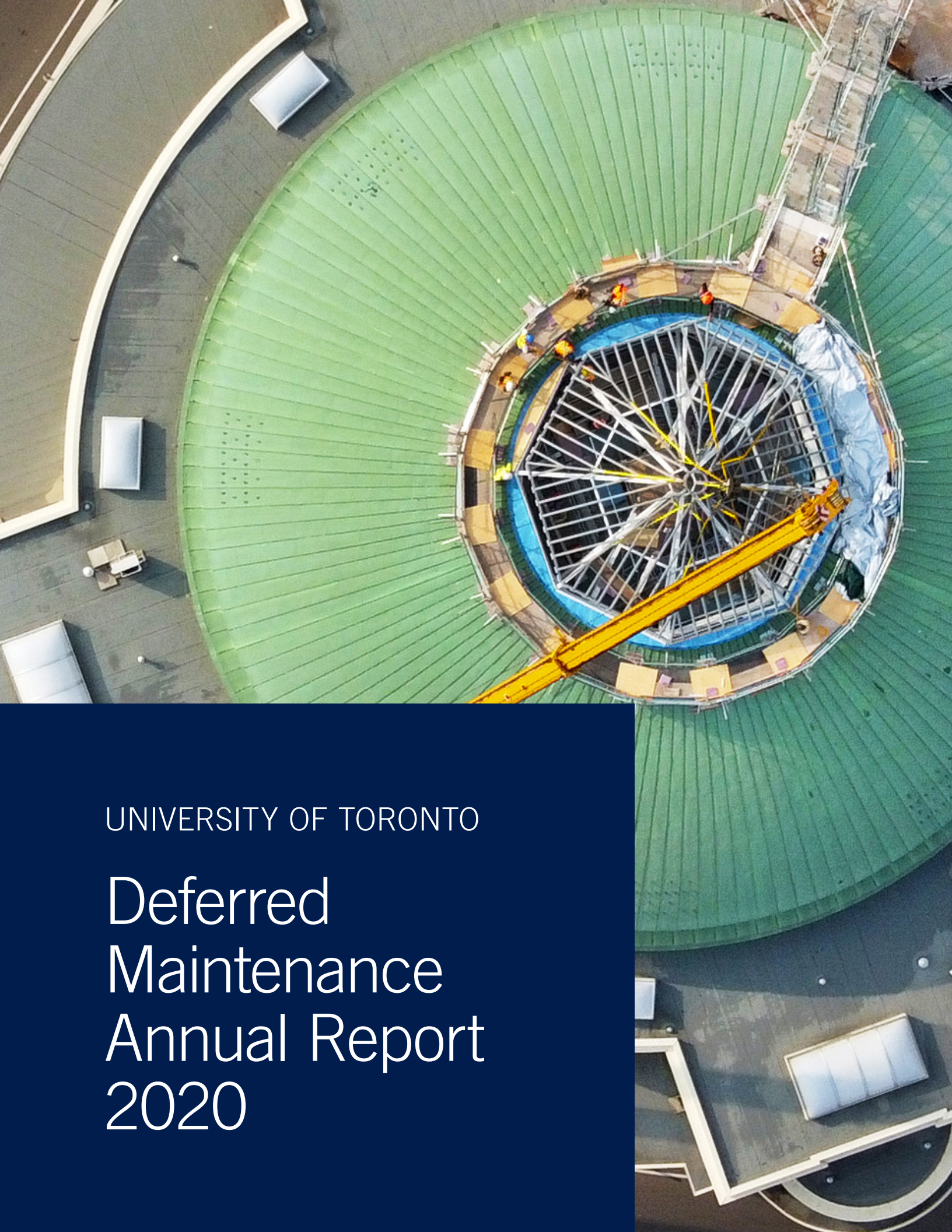

UNIVERSITY OF TORONTO

Deferred Maintenance Annual Report 2020

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Cover image: Convocation Hall, the historic centrepiece of the St. George campus, was fitted with a new glass skylight in 2020 — a once-in-a-century renewal that will help ensure the longevity and grandeur of the 114-year-old building.

