



**UNIVERSITY OF
CALGARY**

2019

Comprehensive Institutional Plan

Prepared for the Government of Alberta

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1. Executive Summary

The University of Calgary, located in Canada's most dynamic and enterprising city, is a young academic institution on the rise, making significant contributions to the local and provincial economies. We have earned a reputation for courageous thinking and for attracting exceptional people. We are proud to submit our 2019 Comprehensive Institutional Plan (CIP) to the Ministry of Advanced Education. This executive summary provides in capsule format the information requested by the Ministry. The key messages of this document are:

- the University of Calgary is guided by a strong triad of documents that have been developed through broad consultation processes – the *Eyes High Strategy 2017-22* and the renewed Academic and Research Plans 2018-23. These plans, built on the solid foundation of the *Eyes High* vision, collectively identify the priorities that drive human, capital, and financial budget allocations at the university;
- the university is led by an experienced leadership team;
- we have demonstrated prudent financial management, which has allowed us to move strategic initiatives forward;
- we are a dedicated Campus Alberta partner: we have provided leadership to the system and we collaborate with provincial partners on a number of initiatives;
- we believe differential funding is a key to building a robust Alberta post-secondary system; and
- we believe that universities are important drivers of economic diversification, particularly as it relates to innovation. Innovation is one outcome of support for research and creative ventures.

CONSULTATION PROCESS

This CIP is a three-year, integrated planning document that satisfies legislated requirements described within the *Post-Secondary Learning Act* and the *Fiscal Planning and Transparency Act*. Our submission was developed following the guidelines provided by the Ministry of Advanced Education, with one main chapter and a series of appendices. Preparation of this plan was overseen by a senior team with broad consultation with our internal and external communities. The main chapter and related appendices were approved by our General Faculties Council, and the business-related chapters and full document were approved by our Board of Governors prior to submission to the Ministry.

ACCESSIBILITY, QUALITY, AFFORDABILITY, COORDINATION AND ACCOUNTABILITY

The University of Calgary is a young and progressive institution where teaching and research interact in novel ways to promote creativity, discovery, and innovation. The university is consistently ranked highly in national and international assessments, being ranked number 1 nationally (25th in the world) by Times Higher Education within its "Golden Age Universities 2019" ranking. The University of Calgary also ranked 6th in Canada (128th in the world) in the highly respected CWTS Leiden Ranking 2019.

The University of Calgary is committed to honouring the principles of the adult learning system: accessibility, quality, affordability, coordination and accountability. The university is dedicated to expanding access to qualified students from across the province and beyond. Working with government, we have succeeded in delivering current, meaningful, and relevant high-quality programs to both undergraduate and graduate students at tuition levels that are for the most part significantly lower than those at other research-intensive universities across Canada. We are committing substantial resources to

improve our outreach to students across the province and to increase the amount of financial aid available to students in need of assistance. We are strong Campus Alberta partners, providing leadership and support wherever needed to ensure all Albertans have access to the advanced education they need to succeed in the modern economy and to become active citizens. Through our reporting to government and to our community, we hold ourselves accountable to the students, staff, and the communities we serve.

The University of Calgary is also focused on fulfilling the three foundational commitments of our *Eyes High* 2017-22 strategy: sharpening our focus on research and scholarship; enriching the quality and breadth of learning; and integrating the university with the community. We will continue to focus on these three pillars while ensuring a world-class student experience and enhancing our campus culture. Thus, we are creating a university that provides the highest-quality advanced education to our students while being accessible and affordable to Albertans.

FINANCIAL AND BUDGET INFORMATION

Through careful management and prudent decision-making, we are able to present a balanced budget of \$1,451.0 million for the University of Calgary in 2019-20. Cost pressures and more limited revenue growth will make it challenging to balance the budget in future years. As a result, we are projecting modest in-year deficits for the subsequent two years, which will be financed by a drawdown of our net assets.

ENROLMENT PLAN AND PROPOSED PROGRAMMING CHANGES

The University of Calgary will welcome over 29,750 Full-Load Equivalent (FLE) students (33,440 Head Count) to our campuses in 2019-20. We are located in a growing urban area with a young population. Demand for places in our programs continues to be high, with a number of programs accepting just one student for every 10 applications. We continue to move forward with a sustainable growth model, and have expanded enrolment – thanks to the support of the Government of Alberta through the Targeted Enrolment Expansion funding – in engineering, education, social work, and law. We anticipate modest growth in the number of international students on our campuses as part of our international strategy. These international students will be in addition to our domestic enrolment targets. Future growth is constrained by space limitations on campus, and thus capital expansion/repurposing is important for us to be able to meet demand. We continue to monitor student demand, creating exciting new programs in areas of high demand and closing programs where enrolment is small and declining.

RESEARCH, APPLIED RESEARCH AND SCHOLARLY ACTIVITIES

The 2018-23 Research Plan of the University of Calgary is driven by three priorities: matching strengths with opportunities, increasing research capacity, and driving innovation. As we act on these priorities, we are committed to helping achieve the provincial outcomes of the Alberta Research and Innovation Framework (ARIF): economic diversification and job creation; environmental stewardship and climate leadership; effective resource management; and engaged individuals and communities for a healthy Alberta. The university is on an upward trajectory and continues to win acclaim for our outstanding achievements in research, scholarly activity, and innovation. Evidence of this trajectory includes annual sponsored research funding of \$419.2 million, the growth of our innovation ecosystem through the gift from the provincial government of the University Research Park, the pending launch of our knowledge engagement initiative, and enhanced funding for undergraduate and graduate research.

UNDERREPRESENTED LEARNERS

In this section, we describe the specific initiatives we will undertake to support underrepresented learners, including Indigenous learners, learners with disabilities, rural learners, and learners from low-income backgrounds. To fulfill our *Eyes High* commitment to integrate the university with the community, we seek to welcome students from all segments of our diverse population. Among the key goals of this commitment is to increase the number of Indigenous students studying at the University of Calgary through our Indigenous strategy, *ii' taa'poh'to'p*. In addition, the university is reaching out to students in rural and remote communities and to students from disadvantaged backgrounds. We do this through broader recruitment activities and by introducing innovative educational programs, such as the four-year Bachelor of Education program, which was designed specifically for students in rural and remote areas. At the University of Calgary, we also work to help students overcome financial barriers to academic success by growing the resources available for scholarships and other forms of financial assistance.

COMMUNITY INITIATIVES AND REGIONAL STEWARDSHIP

We collaborate with communities by identifying local learning needs. These efforts include our work with adult learning system stakeholders such as other publicly funded post-secondary institutions, First Nations colleges, and private career colleges to create a strong network that provides a range of access points and pathways for learners to meet their credentialed and non-credentialed needs. Important elements of our commitment to integrate the university with the community include offerings that enable knowledge exchange and foster upskilling and retraining, collaborations with community organizations, and program and research partnerships across Alberta. We also plan to grow our partnerships with industry, government, non-profit organizations, local Indigenous communities, and alumni.

The 2018-23 Academic Plan set as its second priority Connecting Communities, leveraging the university's geographical location to foster relationships with the city and the region to explore new ideas and new collaborative partnerships. Our 2018-23 Research Plan aims to create a culture where innovative, entrepreneurial, creative, and critical thinking thrive and will result in measurable impacts to our city, communities and to society. We will nurture collaborations with local Indigenous communities, strengthen community-engaged scholarship and learning approaches, and develop new learning pathways by creating collaborative partnerships with other post-secondary institutions to optimize resources.

CURRENT MINISTRY INITIATIVES

Within this section, we describe our plans to address the Government of Alberta's two priority initiatives – sexual violence prevention and mental health. Although sexual assault is a societal issue, post-secondary institutions are uniquely positioned to make sexual assault prevention, education, and accountability a priority on campuses. In June 2017, the University of Calgary approved a Sexual Violence Policy that applies to all members of the university community. The policy was the result of more than two years of work by faculty, students, and staff across the university. The policy is a fundamental element in creating and sustaining a safer campus environment for all community members. Our plans in 2019-20 include an extensive review of this policy.

The University of Calgary is also uniquely positioned to support the government's mental health objective through its Mental Health Strategy. The Mental Health Strategy, which was formally launched in December 2015, is designed to raise awareness and promote well-being, develop resilience and self-management, enhance early identification and response, provide direct service and support, align

institutional policies, processes and procedures, and create and sustain a supportive campus environment. In the years since the launch, we added a focus on addictions in 2017-18, a focus on suicide prevention, mental health messaging, and reaching diverse and unengaged audiences in 2018-19; and we plan to enhance our student mental health services goals for 2019-20 in the areas of harm reduction and regional collaboration. We also plan to review our counselling model.

INTERNATIONALIZATION

The University of Calgary is a global intellectual hub thanks in part to our location in a diverse, growing and enterprising city. We have implemented an ambitious International Strategy that encourages students, faculty, staff and post-doctoral scholars to explore the world through linkages with partner institutions around the world. Among our specific goals are to increase the diversity of our student body and our staff; to build cross-cultural competencies in our students that will help them succeed in multi-cultural settings; to build partnerships through academic programs and research initiatives with universities and industry in other countries; and to leverage our expertise to engage in international development activities.

The University of Calgary is attracting significantly larger numbers of applications from students from around the world. The university expects that within a year, international students will make up 10 percent of undergraduate and over 25% of the graduate student population, thus achieving two targets set in the International Strategy. Twenty percent of our students have an international experience before they graduate, and we hope to raise that number to 30 percent by 2020. In the years ahead, the focus will be on strengthening our efforts in international recruitment and building new partnerships. The University of Calgary is developing collaborative degree programs at the master’s and doctoral levels, which provide the foundation for joint research and joint training of both domestic and international graduate students. We will also continue to focus on further developing the student services available to our international students in order to ensure they have a rich student experience and are positioned to succeed academically. The International Strategy is scheduled for review in 2019-2020.

CAPITAL PLAN

The University of Calgary is one of the few institutions within the Campus Alberta system with a recognized space shortage. Compounding this infrastructure deficit is the fact that critical buildings on campus are unoccupied due to building code issues and deferred maintenance challenges. This has resulted in an institution-wide shortfall in essential classrooms, laboratories, theatres, administrative support space, and core campus service facilities. The goal of the Capital Plan is to balance the competing needs of code upgrades, deferred maintenance, repurposing of antiquated learning and research spaces, and selective but necessary new construction. Following extensive discussion and analysis, the University of Calgary has identified three high-priority capital projects for which we seek government support.

Priority	Project Title	FLEs	Budget (\$ millions)
1	Foothills Campus Code Upgrades and Decant	185	450.0
2	Kinesiology Complex Expansion and Renewal	400	230.0
3	Interdisciplinary Science and Innovation Centre – Phase 2	565	45.0
	Total	1,150	725.0

Addressing these key needs will allow us to achieve the vision outlined in this CIP while providing additional high-quality space for students on our campuses. We continue to struggle with a significant deferred maintenance liability of \$536.0 million as of March 31, 2019, inclusive of approximately \$30.5 million that will be addressed as part of the approved MacKimmie Complex and Professional Faculties Building Redevelopment project. Predictable annual funding in the order of \$45.0 million is required (approximately 1.0 percent of the current replacement value of our capital assets) for the university to maintain our physical infrastructure and minimize the escalation of deferred maintenance.

INFORMATION TECHNOLOGY

At the University of Calgary, information technologies are critical to support the research, teaching and learning, and administrative processes of the institution. It is imperative that we maintain leading-edge technologies to ensure that students are able to learn anywhere, at any time and using multiple methods. This requires information technologies that are available, reliable, ubiquitous, scalable, and innovative. Securing investment for sustaining and advancing technology solutions for the university is critical to achieving the vision articulated in the *Eyes High* Strategy 2017-22. During the coming planning cycle, IT will focus on programs that deliver value in four critical areas: ensuring ongoing accessibility for Alberta learners; affordability of IT services and technologies; quality of research and pedagogy; and coordination of opportunities in Alberta's post-secondary sector.

2. Accountability Statement

June 21, 2019

This Comprehensive Institutional Plan was prepared under the Board's direction in accordance with legislation and associated ministerial guidelines, and in consideration of all policy decisions and material, economic, or fiscal implications of which the Board is aware.

[Original Signed by]

Jill Wyatt

Chair, Board of Governors

3. Institutional Context

3.1 INSTITUTIONAL ROLE

The University of Calgary is a Comprehensive Academic and Research University (CARU) as defined by the six-sector model within the *Post-secondary Learning Act (PSLA)*. This classification determines its role within the Campus Alberta system. As a CARU, the University of Calgary grants diplomas and degrees, including graduate degrees, and maintains a strong and diverse basic and applied research enterprise that contributes to the advancement and application of knowledge for Alberta and beyond. CARU institutions have as their primary objectives the development of the province's capacity for research and innovation and the education and training of a workforce that will support a rapidly evolving and increasingly knowledge-based and globalized economy.

The university is actively driving a transformation that will greatly enhance the impact of the institution on our city, our province and society. Guided by the *Eyes High Strategy 2017-22*, and the 2018-23 Academic Plan and the 2018-23 Research Plan, this transformation involves all aspects of our educational and research enterprises as well as how we engage with our communities. We believe that these changes have positioned the University of Calgary as a crucial partner for the Government of Alberta in achieving its goals for the post-secondary education system in Alberta, and in positioning Alberta for the next-generation economy.

At the University of Calgary, our academic enterprise is informed by our 2018-23 Academic Plan. We will drive innovation through our teaching and learning enterprise. Our formal responsibilities for teaching and learning are research-informed, research-active and goal-oriented, enabled by systemic institutional structures, specialized teaching knowledge, and sustained professional support.¹ We are accountable for meeting these responsibilities to ensure that our students have a positive and engaging experience.

We are further developing various forms of engaged scholarship in all our academic programs that enable our students to integrate research and experiential learning into their ways of knowing and learning about the world around them. As a result, our students are developing stronger connections to their community. Our curricula reflects the enterprising spirit of Calgary that instills the importance of applying our students' newfound knowledge to solving society's most persistent and emerging problems, and teaches them how to explore bold new approaches while managing the risks that often accompany such endeavours. Thus, students at the University of Calgary graduate with a skill set that allows them to have societal impact. At every opportunity, we show our students how attending a research-intensive university benefits their personal growth and career trajectory.

Our research enterprise has been galvanized by our 2018-23 Research Plan. This plan sharpens our focus on our research scholarship through three key priorities: 1) matching strengths with opportunities, 2) increasing research capacity, and 3) driving innovation. Within the priority of matching strengths with opportunities, we identified and are executing against six strategic research themes in which the University of Calgary is well positioned for national and international leadership. Two emerging research themes – Child Health and Wellness and One Health – will contribute important findings that help the government achieve their key goals outlined in the Alberta Research and Innovation Framework.

¹ Integrated Framework for Teaching and Learning, June 2011.

3.2 RESPONSIBILITIES

As a publicly funded post-secondary institution accountable to the Minister of Advanced Education under the *Post-Secondary Learning Act*, the University of Calgary is committed to the principles of the adult learning system. These principles are accessible, affordable and quality learning opportunities for Albertans; enhanced coordination within the system; and greater accountability to ensure that all Albertans have access to the advanced education they need to succeed in the modern economy and to become active citizens. In doing so, the University of Calgary operates within its approved mandate, letter of expectation, and in accordance with direction provided by the Minister. The University of Calgary is an important partner in supporting and promoting Campus Alberta and its aims to lead the world in inspiring and supporting lifelong learning, and to foster a post-secondary system that enhances social, economic, and cultural prosperity. In addition, the University of Calgary is responsible for:

- operating within its current government- and board-approved mandate;
- implementing this CIP as approved by the Ministry of Advanced Education;
- monitoring progress towards key goals and objectives outlined in the *Eyes High Strategy 2017-22*, the 2018-23 Academic Plan, and the 2018-23 Research Plan as set out in this CIP; and
- making prudent, responsible, and transparent budgetary decisions within available resources.

3.3 MANDATE

Founded in 1966, the University of Calgary is governed by a Board of Governors, and operates as a public Comprehensive Academic and Research Institution under the authority of Alberta's *Post-secondary Learning Act*. Education and research at the University of Calgary serve the needs of local, provincial, national and international communities. Through its inquiry-based teaching and research programs and strategic and entrepreneurial partnerships, the university's faculty, staff and students pursue knowledge, contribute to the development and critique of societal goals, and engage in creativity and innovation in many fields. The university's goal is to be recognized internationally for the success of its students and for excellence in research, scholarly and creative activity.

The university offers a broad selection of programs of study including baccalaureate, graduate, professional, and research-based master's and doctoral degrees. It also offers a wide assortment of credit and non-credit diplomas and certificates, as well as non-credit programs of professional development, executive development, and artistic and scholarly activities aligned with the academic expertise of the university. Building on strengths in disciplines in the areas of fine arts, humanities, sciences and social sciences as well as in the professions – including architecture, business, education, engineering, environmental design, kinesiology, law, medicine, nursing, social work and veterinary medicine – the university is committed to offering an experience that provides both disciplinary and interdisciplinary education to its students. A number of its programs are unique within Alberta.

As an autonomous institution working within the Campus Alberta framework, the university collaborates with other post-secondary institutions in the delivery of collaborative degrees, the use of transfer and articulation agreements, the sharing of facilities and faculty members, and the offering of degree-completion opportunities to students from both rural and urban communities. Working with the private sector and all three levels of government, the University of Calgary takes a leadership role within Alberta for the further development of educational and research programs in areas designated as strategic academic priorities.

At the University of Calgary, research, teaching and scholarship are interdependent and steeped in the principle of academic freedom. The university encourages, supports and disseminates research,

scholarship, innovation, and creative activity in many forms and integrates these activities into both the graduate and undergraduate curriculum. Students and faculty at the University of Calgary conduct basic and applied research at the frontiers of knowledge and transfer knowledge to society – locally, regionally, nationally and internationally. The university stimulates and supports the commercialization of research and innovation for the common good and for the prosperity of the province, the nation and the world. Students and other scholars, including post-doctoral scholars, are attracted to the University of Calgary for the opportunity to refine their research, teaching and mentoring skills.

The development of programs of study and of research partnerships across Alberta, nationally and internationally, extends the university's engagement with the broader community and enlarges the vision of its students, faculty and staff. International partnerships, alliances, and development projects, together with study-abroad initiatives, allow the university to contribute to and benefit from a network of worldwide interactions that enrich the student experience.

