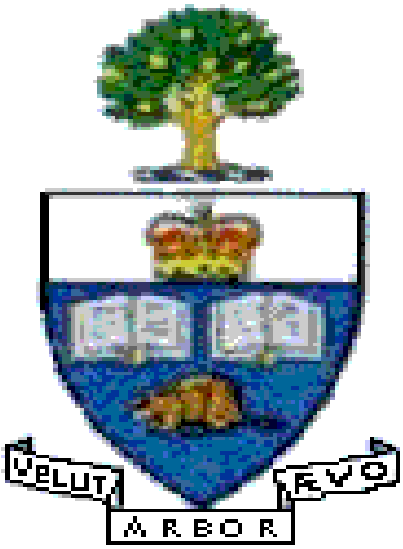
Crumbling Foundations

Report on St. George Campus Facilities



Prepared by

Department of Facilities & Services

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Executive Summary

The Problem

The buildings and physical infrastructure are under attack from the combined effects of age and inadequate maintenance. The University of Toronto has $2 billion invested in buildings and physical plant - an investment whose value is declining annually. U of T has a Facilities Condition Index of 13.5, compared to the average of Canadian Universities of 11.3 and the US average of 7. This means that the deferred maintenance backlog has now reached 13.5% of the current replacement value of the buildings. **The dollar value of the backlog is now $276 million.**

For the past ten years, the University has delayed investing in the physical infrastructure, operating on a "run to failure" strategy. Maintenance and cleaning budgets have been cut to the point where it is no longer possible to guarantee that even basic repairs can be completed in a timely fashion. The actual amount invested in repairs, maintenance and renovations is difficult to quantify as there is no central process for reviewing and evaluating renovation and repair projects; nor is there a consistent priority setting process.

Implications

If we continue with the existing strategy, there is an increasing risk of failure of a significant building component. The failure could occur at any time, and within any of the building systems – heat, power, ventilation or water – and damage could be significant. Insurance may cover most of the financial losses, but it will not compensate for lost research or loss of prestige. There is an increasing safety risk, as the fabric of the buildings is allowed to deteriorate even further. Falling roof tiles, elevator disruptions, cracks that cause trips and falls are only a few of the hazards that are increasingly evident across the campus.

Conclusions

We are not spending enough money on basic building operations (cleaning and repairs) or on maintaining the infrastructure needed to keep the buildings operational.

The lack of a centralized priority setting and decision-making process may result in an inefficient allocation of scarce dollars. The level of funding allocated to maintenance, repairs and replacements is inadequate. The backlog is increasing, and will continue to increase unless a decision is made to solve this problem. The older the buildings get, the more they need maintenance and replacement. We can choose to invest more in maintaining the value of our investment in facilities, and reduce the probability of catastrophic failure, or we can continue with the "run to failure" strategy, and accept the risks outlined above.

Recommendations

We recommend that the University invest enough to at least maintain its investment in buildings and infrastructure and prevent further erosion of value.

1. On an annual basis, ensure that enough budget is set aside from operating revenues and/or government grants to keep the FCI at its current level of 13.5 This means that on average $8 million per year will have to be spent on deficiencies. Assuming that the provincial government maintains the FRP grant at the current level, the University will need to find an additional $4 million per year.

2. Within the funding outlined above, define specified multiple year funding commitments for campus-wide tactical programs to deal with various hazardous materials and critical services. These would include:

    - Asbestos removal program
    - PCB transformers replacements
    - CFC chilling unit replacements
    - Major electrical transmission line upgrades
    - Elevator replacements/upgrades
    - Lock replacements

3. Establish a formal Facilities Renewal program within the University that encompasses:

    - A policy that requires standard assessment of facilities renewal and renovation projects that cost more than $50,000 , regardless of the source of funding
    - An integrated process for reviewing and priority setting for facilities projects (The Accommodation and Facilities Directorate could take this on).
    - An integrated financial and progress reporting system for facilities projects over $50,000

4. Increase the maintenance and cleaning operating budgets to a level that permits some preventive maintenance and more frequent cleaning of things like windows and carpets which if not cleaned deteriorate rapidly and contribute to environmental complaints. Maintenance needs an operating budget of $ $15.83 per square metre; cleaning needs $16.86 per square metre. *This means increasing the current maintenance budget from $9.1 million to $13.3 million and the cleaning budget from $9.9 million to $14.2million.* This would reconcile the impact of inflation and the growth in gross square metres.

5. Investigate ways to leverage the existing investment in the central utilities infrastructure. Options to be considered will include:

- Selling or leasing assets;
- Entering into joint ventures;
- Expanding our generation capabilities and selling power to the grid;
- Entering into management contracts.

The focus will be on generating returns on these assets and/or reducing the risks we are incurring with the run to failure maintenance strategy.

Background

In February 1977, the Sandford Fleming building was razed in a fire blamed on out-dated wiring. The heavily used building had been under-maintained for years, to the point where portions of the largest classroom were considered unsafe for occupancy. The Engineering archives were destroyed in the fire; the water-damaged library collection had to be freeze-dried in an attempt to save it; many graduate students lost months of research and Engineering undergraduate computer projects were cancelled for the balance of the year. Classes and research were displaced for the next three years.

In the late 1990's a portion of the limestone parapet at the top of the Burton Tower was found resting on a ledge fortuitously located a short distance below. After investigation, it was discovered that the majority of the limestone panels up the entire height of the 15 storey tower were in danger of falling because the metal clips holding them in place were corroded through.

In 1999 a substantial chunk of plaster from the dome of Convocation Hall fell to the floor. Fortunately, no one was seated in the hall at the time. The ceiling was replaced in the summer of 2002- no funds were available, but it was decided to assume that FRP funding from the government would be available.

In 2000, the main public staircase at Varsity Stadium had to be shored up with timbers to prevent collapse due to untreated corrosion. The building was demolished in the summer of 2002.

In 2001, the University was taken to trial after a community member tripped on an expansion joint in the floor of Sidney Smith Hall. Replacement of a gasket in the joint had been deferred. It was judged that the accident contributed to the subsequent amputation of the individual's leg.

In the fall of 2002, personal injury accidents occurred in both the Edward Johnson Building and the Best Institute because the obsolete elevator controls failed to level the cars properly before opening their doors.

Over the past five years, the incidence of failure of the campus electrical feeder system has double that of the previous five years, due to aging insulation and equipment.

The importance of buildings and grounds is identified in the University's strategic planning document "*Raising our Sights"* …"the University of Toronto has a precious physical endowment in its location in an internationally renowned city – with large campuses in both central and suburban locations – as well as some magnificent buildings. The physical environment on campus plays an important

role in enhancing the enjoyment of the university experience, reinforcing a sense of identity and facilitating the community life."

Historically, the Government of Ontario has provided the vast majority of capital funding to build the infrastructure required to support the delivery of post secondary education. However in the past several decades, government cutbacks have been a recurring phenomenon, resulting not only in reduced levels of new physical plant and infrastructure but also in severe constraints on the maintenance of the existing infrastructure. By necessity, expenditures on renovations and maintenance have been postponed, resulting in a significant backlog of work known as *deferred maintenance*.

The challenge of deferred maintenance has been growing more critical as the aging of the buildings continues. This is not just a University of Toronto issue but one faced by all Ontario universities. In 2000, the Canadian Association of University Business Officers (CAUBO) tabled its report on the "Urgent Need for Infrastructure Renewal at Canadian Universities". This report estimated that the accumulated deferred maintenance for Canadian Universities was approximately $3.6 billion and was increasing exponentially.

At University of Toronto, deferred maintenance has been the subject of numerous reports and discussions. The last report on deferred maintenance, issued in February 2001 identified a backlog of items that would cost $155 million to fix – today that figure is $276 million. Previous reports did not identify any strategy or plan to address this critical area. Funding of critical renewal and maintenance projects has been ad hoc - dependent on the variable nature of the Province's programs such as Superbuild and Facilities Renewal

This report documents the state of UofT's physical plant and identifies the stewardship issues that are currently facing us. It identifies strategic options and recommends a course of action.

Scope of This Report

The focus of this report is the St. George Campus buildings and infrastructure managed by the Facilities and Services Department. This campus is the center piece of the University and contains a significantly higher percentage of older buildings with associated higher need for maintenance, repair and renovation. The report will focus on the academic, research, administration, athletic and infrastructure buildings. UofT Scarborough, U of T Mississauga, the federated universities, the residences and various ancillaries will not be specifically referenced. However, most findings are applicable to all facilities across all campuses regardless of how they are currently being maintained and managed. Current estimates indicate that the cost of deferred maintenance rises to $400 million if all three campuses, the residences and the Federated universities are included in the analysis.

The Stewardship Mandate

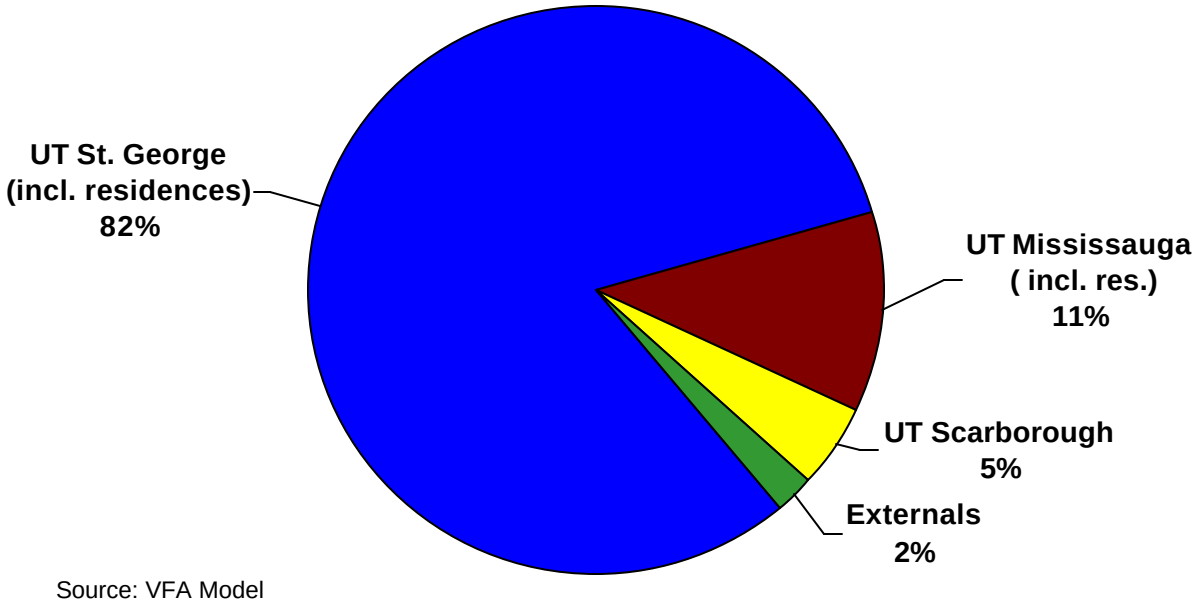
Introduction

The University has a significant investment of **$2.51 billion** (replacement value based the Council of Ontario Universities model) in its academic and support facilities, ancillary facilities, student residences, and campus service infrastructure including the steam plant, the cogeneration plant, the tunnel system and external infrastructure such as grounds, trees, sidewalks and playing fields. The value recorded on the University's financial records is $2.2 billion reflecting the insured replacement value.
This investment is spread among the various units as follows:

	$ Million
St. George Campus (incl. residences)	2,049
UTScarborough	114
UTMississauga	286
Sundry / externals (e.g. parking garages)	59

Figure 1

Breakdown of Univ. of Toronto Space by Replacement Value



Source: VFA Model

As Figure #1 indicates, the St George campus encompasses 82% of the total replacement value of buildings and facilities at the University of Toronto.

The responsibility for managing and maintaining this value is delegated to the Facilities & Services departments of each campus, and to the residence ancillaries. As the University has grown in terms of its facilities and services, so has the task of managing and maintaining these facilities. It is well recognized that this challenge has been made more difficult by the years of Provincial Government funding reductions.

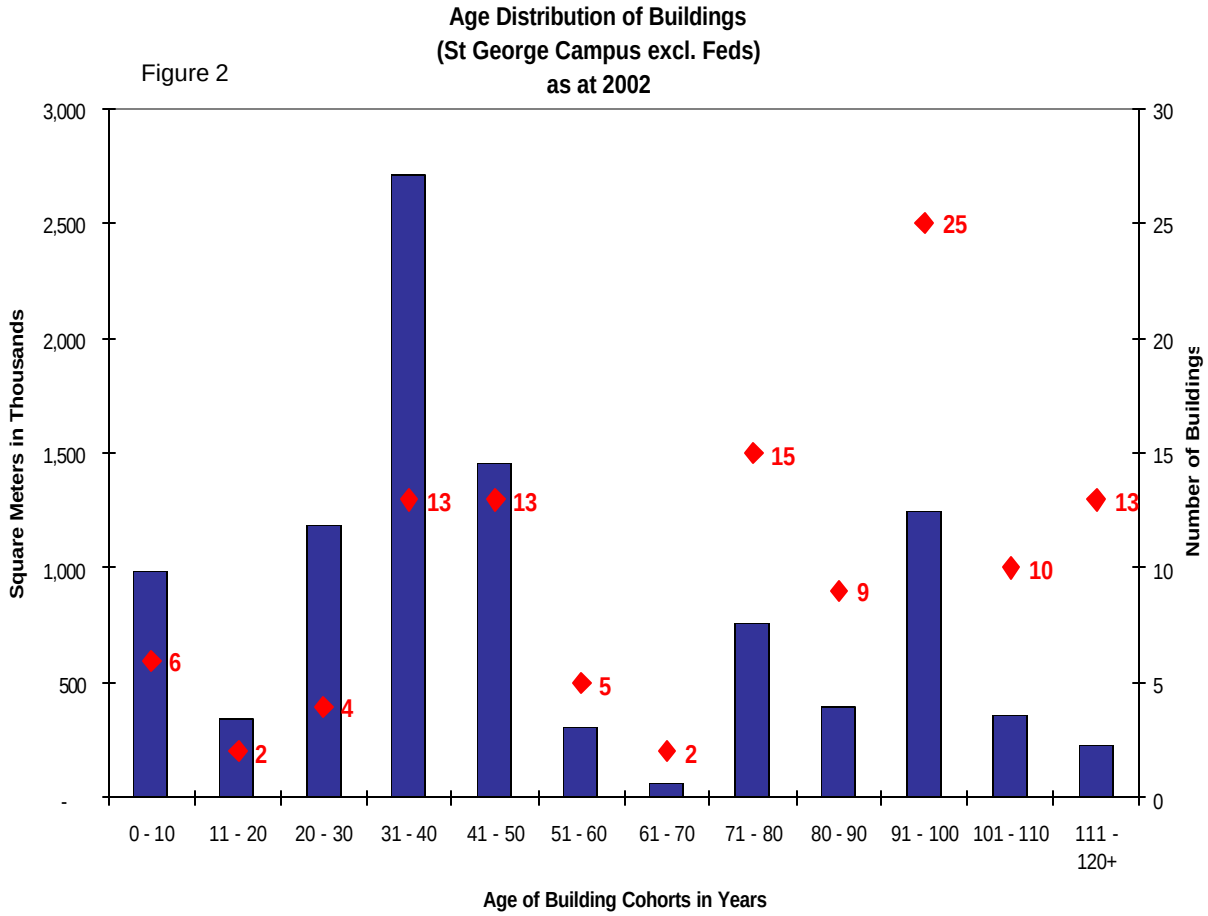
Nature of UofT's Investment

The real estate holdings are diverse. The breakdown is as follows:

Buildings **Replacement Value $2.008 billion**

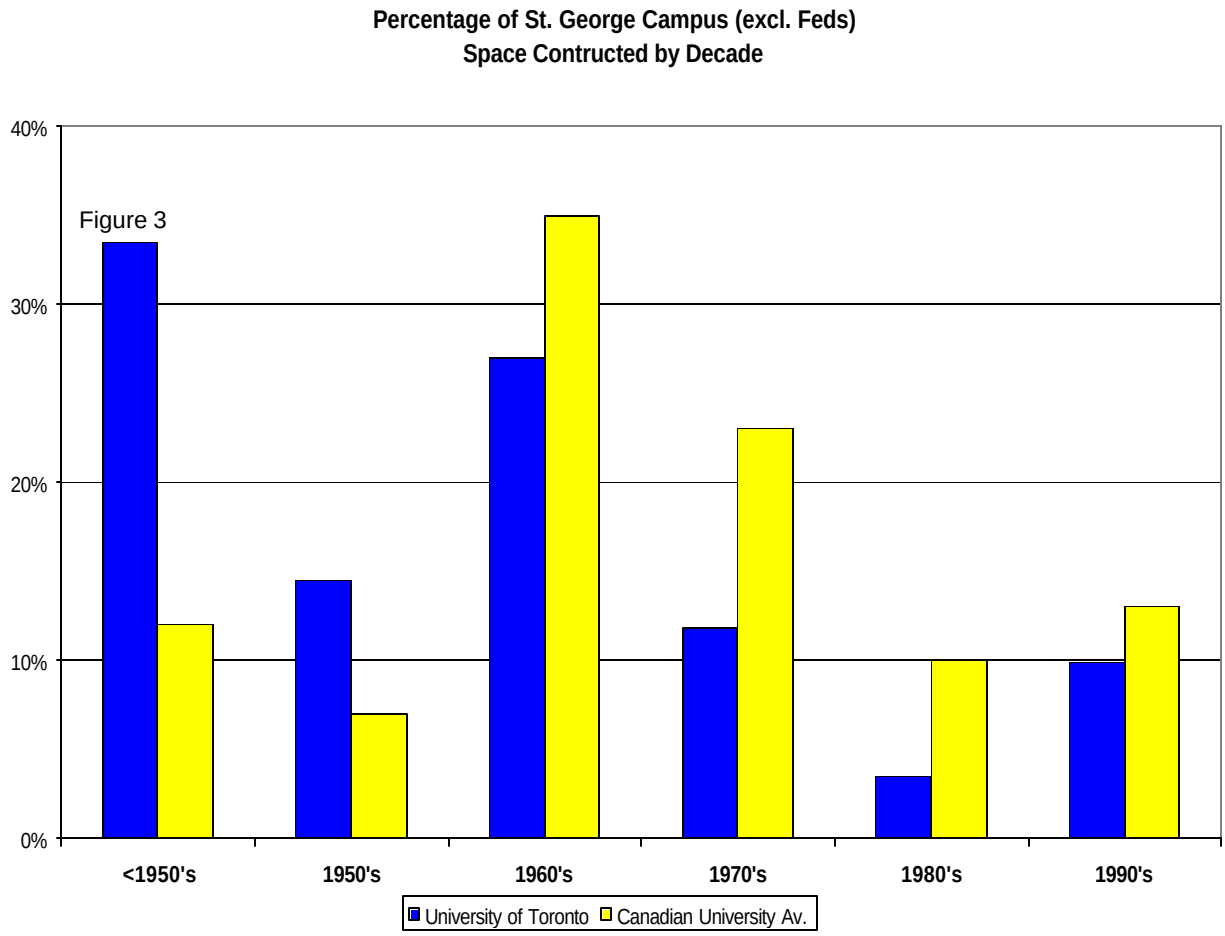
The St George campus currently includes 101 buildings, occupying 866,591 gross square metres, which are used for a variety of academic, research, administration, library, athletic and other purposes. The buildings' ages range from University College – 144 years old to the recently completed Bahen Centre for Information Technology. Figure 2 indicates the building age distribution of the St. George campus. Twenty-two percent (based on sq. metres) of the buildings are in excess of 80 years old. Fifty-three percent (53%) of the St George campus

Figure 2



was built during the 50's, 60's and early 70's when governments were aggressively funding education to provide space for the 'baby boom' generation. Less than thirteen percent (13%) of the floor space has been built in the last 20 years.

