	195.0		2.5	
Student Life	**137.0**	**13.9%**	**5.0**	**3.6%**
Master Plan projects	133.0		5.0	
Other projects	4.0		0.0	
Teaching and Learning	**311.3**	**31.5%**	**19.4**	**6.2%**
Master Plan projects	308.0		18.8	
Other projects	3.3		0.7	
Total	**987.7**	**100.0%**	**167.3**	**16.9%**
Master Plan projects	**924.5**	**93.6%**	**136.5**	

Other projects	**63.2**	**6.4%**	**30.8**

There are nine additional projects with planned spending during FY20-FY23 totaling $349.2M, and one FY15-FY19 Capital Plan project that continues with $2M in planned spending during FY20-FY23. Of the $351.2M total FY20-FY23 spending, $310.5M or 88.4%, will be on Campus Master Plan projects. It is estimated that $9.7M, or 2.8% of FY20-FY23 spending, will help to reduce the Deferred Maintenance backlog.

Capital Plan Funding Summary

Spending on the FY15-FY19 Capital Plan projects is financed through a combination of sources:

Source	Sub-source Funding ($M)	Source Funding ($M)	% of Total
UMass Boston Local funds		**46.6**	**4.7%**
UMass Boston External funds		**21.2**	**2.1%**
Borrowed funds		**503.5**	**51.0%**
UMBA borrowed to date	449.2		
UMBA not yet borrowed	51.8		
UMSO revolving loans	2.5		
State funds		**215.0**	**21.8%**
DCAMM	205.0		
Life Sciences Bond Bill	10.0		
Contingent on Funding		**201.5**	**20.4%**
Total		**987.7**	**100.0%**

Total planned borrowing and use of local funds are projected to be affordable within UMass Boston's current overall financial forecast. Planned borrowing also is projected to be manageable within the 8% DSOE ratio. The university plans to request that UMBA borrow in early 2015 the $51,825,000 currently not yet borrowed.

The $351.2M in spending on FY20-FY23 projects is entirely Contingent on Funding, with the exception of $2M planned to be borrowed through System Office revolving loans.

Over 20% of total FY15-FY19 Capital Plan spending is carried as Contingent on Funding. There are three reasons for part or all of a project's funding to fall into this category, each of which applies to different projects:

- Anticipation of funding through the $100M added by the 2014 General Government Bond Bill to the UMass line item in the 2008 Higher Education Bond Bill
  - o Integrated Sciences Complex $9.00M
  - o General Academic Building 2 $13.65M

- Anticipation of funding by DCAMM in the State's assumption of responsibility for remedying the Substructure
  - o Substructure Stabilization Integrity Assurance $0.80M
  - o Study New Central Quad Façades $1.00M
  - o Demolish Substructure/Science Center/Pool $15.00M
- Investigation of Public-Private Partnership as a financing mechanism
  - o Residence Hall 1 (including campus dining facility) $117.00M
  - o Parking Garage 1 (including Public Safety facility) $45.00M

Project Status from FY2014 Plan

Three of UMass Boston's major projects—all critical components of the university's Campus Master Plan—have projected increases in Total Project Cost (TPC) that exceed 10% of the BOT-approved TPCs reflected in the campus's FY14-FY18 Capital Plan.

I. Increases in UMBA/UMass Boston Project Costs and/or Budget

Background

- UMass Boston determines the program for its capital projects based upon strategic priorities outlined in its Strategic Plan, which were reflected in its Campus Master Plan. UMBA contracts with project teams—designers, engineers, construction managers—and Owner's Project Management firms (OPMs) to bring these capital projects to fruition. The OPM firms direct the work of the project teams.

- Recently two of the major projects have experienced significant, unanticipated, cost increases at various project phases. The later in the design process these cost increases have been identified, the more difficult they have been to address, given the limited options available to change design and/or scope. This has been especially true in the case of the Utility Corridor and Roadway Relocation (UCRR) project, upon which the other major projects are relying for the provision of some or all of their utilities, e.g., ISC awaits installation of its permanent sanitary line and General Academic Building 1 (GAB 1) and the Edward M. Kennedy Institute for the United States Senate await installation of all of their utilities.

Why were there cost pressures on UMass Boston's recent construction projects?

There is no one factor for the cost increases for the two major projects that have experienced them: UCRR and GAB 1. There are, however, some factors that have impacted both of them and some causes that are specific to each of them. The common factors that have impacted both of them are as follows.

- **Boston's construction market**

- The Boston market experienced considerable downsizing and company consolidation during the recession of 2009: firms left the industry and supply houses slowed or curtailed operations, and these changes have made it increasingly difficult for estimating firms to accurately project market pricing.
- The recession was followed by a construction boom, with Boston's skyline sporting a plethora of construction cranes. Driving this surge are several factors, including the strength of Boston's technology, bio-tech, academic, and medical industries; pent-up demand for housing; and improved credit conditions that have made financing available for commercial construction. This surge created a strong seller's market.
- Some subcontractor specialties, especially the mechanical, electrical, and plumbing trades, are in such high demand that some firms do not bother to bid on what previously would be considered 'plum' jobs. Those who do bid feel comfortable submitting bids that far exceed estimates, and low bids are "low" in name only.
- The City of Boston residency requirement in the Project Labor Agreement covering UMass Boston's "Master Plan" projects may exacerbate the effects of an already tight labor market. Many of those construction cranes dotting the Boston skyline are for projects which are also operating under Project Labor Agreements with a similar requirement to make 50% of its tradespeople Boston residents. How many tradespeople in the mechanical, electrical, and plumbing trades are Boston residents *and* available to work on the UMass Boston projects?

- **UMass Boston's location on Columbia Point/Dorchester Bay** imposes unusual site conditions and a micro-climate that engineers, architects, construction managers, and cost estimators have undervalued or overlooked entirely.

  - Building on the site of a former landfill and a former gas processing plant requires the use of much deeper pilings than would be necessary on a site with fewer geo-technical challenges.
  - For projects that generate excess soil from a landfill, unknown subsurface conditions impose expensive soil screening and soil handling requirements and disposal costs because of the contaminants present and the composition/quality of the soil below the landfill cap.
  - Building directly in the flight path of a major international airport requires more intensive sound insulation than would be necessary elsewhere, e.g., window glass and window casings.
  - Building on a small exposed peninsula requires the use of a more intensive wind-resistance technology than would be necessary elsewhere, e.g., mechanically fastened roofs rated to a wind speed of 120 mph, as well as waterproofing on all other exterior construction elements similarly "over-designed" to maintain building envelope integrity and water-tightness.
  - Building on land surrounded by salt water requires the use of more expensive exterior construction materials and fixtures that are highly corrosion-resistant.
  - Building in a highly-regulated coastal zone requires extensive environmental permitting, which adds time and additional design requirements to the project.

- **Internal project processes** have developed while projects are underway, thus creating vulnerabilities.

    - To create broad consensus for a transformational *and disruptive* redevelopment of a campus, campus buy-in efforts have been perhaps more extensive than would ordinarily be the case, and this has occasionally caused delays in decision-making.
    - Internal decision-making needs to occur internally. Early in these two major projects, costly external project consultant resources were used in making program decisions that can only be made by internal stakeholders.

- While use of **early bid packages** has enabled construction to start sooner thereby limiting cost escalation for project work, these packages have been bid prior to completion of design and so pose a financial risk. This risk occurs when the building's foundation and footprint is fixed by early foundation packages, limiting or precluding the project's ability to downsize scope later when estimates for completed design come in higher than anticipated.

What did UMBA and UMass Boston do to respond to these pressures in order to contain costs?

- UMBA and UMass Boston have addressed these major project cost increases by:
    - engaging with the project teams in extensive and successive Value Management exercises to reduce scope without sacrificing critical deliverables or negatively impacting quality; and
    - applying funding planned to be available for other purposes, leaving other needs unmet.

What will UMBA and UMass Boston do differently in the future to avoid a reoccurrence?

- UMass Boston and UMBA have learned valuable lessons from recent experience.
    - We have explicitly included the Columbia Point site conditions/micro-climate requirements in our design standards, to ensure that these requirements are fully understood and included in estimates of project cost from the beginning.
    - UMass Boston, in cooperation with UMBA, will conduct an internal programming exercise with key campus stakeholders prior to a designer for a project being hired, in order to make internal decisions about who will occupy the space and to identify any costs likely because of unique project factors at the earliest possible stage of the project process. This approach has been used in the Energy-Producing Facility project where the UMBA Owner's Project Manager performed a validation study prior to the designer being hired. This study identified a change in approach—moving a future Phase 2 of the project forward to today—

that, while more costly initially, will provide greater annual energy savings and help the project qualify for higher rebates.
- UMBA and/or the campus will add a program step by engaging an independent cost estimator at several stages of the project process, including:
  - prior to any request for borrowing;
  - following an internal planning/programming process;
  - at least following the 100% Design Development phase, in order to serve as an additional check and validate that the design documents are at an appropriate level of completion for the given phase; and
  - during Value Management, to confirm accuracy of costs of items being proposed for deletion.

II. Specific Changes in Project Cost, by Project

Utility Corridor and Roadway Relocation (UCRR)

Project is in Construction (project phase 7) with Board of Trustees (BOT) second-approval Total Project Cost (TPC) of **$155.5M**.
TPC is projected to increase by $22.2M (14.3%) to **$177.7M**, due to costs encountered in project phase 6 – Final Design / Early Construction Packages.

- The project consists of 5 separate construction packages: the estimates and bid costs of the first three that were bid were aligned.

- Following the 50% Construction Document (CD) cost estimate in August 2013, a Value Management process was conducted on the Package 4 work, which reduced the projected TPC to within 1.2% of the BOT-approved TPC.

- However, when final bids were received on the Package 4 work in April 2014, the resulting projected TPC was $182.0M, or $26.5M above the BOT-approved TPC.

- The principal elements contributing to this unanticipated cost increase and their approximate values were:
  - adverse market conditions resulting in higher than anticipated escalation and lack of bidders ($3.0M);
  - design adjustments resulting from an increased understanding of the unique soil and subsurface conditions on campus:
    - an increase in the soil handling allowance ($4M) due to additional information on soil characteristics received during Package 3 work and a refinement on the calculated amount of soil being excavated; and
    - early excavation on the project also identified the need to import clean soil to improve the fill used to backfill trenching for the utilities to reduce the possibility of settling and to provide an adequate amount of clean soil for plantings where the root system would go below the 2’ of required clean cap soil that must be placed on top of soil from the landfill ($3M).

  - additional information provided by the Substructure Interim Stabilization Project on the continued deterioration of the concrete in the Substructure required a change in the piping support system being used to bring new utility lines into McCormack Hall, the Quinn Administration Building and Wheatley Hall ($1.3M)
  - continued detail and clarification of design intent and component specifications and scope not completely identified or missed during the 50% CD estimate ($9.4M)
  - scope added to address critical equipment failure discovered at the Salt Water Pump House ($3.4M);
  - scope added to satisfy the requirements of regulatory "AHJs" (authorities having jurisdiction) ($0.7M); and
  - scope added to meet additional safety requirements (campus security blue light phones) and new items to promote operational efficiency that were identified by UMass Boston ($0.6M).

- Package 5 has not been bid as of yet; however, based upon its being re-estimated, a Value Management exercise was conducted on its scope as well.

- Construction industry conditions thus accounted for approximately 11% of the increase, new information gained from earlier bid packages on soil conditions and the condition of concrete in the Substructure accounted for approximately 31% , design and estimating clarifications of approved scope accounted for approximately 35%, continued clarification of design details and estimating and and all scope additions—including those caused by unanticipated equipment failure the replacement for which could be handled both most cost-effectively and quickly by adding them to the UCRR project—accounted for approximately 18%.

- Because the previous Value Management process had left very little room for further cost efficiencies to be effected without serious adverse impact on the project's essential deliverables, this cost increase could be reduced by only $4.3M, yielding a net increase of $22.2M.

- UMass Boston plans to finance this additional cost through:
  - borrowing an additional $8.0M through UMBA in Winter 2015, which is manageable within the 8% DSOE ratio; and
  - spending $14.2M of Local funds.

General Academic Building 1 (GAB 1)

Project is in Construction (project phase 7) with BOT second-approval TPC of **$113.0M**. TPC is projected to increase by $17.5M (15.5%) to **$130.5M**, due to costs encountered in project phase 6 – Final Design / Early Construction Packages.

- Following the 90% Construction Document cost estimate in July 2013, a Value Management process was conducted which reduced the projected TPC to within 0.2% of the BOT-approved TPC.

- However, when final bids were received a few months later, the resulting projected TPC was $135.5M, or $22.5M above the BOT-approved TPC.

- The principal elements contributing to this cost increase and their approximate values were:
    - dramatic price escalation and low bidder participation ($15.1M); as an example, the successful bid for HVAC work alone was $4.0M higher than the estimate;
    - estimating errors ($3.7M), primarily in "take off" amounts used to identify the quantities of specific materials required and then also the corresponding labor costs; and
    - scope added to meet new requirements identified by UMass Boston ($3.7M), which included:
        - $2.0M for a connector between GAB 1 and the nearby Campus Center, providing users of GAB 1 with a protected and handicapped-accessible route to other major campus buildings. UMass Boston had anticipated since early in the GAB 1 design process that it would reallocate already-borrowed bond proceeds to fund the connector once an estimated cost could be established.
        - $1.7M to upgrade the roofing system to the campus standard that had been established, and to replace a plaster soffit on the underside of the building's extensive "eyelash" with a metal product, due to concerns over harsh environmental conditions and what would be a costly maintenance program to paint a large structure at a significant height.

- Construction industry conditions thus accounted for approximately 67% of the increase, cost estimating errors accounted for approximately 16%, and all scope additions accounted for approximately 16%.

- Through negotiation, $5.0M of the total increase was absorbed by the contractors, yielding a net increase of $17.5M.

- UMass Boston plans to finance this additional cost through:
    - borrowing an additional $15.5M through UMBA in Winter 2015, which is manageable within the 8% DSOE ratio; and
    - repurposing $2.0M of existing borrowed funds from other projects ($1.5M from Healey Plaza-Level Waterproofing and $0.5M from Exterior Doors/Vestibules) that can be made available because significant portions of those projects' originally-proposed scopes have been, or will be, included in other projects that have arisen since the time of the original project request and borrowing (the Interim Substructure Stabilization project, the Substructure Demolition project, and the post-demolition project to provide New Central Quad Facades for buildings fronting the Plaza).

III. Change in Project Budget Estimate: Energy-Producing Facility (EPF)

Project is in Study/Schematic Design (project phase 4) with BOT first-approval TPC of **$27.5M**. TPC is projected to increase by $4.8M (17.5%) to **$32.3M**.

- The EPF project budget estimate change included in this Capital Plan reflects a deliberate decision to more than double the initial capacity of the Phase 1 plant identified in the campus's Energy and Utility Master Plan (this Plan had identified a two-phase approach, though up until now the cost for only the first phase was reflected in the Capital Plan).

- A study by Arup, the engineering consultants who produced the DCAMM-commissioned UMass Boston Energy and Utility Master Plan, recommended a two-phase project for the Energy Producing Facility; Phase 1 of that plan would result in constructing and equipping a 2 MW plant, and Phase 2 would add 3 MW to that facility for a total generating capacity of 5 MW. The project budget estimate for Phase 1's 2 MW Energy Producing Facility in the FY11-FY15 Capital Plan was $25.0M. This estimate was increased to $27.5M in a subsequent Capital Plan to reflect escalation from moving out the estimated completion date for the project. This estimate was predicated on the availability of a high-pressure natural gas feed to the plant, and on estimated building hot and chilled water loads for the ISC and GAB 1. Once the buildings were designed and hot and chilled water loads for the ISC and GAB were established, the load estimates were higher than originally projected.

- Earlier this year, UMBA hired an OPM for the EPF Project, Jacobs Engineering. UMBA and UMass Boston asked Jacobs to validate the phased approach recommended in the 2009 study. Jacobs recommended that UMass Boston would be better served by combining the two phases into one project, proceeding directly to constructing and equipping a 5 MW plant with a projected TPC of $32.3M. The factors Jacobs cited for proceeding directly to the full 5 MW capacity include:

    - revised higher load estimates for the ISC and GAB 1, resulting in a much earlier higher demand than envisioned in the original two-phase approach;
    - need to purchase a compressor for the plant because changes in NGRID regulations would not allow the installation of a high-pressure natural gas feed to the plant;
    - availability of more favorable and sizable utility industry rebates, which makes development of a larger plant more economical;
    - significant additional cost avoidance in electricity costs from maximizing the co-generation capacity to 5 MW from the start of the project; and
    - cost increases resulting from a two-phased implementation of the project.

- UMass Boston plans to finance the additional capital project cost through spending $4.8M of Local funds.

FY2015 – 2019 Planning Needs and Priorities

There are two new projects in the FY15-FY19 Capital Plan, both of which are urgently needed.

Substructure Stabilization Integrity: Ongoing Testing, Maintenance, and Monitoring of Interim Structural Stabilization Measures

This project was included in the FY14-FY18 Capital Plan submitted last year. It recommends that a total of $0.8M—$0.2M per fiscal year, FY15 through FY18—be devoted to a program of inspection and remediation as necessary of the deteriorating concrete and the utility hangers and pipes embedded in this concrete. This monitoring must continue until the new utilities distribution network being provided by the UCRR project replaces it. UMass Boston proposes that the cost of this program be assumed by the State, since it is an integral element of the overall Substructure interim stabilization and demolition effort.

