



# Taking Care of our Campuses

INTEGRATED ASSET MANAGEMENT STRATEGY





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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.***

# Vice-President Facilities and Operations Message

The University of Alberta's Strategic Plan (2016-26), *For the Public Good*, defines the vision, goals, and specific targets that guide the institution's focus and resources. *For the Public Good* sets the conditions to inspire the human spirit through outstanding achievements in learning, discovery, and citizenship in a creative community. A key objective is the importance of ensuring our campuses, facilities, and utilities meet the institution's needs and goals. Facilities and Operations leads this work and is proud of what's been accomplished to-date and of how its future planning will support decisions that align to learners' and researchers' needs.

The University of Alberta is renowned for its leadership, achievements, and public service, ranking among the top universities in Canada. The institution also ranks amongst the highest in Canada for its volume and value of infrastructure assets. This large volume of assets, while supportive of space needs for all faculty and students, requires the university to strategically look at the life cycle of all buildings and grounds. This means: planning, creating and acquiring, operating and maintaining, and renewing or disposing. This on-going life cycle review of buildings and grounds facilitates continued excellence in supporting learning and research. The ways in which spaces are designed, used, and maintained are critical factors to the accessibility, effectiveness, and sustainability of assets. Facilities and Operations will continue to proactively and cost-effectively manage its assets, strengthening the learning and research foundations for students, faculty, staff, and community.

The condition of buildings and physical support assets are assessed on a regular basis to ensure they will deliver the optimal value over every building's lifespan and ensure the life, health, and safety of users. While some deferred maintenance may not present an immediate challenge, as the maintenance backlog grows, the risk of building failures (mechanical, electrical, building envelope) grows exponentially. This means the cost of maintenance continues to grow (including inflationary pressures and market

escalation as the age of a facility increases and needed maintenance is not completed. With the aging facilities and the growing uncertainty of provincial operating and maintenance funding, the university's deferred maintenance liability will continue to grow until a "tipping point" is reached. This may necessitate directing available funding to emergency or break down situations, versus maintaining the facilities.

This Integrated Asset Management Strategy will look at better utilizing owned space, reducing reliance on leased space, appropriately renewing or disposing of buildings, and prioritizing where the university needs to invest its limited resources to address deferred maintenance liabilities. This all must occur while increasing a focus on preventive maintenance. Publicly funded infrastructure will be increasingly scrutinized to ensure renewal, repurposing, and optimization occurs in advance of any new construction. This continues to put pressure on all public organizations to better use and maintain their assets.

This strategy is, simply put, a guide to ensure all aspects of managing the physical assets of the university are considered. This means optimizing the inventory of facilities that are key to the institution's mandate and prioritizing that inventory based on critical, to necessary, to non-necessary.

As the University of Alberta continues to change and evolve to continue meeting users' needs, its infrastructure must be positioned to support these changing needs and demands, now and into the future. The Facilities and Operations team looks forward to meeting these needs and collaborating across the University of Alberta and with others to take care of our campuses.



**Andrew Sharman**  
Vice-President Facilities and Operations



## Why a Strategy?

The impact of the growing operational and maintenance challenges has created a perfect storm—increased demand and expectations coupled with aging inventory, limited funding, and uncertainty of funding in the future. Facilities and Operations has therefore engaged in a review of how the university manages its inventory, what funding can reasonably be expected versus what is needed, and how best to move forward while maintaining the desire to be a leading academic institution.

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. An important focus of this strategy is that all students, staff, faculty, visitors, and members of the community are stewards of the University of Alberta's buildings and grounds and how each uses the institution today has a direct impact on its future state.

This strategy also sets a collective mission, vision, principles, goals, and actions for future-proofing the University of Alberta's infrastructure. It will help guide decisions to support the infrastructure needs of learners, faculty, staff, and community, while balancing the risks, opportunities, and fiscal environment in which the institution operates. This strategy is a living document that will be reviewed as part of annual planning processes.

The development of the strategy occurred amongst Facilities and Operations staff with communication and feedback incorporated from stakeholders across the campuses. This strategy was approved by the University of Alberta's Board of Governors and General Faculties Council in spring 2019 to ensure that collective feedback was considered and there was awareness of the actions that will lay ahead.

## Strategic Context

The university manages almost 1.73 million square metres in nearly 500 buildings across its five campuses. This is one of the largest volumes of buildings across the greatest land base of Canadian universities and over 60 percent of these buildings are over 40 years old. The widely recognized maintenance investment for post-secondary institutions is typically two per cent of the buildings' replacement value and, when investments fall short of that target, maintenance is deferred. Deferred maintenance is essentially the difference between the optimal investment and the actual investment in maintenance and, in its simplest definition, is the maintenance that should have been done, but wasn't.

There are a number of factors that contribute to the growth in deferred maintenance liability. One of the greatest factors was insufficient funding for preventive and deferred maintenance from government and the institution over the past many years. A second factor is the accelerated depreciation of some buildings and roadways, which is largely due to unsustainable construction practices in the 1950s that did not consider long-term maintenance needs, nor the impact of extreme changes in weather patterns. The DNA of all buildings going forward needs to be future-proofed against extreme and expensive maintenance and long-term renewal costs. Lastly, there has been an absence of data and analytics that identified current and forecasted future state of buildings to enable pro-active planning and strategic allocation of maintenance funding.