Based on the April 2000 study prepared for the CAUBO, the average Canadian university had only 12% of buildings built before 1950, whereas for UofT-St. George Campus, the figure is thirty-four percent (34%). Figure 3 indicates the



comparative breakdown of the balance of the decades. UofT-St. George Campus has a higher proportion of older buildings than its counterparts across Canada. This is due to its early and long standing history as one of Canada's premier academic institutions. However this also has significant implications for the renovation and operating costs of the buildings.

Internal infrastructure (St. George only) Replacement Value $40.9 million

The University of Toronto also has a significant investment in utilities infrastructure, operating a central steam plant, cogeneration plant and central electrical distribution system, supplying the St George campus including residences, and federated colleges as well as several external customers with

steam heat, hot and chilled water and electricity. These systems are critical to the continued operation of the buildings and essential for the academic operation of the university. In addition to operating this infrastructure, Facilities and Services also acts as the central buying source for electricity, gas, oil and water.

- Heating
  Heat for forty-seven buildings (78% of floor space) of the St. George campus **as well as** sixty additional buildings including University residences, ancillaries like Hart House and external customers such as the ROM, Gardiner Museum, Hydro Place and the Ministry of Health is supplied from the central steam plant on Russell Street. This heat is distributed as steam or hot water and is transported via pipes, either buried or located in a network of tunnels. These tunnels, most of which are more than 80 years old, form a network three kilometres long.

- Chilled Water
  Chilled water for air conditioning is distributed to 40% of the St. George campus buildings via piping systems from three central production plants. Over 392,000 sq metres of space are supplied by the central plants alone. Most of the rest of the buildings constructed since the late 1950's have local chilled water plants.

- Electricity
  The cogeneration plant located in the Steam plant building on Russell Street generates enough power to meet about 30% of the St. George campus needs. This percentage is declining as demand for power increases. Power, whether generated by the cogeneration plant or purchased from Hydro, is largely distributed through our own Central Electrical Distribution system to 84% (85 buildings) of the St. George campus as well as to 32 residences and to the Federated universities. Recent changes in the electricity market have caused a change in strategy, and new buildings will be connected directly to Hydro, rather than through our distribution system.

External Infrastructure Replacement Value N/A

The external infrastructure is also a critical component of the St. George campus as it reflects the "look and feel" of the campus. It forms the first impression for prospective students and creates the community atmosphere that houses the current student population. The replacement value would be significant based strictly on the land value that the University of Toronto owns in the center of one of Canada's premier cities.

- Total Area – 49.5 hectares of land with 16 KM of sidewalks, 6KM of walkways and 5KM of roadways.
- 3,000 Trees,
- 6 sports fields and numerous flower beds

Facilities and Services' Stewardship Mandate

The Facilities and Services Department is entrusted with the stewardship of the buildings and infrastructure on the St. George campus as outlined earlier. This mandate is established to achieve two goals: maintaining the value of the investment and ensuring that facilities are available for use. To achieve both of these goals the following functions must be carried out in the most effective manner:

- Operating the buildings and infrastructure;
- Monitoring and controlling the building systems;
- Cleaning and grounds keeping;
- Maintaining, repairing and replacing building systems and components in order to extend the life of the building.

Ensuring that the buildings are *available and accessible* to the university in order to carry out its purpose of providing education and research facilities to the student and academic populations requires that the buildings are safe to inhabit, are heated, cooled and ventilated, are well lighted and have enough power to run equipment and computers. It costs approximately $ 22 million net to run the buildings and the central utilities infrastructure: utilities like hydro, gas, oil and water cost another $25 million net. Building repairs are incremental.

Not only must the buildings be safe and functional, they must be able to adapt to the changing needs of the curriculum delivery, advances in equipment and technology and the evolving building code and environmental regulations. This mandate has become particularly critical in the last 10 years as technology has changed almost every aspect of the University.

Drivers of Cleaning, Maintenance and Renovation,

There are many critical factors which drive the University's need for and cost of renovation, maintenance and cleaning. These include the age of the physical assets and style of construction, the regulatory environment and levels of activity in the building.

Age of the Physical Plant

As David Foot would say; "Every year, every building gets a year older." The aging and deterioration of buildings is inevitable and so is the decrease in the intrinsic value. The rate of decline can be controlled in part by undertaking preventive, regular maintenance and cleaning. Both the aging of facilities and changes in function and technology can be counteracted via renovations which address capital renewal, adaptation and any deferred maintenance.

The CAUBO study indicated that "other factors such as the building design, quality of materials and systems, type of construction, location and history of maintenance will have a greater impact on a building's current condition, and therefore value, than just its age".

Regulatory Environment

Other factors like changing environmental regulations also impact the ongoing cost of building maintenance and renewal. Materials such as asbestos, CFC's and PCB's are all subject to environmental controls and cannot be used in new construction. However UofT continues to have facilities which contain these substances. There are currently 32 PCB transformers on the St. George campus. The cost to replace these units is estimated at $2.5 million. Similarly, out of the 27 local chiller units on campus, 21 use CFC's as do 2 out of 9 chillers in the central plants. The issues surrounding the ongoing existence of these substances and their removal challenges are increasing the complexity and costs of renovation and maintenance.

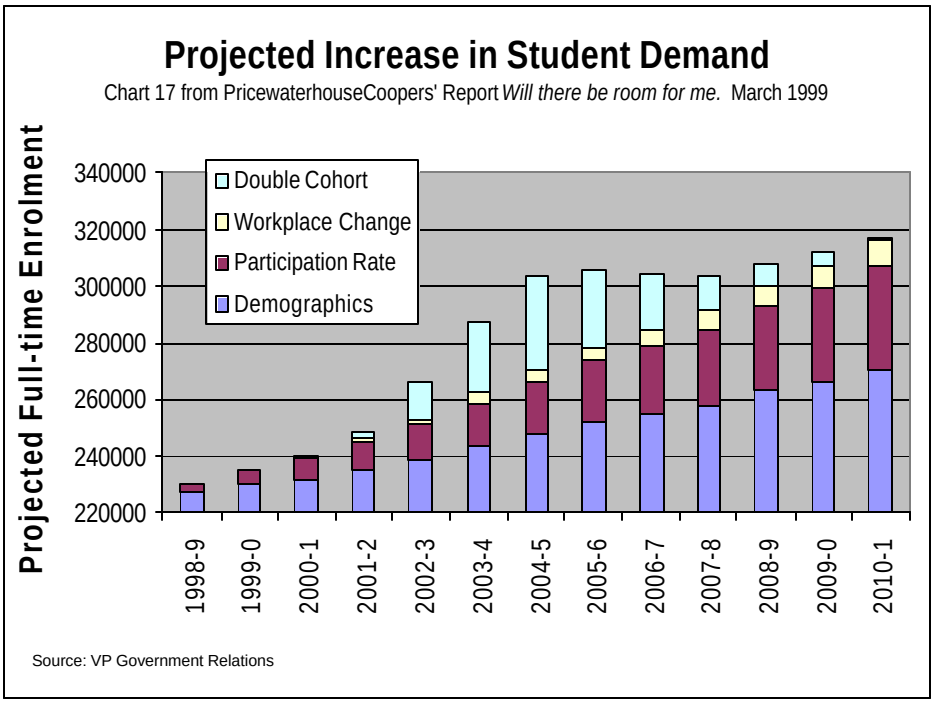
The University has done a poor job of implementing its asbestos control program. Budget cuts over the past years have resulted in necessary repair work being left undone; asbestos dust and debris have accumulated and inventories have not been kept up to date, as is required by law. The result has been a set of orders issued by the Ministry of Labour for work to be completed and for the University to comply with its policy and procedures forthwith. Unless additional budget is allocated, funds will have to be diverted from normal maintenance budgets at the cost of other urgent priorities. See Appendix 3.

Regulatory compliance in other areas such as access for the disabled, fire and life safety and air quality also increase demands on the adaptation of the facilities.

Level of Activity

The other driver of maintenance and cleaning costs is the *level of activity*. The increasing growth in the number of students and the impact of the double cohort year will drive a higher level of activity as the facilities move closer to a 24/7

Figure 4



environment. As evidenced by the attached chart, the projected student population will increase by approximately 25% by the 2005-2006 academic year. Buildings that are heavily used require additional cleaning – it is no longer sufficient to clean classrooms once a day in many locations; similarly washrooms in very busy buildings need more frequent cleaning. It costs $1.50 per student per month for soap, toilet paper and paper towels – a hidden but very real cost associated with the increased student population. Increased frequency of cleaning will be required with smaller windows of opportunity due to the demand for facilities. The trend will be a shift in cleaning activities to the night shift, increasing the costs of operation.

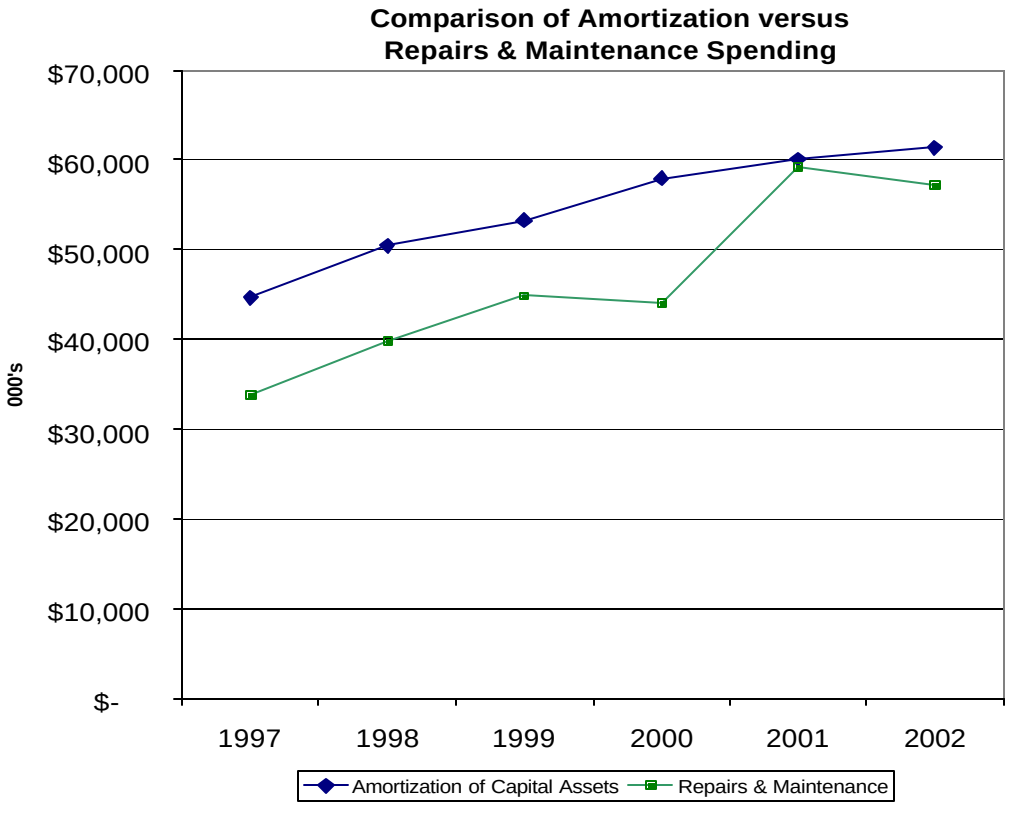
The Stewardship Record –Maintaining Value

In order to measure whether the value of the physical plant is being upheld, it is desirable to look at a variety of measures. These include the traditional accounting/financial measures and a facilities management approach which examines maintenance from a building and services life cycle basis. A common measure based on this approach is the Facilities Condition Index or "FCI". This measure is widely recognized and used by U.S. and Canadian institutions.

Financial Measures

Retention of value can be determined by comparing the rate of amortization (per generally accepted accounting principles) to the actual reinvestment in those assets as indicated by repairs & maintenance expenses. Figure #5 indicates that Repair and Maintenance spending has been consistently below the Amortization costs, except for 2001 year . The accumulated "deficit re-investment" over the past six years is approx. $48.8 million. Historically, organizations have found that this very "short term gain" results in significant "long term pain".

Figure 5



Source: Various financial statements

From the perspective of actual dollars, University of Toronto spent $77.6 millions on the operation and maintenance of physical plant and an additional $26.4 million on renovations in the 2001-2002 fiscal year. However on analyzing this amount in more detail, one determines the following:

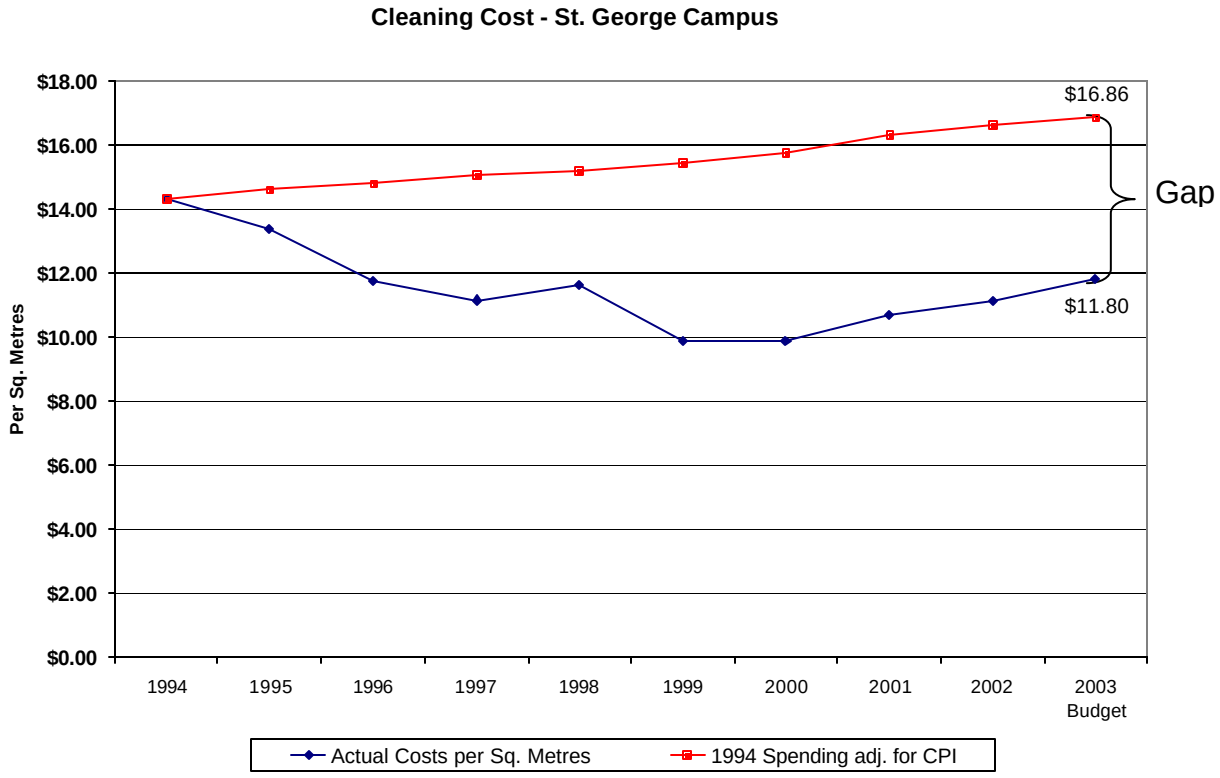
Of the $77.6 million recorded on the financial statements:

- Approximately 74% or $57.1 million was related to the St. George Campus
- Of that amount; $47.1 million was spent on St. George Campus maintenance, cleaning and utilities. However 53% of this total was solely utilities spending.
- *Only* $9.4 million or 13%, of the total amount recorded as operation and maintenance of physical plant, was actually spent on maintenance. Most of this amount was repairs to components that were broken; almost none was spent on true maintenance.

The amount of spending on utilities has increased by 55.2% over the past decade, due to both rate and volume increases, whereas cleaning and maintenance spending has decreased by 6.7% and 7% respectively. In total, it appears on UofT's financial statements that operation and maintenance spending has increased significantly but the increase is the result of utilities' costs not maintenance.

Cleaning Spending Levels

An important and under appreciated part of maintenance is the regular cleaning program. Buildings that are not cleaned regularly and thoroughly deteriorate faster, with a resulting increase in repair bills. For example, windows that are not washed are quickly etched by acid rain – the only solution is glass replacement.



The recent trend to glass clad buildings (Bahen Centre, CCBR) is exacerbating this problem. Signature buildings will rapidly become eyesores, if no investment is made in window cleaning. Similarly, carpets that are not regularly vacuumed develop a dust buildup that both hastens the deterioration of the carpet itself and adds to the dust in the air. The result is an increase in dust in the air vents, dust on sensitive equipment and an increase in air quality complaints.

The budget for cleaning has been severely cut over the past ten years. FTEs have been reduced from 315 in 1992 to the current level of 243. However as Figure #6 indicates, the *actual* cleaning spending per square metre has decreased from $14.32 in 1994 to $11.80 in 2003 Budget. This represents a 17.6% decrease over the past decade. Adjusted for inflation, spending should be $16.86 per sq. metre based on 1994 levels. This gap now stands at $4.2 million annually and is a contributor to the deferred maintenance issue.

