



renewal & resilience

deferred maintenance report 2022



UNIVERSITY OF
TORONTO

Facilities & Services

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LAND ACKNOWLEDGEMENT

We wish to acknowledge the 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 the Mississaugas of the Credit. 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.

renewal & resilience

A NOTE FROM OUR COO

Today we are planning the future of the University of Toronto's extensive infrastructure amid changing economic tides and imminent climate change.

Inflation in the construction sector and the growing risk of adverse weather events pose a unique set of challenges—the need to invest more in renewal and resilience with the need to spend fewer, increasingly limited funds. These challenges impact deferred maintenance precisely because deferred maintenance is deferred capital renewal, which requires dedicated capital-level funding and focus.

We have made significant strides since 2019. Provincially, our advocacy led to increased Facilities Renewal Program funding. Internally, we implemented a risk-based methodology to inform objective and fiscally responsible decisions when allocating the deferred maintenance budget.

Today it is more important than ever to hold steadfast to our commitment to grow the deferred maintenance budget every year for the next decade—to ensure a dedicated stream of funding to keep our facilities reliable and vibrant for many decades to come.



Ron Saporta, Chief Operating Officer
Property Services & Sustainability

introduction

The University of Toronto has some of the most prestigious architecture and beautiful urban green space in Ontario.

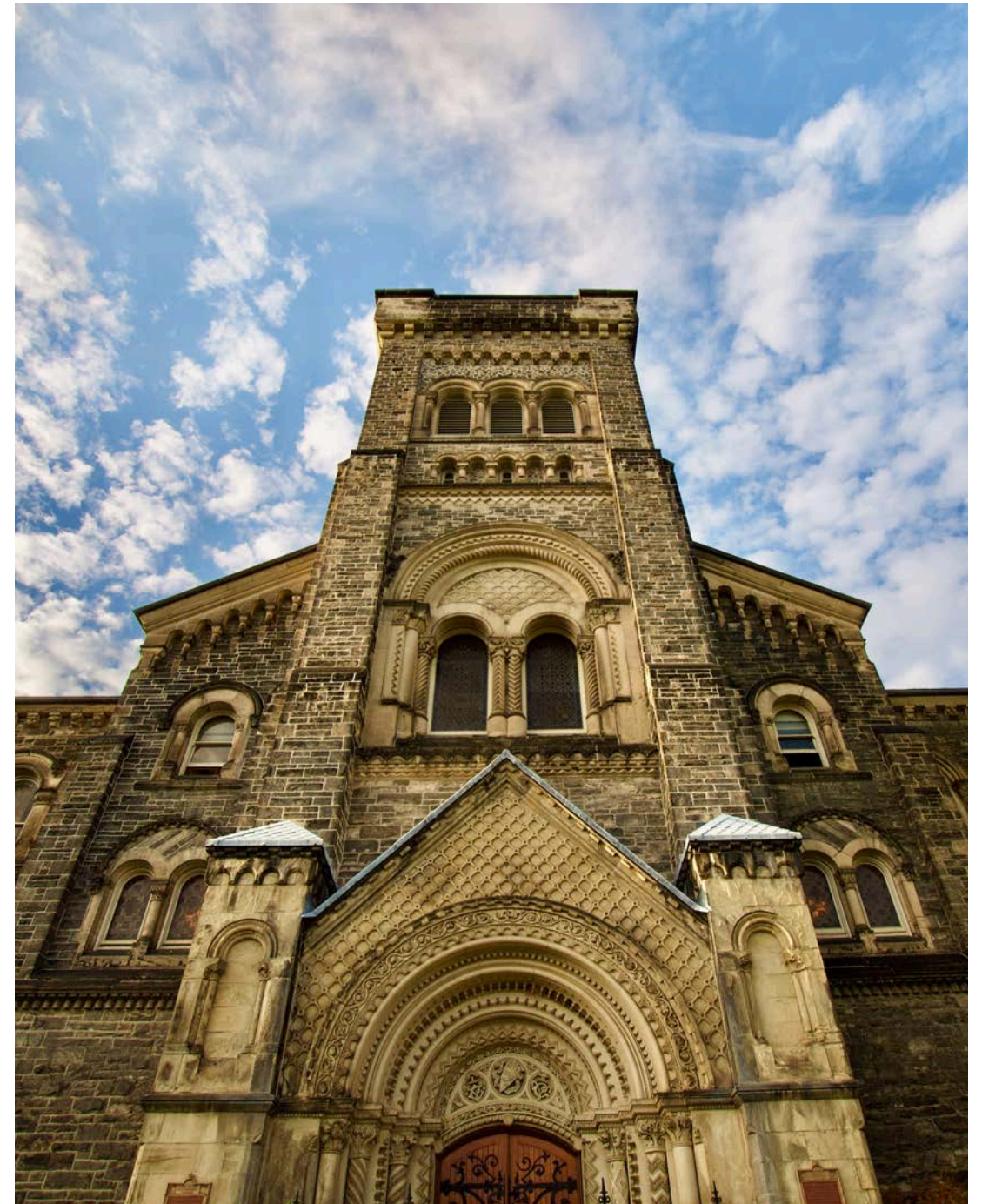
With more than 115,000 students, faculty, librarians, and staff using more than 200 buildings on three campuses spanning 286 hectares—keeping up with facility renewal is a major undertaking.

