

# **University of Virginia**

## **Status Report on the Plan to Address Deferred Maintenance**

### **Executive Summary**

The University of Virginia's facilities portfolio includes 552 buildings and related infrastructure, encompassing nearly seventeen million gross square feet of building space, with a conservatively estimated replacement value of \$4.6 billion. The facilities portfolio constitutes a significant portion of the total assets held by the University and should be appropriately maintained.

In December 2004, after hearing a presentation about the University's deferred maintenance backlog, the Board of Visitors embarked on a long-term plan to accomplish two objectives:

- (1) Reduce the deferred maintenance backlog to a reasonable level by 2015, with a target facility condition index (FCI) of 5 percent or less. At the time, the FCI was 10.6 percent.
- (2) Establish adequate annual maintenance funding to prevent the further accumulation of deferred maintenance, by increasing the then current 1.2 percent reinvestment rate to a 2 percent annual reinvestment rate.

Progress has been made in the last nine years. Annual increases in the maintenance operating budget, combined with the maintenance reserve appropriation has improved the maintenance reinvestment rate to 1.86 percent. We also budget 2 percent of construction costs to maintain each new building we bring on line. Investments through maintenance operations, maintenance reserve and major capital renewals have reduced the FCI to 5.4 percent as of June 30, 2014.

The auxiliaries, Medical Center, and the College at Wise are continuing to address their respective backlogs. The Medical Center, Facilities Planning and Construction, and Health System Physical Plant have developed a building-by-building and system-by-system evaluation of the infrastructure of all Medical Center facilities. The Medical Center Operating Board and the Buildings & Grounds Committee have approved this program of infrastructure enhancement over a period of 10-15 years based on need and available resources from the Medical Center's annual capital expenditure budget. The College at Wise has a facility condition index of 3.2 percent and has a current maintenance reinvestment rate of 0.7 percent. This low FCI percentage is largely due to newer construction and capital renewal of existing buildings.

### **Deferred Maintenance Backlog**

#### Overview

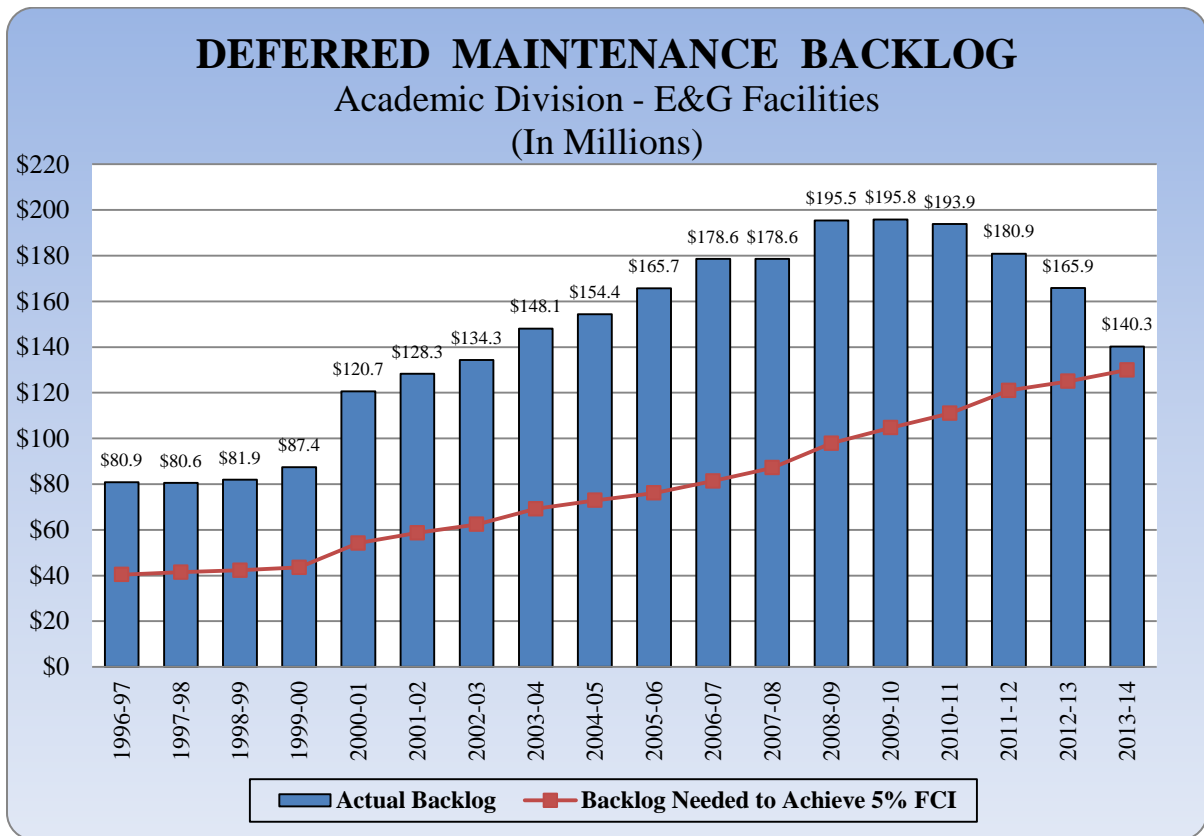
Facilities Management determines the maintenance needs of the University's E&G buildings by performing facility condition assessments. The goal is to inspect E&G buildings once every four years. The assessments result in a number of immediate repairs. They also document repairs that are needed but cannot be undertaken at the time of