The reductions in cleaning budgets were accommodated in a variety of ways – productivity was increased with the implementation of better tools and equipment; more detailed tracking and monitoring of performance and shift changes to maximize cleaning in lower cost time periods (i.e. day shifts). However, there is a limit to what can be achieved by productivity enhancements – some of the budget reductions were achieved by a reduction in service levels. Priority was placed on cleaning critical areas like washrooms and classrooms. Offices and hallways got short shrift.

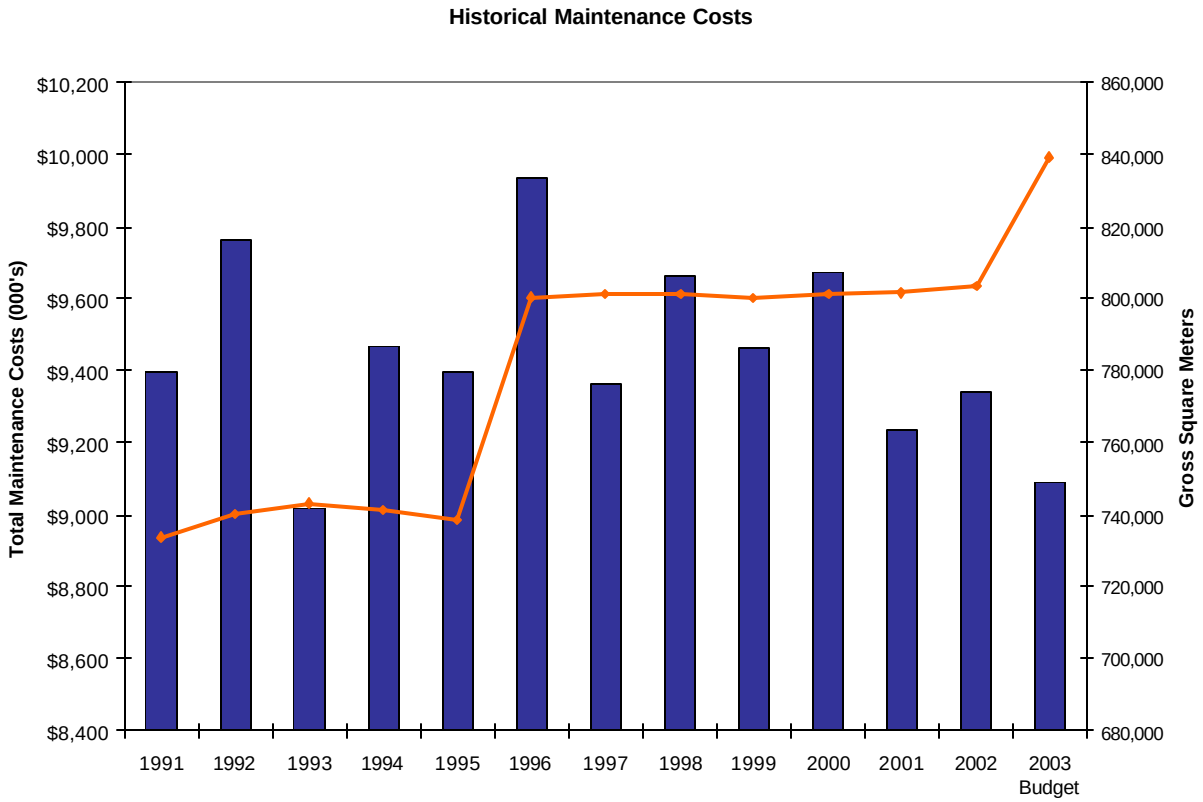
In Appendix 4, we have provided a listing of the cleaning activities that are no longer absorbed by the Facilities and Services budget. The result has been increasing concerns and complaints about the "health" of the buildings. There is an increasing risk that buildings, especially the older ones, could become subject to the Sick Building Syndrome (SBS), resulting in the temporary closure of the facility.

Increased Student Population and Building Utilization

Cleaning costs will also rise with the increase in student population and the increased use in the academic buildings. Facilities and Services Department has estimated that costs will increase by $18,000 per year for every 1000 student population increase, just for washroom products alone. This cost combined with a potential change of cleaning services to a premium shift environment will result in a significant increase in cleaning costs. The full impact is not known at this time.

Maintenance Spending Levels

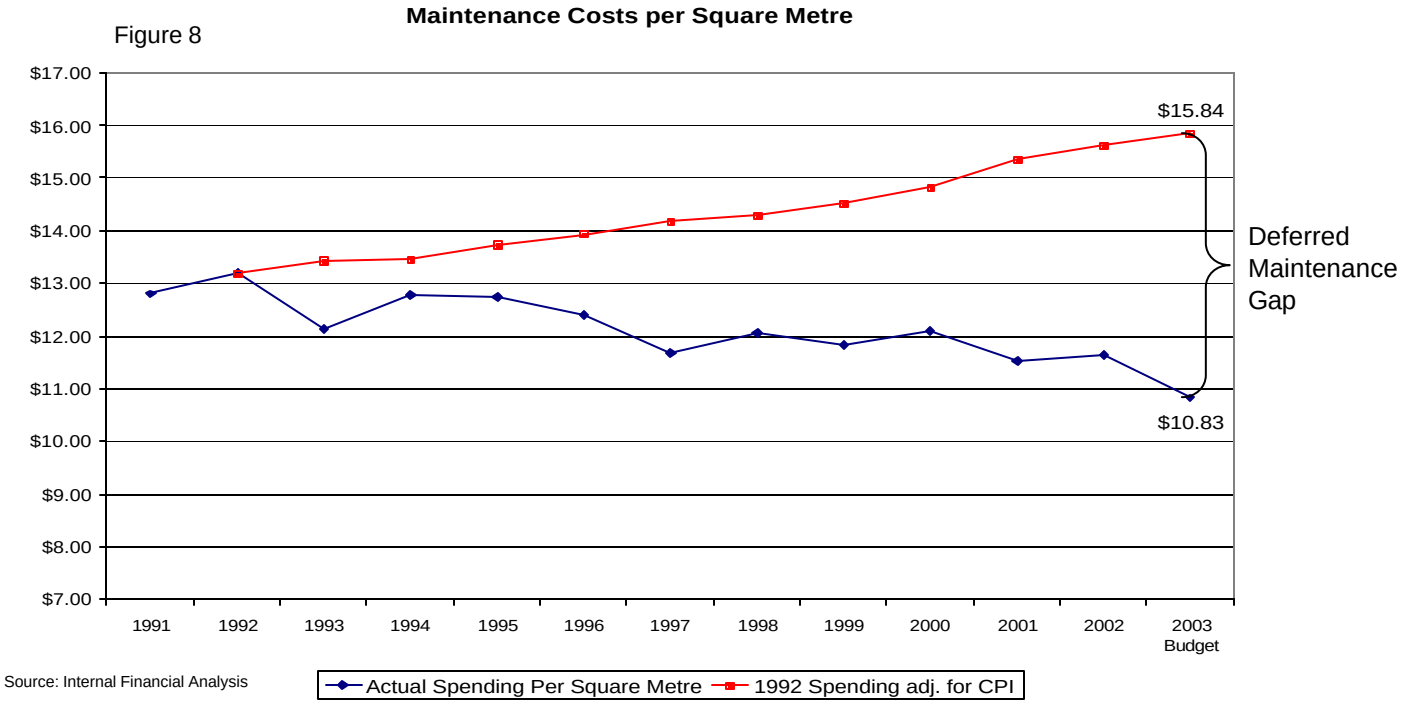
In terms of annual spending, the Facilities & Services maintenance budget has



Source: Internal Financial Analysis

declined gradually to approximately $9.0 million over the past 11 years. This represents the available operating portion of the budget for the St. George campus. It covers the 101 buildings with a total area of 866,591 sq. metres. In

Figure 8



Source: Internal Financial Analysis

1996, 61,900 sq. metres in space was added as OISE, Rotman and several other buildings came on stream. While some dollars where added to cover the costs of maintaining OISE, subsequent budgets were reduced. On an adjusted CPI basis alone, today's maintenance budget *should* be $11.7 million. It should be noted that most of the money in the maintenance budget is for wages and benefits for trades workers; only a small percentage is for supplies and equipment.

Figure #8 indicates that, on a per sq. metre basis, spending in real terms has declined from $13.19 in 1992 to $10.83 in 2003, a decline of 18%. Adjusted for inflation, spending should be $15.84 per sq. metre. It should be noted that in 1999-2000 the Association of Higher Education Facilities Officers (APPA) reported that the average publicly-funded institution in North America spent $19.05 per square metre on maintenance. In the eastern region of the continent that figure was $20.67. The Building Owners and Managers Association International (BOMA) reported that in 1999, government sector buildings in Toronto spent no less than $28.52 and up to $43.06 per square metre.

It is quite clear, that spending on maintenance **has not** kept up with inflation. The gap is increasing; thereby resulting in a large residual deficit – increasing the *deferred maintenance account.*

Facilities Management/FCI Measures

Two years ago, the Facilities and Services Department joined the Facility Condition Assessment program being contributed to by all Ontario universities and administered by the COU in order to create a common database of the state of their physical assets, ensuring the provision of consistent, comparable and reliable data for university administrators and governments.

The program consists of two components: 1) it calculates the deficiencies of the buildings, either by modeling the age (lifecycle) and condition of the building or by conducting a physical audit and listing of all deficiencies for each building and 2) it determines the Facility Condition Index (FCI) by building and by institution. The FCI is the measure of the physical health of the facilities. It measures the costs of the buildings' physical condition deficiency compared to the total replacement value of the building.

Data regarding all the buildings at the University has been entered into the database. See Appendix 1.

FCI Ratings - St. George

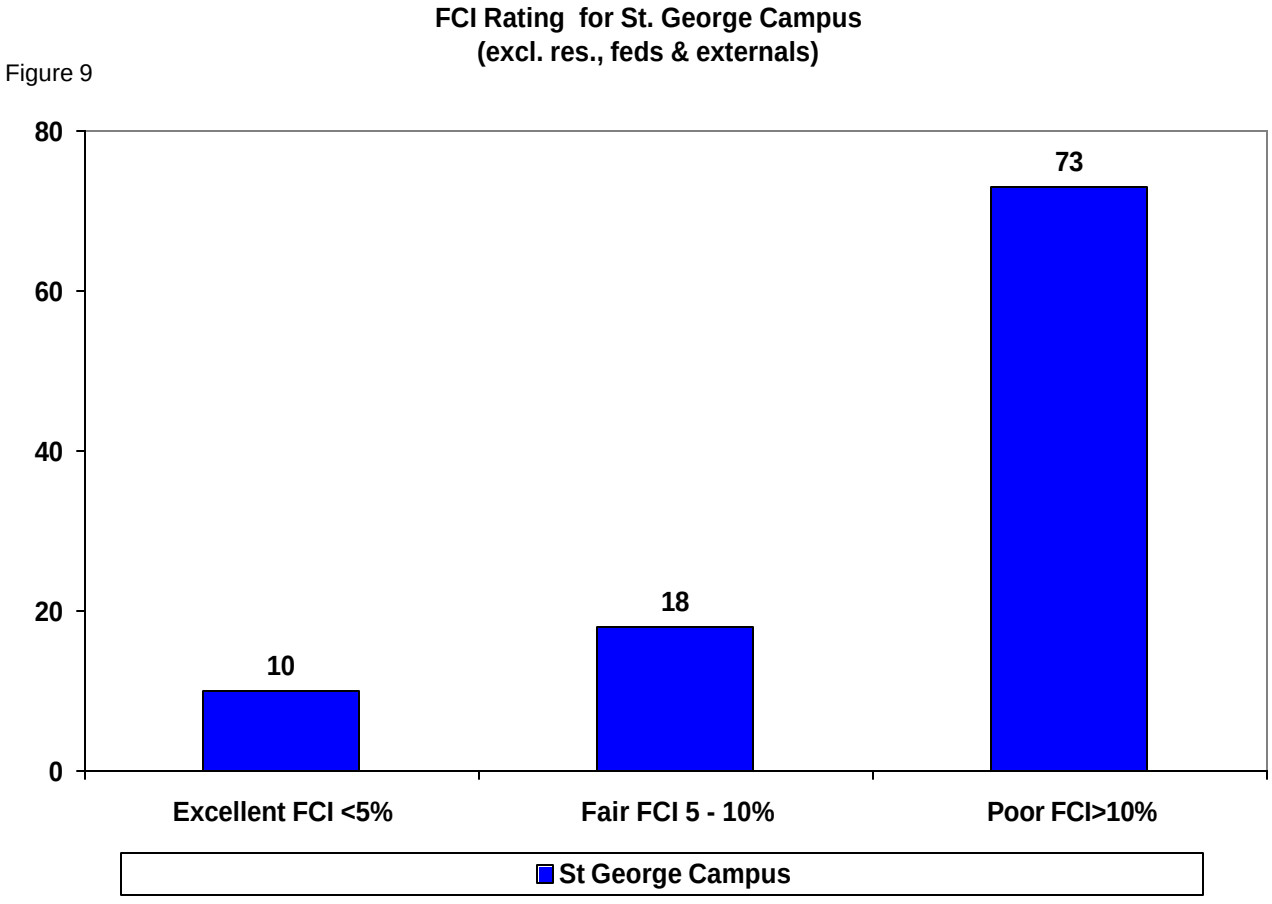
The original FCI rating for each building is a theoretical one calculated using a lifecycle model that is based on the expected life of the building and its components.

To increase the degree of accuracy regarding the physical state of the buildings, UofT is in the process of conducting a detailed facilities audit of all buildings, sub components and systems. Buildings representing forty percent (40%) of the University's floor space were audited by an independent engineering firm in 2000 and 2001. An additional twenty percent (20%) are in process and will be completed by December 31, 2002. The balance including the infrastructure component will be completed over the next 2 years. Priority has been placed on the physical audit of the St. George campus buildings as defined earlier, but eventually all U of T buildings will be audited.

Based on the audits conducted to-date and the theoretical modeling from the software, the St. George campus has in excess of seventy-three percent (73%) or 73 out of 101 of its buildings rated in *poor condition*. Some of the worst rated buildings are the Sigmund Samuel Library, Simcoe Hall, McMurrich and the University College Union.

Figure#9 demonstrates the breakdown of the number of buildings rated according to their FCI ratings. Only 10 or 18% of the buildings are rated as being in excellent shape. These include the newly renovated Munk Centre, Sanford Fleming and the brand new Bahen Centre for Information Technology.

Figure 9



Source: VFA Model

Overall FCI Rating

The UofT St. George campus has an overall FCI rating of 13.5%. This is equivalent to a deferred maintenance total of $276.6 million. For the audited buildings only, the overall FCI rating of these buildings is 11.4%. As the facilities audits are completed, the estimated deficiency total of $276.7 million will become more accurate.

The UofT ratings compare unfavourably with the Canadian universities average FCI rating of 11.3% and the U.S. average of 7%. A world class university would have a FCI rating between 2 - 5%. Appendix 1 contains a detailed breakdown of FCI ratings by building, by campus.

Deficiencies and Priorities Defined

To understand the implications of the FCI rating, it is important to examine in more detail the basis for the deficiency totals and to understand how the dollar estimates are derived. It is also important to determine the level of criticality of deferred maintenance expenditures.

Based on the data and prescribed life cycle equations, deficiencies are subdivided into two categories: deferred maintenance and adaptation/renewal renovations. Deferred maintenance is work that has been deferred on a planned or unplanned basis to a future budget cycle or until funds become available.

Deferred Maintenance is categorized as Priorities 1, 2, 3:

- *Priority 1: Currently Critical*
  Projects in this category require immediate action to (1) return a facility to normal operations, (2) stop accelerated deterioration, and (3) correct a cited safety hazard.
- *Priority 2: Potentially Critical*
  Projects in this category, if not corrected, will become critical within a year. Includes (1) intermittent interruptions, (2) rapid deterioration, and (3) potential safety hazards.
- *Priority 3: Necessary – Not yet critical*
  Projects in this category include conditions requiring appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.

Adaptation/Renewal Renovations is defined as the renewal of facilities to change the interior alignment of space or physical characteristics of an existing building so that it can be used effectively, be adapted for new or modern use or comply with existing building codes.

- *Priority 4: Recommended*
  Projects in this category include items that represent a sensible improvement to the existing conditions. They will improve overall usability and/or reduce long term maintenance.