Bayside Utilities Separation, Buildings Demolition, and Parking Lot Improvements

When the UMass Bayside property was acquired in 2010, it was planned to demolish the abandoned 1960s structures on the site and thereby increase the capacity of the parking facilities that would be needed to accommodate the closure of lots on the main campus due to the planned construction projects there. These main campus projects now are well underway. Over the past two years, in advance of the buildings' demolition, the university has had to make certain improvements to the existing parking lots on the Bayside site in order to make them usable as main campus lots began to be closed. The cost of this work has been approximately $1.9M.

Since acquiring the property, it has become clear that separating the utilities that serve not only the UMass Bayside structures but also neighboring buildings must be an integral part of the demolition project. An engineering study received in October 2014 provided two options for utilities separation, buildings' demolition, and parking lot expansion and improvements. The projected TPCs of these options were $16.0M and $18.8M. Following analysis and a significant re-evaluation of the required scope, the university has determined to pursue an alternative approach with a projected TPC of $9.0M. This approach will provide for utilities separation, buildings demolition, and certain limited expansion and improvement of the parking lots, focusing on enhancements of user safety and security.

This project must commence as soon as possible.

UMass Boston plans to finance this project through:

- use of the balance of the $25.0M borrowed by UMBA for the acquisition and initial improvement of the Bayside property, estimated at $3.46M; and
- spending $5.54M of Local funds.

Deferred Maintenance

Nearly all colleges and universities have difficulty keeping up with the maintenance of their buildings and the timely replacement of major components as they reach the end of their useful life, such that they manage to avoid accumulating a backlog of Deferred Maintenance (DM) needs. UMass Boston is in an especially challenging positon because most of its main campus physical plant—over 2M gross square feet, or 81% of the campus total—was constructed at the same time 40 years ago. This means not only that all of these buildings have been deteriorating on exactly the same timeline resulting in an maintenance needs coming due at the same time, and that these buildings were constructed during a period that Sightlines considers to be characterized by the worst construction quality in the past century. The well-known history 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") have created additional burdens as work needs to not only correct maintenance deferrals but also address deficiencies in the original construction. For example, recent work to correct long-standing water intrusion problems at Healey Library found that none of the Concrete Masonry Unit (CMU) walls of the four mechanical penthouses had ever been waterproofed.

Sightlines provided UMass Boston with an estimated "immediate need" DM backlog totaling $375M, with another $101M in remaining needs and renewal needs coming due over the next 10 years. The university continues to address this daunting DM situation through a combination of measures:

1) targeting sufficient operating resources to Preventive Maintenance so as to delay as much as possible the failure of building components on an ongoing basis;
2) allocating resources in the Capital Plan to address major DM issues that have come due;
3) requesting and receiving DM funding from DCAMM to help address DM issues that have come due; and
4) working through Capital Plan projects toward the outright elimination of substantial portions of the DM burden through demolition of entire structures that have been determined to be past their useful life.

The following table illustrates how the last three measures relate to Sightlines' estimated "immediate need" DM backlog on a building-by-building basis. (Figures are in millions of dollars.)

	Sightlines Immediate Need DM Backlog	**Impact of FY15-FY19 Capital Plan Projects**	**Additional Building Demolition Impact**	**FY15-FY19 Capital Plan DM Impact Not in Sightlines**
Calf Pasture Pumping Station				0.43
Clark Athletic Center	17.32	11.45		
Healey Library	28.86	10.75		
McCormack Hall	45.35	14.76		

Quinn Administration Building	13.27	0.71		
Science Center	55.44	2.60	52.84	
Service & Supply Building	7.92	2.33		
Utility Plant	1.22	1.22		4.28
Wheatley Hall	48.49	10.70		
Substructure	119.08	99.65	19.43	
Bayside	37.68	5.88	31.80	
Nantucket	0.66	0.66		1.39
Fox Point and Harborwalk				0.38
Multiple buildings				0.13
Total	**375.28**	**160.70**	**104.06**	**6.60**
Cumulative Total		**160.70**	**264.76**	**271.36**
% of Sightlines DM Backlog		**42.8%**	**70.5%**	

FY15-FY19 Capital Plan Projects -- minus the full elimination of DM to be achieved through the demolition of the Substructure, Science Center, and Clark Pool and the UMass Bayside buildings—are predicted to reduce the Immediate Need DM Backlog identified by Sightlines by **$160.7M, or 42.8% of the total**. This figure includes 50% of projected spending on the UCRR project, the estimated value of project activity that replaces the old Substructure-based utilities distribution system, thus effectively eliminating DM need there. The figure is less than the full $167.3M DM component of Capital Plan project spending shown in the Capital Plan Spending Summary table in Section 1 above because some of that project spending reflects items not included in Sightlines' list.

Since one of the Capital Plan projects is planned to demolish the UMass Bayside buildings, the remaining $31.8M DM need for those buildings also will be eliminated. The remaining DM need for the Substructure, Science Center, and Clark Pool—which are planned to be demolished by the end of 2018 through a DCAMM-managed project—totals $72.3M**.** The elimination of the remaining DM needs of these structures to be demolished raises the DM-reducing impact of the Capital Plan to **$264.8M, or 70.5% of the Sightlines total.**

Adding $6.6M for those DM-reducing components of the Capital Plan that reflect items not included in the Sightlines total raises the five-year DM reduction value to **$271.4M**.

In addition, to the extent that requests for DM project funding from DCAMM for FY15 (totaling $77.0M) and subsequent years are approved, further direct reduction of the DM need can be achieved. The FY15-FY19 Capital Plan incorporates $3.7M in FY14 DM project funding from DCAMM.

It is important to realize in this connection that projects such as the ISC, GAB 1, GAB 2, and REAB—which may not appear to have direct impact on DM—provide the essential alternative new structures and renovated spaces that will make it possible to vacate, disuse, and demolish the Science Center and thus eliminate its huge outstanding DM need.

Information Technology

Over the course of the next five years, investment in UMass Boston's Information Technology (IT) infrastructure of approximately $15M will be needed to ensure that its teaching, learning, research, and related activities are supported in the manner required by a world-class higher education research institution. The required investment can be classified into four main categories:

- **Teaching and Learning** As an academic institution whose primary objective is education, ongoing investment in classroom technology that enhances teaching and learning is essential. Changes that must be made over the next five years include upgrading the smart classrooms that are over five years old, rolling out a new classroom capture system, and integrating new smart-board/touch panels that enhance student engagement. With each generation using new ways of learning, there will be a need to invest in mobile technology in areas such as Nursing, Education, Academic Support, and Information/Research skills.

- **Network Infrastructure** As educational, research, and business operations change, servers, network switches, cabling, appliances, etc., must be upgraded so that they can accommodate the additional volumes of data. Among the critical upgrades that need to be completed in the next 12-18 months are the expansion of the university's wireless infrastructure and service, connecting the campus infrastructure to UMassNet, and upgrading the antiquated telecom system. The university Data Center's switches and UPS (Uninterruptible Power Supply) system also will need to be upgraded.

- **Security Infrastructure** Network infrastructure and security infrastructure often go hand in hand; however because UMass Boston is in the process of building its security infrastructure, it is important to separate the two elements so that ample resources are devoted to achieving a secure network. Appliances such as Firewalls, SIEM (Security Information and Event Management) systems, and related components need to be acquired and implemented.

- **Research Computing and Storage** As the university moves toward being an increasingly research-intensive institution, the need to invest in technology such as storage devices is necessary to meet the needs of faculty. The high performance computing system being hosted in Holyoke and locally on campus requires high-speed networks, and faculty need storage devices to store large volumes of data.

The ITSD (Information Technology Services Division) Infrastructure project in the FY15-FY19 Capital Plan, representing planned use of $0.5M per year of UMass System Office revolving capital loan funds to be applied to a range of hardware acquisitions and other appropriate aspects of the IT infrastructure developments outlined above, will supplement the funding provided for ITSD in UMass Boston's annual operating budget as well as the IT-related components of the capital project funding for the university's new academic buildings.

Housing Strategy

UMass Boston is actively participating in the development of the Housing Strategy Report to the Board of Trustees that was requested by Chairman Thomas at the September Board meeting, and plans to make use of the report's findings in the review and development of its housing strategy.

Campus Master Plan, Phase 2

UMass Boston soon will begin detailed planning for Phase 2 of the 25-year Campus Master Plan. Following Phase 1's accomplishments of opening up the campus by demolishing the Substructure, Science Center, and Pool and developing a new central quadrangle, establishing a robust new physical infrastructure, and addressing critical needs for academic facilities, Phase 2's projects are envisioned to include, among other elements, a focus on enhanced and expanded athletics facilities and other student life-related spaces, and additional academic buildings to support increased enrollment and programmatic growth.

DARTMOUTH CAMPUS

Introduction and Overview of Campus Capital Plan

In the Fall of 2014 UMass-Dartmouth released UMASSDTRANSFORM2020 the strategic plan that will chart the course going forward.

"*By 2020, UMass Dartmouth aspires to attain national status as a Doctoral Research University. UMASSDTRANSFORM2020 affirms that the transformative education of our students is our highest priority, building upon the reciprocal and enduring community partnerships that are a substantive part of our campus legacy. As an anchor institution in Southeastern Massachusetts, we pledge to collaborate productively with K-12 schools to increase educational attainment and college completion and with business and government leaders to foster entrepreneurship and economic innovation based on the application and commercialization of research." – Divina Grossman, Chancellor*

The five goals of the strategic plan provide the framework through which we build a university culture that continually and agilely adapts to the complex challenges and ever-changing landscape of public higher education.

- 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

Although good capital planning will be integrated throughout the goals of UMASSDTRANSFORM2020 it is Goal 5: Infrastructure and Process in Support of Excellence that will require the most collaboration as described here:

> A robust physical, technological, and administrative infrastructure that ensures a productive, safe environment is essential to the achievement of our strategic goals. The University is committed to ongoing cost containment efforts to improve efficiency and effectiveness throughout the institution and in partnership with the UMass System's Efficiency and Effectiveness Task Force initiatives.
>
> The University will bolster the existing campus infrastructure and construct new facilities to support and enhance teaching and learning, research, and community partnerships. The advent of new technologies and the increased demand for online programs requires upgrading existing buildings and strategic technology investment. Shortly after launching UMASSDTRANSFORM2020, the Campus Master Plan will be developed to serve as a roadmap for all future physical and technological improvements.
>
> Attention to the development of a physical research infrastructure that includes research laboratories, new technologies, and the appropriate research development and compliance administrative staffing will be critical to transition to a Doctoral Research University. Security will be enhanced to protect the physical wellbeing of the campus community, and technologies such as audit and intrusion prevention systems will help protect personal information and intellectual property.

Following UMassDTransform2020 robust and vigorous discussions are occurring concerning the current state of our facilities. **FY15 #2 – Update Campus Master Plan (FY14 #9)** will have its' formal project kickoff on 7-November-2014 and will aspire to put the planning in place to allow for the physical implementation of UMASSDTRANSFORM2020.

The UMass Dartmouth Capital Plan Update for FY2015-2019 presents a capital spending plan for twenty eight prioritized projects with a projected cash flow of $277M in the next five fiscal years.

Project Status Update from FY14 Plan

The campus has made significant progress on the projects prioritized in the FY14 Capital Plan Update.

Completed / Substantially Completed Projects:

- **FY15 N/A – Wind Turbine Project (FY14 #21):** The turbine project is one component of a plan developed in conjunction with the state's Division of Capital Asset Management (DCAM) and the Department of Energy Resources' (DOER) Leading by Example program to modernize the UMass Dartmouth power systems, and to reduce energy consumption. The Elecon 600 kW wind turbine has been erected and site installation is complete. The wind turbine is functional and currently working through operation and maintenance items.

- **FY15 N/A – Residence Halls – Wireless Network Installation (FY14 #22):** The residential wireless project would provide full coverage and allow access for any equipped device. This is an important infrastructure amenity that today's residential student expects as common as electrical power and access to cable television. The majority of the installation in the residence halls has been completed.

- **FY15 #9 – Fitness Center Expansion (FY14 #5):** Construction of a $5 million expansion and renovation of the fitness center was completed. The project doubles the size of the very heavily used facility from 8,000 square feet to 16,000 square feet. The expansion houses brand new state of the art cardio equipment and the second floor multipurpose aerobics room. The renovated facility includes a free weight area and new varsity athlete lifting room.

- **FY15 #10 - Massachusetts Accelerator for Biomanufacturing (MAB) (FY14 #6):** A new 35,000 SF BSL-2 Bioprocessing Facility, located on a four acre site within the newly developed 150-acre South Coast Life Sciences & Technology Park in Fall River. The project is substantially completed with commissioning activities ongoing.

- **FY15 #11 – Repair Four Oldest Residence Halls (FY14 #22):** The initial $5M first phase of revitalizing the four first year residence halls was completed in FY13 by a $2M renovation of the bathrooms in MapleRidge Hall. Section VI Housing Strategy expands the discussion related to this priority. Planning discussions will continue in FY15 to determine what direction to proceed with future work on these structures built in the mid-70s. The first year residence halls are extremely important for the student experience and by providing improved and appropriate residential facilities will only help to increase recruitment and retention while decreasing deferred maintenance.

Ongoing Projects:

- **FY15 #3 - Energy / Water Savings Project (FY14 #2):** The $40M Energy Performance Project being implemented by NORESCO and managed through the DCAMM is a two phased infrastructure upgrade program and is 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 operational phase.
    - Phase II – The construction of the 1.67 MW Kawasaki gas turbine based cogeneration system. The gas turbine generator will generate electricity to UMass-Dartmouth's electrical grid and hot gas exhaust to a Heat Recovery Steam Generator

to produce steam for the campus. The gas turbine generator and heat recovery steam generator have been installed. The cogeneration system is undergoing a series of testing, commissioning and start up .

- **FY15 #4 - Research Laboratory Improvements (FY13#3):** A $13M program focused on upgrading existing or underutilized 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. Highlights of this program include:

  Computational Design Lab – Textile 201 - $376K Renovation: Completed in FY13;

  Multidisciplinary Research Lab – Textile 108 - $1.8M Renovation: Completed in FY13;

  BioEngineering Teaching Labs – Textile 202 and 204 - $1.5M renovation project 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 - $300K renovation project that 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 326. Completed in FY14;

  Computational Science Lab – Textile 105 - $355K capital renewal for the Center for Scientific Computing & Visualization Research which aims to promote and conduct high-level interdisciplinary and multidisciplinary research in scientific computing. 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.

  Biology Research Lab – SENG 327 - $1.45M renovation project constructed a 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 early FY15;

BioEngineering Research Labs – Textile 203 and 205 - $1.5M renovation project currently under construction will build on synergies with the newly constructed 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 Calvert research group revolves around approaches to making soft strong devices for biomedical or commercial applications. The chief tools in the laboratory are inkjet printing and freeform fabrication for sample preparation; diffusion, swelling and mechanical properties for characterization and finite element modeling. Scheduled to be complete mid FY14;

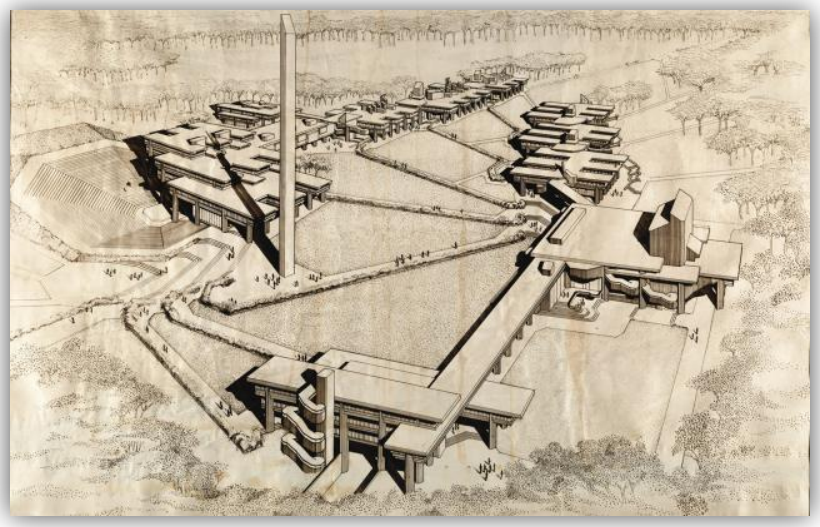
Textile / SENG – Emergency Generator – $800K project for the installation and implementation of emergency power to support critical research infrastructure such as refrigerators, freezers, fume hoods, biological safety cabinets, emergency lighting, exhaust fans, animal facilities and environmental rooms. This will provide reliable back up power to support research activities. Scheduled to be completed mid FY14.

Chemistry Research Lab – Violette 203 - $1M renovation project currently under construction to provide a modern Chemistry research lab. The Guo research group, whose research goal is to understand the molecular basis of these biochemical processes and to develop novel strategies for diagnostics and therapeutics, and 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, will be housed here. Scheduled for completion late FY15;

- **FY15 #5 – Classroom, Teaching Laboratory and Learning Space Improvements (FY14 #4):** A $5M initial borrow through UMBA to kick start this program has yielded immediate results. A task force compiled a prioritized list to address the largest in terms of capacity and most frequently used classrooms. Renovations have included the replacement of seating, installation of new tabletops with power; new carpeting and installation of new technology suites in five classrooms to start. An additional five classrooms will be scheduled for FY15. These types of projects make immediate gains in the student learning experience and classroom renovations will result in better, more efficient classroom utilization.

