Report to the Business Board
Deferred Maintenance
2018

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Introduction - Facilities Condition Assessment Program (FCAP)

Ontario universities have been participating in the Facilities Condition Assessment Program (FCAP) for over 15 years. The program has provided a consistent approach to identify, quantify, prioritize and report on deferred maintenance liabilities. Within FCAP, assets are regularly audited to determine their condition. Deficiencies are identified, quantified, and assigned a priority classification. Buildings are also assigned a numeric score called a facility condition index (FCI) which reflects the building’s relative condition. This index is determined by dividing the cost of deferred maintenance by the current replacement cost of the building – the lower the FCI, the better the condition of the building or portfolio. It should be noted that only academic and administrative buildings have been included in this program.

The strength of the software and the program is in its consistency across the sector in providing data from a macro level. The building audits and database information has not been set up to provide total project costing but rather order of magnitude costs based on building systems through their typical life expectancy. Through the Council of Ontario Universities (COU), we provide an annual report on deferred maintenance across the sector to the Ministry of Training, Colleges, and Universities (MTCU).

More recently, MTCU has expressed interest in harmonizing the database with the recent provincial broader public sector assessments. As such, a working group was struck with COU and OAPPA representatives, as well as those form the College sector and MTCU representatives. Through this work, the FCAP criteria and database was refined and standardized as to allow for more accurate data comparison between the two higher education sectors. These changes are being rolled out during the re-assessment cycle, which has been set at every 5 years. With the new framework in place in 2018, the UofT data set will be completely updated to this new standard by 2023. It is anticipated that this new framework will increase the reported deferred maintenance liability for all three of our campuses. The following is a summary of the material changes in the FCAP framework:

- **Move to the “systems model” approach, versus the “cost model” approach.** This new methodology ensures more detailed and accurate building specific information and costing for:
  - building replacement values,
  - deferred maintenance liabilities identified, and
  - renewal forecasts.

The effect of this change will vary from building to building.
- **Move to total project cost reporting versus construction costs.** Historically the University sector was unique within the broader public sector by not adding soft costs, which artificially lowers the cost to correct each deficiency. When rectifying major building deficiencies, soft costs associated with professional services and consulting are required. The new framework includes a 30% allowance for soft costs for all identified deferred maintenance projects. It should be noted that historically the College sector included a 50% soft cost allowance, hence inflating the deferred maintenance need. As a result, their financial need appeared to be greater than the university sector on a GSM basis. This change will increase the reported total deferred maintenance liability across the University sector. However, it is not anticipated to increase the actual execution budgets as these soft costs were captured in all capital project TPC’s.

- **Addition of Infrastructure to deferred maintenance liability,** such as the Central Steam Plant, underground piping, landscaping and grounds in addition to academic and administrative buildings will need to be audited in the future. This will increase the deferred maintenance liability, as these assets were not reported in the past.

- **Allowance for future cost escalations.** The historic framework did not account for inflation in costs for projects planned in future years. The new framework includes a 2% inflation rate to accommodate for this. Although this will not increase deferred maintenance liability, it will increase the required funding level to maintain FCI.

These changes have been implemented in the 2018 audits. As we audit 20% of our portfolio per year, the impact of the new approach will not be fully realized for five years. In 2018, 24 buildings were audited using this new methodology. The table below summarizes the changes to the key metrics within the FCAP program for those buildings audited.

<table>
<thead>
<tr>
<th></th>
<th>2018 Results</th>
<th>2017 Data</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred Maintenance</td>
<td>$320,756,310</td>
<td>$201,007,102</td>
<td>+59.6%</td>
</tr>
<tr>
<td>Replacement Value</td>
<td>$1,361,457,357</td>
<td>$1,278,460,843</td>
<td>+6.5%</td>
</tr>
<tr>
<td>FCI</td>
<td>23.6%</td>
<td>15.7%</td>
<td>+7.8%</td>
</tr>
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</table>

This increase in deferred maintenance liability is primarily driven by two changes within the new methodology; move to accounting for total project costs versus only construction
costs and assessment of supporting infrastructure. While the replacement value increase was primarily driven by market conditions.

It should be noted that the buildings assessed in 2018 is not a representative sample of our building stock, as it was heavily weighted in laboratory intensive buildings (Lash Miller Chemical Laboratories, McLennan Physical Laboratories, etc.). The impact of the increased infrastructure assessment will have a greater impact on the deferred maintenance projections in those building types as they have an intensive infrastructure demand (i.e. Laboratory, Data Centres, etc.). As such, it is not recommended to use these first year observations to develop projections for the overall campus portfolio.

