UNIVERSITY OF ALBERTA

CAPITAL PLAN
Infrastructure

2021–2024

UNIVERSITY OF ALBERTA

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The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

Background

The University of Alberta is renowned for its world-leading research, strength of academic programs, and excellence of its students. A key component of success in continuing to attract strong students, researchers, faculty, and staff is the quality of the infrastructure and equipment to ensure leading edge teaching and research continues and that it is relevant and responsive to the needs of the 21st century. The buildings, equipment, and grounds are also catalysts for partnerships with other post-secondary institutions, organizations, and businesses. These partnerships are mutually beneficial to industry, public organizations, community, and citizens as they explore, create, and innovate on the campuses while contributing to the needs of Alberta's economy, social fabric, and culture.

The U of A's rolling three year capital plan reflects its academic priorities as outlined in its strategic plan, *For the Public Good*, and the cascading academic plans across the institution. It also aligns with the U of A's *Integrated Asset Management Strategy* (IAMS): Taking Care of our Campuses. This strategy sets the direction for the University of Alberta's infrastructure assets, while defining a long-term roadmap. It describes the current state and the conditions that created some of the challenges currently being faced, while also identifying the future direction and actions to be taken. Lastly, it outlines how the institution intends to be effective and efficient stewards of its physical assets (buildings, roads, grounds, and utility infrastructure) through risk based maintenance, triaging critical deferred maintenance, strategic investments, and appropriate partnerships.

An important focus of IAMS is that all students, staff, faculty, visitors, and members of the community are stewards of the university's buildings and grounds and how each uses the institution today has a direct impact on its future state. IAMS also sets a collective mission, vision, principles, goals, and actions for future-proofing the university's infrastructure. It helps guide decisions that meet the needs of learners, faculty, staff and community today, while balancing the risks, opportunities, and fiscal environment within which the institution operates.

The U of A for Tomorrow

The University of Alberta is in the midst of a significant strategic transformation that will position it for continued success, long-term sustainability, and greater competitiveness amongst post-secondary institutions. By 2025, the University of Alberta will have a new faculty structure firmly in place, consolidated administrative services, a smaller infrastructure footprint, and an increased focus on space optimization. Overall, the U of A has more space than other universities in Canada and 50 per cent more lab space than comparative U-15 universities. At the same time, the deferred maintenance liability is forecast to be over $1 billion in 2025 on the assumption that there is no further investment. It is critical that the U of A continues to consolidate its space, remains strategic in its maintenance and capital renewal investments, reduces its volume of buildings, and decants and/or repurposes space that does not meet academic or research purposes. This will be an uncomfortable shift for many faculty, staff, and students on campus, but is paramount to long term sustainability and good fiscal stewardship.

Context

As Alberta's oldest and largest post-secondary institution, the U of A manages more than 1.7 million square metres of complex facility inventory across five distinct campuses. While the institution emerged from a period of significant growth in formal learning and research spaces, it actively managed aged infrastructure, some of which predates World War I. Greater than 50 per cent of our buildings were built in the post-war (1951-1975) or modern (1976-1990) periods; both of which are known for lower standard construction practices. These buildings, which were built with a projected life-span of 50 to 60 years, are past their life expectancy with many of these buildings' critical systems (mechanical, electrical and building envelope) at or near their end of life—catastrophic building failures are imminent.

In 2021, Alberta continues to be impacted by the global pandemic, changing non-renewable resource policies in the United States of America, and the overall effect on the local economy with a period of considerable economic turmoil. The result has been reduced employment, dramatically reduced revenues for all levels of government, and changing demand and expectations from post-secondary institutions largely manifesting in reduced budgets for publicly-funded organizations. With the additional impacts of COVID-19 on the economy, the U of A recognizes its obligation of greater restraint. However, even in times of fewer resources, failure to invest in maintaining existing infrastructure will only lead to a deepening deferred maintenance deficit, which will directly impact teaching and research, with no conceivable means of recovery.