Land acknowledgement

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

Message from the Chief Operating Officer

Deferred maintenance is important to our community. Our deferred maintenance program at the University of Toronto continuously addresses a backlog of repairs and renewals all while enabling world-class teaching and research to take place on our campuses.

In 2020, the University invested an unprecedented amount in the renewal of our campuses. By strategically allocating this investment as well as continuing to close the funding gap to maintain the condition of our assets, we can meet the ever-changing needs of our students, faculty, librarians, and staff while minimizing infrastructure risk in a fiscally responsible way.

I am also proud of the leadership role that the University of Toronto is playing on the provincial stage. We have worked tirelessly with the Council of Ontario Universities to proactively engage with all levels of government to recognize the growing deferred maintenance needs of the post-secondary sector.

As a direct result, the provincial government has acknowledged that the University's linear assets, including utilities and roads, are not currently included in the provincial Facility Condition Assessment Program. While adding these assets will increase the University's overall deferred maintenance liability, it is critical to accurately reflect and meet the current and future infrastructure needs of our campuses.

I am pleased to share with the University community our 2020 deferred maintenance report that presents the year's highlights and lays out our plan for the future.

RON SAPORTA
Chief Operating Officer, Property Services & Sustainability
University of Toronto

Three things to know about deferred maintenance at the University:

1. **DEFERRED MAINTENANCE IS IMPORTANT TO OUR COMMUNITY AND OUR ACADEMIC AND RESEARCH MISSION.**

2. **OUR DEFERRED MAINTENANCE BACKLOG IN 2020 WAS $794M.**

3. **WE HAVE A LONG-TERM PLAN TO ADDRESS INFRASTRUCTURE RISK AND MEET THE UNIVERSITY'S NEEDS.**

The University of Toronto has three campuses with some of the most prestigious architecture and beautiful green space in the Greater Toronto Area.

With more than 115,000 students, faculty, and staff using more than 200 buildings spanning an area of 286 hectares, keeping up with maintenance on all of the campus facilities is a difficult task. These time-honoured facilities have significant deferred maintenance needs.

The University's deferred maintenance program systematically addresses many of these needs, including improved electrical and plumbing systems, ventilation, building envelopes, and interior finishes.

Energy conservation projects are also being undertaken to reduce energy costs and create a more sustainable campus.

Our deferred maintenance backlog in 2020 was $794M.

THE UNIVERSITY'S DEFERRED MAINTENANCE PROGRAM

Managing the deferred maintenance backlog for Canada's largest university is a balance of continuously striving to meet the needs of our community while mitigating infrastructure risk. One of the greatest challenges is the strategic allocation of the annual deferred maintenance budget.

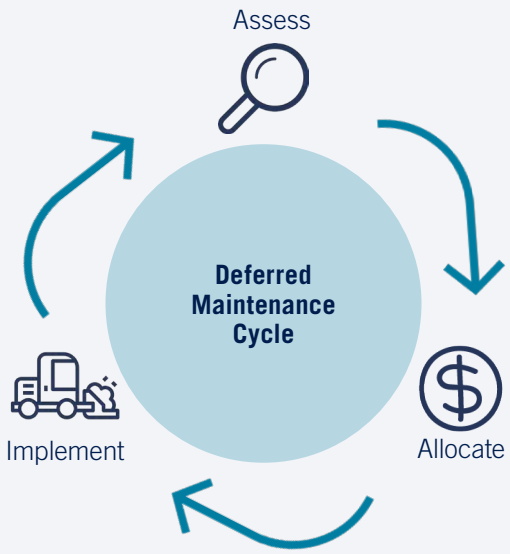
We continue to rise to this challenge. In 2019, the St. George campus developed and implemented a comprehensive model to prioritize funding allocation. This model accounts for different considerations to inform short-term investment in the context of long-term planning for the growth of our campus.

The University's deferred maintenance portfolio is ever evolving. Each year, new building audit data provides updated information on the condition of our facilities, while new property acquisitions are frequently added. The condition of our facilities is continually being improved as deferred maintenance is being addressed by not only operating and fabric projects, but also through the completion of capital projects.