Our facilities have significant deferred maintenance needs.

As a world-class university, our grounds and spaces must be kept safe, comfortable, reliable, and up to date to enable state-of-the-art research and learning.

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

Deferred maintenance is the postponement of major building and equipment renewal and upgrades from an organization's normal budget cycle due to a lack of funds.



key facts

- Our campus facilities are the backbone of world-class research and teaching operations
- In 2022, our deferred maintenance backlog increased to \$961M
- Climate change and economic volatility make the need to invest in facility renewal more important now than ever



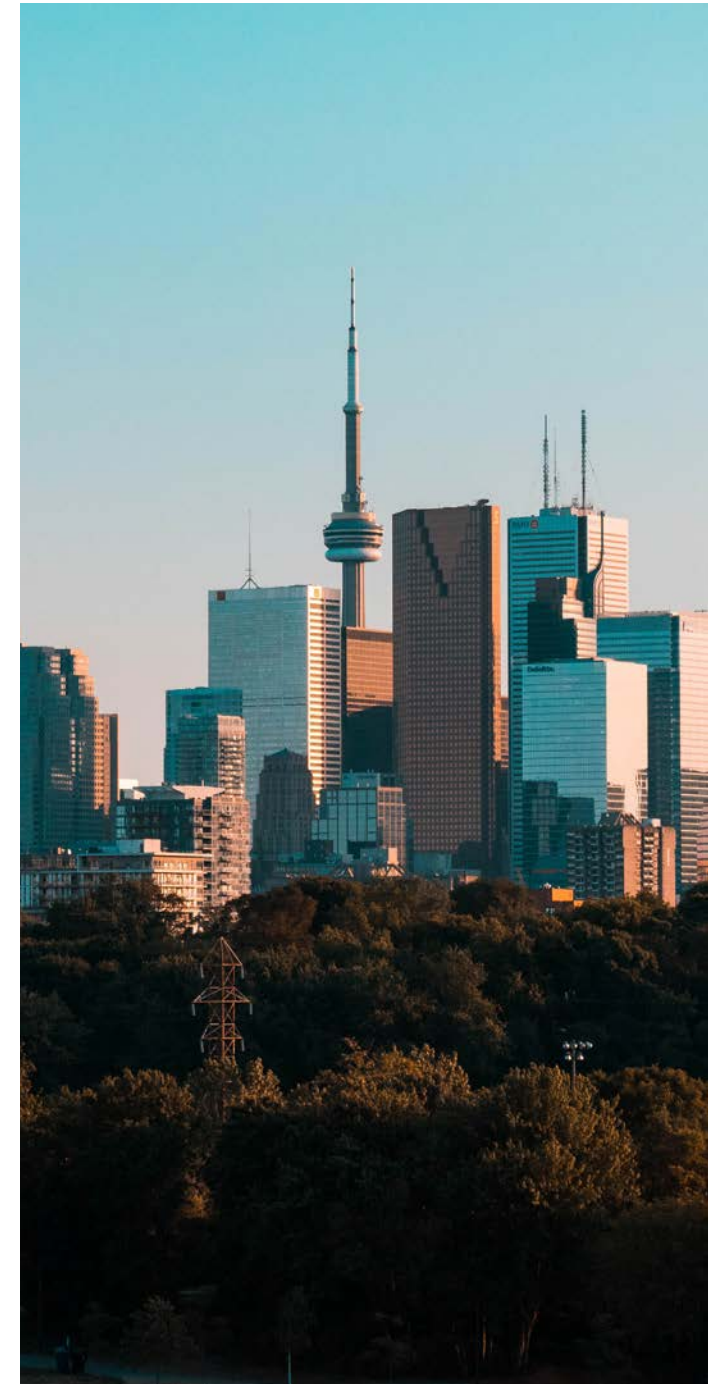
impact of external forces

It is well established that climate change poses a high risk to physical infrastructure. The frequency and severity of extreme heat and precipitation events are increasing. Freeze-thaw cycles are also changing. These adverse weather events can result in both acute hazards and chronic impacts on buildings. These include flooding, accelerated deterioration of infrastructure components, cracks in building materials, and the overwhelming of system capacity.

According to the Financial Accountability Office of Ontario, we can expect a 7% to 29% increase in the costs of operating and maintaining public buildings by 2100. For the university, this represents a total increase of \$20M to \$80M.

At the same time, sweeping economic forces increased the cost of non-residential building construction. In 2022, Toronto experienced the largest year-over-year inflation among Canadian metropolitan areas of 15.6% to 17.5%. The same rates of inflation affect deferred maintenance, which consists largely of major infrastructure upgrades and renewal.

These trends underscore the need to co-plan deferred maintenance with climate change mitigation and adaptation as well as new capital projects to bring down the university's overall infrastructure risk and make the smartest use of limited dollars.



CO-BENEFITS OF CLIMATE CHANGE MITIGATION & CAPITAL PROJECTS

The university can realize sizeable co-benefits for deferred maintenance from both carbon reduction projects and new capital projects.

Project Leap is an ambitious initiative on the St. George campus under the climate positive strategy that aims to cut emissions on campus in half by 2030. This initiative has the potential of addressing \$30M of deferred maintenance by replacing existing chillers, high temperature pumps, boilers, and other equipment with more energy efficient technology.