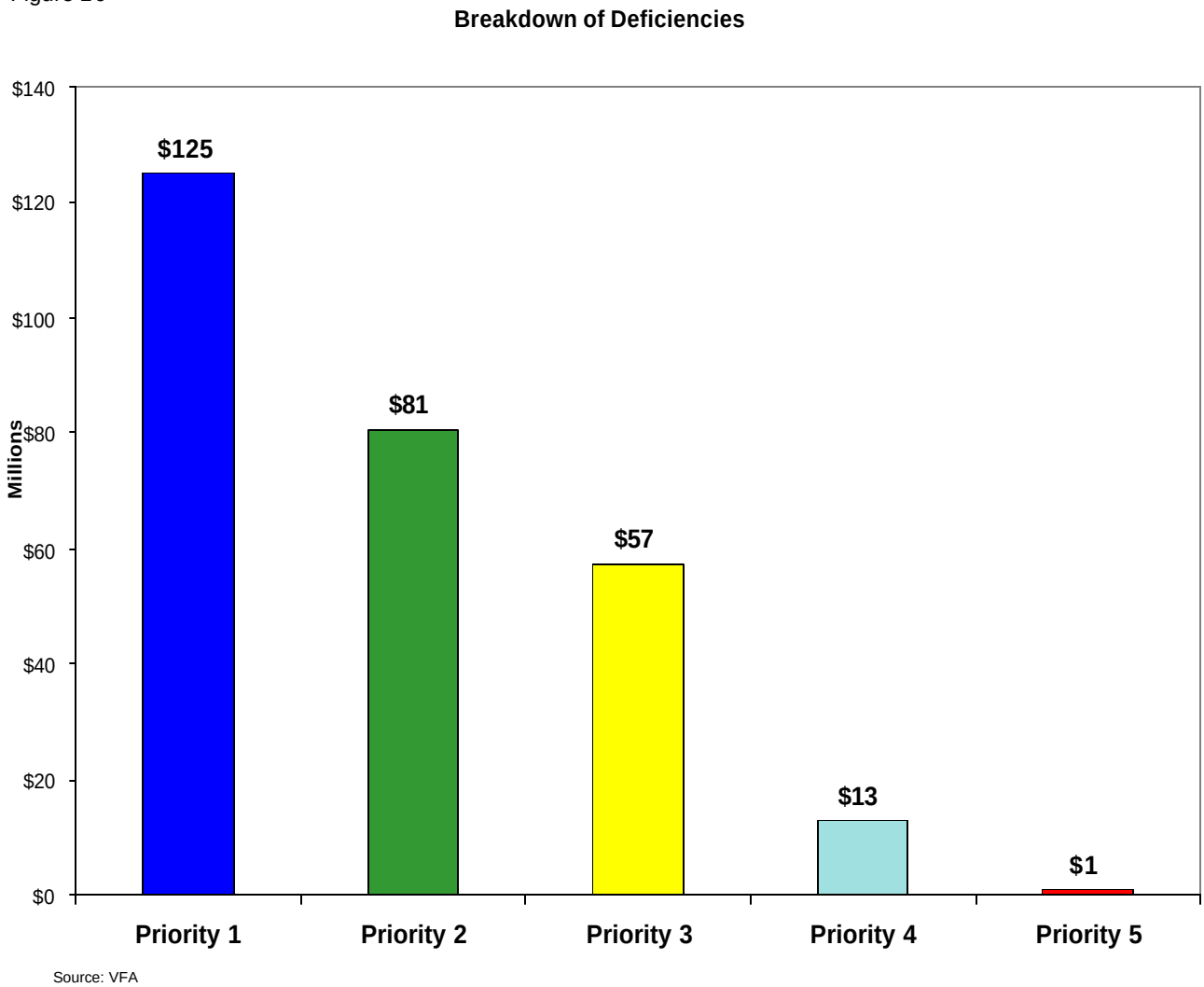
- *Priority 5: Does not Meet Current Codes/Standards*
  Projects include items that do not conform to existing codes but are grandfathered. These would include items such as the CFC chillers, and barriers to persons with disabilities.

St George Campus Deficiencies

In terms of the deficiencies totaling **$276.7 million,** a breakdown of the deficiencies by priorities indicates that forty-five (45%) percent of the deficiencies are deemed *critical,* and fully 74% are Priority 1 & 2.

By next year, the Priority 1 deficiencies will have increased by another 62%,

Figure 10



Source: VFA

reaching a significant $206 million for the St. George campus only. Recognizing that this total is subject to confirmation by the audit process, it is still in excess of the current funding capacity. Appendix 1 contains the audited information for Sidney Smith, showing the detail of the deficiencies by building system category and by priority as defined above.

Internal Facilities and Services Analysis

Internally, the challenge of deferred maintenance has been managed on a year

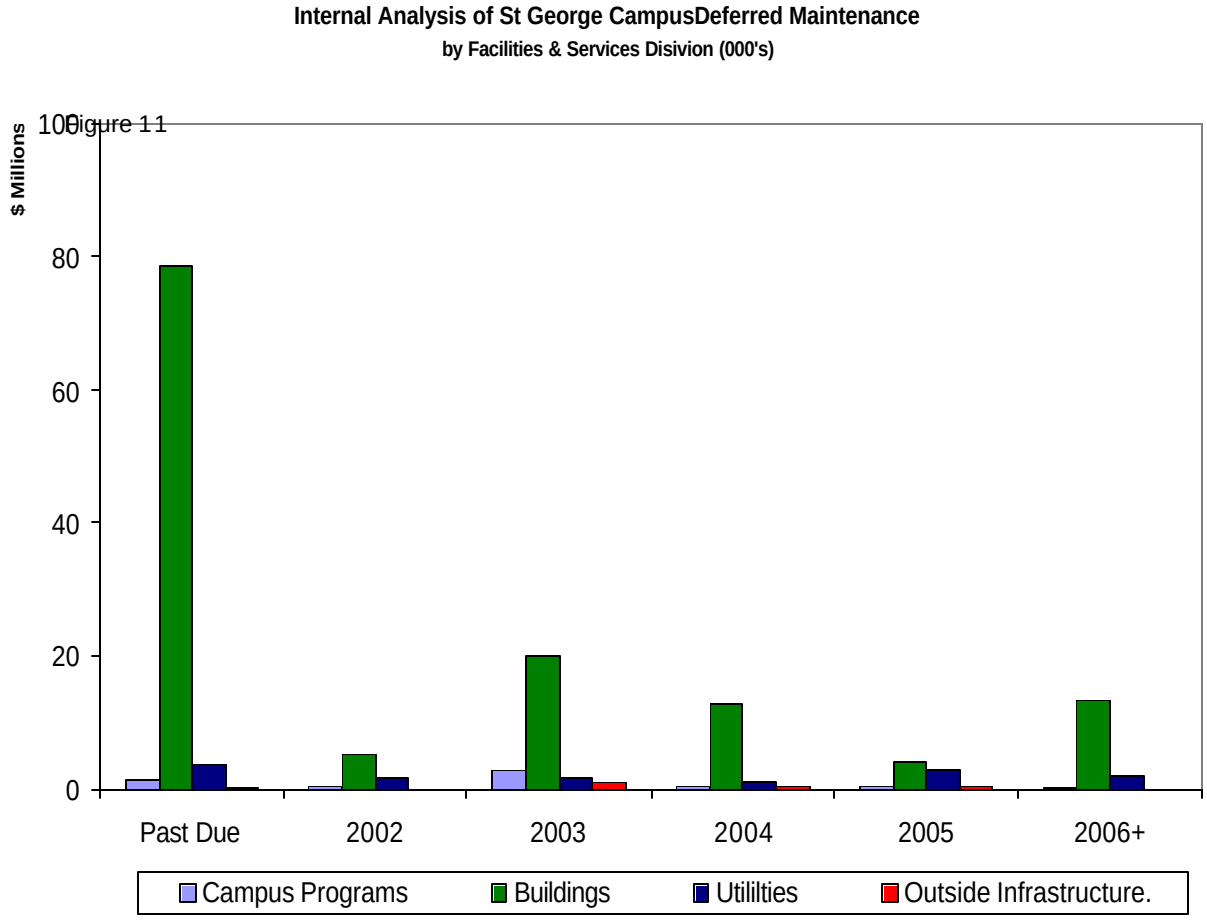


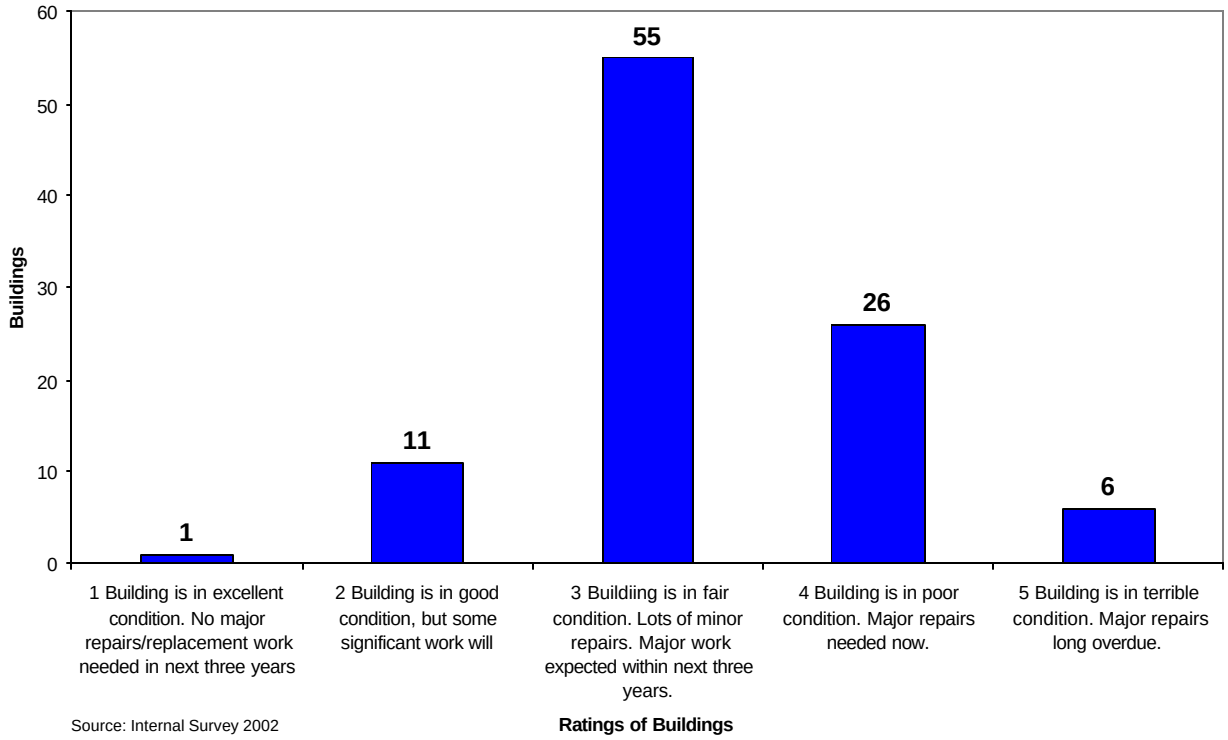
Figure 11

to year basis. What can be accomplished in each year is driven by the *availability of funds,* not any systematic maintenance methodology. The staff have developed an internal listing of the deferred maintenance based on input from the property managers, faculty clients, ad hoc independent engineering studies and their own studies. Based on Facilities and Services' internal analysis, the identified deferred maintenance and life cycle renewal projects required within five years totals $155.1 million with 54% past due. This supports the findings produced using the Facility Condition Assessment generated data. See Figure #11.

We also surveyed the property managers who are directly accountable for the facilities management of their assigned buildings. They were asked to rate the

Building Ratings by UofT Property Managers

Figure 12



Source: Internal Survey 2002

buildings from 1 to 5, with 5 being "the building is in terrible condition". The responses (Figure #12) indicate that fifty-six (56%) of the buildings are in fair condition but requiring many minor repairs and with major work expected within the next three years.

Conclusion

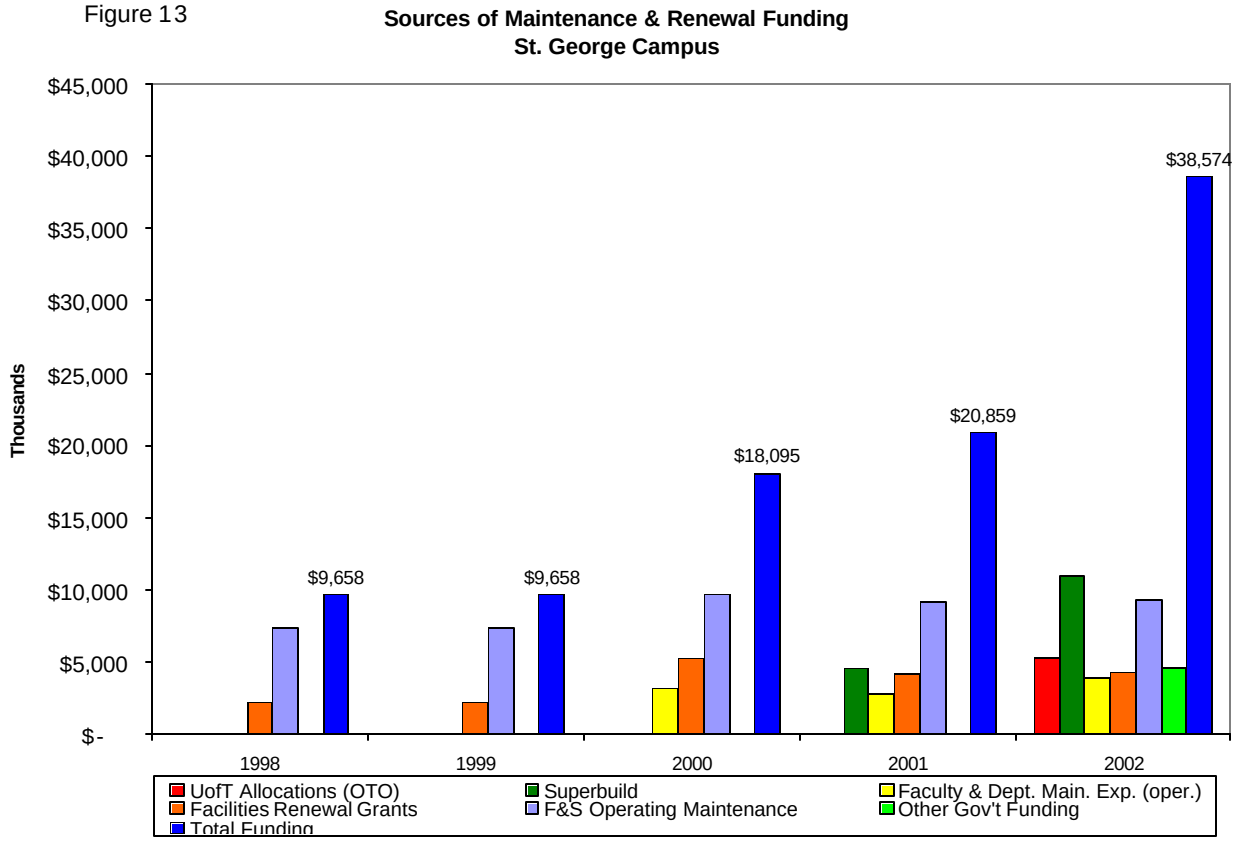
Based on the data above, it is very clear that Facilities and Services Department has **not** achieved its primary objective of maintaining the value of the University facilities and systems. The increasing rate of increase in the deferred maintenance category is clear evidence of this. The inability of the University administration to commit to a minimum level of "non-discretionary" maintenance is also hindering the ability to proactively plan any portion of the maintenance requirements.

It is a tribute to our employees' ingenuity and skills that we are able to keep our facilities and services operating well past their normal life cycles. We are therefore achieving our accessible and available objective. However the risk of a dramatic failure is increasing annually as we seek to extend the life of our facilities and services.

The Funding Sources

The critical component in rectifying the deferred maintenance issue is the amount of funding being allocated by the various levels of Governments and the University. The advent of the Superbuild grants in 2001 and 2002 was a welcome but short-lived source of new funding. The unpredictable nature of these funds prevents us from planning with the necessary degree of certainty.

Figure 13



Source: Various Reports

It is necessary to identity the variety of funding sources of the facilities & systems renewal and maintenance and to understand the variability of them. Funding sources for maintenance and renewal have been identified as:

- Facilities & Services Operating Budget (annual)
- Faculty and Department budgets (annual)
- UofT's allocations - OTO
- Ontario Government Superbuild Growth Fund (established in 2000/2001)
- Ontario Government Facilities Renewal Fund (FRP) (ongoing program)
- University Infrastructure Investment Fund (UIIF)
- Others

As we commenced the data gathering process, it became clear that there are numerous sources and reporting mechanisms, within the University, for the expenditures on Maintenance and Renewal projects. While we have tried to report the total funding dollars, it has been difficult to determine what the *actual* level of funding for maintenance and renewal has been. In many circumstances, historical data was not available and this fact is reflected in the Figure #13 above.

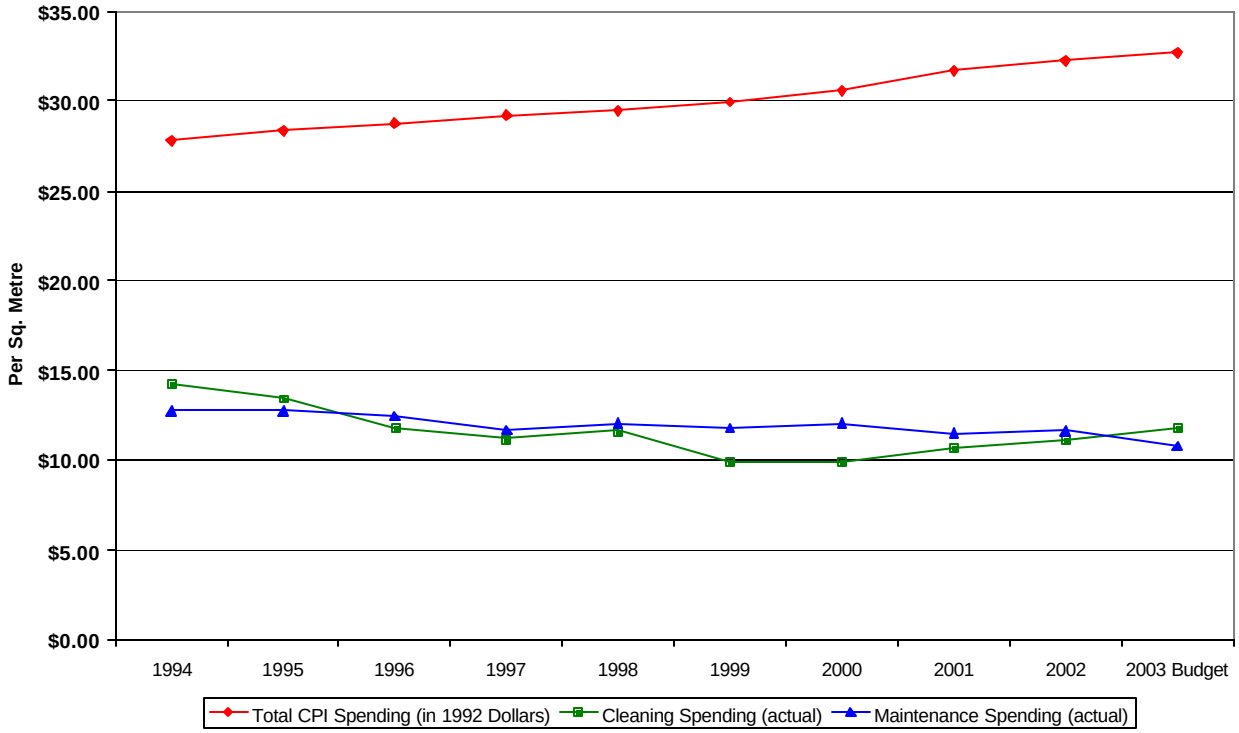
In 2002, we have estimated that the total amount approved for the St George Campus on renewal and maintenance expenditures was $38.5 million. Approximately 45% of the funding was from government sources (Superbuild and FRP) of which $11 million was a *one time* grant from the Superbuild Fund.

Operating Funding Sources

The main *operating* sources for renewal and maintenance funding come from: 1) the Facilities and Service Department's operating budget and 2) the Faculties and Departments' operating budgets.