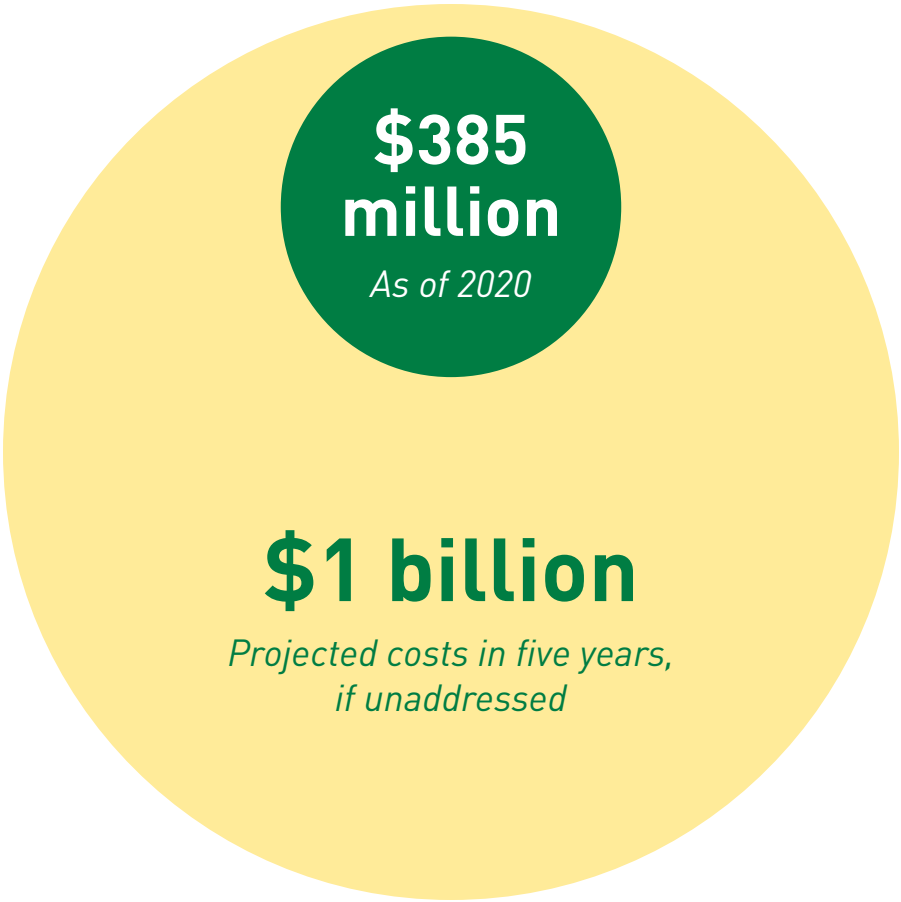
To operate and maintain its supported buildings, the U of A relies on grants from the Government of Alberta, with an amount embedded into the Campus Alberta grant to offset general operational and maintenance costs (eg. custodial, utilities and insurance). Additionally, the government has historically provided a variable grant under the Capital Maintenance Renewal (CMR) program, which, at its core is intended to reduce an institution's deferred maintenance liability. While these allocations are appreciated and crucial to the institution, the reality is that, given the size and complexity of the university's infrastructure assets, for decades these allocations have been unable to allow for adequate investments in preventative or reactive maintenance resulting in increasing deferred maintenance liabilities across the institution.

Infrastructure not eligible for government support (e.g. residences, dining facilities, roads, and parking structures) are considered self-funded, meaning all costs related to construction, maintenance, and renewal must be generated by the users of these spaces. All revenue generated from these operations remains within the system as no tuition or government funding is available for any aspect of these operations. Unfortunately, a preoccupation with keeping student residence rates as low as possible resulted in many of the older residences being in poor condition and in dire need of renewal or, as in the case of Michener Park, beyond use resulting in this residence being decommissioned.

Deferred maintenance

Deferred maintenance is an area of particular focus as the current liability for the U of A stands at $385.4 million with a five year projected aggregate liability of $1.04 billion (as of December 31, 2020). We continue to identify and address deferred maintenance through joint renewal and repurposing projects to maintain, and optimally improve, the condition and functionality of our building inventory. Capital renewal funding (historically through the infrastructure maintenance [IMP] program) has been strategically allocated to priority projects. Access to sustained and predictable funding for deferred maintenance needs to be in the order of $50 million annually to begin a gradual reduction of the institution's liability combined with building closures/dispositions. Even this amount would not be sufficient to address ongoing lifecycle renewal and is well below the industry best practice of two to four percent of the current replacement value invested annually in maintenance and lifecycle renewal.