inspection due to funding constraints, occupancy requirements, or other factors. These deferred maintenance items become the maintenance backlog for that building.

It is important to distinguish between what a facility may need in terms of maintenance, and what it may need in terms of adaptation or modernization. The maintenance backlog represents the amount of money needed to restore deteriorated components to their original operating condition. In many cases, restoring components to their original operating condition will fall short of today’s standards for function and/or aesthetics; therefore, the cost to fully renovate or modernize a building is usually many times greater than the cost of the deferred maintenance in the building. The deferred maintenance backlog does not include the cost of deficiencies or improvements to safety, accessibility, and building code issues.

Quantify – Current Deferred Maintenance Backlog

As of June 30, 2014 the Academic Division E&G deferred maintenance backlog was reduced to \$140 million. Some of the projects that contributed to the significant reduction in the backlog include the completion of the New Cabell Hall and Ruffner Hall capital renewal projects, the Rotunda and Alderman Library roof replacements, and the removal of the Birdwood properties from the E&G Academic Division property portfolio. The graph below shows the backlog trend and the 5 percent FCI goal, which would be equivalent to a backlog of \$130 million in 2013-14



In developing the original deferred maintenance reduction plan, it was recommended that the University undergo a ten-year strategy to improve its E&G facilities from “poor” condition to “good” condition by reducing the facility condition index to 5 percent by 2015. Given assumptions about the expected replacement value in 2015, after inflation and new construction impacts, the deferred maintenance backlog should be reduced to approximately \$130 million. The incremental cost to improve the condition of E&G buildings and infrastructure to “good” over the ten-year period was estimated to be \$125 million over the then current level of maintenance funding. The additional cost to address safety, accessibility, and code issues while correcting identified maintenance deficiencies was calculated to be \$31 million over the same ten-year period, bringing the combined required investment to \$156 million. In addition to funds available in the maintenance operations and maintenance reserve budgets, the University will rely on the capital budget to address maintenance items through building renewals such as the Rotunda, Rugby Office Building, Wilson Hall, and other proposed infrastructure projects.

## **Facility Condition Index**

### Overview

The Facility Condition Index (FCI) is a simple and widely accepted measure used to indicate the relative condition of a building. It is calculated by dividing the value of the maintenance backlog in a building by the replacement value of the building and showing the result as a percentage.

For example, a building with a replacement value of \$5 million that contains a \$100,000 maintenance backlog has an FCI of 2 percent. By comparison, a building with a replacement value of \$600,000 that also has a \$100,000 backlog is in relatively worse condition. The FCI for that building is 17 percent.

Recognized industry benchmarks assume that a facility with an FCI of less than 5 percent is in “good” condition; a facility with an FCI between 5 percent and 10 percent is in “fair” condition; and a facility with an FCI of more than 10 percent is in “poor” condition.

### Quantify – Current FCI

At June 30, 2014 the Academic Division E&G deferred maintenance backlog is \$140 million, with a total facility replacement value of nearly \$2.6 billion resulting in an FCI of 5.4 percent.

