
2020-21 Capital Budget

Important Note: As with the Operating Budget, the recommendations in this Capital Budget are based on our planning parameters as of late February 2020.

However, recent events (i.e. the sudden and rapid impacts of COVID-19 in Canada) have created turmoil on the economic front – and the implications will continue to evolve over the coming months. The major portion of the projected capital expenditures for 2020-21 are associated with projects already underway (see Table 13, Category 1 – lines 1 through 9). Expenditures associated with the projects in various planning stages (i.e. Category 2 in Table 13) are for the most part minor in nature – and primarily involve only spending associated with planning components, not actual construction. If our fiscal situation changes, we will review and realign the timelines for these projects.

A. The Nature of University Capital Expenditures

The Capital Budget for 2020-21 should be seen in the context of both recent trends in capital spending and the University’s proposed Long-Range Space Plan as outlined in Table 13 of the Operating Budget portion of this document. Table 14 sets out expenditures in the Capital Budget since 2016-17 in nine categories.

Category 1 shows all new construction, while categories 2 to 7 show renovations to existing space. Category 1 expenditures are usually funded from general University funds, the major exceptions being projects funded all or in part from external research grants, private funds, government, student contributions, and Housing construction – the latter being funded from the Housing budget. Categories 2 to 5 are funded primarily from general University funds and government, while category 6 is funded from Housing operations, and category 7 is funded by the particular Ancillary Unit undertaking the work. Categories 8 and 9 involve carrying costs and loan repayments, other expenditures such as purchases of land and buildings, and transfers from the Capital Budget for other purposes. Planned capital expenditures for 2020-21 total \$130.7 million.

Categories 2 to 5 involve **Maintenance, Modernization, and Infrastructure (MMI)** and are eligible to receive funds from the annual MMI transfer from the Operating Budget to the Capital Budget, which is budgeted to remain at \$15.5 million in 2020-21 (\$15.5 million in 2019-20). These expenditures are directed at modification of existing space and renewal and expansion of the utilities and infrastructure of the University.

In planning future expenditures on MMI, it is useful to review the current replacement value (CRV) of our fixed assets on campus. At March 12, 2020, our buildings and infrastructure have a CRV of approximately \$3,061 million, as shown in Figure F:

Figure F
CURRENT REPLACEMENT VALUE (BUILDINGS AND INFRASTRUCTURE)

		CRV (\$M)	Square Metres	Major Buildings
1	Major Non-Residential Buildings	2,101	561,808	72
2	Utilities and Infrastructure	163		
3	Subtotal, Eligible for MMI	2,264	561,808	72
4	Housing	545	257,546	14
5	Other Ancillary Buildings	252	70,559	11
6	Total	3,061	889,913	97

At March 12, 2020, the University had approximately 562,000 gross square metres in 72 major non-residential buildings, ranging in size from the Cronyn Observatory (338 square metres) to the Social Science Centre (33,757 square metres). Those non-residential buildings, and \$163 million in utilities and infrastructure, are the physical assets generally eligible for MMI expenditures. The University also has 258,000 square metres of Housing space in ten major undergraduate residences, four major apartment buildings, and numerous smaller buildings for graduate students in Platt's Lane Estates. Other than Housing, there are many buildings which are operated largely or entirely as ancillaries: Western Student Recreation Centre, Thompson Recreation and Athletic Centre, TD Stadium, Boundary Layer Wind Tunnel, Western Day Care, the Ivey Spencer Leadership Centre, and facilities at the Research Parks.

With this background in mind, we briefly set out the nine categories of University capital expenditures.

1. **New Construction.** This category includes projects which create new buildings, including housing, additions to existing buildings, and other new facilities such as parking structures or lots, power plants and athletic fields. It does not include projects which improve the space within existing buildings or projects which upgrade other existing facilities.
2. **Major Building Renovations.** This category involves major maintenance and renovation expenditures on non-residential building projects, with projects generally spanning more than one year. Given that 51% of the 562,000 square metres in major buildings were built before 1980, renovations to major buildings will continue to be a part of our capital planning.
3. **Utilities and Infrastructure Projects.** This category involves projects with values greater than \$10,000 directed at the upgrading and new installation of utilities and other infrastructure, including boilers and chillers, energy conservation initiatives, and electrical, water, and sewer distribution systems. Construction of a new Chiller Plant or major Power Plant expansion would be included in category 1.
4. **Modernization of Instructional and Research Facilities.** This category includes the renewal and modernization of classrooms, laboratories, libraries, and other space used for instruction and research, as well as upgrades to information technology. These expenditures are critical to

maintaining Western's reputation as a leader in the quality of teaching and research. These projects are sometimes funded by the units themselves with operating or research funds.