THE DEFERRED MAINTENANCE CYCLE

1. Assess the condition of the University's facilities.
2. Strategically allocate funding based on comprehensive risk scores.
3. Implement projects that address deferred maintenance.

One of the greatest challenges of deferred maintenance is the strategic allocation of the annual deferred maintenance budget.



ASSESSING THE CONDITION OF OUR FACILITIES

The annual program begins with a facility condition assessment that audits and analyzes the physical state of facilities and building equipment. The assessments consider many factors including age, design, physical state, and emerging design standards to identify deficiencies, cost to repair, and urgency of repair.

The condition of every building is audited every five years. With fresh, objective information on 20% of our total building area every year, the audit continuously updates our deferred maintenance dataset and ultimately, our understanding of the state of our infrastructure.

The audit assigns a facility condition index (FCI) score for each building and equipment.

The FCI is a cross-industry standard measure that compares the cost of fixing a building's deficiencies with the cost of replacing it entirely. The FCI reflects the relative condition of buildings and allows the comparison of the condition of different buildings and equipment.

FCI EQUATION

$$FCI = \frac{\text{total cost of existing deficiencies}}{\text{current replacement value}} \times 100\%$$

FCI SPECTRUM

Good	Fair	Poor	Critical
0–10%	11–20%	21–30%	> 31%

A SNAPSHOT OF OUR DEFERRED MAINTENANCE IN 2020

Today, our deferred maintenance dataset is the most accurate we have ever had with all buildings having been audited in the past five years and the most comparable to our provincial peers who are using the same auditor for the first time ever.

In 2020, the current replacement value of all academic and administrative buildings at the University of Toronto decreased to $5.1B.

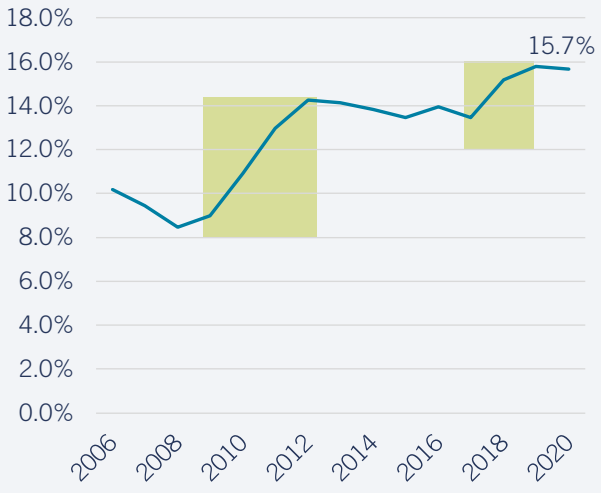
The backlog of deferred maintenance remains high. The total cost of tri-campus deferred maintenance decreased from last year by $79M to $794M. The combined FCI remained stable at 15.7%.

Deferred maintenance is not all made equal. During the audit, deficiencies in facilities are prioritized based on the urgency with which they have to be addressed.

Deficiencies can be assigned one of the following priorities:

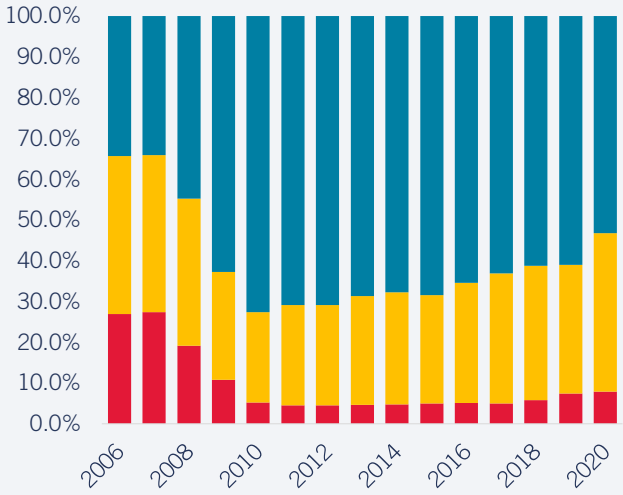
- Priority one deficiencies are recommended to be addressed within the next year. These tend to be assets that are well beyond useful life and/or are currently failing.
- Priority two deficiencies are recommended to be addressed in one to three years.
- Priority three deficiencies are recommended to be addressed in five years.