The University of Calgary offers a comprehensive set of programs, facilities, and services to provide students with an excellent experience both inside and outside the classroom. The university supports the student experience with a range of services including academic and career advising, student-life programming, health and wellness services, and academic success programs. Community-service learning, cooperative and internship placements, and international exchanges all provide experiential learning opportunities to complement students' classroom experiences. The university supplements and enriches its face-to-face instruction with communication and digital technologies, library and cultural resources, and both distance education and blended-learning techniques.

The University of Calgary is responsive to the expectations of the communities it serves in the delivery of its educational and research programs. The university contributes in diverse ways to the cultural, social and economic life of the province, through striving for high quality in its graduates, its research, and its service to the community. The University of Calgary is committed to environmental and financial sustainability, and to making a positive impact on individuals and communities.

[The Mandate was approved by the Minister of Advanced Education on August 12, 2010.]

4. Consultation Process

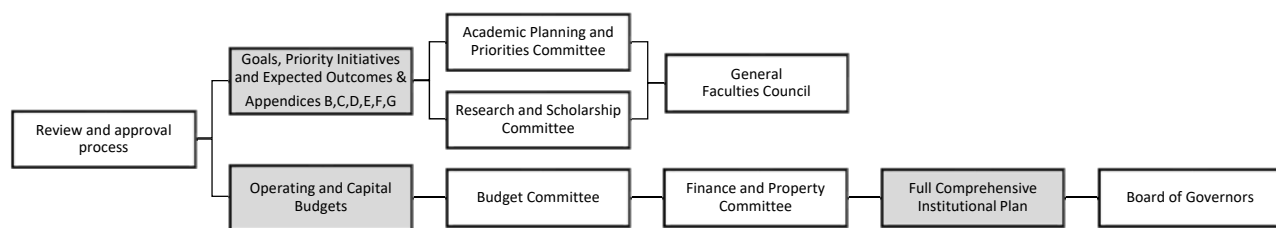
This Comprehensive Institutional Plan is a three-year, integrated planning document that satisfies legislated requirements outlined under Section 78(1) of the *Post-Secondary Learning Act* and Section 10(2) and Section 10(3) of the *Fiscal Planning and Transparency Act*. The Chair of the Board of Governors is required to submit this multi-year plan to the Minister of Advanced Education by June 30 each year.

The planning process begins in July when we start to review the previous year and review trends that will characterize the upcoming year. In the late fall and early January 2019 we met with Ministry of Advanced Education officials to receive feedback on our performance from the previous year and to discuss our early plans for the upcoming year. This feedback was informed by their knowledge of provincial trends expected to influence planning and priority setting. Helping to inform these discussions are regional profiles and institutional factsheets. Our current CIP reflects the outcome of these discussions.

This CIP has been constructed as one main chapter and a series of appendices, the production of which was overseen by a senior team at the university. The academic and research priorities outlined in the Goals, Priority Initiatives and Expected Outcomes chapter serve as a foundation for planning for the Financial and Budget Information and Capital Plan appendices.

The CIP has gone through an extensive, iterative consultative process appropriate to the information in the document. Those chapters that are the purview of General Faculties Council (GFC) have gone through extensive consultation with committees of GFC, including the Academic Priorities and Planning Committee (APPC) and the Research and Scholarship Committee (RSC). Those chapters are Goals, Priority Initiatives and Expected Outcomes; Appendix B: Enrolment Plan and Proposed Programming Changes; Appendix C: Research, Applied Research and Scholarly Activities; Appendix D: Underrepresented Learners; Appendix E: Community Initiatives and Regional Stewardship; Appendix F: Current Ministry Initiatives; and Appendix G: Internationalization. Those appendices that are the purview of the Board (i.e., the more business-related chapters) have had extensive, iterative consultation through sub-committees of the Board, including the Budget Committee (BC) and the Finance and Property Committee (FPC), along with various administrative committees (Executive Leadership Team, Executive Leadership Team Operations Group, and the Campus Strategic Initiatives Group) (Figure 1). In addition, the CIP has been discussed numerous times at the Provost’s team meetings and at Deans’ Council.

Figure 1 – Plan Development (Formal Governance Review and Approval Process)



Undergraduate and graduate students were highly engaged in the academic and research planning processes, and served as members on many of the committees that provided iterative input into the CIP. In its final form, the CIP was approved by the Board of Governors.

5. Goals, Priority Initiatives and Expected Outcomes

5.1 INTRODUCTION

The University of Calgary is one of Canada's leading research-intensive universities: a young, bold, and dynamic institution that embraces opportunity. The recent success of the University of Calgary is driven in large part by our community's commitment to the *Eyes High* Strategy 2017-22:

The University of Calgary is a global intellectual hub located in Canada's most enterprising city. In this spirited, high-quality learning environment, students will thrive in programs made rich by research, hands-on experiences and entrepreneurial thinking. By 2022, we will be recognized as one of Canada's top five research universities, fully engaging the communities we both serve and lead.

We are realizing our *Eyes High* Strategy 2017-22 by focusing on three foundational commitments: 1) sharpening our focus on research and scholarship; 2) enriching the quality and breadth of learning; and 3) fully integrating the university with the community. The university's commitment to these goals has been reaffirmed in our *Eyes High* Strategy 2017-22. In addition to our three foundational themes, we have also highlighted two cross cutting themes: the creation of a rich and multi-faceted student experience and the development of an inclusive, curiosity-driven, and respectful campus culture.

Our 2018-23 Academic Plan and 2018-23 Research Plan provide a roadmap for the achievement of our *Eyes High* Strategy 2017-22. Together, these plans identify five priorities that will guide human, capital, and financial resources over the next five years: prioritizing people, connecting with communities, matching opportunities with strengths, increasing research capacity, and driving innovation. The vision and priorities established at the University of Calgary are designed to demonstrate the benefits and rewards of integrating teaching, learning, and research in an environment where discovery, creativity, and innovation are central to the mission.

The 2018-23 Academic Plan and 2018-23 Research Plan highlight two key value propositions for research-intensive universities: student experience and impact. At the University of Calgary, we take a comprehensive view of student experience — one that supports and promotes intellectual, social, emotional, mental and physical growth and development and prepares our graduates for yet unknown careers in an uncertain future. A focus on the student experience will allow our students to:

- develop as people, professionals, and leaders in their communities;
- explore, take risks, and push boundaries, even if this makes them uncomfortable;
- build resiliency and a growth mindset through overcoming adversity and learning from challenges;
- be self-reflective, aware of perspectives of others and develop relationships which are cultivated through everyday interactions; and
- appreciate the changing world around them and understand sustainability principles at a broad level.

The impact of the work conducted at a research university is evident in many ways. Every day our scholars, who have diverse expertise and perspectives, create new knowledge through synthesis, analysis, experimentation, critical thinking, and expression. We explore our universe in all its dimensions. We

critically evaluate ideas and our understanding of phenomena across many academic disciplines and subjects. We foster informed debate and objective approaches for both unpacking and solving complex problems. Most importantly, we educate the next generation of students and enable them to develop the essential research skills of curiosity, communication, critical thought, perspective, and disciplinary excellence necessary to solve the challenges of the future. In short, our charge is to contribute to the body of world knowledge while simultaneously engaging our students in discovery, creativity, and innovation.

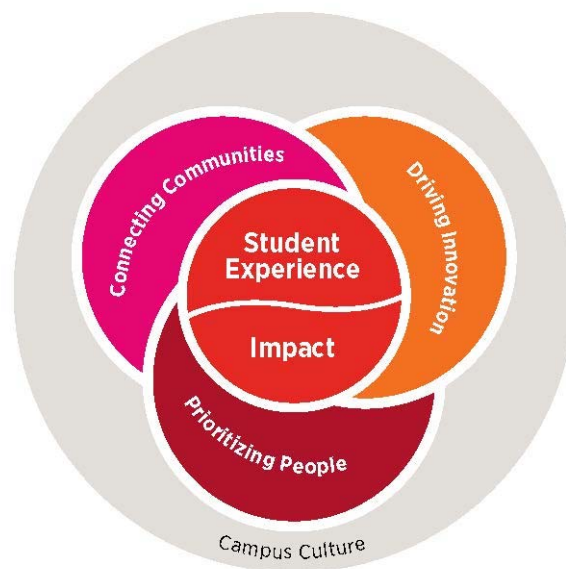
Our two value propositions of student experience and impact are not mutually exclusive, but rather mutually reinforcing. By creating a positive student experience, graduates will be engaged citizens and life-long learners who will positively impact and change society. The new knowledge we create through innovative research results in societal impact, which produces an environment in which students can achieve their potential and flourish. They develop critical thinking and communication skills and leadership attributes that promote impact and influence.

As referenced above, we embrace the fact that we are situated in Calgary, Canada’s most enterprising city. We continue to work collaboratively with many community members and organizations such as Calgary Economic Development (CED) to ensure we are contributing to our city’s success. Recently CED refreshed their economic strategy and our institution is well positioned to play a key role in helping our city move forward in Calgary’s new economy.

5.2 THE PRIORITIES OF THE ACADEMIC PLAN

In the University of Calgary’s 2018-23 Academic Plan, we identify three major academic priorities: prioritizing people, connecting communities, and driving innovation.

Figure 2 – Academic Priorities



Prioritizing People

Universities can be distinguished by the talent they attract, develop, and retain – at all levels of the academy – undergraduate and graduate students, academic staff, management and professional staff, support staff, and administrative and organizational leaders. The University of Calgary is a talent magnet – and we compete globally for talent at all levels. We must work to prioritize our people by creating a

safe, inclusive, and respectful culture of excellence and engagement where people feel valued for the contributions they are making; where diversity of views, thought, and cultures exist in a respectful and collaborative work environment; where leadership from all is encouraged; and where all are empowered and enabled. We will listen to one another, enrich our understanding of other perspectives and voices, and welcome open dialogue and debate. We will continue to develop a campus culture that is curiosity-driven, and supports and enables exploration, risk-taking, learning, and growth. We will work to continually re-vitalize, re-energize, recognize, and reward our talent pool. Attraction, development, and retention of talent is foundational if we are to achieve our vision of being recognized as one of the Top 5 research universities in Canada as outlined in our *Eyes High Strategy 2017-22*.

CONNECTING COMMUNITIES

Communities are differentiated by their values, diversity, and accomplishments. Calgary has been a major engine for economic prosperity in Canada while supporting a diversity of belief systems and alternative models for growth and sustainability - and is currently in a process of renewal and transformation, with an increased focus on entrepreneurial thinking and innovation. Calgary currently has the highest head office concentration per capita in Canada, and the second highest small business concentration of major cities in Canada. Yet, we also live in a caring community that has some of the highest levels of volunteerism, philanthropy, and charitable giving in Canada.

Calgary is repeatedly ranked as one of the world's most livable cities, is known as one of Canada's most educated cities, and is the third most diverse city in Canada. It has a thriving arts community that enriches the lives of Calgarians. One of our biggest advantages as a university is our location – and we reflect the ethos and values of our city. We strive to serve the local communities, including our local Indigenous communities, while at the same time recognizing that our achievements extend far beyond our local jurisdiction. In fact, we are a global intellectual hub, where students and staff from over 160 countries come to share ideas and perspectives and grow together.

We will connect to all of our communities near and far, including our alumni community. We will create engaged citizens and an engaged community organization, by working with community members to discover new ideas and create new art and cultural expressions, and by translating new knowledge into innovative applications that will be of mutual benefit to the university and our many communities. We will support our students, and academic, management, and support staff in active engagement with our communities. We will be the geographical hub for exploring new ideas, new collaborative partnerships, and new knowledge creation, artistic expression, and athletic accomplishments. We will ensure active implementation of our Indigenous Strategy by working with and alongside our Indigenous communities in “a good way.”

DRIVING INNOVATION

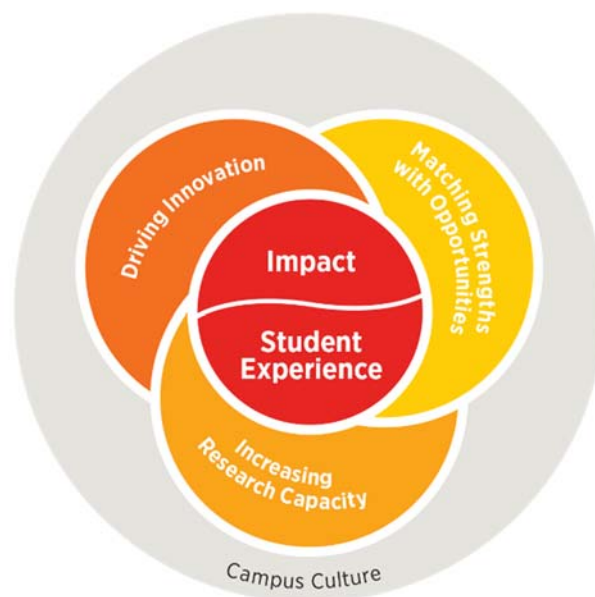
Innovation has many meanings and interpretations, as it is both a process and an outcome. Innovation consists of two key aspects: a) a recognized need and b) a novel idea. Linking these two parts through entrepreneurial thinking as described in our *Eyes High Strategy 2017-22* will be very exciting for creative endeavours championed by all units. Our University interprets a recognized need broadly, reflecting our highly diverse cultures and enterprises. The “need” can involve reaching students at risk, through new teaching approaches, reducing wait times for health treatments, responding to rapidly changing Canadian labour market needs, and improving quality of life for families caring for aging parents. University of Calgary solutions can include designing innovative programs that integrate experiential learning responsive to labour market needs; producing new treatments to improve mental health; promoting

cultural understanding; creating new technologies to improve personal efficiencies in work or play; and improving enterprise solutions for systems that are cumbersome and time consuming. Given that we are a community of 40,000 people always scanning for ways of making improvements, the list of “needs” is boundless. We are a community composed of creative individuals willing to pursue new challenges, especially when it benefits our societies and environments. As a research university, we have engaged scholars, facilities and leveraging opportunities with partners from industry, not-for-profit organizations, governments, and philanthropists who can help us move ideas rapidly from conception to application.

5.3 THE RESEARCH PLAN

The University of Calgary’s 2018-23 Research Plan advances three strategic priorities: matching strengths with opportunities, increasing research capacity, and, in common with the 2018-23 Academic Plan, driving innovation. Combined with a commitment to nurturing campus culture, work on these priority themes will propel the University of Calgary forward in our quest to achieve our refreshed *Eyes High Strategy 2017-22* over the next five years. We will demonstrate through discovery, creativity, and innovation the impact a research-intensive university can have on societal goals and aspirations, and we will create a student experience that will produce the next generation of leaders.

Figure 3 – Research Priorities



Looking forward, our 2018-23 Research Plan will play an important role in identifying areas where we can make significant contributions to the *Alberta Research and Innovation Framework*. This framework, launched in December 2017,

“...sets out shared outcomes and aspirational innovation targets for government, and provincially-supported research and innovation organizations, such as Alberta Innovates and post-secondary institutions. The shared focus inspired by the framework and an accompanying ARIF Action Plan will help Alberta achieve economic, environmental and social prosperity, enabled by research and innovation.” [ARIF, 2017].

The University of Calgary can contribute significantly to achieving the outcomes in the Framework: Engaged Individuals and Communities for a Healthy Alberta, Environmental Stewardship and Climate Leadership, Effective Resource Management, and Economic Diversification and Job Creation. We will contribute through all three of our 2018-23 Research Plan priorities and engage with provincial partners to achieve innovative advances in the areas of health, energy and GHG mitigation, environment and climate adaptation, food and agriculture, and fibre and bioindustry. We will also lead in the development of emerging technologies that support “Growing Alberta’s Green Economy”, “Advanced Materials and Manufacturing” and the “Digital Economy”.

In our previous Research Plan, our university community identified six research themes (see Figure 4) where we had demonstrated national and international scholarly excellence, critical mass, and significant partnerships. For each theme, we brought together a confederation of scholars from across campus to identify and tackle some pressing problems in society where they believed the University of Calgary could make big advances.

Each multidisciplinary team developed their own research strategy for achieving results and the strategies were endorsed through our governance processes. Once approved, our institution invested to help the groups achieve their goals. The six research themes were launched in different years because it took time for the ‘confederation of scholars’ to discuss and formalize their strategies. They are now being implemented and, through our dashboards, we are monitoring our progress. These strategies have proven successful, as we have seen external sponsored research revenue increase from \$282.8 M in 2011-12 to \$419.2 M in 2017-18.

Figure 4 – Research Themes



While our scholars have made significant advances in each of these strategic research themes, there are also new emerging research strengths across our university and new major opportunities that we must capture and nurture. Two new emerging research themes were recently announced: Child Wellness and One Health. These themes will be further developed in the coming year.

Our expertise is evolving with the recruitment of new academic staff, our faculties have identified new priorities that we can build upon, and we have new support systems that enable collaborations and efficiencies across our campus community. The updated priority *Matching Strength with Opportunities* addresses this changing research landscape as we combine our collective research expertise to explore new research methodologies and paradigms and to tackle major issues that are vital to the wellbeing of our societies. Through this work and supported by the priority in our 2018-23 Academic Plan of attraction and development of world leading scholars, we will ensure that we are meeting our second priority of *Increasing Research Capacity* for both curiosity driven and solution-oriented research.

The third shared priority between the 2018-23 Academic Plan and 2018-23 Research Plan is *Driving Innovation*. It will not only identify needs and solutions but will also create value through lessons learned, improvements for society, and growth of creative, critical, and entrepreneurial thinking by our students, faculty, and staff that will deliver long-term benefits to Albertans and to the world at large.

5.4 MATCHING UNIVERSITY OF CALGARY AND ADVANCED EDUCATION GOALS, PRIORITIES AND EXPECTED OUTCOMES

The University of Calgary has matched the goals and strategies of the 2018-23 Academic and 2018-23 Research Plan to the Alberta Adult Learning System Principles. The goals, priority initiatives, expected outcomes and performance measures in the new tables below are consistent with those presented in the 2018 CIP. In the table below, performance measures and expected outcomes most often apply to several priority initiatives within each goal. They do not measure each priority initiative exclusively. Therefore, there is not a direct horizontal alignment between priority initiatives and performance measures and expected outcomes.