The lifespan and ongoing functionality of infrastructure is affected by how it's used, looked after, the ways in which services and repairs are carried out, the prioritization for renewal, the current and future needs and expectations of users, and available funding. Impacts from sudden weather or temperature changes also impact buildings and grounds. All of these impacts make it important to ensure evidence drives decisions of how best to support continued infrastructure renewal and plan for long-term needs. For many years necessary maintenance work has been delayed indefinitely due to insufficient funding and, if this trajectory is not altered, the institution will face an increasing magnitude of disruptions to facilities and, consequently, the ability to support the academic and research objectives.

Tackling maintenance backlogs, future-proofing infrastructure, and continuing good fiscal stewardship in times of economic constraint will require new ways of thinking and making decisions. This will mean difficult choices, optimizing existing infrastructure, improved coordination across campuses and with other partners, and better data and strategic analytics.

The collective challenge is to balance expectations with the best use of limited resources while considering growth of assets versus ongoing maintenance. While there have been remarkable additions to the University's building inventory in the last decade, the priority across all campuses is now on the renewal and refurbishment of existing buildings with very limited consideration for facility expansion or new construction. A critical assumption is that, as facilities are considered for disposal or removed from the infrastructure inventory, the associated funding is retained and directed towards maintaining, upgrading, and operating the remaining key assets.

By prioritizing the inventory, a natural process for determining the allocation of available funding can be developed. This means that some facilities will receive more funding (to get them up to the desired standard); some may receive the same (given their condition and usage); some may receive less (due to lower priority/end of life cycle); and some may not receive funding at all. For those facilities identified as needing less or no funding, additional work is necessary to increase awareness of these decisions to relevant stakeholders/users. In some instances, this leads to consideration for the disposition of those facilities and the impact on programs. Where the university's facility assets cannot meet the criteria necessary to justify retention and/or upgrading, then alternatives need to be considered.

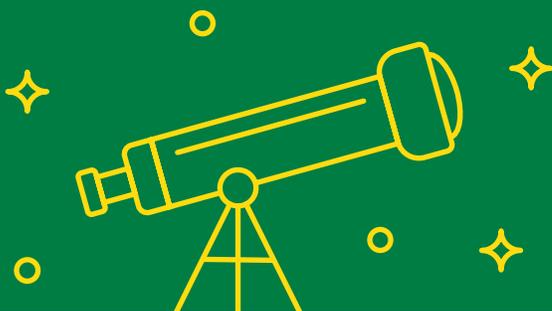


# Vision

**Provide the foundation that enables the university community to excel.**

# Mission

**That the University of Alberta has superior stewardship of all its infrastructure across the five campuses, while cultivating the best possible environment for learning, teaching and research now and into the future.**



# Planning Cycle

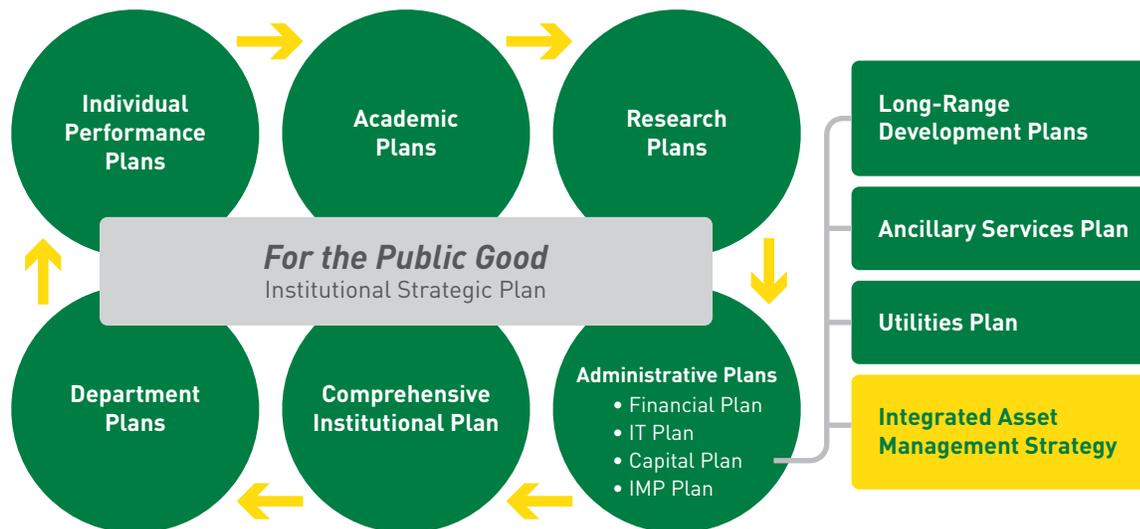
The below visual (Figure 1) is a simplified representation of the numerous interdependent plans that the University of Alberta uses to achieve its vision, mission, and outcomes, while shaping and stewarding its direction. Embedded as the core, is the University of Alberta’s overarching Strategic Plan, *For the Public Good*. The cascade of planning then starts with academic and research plans through to administrative business plans such as the university’s Capital Plan, which is a legislated document required by the Government of Alberta, through to the annual Comprehensive Institutional Plan and department plans.