Construction projects indirectly address deferred maintenance by replacing building elements and systems at or beyond their useful remaining life through demolition and rebuild. The planned demolitions of the Banting Institute, 371 Bloor Street West, and 215 Huron Street have the potential of addressing a combined total of \$57M in deferred maintenance.



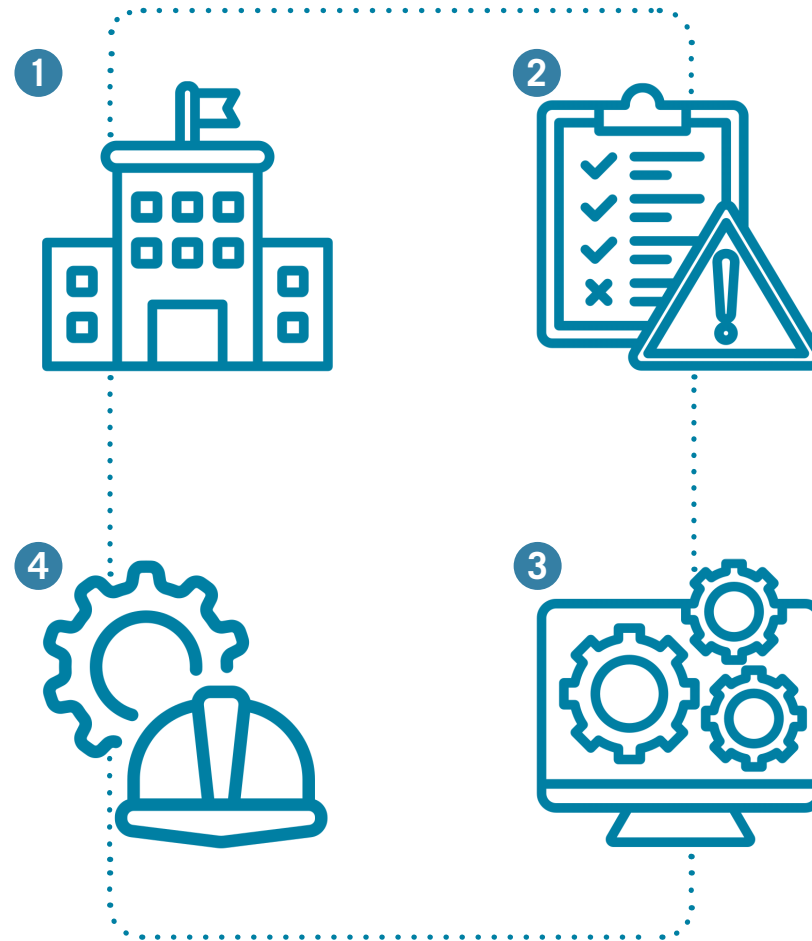
how it works

STEP 1: AUDIT

Each spring, a specialist firm audits the condition of 20% of our building area. The audit considers many factors including age, design, physical state, and emerging design standards. The audit identifies the useful remaining life, estimated cost, and renewal year for each building system. This audit gives us fresh, objective information on the state of our facilities to help us better understand the state of campus infrastructure.

STEP 4: ACT

Each deferred maintenance project is assigned a project manager and implementation begins. The completion of these projects continuously improves the condition of our facilities.



STEP 2: ASSESS

Each fall, we update our deferred maintenance database. Updates include information from the facility condition audit, property acquisitions, changes in how spaces are used, and building systems that have been or will be removed or renewed through capital projects. The remaining life of building systems and costs to repair are also adjusted for the passage of time and inflation. This step ensures that we have an updated and comprehensive deferred maintenance database that will be used for budget allocation.

STEP 3: ALLOCATE

Each December, we assign risk scores to building systems. The scores are derived from the useful remaining life of the system based on the facility condition audit; the current use of the facility, which prioritizes academic and research uses; the future use of the building based on the university's master plan; and the severity of impact of failure to occupants and to other building systems. The highest risk building systems inform the list of deferred maintenance projects for the next year. This ensures that infrastructure risk is mitigated in a fiscally responsible way.



tri-campus deferred maintenance cost

In 2022, the current replacement value of all academic and administrative buildings at the University of Toronto increased to \$5.9B.

The total cost of tri-campus deferred maintenance increased from \$820.5M last year to \$961.3M. The high rate of inflation in the building construction sector has been a significant driver of this growth.