5. **General Maintenance and Modernization Projects.** This category consists of a wide variety of maintenance and modernization projects which are not included in categories 2 to 4. Most of the projects are under \$100,000, involving such work as roof replacement, interior and exterior painting, road, bridge, and sidewalk repair, and general maintenance of structures and systems. A provision for unforeseen projects forms part of the allotment in this category.
6. **Housing Renovations.** This category includes all maintenance and modernization expenditures on University residences and apartment buildings. Construction of a new residence or apartment building would be included in category 1. Maintenance and modernization expenditures, projected to be \$13.5 million in 2020-21, are funded from Housing revenues. Housing has always set aside adequate maintenance funds and does not have the significant deferred maintenance on its buildings which may be observed in many other University buildings.
7. **Ancillary Projects.** This category includes capital expenditures on Ancillaries other than Housing, including Hospitality Services, the Book Store, Parking Services, student fee-funded units, self-funded support units, and self-funded research units. These units pay a charge to the University for the space they occupy.
8. **Carrying Costs and Debt Repayments.** This category consists of principal repayments and interest on debt for capital projects.
9. **Other Capital Expenditures.** This category includes asset acquisitions and other miscellaneous expenditures. It has been an established principle in Western's Campus Master Plan that the University pursue, as appropriate, the purchase of lands contiguous to University property as lands become available. Western will continue to seek to protect the Regional Facilities zoning around the main campus and to buy land near our campus when it comes up for sale. The University will also look to acquire strategic physical assets.

The last twelve lines of Table 14 are labeled A to M. Line A shows total sources of funding for the Capital Budget, including debt; line B, sources of funds less expenditures; line C, the capital reserve at year-end; and line D, capital debt outstanding at year-end. Details on these items are shown in Tables 16 and 18. Annual changes in the capital reserve (line C) are driven by the differences between funding and expenditure (line B). Thus for 2018-19, line B shows a surplus of \$18,588, the difference between funding of \$84,228 and expenditures of \$65,640 (all figures in \$000). The accumulated capital reserve in line C increases by this same amount of \$18,588.

Line E shows the replacement value of non-residential buildings and utilities and infrastructure, the assets eligible for MMI spending, while line F shows the ratio of the annual MMI expenditure to the replacement value. For example, in 2018-19, MMI expenditures were \$38.1 million, while the estimated replacement value of non-residential buildings, utilities, and infrastructure was \$2.11 billion. The ratio of the two is 1.8%, as shown in line F.

Line G of Table 14 shows the annual transfer from the Operating Budget to the Capital Budget for Maintenance, Modernization, and Infrastructure (the MMI transfer). The annual transfer has been

maintained at \$15.5 million since 2017-18, a funding commitment that has established Western as a leader among Canadian universities in maintaining its facilities and dealing with deferred maintenance.

Line H of Table 14 shows the ratio of the annual MMI transfer to total MMI expenditures; for example, in 2018-19, the transfer was \$15.5 million and MMI expenditures were \$38.1 million, so the ratio in line H is 40.7%. Other sources of funding for MMI expenditures include the annual capital facilities renewal grant from the Province (projected for 2019-20 and 2020-21 at \$4.6 million and \$4.6 million respectively), special Provincial grants, additional one-time allocations from the University's Operating Budget, one-time allocations from the Province, fundraising, and borrowing.

Line J contains an estimate of maintenance spending, defined narrowly as spending required to bring aging facilities up to their condition when originally built. In fact, whenever Western undertakes a major maintenance project, there is also modernization of the facility, and whenever we carry out a major modernization project, there is generally some maintenance expenditure; it is thus difficult to separate the two. Line J is calculated on the assumption that 2/3 of the expenditures in categories 2, 3, and 5 involve maintenance (the remaining 1/3 is modernization), while 1/3 of the expenditures in category 4 involve maintenance (the remaining 2/3 is modernization). While the ratio of maintenance to modernization would vary by project and by year, Facilities Management considers them a reasonable average for the four categories over a number of years.