Planning and Design Projects:

- **FY15 #2 – Update Campus Master Plan (FY14 #9)**: In conjunction with the Division of Capital Asset Management and Maintenance (DCAMM) through the Designer Selection Board (DSB) have retained the design team of designLab and Ayers Saint Gross to develop a comprehensive Campus Master Plan Update. The University will be kicking off this process during the Fall 2014 Academic Semester.



Goals of 2014 Master Plan Update:

Through a highly interactive process that inspires the University participants to engage in a shared vision, this Master Plan Update will be a dynamic and flexible document that will develop strategies for investment and implementation of projects that reinforce the goals of the UMASSDTRANSFORM 2020 Strategic Plan. Additionally it will help the campus develop criteria to plan and prioritize those projects with projected costs in a carefully considered phased plan. Embedded throughout the Strategic Plan Goals and Objectives are three overarching goals.

- Creation of a world-class research university.
- Reinvigoration of an active and engaged university community aimed at achieving excellence in research, scholarship, and innovation.
- Achievement of a self-sustaining main campus vis-à-vis the operations and capital needs with an emphasis on addressing the $426.6 M backlog of deferred maintenance.

Projects will be prioritized based on the extent to which they support and reinforce these goals.

Additional Goals:

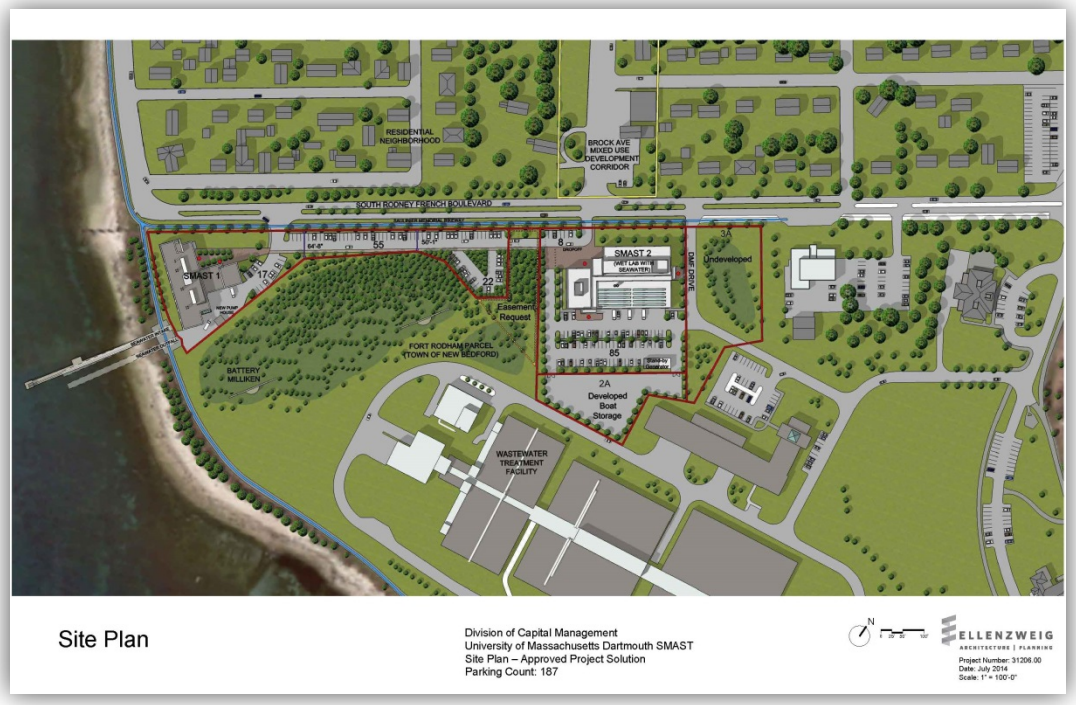
- Verify and validate the space needs of all academic programs.
- Propose means to modernize facilities in response to evolving pedagogies and demands for research space. An example of this is the renovation of the Carney Library which was repurposed as a campus community gathering point.
- Enhance the aesthetics of the campus without diminishing the strong architectural style of the Paul Rudolph buildings.
- Generate a phased implementation plan that will enable continued growth of the student population and the expansion and development of the full range of UMass Dartmouth's diverse academic programs, community outreach programs, on-campus housing for graduate and undergraduates, research programs, and its industry and business partnerships for the near future.
- Provide a well-documented framework that explains the variables that need to be considered relative to the proposed prioritization of projects in order for the University to fully understand the ramification of potential options in its decision making process. This Master Plan will reassess the prioritization of these projects to align them with the University's Strategic Goals and the recommendations of this Master Plan Update.

- **FY15 #6 – SMAST / DMF Expansion (FY14 #8):** The planning study administered by the DCAMM has been completed with an approved project approach:

  - Demolish the existing Naval Reserve Center (NRC) building on an adjacent parcel
  - Construct a new 76,000 gross square foot "SMAST 2" building on the NRC site
  - 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 new 76,000 gross square foot SMAST 2 building at the NRC site includes:

  - Flexible wet/dry research labs and researcher offices
  - 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



The SMAST 2 facility will be comprised 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. Final architectural design will relate to the scale of the existing residential neighborhood and provide a suitable terminus to the Brock Avenue Development Corridor.

Project Budget and Construction Cost

The established Total Project Cost (TPC) is $55,000,000. The Estimated Construction Cost (ECC) for the project scope, including contingencies and cost escalation is $40,307,096.

Project Schedule

The preliminary project schedule is based on the intended “fast-track” Construction Management delivery approach, and includes a 31-month duration from start of design through substantial completion of construction and SMAST 2 move-in. Pending confirmation of this schedule by the project team, and assuming an October 2014 start of design, SMAST 2 move-in would commence at the start of May 2017, which precedes the August 2017 expiration of the SMAST lease in Fairhaven by three months.

- **FY15 #7 – Charlton College of Business, Phase II (FY14 #16):** Working with UMBA the Charlton College of Business expansion will address deficiencies with the current facility which houses only offices and some meeting space. 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 of the existing facility, with an envisioned 22,000 square

foot, 'Learning Pavilion' that will contain 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. 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. Bruner/Cott, architects and planners, has been selected to lead the design and the project is on schedule to commence construction in FY2016.

- **FY15 #8 –New Academic Building (FY14 #12):** A state bond funded project the University has initiated with DCAMM the designer selection process for a new Interdisciplinary Science and Engineering Building with a current total project cost of $55M. UMASSDTRANSFORM 2020, defined goals and initiatives that will serve as a catalyst for the bold changes required as the University moves rapidly towards its goal of becoming a major Doctoral Research University. The continued ability of UMass Dartmouth to attract and retain the next generation of the highest caliber faculty and students requires renewal and expansion of the research facilities to reach this goal. The University is concurrently undertaking a Campus Master Plan Update that will seek to align the University's facilities to support its strategic goals and objectives. The primary goals of that Strategic Plan are: Innovative and High Impact Research and Academic Programs; and Integrate Research and Education in University Culture. To accomplish these goals, the University's strategic plan for STEM programs focuses on providing modern and advanced facilities in order to address the critical shortage of adequate science and research laboratories to sustain current teaching and research programs and to accommodate growth.

  This new facility will be a "hub" of scholarship and teaching where students, faculty and staff will produce the next generation of science break-throughs. This "hub" facility will be

designed to promote informal discussions that will foster interdisciplinary collaboration and a sense of community. Program will include, but not be limited to:

- Laboratories and support spaces for the chemical and physical sciences;
- Specialized shared wet and dry research laboratories that meet urgent needs for the physical sciences, the engineering department, and other science departments;
- Classroom space, general instructional spaces, and general lecture halls;
- Space for the storage and handling of chemical and research waste;
- Offices for faculty and graduate students;
- Building operations spaces;
- Space that enhances a sense of place through its thoughtful placement in the landscape and integration of public art throughout the facility.

FY15 – FY19 Planning Needs & Priorities

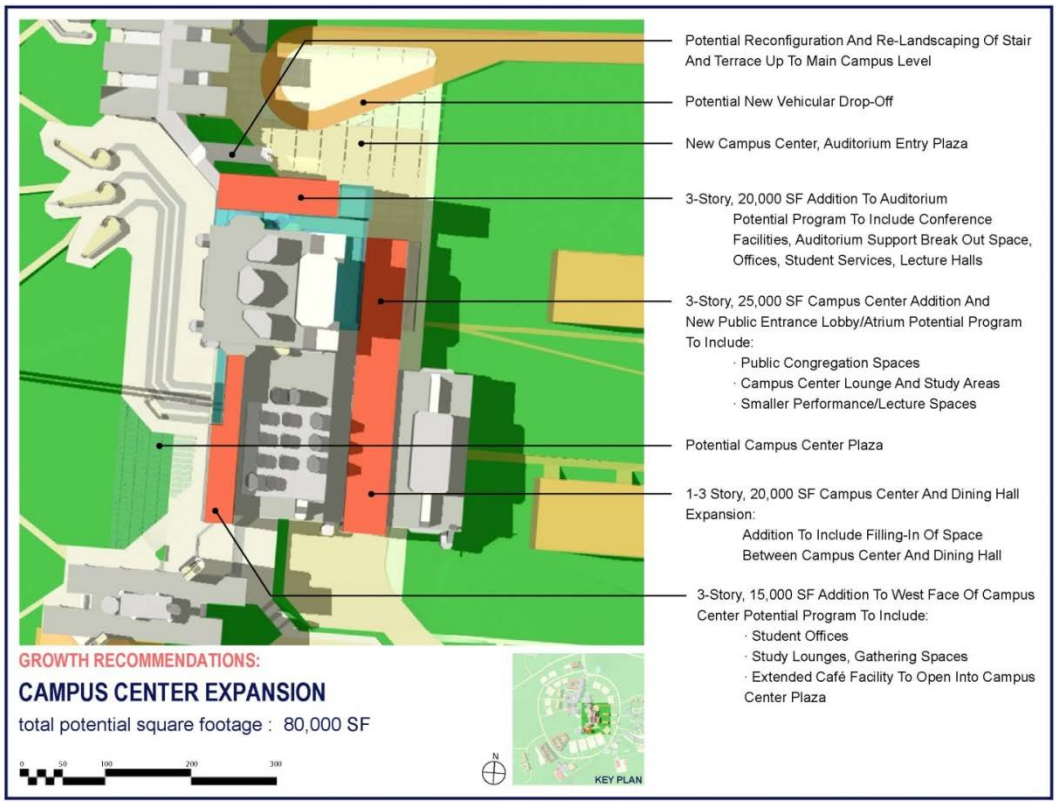
With UMASSDTRANSFORM 2020 recently completed and the Updated Campus Master Plan just beginning the FY15-FY19 Capital Plan Update is one that is firmly grounded in the reality of projects that are a priority and currently underway. The expectation of an Updated Campus Master Plan is to provide a framework in which future Capital Plan Updates can be built upon and enhanced. There still are many unrealized priority projects from previous masterplans and capital plan submissions remain as unfunded mandates. These projects will be reviewed in any new planning process but deserve discussion here:

- **FY15 #12 - Security Installation Project (FY14 #11):** The lessons learned from the aftermath of the 19-April-2013 event related to the Boston Marathon tragedy have demonstrated a definite need for increasing the security infrastructure on campus. The Report of The Special Task Force states "Much of UMass Dartmouth's surveillance camera system is outdated and should be upgraded. Current technologies will leverage the DPS's existing resources and provide for more effective campus safety. Systems can be designed with sufficient transparency to satisfy privacy concerns. In addition, other technological upgrades or efforts should be undertaken to increase the communications capacity (distributed antenna system) or campus safety (upgraded building access system)."[1] The focus of this proposed project is the installation of security card access and CCTV cameras to the exterior of all main campus facilities and the interior of strategically identified areas. Some of this work is being accomplished through the individual capital projects as they are undertaken. This will work toward providing a safer environment for students, faculty, staff and university visitors.

- **FY15 #14 – Campus Center Addition (Student Union) (FY14 #20):** 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 visting

[1] Report of the Special Task Force "University of Massachusetts Dartmouth's Response to Select Issues Related to Boston Marathon Bombing" (August 15, 2013)

a retail shop. Sixty-seven percent of students nationwide reported they attended programs, speakers, events or performances at a student union at least once a semester and 61 percent report spending one or more hours at the student union during the week. 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.

- **FY15 #18 – Campus Entrance Building (FY14 #14):** 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 somewhat difficult to find and does not have significant reserved parking for visitors. 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 continuality of university operations and provide the adequate command and control to ensure safety to the university community residential or non-residential. In addition communication systems between the university and first responders need adequate redundancy. This situation was also noted in The Report of The Special Task Force "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."[2] 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.

- **FY15 #20 – Central Administrative Services Building (FY14 #30):** 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 2004 Facilities Master Plan, the campus Emergency Response 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.

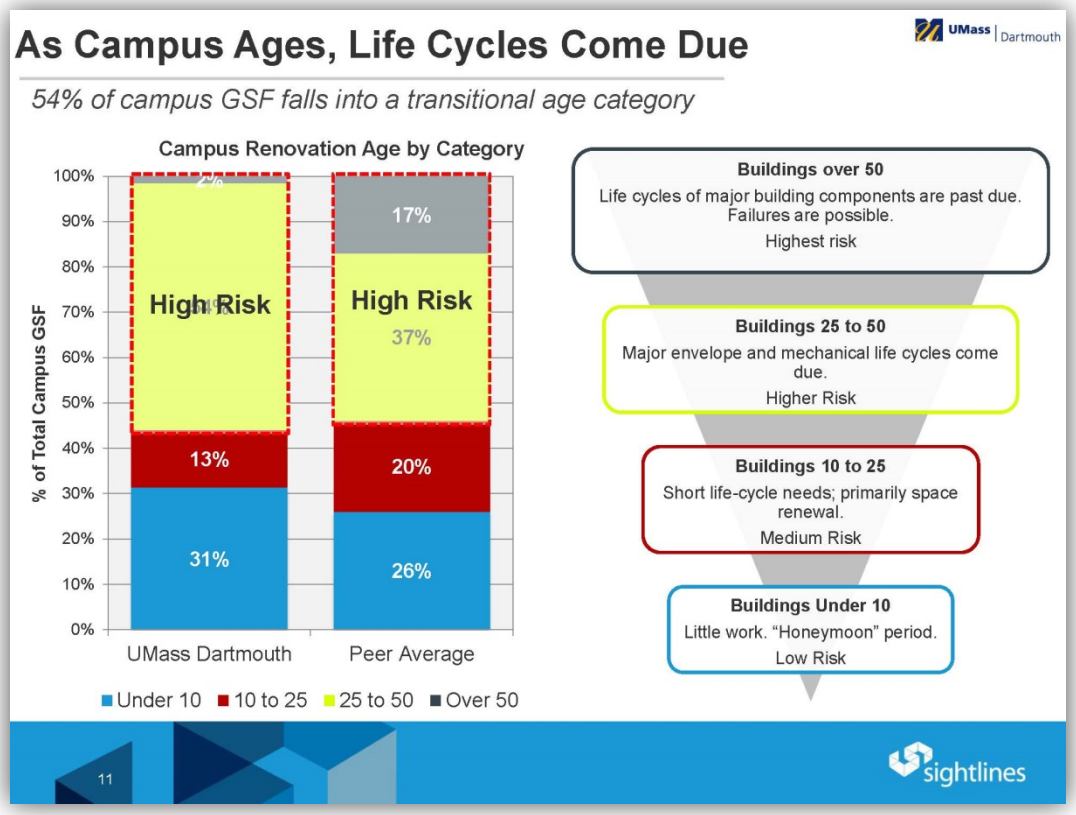
Deferred Maintenance

UMass-Dartmouth continued to work with Sightlines, a facilities asset advisory firm, in FY14 we collaborated on the Return on Physical Assets (ROPA) report which built on the development of an Integrated Facilities Plan (IFP) that was completed in FY13. Sightlines Core Observations included in the ROPA presentation were:

[2] Report of the Special Task Force "University of Massachusetts Dartmouth's Response to Select Issues Related to Boston Marathon Bombing" (August 15, 2013)

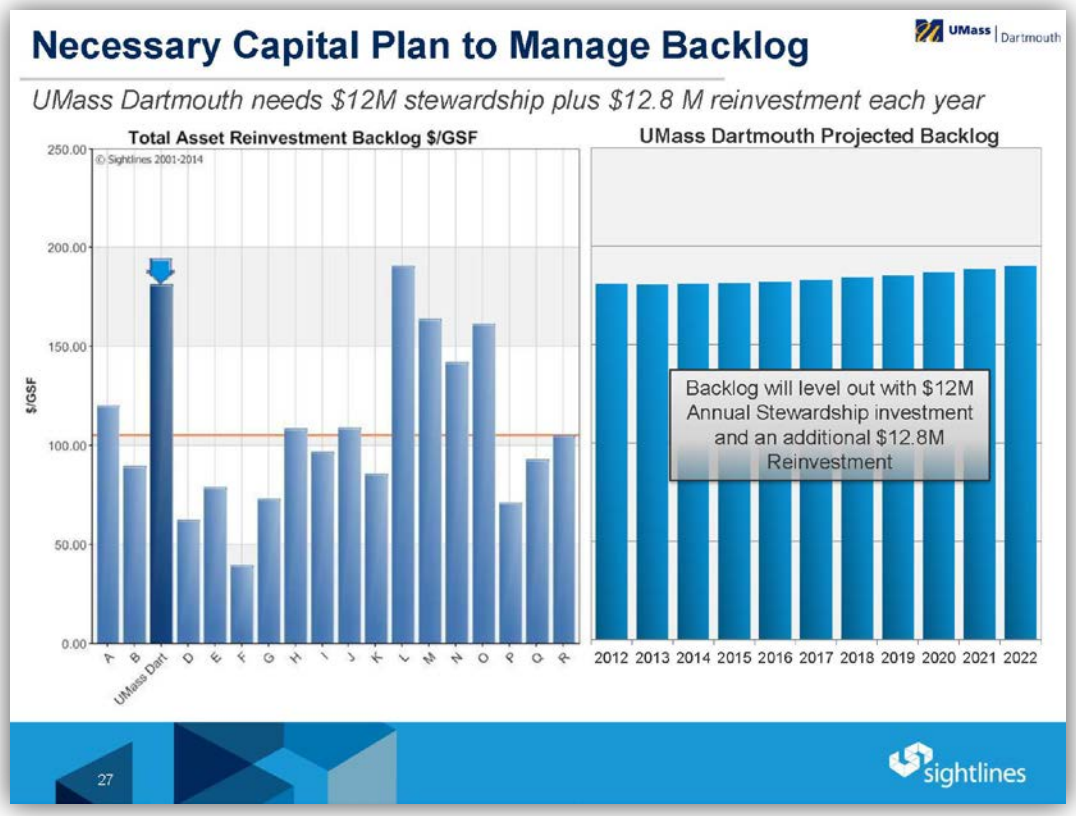
Space Profile:

- Institutional GSF is growing at a faster rate than the population of University leading to a less dense campus;
- The majority of the campus is between 25 and 50 years old and have similar costly life cycles coming due.