## **Maintenance Reinvestment Rate**

### Overview

The ratio of the building maintenance expenditures to the total replacement value is known as the maintenance reinvestment rate (MRR). Various authorities cite a range of 1.5 percent to 4 percent as the reinvestment rate necessary to prevent the growth of a deferred maintenance backlog. Given the age of many of the University’s buildings and the substantial amount of deferred maintenance already accumulated, a reinvestment rate of at

least 2 percent is warranted. To this end, when newly constructed facilities come online, the University allocates 2 percent of the building’s construction cost to the annual maintenance operations budget.

Quantify – Current MRR

The total amount invested in building maintenance can be calculated by combining the amounts available from the operating budget and from Maintenance Reserve. For 2014–15 we budgeted \$46.2 million for maintenance of E&G facilities or 1.86 percent of the replacement value of the E&G buildings and infrastructure. The \$4.3 million increase reflects a \$2.2 million increase in Maintenance Reserve funds, and an increase of \$2.1 million in the operating budget with the most significant increases associated with the acquisition of 560 Ray C. Hunt (\$1.2 million) and the new building systems installed during the New Cabell capital renewal project (\$.7 million).

The table below shows the reinvestment rate for the University’s E&G buildings since the Board of Visitors initiative began. These figures are based on funds available for investment in a given year rather than actual expenditures which may vary from year to year based on time required to plan and execute the work.

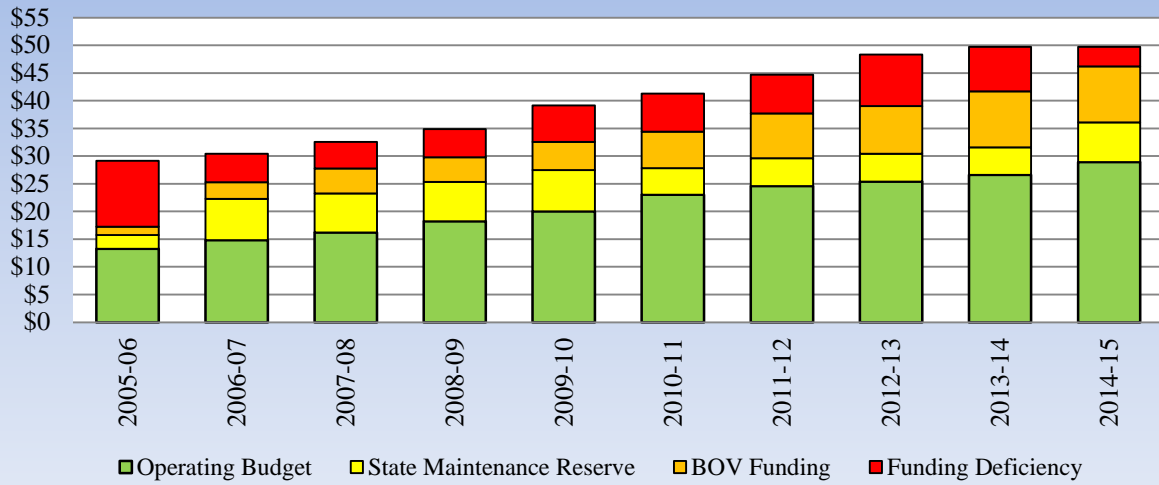
Maintenance Reinvestment Rate

2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
1.66%	1.70%	1.71%	1.66%	1.65%	1.70%	1.61%	1.68%	1.86%

The graph below shows the funding trend and annual shortfall relative to a 2 percent funding level over the past nine fiscal years. It is clear to see that the funding shortfall has improved greatly since 2005-06 as the Board initiative has gained traction.

## FUNDING REQUIRED FOR 2 PERCENT E&G REINVESTMENT RATE

(In Millions)



## Accomplishments

### Capital Renewal Projects

Whole building renewals are crucial to successfully reduce the University's overall facility condition index. It is the most efficient method of dealing with the maintenance challenges associated with an older facility. A renewal project corrects maintenance needs while adapting the building to planned use and current codes.

Extensive renovations are taking place at the Rotunda and Rugby Office Building, which are funded by state capital funds and Maintenance contributions. The capital renovation of the Rotunda will completely renovate the facility and include the installation of a new HVAC system, elevator, and mechanical space. Below are some pictures of the ongoing work at the Rotunda.