ACCESSIBILITY

The University of Calgary is committed to providing exceptional opportunities for qualified learners to achieve a post-secondary education in Alberta. We believe that it is not enough to accept students into our institution; we ensure that the conditions for all students, faculty, and staff are in place that will allow them to flourish, succeed, and thrive in a challenging academic environment. The University of Calgary has identified strategic priorities that support the Adult Learning Principle of Accessibility and complement the numerous programs already offered to students that support accessibility and student success.

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
1. Recruit and retain talented people from a diversity of backgrounds	<p>1.1 Implement our sustainable enrolment growth model, which allows for increases in enrolment numbers in an affordable and sustainable way.</p> <p>1.2 Review recruitment and admission processes to ensure attraction and admission of talented students.</p> <p>1.3 Diversify the student body (e.g., gender, Indigenous, international) and ensure supports are in place for all students.</p> <p>1.4 Enhance retention strategies to improve completion rates.</p> <p>1.5 Increase the number of graduate students.</p> <p>1.6 Develop specific action plans to increase representation of underrepresented federally designated groups (women, Aboriginal peoples, persons with disabilities, and visible minorities).</p>	<p>Learning opportunities at the University of Calgary are accessible to Albertans and attract a diverse student population to our campus.</p> <p>Students have access to a safe, supportive, and vibrant campus environment that supports high quality teaching, learning, and research.</p>	<ul style="list-style-type: none"> ▪ Ratio of Applicants to Student Intake (UG, Grad) ▪ Average entering grade ▪ Undergraduate Retention ▪ Undergraduate Student Engagement (NSSE 1st year, senior year) ▪ Graduate Student Engagement (CGPSS) ▪ Graduation Rate (UG, Master's, PhD) ▪ Graduate Students as % of Total Enrolment ▪ Student Mix (International Undergraduate and Graduate Enrolment) ▪ International Enrolment (UG, Grad) ▪ Indigenous Enrolment (UG, Grad) ▪ Time to Completion (UG, Master's, PhD) ▪ Degrees Awarded (UG, Grad)

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
2: Enhance and Support a Learning Culture	<p>2.1 Continue to evaluate academic and non-academic programs to identify and leverage our strengths and identify strategies for improvement.</p> <p>2.2 Implement and expand efforts to support the Campus Mental Health Strategy.</p> <p>2.3 Implement Indigenous Strategy recommendations, including collaborations with local indigenous communities.</p>	<p>The university offers high quality academic and non-academic programs and supports that meet the needs of our diverse learners.</p> <p>The university attracts, nurtures and supports Indigenous students (see Appendix D).</p>	<ul style="list-style-type: none"> ▪ % of operating budget spent on student experience ▪ Indigenous enrolment
3. Encourage pedagogical innovation and evidence-based teaching practices	<p>3.1 Develop a framework for non-credit programming, including certificates and micro-credentials.</p> <p>3.2 Develop innovative graduate programs such as accelerated 4+1 combined programs and industry-oriented master's programs.</p> <p>3.3 Increase accessibility of blended and online learning opportunities.</p>	<p>The University is accessible to students with different educational needs and delivers its programs through a wide variety of traditional and non-traditional pedagogies.</p>	<ul style="list-style-type: none"> ▪ Non-credit enrolment ▪ Non-Credit Credentials Awarded ▪ Degrees awarded (Graduate) ▪ Credit certificates awarded ▪ # of online courses
4. Expand facilities to support the diverse needs of students and faculty	<p>4.1 Complete building and renovation projects now underway (MacKimmie Complex and Block, Interdisciplinary Science and Innovation Centre, Mathison Hall - HSB) to enhance access, learning and research.</p> <p>4.2 Address deferred maintenance to enhance access, learning and research.</p> <p>4.3 Create a sustainable and energy efficient campus through the implementation of the Institutional Sustainability Strategy.</p>	<p>The University of Calgary provides outstanding facilities and support services to ensure a high-quality learning and research environment.</p>	<ul style="list-style-type: none"> ▪ Space/Facilities (Total Space) ▪ Space/Facilities (Space per Student) ▪ STARS (Sustainability, Tracking, Assessment and Rating System)

QUALITY

The growing quantity and advancement of scientific and scholarly knowledge and the development of innovative teaching pedagogies have raised the bar for universities around the world. University of Calgary students expect and deserve the highest quality educational experience, one that is grounded in research, enriched by relevant and experiential learning opportunities, and embedded in a collaborative and community-based culture. We are invested in providing transformative educational experiences that are supported by the ongoing development of our passionate educators so that we can better engage and challenge students through effective and innovative teaching. We are also highly committed to engaging students beyond the classroom, focusing on co-curricular initiatives that will prepare our graduating students to become the leaders of today and tomorrow. The learning experiences we offer build resilient students prepared for an unknown and changing future. In addition to our on-going quality assurance initiatives and in our constant effort to improve quality, our focus is on the following goals that map under the Adult Learning Principle of Quality.

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
1. Increase Interdisciplinarity	<p>1.1 Develop incentives and opportunities for interdisciplinary teaching, research, and learning, and curriculum design.</p> <p>1.2 Continue to create and reinforce cross-faculty collaborative initiatives and programs that map onto research themes and emerging opportunities.</p>	<p>Graduates will possess strong problem-solving skills enabling them to address complex issues from multidisciplinary angles.</p> <p>The University of Calgary demonstrates excellence and leadership in advancing the interdisciplinary pursuit of sustainability in teaching, research, campus operation, and community service.</p> <p>We will increase our research capacity, and create a dynamic environment to promote research excellence, including interdisciplinarity, to ensure students graduate with cutting-edge knowledge in their fields.</p>	<ul style="list-style-type: none"> ▪ Eyes High Undergraduate Research (# of opportunities, total funding) ▪ STARS (Sustainability, Tracking, Assessment and Rating System)
2. Encourage Pedagogical Innovation	<p>2.1 Continue to develop innovative new academic programs.</p> <p>2.2 Continue to support curriculum review processes to identify program innovations and develop strategies for continuous improvement.</p> <p>2.3 Integrate signature pedagogies within disciplines with inquiry and</p>	<p>The student experience is enhanced through experiential learning opportunities and programs that support student success and employability.</p> <p>Teaching and learning is experientially based, of the highest quality, and is</p>	<ul style="list-style-type: none"> ▪ Undergraduate Student Engagement (NSSE 1st year, senior year) ▪ Graduate Student Engagement (CGPSS) ▪ Eyes High Undergraduate Research (# of opportunities, total funding) ▪ Number of curriculum reviews per year

	<p>evidenced based teaching and learning practices.</p> <p>2.4 Expand experiential and work-integrated learning opportunities.</p> <p>2.5 Respond to feedback received through periodic surveys such as NSSE and the Employee Engagement Survey.</p> <p>2.6 Enhance and expand professional development and internship opportunities with industry and community partners.</p>	<p>assessed according to best practices in the field.</p>	<ul style="list-style-type: none"> ▪ Faculty Survey on Student Engagement (FSSE) ▪ Study Abroad (% of students with international experience) ▪ University Employee Engagement Survey ▪ N, % students in experiential learning ▪ Employment Rate
<p>3. Enable the Expression of Entrepreneurial and Critical Thinking across all of our Endeavours</p>	<p>3.1 Establish an organizational structure to support entrepreneurial initiatives on campus.</p> <p>3.2 Develop space on campus for entrepreneurial initiatives to occur (e.g. Hunter Hub for Entrepreneurial thinking, Life Sciences Innovation Hub, Creative Destruction Lab).</p> <p>3.3 Develop learning opportunities focused on innovation and entrepreneurial thinking.</p> <p>3.4 Create unique experiential programming.</p> <p>3.5 Collaborate with innovation partners in and around Calgary.</p> <p>3.6 Introduce the annual University of Calgary Innovation Prize.</p>	<p>Graduates will possess strong problem-solving skills enabling them to address complex issues from multidisciplinary angles.</p> <p>The student experience is enhanced through entrepreneurial opportunities that support student success and employability.</p>	<ul style="list-style-type: none"> ▪ Entrepreneurial Thinking Dashboard Metric(s)
<p>4. Develop academic platforms</p>	<p>4.1 Create the Office of Experiential Learning.</p> <p>4.2 Develop an undergraduate research platform including course credits for undergraduate research experience.</p> <p>4.3 Expand programs offered by the College of Discovery, Creativity and Innovation.</p>	<p>Graduates will possess strong problem-solving skills enabling them to address complex issues from multidisciplinary angles.</p> <p>The student experience is enhanced through experiential learning opportunities and programs that support student success and employability.</p>	<ul style="list-style-type: none"> ▪ Eyes High undergraduate research ▪ N, % Students in experiential learning

	<p>4.4 Develop a physical learning spaces standard.</p> <p>4.5 Develop a plan to renew key software systems.</p>		
<p>5. Enable leadership and innovation in sustainability</p>	<p>5.1 Implement the Institutional Sustainability Strategy.</p> <p>5.2 Enhance the Campus as a Learning Lab (CLL) Initiative.</p> <p>5.3 Develop collaborative partnerships for sustainability.</p>	<p>Our campus is a place where students become leaders, through experiential learning grounded in sustainability, and conducting research that solves social and environmental challenges in our community and around the globe.</p>	<ul style="list-style-type: none"> ▪ STARS (Sustainability, Tracking, Assessment and Rating System)

AFFORDABILITY

The Government of Alberta and the University of Calgary are committed to preserving affordability for all students who seek a post-secondary education. Affordability of education is a complex issue and relates to the costs associated with tuition and fees and the financial aid available from a variety of sources. The University of Calgary engages thoughtfully and meaningfully with our students around issues of tuition and fees to ensure accountability and transparency. We continue to work to increase financial support for students through scholarships, awards and bursaries. In addition to our ongoing programs and services available to students, the university has established the following priorities that align with the Adult Learning Principle of Affordability.

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
1. Provide Student Scholarships and Financial Support	1.1 Review and enhance scholarship and financial support for students. 1.2 Develop an Eyes High awards program for undergraduate research. 1.3 Enhance Eyes High doctoral scholarships. 1.4 Launch new funding competitions for Eyes High doctoral students and postdoctoral scholars. 1.5 Leverage federal and provincial sources to support all students and those from diverse backgrounds.	Financial barriers to pursuing post-secondary education are reduced. The university is competitive in attracting and retaining top students and postdoctoral scholars.	<ul style="list-style-type: none"> ▪ Eyes High undergraduate research (# of opportunities, total funding) ▪ Scholarships / bursaries \$ per FTE ▪ Eyes High doctoral scholars and postdoctoral scholars (#, total amount)

COORDINATION

Alberta has created a diverse and differentiated system of post-secondary education that responds to the needs of learners through a six-sector model. The University of Calgary is committed to fulfilling the responsibilities outlined in our mandate, approved by the Minister of Advanced Education in 2010. We will deliver educational programs of the highest quality through a “broad selection of programs of study including baccalaureate, graduate, professional and research-based master’s and doctoral degrees.” We will be research leaders, helping to find solutions to the most important problems facing society. We are enthusiastic about collaborating with other academic institutions and community organizations to allow the Alberta post-secondary system to serve all adult learners. As we look forward, our focus over the next year will be on the following strategic priorities that support the Adult Learning Principle of Coordination.

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
<p>1. Collaborate with Local, Regional, National and Global Communities</p>	<p>1.1 Promote new academic activity in the Downtown Campus and the City Building Design Lab.</p> <p>1.2 Implement new learning pathways (Campus Alberta, Dual Credit).</p> <p>1.3 Work with various communities to:</p> <ul style="list-style-type: none"> ▪ support innovation in the Calgary region; ▪ develop work-integrated learning opportunities; and ▪ strengthen community-engaged scholarship and learning. <p>1.4 Continue to implement the alumni strategy.</p> <p>1.5 Create collaborative partnerships with Campus Alberta institutions.</p> <p>1.6 Develop a new International Strategy for 2020-25.</p>	<p>The University of Calgary enhances our academic and research activities through strategic partnerships, provincially, nationally and internationally.</p> <p>The University of Calgary collaborates with post-secondary institutions across the province in a coordinated manner.</p> <p>The university works in partnership with municipal, provincial and federal governments.</p> <p>The university is a strong international partner.</p>	<ul style="list-style-type: none"> ▪ Students in experiential learning ▪ # of Alumni Engaged ▪ Fundraising (Annual total) ▪ # of Donors who are alumni ▪ Likelihood to recommend UCalgary ▪ Awareness of UCalgary ▪ # of dual credit courses with various school boards ▪ Students outside of City but in Alberta (UG/Grad) ▪ Students outside Province but in Canada (UG/Grad) ▪ International enrolment (UG/Grad)

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
	<p>1.7 Create research competitions for prizes that solve major community issues.</p> <p>1.8 Work in partnership with the provincial government on implementing new legislation.</p> <p>1.9 Work with the federal and provincial governments to leverage and optimize resources.</p> <p>1.10 Implement a communications strategy for different levels of government.</p>		

ACCOUNTABILITY

The University of Calgary is accountable to its many stakeholders: students, faculty, staff, parents, alumni, government, granting agencies, donors and the community. We engage with our stakeholders in a number of formal and informal ways, including a public Report to the Community, regular campus community updates and Town Halls. Most importantly, we submit planning documents that satisfy the legislated requirements described within the Post-Secondary Learning Act and the Fiscal Management Act, such as this Comprehensive Institutional Plan and our Annual Report. In addition to our ongoing accountability mechanisms, the University will undertake the following initiatives that support the Adult Learning Principle of Accountability.

Goals	Priority Initiatives	Expected Outcomes	Performance Metrics
1. Comply with New Legislation	1.1 Identify and make necessary changes to comply with: <ul style="list-style-type: none"> ▪ the new PSLA and the requirements under the Labour Code; ▪ Tri-Council mandates related to Open Access; and ▪ Bill 19 – An Act to Improve the Affordability and Accessibility of Post-Secondary Education. 	The University of Calgary is a responsive, transparent, and accountable institution.	<ul style="list-style-type: none"> ▪ Legislation compliance achieved.
2. Streamline Processes while Ensuring Compliance	2.1 Implement a research management system for efficient processing of electronic documentation and approval for grants.	The University of Calgary is a responsive, transparent, and accountable institution.	<ul style="list-style-type: none"> ▪ Research management system implemented
3. Monitor and Report on our Progress towards Eyes High	3.1 Continue to track our progress towards <i>Eyes High</i> using our established performance measures. 3.2 Report annually on our progress towards <i>Eyes High</i> and on the value and impact of the University of Calgary to the Province of Alberta.		<ul style="list-style-type: none"> ▪ Annual submission of the Comprehensive Institutional Plan and Annual Report ▪ GFC approved primary and secondary metrics

5.5 CONCLUSION

The University of Calgary is a strong Campus Alberta partner and supports the principles of the adult learning system of the province. We are committed to increasing **accessibility**, especially for students from communities that have historically been underrepresented in the post-secondary system. Rather than wait for these students to apply, we have adopted a proactive recruitment strategy that allows us to connect with students from diverse backgrounds, including Indigenous, rural and remote students, inform them of the opportunities that await them at the University of Calgary, and take steps to ensure they succeed once they are here.

For students to develop and succeed as individuals and become leaders in the community and labour market, they must be prepared to compete against the best-trained graduates from around the world. Guided by our commitment to enrich the **quality** and breadth of learning, we have invested in bringing leading scholars and teachers to the University of Calgary to introduce our students to innovative ideas in the arts, sciences, and professions. With the development of the Taylor Institute for Teaching and Learning, we are making it possible for our professors to create new and innovative forms of pedagogy, which will better prepare our graduates to succeed in today's labour force.

In the Canadian and North American context, the tuition at the University of Calgary is very modest. Nevertheless, we recognize the importance that **affordability** has to Albertan families when it comes to post-secondary education. Thus, we have worked to make available a wide range of scholarships and bursaries for students in need and have ensured that we have competitive merit-based awards that will help retain top Albertan students in Alberta. Through the enhancement of our financial literacy programs, we will ensure that students are aware of the wide range of aid programs available to them from the university, government, and the community and help them to develop lifelong skills in financial management. We fully support the principle that no qualified student should be deprived of a university education because of financial need.

The adult learning system in Alberta is complex and the need for **coordination** is evident. We remain committed to the six-sector model in Alberta and to working with our Campus Alberta partners across the post-secondary system. We are also collaborative partners with schools throughout the secondary system to maximize the learning opportunities and pathways available to Alberta students and to ensure resources are used as efficiently and effectively as possible. Through collaborative programs with our industry and community partners, we are committed to providing enriching experiential learning and Work Integrated Learning opportunities to our students.

We are grateful for the generous support the University of Calgary receives from the Government and the people of Alberta. We recognize the need for **accountability** for the support we receive and that we must be responsive to our community. Through the formal accountability presented in our Comprehensive Institution Plan and Annual Report, we take this responsibility seriously. We are a young, nimble, and responsive institution that values the collaboration and partnerships we have with the Ministry of Advanced Education and across the province.

The University of Calgary is optimistic about the future. As we build on the momentum and successes of our *Eyes High Strategy 2017-22*, we will continue to be a leader in education, creativity, discovery, and innovation and contribute to a brighter future for all Albertans.