Capital Investment:

- A sizeable portion of campus backlog was removed through the library renovation; however, this was only a small percentage of overall campus GSF.
- $12.5M is needed annually to maintain current condition of campus. UMass Dartmouth should target $25.5M annually to address more backlog needs moving forward.
- The IFP can be utilized to investigate trade offs of new construction vs. renovations to existing space.



Operational Effectiveness:

- Operations are strained on resources causing staffing levels to be at or below peer levels. These limited resources are impacting the appearance of campus.
- Energy reductions and lower unit pricing has created operational costs savings in recent years.
- Opportunity exists within the work order system to improve tracking and utilization of reporting mechanisms.

Sightlines had the following concluding comments:

- UMass Dartmouth has a challenging campus profile with a majority of the core campus space being built at the same time. Building systems have not seen adequate investment and life cycles are past due.
- Use the IFP project list and building portfolios, in conjugation with the Master Planning process, to prioritize and plan renovation work allowing for a systematic approach to campus planning.
- Target utility infrastructure projects and building envelope work on campus to realize additional energy consumption reductions.

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(SMAST) in New Bedford and the College of Visual & Performing Arts (STAR Store) in New Bedford.

- **FY15 N/A – Advanced Technology and Manufacturing Center (ATMC) Acquisition (FY14 #18):**

  151 Martine Street, a 60,000 sq. ft. state-of-the-art technology facility, located in in Fall River which currently houses two major tenants, the University of Massachusetts Dartmouth - Advanced Technology & Manufacturing Center (ATMC) and Celldex Therapeutics Inc. was acquired in FY14 from MassDevelopment with $11.4M in funds granted by the Massachusetts Life Sciences Center.

  The ATMC:

  - serves as a business incubator with emphasis on developing high-tech startup companies for the region. It fosters a close collaboration between the University's research, business, legal and economic development courses, programs, faculty and students to these incubator businesses as well as to the general regional business community.
  - engages in research and works with industry partners to provide opportunities for technology exchange, while providing educational opportunities for students, and research and commercialization opportunities for faculty.

The University of Massachusetts Law School located in Dartmouth falls into this portfolio as well.

Recent Projects Focusing on Deferred Maintenance:

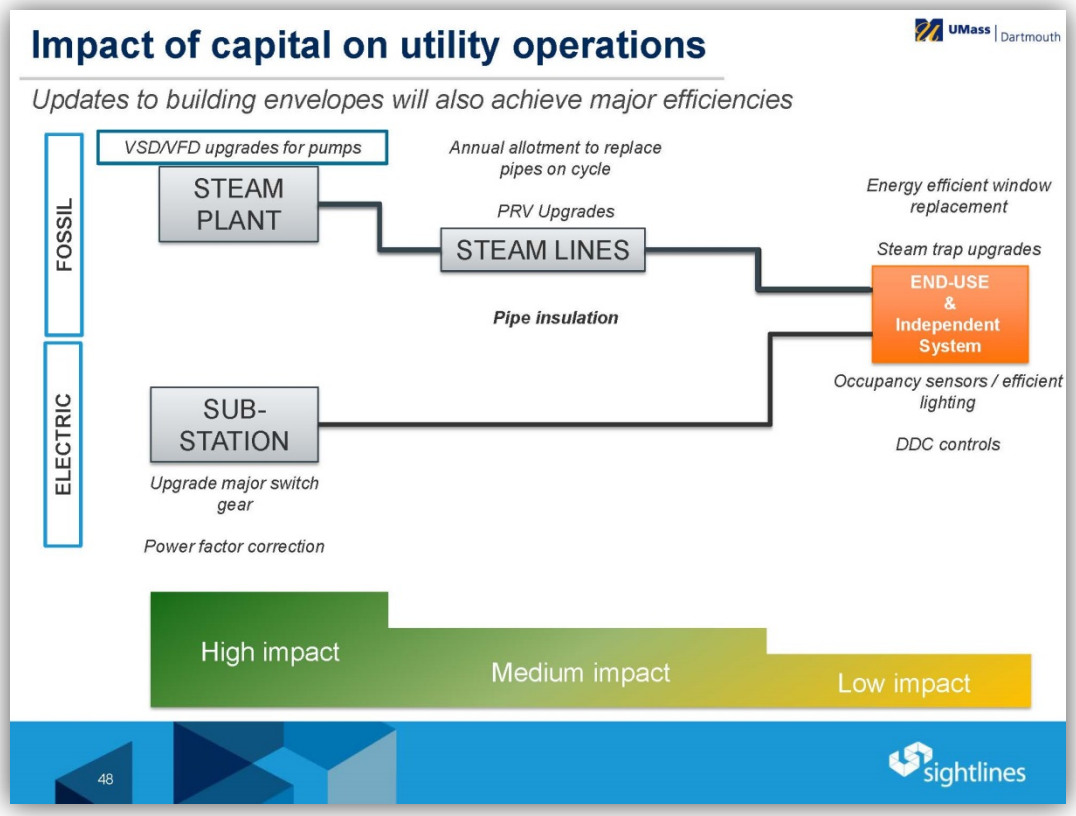
UMass Dartmouth continues to leverage ongoing projects and make strategic investment in targeted utility infrastructure projects.

- **FY15 #3 - Energy / Water Savings Project (FY14 #2):** The total FY14 investment in this project was $2.2M with 45% dedicated to reducing the deferred maintenance backlog.

- **FY14 #3 - Research Laboratory Improvements (FY13#14):** Has spent more than $7M through FY14 concentrating on repurposing underutilized space into new research labs. In FY 14 approximately $1.8M went to improving infrastructure and deferred maintenance to support theses research laboratories.

The campus also strategically addressed DM needs in FY14 while working to prioritize work for the future. These DM projects included:

- Completion of the Tripp Athletic Center Roof Replacement - $355K;
- Initiating construction of the Steam and Condensate Line Replacement for the East Residence Halls - $750K;
- Initiating construction of the Steam and Condensate Line Replacement to the Campus Academic Core. A three phase project - $2M;
- Re-construction of the Loading Dock for the MacLean Campus Center - $610K;
- Planning for a total upgrade to the Violette Research Facility electrical infrastructure. Currently estimated to be a $1.8M project;
- Planning for the installation of an automatic fire suppression system in the Violette Research Facility. Currently estimated to be a $1M project.



FY15 #2 – Update Campus Master Plan (FY14 #9): Will specifically look to address and prioritize deferred maintenance through Facility Assessments and Infrastructure Analysis. The Master Plan Update will prioritize the $426.6 million of deferred maintenance needs identified by Sightlines. The plan includes repair, maintenance, and modernization projects. Condition assessments of all campus facilities and infrastructure on the main campus and the satellite campuses are to be generated and an organized framework for identifying deficiencies and potential scope of upgrades compiled. The plan will develop a phased implementation strategy that addresses deficiencies of particular buildings and systematically seeks to optimize energy efficiency and sustainability consistent with Executive Order 484 and the President's Climate Commitment.

- **$426.6 Million in Identified Total Deferred Maintenance Needs in FY12 – Indexing this with the investments made and escalation for FY14 the University is looking at a Current Deferred Maintenance backlog of $496.9M approximately $187 / GSF;**

- **To <u>just halt the growth of backlog</u> UMass-Dartmouth needs to make an annual investment of $25.5M.**

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; Modernization of 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 FY15 Capital Plan Update continues to be Deferred Maintenance.**

Information Technology

UMass Dartmouth has completed an internal Information Technology Assessment. This assessment has highlighted the following:

Campus IT infrastructure

- The UMass Dartmouth main campus is connected to the UMassNet fiber WLAN with a 10Gb hardware switching capability and dark fiber to SMAST (New Bedford & Fairhaven) ($240k). The commodity Internet bandwidth to the world beyond UMassNet is increased to 1.5Gb as of later Summer 2014 ($72k/year).
- Wireless networking in resident halls:
  - The installation of wireless networking in the upper-class Residence Halls was completed in the Summer 2014 with over 640 access points ($1.1m).
  - Traditional (freshmen) halls are planned for Spring / Summer 2015 pending funding together with replacement of the resident hall core router ($750k). The age of the building makes this project heavy on labor cost.
- Wireless connectivity in administrative and academic buildings:
  - Review and supplement installation of access points in areas of insufficient coverage at all campus locations ($1m).
- Wired network:
  - Healthy, multiple Gb fiber backbone connects the buildings on the main campus.
  - 100Mb connections to satellite locations (Star Store, ATMC, Cherry & Webb, Law School) with proposed upgrades to fiber.
  - CAT3 wiring in existing buildings being replaced as remodeling projects are happening; potential for larger-scale rewiring as part of the facilities master plan with the constraint of old infrastructure vs. new building code requirements.
  - The campus hosts a central server infrastructure in a modern, energy-efficient, highly virtualized data center (private UMassD cloud) on the main campus, but is lacking a hot co-location site for disaster recovery
  - Most integrated campus single sign-on with UMassD Logon (in BDL) and most progressive / automated on data integration solutions.
  - A digital phone network that is decoupled from the computer network is installed with 4 digit dialing at all campus locations. Voice over IP technology aggregates the voice network between the main campus and the satellite locations.

Campus IT Equipment (labs, classrooms, departments) & Support

- Over 90 IT enabled classrooms; adding new classrooms each year; lecture capture to selected classrooms (total cost per classroom $15k - $20k; long life-cycle)

- The KACE remote software management solution ($45k) is consistently deployed across campus on all University-owned computers and allows for efficient security software and application deployments. It is complemented by the Bomgar remote desktop support solution for efficient troubleshooting.
- CITS maintains 400 lab machines, 2150 department computers, and VCL (usage thousands of hours each semester; hosting for UMassD & UMB).
- Deferred replacement of lab machines due to campus fiscal constraints; needs to be addressed in FY15 ($120k).
- IT procurement is vetted by IT service center staff to ensure equipment compatibility with campus IT.

Deferred Maintenance

The following itemization somewhat repeats items from the previous sections. It presents rough estimates for a complete overhaul that could be done, but may not be necessary. A targeted strategic investment could be in building out the wireless network to complete campus coverage and only upgrade wiring in selected spaces that require higher bandwidths such as research labs. For example, the new faculty laptop computers do not have built-in wired Ethernet connectors and require an adapter to connect to wired networks. Wireless networking is being installed in the resident halls and the wire plant may not need to be upgraded, as students mostly use wireless devices.
The investment in distributed antenna systems (DAS) to relay commercial cellular carrier signals inside buildings and areas without coverage benefits the campus community members, but is otherwise questionable and cost-prohibitive as it works to profit commercial carriers. The only feasible approach would be a cost-neutral or profit sharing installation in key areas: for example classrooms may not need cellular voice coverage, and data is available over the campus wireless network. Resident halls would benefit, but installation is expensive due to grounded rebar.

IT Infrastructure:

- Main campus trunk line path diversity – currently the campus connectivity is a single row of poles along a street. If a pole is knocked down, the campus may lose connectivity for several days. A project in this regard would add a secondary path on the opposite side of the campus with a different route than the main lines ($2m).
- Buildings on campus have pre-1990's CAT3 cable still in place. Most renovated space is CAT5 or better, including most all lab drops. The cost of removing and abandoning cable for code makes costs much higher going forward. Main campus might require $1m to fully remove and re-cable copper to the desktop.
- Residential Housing is two-thirds CAT5/6 and one-third CAT3. It would require $1m to fully renovate resident halls. At this time the focus is on completion of the wireless network in all resident halls ($750k).
- Fiber Optic cable plant is varied, and satisfactory. It radiates out of the campus data center in the library. Includes several standards of Multimode and Singlemode fiber. Fiber carries Voice/Video/Data across the entire campus. Fiber plant could be augmented with the latest certification of Singlemode fiber from major nodes and

buildings. Some construction would be necessary, likely $500k depending on whether resident halls were included.

- The new fiber optics hardware that is currently supporting up to 10Gb bandwidth can be built out to support up to 40Gb ($300k) for data transfers between the campus locations and central data centers or HPC. The commodity Internet bandwidth requirement is estimated to at least double to 3Gb by 2017 ($150k/year). The fiber connectivity can be extended to other satellite locations such as ATMC ($40k), Star Store / downtown New Bedford ($200k), or the Law School.
- The increase in bandwidth and the trunk line path diversity would require additional redundancy on the network perimeter security and more powerful network performance management devices ($1.5M).
- Data center upgrades - Redundant, energy efficient, adequate cooling, power and security for the data center. Even with commodity systems moving to the shared system data center or the cloud, there remains the need to adequately host network equipment, closely-coupled systems, and experimental research computing that will not be accommodated in the shared data center or Holyoke ($500k).
- Data center core routing is modern, Enterasys/Extreme S8 architecture. Perimeter routing is being upgraded to new UMassNet standard Juniper MX-104 edge routers. Wireless infrastructure upgrade in progress for housing includes new controllers already with an expected lifespan of at least 5 years. The upgrade of the remaining academic buildings for 100% coverage estimated at roughly $700K.
- The support for the current version of the phone system ends in 2019. At that time an upgrade or switch to an alternate technology must be pursued ($800k).
- Distributed antenna systems (DAS): estimate of $1-2M.

Security:

- Convert security on IT equipment in learning spaces from traditional 3rd party security company to on-site security platform (currently Lenel; $100k/year).
- **FY15 #12 - Security Installation Project (FY14 #11)** expands on the needs of video surveillance and physical access control. As part of ongoing maintenance and projects the Department of Public Safety and CITS were able to expand the installation of proximity card access to include renovated laboratory spaces in SENG, Textile and Violette, the Fitness Center Expansion and upgraded the Residential Facilities from a swipe system to proximity readers.

Learning Space Operations:

Coordinating with **FY15 #5 – Classroom, Teaching Laboratory and Learning Space Improvements (FY14 #4)** the requirements and planning for upgrading IT in this area are:

- Deployment of the technology suite in all classrooms and converting the traditional classrooms to flipped classrooms: avg. $330k /year (20 rooms per year @ $16,500 each on a 5 year rotation).
- Renovate and convert traditional computer labs to IT learning commons, including departmental specialty IT labs: avg. $120k /year (6 rooms per year @ $20,000 each) In the distant future this may merge into a universal learning space configuration with no distinction of “classroom” or “lab”.

- Conference room projection: $10,000 annually (10 rooms per year @ $1,000 each on a 4 year rotation)
- VDI/VCL will become an integral part of the learning and research experience and replace traditional high-performance desktop equipment ($800k).

Life Cycle:
- Wiring plant: >= 10 years
- Networking equipment (switches, routers, access points, firewalls, etc.): 5 years
- Learning spaces: 3 – 5 years

Conclusion
Currently, the campus still benefits from a generally healthy IT infrastructure. The top priorities for the short term are the trunk line path diversity and a consistent wireless coverage across all campus buildings in order to maintain overall connectivity and to meet the expectations of today's mobile users. These projects are followed by proposed network and data center infrastructure upgrades and accompanied by learning space renovations for a sound foundation in support of and beyond the campus strategic plan to contribute to a campus that attracts researchers, faculty, and students.

To this point, loan funding of large projects such as the resident hall wireless project or the faculty laptop program put a drain on the CITS operating budget. Without a technology fee restructuring for a fairer distribution of student related IT costs, and additional funding sources CITS will not be able to maintain the status quo of or grow and transform the campus technology infrastructure and support.

Housing Strategy

Current Situation

The total University enrollment for Fall 2014 is 9,110. This fall we house approximately 46% of those currently enrolled (i.e., 4200 students). Most of our current housing occupants are undergraduate students with 2.7% of our occupants identifying as graduate or law students (i.e.,112 grad/law).

Our current housing standard capacity is 4,494 spaces, and for Fall 2014 we are ~94% occupied.

Future Outlook

University Enrollment Targets and Projected Fall Housing Occupancy

	Fall Enrollment Target	46% of Enrollment	Projected Fall Housing Occupancy *(based on standard capacity)*

Fall 2015	9145	4207	94%
Fall 2016	9338	4295	96%
Fall 2017	9617	4424	98%
Fall 2018	9955	4579	102% *(85 spaces short)*
Fall 2019	10305	4740	105% *(246 spaces short)*
Fall 2020	10679	4912	109% *(418 spaces short)*

These enrollment targets and housing projections assume new, additional spaces will be needed and available for Fall 2018.

