Introduction
At its December 2004 meeting, the Buildings and Grounds Committee heard a presentation regarding the University’s deferred maintenance backlog which currently stands at $144 million for the University’s educational and general (E&G) buildings. Following a discussion about the need to proactively address the issues, the Buildings and Grounds Committee asked that the Finance Committee consider funding options to reduce the backlog to a reasonable level over the next ten years and to establish adequate annual maintenance funding to protect the University’s core facilities. The Board of Visitors will, as a whole, consider several important policy issues related to maintaining the University’s facilities in a responsible fashion.

We recently received a copy of an interim report by the Auditor of Public Accounts who was charged by the 2004 General Assembly with performing an audit to determine the amount of deferred maintenance costs in the Commonwealth. The Executive Summary of that report is included as Appendix A.

This paper will provide an estimate of funding required over the next ten years to reduce the current maintenance backlog to an acceptable level and in the process address associated fire and life safety, accessibility, and code issues. We will also propose an appropriate annual investment to continue after the ten year period that will enable the University to maintain a reasonable maintenance backlog. Finally, we will present overall policy questions to be addressed in setting the University’s approach to deferred maintenance. Based on advice from the Finance Committee regarding the best financing alternatives and the Board of Visitors as a whole regarding policy matters, we will develop an implementation plan to be included in the 2005-06 budget which will be discussed with the Finance Committee in May 2005. The plan will then become part of the annual budget presented to the Board of Visitors for approval in June 2005.

Background
Building and infrastructure maintenance can be addressed in several ways, including routine maintenance, major maintenance and building renewal. In the subsequent descriptions of each, the text in quotations comes from College and University Business Administration published by the National Association of College and University Business Officers (NACUBO) in 2000.

Routine maintenance, funded through the annual operating budget, is considered to be maintenance needed to preserve the facilities and their system components from failure or deterioration. This includes minor routine maintenance (“repair or replacement of obsolete, worn, broken, or inoperative building components” < $25,000), emergency maintenance (“unscheduled work that requires immediate actions to restore services or remove problems that could interrupt activities”), and preventative maintenance (“planned
and controlled program of periodic inspection, adjustment, lubrication, replacement of components, and performance testing and analysis”). Routine maintenance can also include the correction of small scale fire and life safety, accessibility, and code issues when it is feasible or required to do so.

_MAJOR maintenance_, which is primarily funded through state maintenance reserves, repair and renewal reserves (only in auxiliary units currently) or capital outlay projects, consists of major repairs of maintenance deficiencies that can be accomplished without major disruption to occupants and systems, generally at a cost of less than $1 million. This includes roofing, exterior repairs, and replacement of major mechanical equipment, such as chillers, boilers, air handlers, and emergency generators. Again, fire and life safety, accessibility, and code issues may also be addressed during major maintenance activities.

_BUILDING renewal_ projects, also primarily funded through capital outlay projects, state maintenance reserve funds, or repair and renewal reserves (only in auxiliary units currently) can address maintenance deficiencies. However, these projects are more comprehensive in scope than just the repair of maintenance deficiencies and will include asbestos removal, sprinkler system installation, Americans with Disabilities Act Accessibility Guidelines (ADAAG) compliance, and correction of code deficiencies. Building renewal projects will extend the life of a building and may include programmatic and technological updates requested by the building occupants. This is a particularly important point to an enterprise such as the University with such a large facility inventory of historic buildings. Building systems can only be expected to have a useful life of approximately thirty years. In order to extend a building’s life indefinitely, such as with the Rotunda and other historically significant structures, building renewal must be addressed every 30-40 years.

_DEFERRED maintenance_ is defined as maintenance that has been “deferred on a planned or unplanned basis to a future budget cycle, or postponed until funds are available.” Our deferred maintenance backlog is quantified through the identification of maintenance deficiencies through formal facility assessment inspections conducted every three to four years on E&G buildings. During these inspections, maintenance deficiencies that can be observed – either seen or heard – are identified and recorded.