APPENDIX A: FINANCIAL AND BUDGET INFORMATION

Table 1 – Consolidated Budget and Two-year Forecast

(\$ thousands)	Budget 2018-19	Budget 2019-20	Forecast 2020-21	Forecast 2021-22
Revenue				
Campus Alberta Grant	496,030	505,918	516,036	526,357
Other government of Alberta grants	207,509	183,953	187,633	191,386
Federal and other government grants	157,660	189,585	193,431	197,349
Sales of services and products	124,000	127,620	130,294	133,012
Student tuition and fees	231,792	238,632	243,643	248,273
Donations and other grants	134,020	156,814	159,981	163,210
Investment income	48,222	48,445	49,450	50,472
Total Revenue	1,399,233	1,450,967	1,480,468	1,510,059
Expenses				
Academic costs and institutional support	862,254	867,232	894,029	921,829
Research	347,685	383,221	394,081	405,292
Special purpose and trust	72,591	80,623	82,643	84,712
Facilities operation and maintenance	71,831	71,656	72,183	74,424
Ancillary services	44,872	48,235	49,336	50,670
Total Expenses	1,399,233	1,450,967	1,492,272	1,536,927
Excess (shortfall) of revenue over expenses	-	-	(11,804)	(26,868)
Shortfall funded by unrestricted net assets	-	-	-	-
Shortfall funded by internally restricted net assets	-	-	11,804	26,868
Surplus (deficit)	-	-	-	-

Table 2 – Unrestricted Net Assets

(\$ thousands)	Budget 2019-20	Forecast 2020-21	Forecast 2021-22
Opening unrestricted net assets (net of accumulated remeasurement gains)	11,647	11,647	11,647
Shortfall funded by unrestricted net assets	-	-	-
Capital initiatives funded by unrestricted net assets	-	-	-
Closing unrestricted net assets (net of accumulated remeasurement gains)	11,647	11,647	11,647

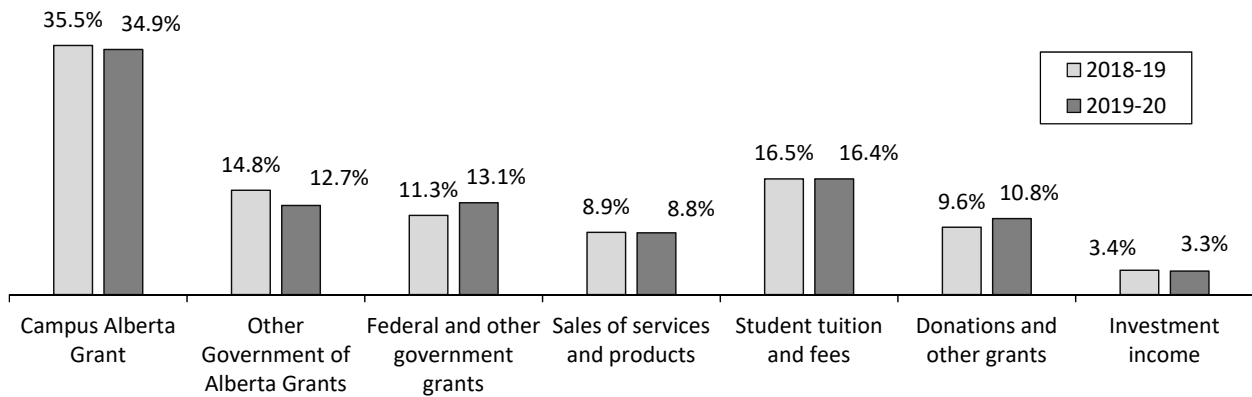
Table 3 – Expense by Object and Two-year Forecast

(\$ thousands)	Budget 2018-19	Budget 2019-20	Forecast 2020-21	Forecast 2021-22
Expenses				
Salaries and benefits	835,744	831,562	860,482	892,111
Materials, supplies, and services	288,474	306,625	312,465	318,657
Utilities	27,727	26,956	27,519	28,091
Maintenance and repairs	18,355	22,714	23,189	23,672
Scholarships and bursaries	86,596	102,917	105,093	107,484
Cost of goods sold	12,563	16,900	17,255	17,616
Amortization of capital assets	129,774	143,293	146,269	149,296
Total Expenses	1,399,233	1,450,967	1,492,272	1,536,927

Note: Does not include financial statement impact from West Campus.

A.1 PROJECTED REVENUE

Figure 5 – Projected Revenue



A.1.1 Campus Alberta Grant

The Campus Alberta Grant from the Ministry of Advanced Education is budgeted to account for \$505.9 million or 34.9 percent of total revenue for 2019-20 (Figure 5). The Campus Alberta grant increased by 2.0 percent in 2018-19 and is expected to increase an additional 2.0 percent in 2019-20. We have assumed 2.0 percent in 2020-21 and 2021-22.

A.1.2 Other Government of Alberta Grants

Other Government of Alberta grants include all research, and funding other than the Campus Alberta Grant from the Government of Alberta including revenues recognized from previously deferred Government of Alberta grants.

Other grants from the Ministry of Advanced Education are budgeted to account for \$184.0 million or 12.7 percent of total revenue for 2019-20 (Figure 5).

A.1.3 Federal and Other Government grants

Federal and other government grants include all funding and revenue recognized from the federal government, municipalities, foreign governments, and other provincial organizations residing in provinces outside Alberta.

Federal and other government grants are budgeted to comprise \$189.6 million or 13.1 percent of our total revenue for 2019-20. Research revenue comprises \$135.6 million or 71.5 percent of federal and other government grants. Research revenue has grown by over 5.0 percent annually on average over the past five years. Growth at this level is expected over the forecast period as we strive to reach our goal of becoming recognized as one of the top five research institutions in Canada. Research spending is expected to increase as a result.

A.1.4 Sales of Services and Products

Sales of services and products include ancillary revenues relating to secondary services available to students, faculty and staff, such as on-campus residence, food services, parking services, university bookstores, Hotel Alma, and conference services. In addition, sales of services and products includes rental income, management fees, and other faculty-generated revenues. The sales of services and products budget for 2019-20 is \$127.6 million or 8.8 percent of total revenues.

A.1.5 Student Tuition and Fees

Student tuition and fees include all income related to credit and non-credit tuition and related fees.

Student tuition and fees for 2019-20 are budgeted to be \$238.6 million or 16.4 percent of total revenue, with a 0.0 percent increase in tuition rates for the 2019-20 year based on guidance from the Ministry of Advanced Education. The increase is predominantly due to an increased number of students, both domestic and international.

A.1.6 Donations and Other Grants

Donations and other grants include all donations and grants recognized from individuals and businesses during the period.

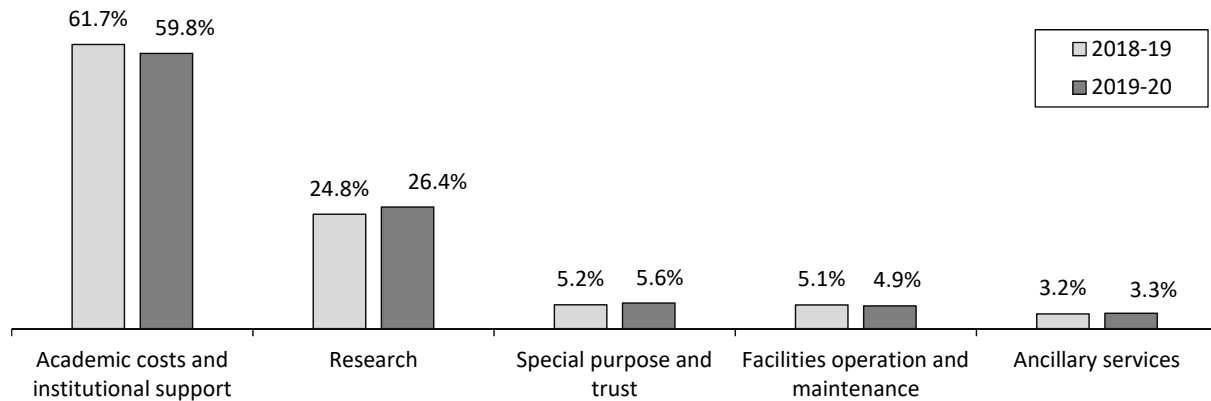
Donations and other grants account for \$156.8 million or 10.8 percent of total revenues for 2019-20 as we continue to focus on established targets for fundraising.

A.1.7 Investment Income

Investment income includes income from dividends, interest income, and realized gains or losses on the sale of investments. Investment income is comprised of realized revenues from the university's non-endowed funds as well as endowment related investment income. The university actively monitors market conditions and investment asset mix ratios for both non-endowed funds and endowment investment pools to ensure both short-term investment needs and long-term objectives for the preservation of real value are met. Investment income expectation for 2019-20 is \$48.4 million or 3.3 percent of total revenues.

A.2 PROJECTED EXPENSE – BY FUNCTION

Figure 6 – Projected Expense by Function



A.2.1 Academic Costs and Institutional Support

Academic costs and institutional support is the largest function at the university and it represents the operating activities of the university. Expenses include activities that directly and indirectly support innovative learning, programming, and teaching, as well as university administration and governance functions. For 2019-20, the academic costs and institutional supports budget is \$867.2 million or 59.8 percent of total expenses.

A.2.2 Research

Research expenses relate primarily to activity funded by externally sponsored research funds intended for specific research purposes as well as internal funds designated for research-related spending. For 2019-20, the research budget is \$383.2 million or 26.4 percent of total expenses.

A.2.3 Special Purpose and Trust

Special purpose and trust is comprised of expenses relating to externally restricted funding for non-research related university activities. The special purpose and trust budget for 2019-20 is \$80.6 million or 5.6 percent of total expenses.

A.2.4 Facilities Operations and Maintenance

The facilities operations and maintenance function includes centralized management and maintenance of the grounds, facilities and buildings. Examples include utilities, building maintenance, custodial services, landscaping and grounds keeping, facilities administration, and major repairs and renovations. The facilities operations and maintenance budget for 2019-20 is \$71.7 million or 4.9 percent of total expenses.

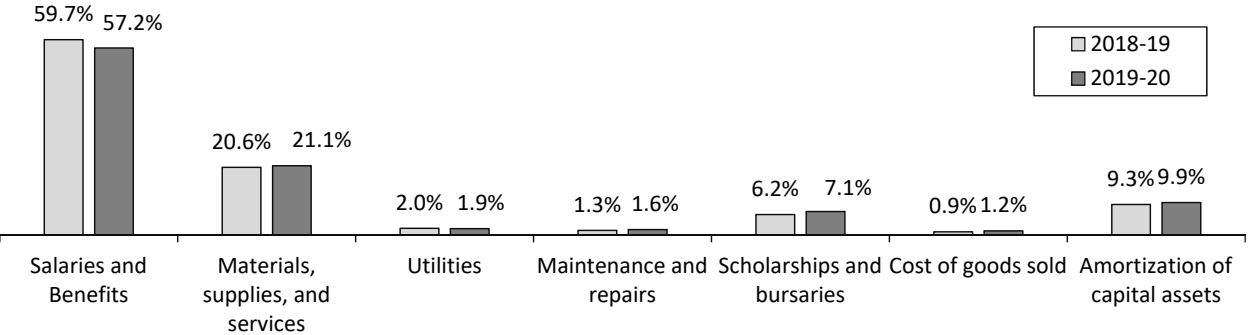
A.2.5 Ancillary Services

Ancillary expenses relate to secondary services available to students, faculty, and staff. Services include on-campus residence, food services, parking services, university bookstores, Hotel Alma, and conference

services. For 2019-20, the ancillary services budget is \$48.2 million or 3.3 percent of total university expenses.

A.3 PROJECTED EXPENSE – BY OBJECT

Figure 7 – Projected Expense by Object



A.3.1 Salaries and Benefits

Salaries and benefits represent the largest expenditure at the University of Calgary. For 2019-20, salaries and benefits are budgeted to be \$831.6 million or 57.2 percent of total expenses. The salaries and benefits decrease is a result of a reduction in the pension liability offset by inflationary costs.

A.3.2 Materials, Supplies, and Services

Materials, supplies, and services are the second-largest university expense. For 2019-20, the budget is \$306.6 million or 21.1 percent of total expenses. The research component of this budget is \$127.8 million or 41.7 percent for 2019-20.

A.3.3 Utilities

The utilities budget is \$27.0 million or 1.9 percent of total expenses for 2019-20. Our hedging strategy, combined with lower natural gas prices and recent energy savings initiatives, allows us to have greater stability within the utilities budget. In Budget 2016, the Government of Alberta introduced a new Carbon levy on greenhouse gas emissions. To date, this has resulted in \$3.5M in additional operating costs with no government backfill. Budget 2019-20 assumes no additional increases in the current levy of \$30/tonne. Additional analysis will need to be done in future years once more information is available from the government.

A.3.4 Maintenance and Repairs

The maintenance and repairs budget for 2019-20 is \$22.7 million or 1.6 percent of total expenses. The budgeted amounts are over and above the funds allocated through the Government of Alberta Infrastructure Maintenance Program (IMP) as the IMP funds are not adequate to meet the current and growing deferred maintenance of the university’s buildings and ongoing infrastructure needs.

A.3.5 Scholarships and Bursaries

The scholarships and bursaries budget for 2019-20 is \$102.9 million or 7.1 percent of total expenses. This represents a \$16.3M increase or 18.8 percent from prior year, as a result of increased scholarships and awards. The sponsored research and other restricted components of the total scholarships and bursaries budget is \$64.2 million or 62.4 percent.

A.3.6 Cost of Goods Sold

The cost of goods sold budget for 2019-20 is \$16.9 million or 1.2 percent of total expenses. This expenditure item represents the costs related to sales of services and products.

A.3.7 Amortization of Capital Assets

Amortization represents an annual expense for the estimated reduction in the useful life of our buildings, utilities and site improvements, furnishings, equipment and systems, and learning resources. For capital assets that have been funded by external capital grants and donations, the respective amortization expense is offset by the recognition of revenue in the line items that provided the capital funding (e.g., Government of Alberta Grants). The amortization of capital assets budget for 2019-20 is \$143.3 million or 9.9 percent.

A.4 BUDGETED CASH FLOW STATEMENT

The Budgeted Cash Flow Statement shows the amount of cash and cash equivalents projected to be received and disbursed by the University of Calgary in 2019-20 (Table 4). It provides an understanding of how the institution is operating, where its resources are coming from, and how the resources will be spent in the following four areas: 1) operating activities, 2) capital transactions, 3) investing activities, and 4) financing activities.

Table 4 – Budgeted Cash Flow Statement

(\$ thousands)	Budget 2019-20	Forecast 2020-21	Forecast 2021-22
OPERATING TRANSACTIONS			
Excess (shortfall) of revenue over expenses	-	(11,804)	(26,868)
Add (deduct) non-cash items:			
Amortization of tangible capital assets	143,293	146,269	149,296
Gain on disposal of portfolio investments	-	-	-
Loss on disposal of tangible capital assets	-	-	-
Capital gifts in kind received	-	-	-
Extended capital contributions recognized as revenue	(92,512)	(94,424)	(96,369)
Change in investment in government business enterprises	-	-	-
Decrease in employee future benefit liabilities	(1,355)	(1,915)	(3,212)
Total non-cash items	49,426	49,930	49,715
Net change in non-cash working capital	20,630	21,417	22,234
Cash provided by operating transactions	70,056	59,543	45,081
CAPITAL TRANSACTIONS			
Acquisition of tangible capital assets less gift in kind	(264,478)	(305,898)	(300,456)
Proceeds on sale of tangible capital assets	-	-	-
Cash applied to capital transactions	(264,478)	(305,898)	(300,456)
INVESTING TRANSACTIONS			
(Purchases) of investments, net of sales	(58,268)	39,906	75,438
Cash applied to investing transactions	(58,268)	39,906	75,438
FINANCING TRANSACTIONS			
Debt – repayment	(5,627)	(6,064)	(6,141)
Debt – new financing	-	-	-
Increase in spent deferred capital, less expended capital recognized as revenue	258,317	212,513	186,078
Cash provided by financing transactions	252,690	206,449	179,937
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	-	-	-
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	145,757	145,757	145,757
CASH AND CASH EQUIVALENTS, END OF YEAR	145,757	145,757	145,757

A.5 CAPITAL BUDGET

Our total expected investment in infrastructure, furnishings and equipment, planned major maintenance and repairs, learning resources and IT hardware and systems for 2019-20 is \$264.5 million (Table 5).

Table 5 – Capital Budget

(\$ thousands) Project	Budget 2018-19	Budget 2019-20	Forecast 2020-21	Forecast 2021-22
Infrastructure (Table 6)	151,248	179,708	230,799	231,641
Furnishings and equipment	42,250	55,465	53,225	47,060
Planned major maintenance and repairs	8,510	10,305	2,475	1,950
Learning resources	8,000	8,000	8,168	8,339
Hardware and Systems (IT)	5,000	11,000	11,231	11,466
Total	215,008	264,478	305,898	300,456

A.5.1 Infrastructure

Infrastructure refers to the construction of capital buildings and site improvements. It includes costs directly attributable to architectural, engineering, and legal fees, as well as construction materials and labour. Infrastructure typically has an estimated useful life of 20 to 40 years (Table 6).

A.5.2 Furnishings and Equipment

Furnishings and equipment refer to movable items not attached to buildings that have estimated useful lives of three to 10 years. Furnishings and equipment includes items such as desks, chairs, shelving, classroom technology, lab equipment, computers, etc.

A.5.3 Planned Major Maintenance and Repairs

Planned critical maintenance is primarily funded through institutional reserves.

A.5.4 Learning Resources

Learning resources refer to library assets with permanent value, museum specimens, archival materials, and maps that are held for education and research purposes.

A.5.5 Hardware and Systems (IT)

IT refers to applications and infrastructure necessary to enhance the student experience, support research excellence, and ensure business continuity. IT includes network cabling and devices, telephone systems, data centres, support for teaching, learning and research, and administrative systems.

A.6 INFRASTRUCTURE BUDGET

Table 6 – Infrastructure Budget

(\$ thousands)	Total Project		Budget 2019-20	Total Project Estimate
	Budget 2018-19	Estimate 2018-19		
Major Capital Projects				
MacKimmie Complex and Professional Building	77,500	290,000	92,250	290,000
Interdisciplinary Science and Innovation Centre (ISIC)	-	-	8,500	245,000
Mathison Hall	-	-	12,300	90,000
Schulich School of Engineering Block E Renovation Project	-	-	6,015	9,500
Research Facility Code Compliance	3,040	14,800	-	-
Veterinary Medicine Student Space Expansion Project	2,400	7,200	5,221	7,200
Utility Reduction Program (URPr) Year 3	6,100	6,500	-	-
Utility Reduction Program (URPr) Year 4	-	-	6,000	6,500
Health Informatics and Clinical Research Methodology Ctr	3,120	3,300	-	-
University Research Centre Labs Project	-	-	5,100	5,100
Strategic Investment Fund (SIF)⁽¹⁾				
High Density Library Expansion (SIF)	1,330	30,000	-	-
Science A Redevelopment, Phase 2, Early Works (SIF)	1,860	20,000	-	-
Research Field Station (SIF)	500	13,000	-	-
Veterinary Medicine Clinical Skills Building Expansion (SIF)	1,260	13,000	-	-
Research and Innovation Infrastructure Renewal (SIF)	500	12,450	-	-
Engineering Complex, Phase 3, Renovations (SIF)	190	10,000	-	-
Utility Reduction Program (URP) (SIF)	110	9,000	-	-
Classrooms & Facilities Alteration Requests (CAR/FAR)⁽²⁾	4,750	18,250	5,282	20,282
Infrastructure Maintenance Program (IMP)⁽³⁾	24,478	90,412	22,635	116,791
Capital Projects (under 3 million)⁽⁴⁾	11,360	15,550	12,300	42,300
Minor Institutional Projects⁽⁵⁾	15,000	60,000	15,000	60,000
Subtotal	153,498	613,462	190,603	892,673
Less: Furnishings & Equipment Included Above	(2,250)	(7,180)	(10,895)	(36,380)
INFRASTRUCTURE BUDGET TOTAL	151,248	606,282	179,708	856,293

Refer to Appendix H – Capital Plan for project details.