In addition to the new spaces needed for the additional enrollment targets, any future plan should include the feasibility of alternative space utilization at Cedar Dell residences. If renovated, and some portion of the existing townhouses are used for graduate students, faculty and staff, and family housing, then we will need to explore the addition of air conditioning for twelve month use. Renovation would also need to alter the current 6 single bedroom townhouse design to some other configuration. We would need to provide new, alternative residence community deemed more appropriate for sophomores and juniors, including an additional dining hall option. If repurposing the Cedar Dell community to graduate students, faculty and staff, and family housing is a consideration, then the planned loss of some of the current 804 spaces would also need to be made available elsewhere.

First Year Housing Considerations

UMass Dartmouth's oldest residence halls are used to house first year students. J. Louis Roberts Residence Hall was first occupied in 1972. Chestnut Hall followed in 1973. In 1976 Maple Ridge and Elmwood Halls were completed. In the ensuing 40 years serious envelope problems (windows, masonry) have developed and mechanical/electrical/plumbing systems have deteriorated and often no longer meet occupancy code requirements due to upgrades in the building code and federal ADA legislation. Interior finishes and amenities need to be upgraded to enhance the expectations of today's students.
In the past three years through a $5M borrow the University has taken steps to stabilize these facilities through the following deferred maintenance measures:

- Roof replacement for all four first year residence halls;
- Maple Ridge Hall bathroom renovation and modernization;
- Common space enhancements for all four first year residence halls;
- Common room improvements at Elmwood and Maple Ridge halls.

These have been strategic investments to hold these facilities over while a full housing strategy is investigated.

- Options to Consider

    A. Renovate piece by piece
    B. Renovate by gutting each hall
    C. Build new and demolish existing halls

- Analysis of Options

Optimal Options for student satisfaction and development – Option B or C

- Change floor configuration to "double loaded corridor-style" with long hallways and rooms on both sides – best for community development/social environment
- Insure plentiful and open design; more common room and study room access – best for community development/social environment
- Main, single point of entry and multiple points of egress – best for student safety and community development

Concerns associated with Options B or C

- Begin immediate process of funding, developing plan, and constructing new residence community with additional dining hall facility before these options can take place
- Leaves current first year halls in poor state for 3-4 additional years

Optimal Option for least expensive and fastest change possibilities – Option A

- Fund entire bathroom renovation ($2 million) for Elmwood Hall in summer of 2015 and entire bathroom renovations for Roberts and Chestnut Halls ($4 million) in summer of 2016
- With high occupancy, plan budget to spend $4 million annually on additional repairs and renovations to existing first-year halls
- Take longer time to fund and construct new residence community including an additional dining hall facility

Concerns associated with Option A

- Will not change current structure to develop the three optimal pieces names above – corridors, common space, main entry access

Facilities Master Plan

These housing strategy considerations provide a brief outline of possible plans and options available. It is understood a significant portion of the University's Facilities Master Plan, currently in progress, includes the detailed planning and reporting of the housing related considerations and future needs.

Housing Facilities Plan:

UMass Dartmouth originated as a predominantly commuter university. Over the years it has evolved until today where over 80% of incoming students live on campus in thirteen residence halls. UMass Dartmouth has created Living / Learning Communities to enhance the academic, personal, and social success of freshmen. Living on campus is now considered an integral part of the university experience.

Specific Tasks Include:

Evaluate the four freshmen resident halls for potential replacement.

1. Investigate strategies for growing graduate housing.
2. Analyze the housing community on campus and develop a plan to enhance the student experience in those communities.
3. Explore and evaluate ways in which to integrate mixed use development with existing or proposed residential halls.

I. Other

The University remains committed to developing a Public Private Partnership (P3) project and working through UMBA has partnered with KPMG as a P3 advisor in order to advance the capital program. This work is in the beginning stages and is still working through the baseline formulation. Working through this method 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 residential village that would create a vibrant and innovative mixed use of residential housing options, student services, dining and retail options with academic components.
- 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:
- **FY15 #14 – Campus Center Addition (Student Union) (FY14 #20):** Consistently the number one priority of students;
- **FY15 #15 – Centennial Way Retail Corridor (FY14 #24):** Would begin to address the lack of opportunities that students, faculty and administrative personnel have for retail shopping. Currently with limited exceptions this exists off campus causing everyone to leave in order to make routine purchases. This is especially apparent off hours and weekends. This concept would incorporate smart growth, transportation and parking. This development would start to go a long way to put the "town" into the phrase "college town".
- **FY15 #26 – Amphitheater (FY14 #36):** 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 CAMPUS

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 FY2015-2019. 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.

Many of our anticipated capital expenditures impact on a number and variety of our academic, research, student life, athletic, recreational and outreach programs and partnerships. 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. The recently opened University Crossing 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 49% between 2007 and 2014 and are projected to grow nearly 4% per year through Fall 2018. UMass Lowell is expanding out-of-state and international enrollments, Master's and on-line enrollments and most significantly, it is expanding 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 will 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 improvements to the North Campus Costello facility, and to institute the use of 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 and Ball, and replacement of the Ames building are needed and are anticipated for funding toward the end of the planning period.

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, Mahoney, South Dining, 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 DCAM-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 FY2014 Plan:

The following projects on the FY2014-2018 Capital Plan are **complete** and have been removed from the FY2015-2019 plan:

- University Suites residential hall opened in Fall of 2013.
- University Crossing opened in Fall of 2014.
- South Campus parking garage opened in Summer of 2013.
- The Saab-ETIC building opened in Fall 2012 and is in use. The 3rd and 4th floor fit-outs for the MLSC-funded Pharmacy program and the Raytheon-supported partnership were completed in October 2014.
- The Leitch & Bourgeois Residence Hall renovations were completed for Fall 2014.
- The Civic and Athletics facilities improvement program included renovations to the Tsongas Center as well as upgrades to athletic fields for field hockey and soccer. Future improvements to the Tsongas Center and other campus athletic and recreational facilities are included in new project proposals.
- The multi-year plan to renovate the Wannalancit Business Center facility is complete as a stand-alone project. There remain a number of deferred maintenance projects that will be addressed as part of the larger campus effort to address the backlog.

FY15 – FY19 Planning Needs and Priorities

The following **New Projects** are being proposed for addition to the FY2015-2019 plan:

- **Priority #10: School of Pharmacy Capital Program: $8.5M.** The new School of Pharmacy at UML has been in planning for some time, and is now actively seeking faculty and students to begin classes in Fall 2017. The school includes two major programs – Doctor of Pharmacy (Pharm.D) and Doctor in Pharmaceutical Sciences. These programs require a variety of specialized lab spaces, faculty, program and doctoral student office space, and classrooms. Some of the specialized laboratory spaces are already in process. On South campus, the Human Assessment lab is underway, located near the Health Sciences living community; the third floor of the ETIC building on North Campus provides a core location for the Pharmacy Science program laboratories. The requested renovation funds allow conversion of existing laboratory spaces in Weed Hall to the additional needs of the Pharmacy program, including compounding lab instruction; a model pharmacy lab/ dispensing lab at Dugan Hall; additional pharmacy lab renovations in Weed and on North Campus to support both Pharmacy and Pharmaceutical Sciences; offices for the Pharmacy program at Dugan Hall, and for the Pharmacy Sciences faculty and doctoral students on North campus. The classroom activities are expected to be provided through the Registrar's pool of classrooms, which awaits improvement via the renovation of Coburn Hall.

- **Priority #13: North Quad Renewal – Future Phases: $29 million**. This project will address mechanical, electrical and plumbing (MEP) infrastructure and distribution systems as well as upgrades to building envelopes. Future phases are building off of the Phase 1 work underway in Priority #5.

- **Priority #14: North Campus Sector Plan Academic Renewal: $45 million**. DCAMM and the campus will be finished with the North Campus Sector Plan in 2015. Initially funds will support enabling projects of various kinds on the North Campus including: infrastructure, code, and utility items between buildings and site and greenspace improvements not included in the scope of individual academic renewal projects. The individual academic renewal projects will address space and backfill needs created by the opening of the PTB and other projects. In total more than 233,000 square feet of space are included in the North Campus Sector Plan and can be addressed one floor at a time depending on funding.

- **Priority #16: Athletic (D1) and Recreational Facilities: $70 million.** The Lowell campus's growth in undergraduate enrollments, and expansion to Division 1 athletics, create pressing need for additional facilities to serve both the recreational and intramural needs of the primarily residential student population, and the requirements associated with Division 1 athletics. Existing indoor recreational facilities are sized for a population of about 5800 undergraduates – a number exceeded by UML several years ago, and not including D1 space. Further planning is needed to refine the demand, and the best means to support it, however work to date makes clear the need for both programs. The $70,000,000 requested here is intended to address significant initial improvement phases for both Athletic and Recreational use.

  Recreational Facilities: National guidelines indicate that UML should be providing about 132,000 gross sq. ft. of indoor space for the undergraduate student population existing and expected during this capital planning period. The existing Campus Recreational Center meets 69,000 gross square feet (gsf) of this need, resulting in a shortfall of about

63,000 gsf, not including additional need for outdoor playing fields and improved aquatic facilities. Early actions to begin addressing the need include a possible addition to the existing Campus Recreation Center – which could be fully addressed within this requested amount.

Division 1 support: Division 1 athletics require facility reinvestment in addition to the Tsongas and new practice facility. The existing Costello Gymnasium was studied as a possible location for this supplemental space. This 95,000 gsf building, built in 1967, can be renewed to serve D1 needs. Feasibility studies would certainly also review whether a new facility would provide a suitable alternative.

NOTE: Priority #11: Tsongas Center Expansion: $35 million. This project received first approval by the Trustees in September 2014. The 50,000 square foot structure will fulfill the original vision of the Tsongas Center, housing ice hockey and basketball practice facilities that will enable the University to maximize the utility of the Tsongas Center. The expansion will help meet the NCAA's facility standards for Division 1 programs as well as facility provisions of the University's agreement for membership in the America East Conference. The additional space will enable more ticketed games, conferences, expos and events to be held at the Tsongas Center, driving revenue for the University and bolstering the development potential of the adjacent UMBA-owned Lots B, C, and D. Developing this facility on the Tsongas Center grounds, as originally envisioned when the then-Tsongas Arena was constructed, will remove practices and similar low-spectator uses from the main venue and expand the number of events and ticketed activities in the arena. The expansion will create efficiencies and adjacencies between the competition and practice venues for the 3 athletic teams: men's basketball, women's basketball, and hockey. The facility is necessary for the full implementation of Division 1 athletic program requirements for Basketball and Hockey.

<u>The following previously approved projects have been combined at no additional cost:</u>

- **Priority #1:** Combine Pulichino/Tong School of Business Building ($35M) & Lydon Library Renovations ($10M), total $45M

- **Priority #2:** Combine McGauvran Dining Conversion ($30M) with a portion of the South Campus Master Plan ($5M), total $35M

<u>The following previously approved projects have changes in TPC greater than +/-10%:</u>

- **Priority #5: North Quad Renewal (Phase 1 PODS).** Prior approval, $31.5M. Current estimate based on scope is $18.0M.

- **Priority #7: Property Acquisitions, $25M**. Prior approval, $15M. Request is for $25M based on current campus acquisition plan reviewed with President's Office and UMBA.

- **Priority #8: Technology Infrastructure, $18.5M.** Prior approval, $15M. Request is for $18.5M based on current technology infrastructure plan to replace, enhance and

expand the campus network and wireless infrastructure, the telephone system, classroom technology and major campus software systems.

- **Priority #9: Energy & Powerplant Improvements including DCAMM AEP, $26M.** Prior capital plan approval, $40M. Significant progress has been made to date, including completion of improvements to the North Campus Powerplant. Remaining $26M project represents the DCAMM managed Accelerated Energy Program (AEP).

- **Priority #15: South Campus Master Plan, Landscaping and Infrastructure Improvements, $14M.** Prior approval, $20M. $5M reallocated to McGauvran project, Priority #2.

- **Priority #17: Coburn Hall Renewal & Addition, $65M.** Prior approval, $57M. Increase based on current estimate of cost escalation.

Deferred Maintenance

The Lowell campus is in worse physical condition than peer campuses, perhaps due to a history of lower than usual long-term reinvestment and the relative age of our facilities.

During 2010 and 2011, the campus completed a comprehensive facility condition assessment. The assessment reviewed each of our buildings and provided overall project costs for systems and prioritized needs for all facilities. The report indicated at that time that the campus deferred maintenance (DM) requirement was for approximately $565 million. Recent reviews and updates by Sightlines, LLC. has estimated the total backlog at approximately $701 million when taking into consideration both the hard and soft costs of renovation and construction projects.

This $701M “Asset Reinvestment Backlog” of 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 in excess of the 10% target set by the President’s Office. 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 indentified 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, accumulated fund balances and limited borrowed funds.

Information Technology

UMass Lowell IT is in the third year of a multi-year 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.

At this time, the UMass Lowell IT team has identified its network direction and will begin installing the higher-capacity campus network in late 2014. This three-year effort 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 (FY206-17), periodic refreshes of classroom technology, and investments in campus software, examples being; virtual terminals, CRM software, and faculty collaboration. 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.

Housing Strategy

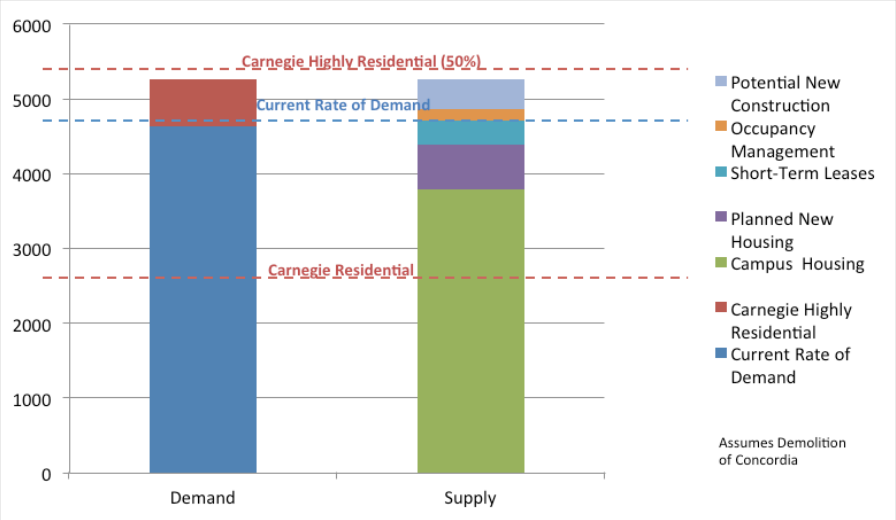
UMass Lowell has set enrollment goals of 20,000 total students, including 12,000 undergraduate students by 2018. The table below illustrates progress toward this vision as well as the growth required in the coming years to achieve it. Note that the projected growth rates are below the annual rates of growth in recent years.

A related UMass Lowell goal is to continue to increase the residential character of the campus. Presently, UMass Lowell has achieved Carnegie Foundation classification as a “Large Primarily Residential Campus” with approximately 44% of full-time undergraduates living in campus housing, a significant increase from 29% less than a decade ago. Sustaining and continuing to increase the on-campus population is an important component of the transition of UMass Lowell from its prior identity as a commuter campus into a top tier research university with a residential undergraduate program. Student housing has been a consistent predictor of academic success, with students residing in campus housing significantly out-performing their peers who live in private off-campus housing or attend as commuters. On-campus housing also plays a key role in protecting student safety.

Achieving this goal alongside the projected enrollment growth will require the expansion and growth of additional collaborations between academic programs and residence life, potential policy changes related to housing requirements for freshmen, continued renovations to improve aging housing stock to meet current student expectations, and careful study of pricing to align with market conditions.

The campus's housing objectives will also require the continued expansion of residence hall beds on campus. For Fall 2014, UMass Lowell is housing approximately 4,000 students in residence halls, including several off-campus properties under short-term leases and a 186-bed obsolete dormitory that is slated for demolition in the campus's master plan. An addition to Riverview Suites which will add 304 beds to the inventory under long-term lease is currently under construction and will be ready for occupancy in Fall 2015. UMass Lowell is also actively working to add 600-700 beds to its inventory over the next three years through planned projects. As the table below illustrates, coupled with continued occupancy management strategies and selective short-term leases to respond to year to year shifts in demand, the campus is well-positioned to meet its projected Fall 2018 housing demand at the current rate of housing demand. However, increasing the demand rate significantly will require the construction or acquisition of additional beds.

UMass Lowell Fall 2018 Housing Supply and Demand



In its housing planning, the University has studied several options for the creation of new housing. Consideration has been given to several sites for potential new construction as well as a number of potential acquisitions. Even assuming a fair amount of renovation and retrofitting cost to convert existing apartments to student residences, there is likely to be a 10-40% savings in the cost per bed if existing apartment buildings are acquired relative to new construction. This Capital Plan includes funding to complete the following projects in support of this housing strategy:

- Complete the expansion of Riverview Suites;
- Bond funding through UMBA to finance planned new housing initiatives that will yield 600-700 beds of new campus housing over the next three years;

- Decommission the now obsolete Concordia Hall;
- Bond funding through UMBA to fund the rehabilitation of several older dormitory buildings to bring them up to current standards and market expectations.
- Begin planning and study for potential additional new housing acquisition or construction.