When defining deferred maintenance it is also important to note what is **not** included in the calculation. Since the University’s deferred maintenance backlog consists only of identified deficiencies, unknown deficiencies are not included. The estimated cost of addressing safety, accessibility, and code issues is not included. While this is not included in our backlog calculation, we will include an estimate of additional funding needs over the ten year period to address safety, accessibility and code issues which, in some cases, are mandated changes and, in other cases, just make good business sense to address at the same time maintenance is done. Finally, the costs of a complete building renewal to extend the life cycle of a building and/or make programmatic and technological updates is not included in the calculation of deferred maintenance.
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Based on these regular assessments, the University’s E&G maintenance backlog is currently estimated at $144 million on a building inventory with a replacement value of $1.38 billion (as calculated in accordance with SCHEV guidelines). Of this amount approximately one-third of the backlog is related to buildings involved in research activities and another third is related to infrastructure, including utility infrastructure, roads, sidewalks, lights, and fencing. The portion related to infrastructure and particularly utilities infrastructure such as steam tunnels, chillers, and sewer lines, while classified as E&G, also serves auxiliaries and the Medical Center.

Current Maintenance Funding – How Did We Get Here?

The maintenance budget is made up of operating funds, maintenance reserve, and capital outlay. Historically insufficient annual maintenance funding has resulted in the substantial maintenance backlog. The operating budget dedicated to maintenance is insufficient due to two primary reasons. First, while the current practice is to fund adequate annual maintenance when new construction is opened, 64 percent of the University’s E&G buildings are greater than 20 years old and sufficient annual maintenance funding was not established at the time of first occupancy. Second, building maintenance is frequently the first expenditure deferred during the budget reduction cycles that have occurred in each of the last 3 decades.

The state augments operating budget maintenance with a biennial capital appropriation for the Maintenance Reserve program. The following graph presents the historical allocations from this program, which have been inconsistent and subject to deep cuts during times of budget shortfalls:

![E&G Maintenance Reserve – Funding per Biennium](chart)

Five million of the nearly $10 million shown for the 2004-06 biennium is pending approval by the General Assembly. Given the rising interest in the General Assembly and the Governor’s projections, we will project a biennial allocation of nearly $10 million for the purposes of this model. However, if the state maintenance reserve does not meet this projection, any shortfall would need to be funded from some other source in order to meet the University’s goals within the stated timetable.
Finally, higher priority is often given to new construction in the University’s Six Year Capital Plan. It is more attractive to potential donors to contribute to a new building than it is to help renovate an existing one. In addition, growth in research has focused the University on adding more space to accommodate the needs.

The cumulative effect of inadequate operating budget funding, operating and maintenance reserve budget reductions, and a priority being placed on new construction has culminated in a severe maintenance backlog.

**Best Practices**

The overall condition of an institution’s buildings is measured by a Facilities Condition Index (FCI), which is calculated by dividing the total maintenance deficiencies in buildings and infrastructure by the total current replacement value. The University’s FCI for E&G facilities is 10.4 percent. An FCI value under 5 percent is considered “good condition”; an FCI value between 5 percent and 10 percent is considered “fair condition”; and an FCI value of over 10 percent is considered “poor condition.” It is recognized in the industry that an organization generally will not eliminate all its deferred maintenance.

After reaching the desired condition level, the University should establish on-going maintenance funding to maintain its building and infrastructure inventory in good condition. Industry experts (from Managing Facilities Portfolio published by NACUBO and Facility Renewal and Adaptation jointly published by NACUBO, the Association of Higher Education Facilities Officers, and Society for College and University Planning) recommend 1.5 to 3 percent of the building inventory’s replacement value be reinvested annually.

**Recommendations**

1. We recommend that the University undergo a ten year plan to improve its E&G facilities from “poor condition” to “good condition” by reducing the FCI to 5 percent by 2014-15. Given assumptions about the expected replacement value in 2014-15 after inflation and new construction impacts, this will require that the deferred maintenance backlog be reduced to approximately $100 million by 2014-15. The incremental cost to improve the condition of E&G buildings and infrastructure to “good” over the next ten years is $124.6 million over the currently projected level of maintenance funding.

2. Critical fire and life safety, accessibility, and code issues are in some cases required, but in any case should be addressed as related maintenance deficiencies are corrected in order to reach maximum effectiveness and cost-efficiency during the maintenance work. The additional cost to address safety, accessibility, and code needs while correcting identified maintenance deficiencies is $30.7 million over the next ten years.