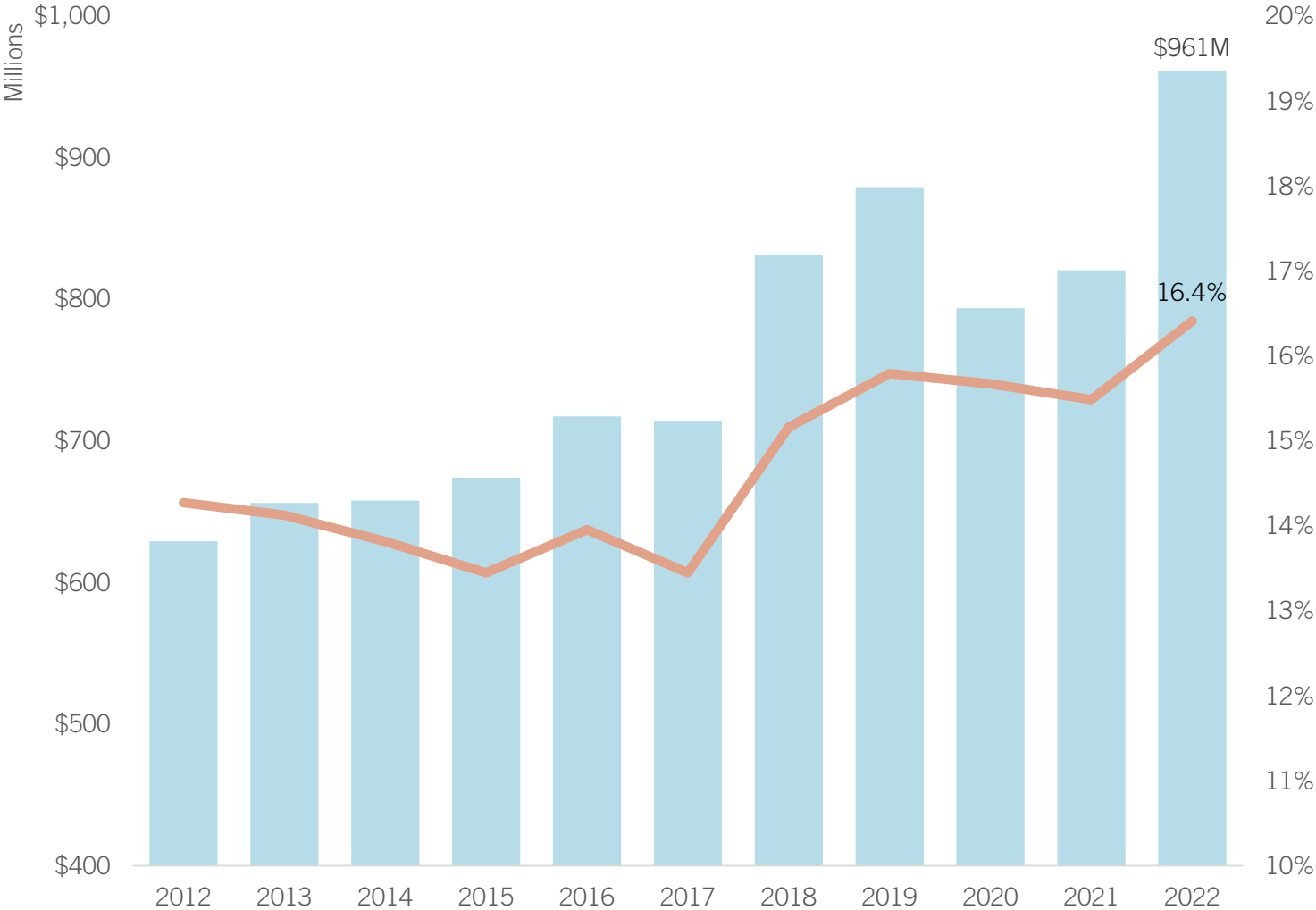
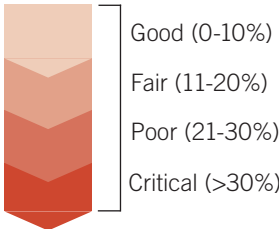
The combined tri-campus facilities condition index (FCI) also increased by 0.9% to 16.4%.

ABOUT THE FACILITY CONDITION INDEX

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. It reflects the relative condition of buildings and allows the comparison of the condition of different buildings and equipment.

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

The FCI percentage is categorized on an industry standard scale ranging from good to critical.