The value of line J in 2018-19 is \$23.4 million, or 1.1% (line K) of the replacement value in that year. A standard target in industry for this ratio is 2.0%; if large buildings last an average of 50 years, then average maintenance spending should be 2.0% of replacement value. When the actual ratio is consistently lower than 2.0%, as has been the case at Western and most Canadian universities over the last three decades, the level of deferred maintenance will grow. As Western continues to renovate aging buildings, there will be years that deferred maintenance will decline.

Table 15 outlines major capital projects, which are assigned to one of the nine categories. Where possible, the year and month of the start and end of the project(s) are shown.

The projects listed in Table 15 reflect the Long-Range Space Plan outlined in Table 13 of the Operating Budget portion of this document. These projects include new construction that will create new student and research spaces, and major building renovations and utilities and infrastructure projects – reflecting the need to maintain and modernize Western's aging physical plant. With new building construction on campus continuing, Western is utilizing scarce developable land in the core campus. The Campus Master Plan, approved in June 2015, highlights the constraints in the amount of buildable land on our campus and the fact that new buildings are being constructed on parking lots – thus increasing the pressure on available parking. We continue planning for the construction of parking structures in the periphery of campus – including siting, a funding plan, and the required parking fee rates to finance the structures. University-wide Infrastructure Projects are also included on Table 15. These projects cover upgrades to Western's central power plant, chiller facilities, and major electrical upgrades, and are typically comprised of multiple projects completed over a number of years.

B. Sources of Funding and Capital Expenditures in 2020-21

Table 16 displays sources of funding for budgeted capital expenditures with estimates of comparative data for 2019-20, divided into five major categories: federal, provincial and municipal government grants; funds transferred from Western's Operating Budget; interest earned; borrowing; and other sources, including internal recoveries. As compared to a decade ago, the University's Capital Budget is more dependent on transfers from the Operating Budget and debt.

Table 17 shows expenditures in categories 1 and 2 for 2019-20 (estimates as of January 31, 2020) and 2020-21 (current proposals).

Table 14
CAPITAL BUDGET SUMMARY, 2016-17 TO 2020-21
(\$000)

Category	Purpose	Actual 2016-17	Actual 2017-18	Actual 2018-19	Projected 2019-20	Budget 2020-21
	New Construction					
1	New Construction (Table 17, line 10)	45,717	51,484	17,285	5,687	44,450
	Maintenance, Modernization, and Infrastructure (MMI)					
2	Major Building Renovations (Table 17, line 18)	15,789	18,924	10,983	7,377	33,656
3	Utilities and Infrastructure Projects	5,719	4,262	13,610	5,251	10,778
4	Modernization of Instructional and Research Facilities	7,816	7,543	5,732	10,113	5,591
5	General Maintenance and Modernization Projects	4,775	5,526	7,750	8,525	14,723
	Sub-Total MMI	34,099	36,255	38,075	31,266	64,748
	Other					
6	Housing Renovations	9,192	9,565	7,988	8,115	13,500
7	Ancillary Projects	1,170	1,776	856	1,893	1,941
8	Carrying Costs and Debt Repayments	4,453	2,964	2,448	1,100	4,100
9	Other Capital Expenditures	20	88	-1,012	1,877	2,000
	Sub-Total Other	14,835	14,393	10,280	12,985	21,541
10	Total Expenditures	94,651	102,132	65,640	49,938	130,739