3. After improving the condition of E&G facilities to “good” by 2014-15, we recommend establishing and maintaining annual maintenance funding equivalent to 2 to 2.5 percent...
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of the facilities inventory. We estimate that the incremental cost, in 2014-15, over the projected level of ongoing maintenance funding at that time will be $9.3 million annually. As we fund the maintenance needs identified in Recommendations 1 and 2, we recommend that an appropriate level is funded on a permanent basis, so that by 2014-15 on-going resources needed to ensure adequate maintenance funding will be in place.

4. We further propose that in order to facilitate major maintenance projects, the University should pursue the establishment of a major repair and renovation reserve to fund projects which may span several years or require the accumulation of significant cash balances. This reserve must not be subject to the state’s re-appropriation process and should receive interest earnings.

5. We suggest that the Board consider whether, for the next ten years, major renovation capital outlay projects be placed as higher priorities over new building construction in the development of the Six Year Capital Plan.

6. We propose that the Board consider whether the University should establish funding guidelines for operations and maintenance funds for new facilities? Specifically, should a maintenance endowment be required for privately financed new construction?

Funding Alternatives Related to Maintenance on Existing Facilities

Funding Options for Research Related Maintenance

Approximately one-third of the E&G deferred maintenance backlog is related to buildings which include research activities. This suggests that several research related sources of revenue may be appropriate for funding both the reduction in the maintenance backlog and the permanent annual maintenance needs.

Facilities and Administrative (F&A) Recoveries are paid on federal grants and contracts to reimburse indirect costs. Approximately 34 percent of the $57.2 million recovered in 2003-04 was attributed to building costs. Currently when the recoveries are generated, 38 percent is re-distributed back to the deans and departments generating the federal grants and contracts; 30 percent is allocated to central university funding; 18 percent is allocated to an F&A Capital Outlay Reserve, while the remaining 14 percent is allocated to research-related costs in the VP for Research Office, the Office of Sponsored Programs, and other departments that support the research enterprise.

Re-allocating existing F&A recoveries to fund deferred maintenance is certainly a potential source of revenues for maintenance. In fact, Duke University currently allocates approximately 8 points of its 54 percent indirect cost rate for deferred maintenance (not restricted to research building maintenance). However, re-allocating existing revenues will reduce the possibility of using this limited pool of funds for expanding research capacity or meeting current needs.
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Another alternative would be to charge rents or increased rents to research activities in buildings in which maintenance work is on-going. However, it is important that rents remain reasonable in order to encourage and not impede the research activities.

Funding Options for Infrastructure Maintenance

Approximately one-third of the E&G deferred maintenance backlog is related to infrastructure, particularly utility infrastructure. These systems benefit the whole of the University, including auxiliaries and the Medical Center. The University’s utility rate includes a charge used to help maintain and improve infrastructure. This charge could be increased to provide additional resources for critical infrastructure maintenance. Each additional 1 percent increase in the utility rates will generate approximately $377,000 annually that could be applied to the infrastructure component of the utility rate. In addition, we should continue to place priority on state supported utility infrastructure projects in our six year capital plan.

General Fund Opportunities for Maintenance

An obvious place for additional maintenance funds would be a request to the state. New funds for routine maintenance will be allocated using the state’s base budget adequacy formulas, so the University could designate a portion of future general fund increases from base adequacy to maintenance. The state is currently studying major maintenance funding for all agencies, so the potential also exists for infusions of new general funds into the maintenance reserve program. Finally, the University could re-prioritize its Six Year Capital Plan to focus requests for new capital outlay funding on building renewal and renovation projects (such as the Ruffner Hall renovation).

Availability of Tuition Revenues for Maintenance

Tuition is the next place to look for additional funds. If we implemented an additional annual increase of $60 (about 1.2 percent on 2004-05 in-state undergraduate tuition) for the next ten years, we could have an annual maintenance fee of $600 per student in place by 2015-16, generating approximately $10.2 million annually. A similar approach was taken by Penn State in 1997 which began to dedicate $1 million in additional tuition funding each year to maintenance; the Penn State allocation has built up to $8 million annually.