The Capital Plan is informed by other Facilities and Operations’ related information, such as: consultation across campuses, long range development plans,

resource plans, space utilization data, and prioritization processes. This work aligns and works together to serve many needs, including: ensuring accessible space for learners, faculty, and staff; supporting utility needs of campuses; monitoring and maintaining assets; designing, renewing, building, and removing capital assets; ensuring ancillary supports and services are available; and maintaining legislated long-range development plans.

This strategy supports and guides the annual Capital Plan. It helps build and strengthen the right foundations to strategically respond to the academic and research missions, while considering the needs of users and the fiscal realities.

**FIGURE 1**  
**Planning landscape at the University of Alberta**



# Environmental Analysis

The University of Alberta is not unique in facing a challenge of growing costs for infrastructure maintenance that exceed available resources, while balancing on-going and changing space needs, changing expectations of users, and increased innovation in building design and delivery. This is a challenge of many post-secondary institutions and public organizations world-wide. What will be unique is *how* the University is strategic in its use of analytics, the disciplined choices it will make to meet the growing needs and expectations for space, and its decisions in managing these costs. The on-going choices will include: identifying assets for renewal, repurposing, closure, disposal, and even demolition. The choices will be driven by evidence of today with projections of tomorrow. They will also look at partnerships and collaborative opportunities in infrastructure design, operations, maintenance, and funding.

Maintenance is considered any activity that seeks to maintain the desired operating condition of an asset. Keeping up with maintenance ensures reliable and safe building occupancy for users. There are five types of maintenance, including: 1) emergency and reactive maintenance that is typically unplanned and urgent; 2) supportive maintenance that supports program and research equipment; 3) corrective maintenance that seeks to resolve chronic failures through performing major repairs or replacement of assets; 4) preventive and predictive maintenance that seeks to resolve maintenance issues before they arise as well as regular maintenance requirements; and 5) deferred maintenance that is required but deferred to future years. The accrual of deferred maintenance increases the risk and liability to the institution and is a large focus of this strategy.

The current asset replacement value of the supported and unsupported buildings is nearly \$7.25 billion<sup>1</sup>. As of 2018, the University of Alberta's deferred maintenance liability for these buildings was nearly \$353 million<sup>1</sup>, with only \$34.9 million<sup>2</sup> currently provided as an annual Infrastructure Maintenance Program (IMP) grant for the supported buildings by the Government of Alberta. The University's buildings, roadways and grounds, whether for learning and research, student services, offices or storage, incur significant capital and recurring operating and maintenance costs and are amongst the highest of the direct operating costs of the institution. If this current rate of growth of on-going maintenance and deferred maintenance liability continues, deferred maintenance liability could reach \$1 billion by 2027 (See Figure 2).

In order to effectively manage risks associated with this liability, it is critical to strategically invest funding. Extensive research across North America suggests that the annual average maintenance investment in facilities should represent approximately two per cent of the replacement value. This can vary from less than two per cent to around five per cent for complex and/or sophisticated buildings (laboratories, research, and other specialized facilities). This would typically have meant a minimum of \$145 million per year (two per cent of \$7.25 billion of the current replacement value) dedicated to maintenance to avoid an accumulation of deferred maintenance for all buildings and roadways. The impact of not having an appropriate threshold of maintenance funding for infrastructure has resulted in the current deferred maintenance liability and its rapid upward trend.

Facility maintenance is a continuum made up of operational (day to day), major maintenance (building systems and components), and major upgrade/modernization. The University is funded by the Government of Alberta through a variety of sources: operational through lights-on funding (allocated as part of our base funding allocation),

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<sup>1</sup> Includes both supported and unsupported facilities. Supported facilities strongly align to the educational role and mandate of the institution, thereby currently receiving operating and maintenance dollars from the Government of Alberta. This includes student classrooms, research spaces, study areas, etc. Going forward, there is less certainty that the Government of Alberta will be providing operating dollars for any new supported facilities

Unsupported facilities are less aligned to the institution's role and mandate, including: food services, parking, residences, retail outlets, etc.

<sup>2</sup> The \$34.9 million is IMP funding for supported infrastructure only, directed towards deferred maintenance.