Actual Costs versus CPI Adj Spending
St. George Campus

Figure 14

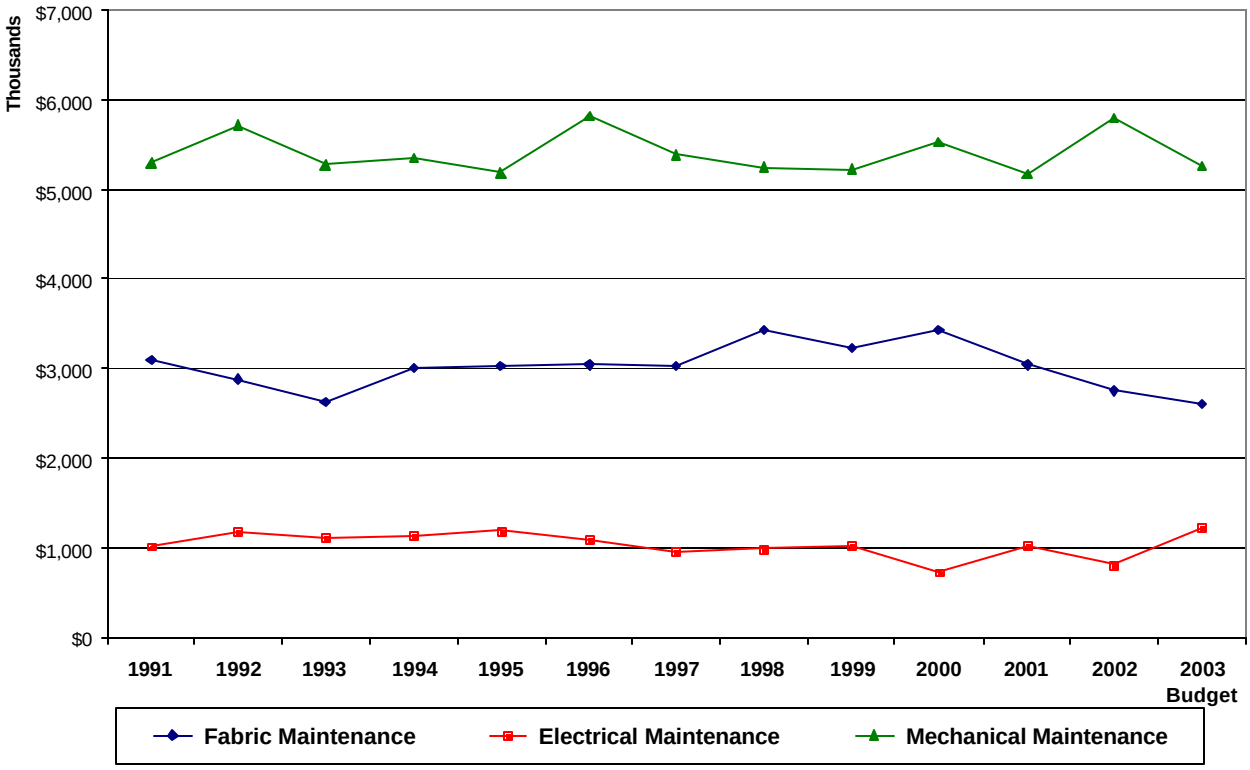


Source: F& S Budget Reports

The Facilities and Services Operating budget has remained basically flat for the past ten years despite a 12% average annual increase in gross sq. metres being managed. Figure #14 denotes that on a per sq. metre basis, the funding via the annual operating budget has not kept up with inflation and the gap is widening progressively.

As Figure #15 confirms, the spending on mechanical, electrical and fabric maintenance has remained basically flat. The individual components are trending downwards despite the increase in sq. metres that have been added.

Figure 15 **Historical F& S Maintenance Spending - St. George Campus**



Source: F&S Budget Reports

In addition to the Facilities and Services budget, the Faculties and Departments also have operating budget dollars allocated for renovations and repairs. Faculty spending on maintenance and small renovations has averaged $3.3 million over the past three years. In 2002, 5,200 work orders from the Faculty and Departments, generated maintenance requests totaling approx. $3.9 million. It must be noted that a majority of these expenditures are adaptations to the existing facilities, i.e. changing office configurations etc. Accordingly, these expenditures have had *minimal impact* on the overall maintenance deficiencies. In fact, some renovations add equipment to the inventory that F&S must maintain, without contributing any budget to do the work.

Capital Funding Sources

Capital sources of funding (in excess of $50,000) for Maintenance and Renewal projects are now being tracked under the auspices of the Accommodation and Facilities Directorate. These sources include the University Investment

Infrastructure Fund (UIIF), Faculty funds and various Government programs such as Canadian Foundation for Innovation (CFI), Ontario Innovation Trust (OIT) and the Ontario Research and Development Challenge Fund (ORDCF). Historical data was not available for these sources, at the time of writing this report.

Conclusions

At first glance, the level of spending on the maintenance, repair and renovation of the various St. George facilities and systems would appear to be more than adequate at approximately $38.5 million (See Figure #13). This figure has been derived from numerous sources and the degree to which these dollars are being spent on the actual building deficiencies is not clear. It should also be noted that the 2002 figures are distorted by the Superbuild grant – a one time only event.

Adaptation versus Deficiencies Spending

It appears that in 2002 a majority of the budget was spent on classroom and laboratory *adaptation requirements and not building deficiencies*. Of the approximately $10 million spent by the Faculties on renovations and repairs only a small portion will have the effect of extending the life cycles of the building systems as new electrical and mechanical requirements stipulate upgrades. A more detailed study would be required to determine the actual breakdown of expenditures between adaptation and renewal.

No Integrated Decision Process or Tracking

There is no process within the various funding approval bodies (such as AFD, Faculties and Departments etc.) to ensure that the projects being funded are addressing the building deficiencies as well as the adaptation needs of the Faculty or Department. There is also no process to prioritize the various needs across the various University stakeholders. Facilities and Services department develops one set of priorities for the buildings based on its limited budget and the Faculties/Departments, another set, based on different priorities.

The result could be that the inside of a building might be spectacular while at the same time the outside cladding is falling off, windows are acid etched, there is asbestos contamination and no wheelchair access. There is also no apparent process for ensuring that all buildings are maintained within a consistent level. Instead, there exists within the St. George campus a significant FCI range - University College Union (35%) to newly constructed BCIT (0%); among the audited buildings Sid Smith (31%) to Earth Sciences (5%).

Funding Levels

The level of funding, which is being dedicated to the deficiencies, is clearly not adequate to reduce the current $125 million Priority 1 backlog of deferred maintenance charges. The critical funding threshold has been reached and additional reductions will further jeopardize the overall fabric, safety and accessibility of the St. George campus.

Strategic Options for Maintenance and Renewal

The University of Toronto's mission states: *"The University of Toronto is committed to being an internationally significant research university, with undergraduate, graduate and professional programs of excellent quality."*

In order to achieve the goal of becoming an internationally significant research university, it is clear that there is a significant requirement for significant research facilities to support the faculty and research capabilities. In January 1999, the Provost's "Raising Our Sights: The Next Cycle of White Paper Planning" confirmed that "in order to support the key priorities – building our faculty, enhancing the educational experience of students and strengthening our academic programs--- demands that UofT provide a level and quality of research infrastructure comparable to that offered at our peer institutions." To achieve this vision, the University will have to seek ways to reduce its Facilities Condition index to a more reasonable level or to at least below 10%.

A 1993 guideline from the American Society of Heating, Refrigerating and Air Conditioning Engineers defined three types of maintenance strategies that can be adopted. These are (1) run-to-failure, (2) preventive maintenance and (3) predictive maintenance. *Run to failure* means you run your facilities, equipment or systems until they break down, repairing or replacing at that point. Alternatively, a discipline of *preventive maintenance* schedules regular maintenance based on run time or calendar, attempting to prevent the disruption caused by system or component failure by minimizing the chance that things will break. A first class facility will normally operate in a *predictive maintenance* manner. A program of predictive maintenance allows costs savings for certain equipment by using high-tech measurement methods to dictate repairs before breakdown occurs. Each option has obvious implications on the timing and amount of financial resources that are required to support it.

The University has been following a strategy of *run to failure* as is evidenced by the growth in the deferred maintenance backlog over the past decade. Funds that once were spent on preventive maintenance are no longer available – our preventive maintenance activities are limited to those activities that are required by law (e.g. boiler maintenance, elevator maintenance, etc.) The budget for Facilities and Services maintenance work can best be described as non-discretionary. We fix things that are broken – and not all things that are broken get fixed.

Risks Associated with the Current Strategy

The current strategy of *"run to failure*" has a number of risks that should be clearly understood. Consequences are potentially severe, both financially and to the reputation of the University. These risks are:

- Unplanned shutdowns of buildings due to lack of heat, electricity or water

  The risk of failure of building systems is increasing. The asbestos situation in the steam tunnels has made doing any work in the tunnels a very slow and expensive proposition. If we have a failure in the tunnels, our ability to respond will be dramatically impacted, until we get the asbestos cleaned up. If we have a significant problem in the tunnels, we could lose heat to a large number of buildings, with the consequent requirement that we close the buildings.

  The elimination of inspection and maintenance of the electric grid has increased the risk of line failure. Digging up a line in winter is difficult and expensive. We are attempting to purchase and store sufficient lengths of the special cable that we need for repairs, so that the problem is not made worse by an inability to get the needed material in a timely fashion. The purchase of the cable is a significant capital expenditure ($200,000), for which we have no budget.

- Increased union disruptions due to unsafe working conditions

  The recent actions of the Asbestos Task Force members in going to the Ministry of Labour should be seen as indicative of how seriously union workers are taking workplace safety. We can expect similar actions and work refusals if we cannot at least repair the things that are broken in a timely manner.

- Increase in the number of air quality complaints, resulting in increased absenteeism

  The reductions in the frequency with which buildings are cleaned are increasing the dust buildup in the air and on surfaces, in carpets and upholstery. It is inevitable that we will see an increase in complaint levels, with potential increases in absenteeism and expenses.

- Increased long term costs of renewal due to lack of planned maintenance and accelerated deterioration

  The longer maintenance is delayed, the more expensive it becomes. A roof that is not repaired can result in a leak that could cause extensive damage to ceilings, walls, equipment and furniture.

- Increased disruptions to research programs

- Increased total costs as more buildings become more expensive to maintain and costs escalate from maintenance to total replacement.

Strategic Choices

In terms of identifying the choices the University faces with respect to its Maintenance and Renewal strategy, we have examined three options. These are:

1. Maintain Current FCI Levels
2. Increase Funding to Reduce FCI rating to 10% over the next 5 years
3. Increase Funding to Reduce FCI rating to 5% over the next 10 years

To determine the funding levels, the VFA forecasting module was used. It calculated the funding level requirements based on several assumptions. These assumptions were:

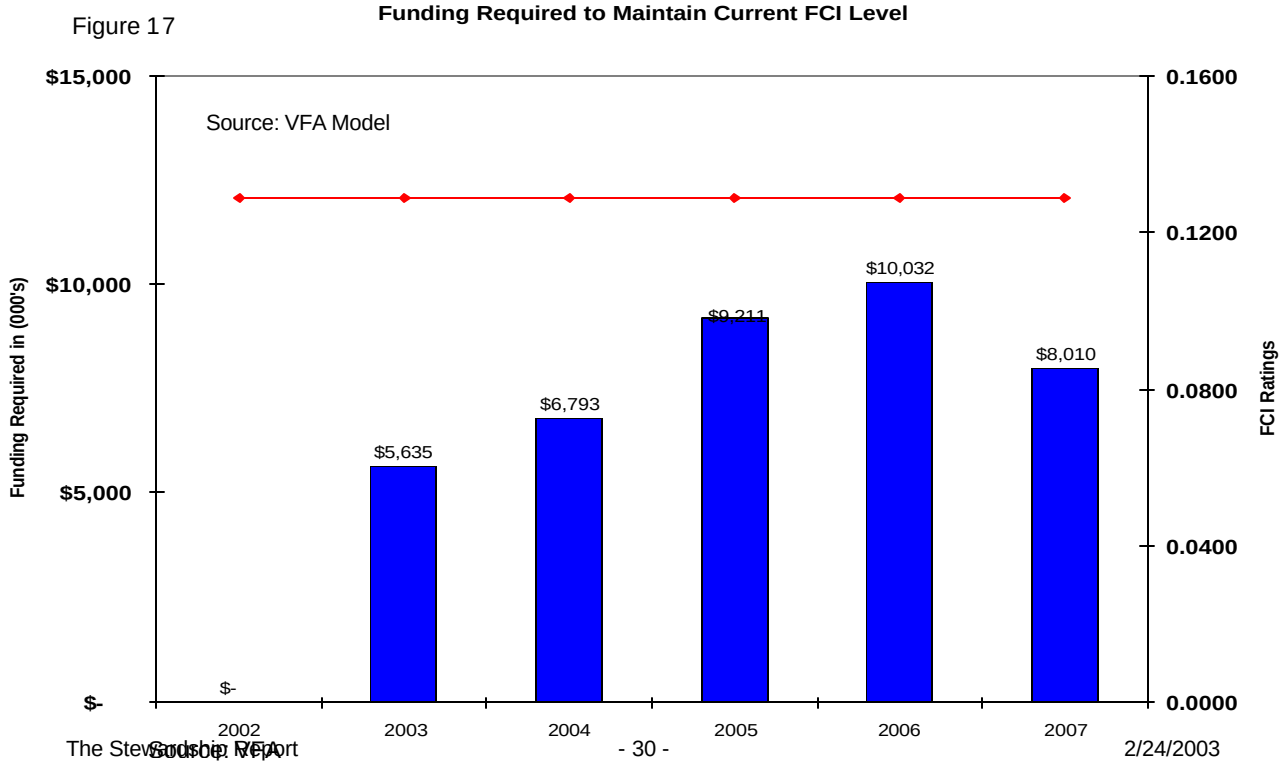
- Inflation rate of 4.7% (based on construction price index)
- Backlog deterioration of 2%
- Replacement value increase of 4.7%
- Various asset & systems life-cycle parameters.

The model forecasts the requirements based on the scenarios presented.

The $8 Million Option - Maintain Current FCI Levels

As discussed in the previous section, maintaining the current FCI level (Figure #17) implies a level of spending of approximately **$8 million per annum. This funding would be dedicated solely to deficiencies reduction and would therefore be incremental to the existing Facilities and Services operating**

Figure 17



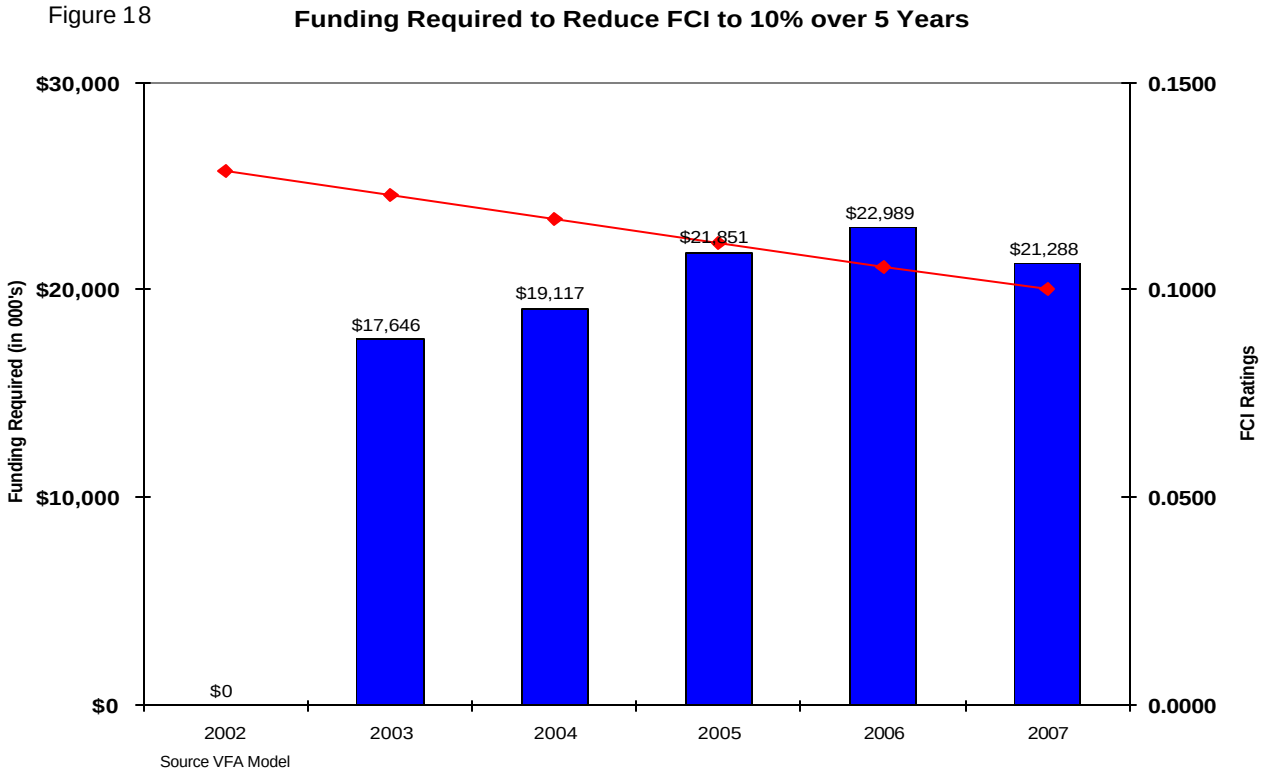
budget. Assuming that FRP funding remains at the current level of $4.3 million for the St George campus, all of which is allocated to deficiencies reduction, this requires an average incremental amount of $3.7 million per year. The actual amounts vary from year to year, as shown on the preceding graph.

Implications
The $8 million funding level will not reduce the current deferred maintenance amount. This total continues to grow due to inflation. The rate of deterioration accelerates as older buildings and machines become more expensive to repair and their life expectancy shortens.

The $20 Million Option - Increase Funding to Reduce FCI rating to 10% over the next 5 years

Another scenario is to face the issue of the total deferred maintenance and to implement the necessary strategies to reduce this account over a period of time. Figure #18 indicates the reduction of the FCI to 10% over a 5 year horizon would require **total funding of $102.9 million** or an average of $20.6 million incrementally per year.