However, it is already projected that in-state undergraduate tuition will increase approximately 10 percent per year over the next five years to fund operating budget needs, salary increases and financial aid. Re-allocating tuition revenues from these priorities will impact the University’s ability to meet these needs on the expected timetable, while increasing tuition beyond 10 percent may have other market implications.
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Institutional Private Resources

The University could choose to allocate institutional private resources to maintenance, with the awareness that every additional permanent commitment on these resources will limit further flexibility and funding for future initiatives. Alternatives from endowment income and investment balances include:

a. maximizing the use of private resources such as historic renovation funds to address building renewal;

b. designating a new source for funding all or a portion of the central University Development functions and allocating the freed-up resources to maintenance;

c. foregoing the annual $500,000 reinvestment into the unrestricted endowment;

d. increasing the distribution from the unrestricted endowment. Each 10 percent increase in the distribution would generate about $1.1 million annually; or

e. allocating a portion of the accumulated balances from incremental earnings resulting from investing a portion of the University’s current funds in the Pooled Endowment Fund.

Establishing Appropriate Maintenance Funding for Future Facilities

Annually we request funding from the Commonwealth to support maintenance costs for new construction. Since 1994, the maintenance request has been based upon the construction value of the new buildings in accordance with industry guidance and, currently, we use 2.5 percent of the construction value. However, under current policy, the state will only contribute approximately 41 percent of the support for a new building which is 100 percent utilized for E&G purposes, while other non-general fund resources must supply the remaining 59 percent. For example, the Special Collections Library is 100 percent E&G and will have annual maintenance needs of $406,000, of which the state has contributed $150,000. The remaining need was allocated from tuition revenues.

If a building will be utilized for research purposes, the state will only contribute 50 percent of the share allocable to the state. For example, the MSENT building will be 50 percent E&G and 50 percent research and will have annual maintenance costs of $723,500. The state is expected to contribute only $224,000 of the total need.

It is also important to monitor the fund split application as the policies have a tendency to change. The state will sometimes reduce or consider eliminating any state share of the maintenance funding for buildings constructed with non-general funds or private support.

Currently the University covers its required share of maintenance costs (along with building operating costs such as utilities, custodial care, and landscaping) for new
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buildings on an ad hoc basis, from whatever resources are available in a given year. It is important that the University consider adopting a policy with funding guidelines regarding the allocation of required operating and maintenance funds for all new buildings. Options in funding the portion of operating and maintenance support not provided from the state include most of the options previously discussed: F&A or rents for research buildings; tuition for E&G buildings; and utility rates for utility infrastructure. Additionally, the board should consider how the University should fund the operating and maintenance costs associated with new buildings to be built from philanthropy. Should an endowment funded from donor contributions be established for the related operating and maintenance needs?

The current Six Year Capital Plan requires extensive philanthropic support for new construction. It will add significantly to fundraising requirements if it is expected that donors’ also fund on-going building support costs. As an example, assume total operating and maintenance support is 4 percent of a building cost; the state continues to fund 41 percent of those costs; and the endowment continues to distribute 4.5 percent. A new $30 million building will have an annual operating and maintenance budget of $1.2 million, of which $492,000 will be contributed by the state. It will require an endowment of $15.7 million (more than 50 percent of the capital costs) to fund the remaining annual need of $708,000.

Other Divisions

Auxiliaries in the Academic Division, the Medical Center, and the College at Wise are responsible for conducting their own facility assessment reviews, estimating their maintenance deficiencies, accumulating cash reserves and planning maintenance activities to maintain buildings at an acceptable FCI.

The Academic Division’s non-E&G buildings are primarily operated by the respective auxiliary or division (residence halls by the Housing Division; Scott Stadium by Athletics; dining halls by Dining Services, etc.). Collectively, the auxiliary FCI, as calculated by the respective auxiliary unit, is 8.9 percent. An example of how the Housing Division is addressing its deferred maintenance needs is the planned replacement of the Alderman Road Dorms, to be funded from the systematic increase in housing rents expressly for maintenance and replacement.

The Medical Center plans and funds – using funded depreciation – maintenance activities as part of the annual operating budget and currently estimates its FCI as 2.2 percent. The College at Wise has an estimated E&G maintenance backlog of $9.5 million on a building inventory with a replacement value of $49.9 million, at a FCI of 19.1 percent. The College is heavily reliant upon state general funds both for its annual operating maintenance budget and maintenance reserve projects. Auxiliaries at Wise are responsible for maintaining their own facilities.
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Summary

In the policy discussion on February 4, 2005, the administration will pose the following policy questions and request the guidance of the Board:

- Is a Facility Condition Index of about 5 percent in 10 years an appropriate target and should we attempt to achieve that level over the next ten years? If so, is the Board willing to invest $124.6 million over that timeframe to reach the goal?