TRI-CAMPUS HISTORICAL FACILITIES CONDITION INDEX



New methodology introduced in 2009 and 2018

TRI-CAMPUS DEFERRED MAINTENANCE BY PRIORITY



Priority one (recommended to be addressed within the next year)
Priority two (recommended to be addressed within one to three years)
Priority three (recommended to be addressed within five years)

Since 2004, we have replaced over 1.3M square feet of roofing on the St. George campus.

$794M

In 2020, the cost of the University's tri-campus deferred maintenance was $794M.

15.7%

The facilities condition index remained stable in 2020 at 15.7%.

DEFERRED MAINTENANCE BY CAMPUS

The University's deferred maintenance varies across our campuses, reflecting the overall size and condition of local building portfolios.

		ST. GEORGE	MISSISSAUGA	SCARBOROUGH
TOTAL REPLACEMENT VALUE OF ACADEMIC AND ADMINISTRATIVE BUILDINGS		$4.3B for 97 buildings*	$0.5B for 22 buildings	$0.3B** for 10 buildings
DEFERRED MAINTENANCE BACKLOG		$660M ▼ $53M	$73M ▲ $34M	$61M ▼ $62M
FACILITIES CONDITION INDEX	FCI	15.5% ▼ 0.3%	14.6% ▲ 6.6%	20.8% ▼ 2.5%

**Eight of a total of 102 buildings on the St. George campus that have not been audited yet will be audited next year.*
***This figure does not include $182M of 40,043 gross square metres to be audited.*

BREAKING DOWN DEFERRED MAINTENANCE BY PRIORITY

- *Priority one (recommended to be addressed within the next year)*
- *Priority two (recommended to be addressed within one to three years)*
- *Priority three (recommended to be addressed within five years)*

75%

The St. George campus makes up 75% of priority one deferred maintenance.

HOW WE STACK UP PROVINCIALLY AND NATIONALLY

In 2019, the Canadian Association of University Business Officers benchmarked deferred maintenance across Canadian universities. The national survey of facilities data compared the condition of infrastructure with renewal investments across all provinces.

While the University of Toronto's cost of deferred maintenance per square foot is 23% higher than the Ontario average, our deferred maintenance funding lags behind all provincial and national comparators.