Line		Actual 2016-17	Actual 2017-18	Actual 2018-19	Projected 2019-20	Budget 2020-21
	Sources of Funding, Reserves, and Debt					
A	Total Sources of Funding, Including Debt (Table 16)	92,798	110,681	84,228	31,036	110,456
B	Sources of Funding less Expenditures	-1,853	8,549	18,588	-18,902	-20,283
C	Capital Reserve, Year End (Table 18)	41,751	50,300	68,888	49,986	29,703
D	Capital Debt Outstanding, Year End (Table 18)	283,725	375,759	362,141	353,874	345,900
E	Replacement Value of Non-Residential Buildings, Utilities & Infrastructure, \$M	1,906	1,985	2,113	2,264	2,309
F	MMI Expenditures/Replacement Value	1.8%	1.8%	1.8%	1.4%	2.8%
G	Annual MMI transfer from Operating to Capital Budget	14,750	15,500	15,500	15,500	15,500
H	MMI transfer/MMI Expenditures	43.3%	42.8%	40.7%	49.6%	23.9%
J	Estimate of Maintenance Expenditure	20,127	21,656	23,473	17,473	41,302
K	Maintenance Expenditure/Replacement Value	1.1%	1.1%	1.1%	0.8%	1.8%
L	Number of Major Buildings	93	94	95	97	97
M	Total Gross Square Meters (000's)	843	854	859	890	890

Category 8 does not include carrying costs and loan repayments for Residences and Apartments, Research Park and Richard Ivey School of Business.

Line B is equal to Line A Total Sources of Funding less Total Expenses.

The change in line C from one year to the next is equal to Line B.

Line J consists of 2/3 of Category 2, 3 and 5 and 1/3 of Category 4.

Table 15
MAJOR CAPITAL PROJECTS

		Category	Start	End
1	<i>Projects Underway or Soon-to-Start</i>			
2	Modernization of Thames Hall	2	Jan 17	Aug 21
3	Weldon Library Modernization	2	Sept 19	tbd
4	Biomedical Research Facility -- Phase 1 of Medical School Project	1	Jan 17	Aug 22
5	Western Centre for Public Health & Family Medicine 3rd Floor Completion: Phase 2a of Medical School Project	1	Nov 19	Oct 20
6	Creation of Indigenous Learning Spaces in Althouse Building	2	tbd	tbd
7	Ivey Spencer Leadership Centre Renewal and Expansion	1&2	Nov 18	tbd
8	Entrepreneurship and Innovation Centre	1	Jun 19	Sep 22
9	University-wide Campus Sustainability/Energy Conservation/Infrastructure Projects (multiple stages--ongoing)	1,3&5	Ongoing	
10	Pedestrian-friendly Campus Initiatives -- Open Space Strategy	5	Ongoing	
11	<i>Projects in Various Planning Stages</i>			
12	University Community Hub -- Common/Gathering Spaces	1	tbd	tbd
13	Science and Medicine Interdisciplinary Research Facilities	1	tbd	tbd
14	Renewal/Replacement/Expansion of Medical School Facilities: Future Phases of Medical School Project	1&2	tbd	tbd
15	Multi-Level Parking Structures	1	tbd	tbd
16	Sports Facilities Projects	1&2	tbd	tbd
17	Space for Student Career Services -- Realignment of Space in the UCC (after completion of Thames Hall Project)	2	tbd	tbd
18	<i>Projects for Future Consideration (requires funding plan)</i>			
19	Space Realignment in the Natural Sciences Centre	2	tbd	tbd
20	Renewal of Chemistry Facilities, UCC, Spencer Engineering Building, Elborn College, Talbot College	2	tbd	tbd
21	Social Sciences Centre Realignment/Expansion	1&2	tbd	tbd
22	Renewal and/or Realignment of Library Facilities -- Future Phases	2	tbd	tbd
23	New Research Initiatives/Partnerships at the Research Parks	1	tbd	tbd
24	Sports Facilities	1&2	tbd	tbd
25	Residence Projects	1&6	tbd	tbd
26	Asset Acquisitions	9	tbd	tbd

Table 16
CAPITAL BUDGET: SOURCES OF FUNDING
(\$000)