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 ISES and Sightline reports.

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.

The University has secured state support for the following projects over the next five years: new Pulichino/Tong School of Business building ($25M); the Science & Engineering renewal and renovation program for Engineering (Perry Hall) ($20M), Olsen ($25M), Coburn Hall renewal and Addition ($19M) and $5M in support of the Accelerated Energy Program. In addition, a recent state capital bond bill included funds that would add $16M and $15M to the Perry Hall and Olsen Hall projects, respectively as well as provide $30M for the Tsongas Center Extension. The campus is working with the President's Office, DCAMM and the Administration to program these funds into the state capital plan.

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. The South campus building was added to the FY13 plan and is estimated at $114M. Last year we added a $100M building for North campus for the FY19 to FY23 time period as well as a number of new renewal projects that would begin later in this planning period or during the beginning of the next five-year plan (FY20-24). These projects include renovations and renewal of Ball, Pinanski and a second phase for Olney Hall renovations on North; Weed Hall, O'Leary Library and Durgin Hall on South as well as improvements to the Power Plant and an addition for central campus services on South. We include these projects at this time for consideration since a new Higher Education Bond Bill is required.

Campus Debt

The campus has identified over $235 million of projects that can be funded with debt. Currently the campus has approximately $20.9 million in funds already borrowed through UMBA and targeted toward projects on the capital plan. This leaves approximately $214 million of future borrowing over the next five years required to keep the capital plan moving forward. The campus currently has a relatively low debt to operations ratio of 5.9% projected for FY14 and the ratio with the new borrowing will not exceed 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.

Other:
Through a public-private partnership, the university entered into an agreement with Soho Development in 2011 to build Riverview Suites, a 172,000 square foot apartment-style residential facility. The campus entered into a lease agreement with the developer. The project included a fitness center, classrooms and study and meeting space available to the entire campus community. An extension to the facility is currently underway and will add approximately 304 additional beds in suites as well as additional classrooms and program space for the Health Sciences.

WORCESTER CAMPUS

University of Massachusetts
UMASS Medical School

Introduction and Overview of Campus Capital Plan

The University of Massachusetts Medical School (UMMS) 2015 Capital Plan is informed and framed by two key institutional documents: 1) the UMass Academic Health Sciences Center Strategic Plan; and 2) the UMMS Master Plan.

"UMass 2020," the UMMS/UMMHC Academic Health Sciences Center Joint Strategic Plan, was developed in conjunction with the Medical School's clinical partner, UMass Memorial Health Care; it 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. Six overarching goals, which follow, have been established in support of this mission:

- Build a health care delivery and biomedical research workforce that makes a lasting impact on human health.
- Continue 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.
- Create a transformative research ecosystem that enables rapid development of products for clinical use.
- Become the best academic health system in New England based on measures of patient safety, quality, cost, patient satisfaction, innovation, education and caregiver engagement.
- Establish an information technology environment that enables the best care and patient experience; that educates the finest caregivers and scientists; and accelerates future therapies.
- Attract, inspire and cultivate outstanding talent in science, medicine and health care to become one of the nation's most distinguished academic health sciences centers.
- Provide a high-value ecosystem that maximizes opportunities and optimizes outcomes for patients who seek prevention, treatments and cures for cancer.
- Transform shared service operations to better serve and support mission based activities through alignment of purpose and integration of effort.

The strategic plan will serve 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 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 analysis of growth assumptions, programmatic needs and institutional goals.

With these as benchmarks, the UMMS 2015 Capital Plan is aligned with both its strategic goals and functional resources. The common thread between all three documents is an unyielding commitment to the tripartite mission of UMMS—education, research and health care delivery.

The value of the capital projects included in the plan, both new and previously approved but not completed, totals $ 629 million. Projects completed in FY14, including the Albert Sherman Center (ASC), total $443 million.

These projects are anchored by a plan for construction of new clinical space to improve the lives of our veterans through a joint venture with the Veterans Administration; a focus on retrofitting space in the Medical School Building and Lazare Research Building made vacant by moves to the ASC (backfill projects); deferred maintenance and improvement priorities in the Medical School Building and to the campus energy grid; and infrastructure investments related to medical services and equipment in partnership with UMass Memorial.

In the last two 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, the University was unable to get these funds allocated as per the bond legislation. Internally funded capital projects include program changes, equipment purchases, renovations and the buy down of the deferred maintenance backlog. Although this work is a priority for the campus, current financial pressures will curtail the Medical School's ability to continue to internally fund capital projects and could ultimately jeopardize or defer plans to buy down the deferred maintenance backlog and execute critical renovation, equipment and backfill projects.

Project Status Update from FY14 Plan

In 2013, UMMS completed construction of the 512,000 square foot, nine-story Albert Sherman Center (ASC), a state-of-the-art education and research complex that also includes important campus amenities such as a 7,000 square foot fitness center, a 350 seat café and a 350 seat lecture hall.

The building is the new home to many cutting-edge research programs, including the Advanced Therapeutics Cluster, the major components of which are the RNA Therapeutics Institute and the Gene Therapy Center. The research floors within the ASC also house research programs in Pathology, Microbiology and Physiological Systems, Cardiovascular Medicine, Diabetes, and Neurology. Co-located throughout the lab floors are researchers from the Department of Quantitative Health Sciences and the Program in Bioinformatics and Integrative Biology, promoting interactions between "wet" and "dry" lab researchers.

In addition to research labs and important amenity spaces, the ASC provides specialized space to support the programmatic requirements of the educational enterprise. The ASC is home to student "learning communities," which bring together students across the class years with faculty from the School of Medicine and Graduate School of Nursing for formal and informal teaching and mentoring. Moreover, the ASC serves as the new home for the interprofessional Center for Experiential Learning and Simulation (iCELS), which provides learners at all levels with ongoing practice, improvement and mastery of essential clinical skills.

While the centerpiece of the ASC is mission-based activity, there were a number of associated infrastructure projects that support it. Chief among these were a power plant expansion and a 1,440 space parking garage. The power plant expansion project included the installation of a

7800kW combustion turbine, a 60,000 pound per hour heat recovery steam generator and a 4,000 ton chiller. This additional capacity and redundancy was required to support the ASC, as well as future projects at UMMS and UMass Memorial. The power plant expansion and the energy efficiencies obtained garnered UMMS a $5.6 million incentive payment from NGRID, which is the largest state energy equipment incentive payment that NGRID ever awarded. In addition to this payment, the power plant will also receive over $2 million annually in alternative portfolio standard energy credits, a component of the Green Communities Act developed to enhance renewable and energy efficient technology throughout the state.

The new $40 million 1,440 space parking garage just north of campus was also completed in conjunction with the ASC project. The construction of the parking garage allowed the campus to close two shuttle lots and reduce the cost of shuttle service for more than 1,500 employees assigned to park off campus. The project costs, over time, will be supported by parking fees paid by employees using the new garage.

Taken together, the Sherman Center Project, comprised of the 512,000 square foot facility, the power plant expansion and the new parking garage, has helped to advance all of the institution's strategic goals, from building the workforce of the future to having a significant impact in the world.

MassBiologics remains committed to its century-old mission of protecting and promoting public health both here in Massachusetts and, increasingly, around the world. Recent infrastructure projects at its main Mattapan site have supported and advanced the MassBiologics mission. A second Mattapan facility for MassBiologics opened in 2010 and enabled it to relocate and concentrate its research and development team into a state-of-the-art laboratory setting designed to foster collaboration, speed the pace of discovery, and support the production mission housed in the nearby production facility. Over the past year, MassBiologics shut down its obsolete production site located at the State Lab Institute (SLI) in Jamaica Plain and transferred all activities to Worcester or Mattapan. Although the Medical School notified DCAMM more than one year in advance of the relocation of these activities, DCAMM did not take control of the SLI site as planned and as a consequence, MassBiologics incurred over $1.8 million in unanticipated and inappropriate facility costs.

In February 2014, MassBiologics was awarded a $5 million grant by the Massachusetts Life Sciences Center to construct a Vector Manufacturing Center (VMC) at its Mattapan site. The VMC will help meet a growing demand by both industry and academic investigators for GMP manufacturing of vectored therapeutics for human clinical trials and ultimately for commercial manufacturing.

The original plan was to construct the VMC within existing shell space at MassBiologics in Mattapan. Since the grant award, an opportunity arose to locate the VMC within the Massachusetts Accelerator for Biomanufacturing (MAB), located in Fall River. A revised program was prepared after an analysis of the VMC plan, the original analysis for the MAB and an evaluation of the advantages of locating the VMC within the MAB, where sufficient space is available to provide both contract process development services and GMP manufacturing of vectored medicines. A sustainable financial plan has been developed that leverages the technology to be used in the VMC and the original economic development goals of the MAB and

integrates both with the GMP manufacture of a viral vaccine which will provide a reliable revenue stream and decrease the risks associated with either activity alone.

The Commonwealth and the University have made significant investments in the MAB. The University is seeking to finalize the revised program with the Mass Life Sciences Center, including authorization of the transfer of its $5 million VMC award to the Fall River facility and a proposal to the MassWorks program for additional support of an additional $5 million. All of the requested funds will be used to support the GMP construction project planned for the facility.

FY15 – FY19 Planning Needs & Priorities

The priorities included in the FY'14 capital plan are based on the Medical School's evolving needs and commitment to maintaining its operational efficiency now and in the future. The projects included in the highest priority bracket (top five) total $268 million. These important projects directly support current campus needs and specifically address our strategic priorities:

- Joint venture with the Veterans Administration
- Information technology improvements
- Health care/translational research initiatives in conjunction with UMass Memorial;
- Retrofitting space in the Medical School vacated by moves to the ASC (backfill projects); and
- Mechanical/electrical deferred maintenance projects funded by state capital.

As part of these priorities, UMMS proposes two additional clinic buildings for its Worcester campus, one the Veterans Administration Community Based Outpatient Clinic (CBOC); the other a UMass Memorial clinic jointly supporting academic and clinical activities. UMMS is working with Massachusetts Department of Transportation to transfer a Medical School-controlled site on Plantation Street to DOT for a new District 3 DOT headquarters; this transfer would permit UMMS to use a critical five-acre parcel on campus but currently occupied by DOT for the UMMS/Veterans Administration joint venture. The result would be a new Community Based Outpatient Clinic on the Medical School campus. The VA's ability to serve veterans in Worcester County is more limited than anywhere else in New England; VA clinics in Worcester and Fitchburg offer a limited range of services. The new CBOC would expand current VA clinical space from 25,000 sf to 100,000 sf and provide critical services for veterans and their families in a stronger Primary Care-Mental Health Integration, using "Academic Patient Aligned Care Teams" (Academic PACT) supported by a UMMS Center of Excellence in Primary Care Education.

The joint venture would expand specialty care; add a test center for new and innovative clinical care; and create an integrated research and training center. Through collaboration, the VA, Medical School and UMass Memorial will provide primary care, mental health, women's health, pediatrics, and specialty care for veterans and their families.

Development plans also include the expansion of the 1,600 space South Road Parking Garage to create an additional 500 spaces required for the anticipated growth for the VA Building and a future outpatient facility. This future clinical facility will complement the proposed COBC and add an additional 100,000 sf of new construction jointly supporting UMMS and UMass Memorial

missions. The second building will eventually augment outpatient programs on the campus and support future programmatic consolidation; clinical, specialty, and support adjacencies; and ultimately make the operation of these clinics more cost effective for patient care and clinical research.

A significant number of capital projects are underway to upgrade aging Information Technology (IT) infrastructure, adapt to the increased data processing needs of the institution, and add new technology services. The IT capital projects underway include migrating from the legacy telecom system to a new VOIP system. This project began in FY13 and will continue through FY17. Once completed, all voice traffic will travel on the same network infrastructure used for data. Another IT capital project is an upgrade of the network and wireless infrastructures at all Medical School sites (Worcester, Shrewsbury, Charlestown, Jamaica Plain, Fall River and Holyoke). This upgrade replaces aging infrastructure and will support the growing bioinformatics needs of the UMMS research community. A new technology service being added is an information security framework that includes securing technology endpoints such as laptops and mobile devices, building a secure cloud storage infrastructure to allow students to use dropbox functionality, and improve perimeter security and monitoring.

With the opening of the ASC, there are now several vacant floors in the Medical School's Basic Science and Student Lab wings. These floors will be renovated to bring lab space up to current scientific standards and to make room for dry lab research and office space. The backfill projects are critical to support research and academic programs that were not relocated to the ASC.

In addition, the backfill space will be used to support the consolidation of programs currently operating in off-campus facilities managed by Worcester City Campus Corporation (WCCC). In turn, WCCC will reduce its inventory of property in and around the Worcester area. WCCC leadership worked with Colliers International to broker the sale of several properties, including the 30,000 sf Grafton Centennial property and a 21,000 sf Auburn facility. During 2014, UMMS also transitioned the Fernald School site (Shriver Center) and the State Lab Institute in Jamaica Plain (MassBiologics) to DCAMM. (A DPH-funded newborn screening program operated by the Medical School remains at the Jamaica Plain site.)

As the campus looks to divest some of its properties outside of Worcester, UMMS will continue to work with DCAMM and other state agencies to formulate a long-term plan for the properties along the Belmont Street corridor. DCAMM has hired a firm to work with all stakeholders around the Medical School campus and the new Worcester Recovery Center and Hospital to determine the best use of land and buildings for the Commonwealth in this area. The ultimate goal of this process is to implement the strategy contained in the UMMS Master Plan and state plan for Gateway Cities, which includes the eventual acquisition of abutting properties.

The aging infrastructure of the Worcester campus continues to have significant deferred maintenance needs, as limited resources have been available to address the backlog of projects. The campus continues to struggle with aging mechanical systems in the original facility. Air handlers, distribution systems and control systems are past their useful life and regularly fail, impacting the academic, patient care and research missions. Replacing more than thirty air handling units and the accompanying distribution systems will require significant

coordination and engineering and will impact normal operations, but the resulting improvements will be energy efficient; meet required safety protocols for biomedical research; reduce maintenance expenditures; and increase comfort and satisfaction for building occupants.

Similarly, replacement of aging electrical substations is critical. This project will replace 40 year-old switches, transformers, breakers and controls, resulting in improved efficiencies, reliability and code compliant functionality and reducing operating expenses.

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.

A majority of the facilities on this campus were constructed in the 1970s and, due to the life cycle of the building systems, the stress of heavy utilization, changes in programming, and reduced maintenance, there are many components that require replacement. This critical work has been deferred due to reduced funding levels and the absence of state capital support. The maintenance backlog for the 900,000 square foot main school building is over $100 million. The largest item and highest priority is a $35 million project to replace more than thirty air handling units that have exceeded their life expectancy. Most of the high priority and life safety deficiencies are funded immediately upon recognition or accelerated to stay current with state building codes and other regulatory requirements such as those associated with research animal use and care, the educational mission and laboratory safety.

The Medical School's complex building infrastructure requires expert attention as well as significant resources. Clinical and biomedical research programs often need redundant building systems and have a higher maintenance costs. These sophisticated systems include those that support laboratories and specialty areas such as medical imaging, biocontainment and animal quarters and enhanced plumbing systems for purified water, CO2, air vacuum, natural gas, and acid waste. In some areas, there is a requirement for air distribution to assure 100% outside air, along with specialty space pressurization, humidity control and high ventilation rates.

Over the past five years, UMMS has consistently invested in deferred maintenance. Examples include the following:

- UMMS replaced all the elevators, control systems, cabling, cabs and motors in the main school building. In 2009, the fire alarm system was replaced throughout the main school building. This was a critical life safety system that required extensive system improvements to meet current code.
- The facade replacement project was jointly funded by the Medical School and UMass Memorial and included repair and replacement of the entire exterior wall system and roofs. This $65 million project replaced a granite façade failing as a result of the original design and construction of the building and poor quality materials and construction.

The maintenance backlog is based on a facility condition assessment completed in 2012 that identified more than $112 million in required facility improvements for the Medical School and

hospital campus. The condition assessment team inspected equipment, surveyed the facility and identified deferred maintenance requirements. Each requirement was documented with detailed cost estimates, photos and narratives and subsequently ranked.

The Medical School will continue to reduce the deferred maintenance backlog with the following strategies:

- Funding through the Higher Education Bond Bill – UMMS currently has a $30 million project on this list to replace the 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 – the 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 system will be surveyed and, if not required, removed. For example, a 125 psi steam system throughout the campus is down to only several users, and within a year the system will be decommissioned and the piping 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. These funds are used to refurbish parking garages and resurface lots.
- Energy project rebates – UMMS has worked closely with NSTAR and NGrid, to initiate, develop, and construct several key energy saving projects that have led to rebates of up to 50% of the capital outlay. UMMS has replaced boilers, electrical drive chillers and lighting systems with this program. Over the past year, UMMS completed a $2M project in the 12 year-old Lazare Research Building. This project installed an on demand ventilation system and energy efficient high performance fume hood retrofits. Over $1M in NGrid and NStar incentive funding supported this project.
- NIH Funded projects – UMMS has been successful in the past with several NIH grant awards. The completion last year of the renovated and expanded BL-3, biosafety level laboratory provided new research space and reduced the deferred maintenance backlog with the replacement and installation of new building systems. This year, UMMS was awarded another NIH grant to develop an enhanced 1800sf state of the art imaging center in animal quarters. This $800,000 project will include new imaging equipment and align the space for use, reducing backlogged deferred maintenance.