The U of A has concluded a detailed strategic evaluation of all facilities and is well positioned to employ robust integrated planning with a view to ensuring the most efficient use of existing space and significant reductions to our ecological and carbon footprint. The results of the evaluation inform where capital renewal and other capital investments will most effectively advance U of A's objectives. This evaluation has also identified buildings where the cost of maintaining or renewing has become prohibitive and, therefore, must be scheduled for decommissioning and demolition.



Capital plan and budget

This capital plan identifies two major capital projects, both focused on renewal, with total funding of over $335 million that are underway within the three-year window of this plan. There are also three major capital renewal and preservation projects that require funding that total over $154 million. Lastly, there are fifteen unfunded smaller capital projects totalling more than $173 million. These projects demonstrate a commitment to investing in our facilities—investments driven by our priorities for teaching and research—that are possible with the requisite funding.

The capital plan accounts for long-term budget impacts on operations, maintenance, utilities, and debt servicing. These obligations are included in the university's long range budget planning. In some instances, cash-flow expenditures extend beyond the five year planning period. It is also important to recognize that there may be shifts if funding sources are impacted, schedules change, scope is altered, cost estimates are refined, and/or the external environment introduces unanticipated hurdles. The projects identified in years two and onward may slightly evolve as some projects prove more feasible than others based upon shifting funding realities and academic priorities.

Strategic investments to date

The University of Alberta has had considerable success in identifying opportunities to leverage funding and explore creative partnerships and project delivery models. This has been an inherently delicate endeavour considering the five distinct campuses, each of which serve unique and separate constituencies in Alberta.

Provincial priority project

The Universiade Pavilion (Butterdome) has assisted the Government of Alberta in responding to provincial emergencies and disasters over the last six years, ranging from the wildfires in Fort McMurray, through to COVID testing for the greater Edmonton area, and lastly, through to a prepared alternate care centre for patients. The building provides incredible flexibility and space to support broader provincial-based needs than solely the interests of students. The building has deferred maintenance needs that need to be remedied prior to continuing to meet the needs of campus, but as important, the needs of the province for critical provincial-based purposes.

Universiade Pavilion (Butterdome)	
Description	**Project cost**
In order to continue having the Universiade Pavilion accessible as a provincial resource, significant deferred maintenance needs to be addressed for it to be a reliable, safe, and effective space. This ranges from exterior cladding and panels to replace those in disrepair and falling off the building, mechanical air handling units that ensure air changes per hour are at optimal health and safety levels, mechanical/electrical work throughout the building, and replacement of flooring.	**$32.5 million**

Major capital projects

The U of A has defined major capital projects as those exceeding $20 million. At present there are two major capital projects that are funded, underway, and at varying stages of completion.

Dentistry/Pharmacy Centre		
Description	**Project cost**	**Completion**
As one of the premier buildings on North Campus, Dentistry/ Pharmacy Building has served the institution for nearly 100 years. Renewal and repurposing of this building will allow the U of A to effectively use a significant infrastructure asset. The renewed facility will provide new teaching, student-focused academic, and administrative space at the heart of North Campus. In addition to allowing the institution to divest itself of externally-leased space, this project is also addressing major health and safety issues (asbestos, fire safety, and indoor air quality), building code and physical condition issues, as well as focusing building outcomes to reduce its carbon footprint.	**$249 million**	2023

Lister Residence Complex - Classic Towers		
Description	**Project cost**	**Completion**
The three original residence towers in the Lister Complex are in the process of being renewed to meet current building codes and address deferred maintenance (including the installation of fire suppression systems). The design includes particular attention to amenities such as study areas and social spaces which, by promoting casual interactions between students, positively contributes to student engagement, attachment and success.	**$85.5 million**	2022

Top capital priorities

In support of the institution's academic and research priorities, the University of Alberta has identified its top three major capital projects (detailed in the following table in priority order), which represent a total of $154.35 million in funding. These are aspirational in that, until the requisite funding is secured, they remain at the planning stage. However, the planning undertaken has all three projects at a stage where they could commence in very short order once funding is committed. These all focus on existing buildings with the aim of reducing deferred maintenance, renewing access to meet current code requirements, and focusing on student experience and capacity demands.