1. SIF was a federal government program that supported up to 50 per cent of the eligible costs of infrastructure projects at post-secondary institutions in collaboration with provinces and territories. The program supported projects that improved the scale or quality of facilities for research and innovation, and/or improved the environmental sustainability of research and innovation infrastructure. All SIF projects were completed on or before April 30, 2018.
2. Total Project Estimate includes forecasts for three additional years at \$5.0M per year historic average.
3. The 2019-20 projection is \$22.4 million plus estimated carryover of \$1.2 million less \$1.0 million included in the CAR/FAR Program for a total budget of \$22.6 million. Total Project Estimate includes forecasts for three additional years and includes potential future increases outlined in the provincial budget.
4. Total Project Estimate includes forecasts for three additional years at \$10.0M per year based on historical spending.
5. Total Project Estimate includes forecasts for three additional years at \$15.0M per year.

A.7 BUDGET ASSUMPTIONS, RISKS AND SENSITIVITY

A.7.1 Revenue Assumptions and Risks

The following revenue assumptions and risks have been identified:

- The Campus Alberta operating grant is expected to increase by 2.0% in 2019-20 and we have assumed 2.0 percent in 2020-21 and 2021-22.
- All other sources of Government funding, including other agencies or business entities that are unrelated to Ministry of Advanced Education, will increase modestly with inflation over the remaining two years of the plan.
- We expect to generate positive returns in the investment market that will be sufficient to sustain endowment expenditure levels.
- We anticipate receiving a similar level of support from the Federal Indirect Costs of Research program.
- Our budget is based on the assumption that we will achieve the established enrolment targets.
- Changes were approved by the Government of Alberta to the Post-secondary Learning Act – Tuition and Fees Regulation on December 11, 2018, that limit tuition increases over the planning period. Except for cost recovery programs, the tuition fees payable by domestic students for any approved program of study administered for the 2018-19 or 2019-20 academic year may not be higher than those that were in effect for that program in the 2014-15 academic year, or in the academic year in which the program was established. Additionally, the mandatory non-instructional fees for the 2019-20 academic year may not be higher than those that were in effect at that institution for the 2014-15 year. We have used a conservative estimate of 2.1 percent for the annual cost of tuition inflation in 2020-21 and 1.9 percent for 2021-22.

A.7.2 Expense Assumptions and Risks

The following expense assumptions and risks have been identified:

- The forecast contains an inflationary estimate for salary and benefit cost increases. The results of future collective bargaining negotiations are unknown.
- As salary and benefits account for 57.2 percent of our total expenditures, any variance in salary and benefit assumptions will have a significant impact on the university's operating budget.
- A number of faculty positions are supported through external funding. While this is beneficial to the university, there are risks that the funding will be discontinued and we will be required to either assume funding responsibility or discontinue positions.
- With a significant deferred maintenance liability and an aging physical plant, expensive emergency repairs will become unavoidable.
- We are exposed to future increases in natural gas, water, and electricity prices or unusually high/low seasonal temperatures. The Energy Performance Initiatives and the hedging strategy are designed to reduce the amount and volatility of the cost of utilities. In Budget 2016, the Government of Alberta introduced a new Carbon levy on greenhouse gas emissions. To date this has resulted in \$3.5M in additional operating costs with no government backfill. Budget 2019-20 assumes no additional increases in the current levy of \$30/tonne. Additional analysis will be required in the future.

A.7.3 Budget Sensitivity Analysis

Table 7 illustrates the effect of a 1.0 percent change in our current-year budget assumptions for key revenue and expenditure categories and the potential outcome. For example, a 1.0 percent increase in our Campus Alberta grant would increase total revenue by \$5.1 million whereas a 1.0 percent increase in salaries would increase total expenditures by \$7.1 million.

Table 7 – Budget Sensitivity

(\$ millions)	1% Change
Campus Alberta Grant	5.1
Student tuition and fees	2.4
Salaries	7.1
Benefits	1.2

A.8 TUITION AND FEES

The Government of Alberta's *Post-secondary Learning Act – Tuition and Fees Regulation* provides a framework for setting tuition fees at the University of Calgary. This framework is intended to set fees at a level that supports student access and affordability, encourages quality in teaching, provides for learning in a scholarly environment, are justified by the financial needs of the institution, and ensures no student is denied access for lack of institutional, governmental or personal resources. Changes were approved by the Government of Alberta to the *Post-secondary Learning Act – Tuition and Fees Regulation* on December 11, 2018, that limit tuition increases over the planning period. Except for cost recovery program, the tuition fees payable by domestic students for any approved program of study administered for the 2018-19 or 2019-20 academic year may not be higher than those that were in effect for that program in the 2014-15 academic year, or in the academic year in which the program was established. Additionally, the mandatory non-instructional fees for the 2019-20 academic year may not be higher than those that were in effect at that institution for the 2014-15 year. We have used a conservative estimate of 2.1 percent for the annual cost of tuition inflation in 2020-21 and 1.9 percent for 2021-22. Shown in the following tables are approved and projected tuition fees.

Consistent with Section 3 of the *Public Post-secondary Institutions' Tuition Fees Regulation*, the University of Calgary established a process for holding consultations with students to discuss annual increases in tuition fees. That process is led by a Tuition and Fees Consultation Committee (TFCC). The TFCC is chaired by the Provost and Vice-President (Academic), and includes representatives of student organizations and administration to ensure that open two-way communication on matters related to tuition and general fees is included in the annual budget process.

A.8.1 Tuition Fees (Canadians and Permanent Residents)

Table 8 – Tuition Fees (Canadians and Permanent Residents)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
UNDERGRADUATE					
5 courses (30 credits)	5,385.90	5,385.90	5,499.00	5,603.48	5,709.95
1 course (6 credits)	1,077.18	1,077.18	1,099.80	1,120.70	1,141.99
1 half course (3 credits)	538.59	538.59	549.90	560.35	571.00
1 half course (3 credits) Audit Rate	269.31	269.31	274.97	280.19	285.51
B. Comm. 200-500 with Mrkt Modifier (MM)	777.42	777.42	793.75	808.83	824.19
Net B. Comm (MM)	238.83	238.83	243.85	248.48	253.20
Law					
Total fees (36 credits)	12,314.88	12,314.88	12,573.49	12,812.39	13,055.82
Per session (18 credits)	6,157.44	6,157.44	6,286.75	6,406.19	6,527.91
Law - Full course (6 credits)	2,052.48	2,052.48	2,095.58	2,135.40	2,175.97
Law - Half course (3 credits)	1,026.24	1,026.24	1,047.79	1,067.70	1,087.99
Medicine					
Maximum	15,012.18	15,012.18	15,327.44	15,618.66	15,915.41
Per session	7,506.09	7,506.09	7,663.72	7,809.33	7,957.71
Post Graduate Medical					
Max per year (12 months)	970.46	970.46	990.84	1,009.67	1,028.85
Vet Medicine					
Total tuition fees (per 8 month year)	10,864.20	10,864.20	11,092.35	11,303.10	11,517.86
Vet Med tuition per term	5,432.10	5,432.10	5,546.17	5,651.55	5,758.93
Co-op Education					
4 month work term (15 credits)	423.00	423.00	431.88	440.09	448.45
Internship					
4 month work term (15 credits)	423.00	423.00	431.88	440.09	448.45
GRADUATE					
Full Time Graduate (except MBA)					
PhD Degree	5,593.50	5,593.50	5,710.96	5,819.47	5,930.04
Master's Degree with Thesis	5,593.50	5,593.50	5,710.96	5,819.47	5,930.04
Subsequent Years fee & continuing fee	1,627.38	1,627.38	1,661.55	1,693.12	1,725.29
Course-based (excluding MBA)					
Full course	1,429.56	1,429.56	1,459.58	1,487.31	1,515.57
Half course	714.78	714.78	729.79	743.66	757.79
Half course audit rate	357.39	357.39	364.90	371.83	378.89
Masters of Business Administration					
Total Thesis-Based MBA Program	11,463.12	11,463.12	11,703.85	11,926.22	12,152.82
Half Course – (No Market Modifier)	1,302.33	1,302.33	1,329.68	1,354.94	1,380.69
Half Course – Total with 2010 MM	1,623.12	1,623.12	1,657.21	1,688.69	1,720.78
Master of Public Policy					
Program full-time annual fee	20,492.88	20,492.88	20,923.23	21,320.77	21,725.87
Program part-time annual fee	10,246.44	10,246.44	10,461.62	10,660.39	10,862.93
Per course fee for non-MPP students	1,615.98	1,615.98	1,649.92	1,681.26	1,713.21
Course fee for MPP who do not pass prep block week	1,413.99	1,413.99	1,443.68	1,471.11	1,499.06

Tuition Increase assumption for 2020-21 is 2.1% and 1.9% for succeeding years.

Table 9 – Other Tuition Fees (Canadians and Permanent Residents)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
UNDERGRADUATE					
1 half course	538.59	538.59	549.90	560.35	571.00
English for Academic Purposes (EAP)					
3 Credits – Domestic Student	538.59	538.59	549.90	560.35	571.00
3 Credits – International Student	1,224.00	1,224.00	1,249.70	1,273.45	1,297.64
GRADUATE					
Executive MBA (per 8 month year)	34,500.00	37,500.00	39,000.00	41,000.00	42,500.00
Executive MBA Global Energy Program Fee	108,383.00	108,383.00	110,659.04	112,761.56	114,904.03
Graduate Division of Educational Research					
EdD Online. HEA, HEL, LEAD, TECH WAL					
Year 1 - 4 (per 12 month year) Program	11,221.00	11,221.00	11,456.64	11,674.32	11,896.13
Continuing (per 12 months, years 5+)	4,041.00	4,041.00	4,125.86	4,204.25	4,284.13
GDER Continuing Fees (Anniversary Term per 12 month year)					
Distance Certificate annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Distance Diploma annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Distance M. Ed. annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
1 half course (3 credits)	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Master of Counselling, CAAP, Applied Psychology					
Annual program fee	1,578.00	1,578.00	1,611.14	1,641.75	1,672.94
3 unit fee CAAP course	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Post Bachelor's Diploma - Applied Psychology					
One-time fee on admit term	488.00	488.00	498.25	507.71	517.36
Master of Education - Applied Psychology					
Continuing fees on 4th year onward at anniversary	1,164.00	1,164.00	1,188.44	1,211.02	1,234.03
Environmental Design					
4 month Term	2,797.00	2,797.00	2,855.74	2,910.00	2,965.29
Continuing Fees (year 3+) per 4 month Term	814.00	814.00	831.09	846.88	862.98
PDIP/PDCER Nursing/Nat Res, Energy, & Environ Law programs annual program fee	714.78	714.78	729.79	743.66	757.79
M.Sc. in Sustainable Energy Development					
SEDV Domestic Calgary (per course)	1,785.00	1,785.00	1,822.49	1,857.11	1,892.40
Master of Architecture					
Program annual fee	7,218.00				
Program fee - Fall or Winter	3,609.00				
Foundation year annual fee	5,386.00				
Foundation year - Fall or Winter	2,693.00				
Structure change from program-based to course-based starting Fall 2019:					
Foundation year per course fee		538.59	549.90	560.35	571.00
Program course fee		714.78	729.79	743.66	757.79

Table 9 – Other Tuition fees (Canadian and Permanent Residents) continued

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Master of Landscape Architecture					
Program annual fee	7,218.00				
Program fee - Fall or Winter	3,609.00				
Foundation year annual fee	5,504.10				
Foundation year - Fall or Winter	2,752.05				
Structure Change from program-based to course-based starting Fall 2019:					
Foundation Year per course fee		714.78	729.79	743.66	757.79
Program course fee		714.78	729.79	743.66	757.79
CORE 600 Level Course Section	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Master of Pathologists' Assistant					
Program annual fee	8,500.00	8,500.00	8,678.50	8,843.39	9,011.42
1 half course (3 credits)	714.78	714.78	729.79	743.66	757.79
Post-baccalaureate Certificate Built and Landscape Heritage per course	1,750.00	1,750.00	1,786.75	1,820.70	1,855.29
Post-baccalaureate Certificate Sustainable Urban Design per course	2,175.00	2,175.00	2,220.68	2,262.87	2,305.86
Post-baccalaureate Designing Smart and Secure Communities per course	2,175.00	2,175.00	2,220.68	2,262.87	2,305.86
Post-baccalaureate Clinical Social Work Practice per course and one-time program fee	1,000.00	1,000.00	1,021.00	1,040.40	1,060.17
Master of Management annual program fee	21,890.00	21,890.00	22,349.69	22,774.33	23,207.05
Doctor of Business Administration annual program fee	30,000.00	30,000.00	30,630.00	31,211.97	31,805.00
Post-baccalaureate Certificate Network Security per course	3,000.00	3,000.00	3,063.00	3,121.20	3,180.50
Post-baccalaureate Certificate Software Security per course	3,000.00	3,000.00	3,063.00	3,121.20	3,180.50
Post-baccalaureate Certificate in Fundamental Data Science and Analytics per course	3,000.00	3,000.00	3,063.00	3,121.20	3,180.50

Tuition Increase assumption for 2020-21 is 2.1% and 1.9% for succeeding years.

EMBA continuing students will have their tuition fees grandparented to ensure their second year rate will not increase from their first year.

A.8.2 Tuition Fees (International Students)

Table 10 – Tuition Fees (International Students)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
UNDERGRADUATE					
5 courses (30 credits)	18,338.40	18,338.40	18,723.51	19,079.25	19,441.76
1 course (6 credits)	3,667.68	3,667.68	3,744.70	3,815.85	3,888.35
1 half course (3 credits)	1,833.84	1,833.84	1,872.35	1,907.93	1,944.18
1 half course (3 credits) audit rate	916.92	916.92	936.18	953.96	972.09
B. Comm. 200-500 level MM	2,072.67	2,072.67	2,116.20	2,156.40	2,197.38
B. Comm. MM	238.83	238.83	243.85	248.48	253.20
Law					
Total fees (36 credits)	40,929.84	40,929.84	41,789.37	42,583.36	43,392.45
Per session (18 credits)	20,464.92	20,464.92	20,894.68	21,291.68	21,696.22
Law - Full course (6 credits)	6,821.64	6,821.64	6,964.89	7,097.23	7,232.07
Law - Half course (3 credits)	3,410.82	3,410.82	3,482.45	3,548.61	3,616.04
Medicine					
Maximum	57,582.42	57,582.42	58,791.65	59,908.69	61,046.96
Per session	28,791.21	28,791.21	29,395.83	29,954.35	30,523.48
Post Graduate Medical	1,648.08	1,648.08	1,682.69	1,714.66	1,747.24
Max per year (12 months)	3,296.16	3,296.16	3,365.38	3,429.32	3,494.48
Vet Medicine (per 8 month year)					
Total tuition fees	32,592.60	32,592.60	33,277.04	33,909.31	34,553.59
Co-op Education					
4 month work term (15 credits)	1,437.30	1,437.30	1,467.48	1,495.37	1,523.78
Internship Max 3 Terms					
4 month work term (15 credits)	1,437.30	1,437.30	1,467.48	1,495.37	1,523.78
GRADUATE					
Full Time Graduate (except MBA)					
PhD Degree	12,695.88	12,695.88	12,962.49	13,208.78	13,459.75
Master's Degree with Thesis	12,695.88	12,695.88	12,962.49	13,208.78	13,459.75
Subsequent Years Fee & Continuing Registration					
Registration	3,693.48	3,693.48	3,771.04	3,842.69	3,915.70
Course-Based (excl. MBA):					
Minimum program fee course-based programs	12,981.12	12,981.12	13,253.72	13,505.54	13,762.15
Full course	3,245.28	3,245.28	3,313.43	3,376.39	3,440.54
Half course	1,622.64	1,622.64	1,656.72	1,688.19	1,720.27
Audit course fee	811.32	811.32	828.36	844.10	860.13
Masters of Business Administration					
Thesis-based MBA Program	25,293.24	25,293.24	25,824.40	26,315.06	26,815.05
Half course	2,880.78	2,880.78	2,941.28	2,997.16	3,054.11
Master of Public Policy (MPP)					
Program full-time annual fee	30,739.35	30,739.35	31,384.88	31,981.19	32,588.83
Program part-time annual fee	15,369.68	15,369.68	15,692.44	15,990.60	16,294.42
Per course fee for non-MPP students	2,424.02	2,424.02	2,474.92	2,521.95	2,569.86
Course fee for MPP who do not pass prep block week	2,121.03	2,121.03	2,165.57	2,206.72	2,248.65

Tuition increase assumption for 2020-21 is 2.1% and 1.9% for succeeding years.