**University of Toronto Tri-Campus Building Assets**

The current combined estimated replacement value of all academic and administrative buildings at the University of Toronto has risen to $5.5B. The total deferred maintenance liability across all three campuses’ academic and administrative buildings is $831M representing an increase of $113M from the previous year. The University’s combined facility condition index (FCI) has increased to 15.2%, 1.8% higher than last year and still above the average for Ontario universities’ last published average. An FCI above 10% is indicative of a portfolio in “poor” condition.
When we look at the trend of FCIs, two notable increases can be observed. From 2009 to 2012 a new methodology was introduced that caused an increase in the reported FCI. In 2018, as a result of the standardized methodology implemented by the MTCU the FCI at the university increased. This is primarily due to the inclusion of site infrastructure which was excluded previously.

The graph below illustrates number of buildings in the broad categories of “poor”, “fair”, and “excellent” condition for each campus. St. George has the lion’s share of buildings classified in the “poor” category.

![Distribution of Building Condition by Campus](chart)

The Facilities Assessment Program not only identifies deficiencies but also classifies all into priorities ranging from one to three. Priority 1 items are renewals that are recommended to be addressed within the next year. These tend to be assets that are well beyond useful life or are currently failing. Priority two items are recommended to be addressed in 1-3 years and priority three items in the next 3 to 5 years. The graph below identifies the University’s priority one items by campus. The St. George campus has the vast majority of these high priority deficiencies compared the other two University campuses.
Managing Deferred Maintenance – Funding Needs

The chart below illustrates the direct investments made in deferred maintenance over the years at the St. George campus. The DM programs target of maintaining FCI requires an annual investment of $28.7M. In 2017-18, $24M in funding was provided. A funding request was made through the University’s budget process to increase this amount by $1M per year, until the steady state funding level of $28.7M is achieved.

Approximately $7M of the 2018-19 projected DM allocation is from the province’s facility renewal program (FRP) funding. It should be noted that the University has not received this funding as of yet, and there is growing concern that this funding may be impacted by the anticipated provincial budget changes.

Beyond the direct funding noted below, capital projects through the ongoing rehabilitation of buildings such as 230 University Ave, energy retrofit projects funded through the URRF, and more recently the SIF and GGRP program have indirectly eliminated deferred maintenance items in buildings being retrofitted.
FCAP Results Summary: University of Toronto at Mississauga (UTM)

The survey data for UTM now includes 14 buildings with a gross area of 139,152 gross square meters. Total replacement value of the buildings is approximately at $651M, with a deferred maintenance backlog of $72M; an increase of $34M from last year. Over the past year, the campus FCI increased from 6.7% to 11.1%. As can be seen in the following chart, the majority of the deferred maintenance items at the Mississauga campus are priority three.
FCAP Results Summary: University of Toronto at Scarborough (UTSC)

There are 10 administrative and academic buildings at the UTSC campus with a total gross area of 100,245 square meters. The total replacement value of these buildings is estimated at $421M. The total deferred maintenance liability stands at $70M, higher by approximately $15.6M from the previous year. The campus FCI is now 16.7%; an increase of 5% from the previous year. Similar to UTM, the majority of the deferred maintenance items at the Scarborough campus are priority three.
FCAP Results Summary: University of Toronto at St. George

There are 102 academic and administrative buildings at the St. George campus (5 have not been audited) with a total gross area of 1,005,936 gross square meters and a total replacement value estimated at $4.4B. The campus FCI is now 15.6% a slight increase from the previous year’s FCI of 14.6%. The total estimated deferred maintenance backlog is now $689M up from the previous year by $68M.

This graph illustrates the proportion of building ages over time by square footage at the St. George campus. The campus has a significant amount of very old buildings, a majority of post war buildings that need fundamental renewal of building systems, and a smaller percentage of relatively new high quality more complex buildings.

An analysis was conducted that overlays typical renewal periods for key components against year of construction. This analysis looked at; roofs, electrical systems, building envelopes, HVAC, and plumbing. Two primary campus growth spurts were modelled for projected renewal needs, 1965 to 1975 and 2000 to 2010. The results are illustrated in the graph below.
From this, we can see a projected significant renewal need on the horizon. Given the anticipated lifespan of these primary systems, in conjunction with the spike in building growth in tow periods, we are projecting an increase in deferred maintenance needs from 2025 to 2035. We are currently analyzing these needs with audit data, and will be developing a recommended plan to ensure that our deferred maintenance program remains effective as the anticipated renewal needs continue to rise.