The priorities that follow are reflective of our 2021 Building and Land Information System (BLIMS) submission to the Government of Alberta.

Education Complex				
Description				
Renew and redevelop (functional renewal) the Education complex to meet the requirements of modern academic teaching and learning pedagogy and renewing the existing electrical building systems, and bring the building up to modern standards for student learning and well-being. Based on comprehensive utilization studies and growth projections, the two education towers have a capacity to be repurposed to accommodate large decant and the closure of other buildings. The primary outcome will be improved building service reliability (renewal of existing mechanical building systems), expanded infrastructure capacity for building renewal, and reduced deferred maintenance in the building.				
Type	**Total Project Cost**	**Funding sources**	**Government approved**	**Estimated project timelines**
Preservation	**$21.95 million**	100% GoA	No	September 2021 – June 2023

College of Social Sciences and Humanities - Asset Optimization

Description

Based on the programming and functional assessment of the Faculty of Arts, several initiatives have been identified as an alternative to a new development. A multi-year phased renewal and replacement program will address program pressures, deferred maintenance, and functionality.

Through a multi-year building renewal program, several buildings including Fine Arts, Industrial Design, HUB, and select other buildings would be renewed to accommodate changing program objectives. This would also permit several buildings to be better utilized to decrease operational costs and reduce deferred maintenance while aligning with the Integrated Asset Management Strategy. This project will permit low-quality, expensive-to-maintain buildings to be decommissioned.

Type	Total Project Cost	Funding sources	Government approved	Estimated project timelines
Preservation & Expansion	**$72.8 million**	100% GoA	No	December 2021 – January 2027

Biological Sciences

Description

An ongoing renewal program for a 60-year-old facility focusing on mechanical and electrical base building infrastructure. As aged infrastructure is starting to fail, the ability to continue teaching and research in this space is at risk. There are significant challenges in renewing the systems in this building as each wing is cross-linked meaning the renewal is most feasibly undertaken for the entire building. As planned, mechanical and electrical system renewals will also support internal architectural renewals.

Type	Total Project Cost	Funding sources	Government approved	Estimated project timelines
Preservation	**$59.6 million**	100% GoA	No	May 2021 – June 2024

Beyond our top capital projects, we have categorized additional projects into one of four categories listed below. These categories focus on: 1) emerging capital projects that are unfunded, but could be advanced to a state of readiness if funding becomes available; 2) fully- or partially-funded projects that are shovel ready-to-go; 3) projects that are fully-funded and underway; and 4) projects that will be complete in 2021/22.

Emerging capital priorities

Recognizing the uniqueness of operating multiple distinct and unique campuses, in addition to the top three identified above, numerous other projects have been identified as institutional priorities and are included in our Building Land Information Management System (BLIMS) submission. These are presented in order to emphasize the breadth and depth of necessary capital investment across the largest inventory of buildings and grounds of any post secondary institution in Canada. For ease of presentation, these, which only highlight key projects, have been grouped by campus and, as with the three above, each is ready to proceed pending the emergence of the requisite funding.

Campus Saint-Jean				
Type	**Description**	**Cost**	**Funding source**	**Government approved**
Preservation	Campus Electrical Infrastructure	$8.7 million	GoA	No
Preservation/ Expansion	Science (classroom renewals and expansion)	$7.85 million	$4.122 million GoA $3.728 million GoC	No
North Campus				
New	Plant Based Research and Innovation Centre Greenhouse Facility	$45.6 million	$44.594 million GoA $1.006 million U of A	No
Preservation	Animal Research Lab Renewals in HMRC, MSB, and Bio Sci	$7.2 million	$6.2 million GoA $1 million U of A	No
Preservation	BioSci Wet & Dry Labs	$13.5 million	GoA	No
Preservation	Cameron Building Envelope	$24.8 million	GoA	No
Preservation	Chem West Main floor renewal	$10 million	GoA	No
Preservation	Con Hall - Space Renewal	$10 million	GoA	No
Preservation	Earth Sciences Building - Infrastructure Renewal	$14 million	GoA	No