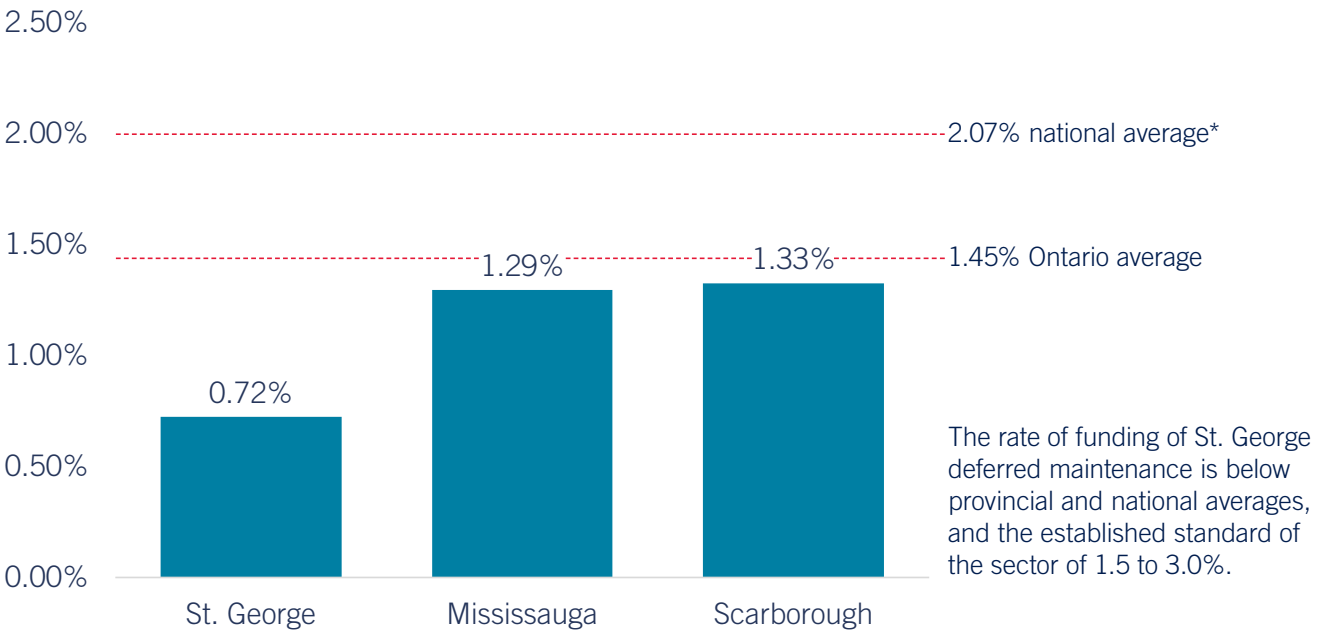
Our backlog is significant and growing. To maintain overall infrastructure health year-over-year and prevent increases in deferred maintenance, a well-established standard for the post-secondary sector is to invest 1.5 to 3.0% of current replacement value into renewals every year.*

Deferred maintenance funding remains a key risk for the University.

Our long-range budget submissions aim to close the gap between current funding and the provincial average within 10 years. This is an ambitious plan that calls for both a near doubling of the current spend and a strategic leveraging of provincial and federal funding programs.

**Association of Physical Plant Administrators of Universities and Colleges."Capital Budgeting Practices in Public Higher Education." January/February 2006. Facilities Manager.*

2019-20 DEFERRED MAINTENANCE FUNDING AS A PERCENTAGE OF CURRENT REPLACEMENT VALUE BY CAMPUS



The rate of funding of St. George deferred maintenance is below provincial and national averages, and the established standard of the sector of 1.5 to 3.0%.

**Canadian Association of University Business Officers. "2019 CAUBO Deferred Maintenance at Canadian Universities." January 2020.*

We have a plan to address the backlog while meeting the University's future needs.

A successful deferred maintenance strategy that meets the University's needs calls for both the right level of infrastructure renewal funding and a strong approach to allocating this funding. We have a plan to address both.

OUR DEFERRED MAINTENANCE FUNDING NEEDS

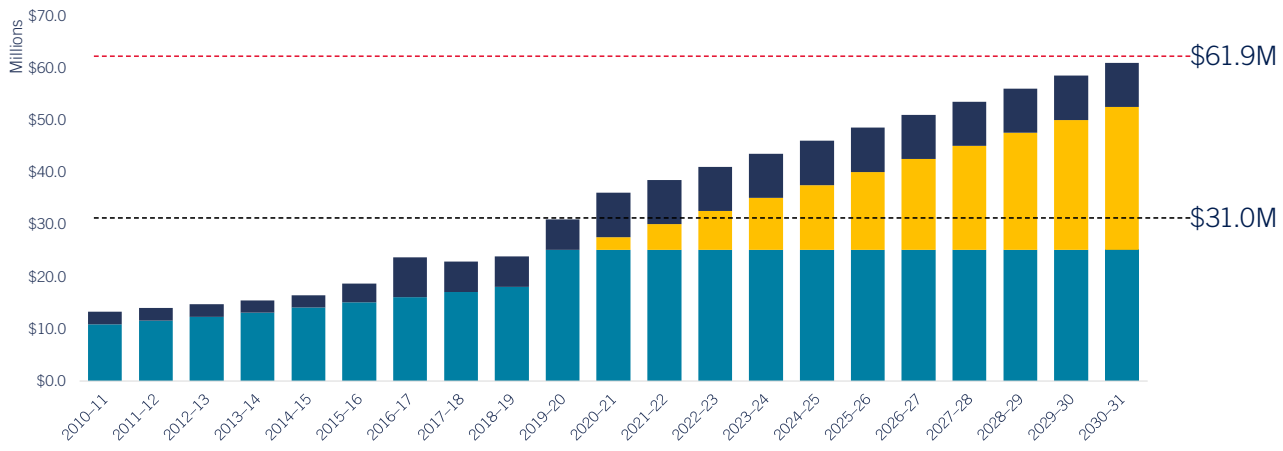
Deferred maintenance is funded by the University with grant support from the provincial government's Facilities Renewal Program. Capital projects also indirectly address deferred maintenance costs through the renewal of buildings.