Table 11 – Other Tuition Fees (International Students)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
GRADUATE					
Executive MBA (per 8 month)	34,500.00	37,500.00	39,000.00	41,000.00	42,500.00
EdD Online. HEA, HEL, LEAD, TECH WAL					
Year 1 - 4 (per 12 month year) Program Fee	14,540.55	14,540.55	14,845.90	15,127.97	15,415.41
Continuing (per 12 month year, years 5+)	5,233.81	5,233.81	5,343.72	5,445.25	5,548.71
GDER Continuing Fees (Anniversary Term per 12 month year)					
Distance Certificate Annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Distance Diploma Annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Distance M. Ed. Annual program fee	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
1 half course (3 credits)	1,212.00	1,212.00	1,237.45	1,260.96	1,284.92
Environmental Design					
4 month term	6,347.94	6,347.94	6,481.25	6,604.39	6,729.87
Continuing fees (year 3+) per 4 month Term	1,846.64	1,846.64	1,885.42	1,921.24	1,957.75
M.Sc. in Sustainable Energy Development					
International Calgary (per course)	2,785.00	2,785.00	2,843.49	2,897.51	2,952.56
Master of Architecture					
Program annual fee	16,386.96				
Program fee - Fall or Winter	8,193.48				
Foundation year annual fee	12,225.60				
Foundation year - Fall or Winter	6,112.80				
Change from program-based to course-based starting Fall 2019:					
Foundation year per course fee		1,222.56	1,248.23	1,271.95	1,296.12
Program course fee		1,622.64	1,656.72	1,688.19	1,720.27
Master of Landscape Architecture					
Program annual fee	16,747.48				
Program fee - Fall or Winter	8,373.74				
Foundation year annual fee	12,494.40				
Foundation year - Fall or Winter	6,247.20				
Change from program-based to course-based starting Fall 2019:					
Foundation year per course fee		1,622.64	1,656.72	1,688.19	1,720.27
Program course fee		1,622.64	1,656.72	1,688.19	1,720.27
Master of Pathologists' Assistant					
Program annual fee	17,000.00	17,000.00	17,357.00	17,686.78	18,022.83
1 half course (3 units)	1,622.64	1,622.64	1,656.72	1,688.19	1,720.27
Post-baccalaureate Built and Landscape Heritage per course	3,975.00	3,975.00	4,058.48	4,135.59	4,214.16
Post-baccalaureate Sustainable Urban Design per course	4,950.00	4,950.00	5,053.95	5,149.98	5,247.82
Post-baccalaureate Designing Smart and Secure Communities per course	4,950.00	4,950.00	5,053.95	5,149.98	5,247.82
Post-baccalaureate Certificate Clinical Social Work Practice per course and one-time program fee	2,000.00	2,000.00	2,042.00	2,080.80	2,120.33
Master of Management annual program fee	41,800.00	41,800.00	42,677.80	43,488.68	44,314.96
Doctor of Business Administration annual program fee	30,000.00	30,000.00	30,630.00	31,211.97	31,805.00
Post-baccalaureate Certificate Network Security per course	4,000.00	4,000.00	4,084.00	4,161.60	4,240.67

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Post-baccalaureate Certificate Software Security per course	4,000.00	4,000.00	4,084.00	4,161.60	4,240.67
Post-baccalaureate Certificate in Fundamental Data Science and Analytics per course	4,000.00	4,000.00	4,084.00	4,161.60	4,240.67

Tuition Increase assumption for 2020-21 is 2.1% and 1.9% for succeeding years.

The Executive Master of Business Administration (EMBA) program is designated as an “Executive Graduate Program” within the *Post-secondary Learning Act – Tuition and Fees Regulation (TFR)*. As such, it is exempt from the guideline imposed under the TFR that limits tuition fees payable in the 2019-20 academic year to those that were in effect for the program in the 2014-15 academic year. EMBA continuing students will have their tuition fees grandparented to ensure their second year rate will not increase from their first year.

A.8.3 General Fees

Table 12 – General Fees – Fall or Winter (Undergraduate Students)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Full Time					
Students' Union General	55.50	55.50	55.50	55.50	55.50
U-Pass*	145.00	151.00	151.00	151.00	151.00
Student Health Plan***	51.50	51.50	51.50	51.50	51.50
Student Dental Plan***	45.00	45.00	45.00	45.00	45.00
Campus Recreation**	35.90	35.90	36.65	37.35	38.06
Athletics	49.29	49.29	50.33	51.28	52.26
Donation	10.00	10.00	10.00	10.00	10.00
Student Services	225.00	225.00	225.00	225.00	225.00
Total	617.19	623.19	624.98	626.63	628.32
Part Time					
Students' Union General	31.75	31.75	31.75	31.75	31.75
Campus Recreation**	35.90	35.90	36.65	37.35	38.06
Athletics	49.29	49.29	50.33	51.28	52.26
Donation	7.00	7.00	7.00	7.00	7.00
Student Services	75.00	75.00	75.00	75.00	75.00
Total	198.94	198.94	200.73	202.38	204.07
Coop / Internship					
Students' Union General	27.00	27.00	27.00	27.00	27.00
Student Health Plan***	51.50	51.50	51.50	51.50	51.50
Student Dental Plan***	45.00	45.00	45.00	45.00	45.00
Donation	10.00	10.00	10.00	10.00	10.00
Total	133.50	133.50	133.50	133.50	133.50
Faculty Specific General Fees					
Engineering Endowment Fee	25.00	25.00	25.00	25.00	25.00
Engineering Student Society Fee****	-	-	-	-	-
Law Career Services Fee	75.00	75.00	75.00	75.00	75.00
Full Time Medical Doctor Students					
Students' Union General	28.00	28.00	28.00	28.00	28.00
U-Pass*	145.00	151.00	151.00	151.00	151.00
Student Health Plan***	51.50	51.50	51.50	51.50	51.50
Student Dental Plan***	45.00	45.00	45.00	45.00	45.00
Campus Recreation**	35.90	35.90	36.65	37.35	38.06
Athletics	49.29	49.29	50.33	51.28	52.26
Donation	10.00	10.00	10.00	10.00	10.00
Student Services	225.00	225.00	225.00	225.00	225.00
Total	589.69	595.69	597.48	599.13	600.82

* The U-Pass Fee for Fall 2019 rises to \$151.

** Campus recreation and athletics rate increase assumption for 2020-21 is 2.1%. For 2021-22 and 2022-23, the rate increase is 1.9%.

*** Students' Union, Health and Dental Fees are subject to change. Starting in Fall 2018, the Health and Dental fees are assessed once a year at \$103 for Health and \$90 for Dental.

**** Starting in Fall 2018, the Engineering Student Society Fee of \$10 is no longer collected.

Table 13 – General Fees – Spring or Summer (Undergraduate Students)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Full Time					
Students' Union General	22.75	22.75	22.75	22.75	22.75
U-Pass*	145.00	151.00	151.00	151.00	151.00
Campus Recreation**	17.95	17.95	18.33	18.68	19.03
Donation	7.00	7.00	7.00	7.00	7.00
Student Services	75.00	75.00	75.00	75.00	75.00
Total	267.70	273.70	274.08	274.43	274.78
Part Time					
Students' Union General	22.25	22.25	22.25	22.25	22.25
Campus Recreation**	17.95	17.95	18.33	18.68	19.03
Donation	7.00	7.00	7.00	7.00	7.00
Student Services	37.50	37.50	37.50	37.50	37.50
Total	84.70	84.70	85.08	85.43	85.78
Coop / Internship					
Students' Union General	19.25	19.25	19.25	19.25	19.25
Donation	7.00	7.00	7.00	7.00	7.00
Total	26.25	26.25	26.25	26.25	26.25

* The U-Pass Fee for Fall 2019 is \$151.

** Campus recreation and athletics rate increase assumption for 2020-21 is 2.1%. For 2021-22 and 2022-23, the rate increase is 1.9%.

Table 14 – General Fees – Yearly (Graduate Students)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Full Time					
Graduate Students Association (GSA)	170.65	170.65	170.65	170.65	170.65
Group Insurance	11.00	11.00	11.00	11.00	11.00
U-Pass*	435.00	453.00	453.00	453.00	453.00
Health Insurance**	330.58	330.58	330.58	330.58	330.58
Dental Insurance**	270.09	270.09	270.09	270.09	270.09
Campus Recreation***	107.71	107.71	109.97	112.06	114.19
Athletics ***	49.29	49.29	50.33	51.28	52.26
Donation	10.00	10.00	10.00	10.00	10.00
Student Services	450.00	450.00	450.00	450.00	450.00
Total	1,834.32	1,852.32	1,855.62	1,858.66	1,861.77
Part Time					
Graduate Students Association (GSA)	141.20	141.20	141.20	141.20	141.20
Campus Recreation***	107.71	107.71	109.97	112.06	114.19
Athletics***	49.29	49.29	50.33	51.28	52.26
Donation	10.00	10.00	10.00	10.00	10.00
Student Services	150.00	150.00	150.00	150.00	150.00
Total	458.20	458.20	461.50	464.54	467.65

* The U-Pass Fee for Fall 2019 is \$151.

** Graduate GSA, Health, Dental insurance are subject to change by the Graduate Students' Association in March 2019.

*** Campus recreation and athletics rate increase assumption for 2020-21 is 2.1%. For 2021-22 and 2022-23, the rate increase is 1.9%.

Table 15 – New Programs for 2019-2020 Fees Proposed

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
DOMESTIC RATES					
GRADUATE CERTIFICATES					
Data Privacy per course fee		3,000.00	3,063.00	3,121.20	3,180.50
Geospatial Information Technology per course fee		714.78	729.79	743.66	757.79
Geospatial Information Technology program fee		250.00	255.25	260.10	265.04
Advanced Social Work Practice per course fee		1,000.00	1,021.00	1,040.40	1,060.17
Advanced Social Work Practice program fee		1,000.00	1,021.00	1,040.40	1,060.17
International and Community Development per course fee		1,000.00	1,021.00	1,040.40	1,060.17
International and Community Development program fee		1,000.00	1,021.00	1,040.40	1,060.17
Leadership in the Human Services per course		1,000.00	1,021.00	1,040.40	1,060.17
Leadership in the Human Services program fee		1,000.00	1,021.00	1,040.40	1,060.17
Advanced Nursing Practice I and II per course fee		1,850.00	1,888.85	1,924.74	1,961.31
Doctor of Design program tuition		45,000.00	45,945.00	46,817.96	47,707.50
Doctor of Design continuing fee		15,000.00	15,315.00	15,605.99	15,902.50
INTERNATIONAL RATES					
GRADUATE CERTIFICATES					
Data Privacy per course fee		4,000.00	4,084.00	4,161.60	4,240.67
Geospatial Information Technology per course fee		1,622.64	1,656.72	1,688.19	1,720.27
Geospatial Information Technology program fee		250.00	255.25	260.10	265.04
Advanced Social Work Practice per course and one-time program fee		2,000.00	2,042.00	2,080.80	2,120.33
Advanced Social Work Practice program fee		2,000.00	2,042.00	2,080.80	2,120.33
International and Community Development per course fee		2,000.00	2,042.00	2,080.80	2,120.33
International and Community Development program fee		2,000.00	2,042.00	2,080.80	2,120.33
Leadership in the Human Services per course		2,000.00	2,042.00	2,080.80	2,120.33
Leadership in the Human Services program fee		2,000.00	2,042.00	2,080.80	2,120.33
Advanced Nursing Practice I and II per course fee		2,500.00	2,552.50	2,601.00	2,650.42
Doctor of Design program tuition		45,000.00	45,945.00	46,817.96	47,707.50
Doctor of Design continuing fee		15,000.00	15,315.00	15,605.99	15,902.50

A.8.4 Residence and Meal Plan Rates

Table 16 – Residence Rates

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
Glacier & Olympus Halls (Apartments)					
Studios	7,746	7,940	8,107	8,261	8,418
1 Bedroom	8,165	8,369	8,545	8,707	8,872
2 Bedroom	6,404	6,564	6,702	6,829	6,959
4 Bedroom	6,204	6,359	6,493	6,616	6,742
Cascade Hall (Apartments)					
Studios	8,116	8,319	8,494	8,655	8,819
2 Bedroom	6,469	6,631	6,770	6,899	7,030
4 Bedroom	5,749	5,893	6,017	6,131	6,247
Living Learning – Large Double	6,719	6,887	7,032	7,166	7,302
Living Learning – Small Single	7,382	7,567	7,726	7,873	8,023
Yamnuska (Suite Style)					
1 Bedroom	6,417	6,567	6,705	6,832	6,962
2 Bedroom	6,835	7,006	7,153	7,289	7,427
3 Bedroom	6,417	6,567	6,705	6,832	6,962
Kananaskis Hall & Rundle Hall (Traditional Style Residence)					
Single	6,146	6,300	6,432	6,554	6,679
Double	3,706	3,799	3,879	3,953	4,028
Aurora (Apartments)					
Studio	8,009	8,209	8,381	8,540	8,702
2 Bedroom	6,995	7,170	7,321	7,460	7,602
3 Bedroom	6,595	6,760	6,902	7,033	7,167
Studio (Floor 8-9)	8,009	8,209	8,381	8,540	8,702
2 Bedroom (Floor 8-9)*	6,995	7,170	7,321	7,460	7,602
3 Bedroom (Floor 8-9)*	6,595	6,760	6,902	7,033	7,167
Crowsnest (Apartments)					
Studio	7,769	7,963	8,130	8,284	8,441
1 Bedroom	8,294	8,501	8,680	8,845	9,013
2 Bedroom	6,845	7,016	7,163	7,299	7,438
Studio (Floors 9-11)	7,769	7,963	8,130	8,284	8,441
1 Bedroom (Floors 9-11)*	8,294	8,501	8,680	8,845	9,013
2 Bedroom (Floors 9-11)*	6,845	7,016	7,163	7,299	7,438
2 Bedroom (Couple Rate)	11,440	11,726	11,972	12,199	12,431
Family Housing **					
1 Bedroom	1,243	1,243	1,269	1,293	1,318
2 Bedroom	1,370	1,370	1,399	1,426	1,453
3 Bedroom	1,425	1,425	1,455	1,483	1,511

Academic-year contracts are for eight months starting at the commencement of the fall term and ending in April. This statement applies to all residence rates shown in the table except for the Family Housing rates – Family Housing rates are monthly and not based on an eight-month academic year contract. Residence rate increase assumption for 2020-21 is 2.1% and 1.9% for 2021-22 and 2022-23.

* Upper floor premiums removed.

** Family housing rates are monthly.

Note: Per person rate is effective May 1, 2019.

Table 17 – Meal Plan Rates (8-month contract)

(\$ dollars)	2018-19	2019-20	2020-21	2021-22	2022-23
7 Day Unlimited	4,999	4,999	5,104	5,201	5,300
5 Day Unlimited	4,200	4,200	4,288	4,369	4,452
250 Entries	2,625	2,625	2,680	2,731	2,783
120 Entries	1,380	1,380	1,409	1,436	1,463

Meal plan rate increase assumption for 2020-21 is 2.1% and 1.9% for 2021-22 and 2022-23.

APPENDIX B: ENROLMENT PLAN AND PROPOSED PROGRAMMING CHANGES

B.1 ENROLMENT CONTEXT

The City of Calgary, home to the University of Calgary, is Alberta's largest city and the fourth largest metropolitan area in Canada with a population of 1,267,344². Calgary has seen rapid growth over the last 40 years and in the period from 2012 to 2018; its population grew by an average of 2.7% per year. Following the economic downturn in 2015, growth slowed, yet the population still increased by 0.6% between 2016 and 2017 and by 1.7% from 2017 to 2018³. Growth, although moderate, is continuing, with the population increase for the 2019-2022 period expected to be faster for the city of Calgary (2.0%), than the entire province of Alberta (1.6%), with growth projected in the 20-24 and 25-29 age groups⁴.

The economic downturn had a differential impact on unemployment rates in Calgary due to our position as an oil and gas leader in Canada, with rates as high as 10.3% in December 2016, the highest of any major city in Canada⁵. Recovery is continuing, as Calgary's unemployment rate was reported at 6.8% in January 2019⁶. This downturn has also resulted in significant momentum amongst business, higher education, and community leaders to diversify and create the next generation economy. The Calgary Amazon HQ2 bid process was part of that momentum, and while the bid was not successful, our community received important feedback about our labor force. We learned that we should be producing more graduates in areas needed for jobs in the industries, such as the tech sector, that will lead our economy in the decades ahead. Moreover, we will need to ensure the currency of our programs in rapidly changing fields of study in order to prepare our graduates to succeed in the new economy. Calgary has a young, highly skilled, and educated workforce – one of the youngest and most prepared in the country. Many are already prepared to contribute to new industries and others can be reskilled or retrained to play an important role in our city's growth.

Calgary is a young city, having the lowest average age of major Canadian cities (36.4) with 70.2% of the population being between 15-64 years old, the highest of major Canadian cities⁷. Calgary also has a diverse population with 29.4% of Calgary's population identifying as immigrants, up from 26.2% in 2011, and 33.7% identifying as visible minorities, up from 28.1% in 2011⁸. Within the Calgary population, 3.0% self-identify as Indigenous⁹.

According to the 2016 Statistics Canada Census, Calgary had the third highest post-secondary educational attainment of major Canadian cities at 38.3%, almost 10 percentage points higher than the Canadian average. In addition, 45.2% of immigrants have a bachelor's degree or higher and 17.5% of the Indigenous population holds a bachelor's degree or higher. Calgary also has the highest proportion of science, technology, engineering and mathematics (STEM) graduates among major Canadian cities with 17.7% of graduates having degrees in STEM¹⁰, many of whom have historically been employed in the oil and gas industry. The University of Calgary has adopted a sustainable growth enrolment model. The model

² 2018 Calgary Civic Census

³ 2018 Calgary Civic Census

⁴ Calgary and Region Economic Outlook 2018-2023

⁵ 2016 Labour Force Characteristics, Government of Canada, Statistics Canada

⁶ 2018 Labour Force Characteristics, Government of Canada, Statistics Canada

⁷ <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hltfst/as/Table.cfm?Lang=E&T=12&type=2>

⁸ <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hltfst/imm/Table.cfm?Lang=E&T=12&Geo=00&SP=1&view=2&age=1&sex=1>

⁹ <http://www.statcan.gc.ca/pub/89-656-x/89-656-x2016010-eng.htm>

¹⁰ 2016 Statistics Canada Census

ensures that we are responsive to provincial needs and priorities supported through program expansion initiatives; further, re-allocation of enrolment targets in the absence of provincial funding are used to support university and provincial priorities. Two key goals of this model are to ensure that academic programs are current, meaningful, and relevant for students, and secondly, that students have a positive experience. The University continues to work toward our objective of increasing graduate enrolments to achieve a 4:1 ratio of undergraduate to graduate students. Through funded program expansions, investments in PhD funding and an expansion of our offerings in professional graduate degrees, certificates and diplomas with sustainable funding models, we are responding to both student and labour market demand. Although some short-term fluctuation in graduate enrolment is assumed due to economic conditions, the capacity to expand graduate student access long-term is critical; however, it is contingent on funding that supports the costs of graduate education.