Figure 18



Implications
This funding level would start to reduce the deferred maintenance total and establish the necessary level of funding to improve the St. George campus. This level may not be feasible from either a Government or University perspective. If

the funds were generated within the University, it would impact the Faculty operating budgets and potentially their ability to achieve their academic goals.

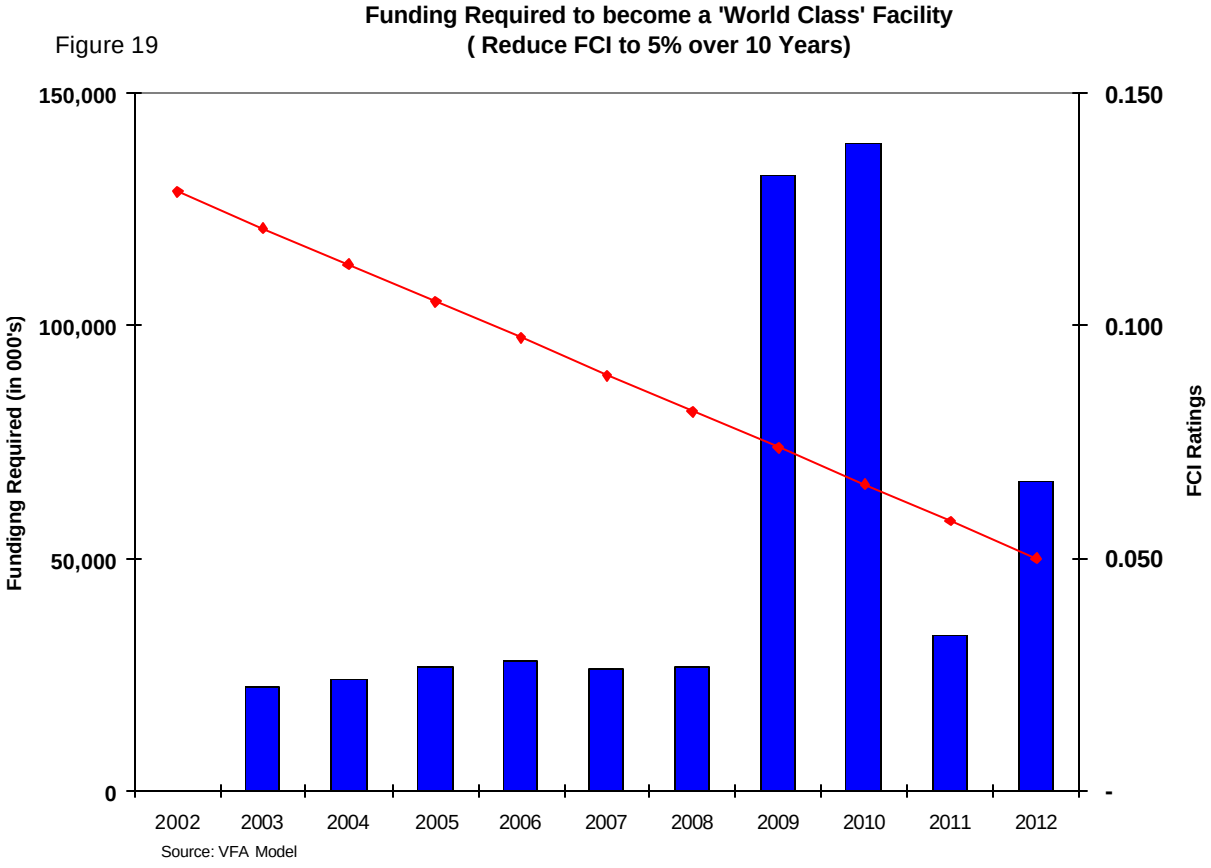
This level of funding would also not catapult University of Toronto ahead of its peers but would simply bring it into line with the newer Canadian universities. University of Toronto's international reputation would not be strengthened as the average FCI for U.S. universities is roughly 7%.

The $50 Million Option - Increase Funding to Create a "World Class" Facility (i.e. Reduce FCI rating to 5%) over the next 10 years

The final option would be to determine the funding requirements to achieve and match the University's goal of being an *internationally significant institution.* Using the FCI model, this implies striving to attain an FCI rating of 5%. The funding requirements are estimated to be **$524.1 million over the ten years**. The model predicts a huge investment requirement in 2009-2010. The investment amount is based on the imbedded assumptions contained in the model such as replacement of wall and floor surfaces on a seven year life-cycle etc. Given that most UofT buildings are well past these assumptions, the investment may be needed earlier. However, the exact requirement will become more accurate when the current program of facilities audits has been completed.

Implications

Figure 19



This investment level would require a major shift in emphasis on how the University funds itself and its partnership with the Government. It would most likely require more private/public partnerships, sale of non-critical assets, and different funding raising approaches.

Conclusion - this will never be a world class university if the toilets don't flush! We do not have, nor do we see the government providing sufficient funds to transform U of T into a world class facility. Even to achieve a level of maintenance spending that permits us to prevent further deterioration requires more funds than are available today.

Next Steps – What is the Plan?

This report has attempted to document, in a comprehensive manner, the stewardship record for the St. George campus based on examining the deferred maintenance issue. It is clear that substantially more detailed analysis could be undertaken to determine the exact state of deferred maintenance, sources of funding & spending patterns at the University. However, the findings contained herein provide sufficient information to outline the justification for moving forward so that the deferred maintenance issue can be handled in a proactive manner. In our opinion, the status quo is not an acceptable route to follow as we would not be upholding the stewardship mandate.

We recommend that the University invest enough to at least maintain the investment in buildings and infrastructure and prevent further erosion of value.

1. On an annual basis, ensure that enough budget is set aside from operating revenues and / or government grants to keep the FCI at its current level of 13.5 This means that on average $8 million per year will have to be spent on deficiencies. Assuming that the provincial government maintains the FRP grant at the current level, the University will have to find an additional $4 million per year.

2. Establish a formal Facilities Renewal program within the University that encompasses:

    - A policy that requires standard assessment of facilities renewal and renovation projects that cost more than $50,000, regardless of the source of funding
    - An integrated process for reviewing and priority setting for all facilities projects (The Accommodation and Facilities Directorate could take this on).
    - An integrated financial and progress reporting system for facilities projects over $50,000

3. Within the funding outlined above, define and approve specified multiple year funding commitments for campus-wide tactical programs to deal with various hazardous materials. These would include:

    - Asbestos removal program
    - PCB transformers replacements
    - CFC chilling unit replacements
    - Major electrical transmission line upgrades
    - Elevator replacements/upgrades
    - Lock replacements

4. Increase the maintenance and cleaning operating budgets to a level that permits some preventative maintenance and more frequent cleaning of things like windows and carpets which if not cleaned deteriorate rapidly and contribute to environmental complaints. Maintenance requires an operating budget of $ $15.83 per square metre; cleaning requires $16.86 per square metre. *This means increasing the current maintenance budget from $9.1 million to $13.3 million and the cleaning budget from $9.9 million to $14.2million.* This would reconcile the impact of inflation and the growth in gross square metres being serviced.

5. Investigate ways to leverage the existing investment in the central utilities infrastructure. Options to be considered will include:
    - Selling or leasing assets;
    - Entering into joint ventures;
    - Expanding our generation capabilities and selling power to the grid;
    - Entering into management contracts.

    The focus will be on generating returns on these assets and/or reducing the risks we are incurring with the run to failure maintenance strategy.

Appendix 1: FCI Rating by Building

Building Name	Usage	Age	Gross Area (m)	Replacement Value	Deficiencies	FCI
001 - University College	Academic/Administration	144	16,922	$40,259,130	$1,953,000	0.05
002 - Hart House	Athletic Facility	83	19,022	$45,255,240	$11,118,125	0.25
003 - Sigmund Samuel Library Building	Library	110	17,818	$24,645,858	$7,846,750	0.32
004 - McMurrich Building	Administration	79	5,400	$8,888,400	$3,049,482	0.34
005 - Medical Sciences Building	Acad & Research	33	72,372	$237,249,167	$22,602,200	0.10
006 - John P. Robarts Library Building	Library	29	80,882	$111,875,982	$27,845,000	0.25
006A - Claude T. Bissell Building	Academic	31	9,298	$14,021,012	$2,950,488	0.21
006B - Thomas Fisher Rare Book Library B	Library	29	6,383	$8,828,966	$2,922,318	0.33
007 - Mining Building	Academic	98	11,064	$16,684,069	$4,422,210	0.27
008 - Wallberg Building	Acad & Research	53	17,160	$56,253,740	$3,564,300	0.06
008A - D.L. Pratt Building	Acad & Research	37	8,130	$26,651,685	$4,413,342	0.17
009 - Sanford Fleming Building	Acad & Research	95	21,833	$71,572,722	$2,259,200	0.03
010 - Simcoe Hall	Administration	78	5,893	$9,699,878	$3,122,162	0.32
010A - Convocation Hall	Academic	95	4,348	$12,028,307	$2,386,355	0.20
011 - Tanz Neuroscience Building	Acad & Research	70	5,421	$17,771,068	$1,106,447	0.06
012A - Munk Centre for Intl Studies Nort	Academic	93	2,264	$3,414,021	$10,000	0.00
012B - Munk Centre for Intl Studies Sout	Academic	93	2,238	$3,374,814	$10,000	0.00
012C - Munk Centre for Intl Studies East	Academic	93	2,276	$3,432,117	$10,000	0.00
014 - Bloor Street West-371	Administration	92	16,568	$27,270,928	$5,276,306	0.19
016 - Banting Institute	Acad & Research	72	9,466	$31,031,347	$7,773,843	0.25
018 - Central Steam Plant	Maintenance	50	3,264	$29,185,741	$1,743,264	0.06
019 - Kings College Circle-21	Administration	44	2,331	$3,836,826	$1,027,692	0.27
020 - Rosebrugh Building	Academic	81	5,628	$8,486,799	$1,463,339	0.17
021 - Engineering Annex	Acad & Research	82	1,941	$6,362,967	$1,212,891	0.19
022 - Mechanical Engineering Building	Acad & Research	93	9,723	$31,873,841	$2,623,000	0.08
023 - University College Union	Administration	117	2,090	$3,440,140	$1,193,267	0.35
024 - Haultain Building	Administration	98	3,258	$4,912,934	$1,089,981	0.22
025 - FitzGerald Building	Acad & Research	75	9,392	$30,788,760	$1,854,000	0.06
026 - Cumberland House	Administration	142	1,581	$2,384,085	$513,762	0.22
027 - Physical Geography Building	Academic	76	1,952	$2,943,538	$553,098	0.19
028 - Architecture Building	Academic	94	6,452	$9,729,358	$2,144,192	0.22
032 - Wetmore Hall - New College	Academic	37	12,919	$13,494,283	$2,925,900	0.22
032A - Wilson Hall - New College	Academic	33	18,360	$27,686,146	$1,091,400	0.04
033 - Sidney Smith Hall	Academic/Administration	41	28,039	$46,152,194	$14,188,900	0.31
034 - Massey College	Academic	39	7,456	$17,738,570	$4,534,571	0.26
036 - Nursing Building	Academic	49	3,131	$10,264,013	$1,898,394	0.18
037 - DDO	Acad & Research	69	2,132	$6,989,101	$435,158	0.06
038 - Woodsworth College	Academic	109	5,332	$12,685,361	$1,200,639	0.09
039 - St. George Street-49	Academic	102	787	$1,186,765	$319,158	0.27
040 - Flavelle House	Academic	100	11,512	$17,359,636	$5,111,674	0.29
043 - School of Graduate Studies	Academic	111	1,139	$1,717,566	$240,186	0.14
047 - Canadiana Gallery	Library	52	2,864	$3,961,485	$823,200	0.21
049 - Aerospace	Acad & Research	43	8,104	$26,566,452	$5,853,563	0.22
050 - Falconer Hall	Administration	101	2,453	$4,037,638	$803,589	0.20
051 - Edward Johnson Building	Academic	42	14,881	$22,439,953	$2,735,600	0.12
052 - Best Institute	Acad & Research	48	6,884	$22,567,060	$4,173,913	0.18
053 - Institute of Child Study	Academic	71	2,489	$3,753,312	$256,880	0.07
054 - Spadina Crescent-1	Administration	127	8,647	$14,232,962	$3,551,617	0.25
055 - Highland Avenue-93	Residential	86	1,777	$1,856,130	$565,918	0.30
056 - Graduate Students Union	Administration	82	920	$1,514,320	$372,774	0.25
057 - Bancroft Building	Administration	76	3,728	$5,621,675	$1,056,341	0.19
061 - Borden Building South	Administration	82	2,443	$3,683,946	$908,050	0.25
061A - Borden Building North	Administration	92	3,425	$5,164,763	$1,086,823	0.21
062 - Earth Sciences Centre	Acad & Research	13	30,345	$99,476,676	$4,521,500	0.05

065 - Dentistry Building	Acad & Research		52	23,898	$78,342,185	$6,224,000	0.08
067 - Huron Street-215	Administration		41	11,572	$19,047,512	$1,524,914	0.08
068 - Clara Benson Building	Athletic Facility		52	9,988	$12,986,398	$3,964,752	0.31
068A - Warren Stevens Building	Athletic Facility		22	19,568	$25,442,314	$3,364,932	0.13
069 - Willcocks Street-47	Administration		92	458	$753,868	$170,843	0.23
070 - Galbraith Building	Academic		42	19,577	$29,521,333	$3,398,500	0.12
071 - College Street-92	Administration		82	592	$974,432	$220,403	0.23
072 - Ramsay Wright Zoological Laborator	Acad & Research		37	22,997	$75,388,535	$7,561,500	0.10
073 - Lash Miller Chemical Laboratories	Acad & Research		39	21,681	$71,074,437	$5,955,000	0.08
074 - Spadina Avenue-581	Administration		97	441	$725,886	$213,577	0.29
076 - Willcocks Street-45	Administration		92	469	$771,974	$153,080	0.20
077 - Sussex Court	Academic		99	3,293	$4,965,712	$1,570,305	0.32
078 - McLennan Physical Laboratories	Acad & Research		35	31,826	$104,331,675	$10,425,100	0.10
079 - F. Norman Hughes Pharmacy Building	Acad & Research		39	6,196	$20,311,665	$5,473,153	0.27
080 - Bahen Information Technology Centr	Acad & Research		0	29,000	$95,067,510	$10,000	0.00
080A - Bahen Underground Parking Garage	Agriculture		0	11,600	$9,104,956	$10,000	0.00
082 - Gage Building	Academic		49	1,353	$3,218,922	$693,169	0.22
083 - McCaul Street-254/256	Academic		90	4,391	$6,621,452	$1,230,938	0.19
084 - CIUT Radio	Other		110	660	$1,570,206	$236,685	0.15
088 - St. George Street-123	Administration		103	790	$1,300,340	$445,701	0.34
089 - Admissions Office	Administration		94	1,802	$2,966,092	$594,790	0.20
090 - College Street-88	Academic		120	1,734	$2,614,803	$208,440	0.08
091 - Studio Theatre	Academic		88	442	$1,222,749	$261,972	0.21
093 - Electrometallurgy Lab	Acad & Research		55	176	$576,961	$115,169	0.20
097 - Centre for Medieval Studies	Academic		99	799	$1,204,860	$380,996	0.32
097A - Queens Park Crsc. E.-39(rear)	Administration		99	165	$271,590	$89,014	0.33
102 - Soldiers Tower		90	78	300	$713,730	$135,565	0.19
103 - School of Continuing Studies	Academic		52	1,706	$2,572,580	$449,550	0.17
104 - Economics Department	Academic		104	2,403	$3,623,628	$1,016,072	0.28
105 - Fields Inst for Research in Math S	Academic		7	3,239	$4,884,282	$200,610	0.04
110 - St. George Street-121	Administration		114	1,244	$2,047,624	$289,019	0.14
111 - Bloor Street West-246	Academic		52	6,698	$10,100,316	$1,925,206	0.19
115 - St. George Street-97	Administration		113	1,039	$1,710,194	$261,479	0.15
117 - W.B. MacMurray Field House	Athletic Facility		106	368	$875,509	$73,591	0.08
120 - Louis B. Stewart Observatory (SAC)	Academic		145	537	$809,775	$223,291	0.28
122 - North West Chiller Plant	Maintenance		31	1,316	$11,767,290	$1,177,023	0.10
123 - Ont. Inst. for Studies in Educatio	Administration		42	38,156	$62,804,776	$14,366,987	0.23
123A - OISE Underg. Parking Garage	Agriculture		33	8,260	$6,483,357	$10,000	0.00
125 - Spadina Avenue-703	Administration		112	705	$1,160,430	$216,720	0.19
132 - Innis College	Academic		26	3,361	$5,068,254	$619,814	0.12
134 - Joseph L. Rotman School of Managem	Academic		7	9,987	$15,059,997	$1,120,143	0.07
138 - Huron Street-370	Academic		118	443	$668,026	$238,350	0.36
142 - Spadina Ave-713	Administration		97	311	$511,906	$161,799	0.32
143 - Koffler Student Services Centre	Academic		96	11,511	$27,385,820	$5,734,843	0.21
145 - Koffler Institute for Pharmacy Mgm	Academic		12	2,118	$3,193,859	$170,232	0.05
146 - Sussex Avenue-40	Administration		112	375	$617,250	$77,897	0.13
153 - Spadina Road-56	Administration		92	899	$1,479,754	$279,552	0.19
171 - Spadina Ave-455	Administration		74	987	$1,624,602	$370,017	0.23
172 - Macdonald-Mowat House	Residence		130	1,514	$1,581,418	$293,422	0.19
174 - College Street-203	Administration		31	1,369	$2,253,374	$541,311	0.24
	103 bldgs.			886,451	$2,013,679,565	$273,165,188	0.136
					$ 1,972,726,533		
013 - Whitney Hall	Residence		71	9,077	$9,481,199	$1,774,808	0.19
029 - Sir Daniel Wilson Residence	Residence		48	9,188	$9,597,142	$912,540	0.10
064 - Graduate House	Residence		2	17,373	$18,146,620	$10,000	0.00
133 - Innis College Student Residence	Residence		8	11,934	$12,465,421	$501,057	0.04
141 - Margaret Fletcher Day Care Centre	Residence		82	410	$428,257	$35,228	0.08
151 - Spadina Avenue-655	Residential		82	1,015	$1,060,198	$254,268	0.24
030 - Varsity Stadium	Athletic Facility		78	5,689	$7,396,838	$2,208,164	0.30

030A - Varsity Arena	Athletic Facility	75	6,560	$8,529,312	$1,941,257	0.23
046 - Varsity Newspaper	Administration	124	724	$1,191,704	$585,019	0.49
064A - Graduate R. Parking Garage	Agriculture	2	5,546	$4,353,111	$10,000	0.00
075 - Faculty Club	Other	106	1,586	$2,610,556	$644,962	0.25
135 - St. George Parking Garage	Agriculture	9	20,168	$15,830,065	$1,249,134	0.08
136 - Spadina Avenue-705	Administration	97	325	$534,950	$157,382	0.29
176 - College Street-243	Administration	79	294	$483,924	$106,908	0.22
179 - Institute for Christian Studies RE	Academic	72	256	$386,038	$82,555	0.21
186 - University Avenue-620	Administration	44	1,114	$1,833,644	$447,312	0.24
189 - Spadina Avenue-720	Administration	94	246	$404,916	$76,495	0.19
				$4,081,139,991		

Note: The buildings that have been audited are highlighted in red.