Campus	Priority	Project Name	Local Funding	External Funding	Borrowed Funding	State Approved	State Pending	Contingent on Funding	Total Project Cost	Project Phase	Reporting Type
Amherst	AMH1	Housing Expansion	$ 3,400,000	$ -	$ 187,100,000	$ 1,400,000		$ -	$ 191,900,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH2	Life Science Laboratories	$ 12,500,000	$ -	$ 47,500,000	$ 100,000,000		$ -	$ 160,000,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH3	Academic Classroom Building	$ 20,000,000	$ -	$ 8,250,000	$ 65,000,000		$ -	$ 93,250,000	8 - Substantial Completion	Secondary Board Approval
Amherst	AMH4	McGuirk Training Facility and Pressbox	$ 250,000	$ -	$ 36,550,000	$ -		$ -	$ 36,800,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH5	Lederle Graduate Research basic systems upgrades	$ -	$ -	$ 10,305,000	$ -		$ -	$ 10,305,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH6	Morrill complex repairs and renovations	$ -	$ -	$ 9,081,000	$ -		$ -	$ 9,081,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH8	DuBois Library Electrical, Plumbing, Fire Suppression, Deferred Maintenance	$ -	$ -	$ 25,000,000	$ -		$ -	$ 25,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Amherst	AMH9	Fine Arts Center fire protection and emergency generator	$ 2,810,000	$ -	$ 3,190,000	$ -		$ -	$ 6,000,000	8 - Substantial Completion	Secondary Board Approval
Amherst	AMH10	New Substation and Electrical Upgrades	$ -	$ -	$ 40,000,000	$ -		$ -	$ 40,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Amherst	AMH11	Physical Plant deferred maintenance & renovations	$ 3,000,000	$ -	$ 4,500,000	$ -		$ -	$ 7,500,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH13	Lederle Graduate Research Center Window encapsulation/replacement	$ -	$ -	$ 4,500,000	$ -		$ -	$ 4,500,000	7 - Construction	Secondary Board Approval
Amherst	AMH14	Central Campus Infrastructure	$ -	$ -	$ 25,000,000	$ -		$ -	$ 25,000,000	8 - Substantial Completion	Secondary Board Approval
Amherst	AMH15	Paige Lab Renovations	$ -	$ -	$ 9,900,000	$ -		$ -	$ 9,900,000	8 - Substantial Completion	Secondary Board Approval
Amherst	AMH16	Champions Center	$ -	$ 900,000	$ 29,000,000	$ -		$ -	$ 29,900,000	7 - Construction	Secondary Board Approval
Amherst	AMH17	MLSC Life Sciences Facility	$ -	$ -	$ -	$ 95,000,000		$ -	$ 95,000,000	5 - Design	Secondary Board Approval
Amherst	AMH18	Lincoln Campus Center Concourse Improvements, Phase II - separated out from previous project 24	$ 4,500,000	$ -	$ 14,500,000	$ -		$ -	$ 19,000,000	9A - Construction Complete	Secondary Board Approval
Amherst	AMH19	Housing Repair & Renovation	$ 25,000,000	$ -	$ -	$ -		$ -	$ 25,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH20	New Faculty Hire Renovations	$ -	$ -	$ 14,000,000	$ -		$ -	$ 14,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Amherst	AMH21	Life Science Laboratories, OIT data center fitout	$ -	$ -	$ 8,000,000	$ -		$ -	$ 8,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Amherst	AMH22	Expand and Upgrade Central Chilled Water Plants	$ -	$ -	$ 30,000,000	$ -		$ -	$ 30,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Amherst	AMH23	Physical Sciences Building	$ -	$ -	$ 16,800,000	$ 85,000,000		$ -	$ 101,800,000	5 - Design	Secondary Board Approval
Amherst	AMH24	Integrated Design Building - formerly Hills replacement Building	$ -	$ -	$ 55,000,000	$ -		$ -	$ 55,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Amherst	AMH25	South College Academic Facility - formerly Bartlett Replacement Building	$ -	$ -	$ 65,000,000	$ -		$ -	$ 65,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Amherst	AMH26	Deferred Maintenance & Modernization Projects	$ 35,300,000	$ -	$ -	$ 1,450,000		$ -	$ 36,750,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH27	ADA Accessibility	$ 600,000	$ -	$ -	$ -		$ 5,400,000	$ 6,000,000	1 - Conceptual	Preliminary Board Approval
Amherst	AMH28	Isenberg School of Management renovations and addition	$ -	$ -	$ 40,000,000	$ -		$ -	$ 40,000,000	3 - Owner's Project Manager/Designer Procurement	Preliminary Board Approval
Amherst	AMH29	Old Chapel Renovations	$ -		$ 21,000,000				$ 21,000,000	4 - Study / Schematic Design	Pending Preliminary Approval (Dec BOT Meeting)
Amherst	AMH31	Lederle Research Center Repairs and Renovations	$ -	$ -	$ -	$ 41,250,000		$ -	$ 41,250,000	1 - Conceptual	Preliminary Board Approval
Amherst	AMH32	Morrill Science Center Renovations	$ -	$ -	$ -	$ 51,300,000		$ -	$ 51,300,000	1 - Conceptual	Preliminary Board Approval
Amherst	AMH33	Whitmore deferred maintenance	$ -	$ -	$ 14,000,000	$ -		$ -	$ 14,000,000	3 - Owner's Project Manager/Designer Procurement	Preliminary Board Approval
Amherst	AMH34	Marston Repairs and Renovations	$ -	$ -	$ 6,000,000	$ -		$ -	$ 6,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH35	Thompson Deferred Maintenance - formerly part of DM project 46 in prior year	$ -	$ -	$ 2,250,000	$ -		$ -	$ 2,250,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH36	Replace Oil Filled Transformers	$ -	$ -	$ 2,000,000	$ -		$ -	$ 2,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Amherst	AMH37	University Drive Infrastructure	$ 400,000	$ -	$ 7,600,000	$ -		$ -	$ 8,000,000	8 - Substantial Completion	Secondary Board Approval
Amherst	AMH40	Marks Meadow/Furcolo Renovations	$ 2,000,000	$ -	$ 20,500,000	$ -		$ -	$ 22,500,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Amherst	AMH41	Fine Arts Center renovations	$ -	$ -	$ 9,000,000	$ -		$ -	$ 9,000,000	2 - Feasibility Report	Preliminary Board Approval
Amherst	AMH42	Life Science Laboratories backfill renovations	$ -	$ -	$ 18,000,000	$ -		$ -	$ 18,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Amherst	AMH44	Solar Panels	$ -	$ 2,350,000	$ -	$ -		$ -	$ 2,350,000	4 - Study / Schematic Design	President Approval
Amherst	AMH45	Campus Infrastructure	$ 15,000,000	$ -	$ 500,000	$ -		$ 4,000,000	$ 19,500,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH46	Morrill Steamline	$ 6,000,000					$ -	$ 6,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Amherst	AMH47	Academic/Classroom/Office Renovations Pool	$ 21,000,000	$ -	$ -	$ -		$ -	$ 21,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Amherst	AMH48	DuBois Writing Program & Image Library	$ -		$ 6,400,000			$ -	$ 6,400,000	2 - Feasibility Report	Pending Preliminary Approval (Dec BOT Meeting)
Amherst	AMH50	Life Science Laboratories Fit out	$ -	$ 15,000,000	$ -	$ -		$ -	$ 15,000,000	2 - Feasibility Report	Preliminary Board Approval
Amherst	AMH51	Machmer Repairs	$ -	$ -	$ -	$ 12,600,000		$ -	$ 12,600,000	1 - Conceptual	Preliminary Board Approval
Amherst	AMH52	University Health Services design	$ -	$ -	$ -	$ -		$ 4,000,000	$ 4,000,000	1 - Conceptual	Preliminary Board Approval
Amherst	AMH53	North Pleasant Street Road Improvements	$ -	$ 9,000,000	$ -	$ -		$ -	$ 9,000,000	1 - Conceptual	President Approval
Amherst	AMH54	Property Acquisitions	$ 2,000,000	$ -	$ -	$ -		$ -	$ 2,000,000	Acquisitions	Deferred Maintenance / Acquisitions / IT
Amherst	AMH55	Student Center/Student Experience	$ -					$ 180,000,000	$ 180,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH56	Engineering Building	$ -					$ 300,000,000	$ 300,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH57	Neuro/Cognitive Science facilities master plan	$ -					$ 50,000,000	$ 50,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH58	Housing	$ -					$ 200,000,000	$ 200,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH59	Data Science Facilities Master Plan	$ -					$ 125,000,000	$ 125,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH60	Adaptive reuse of campus core facilities	$ -					$ 2,000,000	$ 2,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH61	Faculty Hiring Renovations FY15-19	$ 15,000,000					$ 10,000,000	$ 25,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH62	Energy Reduction Initiatives Planning	$ -					$ 2,000,000	$ 2,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH63	Parking Garage/multi modal center	$ -					$ 2,000,000	$ 2,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH64	Public Health and Health Sciences building	$ -					$ 225,000,000	$ 225,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH65	Water Technology Piloting Facility	$ -					$ 4,000,000	$ 4,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH66	Center for Urban Sustainability Waltham	$ -					$ 20,000,000	$ 20,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH67	Stockbride School of Agriculture space and tech upgrades	$ -					$ 5,000,000	$ 5,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Amherst	AMH68	National Aeronautics, Research, Development and Training Center	$ -					$ 5,000,000	$ 5,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSBI.02.03	Healey Building: Roof Replacement and Building Envelope Repairs	$ -	$ -	$ 6,850,000	$ 1,350,000		$ -	$ 8,200,000	7 - Construction	Secondary Board Approval
Boston	BOSBI.02.05	McCormack Hall: Roof Replacement and Building Envelope Repairs	$ -	$ -	$ 3,500,000	$ -		$ -	$ 3,500,000	5 - Design	Secondary Board Approval
Boston	BOSBI.14.01	Quinn Administration Building: Install Fire Suppression System and Upgrade Fire Alarm System	$ -					$ 1,200,000	$ 1,200,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSBI.14.02	Service and Supply Building: Install Fire Suppression System and Upgrade Fire Alarm System	$ -	$ -	$ 2,300,000	$ -		$ -	$ 2,300,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSBI.21	Quinn Administration Building: Renovations to Improve Building Space Efficiency	$ -					$ 12,500,000	$ 12,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSBI.22	Deferred Maintenance Projects Less than $2M Each (Aggregate)	$ 1,335,800	$ -	$ 3,400,000	$ 264,200		$ -	$ 5,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Boston	BOSBI.25	Clark Athletic Center: Gymnasium Roof Replacement and Building Envelope Repair	$ 162,500		$ 3,000,000	$ 2,087,500			$ 5,250,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Boston	BOSBI.26	Service and Supply Building: Renovate Space for New Campus Operations Center	$ -		$ 2,200,000				$ 2,200,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSBI.27	Projects Other than Deferred Maintenance Less than $2M Each (Aggregate)	$ 2,600,000		$ 3,500,000				$ 6,100,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSBI.05	Grounds: Sea Wall and Harborwalk Construction on North-Facing Shore	$ -	$ -	$ 3,800,000	$ -		$ -	$ 3,800,000	7 - Construction	Secondary Board Approval
Boston	BOSBI.06	Nantucket Facilities: Repairs to Field Station Buildings and Septic System, and to Gouin Village Apartments	$ 600,000	$ -	$ 1,400,000	$ -			$ 2,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Boston	BOSBI.09	Healey Building: Fire Protection Improvements: Install Fire Sprinklers, and Replace Fire Alarm System and Fire Pumps	$ -	$ -	$ 8,200,000	$ -		$ -	$ 8,200,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSBI.10	Clark Athletic Center/McCormack Hall/Quinn Administration/Wheatley Hall: Elevator Renovations (Code/Restoration)	$ -	$ -	$ 3,300,000	$ -		$ -	$ 3,300,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSBI.12	Campus-wide: Information Technology Services Division Infrastructure Needs	$ -	$ -	$ 4,500,000	$ -		$ -	$ 4,500,000	IT	Deferred Maintenance / Acquisitions / IT
Boston	BOSMP.01.01	Master Plan Phase I: Construct New Integrated Sciences Complex	$ 4,350,000	$ -	$ 52,000,000	$ 113,650,000	$ 9,000,000	$ -	$ 179,000,000	7 - Construction	Secondary Board Approval
Boston	BOSMP.01.02	Master Plan Phase I: Utility Plant System Expansion and Upgrades to Accommodate ISC and GAB Including New Chiller a	$ -	$ -	$ 3,000,000	$ -		$ -	$ 3,000,000	7 - Construction	Secondary Board Approval
Boston	BOSMP.01.03	Life Sciences: Center for Personalized Cancer Therapy - To Be Located within Integrated Sciences Complex - LSBB Earmar	$ -	$ -	$ -	$ 10,000,000		$ -	$ 10,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)