TRI-CAMPUS DEFERRED MAINTENANCE COST VS. FACILITIES CONDITION INDEX

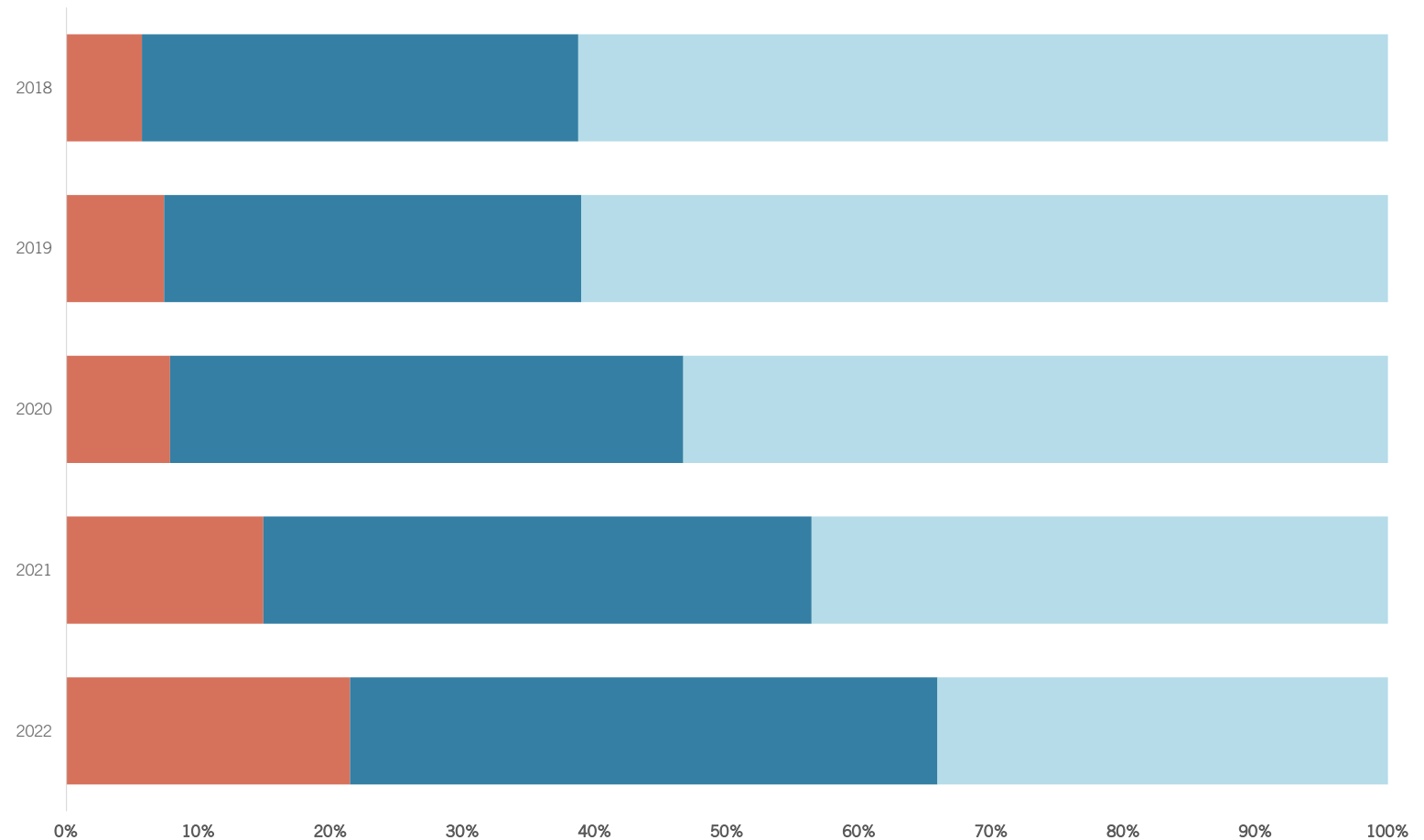
deferred maintenance by priority

Deferred maintenance is not all made equal.

During the annual facility condition audit, deficiencies in facilities are prioritized based on the urgency with which they must 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 DEFICIENCIES BY PRIORITY AS A PERCENTAGE OF TOTAL DEFERRED MAINTENANCE

Priority one Priority two Priority three



2022 tri-campus snapshot

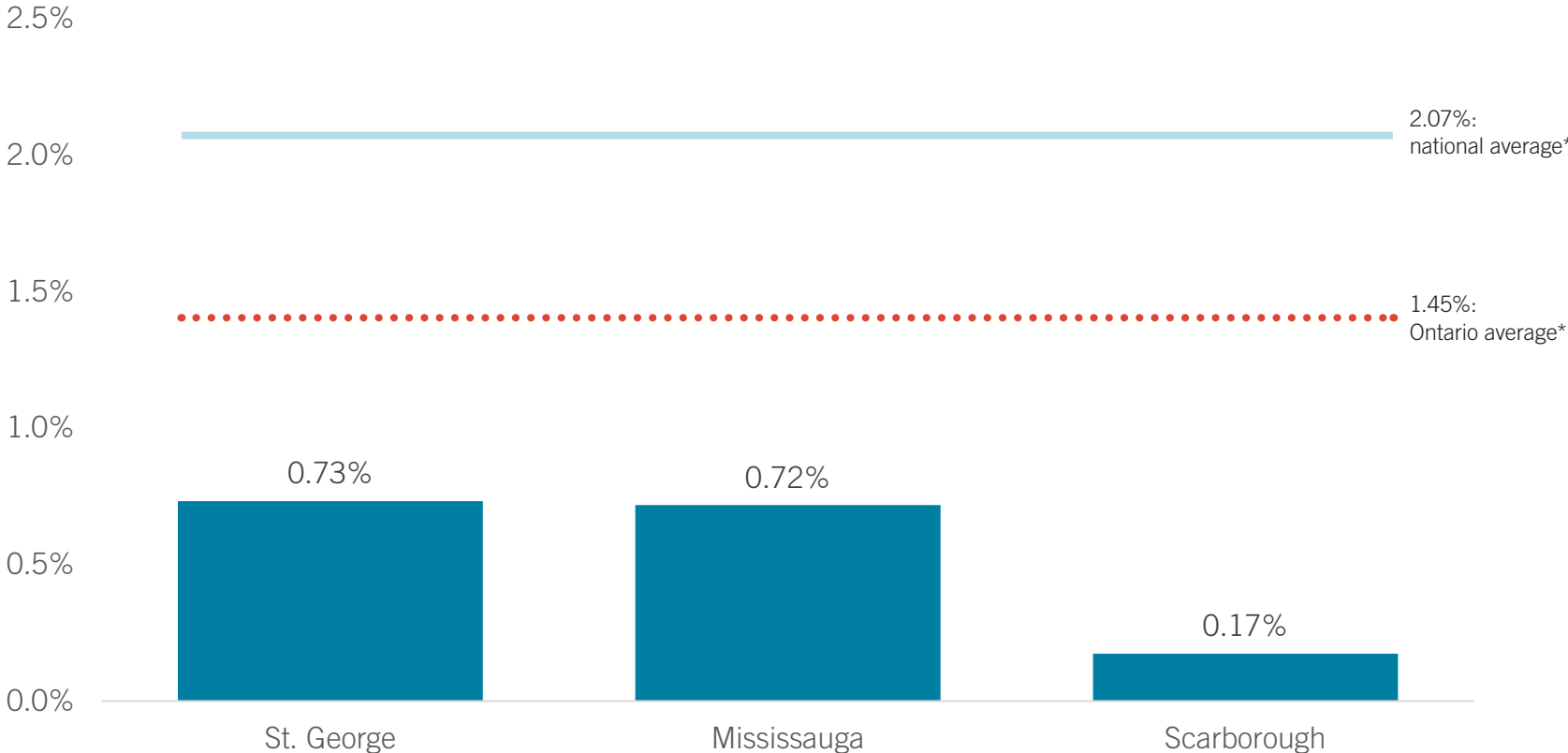
	DEFINITION	ST. GEORGE	MISSISSAUGA	SCARBOROUGH
TOTAL REPLACEMENT VALUE	The cost to replace academic and administrative buildings on campus	\$4.7B for 104 buildings	\$0.6B for 22 buildings	\$0.5B for 9 buildings
DEFERRED MAINTENANCE BACKLOG	The cost of the deferred maintenance backlog	\$777.5M up \$112.1M	\$94.3M up \$22.0M	\$89.5M up \$6.7M
FACILITIES CONDITION INDEX	Compares the cost of fixing a building's deficiencies with the cost of replacing it entirely	16.4% up 1.1%	16.4% up 2.2%	16.7% down 2.6%
BREAKDOWN OF DEFERRED MAINTENANCE BY PRIORITY	<p>Priority one deficiencies are recommended to be addressed within the next year. Priority two are recommended to be addressed in one to three years. Priority three are recommended to be addressed in five years.</p> <p>■ Priority one ■ Priority two ■ Priority three</p>	<p>21% 49% 30%</p>	<p>37% 17% 46%</p>	<p>10% 29% 61%</p>
PRIORITY ONE NEEDS	The cost of priority one needs that are recommended to be addressed within the next year	\$161.6M up 157.9%	\$35.3M down 18.2%	\$9.3M down 42.8%