VFA Building System Categories

STRUCTURE

A	1010	Standard Foundation
A	1030	Slab on Grade
B	1010	Floor Construction
B	1030	Structural Walls
B	1020	Roof Structure

ENVELOPE

B	2010	Exterior Walls
B	2020	Exterior Windows
B	2030	Exterior Doors
B	3010	Roof Coverings
B	3020	Roof Openings

INTERIOR

C	1010	Paritions
C	1020	Interior Doors
C	1030	Fittings
C	2010	Stair Construction
C	3010	Wall Finishes
C	3020	Floor Finishes
C	3030	Ceiling Finishes
E	2010	Fixed Furnishings

ELEVATOR

D	1010	Conveying Systems

MECHANICAL

D	2010	Plumbing Fixtures
D	2020	Domestic Water Dist.
D	2030	Sanitary Waste
D	2040	Rain Water Drainage
D	3010	Energy Supply
D	3020	Heat Generating Systems
D	3030	Cooling Generating Systems
D	3040	Distribution Systems
D	3050	Terminal and Package Uniotes
D	3060	Controls and Instrumentation
G	4010	Electrical Dist.
G	4020	Site Lighting
G	4030	Site Communications
G	9019	Service Tunnels

ELECTRICAL

D	4010	Fire Protection and Standpipe System
D	5010	Electrical Service and Distribution
D	5020	Lighting and Branching Wiring
D	5030	Fire Alarm, Security, Communications

SITE

G	2010	Roadways
G	2020	Parking Lots
G	2030	Pedestrian Paving
G	2040	Site Development
G	2050	Landscaping
G	3010	Water Supply
G	3020	Sanitary Sewer
G	3030	Storm Sewer
G	3040	Heating Distribution
G	3050	Cooling Distribution
G	3060	Fuel Distribution
G	3070	Cogeneration System

Sidney Smith Building #033
VFA Deficiencies Sorted by Building System

STRUCTURE

B1010 floor structural frame	Study - Firestopping	$18,000	
			$18,000

ENVELOPE

B2020 windows	Repair - Caulking at windows and stone interface (Only on tower)	$70,000	
B3010 roofing membranes	Repair - Roof over lecture rooms is leaking.	$38,400	
B3010 roofing membranes	Replace - Roof #302 at 667 sq. ft.	$15,000	
B3010 roofing membranes	Replace - Roof replacement - Phase 1	$550,000	
B3010 roofing membranes	Replace - Roof replacement Phase II	$222,000	
B3010 roofing membranes	Replace - Roof #301 at 5447 sq. ft.	$57,000	
B3010 roofing membranes	Replace - Roof #303 at 11,775 sq. ft.	$110,000	
B3010 roofing membranes	Replace - Roof #304 at 1130 sq. ft.	$16,000	
B3010 roofing membranes	Replace - Roof #701 at 22,001 sq. ft.	$257,000	
B3010 roofing membranes	Replace - Roof #201 at 4327 sq. ft.	$45,000	
B3010 roofing membranes	Replace - Roof #401 at 9117 sq. ft.	$96,000	
B3010 roofing membranes	Replace - Roof #702 at 1227 sq. ft.	$24,000	
B3010 roofing membranes	Replace - Roof #703 at 11991 sq. ft.	$154,000	
B3010 roofing membranes	Replace - Roof #704 at 904 sq. ft.	$20,000	
			$1,674,400

INTERIOR

C1010 fixed partitions	Install - Isolate hangar washrooms from lecture wing.	$40,000	
C1010 fixed partitions	Repair - Interior painting	$55,000	
C1020 doors	Repair - Delaminated wood doors.	$7,000	
C1020 doors	Repair - Replace door hardware (locks, hinges)	$35,000	
C1020 doors	Replace - Door replacement - interior aluminum doors in corridors & stairwells.	$70,000	
C1020 doors	Install - Install metal door grills	$20,000	
C1020 doors	Study - Fire rated door retrofits	$9,000	
C1030 toilet & bath accessories	Replace - Toilet partitions, dispensers, equipment.	$65,000	
C2010 stair treads, risers and landings	Study - Stair enclosures	$43,000	
C2010 stair treads, risers and landings	Study - Stair handrails	$2,000	
C3020 floor toppings and traffic membranes	Repair - Replace floor tile	$25,000	
C3020 floor toppings and traffic membranes	Replace - Replace floor tile - corridors	$40,000	
C3030 plaster ceiling finishes	Replace - Ceilings including suspended, painted systems	$845,000	
C3030 plaster ceiling finishes	Repair - Deterioration of ceiling grilles	$8,000	
E2010 fixed millwork	Repair - Millwork-cabinet fronts deteriorated	$22,000	
			$1,286,000

ELEVATOR

D1010 passenger elevators	Replace - Replace passenger elevators.	$1,000,000	
D1010 passenger elevators	Study - Projected Safety Code Revision upgrades on all 3 elevators	$9,000	
			$1,009,000

MECHANICAL

D3020 equipment & piping insulation	Study - Conduct a study to determine the extent of asbestos in the building.	$25,000	
D3020 equipment & piping insulation	Study - Conduct a study to determine the extent of asbestos in the building.	$25,000	
D3030 chillers	Repair - Major overhaul chiller #2	$50,000	
D3030 chillers	Replace - Replace CFC chillers	$940,000	
D3030 piping & fittings	Repair - Repair control valves	$26,000	
D3030 piping & fittings	Repair - Repair roof drain piping.	$20,000	
D3030 piping & fittings	Replace - Replace 2 HTHW converter	$200,000	
D3030 piping & fittings	Replace - Replace Rad Valves on Heating System.	$106,000	
D3030 piping & fittings	Replace - Replace rad valves phase 2	$150,000	
D3030 piping & fittings	Study - Study to determine soil pipe drainage problems.	$25,000	
D3030 piping & fittings	Replace - Replace valves	$215,000	
D3030 piping & fittings	Replace - Isolating valves, regulator valves, radiator control valves	$35,000	
D3040 piping, duct, & equipment insulation	Repair - Duct work repair and cleaning (overdue)	$95,000	
D3060 energy monitoring & controls	Repair - Overhaul controls HVAC	$25,000	
D3060 energy monitoring & controls	Repair - Overhaul controls HVAC	$25,000	
D3060 heating/cooling air handling units	Repair - Repair Cooling Coils	$16,000	
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000	
D3060 heating/cooling air handling units	Install - Improve air quality	$6,800,000	
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000	
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000	
D3060 terminal devices, sensors	Replace - Replace Terminal Units	$616,000	
D3060 terminal devices, sensors	Repair - Clean induction units	$10,000	
			$9,539,000

ELECTRICAL

D5010 branch circuit panels	Replace - Replace panel boards	$75,000	
D5010 conduit and wiring to circuit panels	Repair - Repair electrical room floor fire rating	$10,000	
D5010 main switchgear	Replace - Replace original high voltage switchboard	$135,000	
D5020 lighting fixtures	Upgrade - Upgrade mechanical room lighting	$5,000	
D5020 wiring devices	Replace - Replace 04.2-010C04 Stand Alone - Motor Starters	$121,000	
D5030 fire alarm systems	Replace - Replace fire alarm system	$200,000	
			$546,000

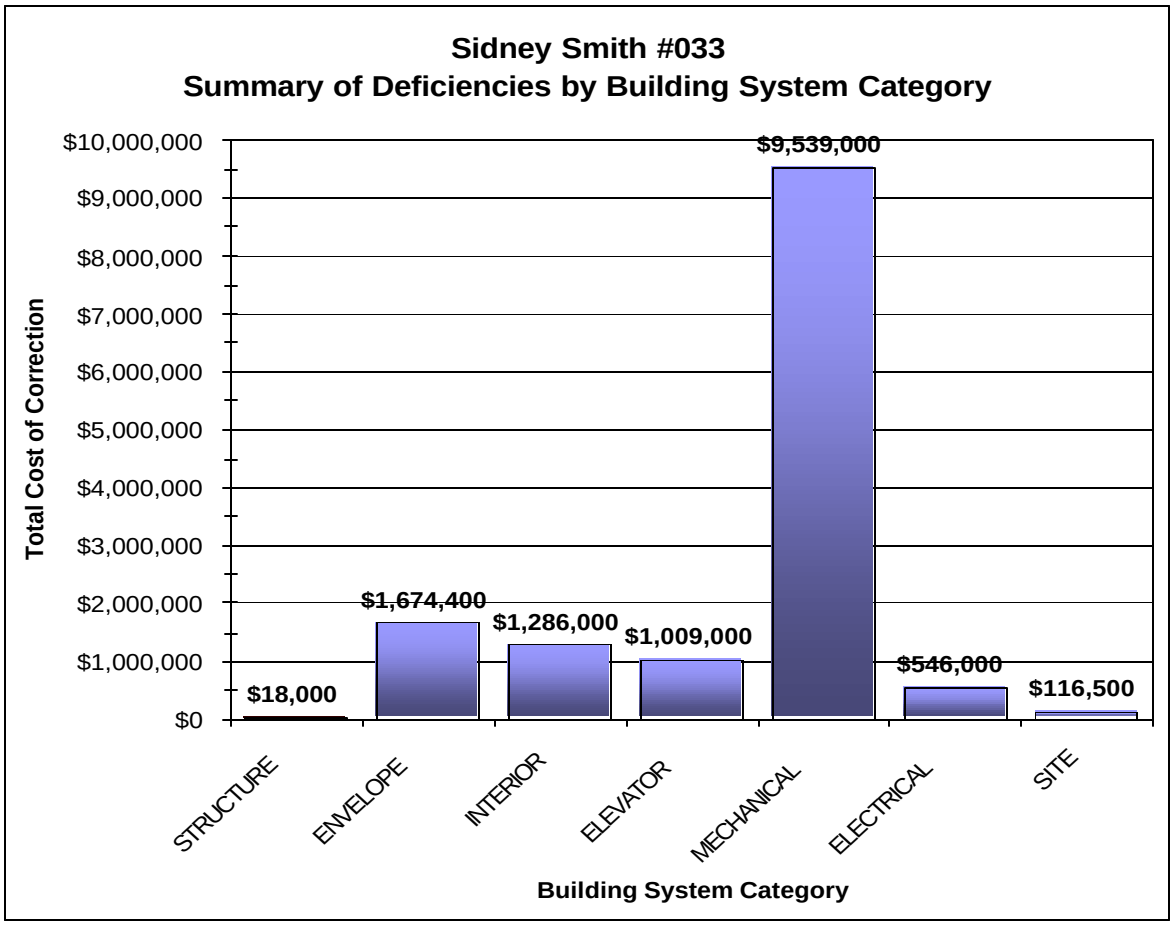
SITE

G2030 exterior steps	Repair - Broken brick swale	$3,000	
G2030 exterior steps	Repair - Site benches need painting.	$500	
G2030 paving & surfacing	Repair - Curbs/sidewalks/pathways have broken	$110,000	

	concrete and rail deterioration.		
G2030 paving & surfacing	Repair - Driveways have potholes and broken curbs.	$3,000	
			$116,500
			$14,188,900

Sidney Smith Summary

STRUCTURE	**$18,000**
ENVELOPE	**$1,674,400**
INTERIOR	**$1,286,000**
ELEVATOR	**$1,009,000**
MECHANICAL	**$9,539,000**
ELECTRICAL	**$546,000**
SITE	**$116,500**
TOTAL	**$14,188,900**



Sidney Smith Building #033
VFA Deficiencies Sorted by Priority

PRIORITY: 1

Prime System	Deficiency Name	Cost
B2020 windows	Repair - Caulking at windows and stone interface (Only on tower)	$70,000
B3010 roofing membranes	Repair - Roof over lecture rooms is leaking.	$38,400
B3010 roofing membranes	Replace - Roof #302 at 667 sq. ft.	$15,000
B3010 roofing membranes	Replace - Roof replacement - Phase 1	$550,000
B3010 roofing membranes	Replace - Roof replacement Phase II	$222,000
C1020 doors	Repair - Delaminated wood doors.	$7,000
C1020 doors	Repair - Replace door hardware (locks, hinges)	$35,000
C1020 doors	Replace - Door replacement - interior aluminum doors in corridors & stairwells.	$70,000
C2010 stair treads, risers and landings	Study - Stair handrails	$2,000
C2010 stair treads, risers and landings	Study - Stair enclosures	$43,000
C3020 floor toppings and traffic membranes	Repair - Replace floor tile	$25,000
D1010 passenger elevators	Replace - Replace passenger elevators.	$1,000,000

D3030 chillers	Repair - Major overhaul chiller #2	$50,000
D3030 piping & fittings	Repair - Repair control valves	$26,000
D3030 piping & fittings	Repair - Repair roof drain piping.	$20,000
D3030 piping & fittings	Study - Study to determine soil pipe drainage problems.	$25,000
D3030 piping & fittings	Replace - Replace 2 HTHW converter	$200,000
D3030 piping & fittings	Replace - Replace Rad Valves on Heating System.	$106,000
D3030 piping & fittings	Replace - Replace rad valves phase 2	$150,000
D3040 piping, duct, & equipment insulation	Repair - Duct work repair and cleaning (overdue)	$95,000
D3060 energy monitoring & controls	Repair - Overhaul controls HVAC	$25,000
D3060 heating/cooling air handling units	Repair - Repair Cooling Coils	$16,000
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000
D5010 branch circuit panels	Replace - Replace panel boards	$75,000
D5020 lighting fixtures	Upgrade - Upgrade mechanical room lighting	$5,000
D5030 fire alarm systems	Replace - Replace fire alarm system	$200,000
G2030 exterior steps	Repair - Site benches need painting.	$500
G2030 exterior steps	Repair - Broken brick swale	$3,000
G2030 paving & surfacing	Repair - Driveways have potholes and broken curbs.	$3,000
G2030 paving & surfacing	Repair - Curbs/sidewalks/pathways have broken concrete and rail deterioration.	$110,000
		$3,231,900

PRIORITY: 2

Prime System	Deficiency Name	Cost
B3010 roofing membranes	Replace - Roof #301 at 5447 sq. ft.	$57,000
B3010 roofing membranes	Replace - Roof #304 at 1130 sq. ft.	$16,000
B3010 roofing membranes	Replace - Roof #303 at 11,775 sq. ft.	$110,000
B3010 roofing membranes	Replace - Roof #701 at 22,001 sq. ft.	$257,000
C1010 fixed partitions	Install - Isolate hangar washrooms from lecture wing.	$40,000
C1010 fixed partitions	Repair - Interior painting	$55,000
C3020 floor toppings and traffic membranes	Replace - Replace floor tile - corridors	$40,000
D3030 chillers	Replace - Replace CFC chillers	$940,000
D3030 piping & fittings	Replace - Replace valves	$215,000
D3060 energy monitoring & controls	Repair - Overhaul controls HVAC	$25,000
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000
D3060 heating/cooling air handling units	Replace - Phased replacement of all coils	$45,000
D3060 heating/cooling air handling units	Install - Improve air quality	$6,800,000
D5010 main switchgear	Replace - Replace original high voltage switchboard	$135,000
		$8,780,000

PRIORITY: 3

Prime System	Deficiency Name	Cost
B3010 roofing membranes	Replace - Roof #201 at 4327 sq. ft.	$45,000
B3010 roofing membranes	Replace - Roof #401 at 9117 sq. ft.	$96,000
B3010 roofing membranes	Replace - Roof #702 at 1227 sq. ft.	$24,000
B3010 roofing membranes	Replace - Roof #704 at 904 sq. ft.	$20,000

B3010 roofing membranes	Replace - Roof #703 at 11991 sq. ft.	$154,000
C1030 toilet & bath accessories	Replace - Toilet partitions, dispensers, equipment.	$65,000
C3030 plaster ceiling finishes	Replace - Ceilings including suspended, painted systems	$845,000
D3030 piping & fittings	Replace - Isolating valves, regulator valves, radiator control valves	$35,000
D3060 terminal devices, sensors	Replace - Replace Terminal Units	$616,000
D5020 wiring devices	Replace - Replace 04.2-010C04 Stand Alone - Motor Starters	$121,000
		$2,021,000