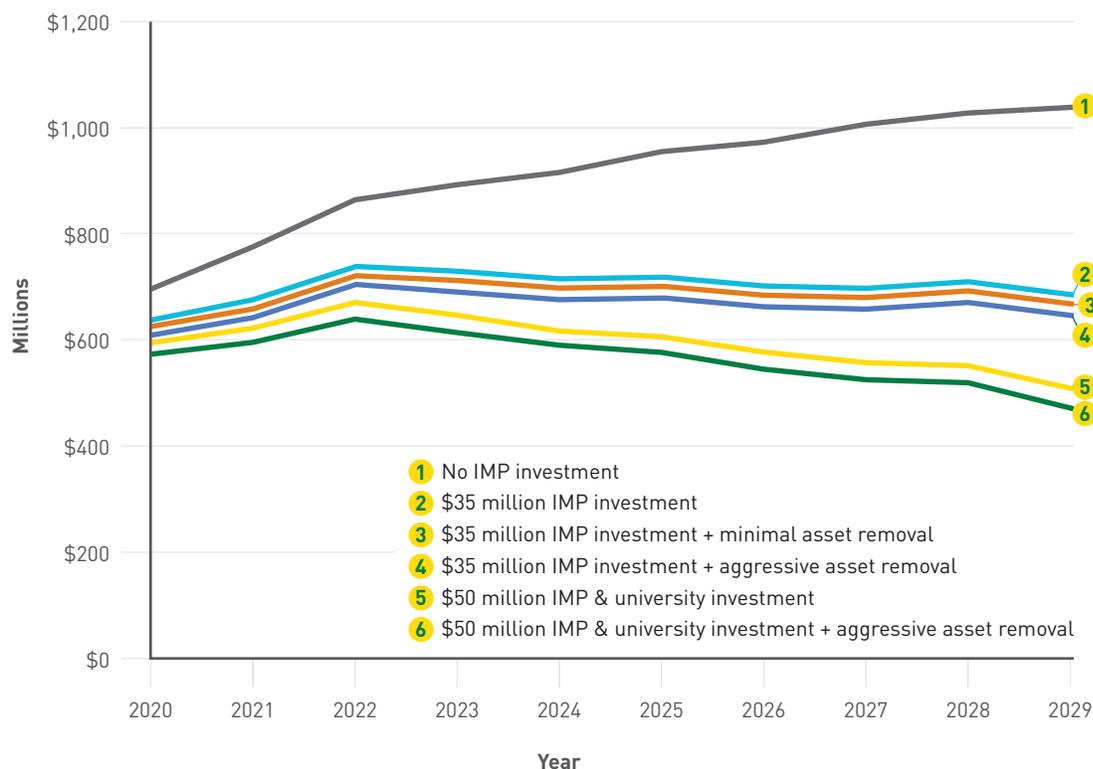
major maintenance through capital maintenance and renewal (IMP) funding, and major upgrade/modernization funding which is provided on a project-by-project approval basis. Other sources of maintenance funding can be directed from internal sources such as partner funding from faculties or centrally by the university. The University contributed its first funding of \$1 million in 2019-20 to address deferred maintenance with an aspiration for that amount to increase over time.

Difficult choices lie ahead and repurposing and/or removing any infrastructure from such a monumental institution with over a 100-year history will require debate and discussion to understand concerns and areas of potential resistance. These collaborative discussions and ultimate choices are good asset management practices grounded in principles. The principles have been discussed in early 2019

with the Board of Governors, the General Faculties Council, the university's executive and faculty leadership, and students. The principles emphasize: 1) student life experience, research and scholarship; 2) asset management; 3) campus character; and 4) decision-making.

Figure 2 provides examples of the types of choices that will be informed by an asset management strategy. This figure forecasts six scenarios based on varying levels of financial commitment from the Government of Alberta and the University of Alberta to mitigate the deferred maintenance liability coupled with removing building assets that have either exceeded their life expectancy, their cost to maintain is larger than the value of the buildings, and/or they no longer meet users' needs in design or operation. While these are only examples, they illustrate the disciplined choices necessary over the years ahead

**FIGURE 2**  
**Deferred maintenance liability scenarios for supported, unsupported and mixed buildings**



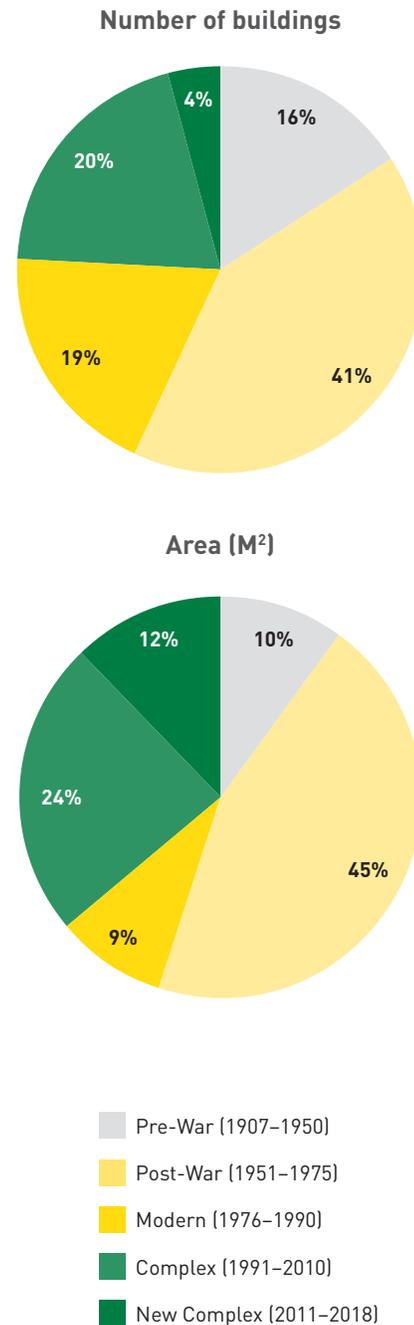
requiring deep engagement across the institution and tight alignment to the institution’s academic and research needs.