funding deferred maintenance

Historically, the university's deferred maintenance funding has lagged all provincial and national comparators.

Meanwhile, our cost of deferred maintenance per square foot has been 47% higher than the Ontario average.

This gap is further widened by the significant risk of climate change to physical infrastructure and high inflation in the construction sector that could result in the rate of asset degradation outpacing the rate of investment.



2021-22 DEFERRED MAINTENANCE FUNDING AS A PERCENTAGE OF CURRENT REPLACEMENT VALUE

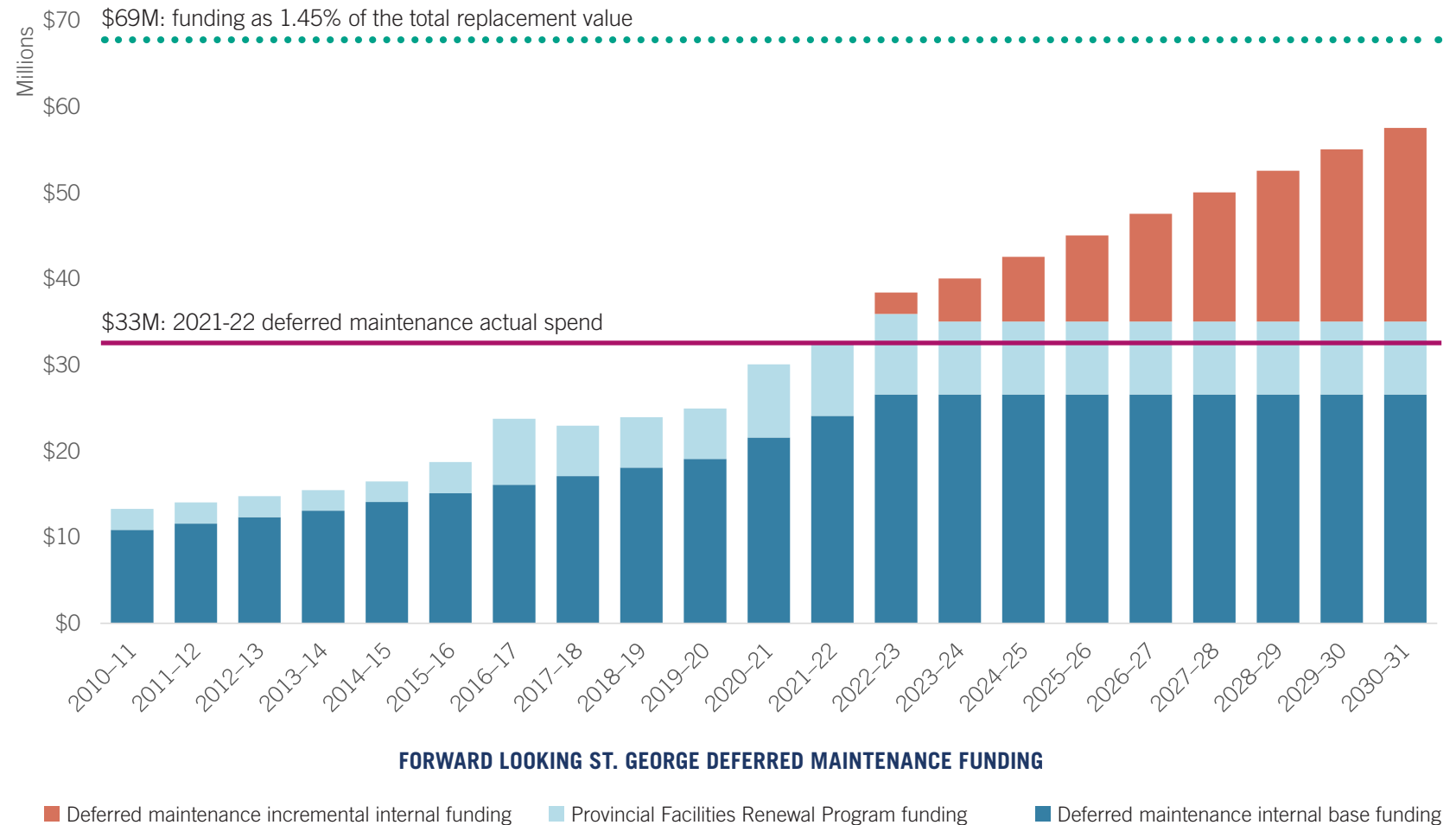
*Canadian Association of University Business Officers. "2019 CAUBO Deferred Maintenance at Canadian Universities." January 2020.