PRIORITY: 4

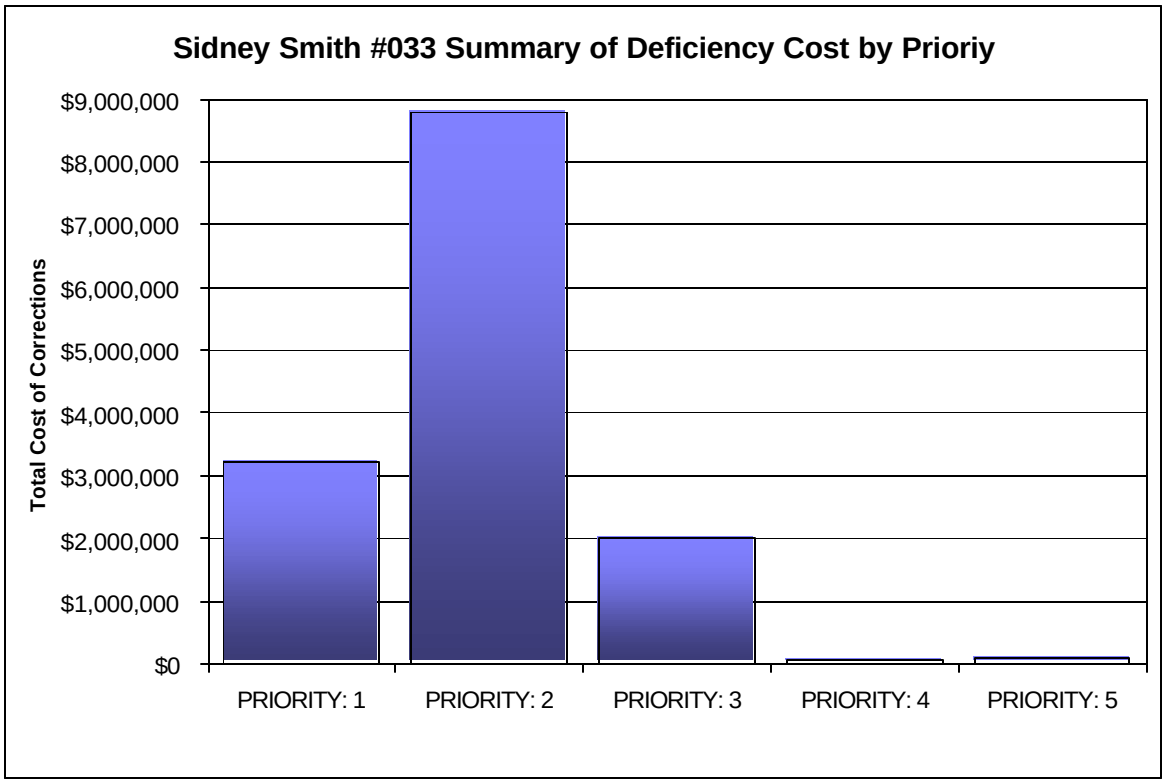
Prime System	Deficiency Name	Cost
C1020 doors	Install - Install metal door grills	$20,000
C3030 plaster ceiling finishes	Repair - Deterioration of ceiling grilles	$8,000
D3060 terminal devices, sensors	Repair - Clean induction units	$10,000
E2010 fixed millwork	Repair - Millwork-cabinet fronts deteriorated	$22,000
		$60,000

PRIORITY: 5

Prime System	Deficiency Name	Cost
B1010 floor structural frame	Study - Firestopping	$18,000
C1020 doors	Study - Fire rated door retrofits	$9,000
D1010 passenger elevators	Study - Projected Safety Code Revision upgrades on all 3 elevators	$9,000
D3020 equipment & piping insulation	Study - Conduct a study to determine the extent of asbestos in the building.	$25,000
D3020 equipment & piping insulation	Study - Conduct a study to determine the extent of asbestos in the building.	$25,000
D5010 conduit and wiring to circuit panels	Repair - Repair electrical room floor fire rating	$10,000
		$96,000
	Grand Total:	**$14,188,900**

Sidney Smith Priority Summary

PRIORITY: 1	**$3,231,900**
PRIORITY: 2	**$8,780,000**
PRIORITY: 3	**$2,021,000**
PRIORITY: 4	**$60,000**
PRIORITY: 5	**$96,000**
TOTAL	$14,188,900


Sidney Smith #033 Summary of Deficiency Cost by Prioriy
Total Cost of Corrections
$9,000,000
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
PRIORITY: 1
PRIORITY: 2
PRIORITY: 3
PRIORITY: 4
PRIORITY: 5

Appendix 2:Projects Funded by Superbuild and FRP

2001 – 2002

St. George Campus **Plant Renewal Projects**	**$000's** **Superbuild**	**$000's** **FRP**
Southeast Campus – Chiller	1,290.00	
Southeast Campus – Substation	1,710.00	
Sid Smith – Replace fire alarm	275.00	
CED – New Hydro feeders and Upgrades relay	700.00	
Southwest campus – Chiller Plant connections	414.00	
MSB – Replace electrical Transformers – substations 9C &D	1,522.00	
Dentistry – Replace leaking oral vacuum piping	60.00	
Campus Wide – Concrete/asphalt road repairs	60.00	
CHD – Reconstruct tunnel – S. Fleming to Fitzgerald	1,047.20	
CHD – Reconstruct tunnel to Knox College	312.10	
CHD – Reconstruct tunnel - Carsbrook Tee to Lillian Massey	566.40	
CHD – New Condensate pump in Mechanical Eng.	150.00	
McLennan Labs – Extend sprinklers in basement to Linac Labs	149.00	
Campus Wide – Water Main system Phase 3	50.00	
Campus Wide – Sanitary and storm system Phase 3	40.00	
CSP – Upgrade Flame scanner, Boilers 1 and 2	81.00	
UC – Waterproof mechanical floor room	15.00	
Canadiana Building – Replace two HVAC units	320.00	
SUBTOTAL PLANT RENEWAL PROJECTS	**8,761.70**	

ST. GEORGE CAMPUS **OTHER PROJECTS**	**$000's** **Superbuild**	**$000's** **FRP**
W. Stevens & Benson Bldg. - Install automatic door openers	20.00	
Architecture – Improvements to Classroom 500	15.00	
Arts & Sciences – NF 003 Auditorium – Upgrade classroom	150.00	
Arts & Sciences – Alumni Hall – upgrade classroom	65.00	

Bissell Bldg. Rm. 116 – Conversion to computer lab	22.00	
Mechanical – MC 10 – Underground Lab improve	70.00	
Mining Rm. MB 326 – Undergrad Lab improve.	40.00	
Galbraith Rm. 308 – Create space for undergrad teaching	41.00	
Galbraith – Rm. 12 (Basement) – renovate space	39.00	
Social Sciences – Computing facility (371 Bloor St. W.)	162.00	
1 Spadina – Renovation to accommodate Fine Art	100.00	
Canadiana Bldg – Create classrooms, test & exam space	220.00	
Rosebrugh – Install data Projection system (RS 208)	19.00	
Wallberg – Install data projection System (WB 130)	21.20	
Mining – Install data projection System (MB 128)	27.50	
Sandford Fleming – Install data Projection system (SF 1011)	17.30	
MSB – Install data projection system (MSB 3153)	19.00	
MSB – Install data projection system (MSB 3154)	19.00	
MSB – Electronic upgrade (MSB 2172)	25.60	
MSB – Install data projection system (MSB 4171)	11.00	
MSB – Install data projection system (MSB 4279)	11.00	
Koffler Pharmacy – Replace Carpet (KP 108)	25.00	
Benson Board Rm & W. Stevens - Upgrade electronic classrooms	40.00	
Mining – Classroom improvements	210.00	
Borden – A.V. equipment services	40.00	
Woodsworth College – New classroom construction Classroom construction	711.40	971.60
Nursing Bldg. – Cody Hall classroom alternations	117.00	
500 University – Occupational/Physical Therapy classroom		700.00
Pharmacy Bldg Bldg – Fumehold	37.00	
SUBTOTAL SUPERBUILD	**2,275.00**	**1,671.60**
OTHER PROJECTS		
ST. GEORGE CAMPUS		

FRP PROJECTS	**$000's**	**$000's**
ST. GEORGE CAMPUS	**Superbuild**	**FRP**
Dentistry – Repair & restore concrete at entrance to building		39.40
Architecture – Replace hydraulic lift	260.00	245.00
Nursing bldg – Install elevator		450.00
Gerstein library – Elevator retrofit		250.00
McLennan Labs – Install access ramp		90.00
Sid Smith – Access to ramp improvements		30.00
ESC – Modification to Room 4001		30.00

Flavelle House – Ventilation system improvements	100.00	100.00
MSB – Refining the anatomy morgue		300.00
Sid Smith – Grad student workspace, Seminar, faculty offices		250.00
Dentistry – Relocate/reconfigure student/staff space		200.00
OISE/UT – Access stairwell from 4th to 5th flr. classrooms		650.00
SUBTOTAL FRP PROJECTS ST. GEORGE CAMPUS		**2,634.40**
TOTAL SUPERBUILD/FRP ST. GEORGE	**11,036.70**	**4,306.00**

SUPERBUILD/FRP UTM CAMPUS	**$000's Superbuild**	**$000's FRP**
South Building – Repair classroom/hallway ceilings	20.00	
South Building – Upgrade Building monitoring system		20.00
Utility Plant – Repair concrete floor	15.00	
Outer Circle Road – Upgrade Roadway catch basins (final ph)	40.00	
South Building – Upgrade fumehoods (Phase 2)	60.00	
South/North Bldgs – Upgrade washrooms		66.50
South Building – Upgrade Emergency lab showers	70.00	
South Building – Upgrade HVAC Eliminators (Phase 2)	68.50	
South Building – Upgrade Ballast Panels		80.00
Outer Circle Road – Repair Exterior Lighting system (Phase 1)	125.00	
North Building/Utility Plant – Upgrade Fire Alarm system	125.00	
North Building – Upgrade HVAC Unit #1	140.00	
Campus Wide – Infrastructure assessment	29.90	
Utility Plant – Upgrade motor Control panels		200.00
South Building – Upgrade Lab bench, Counters/sinks		30.00
South/North Buildings – Painting of classrooms	65.00	
TOTAL SUPERBUILD/FRP UTM CAMPUS	**778.40**	**376.50**

SUPERBUILD/FRP **UTSC CAMPUS**	**$000's** **Superbuild**	**$000's** **FRP**
Science Wing/"H"/"B" Wings – Partial Roof replacement		330.00
Humanities Wing – Delivery tunnel concrete repairs	43.30	15.70
Main Bldg/Science/Humanities Wings – Door/window replac.	120.00	
Main Bldg-Security system upgrade backbone	185.00	
Main Bldg – Expansion Building Infrastructure	50.90	
Main Bldg – Computer Network Upgrade backbone	80.00	
Campus Wide – Utilities infrastructure assessment	21.50	
Main Bldg – Elevator refurbishment	60.00	
All Buildings – Classroom maintenance and upgrades	100.00	
Main Bldg – Floor/ceiling tile replacements replacements	53.10	
TOTAL SUPERBUILD/FRP UTSC CAMPUS	**714.80**	**345.70**
TOTAL U OF T	**12,529.90**	**5,028.20**
Federated Colleges/TST		**966.90**
GRAND TOTAL	**12,529.90**	**5,995.10**

Appendix 3: Asbestos Control at UofT

December 2002

The union members of the Asbestos Task Force called in the Ministry of Labour on October 31 to investigate their complaints that the University was not complying with either the Law or its own policy for managing asbestos.

The Ministry conducted an investigation and issued orders that require us to do the following:

1. comply with our policies forthwith
2. ensure that contractors comply
3. update our records on11 buildings by December 16th
4. inspect the same buildings by December 16th
5. update our records on all other buildings by February 7
6. inspect all other buildings by February 7

Since the order was issued on November 8, we have done the following:

1. met with all project managers in PMD&C to reinforce the need to ensure that contractors are complying and that any who do not are terminated.
2. contacted the supplier who created the original database to get an updated version (new software, the original was in DOS)
3. issued an RFP to several consultants to do the inspections and updates (closes today at 3:00pm)
4. announced the creation of a new position in F&S – Manager Environmental Hazards and Safety. It will be posted within the next two weeks. The strategy will be to hire a contractor to provide 5 asbestos workers to do the clean-up needed to allow us to reduce the requirement for Type 2 procedures in the mechanical rooms. An RFP for this contract is being prepared.
5. Environmental Health and Safety have issued a new protocol for working with asbestos –containing dust in mechanical rooms and pipe shafts
6. requested proposals to clean the tunnels
7. provided the Ministry of Labour (the Provincial Physician) with exposure reports for workers for the last decade. They had claimed not to have received any.

On November 28, the Ministry of Labour returned and issued an additional series of orders requiring us to clean up the tunnels.

1. remove all fallen materials in the tunnels
2. file a plan by December 31, identifying how we will do that
3. repair or remove any asbestos that will continue to fall because of deterioration

4. file a plan by December 31, specifying how we will do that.

The obvious question is “how did we get into this situation?” In my opinion and that of my directors, this is a direct result of cutting maintenance budgets to a level where inspections became a luxury, instead of part of the normal operating procedure. Record keeping faced a similar fate. Priority was given to fixing things that were broken. Environmental Health and Safety faced similar constraints and reacted in a similar manner, doing the best they could with their limited resources. Unfortunately, this also meant inspections were not done, records not updated and training sessions were limited.

The solution to this problem is simple, but expensive.

1. cost to do the inspections and update the records $420,000 (estimate based on responses to RFP for initial 11 buildings)
2. cost to clean the tunnels $500,000 Note that this must be done as soon as possible – until the clean up is complete, all work done in the tunnels, including walking through them, must be done as a type two procedure. This is very expensive and very time consuming. If we face a serious breakdown in the tunnels this winter, we will face delays in fixing the problems that could cause loss of heat in a large percentage of the buildings on campus.
3. cost to clean the mechanical rooms $300,000 (estimate to be confirmed when responses to RFP are received. Note that this will be an annual expense, as we are not removing the asbestos, just containing it.)
4. cost of new manager $ 0 – another position is being eliminated to fund this one.
5. cost of additional training $ 75,000 annually

Funding can be provided in a variety of ways:

1. Funds can be provided as COPC.
2. FRP funds can be used for this purpose. This will mean that other repairs will not be funded (e.g. replacing heating system and garage sprinkler in Lash Miller, removing mould in Zoology, removing PCB transformers in MSB and the NW Chiller plant) Note that these are all also projects that are Health and Safety related – they can be delayed, but not eliminated.
3. F&S can be told to absorb within the existing maintenance budget. This will result in an immediate reduction in other repairs, since we are already operating on a “repair only” basis.

Recommendation

Immediately authorize a budget transfer of $610,000 to fund items 1 through 3 for the balance of this fiscal year.
Recognize that a COPC increase of $610,000 will also be required for fiscal 2003/4 and that an annual amount of $300,000 will be required thereafter.

Appendix 4: Changes in Cleaning Activities

1992	2002
Daily office cleaning	Weekly office cleaning
Daily garbage removal from offices	Weekly garbage removal
Library stacks cleaned daily	Library stacks cleaned weekly
Library carrels cleaned daily	Library carrels cleaned weekly
Research labs cleaned daily	Research labs cleaned weekly
Stairwells cleaned daily	Stairwells cleaned twice per month
Carpets vacuumed daily	Carpets vacuumed bi-weekly
Ordinary vacuum cleaners	Hepa filter vacuums
No re-cycling	Re-cycling part of cleaning

Appendix 5: We don't do windows!

As a result of the years of budget cuts, we have had to cut back on the services offered on a regular basis, so we don't do windows anymore! We don't do them because the equipment needed to access any window higher than 40 feet (accessible by a ladder) is no longer safe to use. It has not been maintained and is rusted or broken. In addition to windows, we also don't do:

- Interior and exterior painting
- Sign making
- Furniture refinishing
- Clean return air and exhaust grills
- Clean windows, window coverings, blinds or drapes
- Install new flooring – patch or repair only
- Brick or stone repairs unless a safety hazard
- No caulking unless leaking
- No roof replacement or maintenance unless leaking

Maintenance operating budgets are intended to fund preventive and predictive maintenance and non-major corrective repairs. Preventive maintenance is similar to changing the oil in the car on a regular schedule so that breakdowns are avoided. Predictive maintenance employs technologies such as thermographic scanning or vibration measurements to delay maintenance until specific operating limits are approached. However, due to the limitations of current funding, preventive maintenance is limited for the most part to equipment of a highly critical nature or with a high repair value such as chillers and turbines. The frequency of predictive maintenance has been significantly reduced.

This strategy has real flaws, swapping immediate operating cost savings for eventual major capital corrective action that will disturb the academic activities carried on in the University's facilities. A case in point: lack of regular maintenance on the insulation of the chilled glycol piping resulted in a mould problem in Zoology that threatened to close the building. So far, almost $300,000 has been spent to bring the situation under control.

Access to buildings is threatened by the fact that we no longer do the important work listed below:

- High voltage sub-station maintenance (i.e. cleaning, monitoring etc) at Mechanical Engineering, North Borden (serves 1Spadina and Koffler Institute of Pharmacy Management); Medical Sciences: Sir Daniel Wilson

(serves 65 St George, UC Union and Whitney Hall); Bora Laskin (serves Flavelle House); Edward Johnson (serves Falconer Hall).

- Infra-red scanning for hot spots in substations and their repairs
- Transformer oil sampling and testing
- Calibration of protective relays
- Repairs of defects reported by meter readers
- Surveying of cables in tunnels
- Testing of phones and alarms in sub-stations
- Cleaning and inspection of electrical rooms
- Testing of transfer switches which enable emergency power to cut in automatically on failure of the main power
- Inspection and clean up of motor control centres, starters and variable speed drives
- Maintenance of pumps instead of repairing after they break
- Duct cleaning despite elevated dust levels from reduced caretaking in buildings. Failure to clean the air distribution system results in clogged controls requiring major repairs to remedy air quality and temperature complaints.
- Steam trap overhauls – as a result energy losses are not caught.
- Cleaning of tunnels (used to employ two men for three weeks each year) – result is asbestos buildup and higher costs (see Appendix 3) Continuous asbestos containment and repairs were discontinued two years ago.
- Inspection of piping is done every four months instead of monthly – leaks are caught later.
- Reduction of pest control in the tunnels
- Cycling of High Temperature Hot Water valves and main steam valves located in the tunnels on a periodic basis. If not done, risk that valves may not function when needed for isolation increases.
- Meter calibration for external customers only – reduces reliability of production and distribution statistics.

And the list goes on….

Appendix 6: Responding to Crises

Events like the Montreal ice storm in 1999 and the actions of 9/11/01 have caused the University to reevaluate how well it is prepared to respond to crises. A task force is examining the way In which crisis management should operate, and individual units are looking at their own plans. Facilities and Services is well prepared to respond to any crisis within the limits of our technology. We can shut off power, gas or water; isolate ventilation; assist in evacuating buildings; respond to fire alarms; control traffic and crowds. However, there are a number of areas where the University is vulnerable:

1. An extended power failure would be a major problem. Without power, the steam plant will shut down, and we will eventually lose heat to the majority of our buildings. Many people assume that because we have the cogeneration plant that we are protected – this is not the case. The cogeneration plant needs a generator to restart in the event of a grid failure. We do not have a generator that is large enough. We do have generators for specific buildings with particularly sensitive labs, but these cannot operate for extended periods of time.

   If the heating fails, damage to the physical plant would be significant, including burst pipes, ice and water damage. Power failure also means loss of many fire alarms, once their battery backups are drained, with the resultant increase in fire risk.

   Insurance will cover the loss to buildings, as it did for McGill in the 1999 storm. The bigger loss will be in research data, animals, specimens and the like, which are not covered by insurance.