The data presented in Figure 2 (page 9) are the best available at this time, but do not include the maintenance needs of the newer and more complex buildings on campus<sup>3</sup>. It is likely that when this information becomes available and integrated into our information systems, the forecasted liabilities will be significantly higher.

Greater than 50% of the University of Alberta’s individual buildings were built in the post-war (1951-75) or modern (1976-90) eras. These eras were known to have unsustainable construction processes with an original intent that lesser construction quality would be offset by sufficient maintenance funding that would mitigate deficiencies. These buildings have a 50–60 year life cycle, ending now (Figure 3). Many of the critical systems in these buildings are at or near the end of their life and their failures would impair the delivery of the institution’s academic mission if preservation funding or increased maintenance dollars are not available.

The choices the University makes will need to bend the trend of expenditure growth in our deferred maintenance liability. While the adjacent visuals display the number and volume of buildings at different ages and areas, the impact of the more modern and complex buildings will be significant (Figure 4). This second wave of impact of maintenance needs requires the planning and financial policies to be established now in order to best mitigate the future consequences.

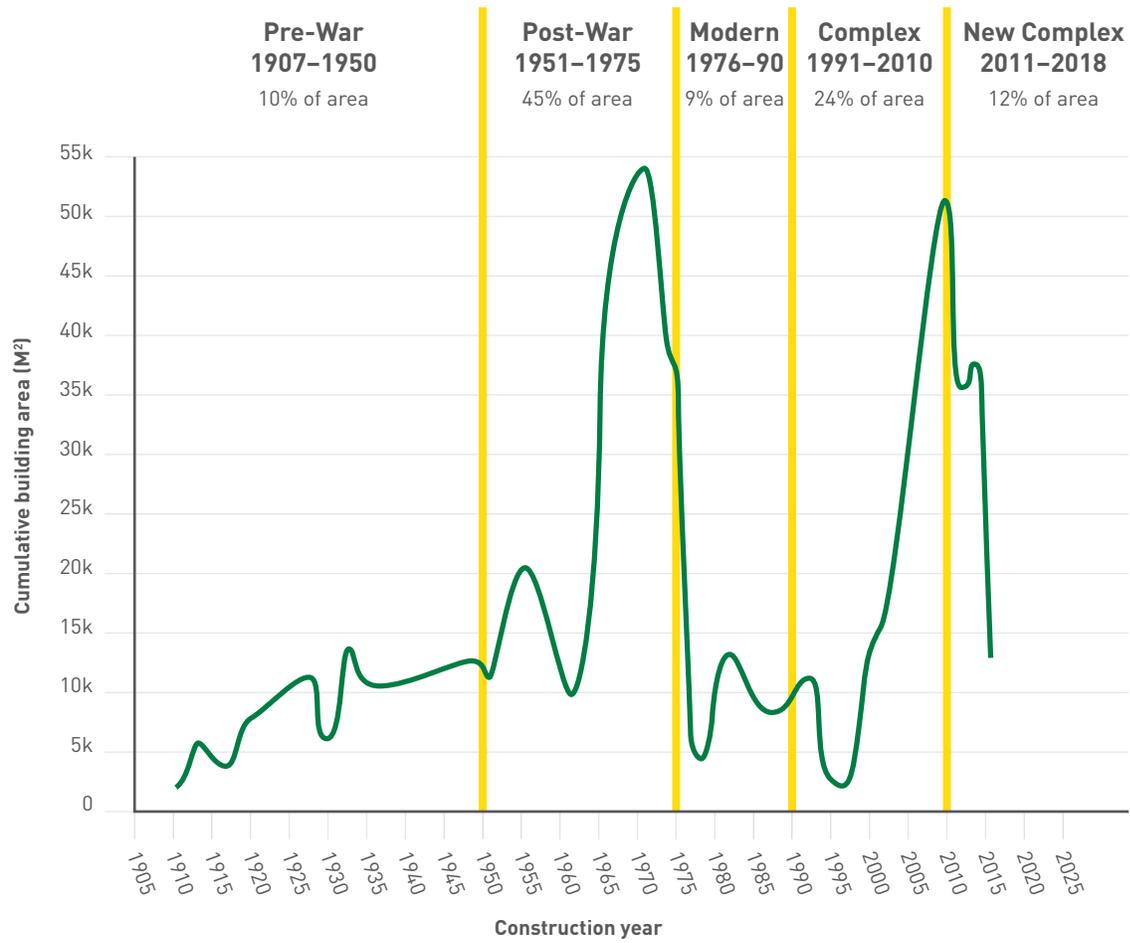
**FIGURE 3**  
**Building Distribution Based on Age**



<sup>3</sup> Such as Edmonton Clinic Health Academy, Centennial Centre for Interdisciplinary Science and Donadeo Innovation Centre for Engineering.