- As we address identified maintenance deficiencies, correction of fire and life safety items, accessibility accommodations, and building code issues will either be required or should be undertaken at the same time. Is the Board willing to invest an additional $30.7 million over 10 years to address these issues?

- If needed, is the Board comfortable using a portion of the University’s debt capacity to finance the reduction of the deferred maintenance backlog?

- Should we place a higher priority in the six-year capital program on renovating existing facilities?

- Should increased priority be placed on major building renewal recognizing that this requires displacement of occupants and identification of swing space?

- After the initial 10 year period, should we have established adequate annual maintenance funding to maintain a “good condition” for existing facilities at an approximate incremental annual cost of $9.3 million in 2015?

- Should the University fund annual operating maintenance for new facilities at a 2-3 percent reinvestment rate? What resources should be responsible for funding the portion left unfunded by the state?

- Should a maintenance endowment be required for privately financed new construction?

- Should research activities be responsible for newly constructed research facilities?

- Should the Medical Center and auxiliaries help maintain newly completed infrastructure projects?

If these critical issues are addressed, the University will be able to make significant progress in protecting our investment in existing, as well as future, facility assets.
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APPENDIX A

Auditor of Public Accounts’ Review of Deferred Maintenance in the Commonwealth
Interim Report issued December 2004 – Executive Summary

The Commonwealth of Virginia owns over $8.6 billion in buildings and surrounding infrastructure valued at historical cost. When considering the current replacement value of those same buildings, they are worth over $12.6 billion. The Commonwealth currently owns 187 buildings constructed before 1900. During the past 50 years, the Commonwealth has tripled the number of buildings it owns over the number it owned in the first half of the century.

The Commonwealth’s buildings and their systems are in a constant state of deterioration. Naturally, as the buildings age, components start to wear. This deterioration is cyclical and compounds the deficiencies. However, not only are the Commonwealth’s buildings deteriorating, they often do not fulfill the needs of the agencies’ and institutions’ current missions. Technological advancements, programmatic and social changes, and economic fluctuations over the years have changed the way the Commonwealth does business and the resources needed to do business.

We determined there is no accountability for the condition of the Commonwealth’s buildings and how agencies maintain them. In addition agencies and institutions do not budget or account for operating maintenance. The budgeting that occurs does not consider actual need, but uses historical information. Since agencies and institutions do not budget for actual need, they are using their maintenance reserve allocations to perform activities that they should fund through the operating budget. Therefore, the Maintenance Reserve Program is not a good indicator of the current backlog of deferred maintenance for the Commonwealth.

There is no complete inventory of all Commonwealth-owned buildings and their components and their current physical condition. The Commonwealth does not provide agencies and institutions with any policies or guidance on how to maintain facilities. The Commonwealth’s current capital outlay and maintenance process is not functioning as intended and will continue to accelerate the growing deferred maintenance backlog if not reformed.

We recommend that the Governor and General Assembly consider the following:

- Reforming the operating, maintenance, and capital outlay budget process especially for facility maintenance, renewal, and renovation;
- Establishing a standard condition level for state-owned facilities and requiring agencies and institutions to develop a program to achieve this level;
- Eliminating the Maintenance Reserve Program and establishing a reserve fund for each agency that owns buildings for continuous maintenance;
- Requiring agency and institution management to provide information that they have properly performed operating and continuous maintenance; and
- Establishing a Capital Preservation and Renewal Reserve Fund to accumulate long-term funding for capital renewal activities by relating the funding to financing instruments used to fund capital improvements, renovations, or new building construction. Requiring the agencies and institutions to demonstrate that they have only used the funds for the purposes intended and not used the funding on other facilities, programs, or activities.

We are also recommending a statewide Facility Asset Management System to allow for the accumulation, analysis, and prioritization of the data needed to assess maintenance costs and management performance of maintenance. In addition, the system will provide the information necessary to plan for each phase in the life cycle of a building.