The campus map below illustrates the breakdown of the excellent, fair, and poor building conditions on the St George Campus.
The FCAP database also allows us to further break down the condition of the portfolio into 3 priority areas. Over the past few years, the overall liability remains relatively flat particularly in priority one deficiencies. This stability is the result of:

- Direct internal and Provincial FRP funding directed to this issue combined with,
- Indirect impact of several capital building renovation projects and,
- Building energy retrofits financed through the Utilities Reduction Revolving Fund (URRF).
Despite the significant total cost of this liability, an improvement has been made to the priority one needs. These represent the fundamental elements of the building components on the campus. The increase in priority 1 observed in 2018 is a direct result of the change in auditing methodology described earlier. The overall impact of this new methodology will not be known until further implemented.

The deferred maintenance investment for 2018 can be found in Appendix A

Deferred Maintenance – Setting Priorities

In general, priorities for selecting projects are based on four basic principles:
1. Legislation, regulations, or enforcement agency orders requiring the work to be undertaken
2. Risk of failure based on VFA assessment priorities
3. Work that can be coordinated with major renovations to buildings
4. Projects that support academic priorities such as improving the student experience
As part of the ongoing review of the DM process, an advisory group was assembled to review the allocation methodology. A desire to move to an evidence based, risk mitigation approach was expressed, in an effort to ensure the University is addressing the deferred maintenance liability in a manner to ensure that asset portfolio is managed with the long-term interests in mind. As such, a multi-factor weighted approach was selected to address this need. All deferred maintenance priorities are ranked according to:

- **Building Status**: a measure of the future use of the asset (slated for demolition, repurposing, or retain)
- **Physical condition**: Priority based measure developed by the third party auditor
- **Usage**: A criteria the represents the current use of the facility, and priorities academic uses over administrative uses
- **Operational Impacts of Failure**: Prioritizes renewal that if deferred will have significant impact of the university’s operations
- **Fabric impacts of failure**: Prioritizes renewals that if not addressed may have consequential and compounding impacts to other assets (e.g. a roof renewal that if not address can damage the boiler, chiller and other assets)

These criteria are then weighted against each other, providing a renewal priority score for each of the identified needs on campus. By using these measures, we can ensure that we are tackling renewal needs in a manner that addresses our legislative/mandatory requirements all the while ensuring we meet the academic needs of the University.

**Conclusion**

Over the past five years, we can observe a steady leveling off and stability in the priority one deficiencies across all three campuses. The funding we are receiving internally has effectively supported the management of this issue and mitigated the steady decline of our overall asset condition. There is still a need to increase the amount of deferred maintenance funding, in an effort to ensure we maintain our overall FCI on campus. Further to this, special focus should be placed on monitoring the amount of provincial funding received to assist in addressing this effort.

This liability, however, will be with us for a very long time into the future. With the stable and significant funding we are receiving, we will be able to continue to address the condition of our buildings and minimize, although not eliminate, the chance of an unforeseen problem having major consequences to the University’s mission and operating budget.
Appendix A: Major Projects for fiscal 2019 at St. George Campus

<table>
<thead>
<tr>
<th>PROJECT CATEGORY</th>
<th>$ 000’s</th>
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<tbody>
<tr>
<td>Roofing</td>
<td>3,740</td>
</tr>
<tr>
<td>(e.g. Clara Benson, Anthropology, MSB, 21 Sussex, Aerospace, 4 Bancroft)</td>
<td></td>
</tr>
<tr>
<td>Building Envelope</td>
<td>1,454</td>
</tr>
<tr>
<td>(e.g. Dentistry, Galbraith, Warren Stevens, UC)</td>
<td></td>
</tr>
<tr>
<td>Elevators</td>
<td>296</td>
</tr>
<tr>
<td>(e.g. Bissell, Robarts, McMurrich, Sig Sam Library)</td>
<td></td>
</tr>
<tr>
<td>Road Repairs and Grounds</td>
<td>561</td>
</tr>
<tr>
<td>(e.g. irrigations systems, fences, paving, etc.)</td>
<td></td>
</tr>
<tr>
<td>Contribution to the TIL Classroom Project</td>
<td>4,000</td>
</tr>
<tr>
<td>Contributions to Capital Projects &amp; Renovations</td>
<td>4,889</td>
</tr>
<tr>
<td>(e.g. Convocation Hall – Skylight and Dome Repair, Student Commons Renovation, Robarts – Revolving Doors)</td>
<td></td>
</tr>
<tr>
<td>GGRP Projects</td>
<td>10,000</td>
</tr>
<tr>
<td>Contribution towards GGRP projects in numerous buildings</td>
<td></td>
</tr>
<tr>
<td>(e.g. MSB, Central Steam Plant, Physical Geography, Warren Stevens, Clara Benson, Varsity Arena, Sig Sam Library, Building Energy Metering)</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$24,940</strong></td>
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**NOTE: Approximately $5.8M of the anticipated 2018-19 Facility Renewal Program (FRP) funding from the province is included in the above total.**
Appendix B: University of Toronto Facility Condition Index – Dec 2018