North Campus (continued)				
Type	**Description**	**Cost**	**Funding source**	**Government approved**
Preservation	NINT EMSO Renewals	$5 million	EMSO	No
Minor Preservation	IAMS Renovation & Renewal across Campus	$4.65 million	GoA	No
Minor Preservation	Campus Wide Classroom & Technology Renewals	$6.4 million	GoA	No
Minor Preservation	HMRC - Supply Side Ventilation Renewal	$4 million	$3 million GoA $1 million U of A	No
Demo	Research Transition Facility (Hazmat & Demo)	$7.3 million	GOA	No
South Campus				
New	Outdoor Tennis Court Relocation	$4.5 million	U of A	No

Partially funded or unfunded priorities

Recognizing the uniqueness of operating multiple distinct and unique campuses, in addition to the top three identified above, numerous other projects have been identified as institutional priorities and are included in our Building Land Information Management System (BLIMS) submission. These are presented in order to emphasize the breadth and depth of necessary capital investment across the largest inventory of buildings and grounds of any post secondary institution in Canada. For ease of presentation, these, which only highlight key projects, have been grouped by campus and, as with the three above, each is ready to proceed pending the emergence of the requisite funding.

Type	Description	Cost	Funding source	Funding gap	Government approved
Preservation	Asset reduction impacts program - (Phase 1)	$8 million	$4.5 million GoA $3.5 million U of A	$4.5 million	No
Preservation	Brain & Aging Research Building - wet lab fit-up	$6 million	GoA	$6 million	No
Preservation	Chemistry East - research labs	$11 million	GoA	$11 million	No

Type	Description	Cost	Funding source	Funding gap	Government approved
Preservation	Clinical Sciences Building - envelope renewal	$18 million	GoA	$18 million	No
Preservation	Education - electrical vault	$6 million	IMP/TBD	$5.5 million	Yes
Preservation	HUB Mall - suite renewals	$10 million	U of A	$4.2 million*	No
Preservation	Mechanical Engineering Building - redevelopment	$94 million	$70 million GoA $24 million U of A	$94 million	No
Preservation	Medical Sciences Building - floor renewals	$82.3 million	GoA	$82.3 million	No
Preservation	Medical Sciences Building - infrastructure renewal	$33.6 million	GoA	$33.6 million	No
Minor Preservation	Campus wide - elevator renewal	$3.05 million	CMR	$2.86 million	No
Minor Preservation	Campus wide - radio infrastructure	$1.5 million	U of A	$500,000	No
Minor Preservation	Chemistry West - mechanical renewal	$4.5 million	CMR	$4.5 million	No
Minor Preservation	Standing-open programs - (trades, HVAC, grounds)	$7.2 million /year	IMP/CMR	$3.1 million for FY22	No
Minor Preservation	Other critical deferred maintenance priorities (<$2.5 million)	$24.58 million	CMR	$24.58 million	No
Minor Preservation	RSF standing-open programs and critical priorities - (fume hoods, Canadian Council on Animal Care compliance, biosafety)	$1.098 million /year	RSF	TBD	Yes
Demolition	Michener Park demolition	$22 million	U of A	$16 million	No

* The funding gap for HUB Mall suite renewals will be supported from residence revenues.

Fully funded projects

This table represents projects that are fully funded regardless of whether they are emerging or in construction. The majority of these projects are in the active construction phase of project delivery, are being actively designed to go into construction, or are substantially complete from a construction perspective.

