Deferred Maintenance @ U of A
Students’ Council December 11, 2018

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Our Infrastructure - The Facts

- ~17.5M ft² of space, more than any other Canadian university.
- 0-110 year old campus
- Mix of simple and complex buildings
What is Deferred Maintenance?

Annual Maintenance Requirements
+ Deferred Action
= Deferred Maintenance

- Deferred Maintenance can look like:
  - Floods in spaces
  - Heating/Power loss in a building
  - Equipment failures leading to impacts on research.
Why should you care about Deferred Maintenance?

- Risk to the Institution, Academic Mission
- Impact to student usage/occupancy
- Impact to research outcomes
- DM is increasing unsustainably. Building system failures will be more numerous, more intense, and more often.
So what is this $1B I read about?

University of Alberta's deferred maintenance bill now tops $800M

JURIS GRANEY  Updated: November 15, 2016

The work will also help address the university’s deferred maintenance bill, which has now topped $1 billion. Sharman said the refurbishment will knock that number down by $21 million.

effects and costlier future repairs. The highest decision-making body at the U of A, the Board of Governors, said at an October 2017 meeting that the university’s deferred maintenance bill is nearing one billion dollars.

Ballooning deferred maintenance costs continue to cause consternation at Alberta’s post-secondary institutions.

University of Alberta deferred maintenance bill nearing $1 billion

JURIS GRANEY  Updated: October 21, 2017
## Current DM vs. 5 Year Projection

<table>
<thead>
<tr>
<th></th>
<th>Supported ($ million)</th>
<th>Unsupported ($ million)</th>
<th>Total ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current deferred maintenance</td>
<td>311</td>
<td>69</td>
<td>380</td>
</tr>
<tr>
<td>5-year projection</td>
<td>888</td>
<td>93</td>
<td>981</td>
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Figures pulled from the Government of Alberta Deferred Maintenance database. Our experience shows that these figures are understated by an average of 40%.
So how did we get here?

- Deferred Maintenance primarily driven by maintenance budget limitations.
- 1% – 4% of building value for maintenance industry standard.
  
  Translated: $63.1M – $252.4M.

- So where are we at?
0.7%
## How is maintenance funded?

<table>
<thead>
<tr>
<th>FY</th>
<th>Infrastructure Maintenance Program ($ million)</th>
<th>Operating Maintenance ($ million)</th>
<th>Total ($ million)</th>
<th>Shortfall to 1% ($ million)</th>
<th>Shortfall to 2% ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/15</td>
<td>19.8</td>
<td>9.3</td>
<td>29.1</td>
<td>34.0</td>
<td>97.1</td>
</tr>
<tr>
<td>2015/16</td>
<td>17.5</td>
<td>9.3</td>
<td>26.8</td>
<td>36.3</td>
<td>99.4</td>
</tr>
<tr>
<td>2016/17</td>
<td>23.6</td>
<td>9.3</td>
<td>32.9</td>
<td>30.2</td>
<td>93.3</td>
</tr>
<tr>
<td>2017/18</td>
<td>34.9</td>
<td>9.3</td>
<td>44.2</td>
<td>18.9</td>
<td>82.0</td>
</tr>
<tr>
<td>2018/19</td>
<td>34.9</td>
<td>9.3</td>
<td>44.2</td>
<td>18.9</td>
<td>82.0</td>
</tr>
</tbody>
</table>
What does our situation look like?
North Campus (Understanding the Bow Wave) FY 17/18

**Pre War**
- Buildings over 50
  - Life cycles of major building components are past due. Failures are possible. Core modernization cycles are missed.
  - Highest risk (11%)

**Post War**
- Buildings 25 to 50
  - Major envelope and mechanical life cycles come due. Functional obsolescence prevalent. High risk (42%)

**Modern**
- Buildings 10 to 25
  - Short life-cycle needs; primarily space renewal. Medium Risk (18%)

**Complex**
- Buildings Under 10
  - Little work. “Honeymoon” period. Low Risk (29%)
Deferred Maintenance and 5 Year Maintenance Projection: By Category

Current Deferred Maintenance

- S4 - Mechanical: $127M (33%)
- S2 - Envelope: $79M
- S3 - Interior: $52M
- S5 - Electrical: $43M
- S6 - Facility Equipment and Built-in Furniture: $41M
- S7 - Site: $19M
- S1 - Structural: $9M
- S8 - Special: $7M
- Other: $2M

Total: $380M (Supported + Mixed + Unsupported)

5 Year Projection

- S4 - Mechanical: $44% (431M)
- S3 - Interior: $153M
- S2 - Envelope: $129M
- S6 - Facility Equipment and Built-in Furniture: $129M
- S5 - Electrical: $93M
- S7 - Site: $25M
- S1 - Structural: $9M
- S8 - Special: $7M
- Other: $2M

Total: $980M (Supported + Mixed + Unsupported)
Current Deferred Maintenance: Where We Are Today

Supported & Mixed Buildings By Category

- S4 - Mechanical: $113M
- S2 - Envelope: $60M
- S3 - Interior: $39M
- S5 - Electrical: $37M
- S6 - Facility Equipment: $35M
- S7 - Site: $15M
- S1 - Structural: $7M
- S8 - Special: $4M
- Other: $2M

Supported & Mixed Buildings By Criticality

- 5 - Critical: 17% (54M)
- 4: 11% (34M)
- 3: 36% (114M)
- 2: 18% (55M)
- 1 - Low: 18% (56M)
So what do we do now?
Improving Maintenance

- Preventive Maintenance – catching things before they fail.
A multi-faceted approach
Into 3 main pillars

- Renew and Repurpose
  - Make strategic investments in our facilities.

- Space Optimization
  - Better utilize our space on campus.

- Asset Reduction
  - Remove infrastructure where renewal and maintenance costs outpace financial sustainability.
Targeted Investment

Central Academic Building
- Built in 1971
- ~160k square feet
- Office and Classroom Space with Basement Cafeteria
- DM: $6.5M
- FCI: 0.19

Humanities Centre
- Built in 1972
- ~160k square feet
- Office and Classroom Space predominantly
- DM: $6.9M
- FCI: 0.14

How can data analysis help us decide?
- Operational Criticality as a first metric
  - Probability of failure
  - Impact of failure on academic mission and building occupants
  - Expected time for recovery
  - Risk of cascading failures

Central Academic $6.5M DM

Humanities Centre $6.9M DM