our commitment

Deferred maintenance at the University of Toronto is addressed directly through projects funded by provincial and federal grants, a dedicated internal budget, and indirectly through capital projects.

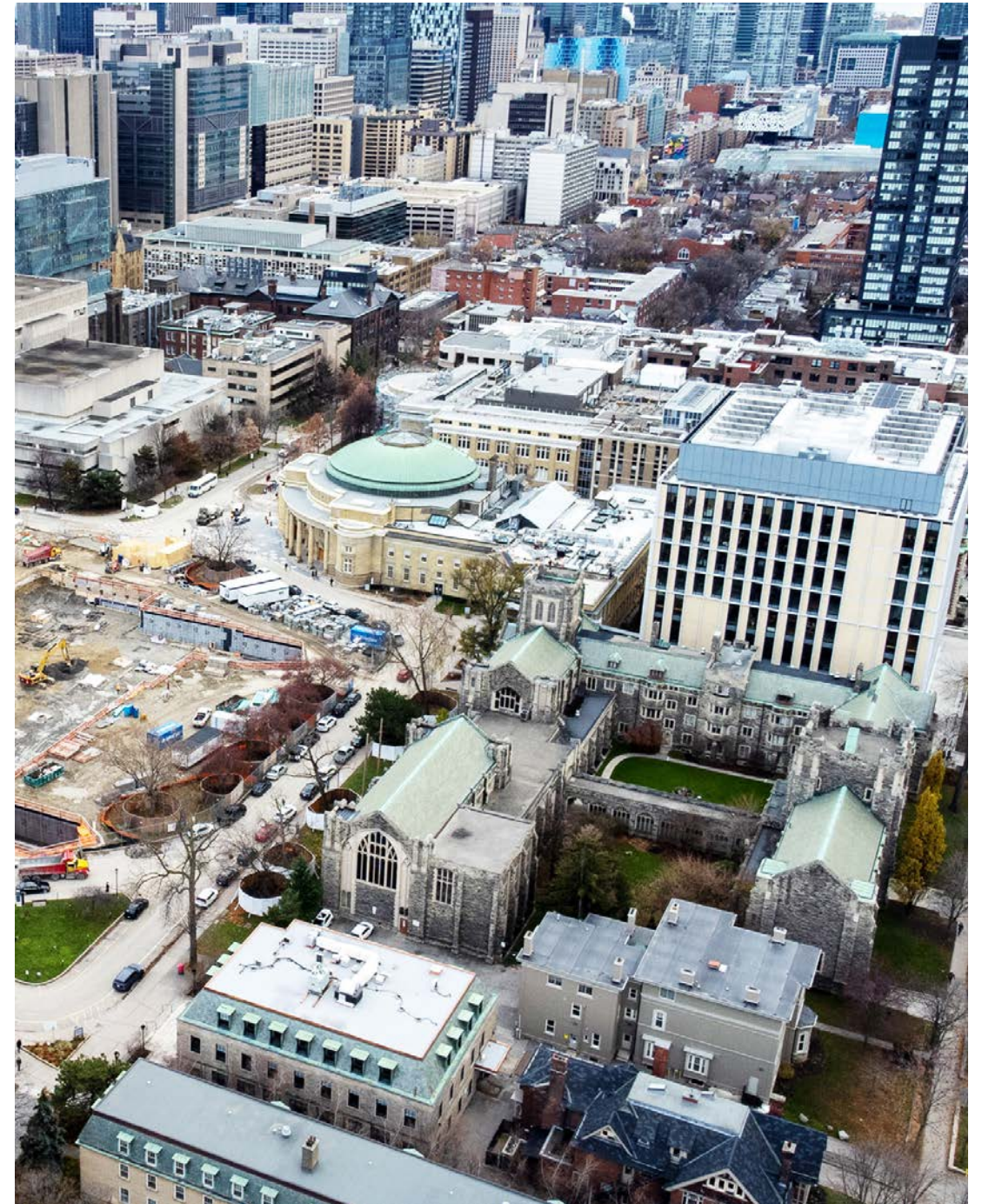
To catch up to the average provincial spend of 1.45% of total replacement value, the university is increasing its deferred maintenance budget every year for the next decade. For the university's largest campus with the most significant deferred maintenance backlog—St. George—a total annual investment of \$68.9M is needed, which represents an increase of \$36.3M.