Rotunda – East oval room selective demolition



Rotunda – East oval room demolition of slab



Rotunda – Steel shoring for capital replacement



Rotunda – Fifth completed capital in Carrara, Italy



Rotunda – Dome room protective enclosures

The capital renovation of Rugby Office Building includes all new HVAC, electrical, and plumbing systems, elevator installation, and complete asbestos abatement. Below are pictures of the ongoing work.



Rugby – Pool under main floor before



Rugby – Debris removed from pool



Rugby – Pool filled in



Rugby – Elevator shaft being constructed



Rugby – New AHU in lower level mechanical room



Rugby – Curb installation

Elevator modernization project

Over the past year the deferred maintenance program has funded 9 elevator modernization projects. Below are pictures of the finished Thornton Hall, Mechanical Engineering, and Old Cabell. The Monroe Hall and Carruthers Hall elevators are currently in progress and work is about to begin on elevators at 2400 Old Ivy and the Michie Buildings.



Thornton Hall E-wing - Modernization in progress



Thornton Hall E-wing - Modernization completed



Mechanical Engineering Freight - Completed



Old Cabell – Completed



Deferred Maintenance Projects

There are over 68 deferred maintenance projects in progress, totaling over \$20.9 million, including the upcoming Albert H Small Building and Old Cabell Hall roof replacements, Carruthers Hall retaining wall repairs, and Halsey Hall’s built in gutter and ridge cap replacement. In progress projects include Zehmer Hall roof replacement, Thornton Hall Fire alarm installation, and Harrison Special Collections dehumidification project.

Other major roofing projects that took place during 2013-2014 were the Withers-Brown, McIntire Wing, and MR-4 roof replacements.



Withers-Brown – Roof before



Withers-Brown – Roof after



McIntire Wing – Roof before



McIntire Wing – Roof after



MR-4 – Roof before



MR-4 – Roof after

By completing deferred maintenance projects, the backlog is reduced and the overall condition of the University's facilities is improved. Since 2005-06, hundreds of deferred maintenance projects have been completed. In 2013-14, projects such as the East Range roof replacement, Amphitheater concrete repairs and the Withers-Brown air handling unit replacement were instrumental in reducing the overall maintenance backlog. Currently, there are several deferred maintenance projects underway at the Academical Village, the most notable being the Hotel D roof replacement and East Lawn colonnade support beam repairs.



East Range – Roof before



East Range – Roof after



Hotel D – Roof before



Hotel D – Roof in-progress



East Lawn – Recently discovered Colonnade support beam deterioration, hidden by fascia board

Draft FY14-15 Report on Deferred Maintenance (2-6-15)



East Lawn – Colonnade support beam partial repair

## **Challenges**

### Maintenance Budget Reductions

During the last three decades, building maintenance has frequently been one of the first expenditures to be deferred during budget reduction cycles. Since the Board approved program began the maintenance operating budget has been reduced by a total of \$2.9 million which lowers the maintenance reinvestment rate by about one-tenth of one percent. Despite these reductions we have returned to the multi-year investment program when we are able and have made good progress as this report reflects.

### State Maintenance Reserve Funding

Maintenance Reserve has funded nearly \$122 million in maintenance projects from the 1982-84 biennium through 2012-14 for E&G facilities. In the 2008-10 biennium, the Maintenance Reserve budget was set at approximately \$14.5 million. The University's allocation was reduced in the 2010-12 and 2012-2014 bienniums to \$9.86 million; however it was increased to \$14.4 for the 2014-2016 biennium.

## **Summary**

In 2005-06, the Board of Visitors embarked on a long-term plan to reduce the deferred maintenance backlog of E&G facilities and the corresponding FCI to 5 percent or less. The Board also took steps to establish adequate annual maintenance funding to prevent the further accumulation of deferred maintenance. Today the FCI is 5.4 percent, which is in the "fair" category by industry standards. The FCI has shown a steady improvement since 2004-05, when the Report on the Condition of University Facilities reported the E&G FCI to be 10.6 percent. The University has made significant progress in enhancing its operating maintenance budget toward the targeted two percent reinvestment rate, a rate that began in 2005-06 as 1.2 percent and is now 1.86 percent.