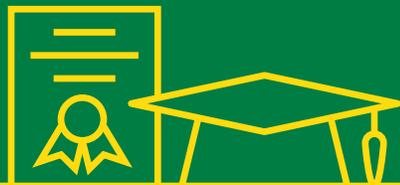
**FIGURE 4**

**Bow Wave of Deferred Maintenance Liability**



# Principles

Principles set a foundation for a system of decision-making and actions. The below principles are guiding the asset management decisions that will be made in the short and long term. They have been reviewed and supported by both the General Faculties Council and Board of Governors, as well as leadership tables such as President's Executive Committee. The fourteen principles are intended to have a long term lens in their application.



## Student Success, Life Experience, Research and Scholarship

1. Campus spaces foster positive student learning and living experiences.
2. Building assets that positively contribute to teaching, research and service.
3. We endeavour to provide modern environments, including staff space, reflective of today's pedagogies.
4. Facilities are capable of supporting world-class research across multiple disciplines.



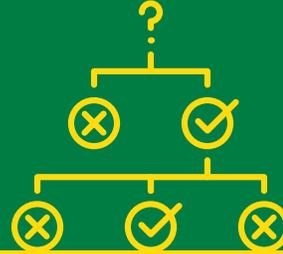
## Asset Management

5. Buildings are continually evaluated to prioritize investments in capital (renewal, expansion, new construction); in maintenance (preventative, current and deferred); and obsolescence.
6. Recognizing the inherent uniqueness in an institution of higher learning, while maximizing system-wide functionality.
7. Social, economic and environmental sustainability is achieved by:
  - a. Incorporating inclusive design principles into campus infrastructure (e.g. all-gender, barrier-free).
  - b. Reducing our ecological footprint.
  - c. Reducing operational costs.
  - d. Continually advancing the three pillars of sustainability: social, economic and environmental.



## Campus Character

8. Every building has a unique role and its strategic value in the institutional inventory is more than a mathematical computation.
9. Fostering the active transportation experience is seen to be a priority on all campuses.
10. Campus buildings and grounds will be aesthetically coherent and maintained in a way that considers the community in which it resides.
11. Considerations for removing building inventory will include a meaningful assessment of its historic value and placement in the university's architectural mosaic.



## Decision-Making

12. Adhere to all government-mandated long range development plans, sector plans, urban planning principles, and building codes and regulations.
13. Spending must adhere to government guided parameters:
  - a. "Lights-on" (Base) funding: the portion of the Campus Alberta Grant that is used to cover building operating costs (e.g. utilities, janitorial, maintenance, insurance, etc.).
  - b. Infrastructure Maintenance Program (IMP): a variable annual allocation intended to address deferred maintenance on base building systems.
  - c. Capital grants: funds received in order to achieve a specific building project.
14. Decisions are evidence-based and supported by openly available data related to building occupancy, functionality, performance, environmental considerations, and deferred maintenance.
  - a. Supported by the CIP, we strive to have a "data-driven approach to maintaining, renovating and repurposing existing spaces on campus."
  - b. In order to support modern learning environments we need to have the ability to sustain building infrastructure.



# Goals and Actions

There are four stages, illustrated below, of the life cycle of assets (Figure 5). They are highly interdependent, suggesting the rigour and quality of each stage impacts the subsequent stages. These align with the aforementioned principles and each has specific goals and actions that will

be monitored and reported as part of regular operations within Facilities and Operations. This regular reporting will include performance indicators, best practice targets, and on-going review and risk analyses.

**FIGURE 5**  
**Asset Management Life Cycle**



## Planning and Programming

**1. Strengthen campus planning processes and outputs to consider future events, innovation and risks.**

Campus long range development planning processes are the convergence of many collaborative planning events to understand, anticipate, and design the campus and identify priorities of tomorrow including alignment with the academic mission; research priorities and needs; supporting students' academic, social and wellness aspects; and considering the emergent future risks to a post-secondary institution.

- a. Maintain current **Long Range Development Plans and Sector Plans**<sup>4</sup> to ensure they act as frameworks to support academic visions and student experiences.
- b. Demonstrate **consistency in direction and decisions for campus planning** that exemplifies best practices in smart growth, healthy community and sustainable design.
- c. **Create more innovative approaches to the development of flexible and adaptable space** to meet changing needs of users.

**2. The University's infrastructure will meet end-users' space needs while enabling a positive experience.**

Planning inputs and cycles are interdependent with many functional inputs across the institution, including: academic, research, operational, risk, equipment maintenance, deferred maintenance, and capital disposal. Sound planning and implementation inspires excellence, significantly impacts educational progress, overall productivity, researcher retention, and satisfaction of end users. Aligning programming, planning, and functional design principles within an academic and research delivery framework is crucial to the success of the user experience.