		Projected 2019-20	Budget 2020-21
1	Government Grants		
2	MCU Annual Capital Grant (Facilities Renewal Program)	4,644	4,644
3	MCU/MOECG GGRP Innovation Fund	1,161	0
4	Sub-Total	5,805	4,644
5	Operating Budget		
6	Operating Budget MMI Transfer - Base	15,500	15,500
7	Operating Budget MMI Transfer - Base (Ancillaries)	600	600
8	Operating Budget - Pedestrian-friendly Campus Initiatives - Open Space Strategy	0	6,000
9	Operating Budget - Energy Conservation Initiatives	0	5,000
10	Operating Budget - TD Stadium Enhancements	0	4,500
11	Operating Budget - Engineering Building Facilities Expansion/Renewal	7,957	3,733
12	Operating Budget - FRSF Transfer	3,000	3,000
13	Operating Budget - CRC Transfer	736	912
14	Operating Budget - Classroom Modernization	1,000	812
15	Operating Budget - Medical School Innovation Hub	3,000	0
16	Miscellaneous Faculty/Department Budgets	380	700
17	Sub-Total	32,173	40,757
18	Interest Earned	800	300
19	Borrowing		
20	Long-Range Space Plan	-22,821	46,426
21	Sub-Total	-22,821	46,426
22	Other		
23	Student Contribution - Western Student Recreation Centre	1,365	1,407
24	Energy Conservation Incentives (Rebates)	716	700
25	Sports & Recreation Services - Student Contribution for Artificial Turf Playing Fields	172	175
26	Projects Funded by Housing	8,115	13,500
27	Projects Funded by Ancillaries	2,362	1,941
28	Projects Funded by Units	2,349	606
29	Sub-Total	15,079	18,329
30	Total Sources of Funding	31,036	110,456

Table 17
CAPITAL EXPENDITURES FOR NEW CONSTRUCTION AND MAJOR BUILDING RENOVATIONS
2019-20 and 2020-21
(\$000)

		Projected 2019-20	Budget 2020-21
1	<i>Category 1: New Construction</i>		
2	Biomedical Research Facility - Phase 1 of Medical School Project	4,125	19,000
3	Entrepreneurship and Innovation Centre	700	13,150
4	Multi-Level Parking Structures	0	4,930
5	Ivey Spencer Leadership Centre Renewal and Expansion	712	3,600
6	Western Centre for Public Health and Family Medicine - 3rd Floor Completion	150	2,570
7	TD Stadium Enhancements	0	1,000
8	Science and Medicine Interdisciplinary Research Facilities	0	100
9	University Community Hub - Common/Gathering Spaces	0	100
10	<i>Total, Category 1</i>	<i>5,687</i>	<i>44,450</i>
11	<i>Category 2: Major Building Renovations</i>		
12	Modernization of Thames Hall	4,543	17,950
13	Weldon Library Modernization	800	7,450
14	Renewal of Spencer Engineering Building	855	2,824
15	Creation of Indigenous Learning Spaces in Althouse Building	80	2,400
16	Sommerville House Renovations to Create Student Space	0	2,000
17	Medical School Innovation Hub	1,099	1,032
18	<i>Total, Category 2</i>	<i>7,377</i>	<i>33,656</i>

Table 18
CAPITAL RESERVES AND DEBT AT FISCAL YEAR END
(\$000)

		Actual 2016-17	Actual 2017-18	Actual 2018-19	Projected 2019-20	Budget 2020-21
1	A. Capital Reserves					
2	General Capital Fund	20,291	25,783	32,271	31,617	23,032
3	Designated Capital Fund	21,460	24,517	36,617	18,369	6,671
4	Total Capital Reserves	41,751	50,300	68,888	49,986	29,703

		Actual 2016-17	Actual 2017-18	Actual 2018-19	Projected 2019-20	Budget 2020-21
5	B. Capital Debt					
6	New Construction, Major Renovations & Other	61,970	51,141	22,821	0	46,427
7	Housing	120,247	107,003	88,346	73,839	59,779
8	Research Park	27,868	27,015	26,142	25,235	24,294
9	Unused and Invested Debenture Proceeds	73,640	190,600	224,832	254,800	215,400
10	Total Capital Debt	283,725	375,759	362,141	353,874	345,900

Line 2 includes the required \$6 million general capital reserve fund.

Line 3 includes fund balances for large capital projects.

Long-Term Financial Trends

The Operating and Capital Budgets set out in Tables 2 and 14 of this document describe proposed spending of some \$973 million for the single year of 2020-21. That spending will take place, however, in a long-term context which must be understood in evaluating the Operating and Capital Budgets. The Administration and Board have identified three elements of that long-term context which should be reviewed in the annual Budget of the University: capital reserves and debt, employee future benefits, and deferred maintenance.

A. Capital Reserves and Debt

Table 18 displays Capital Reserves and Debt for fiscal years ending April 30. Capital Reserves are divided into two categories:

- the General Capital Fund, which includes funds not yet designated for specific purposes and funds designated for future projects.
- the Designated Capital Fund, which has been assigned to specific capital projects.