Recent projects such as the demolition of the Best Institute and the ongoing renovations of the FitzGerald Building and the future Student Commons at 230 College St. have eliminated deferred maintenance needs in these buildings.

To improve the condition of the facilities on the University's largest campus with the most significant deferred maintenance backlog — St. George — and bridge the investment gap with our peers calls for a total annual investment of $61.9M.

CAPITAL PROJECT	DEFERRED MAINTENANCE COSTS ELIMINATED BY CAPITAL PROJECT
Best Institute demolition	$20.2M
Fitzgerald building renovation	$18.5M
Student Commons renovation	$6.8M
TOTAL	**$45.5M**

ST. GEORGE DEFERRED MAINTENANCE FUNDING



23%

The University of Toronto's cost of deferred maintenance per square foot is 23% higher than the Ontario average.

$61.9M

Total annual investment needed to match the 1.45% average level of investment by our peers in Ontario.

HVAC represents 27% of the total deferred maintenance cost for the St. George campus. In 2020, $2.8M was allocated to address deferred maintenance for HVAC systems.

THE ST. GEORGE CAMPUS: A CITY WITHIN A CITY

For the University of Toronto, there is more to the story. Ontario universities have historically only assessed and reported the condition of buildings and building equipment to the provincial government.

While buildings make up the majority of the University's assets, the St. George campus is more than a group of buildings. St. George is a sprawling downtown campus within Canada's largest city. The University owns and maintains — not unlike a municipality — linear assets such as district energy, road, sewer, and watermain systems.

The St. George campus is city with a city. Assessing and reporting solely on our building assets does not reflect our entire infrastructure portfolio and underrepresents our deferred maintenance needs.

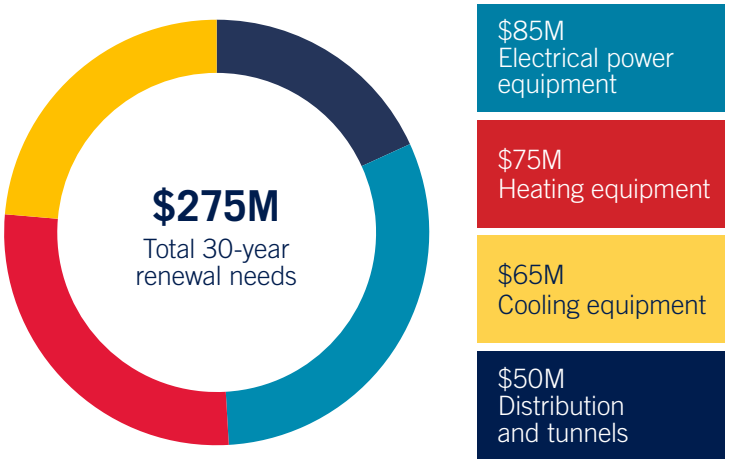
Over the next 30 years, the St. George campus will require $275M to update its aging linear assets — $98M of which will be needed in the next five years.

To address this gap, we developed a bold 30-year sustainable plan for the St. George campus' expansive utility systems.