B.2 ENROLMENT PROJECTIONS

In 2019-20, the University of Calgary is projecting a Full-Load Equivalent (FLE) enrolment of 23,828 undergraduates and 5,922 graduates for a total enrolment of 29,750 FLEs. This compares to the 29,700 FLEs projection for 2018-19, and is in line with our previously projected enrolment for 2019-20. The growth over the past three years includes the approved program expansions and new international enrolment, which is above our provincial targets.

Table 15 – 2019-20 Fall Enrolment Projections and Forecast – Undergraduate

Undergraduate Faculty / School	Actuals				Projections							
	2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022	
	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE
Arts	6,835	5,731	7,112	5,887	7,368	6,073	7,439	6,131	7,439	6,131	7,439	6,131
Schulich Engineering	3,506	3,334	3,621	3,379	3,745	3,540	3,853	3,692	3,712	3,557	3,712	3,557
Environmental Design	-	-	-	-	-	-	-	-	-	-	-	-
Haskayne Business	2,979	2,640	2,985	2,673	3,055	2,712	3,132	2,781	3,132	2,781	3,132	2,781
Kinesiology	867	772	919	822	1,026	907	1,044	923	1,044	923	1,044	923
Law	359	346	382	368	385	370	382	370	382	370	382	370
Cumming Medicine – MD	488	676	490	676	509	693	470	640	470	640	470	640
Cumming Medicine – Other	623	539	642	564	678	583	668	576	668	576	668	576
Nursing	811	896	827	905	834	903	831	901	831	901	831	901
Science	4,851	4,136	4,920	4,210	5,113	4,316	5,184	4,435	5,184	4,435	5,184	4,435
Public Policy	-	-	-	-	-	-	-	-	-	-	-	-
Social Work	484	412	537	454	601	504	591	501	567	481	567	481
Veterinary Medicine	119	128	126	134	129	138	129	138	145	156	160	172
Werklund Education	1,121	1,098	1,232	1,184	1,202	1,153	1,132	1,055	1,079	1,006	1,079	1,006
IGP	-	-	-	-	-	-	-	-	-	-	-	-
Open Studies	1,407	860	1,301	779	1,090	640	900	513	1,025	669	1,010	653
PGME	974	956	956	938	972	945	906	881	906	881	906	881
Sub-total	25,423	22,524	26,048	22,973	26,705	23,476	26,661	23,537	26,584	23,508	26,584	23,508
Qatar	432	281	428	267	389	241	467	291	467	291	467	291
Total	25,855	22,805	26,476	23,240	27,094	23,717	27,128	23,828	27,051	23,799	27,051	23,799

Table 16 – 2019-20 Fall Enrolment Projections and Forecast – Graduate

Graduate	Actuals						Projections					
	2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022	
	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE
Arts	716	687	710	654	671	630	700	657	700	656	700	656
Schulich Engineering	1,164	1,033	1,206	1,096	1,289	1,152	1,216	1,098	1,216	1,098	1,216	1,098
Environmental Design	288	276	284	276	288	278	308	297	308	297	308	297
Haskayne Business	671	657	724	645	686	631	678	629	678	629	678	629
Kinesiology	100	104	111	109	111	112	91	92	91	92	91	92
Law	37	22	30	22	29	18	30	19	30	19	30	19
Cumming Medicine – MD	-	-	-	-	-	-	-	-	-	-	-	-
Cumming Medicine – Other	495	497	537	516	546	531	527	515	527	515	527	515
Nursing	123	109	156	133	160	140	160	140	160	140	160	140
Science	843	813	832	803	847	809	880	842	880	842	880	842
Public Policy	48	54	47	58	58	67	65	75	65	75	65	75
Social Work	310	283	285	282	353	326	343	319	320	293	320	293
Veterinary Medicine	81	78	77	76	82	82	77	77	77	77	77	77
Werklund Education	1,187	1,112	1,211	1,213	1,261	1,188	1,150	1,072	1,150	1,072	1,150	1,072
IGP	5	7	3	4	3	3	-	-	-	-	-	-
Open Studies							70	62	70	62	70	62
PGME							-	-	-	-	-	-
Sub-total	6,068	5,731	6,211	5,887	6,383	5,966	6,295	5,894	6,272	5,867	6,272	5,867
Qatar	28	25	16	18	16	17	25	28	25	28	25	28
Total	6,096	5,755	6,227	5,905	6,399	5,983	6,320	5,922	6,297	5,895	6,297	5,895

Table 17 – 2019-20 Fall Enrolment Projections and Forecast – Institutional Total

Institutional Total	Actuals						Projections					
	2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022	
	Headcount	FLE	FLE Actual	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE	Headcount	FLE
Arts	7,551	6,418	7,822	6,541	8,039	6,702	8,139	6,788	8,139	6,787	8,139	6,787
Schulich Engineering	4,670	4,367	4,827	4,475	5,034	4,692	5,069	4,790	4,928	4,655	4,928	4,655
Environmental Design	288	276	284	276	288	278	308	297	308	297	308	297
Haskayne Business	3,650	3,298	3,708	3,318	3,740	3,343	3,810	3,410	3,810	3,410	3,810	3,410
Kinesiology	967	876	1,029	931	1,137	1,019	1,135	1,015	1,135	1,015	1,135	1,015
Law	396	368	412	390	414	388	412	389	412	389	412	389
Cumming Medicine – MD	488	676	490	676	509	693	470	640	470	640	470	640
Cumming Medicine – Other	1,118	1,036	1,178	1,080	1,224	1,114	1,195	1,091	1,195	1,091	1,195	1,091
Nursing	934	1,005	983	1,038	994	1,043	991	1,041	991	1,041	991	1,041
Science	5,694	4,949	5,752	5,013	5,960	5,126	6,064	5,277	6,064	5,277	6,064	5,277
Public Policy	48	54	47	58	58	67	65	75	65	75	65	75
Social Work	794	694	822	735	954	830	934	820	887	774	887	774
Veterinary Medicine	200	206	203	210	211	219	206	215	222	233	237	249
Werklund Education	2,308	2,210	2,443	2,397	2,463	2,341	2,282	2,127	2,229	2,078	2,229	2,078
IGP	5	7	3	4	3	3	-	-	-	-	-	-
Open Studies	1,407	860	1,301	779	1,090	640	970	575	1,095	731	1,080	715
PGME	974	956	956	938	972	945	906	881	906	881	906	881
Sub-total	31,490	28,255	32,258	28,860	33,087	29,442	32,956	29,431	32,856	29,374	32,856	29,374
Qatar	460	305	444	285	405	257	492	319	492	319	492	319
Total	31,950	28,560	32,702	29,145	33,492	29,700	33,448	29,750	33,348	29,693	33,348	29,693

B.3 TARGETED ENROLMENT EXPANSIONS

The University of Calgary has an ongoing commitment to achieve the targeted enrolment expansions which were funded by the Ministry of Advanced Education in 2014. These expansions, which are included in our overall enrolment projections, provided places for an additional 1,031 FLE students in nine high-demand programs at the University of Calgary. In 2018, we received confirmation that six of our expansion programs would be rolled into base with three programs receiving an additional year to hit the expansion targets. It is anticipated the three programs will hit their expansion target in 2019-20. In the table below, the third column, entitled Expansion Target, shows the targets agreed on with the Ministry to complete the expansions. The final column indicates that current projections for 2019-20 are all in excess of these targets.

Table 18 – Program Expansion (FLE)

FLEs	2012-13 Base	Expansion	Expansion Target	2019-20 Enrolment Forecast
Masters Engineering	580	50	630	667
Bachelor of Social Work	381	100	481	501
Master of Social Work	247*	25	272	273

* The MSW base has been reduced by 27 FLEs due to a 2012-13 one-time cohort of students, located in Grande Prairie, that were funded through the Health Workforce Action Plan.

B.4 TECHNOLOGY SECTOR EXPANSION

The downturn in the energy industry has increased unemployment and caused hardship for many people in Alberta, and in Calgary particularly. It has also put pressure on the province and the city to diversify the economy and capitalize on new initiatives, particularly in the technology sector, that will increase prosperity for all Albertans. The University of Calgary is well positioned to become a leader in producing talent for this next generation economy. With the support of a new enrolment expansion initiative, we are ready to increase the number of graduates with high-level skills in critical areas such as computer science, mathematics and data analytics, information security, software engineering, management and geomatics. The increased seats will be the result of expansions to existing technology programs and the proposal of new options for degree students at the undergraduate and graduate levels. Proposals have been submitted separately in response to a call from the government and are not included in current targets, as decisions on proposals were not made at the time of submission.

With the support of a new government tech talent initiative on the non-credit side, our Continuing Education division has expanded its tech offerings and skills development programs to support reskilling and retraining, including non-credit programs in web development, mobile app development, and Python Enterprise applications development.

B.5 PROJECTED ENROLMENT CHANGES IN SPECIFIC PROGRAMS

As the University has adopted a sustainable growth enrolment model, planned enrolment changes are limited to our Ministry funded enrolment expansions, which were achieved in 2018-19, and to projected new international enrolment, which is over and above the existing targets set by the Ministry. Although a number of new programs are under development, these are not factored into our enrolment projections, as the programs are not yet approved. Enrolment management is a complex process with a number of variables that change year to year due to fluctuations in student demand, retention, stop outs, etc. While these factors have been included in the overall enrolment projections in the tables above, they are not

included as planned program changes in the table below due to the difficulty in predicting them on an annual basis. The table below contains projected enrolment changes in specific programs that are known to us at this time.

Table 19 – 2019-20 Projected Enrolment Changes in Specific Programs (highlighted in shaded areas)

Faculty	Specialization	Actual			Projection		
		16-17	17-18	18-19*	19-20	20-21	21-22
Arts	Ancient and Medieval History	11	13				
	Anthropology	105	118				
	Archaeology	68	64				
	Art History	-	11				
	Arts	626	635				
	Bachelor of Film Studies	20	19				
	Canadian Studies	10	16				
	Communication and Culture	20	17				
	Communication and Culture (Multidisciplinary)	93	74				
	Communication and Media Studies	433	417				
	Composition	8	6				
	Dance	62	49				
	Drama	76	76				
	Drama Education	-	-				
	Earth Science	33	23				
	East Asia	19	21				
	East Asian Language Studies	36	37				
	Economics	578	564				
	English	292	291				
	Film Studies	38	34				
	French	43	40				
	General Humanities	-	-				
	Geography	92	92				
	German	9	9				
	Greek and Roman Studies	16	17				
	History	180	181				
	History And Philosophy of Science	1	0				
	Integrated Studies	23	33				
	International Development Studies	71	65				
	International Indigenous Studies	10	18				
	International Relations	243	271				
	Italian Studies	5	6				
	Latin American Studies	5	5				
	Law and Society	343	385				
	Linguistics	77	74				
	Linguistics and Language	28	30				
	Music	58	69				
	Music History and Theory	-	-				
	Performance	17	17				
	Philosophy	79	78				
Political Science	359	420					
Primatology	-	-					
Psychology	680	717					
Religious Studies	18	18					
Religious Studies And Applied Ethics	1	1					
Russian	4	5					
Science Technology and Society	8	3					
Social And Cultural Anthropology	58	70					
Sociology	466	490					
Spanish	29	27					

Faculty	Specialization	Actual			Projection		
		16-17	17-18	18-19*	19-20	20-21	21-22
	Urban Studies	175	163				
	Visual Studies	88	81				
	Women's Studies	20	17				
Schulich School of Engineering	Biomedical Engineering	130	142				
	Chemical Engineering	415	449				
	Civil Engineering	339	340				
	Electrical Engineering	446	411				
	Energy Engineering	148	165				
	Engineering	855	847				
	Geomatics Engineering	80	87				
	Mechanical Engineering	655	669				
	Oil And Gas Engineering	86	74				
	Software Engineering	173	197				
Haskayne School of Business	Commerce	2,638	2674				
	Hotel and Resort Management	3	-				
Kinesiology	Athletic Therapy	4	0				
	Biomechanics	36	44				
	Exercise And Health Physiology	127	146				
	Kinesiology	520	527				
	Leadership in Pedagogy and Coaching	42	46				
	Mind Sciences In Kinesiology	42	58				
Law	Law	346	368				
Cumming School of Medicine	Bioinformatics	27	30				
	Biomedical Sciences	282	283				
	Community Rehabilitation	171	185				
	Health And Society	60	65				
	Medicine, MD	676	676				
Nursing - Qatar	Nursing	281	267				
Nursing	Nursing	87	90				
	Nursing- Degree Holder	406	382				
	Nursing- Direct Entry	403	433				
Science	Actuarial Science	143	152				
	Applied and Environmental Geology	4	0				
	Applied Chemistry	6	7				
	Applied Mathematics	110	142				
	Astrophysics	82	98				
	Biochemistry	95	94				
	Biological Sciences	889	932				
	Cellular Molecular and Microbial Biology	111	137				
	Chemical Physics	2	0				
	Chemistry	369	377				
	Computer Science	775	799				
	Ecology	45	36				
	Environmental Science	171	166				
	General Mathematics	95	107				
	Geology	325	239				
	Geophysics	125	90				
	Natural Sciences	379	409				
	Neuroscience	92	102				
	Physics	141	144				
	Plant Biology	17	20				
Pure Mathematics	49	41					
Statistics	35	44					
Zoology	72	75					
Social Work	Social Work**	412	454	504	501	481	481

Faculty	Specialization	Actual			Projection		
		16-17	17-18	18-19*	19-20	20-21	21-22
Vet. Medicine	Doctor of Veterinary Medicine	128	134	138	139	156	172
Werklund School of Education	Education	16	23				
	Elementary Education	566	677				
	Secondary Education	509	484				
Graduate Studies - Doctoral	Anthropology	12	11				
	Archaeology	18	20				
	Biochemistry And Molecular Biology	42	49				
	Biological Sciences	91	81				
	Biomedical Engineering	38	46				
	Cardiovascular/Respiratory Sciences	17	14				
	Chemical and Petroleum Engineering	153	185				
	Chemistry	67	59				
	Civil Engineering	50	54				
	Clinical Psychology	29	26				
	Communication and Culture	-	-				
	Communication and Media Studies	7	19				
	Communication Studies	15	-				
	Community Health Sciences	61	70				
	Computational Media Design	14	14				
	Computer Science	75	80				
	Culture and Society	1	1				
	Economics	49	42				
	Education	163	170				
	Educational Psychology	46	51				
	Educational Research	86	83				
	Electrical and Computer Engineering	87	81				
	English	31	32				
	Environmental Design	34	40				
	Gastrointestinal Sciences	6	6				
	Geography	27	27				
	Geology and Geophysics	64	69				
	Geomatics Engineering	61	60				
	Greek and Roman Studies	10	10				
	History	18	19				
	Immunology	10	9				
	Interdisciplinary Studies	7	5				
	Kinesiology	39	40				
	Languages, Literatures, and Cultures	-	4				
	Linguistics	13	11				
	Management	41	42				
	Mathematics and Statistics	29	26				
	Mechanical and Manufacturing Engineering	72	68				
	Mechanical Engineering	1	1				
	Medical Science	46	40				
Microbiology and Infectious Diseases	18	17					
Military and Strategic Studies	13	6					
Music	13	10					
Neuroscience	57	57					
Nursing	30	34					
Philosophy	19	20					
Physics and Astronomy	55	56					
Political Science	14	12					
Psychology	29	27					
Religious Studies	9	8					
Social Work	25	20					

Faculty	Specialization	Actual			Projection		
		16-17	17-18	18-19*	19-20	20-21	21-22
Graduate Studies - Master	Sociology	11	16				
	Veterinary Medical Sciences	48	50				
	Anthropology	19	18				
	Applied Psychology	2	1				
	Archaeology	11	13				
	Architecture	128	130				
	Art	17	16				
	Biochemistry and Molecular Biology	20	24				
	Biological Sciences	91	92				
	Biomedical Engineering	41	36				
	Biomedical Technology	16	16				
	Business Administration	391	381				
	Business-EMBA	185	184				
	Cardiovascular/Respiratory Sciences	12	16				
	Chemical And Petroleum Engineering	120	146				
	Chemical Engineering	124	123				
	Chemistry	42	44				
	Civil Engineering	67	66				
	Clinical Psychology	10	12				
	Communication Studies	8	0				
	Communication and Media Studies	10	18				
	Community Health Sciences	66	67				
	Computational Media Design	10	10				
	Computer Science	80	85				
	Culture and Society	2	1				
	Drama	10	16				
	Economics	31	41				
	Educational Psychology	213	212				
	Educational Research	474	558				
	Electrical and Computer Engineering	31	32				
	Electrical Engineering	67	64				
	English	18	17				
	Environmental Design	33	23				
	Environmental Science	1					
	French	19	11				
	Gastrointestinal Sciences	8	8				
	Geography	49	46				
	Geology and Geophysics	128	109				
	Geomatics Engineering	18	22				
	German	4	4				
	Greek and Roman Studies	4	5				
	History	24	26				
	Immunology	8	6				
	Industrial Design	-	0				
	Interdisciplinary Studies	-	0				
	Kinesiology	65	70				
	Landscape Architecture	22	30				
Law	22	21					
Linguistics	5	5					
Master of Disability and Community Studies	7	2					
Master of Planning	59	54					
Mathematics and Statistics	39	46					
Mechanical and Manufacturing Engineering	50	51					
Mechanical Engineering	56	52					
Medical Science	42	41					
Microbiology and Infectious Diseases	12	17					

Faculty	Specialization	Actual			Projection		
		16-17	17-18	18-19*	19-20	20-21	21-22
	Music	17	13				
	Neuroscience	48	55				
	Nursing	96	106				
	Pathologists' Assistant	4	10				
	Philosophy	16	15				
	Physics and Astronomy	29	34				
	Political Science	19	23				
	Psychology	22	22				
	Public Policy	54	58				
	Religious Studies	10	6				
	Social Work**	258	262	300	273	273	273
	Sociology	14	18				
	Spanish	2	3				
	Strategic Studies	15	17				
	Sustainable Energy Development	40	38				
	Veterinary Medical Sciences	30	27				
	Master's Engineering Total**	574	592	667	667	667	667
Diploma	Educational Research	120	114				
	Civil Engineering	1	0				
	Mechanical and Manufacturing Engineering	9	0				
	Nurse Practitioner	7	13				
	Radiation Oncology Physics	2	3				
Certificate	Bridge to Teaching	7	0				
	Natural Resources, Energy and Environment Law	1	1				
	Post-graduate Medical Education	956	938				
Open Studies	Open Studies	860	779	640	531	669	653
Institutional Total		28,560	29,145	29,700	29,750	29,693	29,693

* 2018-19 Actuals are available through the Learner Enrolment Reporting Submission (LERS) in July 2019.