It is a pathway that is deliberate and guided by many tangible and intangible factors and phases. The formalization from idea to a hard asset is founded in life cycle and deeply connected to a strong stewardship mandate. Over the course of a normal life cycle span, approximately only one tenth of an asset's cost is related to its initial capitalization phase and, as such, the relevance of life cycle assessments is fundamentally important in determining and making decisions to construct, lease, or acquire new assets.

- a. Advance a **consistent approach in optimizing space** that aligns with space standards, and provides guidance on how space connects to the overall academic mission, accessibility of key user groups, and unit cost impacts.
- b. Collaborate with faculties to ensure completion of **General Space Programming (GSP)** and **Functional Programming (FP)** to affect academic planning outcomes in priority areas.

<sup>4</sup> These are mandated in the Post-Secondary Learning Act.

### 3. Stakeholders are appropriately informed and engaged when there are significant changes to assets.

Based on the resource allocations in the planning and programming phase, ensure that stakeholder engagement, principle-based outcomes and alignment to effective stewardship principles are effectively considered and executed. This will occur in a transparent and responsible manner. Excellence in planning and execution are the cornerstones to both asset management and space utilization.

- a. **Develop a consistent approach to communications and engagement** prior to any significant change to infrastructure.
- b. Throughout key design implementation phases, input is sought from stakeholders to ensure the multitude of institutional perspectives are acknowledged and **decisions are founded in a common understanding of approved requirements, limitations, and/or compromises.**
- c. Ensure **compliance to institutional design and operational standards** as part of the Board of Governors space policy.

## Creating and Acquiring

### 4. Evaluate space aspirations to align within a framework of established criteria.

At any given time, students, faculty, and staff will express a desire for new, expanded, or repurposed space. These requests will increasingly undergo a multitude of assessments to understand need, evaluate if stated requirements fall within a framework of established criteria, and seek assurance from leaders of the relevance and value of desired space needs.

- a. Facilities and Operations will **provide guidance and direction** to academic and business entities regarding space needs and seek endorsement of appropriate levels of leadership.
- b. Formal planning and design will include an **evaluation framework; capital and operating budget analysis; operational impact assessment; and consideration of alternatives** (renewal, lease, rebuild). Space need options will be formalized and submitted to appropriate levels of leadership for input and decision.
- c. Projects requiring government financial support will be **prioritized, benchmarked, and submitted for consideration within the BLIMS and/or federal government submission processes.**

## Operating and Maintaining

**5. Optimize operations to strategically re-invest funding to maintenance programs and/or capital renewal efforts to better manage the growing deferred maintenance liability.**

Operating and maintaining assets can account for up to 90 per cent of the total cost of building ownership and is comprised: support and maintenance such as administration costs (insurance, security, etc.); routine maintenance and minor repairs; custodial services; fire protection services; pest control; snow removal; grounds care; environmental operations; and utility charges (electric, gas, water). All members of the University of Alberta community can individually and collectively help meet and potentially extend the life cycle of infrastructure through understanding and adapting behaviours in how assets are used and cared for.

- a. **Enhance preventive and predictive maintenance programming** to support improved efficiencies.
- b. **Establish campus service standards and levels** and actively manage and measure across all campuses.
- c. **Develop marketing and awareness campaigns** that emphasize the role each member of the university has in stewarding and maintaining its assets.
- d. **Advance sustainable operations' practices** to support sustainability and environmental targets.

## Renewing or Disposing

**6. The renewal, repurposing and end-stage of assets or their components will inform decisions as part of an integrated process.**

Facilities and Operations will lead the optimization of capital and other asset investments to improve their use with centralized asset management and tracking. This integrated process reduces excess inventory with a clear understanding of actual needs; enables better decisions in renewal, repurposing, or replacement to avoid unnecessary expenditures; and facilitates the decommissioning and/or disposal of assets.

- a. **Undergo a regular review of aligning all assets** to the academic and research mission, considering prioritization criteria and guiding principles.
- b. **Financial, space, and academic modeling will be implemented** as part of the analytic framework to support choices of which buildings will undergo change.

## Strategic Enablers

**7. Establish a strong information and analytics platform to support evidence-based decision-making.**

Robust, consistent, and transparent decisions can be more effectively made when the information they are based on is complete, accurate, and integrated. In order to support improved management of assets, potential investment decisions, or monitoring of performance against service levels, a strong data inventory and analytics framework is needed.

- a. **Strengthen front line processes and information gathering** to instill higher confidence in facilities' data.
- b. **Complete technology and business needs assessments** to identify integrated solutions that support business requirements.
- c. **Build predictive modeling of key assets** that consider multiple factors to the longevity and operational costs of assets.

**8. Enhanced monitoring and reporting of progress will be embedded into the Facilities and Operations portfolio processes.**

This strategy provides Facilities and Operations a framework for the effective and efficient management of the institutions' assets. This is a living document which is relevant and integral to the daily asset management activities across the campuses. To ensure the strategy remains relevant and responsive, the following actions will be undertaken.

- a. **Refresh the strategy as part of the annual planning cycles** in place across Facilities and Operations.
- b. **Implement quality assurance audits** to ensure the integrity and cost effectiveness of data collected.
- c. **Develop a reporting dashboard** aligned with each phase of an asset's life cycle and report on progress and actions quarterly.