In the spring of 2021, the University will release a utilities master plan for the St. George campus that will present a detailed roadmap to accomplish three goals:

1. Renew our 120-year-old linear assets that is some of the oldest in the country.
2. Enable the planned growth of our campus that is anticipated to nearly double our total area by 2050.
3. All while building a climate positive campus that reduces more greenhouse gas emissions than the campus emits.

This plan marries our carbon reduction goals with deferred maintenance planning. Projects that are part of this plan both reduce our deferred maintenance costs and our carbon emissions.

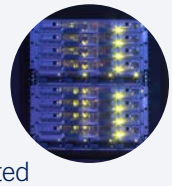


Our utility assets constitute an additional $275M in deferred maintenance need that is not included in the current methodology.

MARRYING CARBON REDUCTION WITH DEFERRED MAINTENANCE PLANNING

Data centre servers require chillers to work round-the-clock to keep temperatures from rising and corrupting the hardware. The 50-year-old chillers cooling our tri-campus data centre are past the end of their useful life.

By revitalizing the chillers with heat pump technology that recovers heat generated by the servers to both heat and cool space, we will dramatically reduce risk to the data centre while eliminating deferred maintenance costs and CO2 emissions.



IMPACT

- $800K of deferred maintenance costs addressed
- 800 tons of CO2 emissions eliminated

120

The University's district energy system is 120 years old and one of the oldest in the country.

$275M

$275M is needed in the next 30 years to update the University's aged utility assets.

St. George's Front Campus will host the largest urban geoexchange system in Canada with more than 370 cylindrical holes drilled 250 metres deep.

STRATEGICALLY ALLOCATING OUR FUNDING

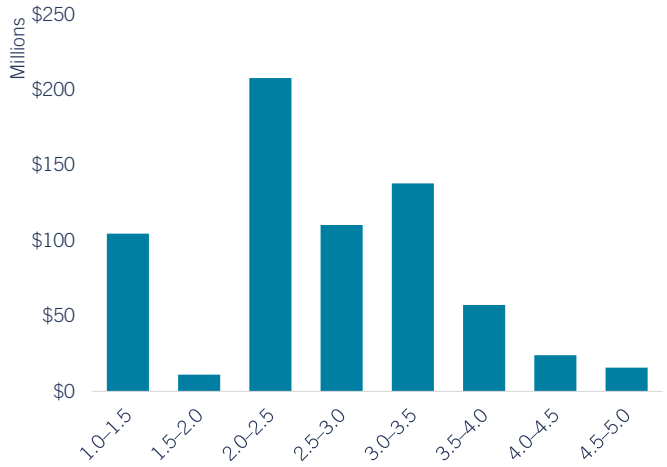
In 2019, a new model was developed and implemented by the St. George campus to strategically prioritize the allocation of deferred maintenance funding.

In addition to facility condition data derived from the audit, we now account for different considerations to better use limited deferred maintenance dollars to balance addressing deferred maintenance needs with meeting the needs of the University community.

The allocation of deferred maintenance funding is prioritized towards systems that have the highest risk score to mitigate infrastructure risk with consideration to building occupants, the University's activities, and the long-term plan for the campus.

We commit most deferred maintenance funding to address the highest risk deferred maintenance on the St. George campus.

2020 DEFERRED MAINTENANCE COST BY RISK SCORE



1.0: lowest risk
5.0: highest risk

ST. GEORGE DEFERRED MAINTENANCE COMPREHENSIVE RISK METHODOLOGY

In this comprehensive model, every year each asset is assigned a weighted risk score of one to five based on the following criteria:

The physical condition of the asset based on the facilities condition audit.

The current use of the facility that prioritizes academic and research uses.

The future use of the building based on the University's capital plan.

If the asset fails, the severity of impact to building occupants.

If the asset fails, the severity of impact to other building systems, where failures that have consequential impacts to other assets are prioritized.

IMPLEMENTING MAJOR PROJECTS FOR FISCAL 2020–21

This year will see a variety of projects completed to address high-risk deferred maintenance.