Type	Project name	Project completion
New	Devonian Gardens: Diwan Pavilion	2020-2023
Preservation	Brain & Aging Research Building - Renewal	2019-2023
Preservation	CAB Renewal - Phase 2	2021-2023
Preservation	Chemistry West: 1st and 2nd Flr Renewal	2020-2022
Preservation	Dentistry/Pharmacy Building Renewal	2018-2024
Preservation	Enterprise Square Renovation	2020-2022
Preservation	John Scott Library / ECHA Re-stack	2020-2023
Preservation	Lister Tower Renewals	2019-2023
Preservation	Morrison Structures Engineering Lab	2019-2023
Preservation	Tory Tower Mechanical Renewal	2020-2022
Preservation	Chemistry Electrical Vault	2019-2022
Minor Preservation	Bio Science - Lab & Infrastructure Renewals	2020-2023
Minor Preservation	Clinical Sciences Building - Replacements & Renewals	2020-2022
Minor Preservation	Fine Arts Building - Maintenance & Renewal	2020-2022

Utilities

University of Alberta owns and operates a district energy system (DES) supplying utility services to the greater campus area. The University's DES partners are Alberta Health Services (Walter C. McKenzie Health Sciences Centre, Kaye Clinic, and Cross Cancer Institute), Alberta Infrastructure (Canadian Blood Services and Northern Alberta Jubilee Auditorium), and others such as St. Joseph's College, St. Stephen's College, and the National Institute of Nanotechnology (leased to the National Research Council). Greater than ten kilometers of service corridors bring steam; electricity; natural gas; compressed air; and domestic, demineralized, and chilled water to our partners.

Operating a DES has many benefits, not the least of which is significantly reduced emissions over conventional energy systems. UAlberta's DES prevents approximately 60,000 tonnes of carbon dioxide emissions from entering the atmosphere every year.

With guidance from Advanced Education, the University of Alberta Utilities department, together with its engineering and regulatory consultants, conducted a review of the long-term capital renewal and maintenance funding liability for the DES and examined potential funding options.

Phase 1 of this work was to review capital renewal and maintenance liabilities for the next 10 years for the DES that serves the University as well as other Government of Alberta funded facilities located in the Greater Campus Area. Stantec Consulting was retained to complete an engineering study to support this work. This study indicated a capital renewal and maintenance liability of approximately $200 million over the next 10 years. The results of this report are being used to prioritize capital renewal and maintenance spending for the DES.

Capital renewal costs over the next 3 years is estimated at approximately $43 million. The costs here are indicative of the total costs of renewal, the sourcing of these funds will come from a variety of places including, but not limited to DES Reserve, Government grants, IMP/CMR, etc.

Phase 2 of this work includes discussions and consultation with Government of Alberta stakeholders (Advanced Education, Infrastructure, and Health) to address this liability. To support these discussions, submissions have been made to the GoA through the BLIMS and IMP / CMR processes. Some of the larger value near term projects include: two high priority civil projects (utility service corridor repair at station 1530 and 1540 and the Cooling Plant river water intake) and renewal of the Heating Plant Emergency Diesel Generator Controls and Switchgear. The funding source for these repairs has not yet been determined.

Other major projects are currently underway to address capital renewal, expansion, and reliability issues. The first is the replacement of the ageing electrical infrastructure in the Heating Plant. Phase six, of approximately ten phases, is currently underway. This project is currently funded through utilities reserves. The second major project is the expansion and renewal of the electrical service from EPCOR's Garneau substation to UAlberta's DES electrical distribution system. This renewal is critical to ensuring a continuous supply of electrical power to UAlberta, Alberta Health Services, and the Government of Alberta facilities, thereby avoiding disruptions like those experienced across Edmonton in the summer of 2017 to a distribution system that contains a high density of critical medical and high-end teaching and research facilities. This project has received regulatory approval and is now moving forward and is being funded via a Government of Alberta grant.

District Energy System			
Project description	**Approx. cost**	**Completion**	**Alignment**
Expansion EPCOR Garneau Substation Switchgear Renewal / North Campus Electrical Feed	$29.5 million	2024	Alberta Adult Learning System • Accountability For the Public Good
Expansion Heating Plant - Emergency Diesel Generator Controls & Switchgear Renewal	$4.128 million	Estimate 2022-2024	100% GoA
Expansion Utilities Civil Infrastructure Renewals	$14.491 million	Estimate 2022-2024	100% GoA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