Growing this dedicated funding stream for renewal is even more important to maintain a vibrant campus experience and reliable and resilient facilities in the context of growing infrastructure risk and inflation.



2022-23 projects

TYPE	EXAMPLES	COST
CONTRIBUTION TO CAPITAL PROJECTS & RENOVATIONS	Convocation Hall dome repair Landmark geoexchange project Learning Space Management classroom upgrades	\$4.0M
ELECTRICAL & MECHANICAL SYSTEMS	Basin and tank replacements Building automation system upgrades New electrical switch gear	\$3.4M
INTERIOR & FABRIC PROJECTS	Fire panel replacements Mould investigation Pipe replacements	\$7.6M
ROOFS & BUILDING ENVELOPES	Roof replacements Exterior painting, wall repairs, and perimeter caulking Noise abatement barrier installation	\$21.0M
ELEVATORS	Major elevator renewal Elevator door upgrades Freight elevator repairs	\$0.8M
ROAD REPAIRS & GROUNDS	Asphalt and concrete repairs Fence repairs Irrigation upgrades	\$0.9M
TOTAL		\$37.7M





project spotlight: classrooms



Before

The primary goal of all deferred maintenance projects is facility renewal—with many projects yielding additional co-benefits for the university community.

Since 2020, the deferred maintenance program has been contributing funding to revitalize Learning Space Management classrooms. This upgrade is part of the larger initiative to transform the instructional landscape by enhancing the intersection of technology and learning space.



After

The renewal applies a consistent and thoughtful redesign approach to aged classrooms with rudimentary furnishings to greatly enhance student comfort, technological capabilities, and the aesthetics of the learning space—all while retaining the unique historic architectural attributes.

Between 2019 and 2022, 15 classrooms in University College and two lecture halls in the Leslie L. Dan Pharmacy Building were upgraded.



After

IMPROVEMENTS

- Comfortable new chairs
- Carpeting, paint, and an accent wall
- Modern furniture with powered desks
- New white boards
- Programmable fob access
- Refinished historic trim, doors, and window frames
- State-of-the-art audio and visual equipment

project spotlight: roofs



Before

Roofs sit at the top of the university's highest risk infrastructure; they are critical to ensuring buildings are operating smoothly and safely. Damaged and leaky roofs could disrupt research and teaching operations, cause damage to expensive interior building systems, and lead to associated fire safety and mould hazards.



In progress

We are significantly reducing the total deferred maintenance liability of roofing. With 150 buildings on the St. George campus, property managers use a robust database to aid in prioritizing roof repairs. They work with a roofing consultant who provides specifications and a scope for tender, inspects the construction, and recommends standards for durable roofs.



In progress

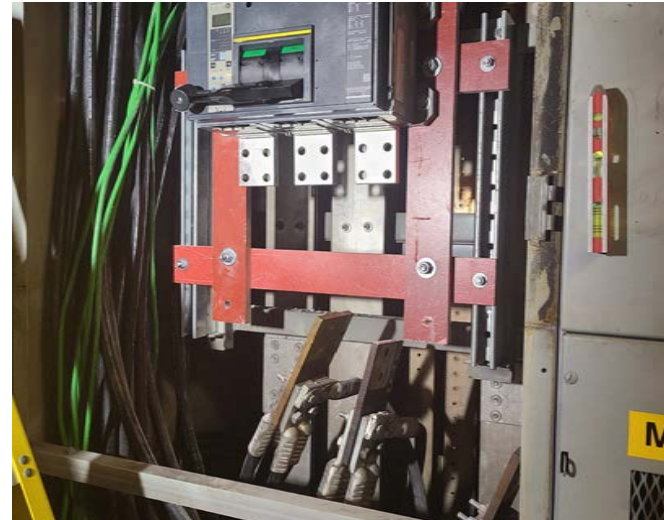
project spotlight: electrical systems



Before

The St. George campus is home to a sizeable electrical generation and distribution system that requires regular maintenance and—as it ages—renewal to ensure safety for maintenance staff and occupants, and a reliable power supply.

The total deferred maintenance liability for electrical systems in 2022 was \$182M, growing by 29% since 2019 as a result of new audit information on the physical condition of electrical infrastructure and inflation increasing costs of renewal.



Before

Electrical systems will be an ongoing focus for the deferred maintenance program.

In 2022, in partnership with Toronto Hydro, the deferred maintenance program funded the construction and energization of a new electrical substation at the Ontario Institute for Studies in Education building. Originally installed in 1969, the substructure was no longer protecting the equipment and maintenance on the existing substation was limited due to safety. Entirely new equipment was installed in a new, better-suited space.



After

IMPROVEMENTS

- Compliance with modern design standard
- Increased reliability and ready availability of replacement parts
- Safe operability and maintainability by staff



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