PROJECT TYPES ON THE ST. GEORGE CAMPUS	ESTIMATE
Contribution to capital projects and renovations (e.g., Convocation Hall dome repair and chandelier replacement, exterior renovations of Flavelle House exterior renovations)	$4.5M
Interior and fabric projects (e.g., fire alarm and sprinkler system upgrades, basement waterproofing at 1 Spadina)	$2.5M
Roofs and building envelope (e.g., external wall repair at OISE, skylight at Rotman, Dentistry Building roof repair)	$17.2M
Elevators (e.g., Ramsay Wright Laboratories, lifts at various locations, etc.)	$2.0M
Road repairs and grounds (e.g., paving, sidewalks, irrigation systems, fences, etc.)	$1.0M
Electrical and mechanical systems (e.g., HVAC upgrades at 500 University, domestic hot water generation at the C. David Naylor Building, replacement of rooftop air conditioning at Earth Sciences)	$2.8M
TOTAL	**$30.0M**

A LONG-TERM APPROACH FOR SUCCESS

A comprehensive risk-based approach provides better actionable insights.

In 2019, the comprehensive model identified the primary building systems across campus with the highest average risk scores. We began improving our preventative maintenance in these areas:

- Roofing: Improved inspections and introduction of infrared scanning
- Fire protection: Review of our annual inspection processes
- HVAC: Enhanced maintenance programs to extend length of useful life of assets
- Elevators: Auditing and monitoring of all elevators
- Electrical systems: Launching a new program with a focus on improving reliability

By investing our deferred maintenance funding in our highest risk assets, we will steadily stabilize the overall risk of our infrastructure portfolio. Already, the risk score and cost of deferred maintenance of the highest risk building systems are starting to decrease. This is a direct result of targeted investments made in 2019 and 2020.

MAKING AN IMPACT ON OUR HIGHEST RISK BUILDING SYSTEMS

BUILDING SYSTEM	2019 RISK SCORE	2020 RISK SCORE	IMPACT TO RISK
Roofing	4.35	4.06	▼
Fire protection	3.7	3.62	▼
HVAC	3.14	3.06	▼
Elevators	2.87	2.83	▼

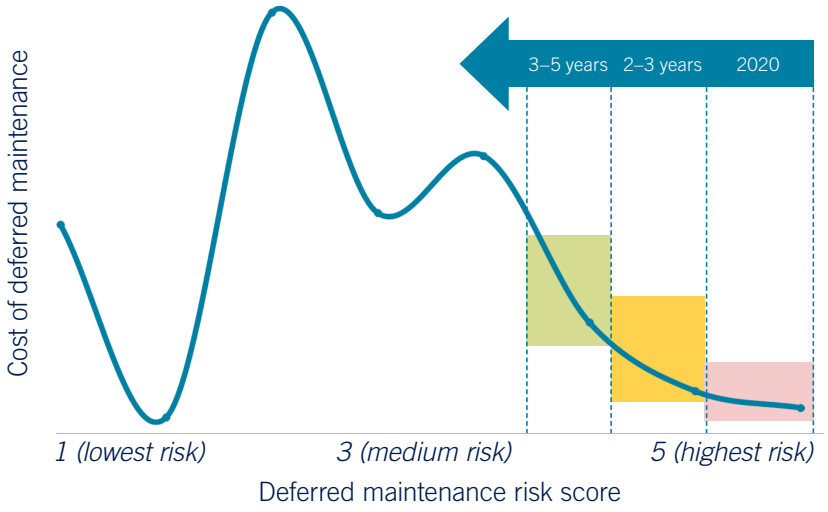
STRATEGIC DEFERRED MAINTENANCE FUNDING

Targeting our deferred maintenance funding strategically year-over-year is a long-term strategy for success.

Today, we are targeting funding to address the highest risk infrastructure. Looking ahead, as we steadily increase deferred maintenance funding while simultaneously reducing risk to the highest risk infrastructure, we will change the risk structure of the entire portfolio of assets on the St. George campus.

In future years, we will begin to fund lower risk deferred maintenance and more comprehensively address the needs of the University community.

OUR LONG-TERM DEFERRED MAINTENANCE FUNDING ALLOCATION STRATEGY



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