Campus	Priority	Project Name	Local Funding	External Funding	Borrowed Funding	State Approved	State Pending	Contingent on Funding	Total Project Cost	Project Phase	Reporting Type
Boston	BOSMP.02.01	Master Plan Phase I: Utility Corridor and Roadway Relocation Project (UCRR)	$ 14,200,000	$ -	$ 151,000,000	$ -		$ -	$ 165,200,000	7 - Construction	Secondary Board Approval
Boston	BOSMP.02.02	Master Plan Phase I: Utility Plant Upgrades Related to Pumps, Controls, Heat Exchangers, and Utility Corridor Reconfigur	$ -	$ -	$ 11,000,000	$ -		$ -	$ 11,000,000	7 - Construction	Secondary Board Approval
Boston	BOSMP.02.03	Master Plan Phase I: Construct New Energy-Producing Facility to Accommodate Increased Campus Chilled Water, Hot W	$ -	$ -	$ 27,500,000	$ -		$ -	$ 27,500,000	4 - Study / Schematic Design	Preliminary Board Approval
Boston	BOSMP.03	Master Plan Phase I: Construct New Academic Building 1	$ 13,000,000	$ -	$ 117,500,000	$ -		$ -	$ 130,500,000	7 - Construction	Secondary Board Approval
Boston	BOSMP.04	Master Plan Phase I: Construct +/-1,000 Bed Residence Hall 1, including Dining Facility	$ -	$ -	$ 1,000,000	$ -		$ 117,000,000	$ 118,000,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSMP.05.01	Master Plan Phase I: Renovations to Existing Academic Buildings	$ -	$ 9,650,000	$ 65,350,000	$ -		$ -	$ 75,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Boston	BOSMP.05.02	Master Plan Phase I: Purchase or Lease Additional Swing Space to Accommodate Growth and McCormack and Wheatley	$ -	$ -	$ 2,500,000	$ -		$ -	$ 2,500,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSMP.06.02	Master Plan Phase I: Construct New Campus Greenhouse for Research, Teaching, and Community Service, due to Demol	$ -	$ 2,500,000	$ 2,500,000	$ -		$ -	$ 5,000,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSMP.06.06	Master Plan Phase I: Demolish Substructure, Science Center, and Pool	$ -	$ -	$ -	$ -		$ 15,000,000	$ 15,000,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSMP.06.07	Master Plan Phase I: Central Quadrangle Development	$ -					$ 7,500,000	$ 7,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSMP.06.08	Master Plan Phase I: Relocate Track/Athletic Field	$ -	$ -	$ 2,800,000	$ -		$ -	$ 2,800,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSMP.07	Master Plan Phase I: Construct New Academic Building 2	$ -	$ -	$ -	$ 86,350,000	$ 13,650,000		$ 100,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Boston	BOSMP.08	Master Plan Phase I: Construct +/- 1,200 Vehicle Parking Garage 1, including Public Safety Space	$ -	$ -	$ -	$ -		$ 45,000,000	$ 45,000,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSMP.09	Master Plan Phase I: Build Out Campus Center UL Parking Garage Space as Assignable Space	$ -	$ -	$ 5,000,000	$ -		$ -	$ 5,000,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSMP.10.01	Master Plan Phase I: Bayside Expo Center: Separate Utilities and Demolish Buildings, and Make Certain Parking Lot Impr	$ 5,540,000		$ 3,460,000				$ 9,000,000	2 - Feasibility Report	Pending Preliminary Approval (Dec BOT Meeting)
Boston	BOSMP.11	Master Plan Phase II: New Academic Building 3 / Development of Bayside	$ -					$ 150,000,000	$ 150,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSMP.12	Master Plan Phase II: Construct +/- 1,000 Bed Residence Hall 2 / Development of Bayside	$ -					$ 110,000,000	$ 110,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSMP.13	Master Plan Phase II: Construct +/- 1,200 Vehicle Parking Garage 2	$ -					$ 42,000,000	$ 42,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSMP.14	Master Plan Phase I: Construct New Pool Facility (to replace existing pool to be demolished with Substructure)	$ -	$ 5,000,000	$ 5,000,000				$ 10,000,000	1 - Conceptual	Preliminary Board Approval
Boston	BOSMP.15	Master Plan Phase I: New Public Art for Campus Green	$ -					$ 1,000,000	$ 1,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSTR.01	McCormack Hall: Conversion of Vacant Cafeteria, Servery, and Kitchen Space	$ -	$ -	$ 2,275,000	$ -		$ -	$ 2,275,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Boston	BOSTR.05.01	Healey Building: Renovations to Improve and Increase Student Learning Space	$ -	$ -		$ -		$ 12,500,000	$ 12,500,000	2 - Feasibility Report	Preliminary Board Approval
Boston	BOSTR.05.02	Healey Building: Renovations to Improve and Increase Student Learning Space, Phase II	$ -					$ 12,500,000	$ 12,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Boston	BOSTR.07	WUMB: Relocation of WUMB Radio to New Facility	$ -	$ 4,000,000	$ -	$ -		$ -	$ 4,000,000	1 - Conceptual	President Approval
Dartmouth	DAR01	Deferred Maintenance - Ongoing / Completed	$ 2,754,704		$ 2,014,750	$ 5,636,951			$ 10,406,405	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Dartmouth	DAR02	Update Campus Master Plan	$ -	$ -	$ -	$ 450,000		$ -	$ 450,000	5 - Design	Secondary Board Approval
Dartmouth	DAR03	Energy / Water Savings Project	$ 15,910,681	$ 1,349,005	$ 29,799,326	$ 2,800,000		$ -	$ 49,859,012	8 - Substantial Completion	Secondary Board Approval
Dartmouth	DAR04	Research Laboratory Improvements	$ -	$ 165,000	$ 13,140,500	$ -		$ -	$ 13,305,500	7 - Construction	Secondary Board Approval
Dartmouth	DAR05	Classroom, Teaching Laboratory, and Learning Space Improvements	$ 200,000	$ -	$ 11,240,000	$ -		$ -	$ 11,440,000	6 - Final Design / Early Construction Packages	Pending Secondary Approval (Dec BOT Meeting)
Dartmouth	DAR06	SMAST / DMF Expansion	$ -	$ -	$ 18,000,000	$ 30,000,000		$ -	$ 48,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Dartmouth	DAR07	Charlton College of Business, Phase II	$ -	$ 5,000,000	$ 10,000,000	$ -		$ -	$ 15,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Dartmouth	DAR08	New Academic Building	$ -	$ -	$ -	$ 55,000,000	$ 20,000,000	$ -	$ 75,000,000	3 - Owner's Project Manager/Designer Procurement	Preliminary Board Approval
Dartmouth	DAR09	Fitness Center Expansion	$ -	$ -	$ 5,100,000	$ -		$ -	$ 5,100,000	9A - Construction Complete	Secondary Board Approval
Dartmouth	DAR10	Massachusetts Accelerator for Biomanufacturing - MAB, Fall River	$ -	$ -	$ 10,500,000	$ 21,000,000		$ -	$ 31,500,000	9A - Construction Complete	Secondary Board Approval
Dartmouth	DAR11	Repair Four Oldest Residence Halls	$ -	$ -	$ 5,000,000	$ -		$ 70,000,000	$ 75,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Dartmouth	DAR12	Security Installation Project	$ -	$ -	$ -	$ -		$ 7,000,000	$ 7,000,000	2 - Feasibility Report	Preliminary Board Approval
Dartmouth	DAR13	ADA Renovations Immediate Needs	$ -	$ -	$ -	$ -		$ 2,184,000	$ 2,184,000	1 - Conceptual	Preliminary Board Approval
Dartmouth	DAR14	Campus Center Addition (Student Union)	$ -					$ 16,400,000	$ 16,400,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR15	Centennial Way Retail Corridor	$ -	$ 10,000,000	$ -	$ -		$ -	$ 10,000,000	1 - Conceptual	Preliminary Board Approval
Dartmouth	DAR16	Athletic Field Replacement	$ -					$ 3,000,000	$ 3,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR17	SENG Exterior Envelope Repair	$ -					$ 16,000,000	$ 16,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR18	Campus Entrance Building	$ -					$ 45,000,000	$ 45,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR19	LARTs Air Conditioning Installation	$ -					$ 3,016,000	$ 3,016,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR20	Central Administrative Services Building	$ -					$ 12,690,000	$ 12,690,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR21	Claire T. Carney Library Exterior Envelope Repair	$ -					$ 14,000,000	$ 14,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR22	Roadway Repairs	$ -					$ 6,220,000	$ 6,220,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR23	Health Sciences Building	$ -					$ 60,000,000	$ 60,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR24	Law School - Deferred Maintenance	$ -	$ -	$ -	$ -		$ 5,000,000	$ 5,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Dartmouth	DAR25	Multi Purpose Field House	$ -					$ 20,800,000	$ 20,800,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR26	Amphitheater Project	$ -					$ 7,000,000	$ 7,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR27	Conference / Alumni Center	$ -					$ 75,000,000	$ 75,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Dartmouth	DAR28	Deferred Maintenance - Conceptual	$ -					$ 64,438,500	$ 64,438,500	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Lowell	LOW1	Pulichino/Tong School of Business Building	$ 7,000,000	$ 5,000,000	$ 8,000,000	$ 25,000,000		$ -	$ 45,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Lowell	LOW2	McGauvran Dining Conversion	$ 18,000,000	$ -	$ 17,000,000	$ -		$ -	$ 35,000,000	6 - Final Design / Early Construction Packages	Secondary Board Approval
Lowell	LOW3	Science & Engineering Master Plan-Perry Hall, Engineering, Renewal	$ -	$ -	$ -	$ 20,000,000	$ 16,000,000	$ -	$ 36,000,000	1 - Conceptual	Preliminary Board Approval
Lowell	LOW4	Science & Engineering Master Plan-Olsen Renovations	$ -	$ -	$ -	$ 25,000,000	$ 15,000,000	$ -	$ 40,000,000	1 - Conceptual	Preliminary Board Approval
Lowell	LOW5	North Campus Quad Renewal	$ 4,000,000	$ -	$ 11,400,000	$ 2,600,000		$ -	$ 18,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Lowell	LOW6	Residence Hall Acquisition & Construction	$ -	$ -	$ 80,000,000	$ -		$ -	$ 80,000,000	4 - Study / Schematic Design	Preliminary Board Approval
Lowell	LOW7	Property Acquisitions	$ 20,500,000	$ -	$ 4,500,000	$ -		$ -	$ 25,000,000	Acquisitions	Deferred Maintenance / Acquisitions / IT
Lowell	LOW8	Technology Infrastructure	$ -	$ -	$ 18,500,000	$ -			$ 18,500,000	IT	Deferred Maintenance / Acquisitions / IT
Lowell	LOW9	Energy & Power Plant Improvements, incl. DCAMM AEP	$ 21,000,000	$ -		$ 5,000,000		$ -	$ 26,000,000	7 - Construction	Secondary Board Approval
Lowell	LOW10	Lowell, School of Pharmacy Capital Program	$ -	$ 8,500,000					$ 8,500,000	1 - Conceptual	President Approval
Lowell	LOW11	Tsongas Center Expansion		$ 5,000,000		$ -	$ 30,000,000	$ -	$ 35,000,000	1 - Conceptual	Preliminary Board Approval
Lowell	LOW12	Residential Hall Comprehensive Renewal Program - Phase 1: FY13-22	$ 10,000,000	$ -	$ 20,000,000	$ -		$ -	$ 30,000,000	1 - Conceptual	Preliminary Board Approval
Lowell	LOW13	Lowell, North Quad Renewal, Future Phases	$ 10,000,000					$ 19,000,000	$ 29,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW14	Lowell, North Campus Sector Plan Academic Renewal	$ 20,000,000					$ 25,000,000	$ 45,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW15	South Campus Master Plan - Initial Space & Mall Improvements - Phase 1	$ 10,000,000	$ -	$ 4,000,000	$ -		$ -	$ 14,000,000	5 - Design	Secondary Board Approval
Lowell	LOW16	Lowell, Athletic (D1) and Recreational Facilities	$ -		$ 70,000,000				$ 70,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW17	Lowell, Coburn Hall Renewal and Addition	$ -			$ 19,000,000		$ 46,000,000	$ 65,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW19	New Residential Hall	$ -					$ 56,000,000	$ 56,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW20	Science & Engineering Master Plan-Olney Renovations (Phase 1)	$ -					$ 55,000,000	$ 55,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW21	Ball Hall Renewal	$ -					$ 50,000,000	$ 50,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW22	New South Campus Academic Building (South Campus Master Plan)	$ -					$ 114,000,000	$ 114,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW23	Pinanski Hall Renewal	$ -					$ 50,000,000	$ 50,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW24	Weed Hall Renewal	$ -					$ 45,000,000	$ 45,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW25	Science & Engineering Master Plan-Olney Renovations (Phase 2)	$ -					$ 100,000,000	$ 100,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW26	O'Leary Renewal	$ -					$ 22,000,000	$ 22,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW27	Durgin Hall Renewal & Addition	$ -					$ 65,000,000	$ 65,000,000		Biennial - 5 Yr Plan (Not Yet Approved)

Campus	Priority	Project Name	Local Funding	External Funding	Borrowed Funding	State Approved	State Pending	Contingent on Funding	Total Project Cost	Project Phase	Reporting Type
Lowell	LOW28	South Campus Central Services Addition, Power Plant & Infrastructure	$ -					$ 30,000,000	$ 30,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell	LOW29	New North Campus Academic Building	$ -					$ 100,000,000	$ 100,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Lowell		Civic & Athletic Facilities	$ 2,000,000	$ 1,300,000	$ -	$ -		$ -	$ 3,300,000	9A - Construction Complete	President Approval
Lowell		Wannalancit	$ -	$ -	$ 6,100,000	$ 1,000,000		$ -	$ 7,100,000	8 - Substantial Completion	Secondary Board Approval
Lowell		ETIC	$ -	$ 12,000,000	$ 27,000,000	$ 45,000,000		$ -	$ 84,000,000	8 - Substantial Completion	Secondary Board Approval
Lowell		South Campus Garage	$ -	$ -	$ 21,000,000	$ -		$ -	$ 21,000,000	9A - Construction Complete	Secondary Board Approval
Lowell		University Suites, Aiken St., Residence Hall	$ 2,500,000	$ -	$ 54,000,000	$ -		$ -	$ 56,500,000	9A - Construction Complete	Secondary Board Approval
Lowell		Leitch & Bourgeois Residence Hall Renovations	$ 7,000,000	$ -	$ 30,000,000	$ -		$ -	$ 37,000,000	9A - Construction Complete	Secondary Board Approval
Lowell		Athletic & Recreational Facility Improvements - incl. Division 1	$ -	$ -	$ 5,000,000	$ -		$ -	$ 5,000,000	9A - Construction Complete	Secondary Board Approval
Lowell		University Crossing - Student Life, Student Services & Admin Serv. Includes Salem St	$ 5,000,000	$ 2,000,000	$ 90,000,000	$ -		$ -	$ 97,000,000	9A - Construction Complete	Secondary Board Approval
Lowell		On-Going Academic Modernization incl. Relocations - Phase 1: FY13-18	$ 5,000,000	$ -	$ 10,000,000	$ -		$ 15,000,000	$ 30,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Lowell		Capital Renewal/Deferred Maintenance/Compliance - Phase 1: FY13-22	$ 6,000,000	$ -	$ 29,000,000	$ 5,000,000		$ 40,000,000	$ 80,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
WCCC	WCCC1	BioTech IV Renovation	$ -	$ 2,000,000					$ 2,000,000	1 - Conceptual	President Approval
WCCC	WCCC2	MBL South Coast GMP Renovations - Fall River	$ -	$ 13,000,000					$ 13,000,000	1 - Conceptual	Pending Preliminary Approval (Dec BOT Meeting)
WCCC	WCCC3	South Street Building 1 Renovations	$ -					$ 7,000,000	$ 7,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
WCCC	WCCC4	South St. Deferred Maintenance	$ -					$ 7,875,000	$ 7,875,000		Biennial - 5 Yr Plan (Not Yet Approved)
WCCC	WCCC5	South St. Bldg 2 Demo / Renovation	$ -					$ 7,000,000	$ 7,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
WCCC	WCCC6	MBL - Tetanus/Diphtheria Manufacturing Facility: Vaccine Cultivation & Purification	$ 6,500,000	$ -	$ -	$ -		$ -	$ 6,500,000	8 - Substantial Completion	President Approval
WCCC	WCCC6	Misc. Renovations WCCC	$ -					$ 3,000,000	$ 3,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
WCCC	WCC9	MBL - AAV Production Facility, not including filling suite	$ -	$ 5,000,000	$ -	$ -		$ -	$ 5,000,000	2 - Feasibility Report	President Approval
Worcester	WOR1	VA-1 Mass Dept of Transportation (DOT) Land Transfer (House Bill 4301)	$ -			$ 8,500,000			$ 8,500,000	1 - Conceptual	President Approval
Worcester	WOR2	Campus IT Projects	$ 14,974,000						$ 14,974,000	IT	Deferred Maintenance / Acquisitions / IT
Worcester	WOR3	Outpatient Clinical Facility - New Facility - Phase 2	$ -		$ 80,000,000				$ 80,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR4	REN - 4 Basic Research and Student Lab Wing Improvements Floors 1 - 4	$ 15,500,000	$ -	$ -	$ -		$ -	$ 16,000,000	5 - Design	Pending Secondary Approval (Dec BOT Meeting)
Worcester	WOR5	E/M DM - 5 School HVAC Upgrades / Replacements - Amphitheater Mechanical Systems and AHU	$ -			$ 4,000,000			$ 4,000,000		President Approval
Worcester	WOR6	Land Acquisition, per Master Plan	$ -	$ -	$ -	$ -		$ 5,000,000	$ 5,000,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR7	Renovate 1st Floor Basic Wing	$ -		$ 6,000,000				$ 6,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR8	LRB Teaching and Learning Space - Backfill Project, Floor 1	$ -	$ -	$ -	$ -		$ 2,000,000	$ 2,000,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR9	LRB Animal Quarters Robotics (Equipment Procurement / Installation	$ -			$ 2,000,000			$ 2,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR10	Deferred Maintenance Projects - Level 2,3	$ 10,000,000			$ 25,000,000			$ 35,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR11	Library repurposing and renovations	$ -	$ -	$ 150,000	$ -		$ 5,350,000	$ 5,500,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR13	Integrated Learning and Teaching Center, Phase 2	$ -	$ 2,500,000					$ 2,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR14	Install Chiller 6	$ -	$ -	$ -	$ -		$ 4,000,000	$ 4,000,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR15	Balance of Plant Controls (BOP) Upgrade	$ -			$ 2,257,500			$ 2,257,500		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR16	Hospital Bed Tower (per Master Plan)	$ -					$ 200,000,000	$ 200,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR17	South Road Pavement, Landscaping, Sidewalks and Lighting	$ -			$ 2,500,000			$ 2,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR17	Animal Quarters A Level Renovations (HVAC, Cage Wash, and Holding Rooms)	$ -	$ -	$ -	$ -		$ 14,500,000	$ 14,500,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR18	Parking Lot Maintenance - Main Campus	$ 10,840,000	$ -	$ -	$ -		$ -	$ 10,840,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR19	Renovate and Expand BL3 Suite, 7th Fl	$ 1,200,000	$ 5,200,000	$ -	$ -		$ -	$ 6,400,000	9A - Construction Complete	Secondary Board Approval
Worcester	WOR19	LP Boiler Re-tubing	$ -			$ 4,000,000			$ 4,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR20	School Building Retro Commissioning,LEED EB	$ -			$ 3,000,000			$ 3,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR22	BNRI Upgrades	$ 2,000,000						$ 2,000,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR23	School Stairwell Fire Safety Improvements	$ -			$ 2,500,000			$ 2,500,000		Biennial - 5 Yr Plan (Not Yet Approved)
Worcester	WOR31	Departmental equipment purchases	$ 3,000,000	$ -	$ -	$ -		$ 7,000,000	$ 10,000,000	1 - Conceptual	Preliminary Board Approval
Worcester	WOR1A	VA-1 Mass DOT Building Demolition	$ -		$ 2,000,000				$ 2,000,000	1 - Conceptual	Pending Preliminary Approval (Dec BOT Meeting)
Worcester	WOR1B	VA-1 Worcester VA Community Based Outpatient Clinic - New Facility - Phase 1	$ -		$ 70,000,000				$ 70,000,000	1 - Conceptual	Pending Preliminary Approval (Dec BOT Meeting)
Worcester	WOR1C	VA-1 Expansion to South Road Garage	$ -		$ 10,000,000				$ 10,000,000	1 - Conceptual	Pending Preliminary Approval (Dec BOT Meeting)
Worcester	WOR4A	REN - 4 Clinical Wing Lab to Office Conversions (Floor 2 - 7)	$ 4,000,000			$ 11,500,000			$ 15,500,000	4 - Study / Schematic Design	Secondary Board Approval
Worcester	WOR5A	E/M DM - 5 School HVAC Upgrades / Replacements - Student Wing Mechanical Systems and AHU	$ -			$ 4,000,000			$ 4,000,000		President Approval
Worcester	WOR5B	E/M DM - 5 School HVAC Upgrades / Replacements - Basic Wing Mechanical Systems and AHU	$ -			$ 14,000,000			$ 14,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Worcester	WOR5C	E/M DM - 5 School HVAC Upgrades / Replacements - Clinical Wing Mechanical Systems and AHU	$ -			$ 14,000,000			$ 14,000,000	Deferred Maintenance	Deferred Maintenance / Acquisitions / IT
Worcester	WOR5D	E/M DM - 5 Campus Electrical Distribution Efficiency Improvements	$ 2,500,000	$ -	$ -	$ -		$ -	$ 2,500,000	2 - Feasibility Report	President Approval
Worcester	WOR5E	Enhance chilled water loop pump/controls	$ 3,000,000	$ -	$ -	$ -		$ -	$ 3,000,000	2 - Feasibility Report	President Approval
Worcester	WOR5F	E/M DM - 5 Replace School Electric Substations	$ -			$ 9,900,000			$ 9,900,000		Biennial - 5 Yr Plan (Not Yet Approved)