The Designated Capital Fund includes the remaining funds from the sale of the Gibbons property. The University's intention is that when the Gibbons funds are spent, there will be naming opportunities to honor the Gibbons name.

Capital Debt is divided into the following categories:

- **New Construction, Major Renovations, Infrastructure, and Other** – represents debt on projects that are largely new construction, additions to existing buildings, other new facilities, non-residential projects that involve major maintenance, and renovations to existing space. It also includes debt on purchases of property.
- **Housing** – debt required for new construction, maintenance, and modernization projects for University residences and apartment buildings.
- **Research Park** – debt incurred by the Research Park.
- **Unused and Invested Debenture Proceeds** – unused proceeds from Western's debenture issuances that have been committed and invested until specific capital projects require the funding.

Capital Debt is viewed as a resource that can help the University advance its Long-Range Space and Campus Master Plans. As part of the overall management of capitalization, the University has increased its Capital Debt, primarily through debenture issuances of \$190 million and \$100 million in 2007 and 2017, respectively, and by entering into a \$100 million fifteen-year facility in 2013 to finance a 1,000 bed residence and other capital projects. The University's debentures necessitate an annual credit rating review, performed each year by Standard & Poor's. During February 2020, the University's credit rating was reaffirmed at AA.

The Board of Governors has approved a Capital Debt Policy which outlines the principles used in guiding the University's overall capitalization and debt management strategy. The policy includes compliance and monitoring ratios for which the University regularly reviews. Western is in compliance with both of its compliance ratios (net assets-to-debt and debt burden). The University also utilizes monitoring ratios as part of its management strategy. Figure G shows selected Capital Debt monitoring ratios for the years ending April 30.

Figure G
CAPITAL DEBT MONITORING RATIOS

	FTE Enrolment	Debt (\$M)	Debt per FTE (\$)	Combined Revenue (\$M)*	Debt / Revenue (%)
2016	31,772	291.4	9,170	1,125.2	25.9%
2017	32,528	283.7	8,722	1,253.1	22.6%
2018	33,059	375.8	11,369	1,253.7	30.0%
2019	33,356	362.2	10,859	1,318.0	27.5%
2020p	33,725	353.9	10,494	1,344.4	26.3%

*2016-2017 information has been updated for comparability purposes to reflect reclassifications in revenues and expenses occurring in 2018

The projected debt is based on Board-approved projects with allowance for other projects which may be presented to the Board during the period under consideration.

B. Employee Future Benefits

Subject to eligibility rules set within various collective agreements, the University provides medical, dental, and life insurance benefits to eligible employees after their employment with Western has ended.

The obligation for these employee future benefits are projected by actuarial valuation every three years. In the years between valuations, an extrapolation of the actuarial valuation is used to determine the projected benefit obligations. At April 30, 2019, the University's accrued benefit liability relating to the employee future benefit plans was \$546.5 million (2018 - \$495 million).

Included in the University's 2019 Audited Combined Statement of Operations is an annual expense in the amount of \$23.4 million (2018 - \$21.8 million) for non-pension employee future benefits.

A recent review of major research universities identified only five institutions with significant post-employment benefit obligations greater than \$200 million, ranging from \$244 million to \$625 million and an unweighted average of \$391 million. Western ranked second in total liability for employee future benefits. Figure H outlines the University employee future benefits, the obligation and expense for years ending April 30.

Figure H
EMPLOYEE FUTURE BENEFITS (EFB) AS A % OF TOTAL EXPENSES

	Obligation (\$M)	Expense (\$M)	Total University Expenses (\$M)*	EFB Expense as % of Total
2015	482.3	22.5	1,061	2.1%
2016	525.7	25.4	1,079	2.4%
2017	473.5	28.9	1,113	2.6%
2018	495.3	21.8	1,122	1.9%
2019	546.5	23.4	1,170	2.0%

*2015-2017 information has been updated for comparability purposes to reflect reclassifications in revenues and expenses occurring in 2018

C. Deferred Maintenance

Deferred Maintenance is defined as work on the maintenance of physical facilities that has been deferred on a planned or unplanned basis to a future budget cycle or postponed until funds become available. To avoid increasing the size of the deferred maintenance backlog, it is necessary to carry out replacement of facility components on an annual basis.