# Next Steps

Taking care of our campuses today, will provide a stronger tomorrow. This requires strategic choices of how to manage and future-proof the full life-cycle of current and future infrastructure assets. This requires support from across the university faculties, schools, departments, faculty, researchers and staff, key stakeholders, as well as with different orders of government. All stakeholders are stewards of these assets and have a direct influence on the state and care of all of them.



## One to Two Years

In the next year, Facilities and Operations will be more evidence-driven and seek opportunities to harness innovation in how it maintains, monitors, and operates infrastructure. This includes predicting trends that will improve capital-planning decisions based on expected performance of existing infrastructure. It will also see remote sensors reporting on performance of equipment and productivity of these assets to enhance maintenance cycles and reduce overall operating costs.

Space will be optimized in ways that will align with the academic and research mission while minimizing the quantity of leased space to reduce the overall operating and maintenance costs while allowing more focused and targeted investments. All new or enhanced capital infrastructure will be evaluated to establish the full life cycle costs. There will be renewal of targeted buildings where learners' needs, efficiency gains, and space optimization are evident, such as renovations of the Dentistry/Pharmacy building and Lister Hall.

Land and infrastructure not core to the academic and research missions or not aligned with students' needs or support may be disposed or exchanged for other assets or developed to realize revenues for the institution. And lastly, buildings that have met the end of their life cycle, do not align with the academic and research missions, do not meet student needs' or supports, or are prohibitive to operate or maintain will be decommissioned and, in select instances, demolished.



## Three to Five Years

Over the next three to five years, Facilities and Operations will use predictive analytics to better understand performance, utilization, ecological impacts, and operating costs of assets including the impact of external events such as changing weather patterns and advances in innovation. As increasing amounts of building data is gathered by sensors and sources across all networks, assets that are 'over-maintained' and too cost intensive will be identified leading to a consideration of where alternatives may be more appropriate. There will also be a better understanding of space utilization and, where appropriate, changes to how space is used will need to be made. This will range from reductions to overall space, new configurations, or alternative lay-out and design.

There will also be an increased emphasis on customer service in planning and delivery of infrastructure, including opportunities for continual feedback and satisfaction evaluations from users. This feedback will support continuous improvement throughout the full life cycle.

Lastly, buildings that have reached the end of their life cycle, have increased operating and maintenance costs, and the return on investment to academia through to the financial analysis is unsustainable, will be decommissioned. And, in some instances, these buildings will be demolished if adequate and appropriate space is available elsewhere.



## Five to Fifteen Years

In the next five to fifteen years, there will be changes in how students learn, how academia educates and trains, and there will likely be a substantive growth in the number of students attending post-secondary education. Innovation, technology, and environmental considerations will also increasingly influence asset needs and how infrastructure will be used. These changes over the years ahead will require adaptive and flexible space that more easily changes to the needs of users. Creativity will be needed now in order to accommodate for changes in the future.

There are numerous impacts that will influence infrastructure decisions. One impact relates to autonomous vehicles and increased public transit potentially resulting in how the institution addresses parking and road infrastructure. This may require more sensors and cameras across the institution to support vehicle and passenger safety. Similarly, advances in alternative energy systems may result in changes to the utility grid and power systems, water collection and storage, and even energy storage. This could have a direct impact to the adjacent partners that use the University of Alberta's utility systems. Student learning spaces may shift from a 'sage on the stage' to a 'guide on the side' suggesting a greater need for more collaboration and collision space for students to work together in ways that better enable collaboration and inter-disciplinary learning. Lastly, there may be mergers or acquisitions in post-secondary that expand the volume of assets that the University of Alberta is responsible for, thereby requiring even greater discipline in space optimization and efficient use and maintenance of infrastructure. These are only a handful of the impacts that changes in the environment, the fiscal context and advancements in technology could potentially influence our infrastructure. Facilities and Operations will increasingly undergo environmental scanning, strategic foresight and risk analysis, appropriate adoption of technology, and acceleration of analytics to understand the impact of potential decisions.



# Summary

**The current situation is not sustainable and action is needed now. This strategy will strengthen how we care for our campuses to ensure long term resilience and sustainability.**

Infrastructure is an enormous collective investment and a tremendous resource for a community, society, and the economy. All members of the University of Alberta community are stewards of its buildings and grounds. The majority of assets are increasingly vulnerable to outliving their life cycle, bringing safety, student and research programming, financial enterprise risks, and escalating overall operations and maintenance costs. The current situation is not sustainable and action is needed now, therefore this Integrated Asset Management Strategy requires extensive thought, input, and action. These challenges are not insurmountable but will require dedicated resources, behaviour change, concerted focus, and purposeful collaboration.

This strategy and the actions within it will strengthen how the institution cares for its assets and work toward bending the trend of growth in operations and maintenance expenditures to ensure that the institution is resilient and sustainable for the long-term. Strategic asset management will underpin all activities and investment decisions related to managing our physical infrastructure assets in order to ensure optimal outcomes that underpin the core mission.