The estimates of deferred maintenance are different than estimates of debt or employee future benefits in the previous sections. There are actual contracts in place for the first two categories that allow us to make reasonable estimates. For deferred maintenance, this is not the case; therefore, we have to find other ways to quantify this liability. In 2001, a common capital-asset management system was purchased by the Ontario University system to assess, track, and report on the condition of facilities. The system requires that each major component of a building – roof sections, classrooms, heating, ventilation, air-conditioning systems and so on – be inspected, either entirely or on a sample basis. Data on the findings of these inspections are entered into a central database. The system uses industry-standard cost and lifecycle data to forecast the timing and costs of capital renewal projects. During 2019, at the request of the Ministry of Colleges and Universities, cost forecasting methodologies were updated in the Ontario university sector to produce a more harmonized approach for facility assessment across provincially owned and broader public sector assets. As a result of the alignment in methodologies across Ontario, estimates of deferred maintenance have increased. The Facilities Management Division estimates that (as of March 12, 2020) deferred maintenance at Western is \$299 million for non-residential buildings and \$46 million for residences. Approximately 52% of the deferred maintenance for non-residential buildings relates to mechanical and electrical requirements. Other major components include maintenance driven by code requirements and maintenance for roofs and windows.

A common measure for determining the overall condition of facilities is the ratio of deferred maintenance over replacement value of the facilities. The calculation as at March 12, 2020 is outlined in Figure I as follows:

Figure I
DEFERRED MAINTENANCE TO CURRENT REPLACEMENT VALUE

		Non-Residential Buildings	Combined Residences
1	Current Replacement Value (CRV)	\$2,264 million	\$545 million
2	Deferred Maintenance (DM)	\$299 million	\$46 million
3	DM/CRV	13.2%	8.4%

The average age of buildings for universities in the Province of Ontario was 54 years as of March 2020. Western's average age is 40 years. Over 51% of our buildings were built before 1980. Western's residences are funded through rents which cover maintenance; the University has never had a problem with deferred maintenance on residences. A ratio of 13.2% (Deferred Maintenance/Current Replacement Value) for non-residential buildings indicates a significant need for maintenance funding.

If the average component of a large building lasts 50 years, then on average, maintenance spending should be 2.0% of replacement value. This level of spending is a standard target in the industry. When the actual ratio is consistently less than 2.0%, as has been the case at most Canadian universities, the volume of deferred maintenance will grow. Failure to adequately address deferred maintenance results in substandard facilities and could result in the failure of critical systems. Based on the current replacement value of our facilities at \$2.3 billion, spending on major maintenance for campus buildings at 2.0% should be in the range of \$46 million annually.

As explained at the start of the Capital Budget, the annual maintenance transfer is used for Maintenance, Modernization, and Infrastructure (MMI). The Administration is sometimes asked by faculty and staff if the MMI transfer is too large. As lines G and E in Table 14 show, the ratio of the MMI transfer to the current replacement value (CRV) of our non-residential buildings, utilities, and infrastructure has been below 1% in recent years (Figure J).

Figure J
MMI TO CRV RATIO 2016-17 to 2020-21

		Actual 2016-17	Actual 2017-18	Actual 2018-19	Projected 2019-20	Budget 2020-21
1	MMI (\$M)	14.75	15.50	15.50	15.50	15.50
2	CRV (\$M)	1,906	1,985	2,113	2,264	2,309
3	Ratio	0.77%	0.78%	0.73%	0.68%	0.67%

Thus, the MMI transfer from the Operating to the Capital Budget is less than half of the 2.0% required to keep deferred maintenance from growing. Continuation of this MMI transfer is essential to maintaining a safe and reliable campus infrastructure, which supports modern research and teaching, and sustains faculty, staff, and student morale.

Line J of Table 14 presents an estimate of maintenance spending from all sources, with maintenance defined as spending required to bring aging facilities up to their condition when originally built. The last time the ratio was about 2% was 2010-11. The estimated ratios for 2019-20 and 2020-21 will not reach the 2.0% target. Additional funding, from provincial and federal sources, will be required to catch up and maintain the 2% target in future periods, in order to begin to restore the condition of University facilities.