** The highlighted programs reflect program expansions and are not necessarily at the program level.

B.6 INTERNATIONAL ENROLMENT

In 2015-16, the University of Calgary began implementation of an International Undergraduate Student Recruitment Model in support of the institution's International Strategy, which calls for an overall international enrolment target of 10% of the undergraduate student population and 25% of the graduate student population. While the 25% graduate target has been achieved, the model identified the need for additional international undergraduate student growth in order to achieve the 10% target. As of 2018-19, the University of Calgary required an additional 237 undergraduate international students in order to reach our 10% target, which we anticipate reaching in 2019-20. The additional student growth is a result of the international strategy. It is in addition to any target that the provincial government has established. Diversifying the student body at the University of Calgary has enhanced the overall student experience and has led to a greater cultural and geographic understanding that lends itself to global citizenship, in line with our 2018-23 Academic Plan and 2018-23 Research Plan and our International Strategy.

Table 20 – International Undergraduate Incremental Enrolment Growth (Headcount)

	2016-17	2017-18	2018-19	2019-20
	Actual	Actual	Projection	Projection
Incremental Undergraduate International Enrolment	41	327	342	237

Our goal is to ensure our international student population is diverse in origin and distributed across different faculties and programs. We must also respond to student demand. Many of the following programs have a high demand from international students. Consequently, the international enrolment in each program currently exceeds 15% of the overall enrolment of the program. Of the 256 credential programs (121 undergraduate, 135 graduate) offered at the University of Calgary, 89 have an international enrolment that exceeds 15%. Of these 89 programs, the vast majority (94%) are graduate programs, where you would anticipate a higher international enrolment. Of note, 36% of these high international enrolment programs have a total FLE enrolment (domestic and international) of under 20.

Table 21 – International Full-Load Equivalent (FLE) Enrolment by Program Exceeding 15%

Program	Specialization	2017-18	Int'l %
Bachelor of Arts	Economics	564.3	16.6
Bachelor of Eng. in Oil and Gas	Oil And Gas Engineering	73.5	35.5
Bachelor of Science	Actuarial Science	151.7	23.8
	Applied Mathematics	142.3	22.3
	Statistics	43.9	27.4
Graduate Studies - Masters	Anthropology	18.2	33.0
	Archaeology	13	23.1
	Art	16	40.6
	Biochemistry and Molecular Biology	24	18.8
	Biological Sciences	92.3	21.1
	Biomedical Engineering	35.7	16.8
	Cardiovascular/Respiratory Sciences	16	18.8
	Chemical and Petroleum Engineering	145.7	59.0
	Chemical Engineering	123	67.5
	Chemistry	44	27.3
	Civil Engineering	65.7	43.4
	Computational Media Design	10	30.0
	Computer Science	84.5	55.0
	Drama	15.7	16.0
	Economics	41	53.7
	Electrical and Computer Engineering	32.4	35.5
	Electrical Engineering	64	48.4
	Environmental Design	23.2	23.7
	French	10.5	42.9
	Gastrointestinal Sciences	8	25.0
	Geography	45.7	33.9
	Geology and Geophysics	108.8	27.1
	Geomatics Engineering	22	49.2
	History	25.7	15.6
	Immunology	5.5	18.2
	Kinesiology	69.6	24.4
	Landscape Architecture	29.5	18.6
Law	21.2	36.2	
Linguistics	5	60.0	
Mathematics and Statistics	46	63.0	
Mechanical and Mfgr. Engineering	51.2	40.7	
Mechanical Engineering	52	30.8	
Medical Science	40.5	17.3	
Microbiology and Infectious Diseases	16.8	17.9	
Music	13	46.2	
Physics and Astronomy	33.5	40.3	
Religious Studies	5.5	36.4	
Spanish	3	66.7	
Sustainable Energy Development	38	17.1	

Program	Specialization	2017-18	Int'l %
Doctor of Philosophy	Veterinary Medical Sciences	26.5	37.7
	Anthropology	11	45.5
	Archaeology	20	55.0
	Biochemistry and Molecular Biology	48.5	60.8
	Biological Sciences	81	46.9
	Biomedical Engineering	45.5	63.7
	Cardiovascular/Respiratory Sciences	14.3	38.6
	Chemical and Petroleum Engineering	184.5	75.6
	Chemistry	59	44.1
	Civil Engineering	54.3	50.6
	Community Health Sciences	69.8	15.8
	Computational Media Design	14	42.9
	Computer Science	79.8	52.0
	Economics	41.5	71.1
	Educational Research	82.5	22.4
	Electrical And Computer Engineering	81.3	67.6
	English	31.5	20.6
	Environmental Design	39.5	30.4
	Gastrointestinal Sciences	5.5	45.5
	Geography	27	46.3
	Geology and Geophysics	69	47.8
	Geomatics Engineering	60	86.7
	Greek and Roman Studies	9.5	21.1
	History	19	34.2
	Immunology	9	22.2
	Interdisciplinary Studies	5	40.0
	Kinesiology	39.5	55.7
	Languages, Literatures, and Cultures	4	75.0
	Linguistics	10.5	57.1
	Management	41.5	45.0
	Mathematics and Statistics	26	75.0
	Mechanical and Mfgr. Engineering	68	72.1
	Mechanical Engineering	1	100.0
	Medical Science	39.5	46.8
	Microbiology and Infectious Diseases	16.5	54.5
	Music	10	45.0
	Neuroscience	56.5	27.4
	Philosophy	19.5	53.8
	Physics and Astronomy	56	59.8
	Political Science	11.5	26.1
	Psychology	26.5	15.1
Religious Studies	7.5	20.0	
Social Work	19.5	20.5	
Sociology	16	53.1	
Veterinary Medical Sciences	49.5	57.6	

B.7 STUDENT DEMAND

Demand for programs at the University of Calgary continues to be strong, as evidenced by the ratio of applicants to registrants. For example, in 2018-19, the application-to-registrant ratio was more than 9.6:1 in our Medical Doctor (MD) program, 9.1:1 for law, 8:1 for veterinary medicine, 7.9:1 for the Bachelor of Health Science, 6.8:1 for nursing, 6.5:1 for computer science, and 3.3:1 for engineering. Our overall applicant-to-registrant ratio for undergraduate students sits at 2.75:1 and 3.6:1 at the graduate level. This application pressure is expected to increase given the growth in Calgary and as we continue to improve our national and international reputation. In order to manage growth effectively and within available resources, over the past five years we have moved to a sustainable growth model – one that increases our accountability to the government and to the staff and students of the university. A sustainable growth model for the University of Calgary includes a commitment to maintaining enrolment unless new resources become available for expansion through government-funded expansion initiatives, through growth in our cost-recovery programming, or through technology-related pedagogical enhancements that allow us to increase student numbers. Our ability to admit more students in the future will continue to be constrained by funding and space.

B.8 PROGRAMS UNDER DEVELOPMENT

New programs and program changes are developed by the faculties in response to student demand, new developments in academic disciplines, needs in the labour force, or in response to requests from government. All proposals go through a rigorous internal review as well as a System Coordination Review and review by the Campus Alberta Quality Council. The University of Calgary monitors enrolment in programs of study annually and terminates programs with persistently low enrolment that are no longer sustainable and are not aligned with student demand.

Table 22 – Programs under Development

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
Arts	University and Post-Baccalaureate Certificates and Diplomas	Numerous disciplines within the Faculty of Arts are exploring development of undergraduate and graduate certificates and/or diplomas.	Institution, Ministry	2021
	University Certificate in Creative Writing	The Department of English intends to propose a University Certificate that will build on the current embedded certificate in Creative Writing for people with an interest in expanding their knowledge of writing genres, styles, and aesthetic concerns and earning a stand-alone credential.	Institution, Ministry	2020
	Master of Arts in Visual Studies	A one-year course-based Masters in Visual Studies will provide an opportunity to explore practices with visual media and materials to prepare graduates for career opportunities in the nonprofit sector, public museums and art galleries, and related areas.	Institution, Ministry	2021

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
	Termination of the BSc in Primatology	Suspension leading to termination of the BSc in Primatology. The degree has been replaced by BSc Anthropology.	Institution, Ministry	2020
	Termination of the BA in Canadian Studies	Suspension leading to termination of the BA Canadian Studies. This will be replaced by an embedded certificate in Canadian Studies.	Institution, Ministry	2020
	Termination of BSc and BSc Honours in Earth Science	Suspension leading to termination of the Earth Science programs. Very few students have completed the degree since its inception and students with an interest in Earth Science can choose either a Geography or Geoscience program.	Institution, Ministry	2021
	Termination of the BSc Communication and Culture	Termination of the BSc Communication and Culture. This program has been a low enrolment program and currently has no students registered in it.	Institution, Ministry	2019
	Change of Name to the BA in Women's Studies	To update the name of the degree to align it with the more current field designation of Gender Studies.	Institution, Ministry	2020
	Graduate Diploma in Geographic Information Science and Technology	This professionally oriented diploma program will train students with some background in foundational geospatial knowledge to further develop their skills in GIS, remote sensing, statistical modelling and data management. It will allow students to ladder into a professional master's degree in Geographic Information Sciences.	Institution, Ministry	2021
	Professional Master's Degree in Geospatial Information Technology	As the demand for GIS trained graduates with a master's level education continues to grow, particularly from those working in the profession, the Department of Geography is developing a professional/executive course-based Masters in the area of Geographic Information Sciences and will provide a stackable certificate/diploma pathway to the Master's degree.	Institution, Ministry	2021

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
Architecture, Planning and Landscape Architecture	Doctor of Design	There is a strong demand from students and the profession to develop a professional doctoral program targeted at those currently practicing in the field.	Institution, Ministry	2019
Engineering	Master of Leadership in Engineering and Advanced Practice	This is a course-based, professional Master's program whose intended audience will be engineers with 5 to 7 years of experience, and who require a graduate-level credential to move into senior engineering or engineering management roles.	Institution, Ministry	2020
	Graduate Certificate and Diploma in Engineering and Advanced Practice	A course-based, professional stackable certificate/diploma program, designed for practicing engineers who are looking to develop both their advanced engineering technical expertise as well as their leadership and professional skillset in order to progress in their careers.	Institution, Ministry	2020
	Master of Engineering in Environmental Engineering	A course-based professional master's program focused on an emerging field of engineering requiring highly skilled graduates.	Institution, Ministry	2020
	B.Sc. Environmental Engineering	This is a new interdisciplinary degree specialization. It will provide students with the skills and expertise required to solve current and future environmental challenges related to the engineering profession.	Institution, Ministry	2020 or beyond
	BSc in Engineering Physics	This is a new degree specialization. It will allow students to apply basic scientific principles to the design of equipment and technology.	Institution, Ministry	2020 or beyond
	Graduate Certificate in Pipeline Engineering	The Schulich School of Engineering is building on its expertise in the area of Pipeline Engineering, by developing a Post-Bachelor's Certificate that would allow industry professionals to expand their credentials in an area with high labour market demand.	Institution, Ministry	2019

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
	Graduate Certificate in Digital Engineering	This Graduate Certificate will provide training that will help a graduate transition to the digital engineering workforce. The program will focus on: <i>Software Engineering, Applied Artificial Intelligence, Cyber-Physical Systems, Internet of Things, and Robotics, and Applied Augmented and Virtual Reality Systems</i>	Institution, Ministry	2020
	BSc Biomedical Engineering	A new accredited engineering major in biomedical engineering is proposed which would focus on the development and utilization of advanced technologies to understand and model complex biomedical systems and design and implement solutions that positively maintain and improve quality of life.	Institution, Ministry	2020
Business	Doctor of Philosophy in Sustainable Energy Development	The University's interdisciplinary MSc in Sustainable Energy Development provides a broad-based education in sustainable energy and environmental management. The program is currently exploring the possibility of a PhD program in the same area to respond to student and industry demand.	Institution, Ministry	2020 or beyond
	Master of Finance and Master of Accounting (and other professional course-based business graduate programs)	Numerous disciplines within the Haskayne School of Business are exploring development of course-based professional master's level credentials, the first two of which, the Master of Finance and Master of Accounting, are under development.	Institution, Ministry	2020 and beyond
	Graduate Certificates in Business Intelligence and Data Analytics, Advanced Accounting and Management Analytics	These Certificate programs are designed for MBA graduates looking to upskill in the area of data analytic tools and business intelligence within a management context.	Institution, Ministry	2020
	Graduate Certificates and Diplomas in Business disciplines	The Haskayne School of Business is responding to the business and management needs in Alberta and developing a series of Certificates and Diplomas that	Institution, Ministry	2019

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
		would ladder into a Master's degree.		
Law	Doctor of Law	The Faculty of Law is currently developing a doctoral program, in order to enhance research opportunities for graduate students, particularly in the area of Natural Resources, Energy, and Environmental Law.	Institution, Ministry	2020
	International Lawyers Certificate	A Certificate designed for individuals who have obtained their law degree outside of Canada and wish to practice law in Canada.	Institution, Ministry	2020
Medicine	Physician's Assistant	The Cumming School of Medicine has developed and the institution has internally approved a Physician's Assistant (PA) degree program proposal. Resource discussions are currently underway with various Ministries.	Institution, Ministry	2020
	Master of Community Medicine	Suspension of admission leading to termination of the Master of Community Medicine degree, which is only available to physicians registered in the Public Health and Preventative Medicine Residency Training Program.	Institution, Ministry	2020
	Master's degree in Medical Education Research	The Cumming School of Medicine is conducting a needs assessment to create a course-based degree in medical education research at the master's level that may offer online and/or blended delivery options.	Institution, Ministry	2020 or beyond
	Precision Health Professionals Program (graduate certificate/diploma)	The Precision Health Professionals Program is designed to educate the physicians of today given the burgeoning of information and opportunity to approach the diagnosis and treatment of medical conditions using data driven science. It will allow for education in health care quality and safety as well as in business and leadership skills.	Institution, Ministry	2020

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
Nursing	Graduate Certificates in Nursing	The Faculty of Nursing is responding to the needs of practicing nurses in Alberta and developing a series of Post-Bachelor Certificates in Nursing that would ladder into a Master's level nursing degree.	Institution, Ministry	2019
	Graduate Certificate in Healthcare Innovation and Design	The program will be designed to provide technology skills to Albertans who wish to transition to high-tech careers in the healthcare sector and to drive technological innovation and change. The program will be open to students from a wide range of disciplines.	Institution, Ministry	2020
Science	Master of Science in Physics – Dual degree with University of Oslo	This partnership will enable students to benefit from expertise and learning opportunities unique to each institution	Institution	2020
	International Space Masters – Joint Degree with University of Oslo	This degree will build on the MSc Physics degree and create a professional master's degree that will be a mission-based program.	Institution, Ministry	2020 or beyond
	Master of Geoenergy – Joint Degree with University of Edinburgh	This professional master's degree will include expertise in areas of geoenergy along with a significant field experience and capstone project in order to prepare student for geoenergy related careers.	Institution, Ministry	2020 or beyond
	Master of Data Science and Analytics	This professional, course-based master's degree will be comprised of stackable certificates and targeted to working professionals in the field of data science and analytics.	Institution, Ministry	2020
	Master of Information Security and Privacy	This professional, course-based master's degree will be comprised of stackable certificates and targeted to working professionals in the field of information security.	Institution, Ministry	2020
	Graduate Certificate in Data Privacy	This professional, course-based certificate will allow working computer science and IT professionals to gain advanced training in data privacy on a part-time basis, and will enable its graduates to ladder into the proposed Master of	Institution, Ministry	2020

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
		Information Security and Privacy degree program		
	BSc in Data Science	This program will provide undergraduate students with the mathematical, statistical, and computing knowledge and skills necessary to begin analyzing Big Data and will include specific data science courses that give students opportunities to solve real-world data challenges.	Institution, Ministry	2020
	Master and PhD in Mathematical Finance	Through stackable graduate credentials, this program will develop students' mathematical modelling, data analysis and computational skills in applications to finance.	Institution, Ministry	2020
	Graduate Certificate, Graduate Diploma and Professional Master's degree in Computer Game Development: Computational Media Design for Creative Industries	The program will provide advanced training in computational media (i.e. software, media elements, platforms and objects) development and professional practice for the computer game and creative technology sector. Three faculties will offer the program collaboratively: Architecture, Planning and Landscape Architecture, Science, and Business.	Institution, Ministry	2020
	Graduate Certificate for Smart Cities	The program provides advanced training in the computational technologies that will optimize the design, construction and management of cities, buildings, and landscapes in order to curb climate change, increase operational efficiency and maximize urban livability. The program is jointly offered by the Faculties of Architecture, Planning, and Landscape Architecture, Science, and Engineering.	Institution, Ministry	2020
	Graduate Certificate for Software Technologies	The program provides advanced training in technologies that enable the development of software for digital innovations with a focus on local industries. The program, built on work-integrated learning experiences, focuses on the	Institution, Ministry	2020

Faculty	Proposed Program	Rationale	Approval Routing	Proposed Implementation
		creation and deployment of advanced applications to support tailored data acquisition, automated data analysis, and human-centric, data-driven decision-making.		
	Professional course-based Master of Science degrees	The Faculty of Science is currently exploring other areas where there is strong student and labour market demand to support the development of professional course-based Master of Science degrees.	Institution, Ministry	2020
Social Work	Graduate Certificates in Social Work	Professional, course-based certificates meet the needs of Social Workers across the province looking for part-time professional development opportunities which could ladder to a MSW degree.	Institution, Ministry	2020
Education	Bachelor of Arts in Adult Learning	The Werklund School of Education currently offers graduate programming in the area of adult learning. A BA Adult Learning would focus on community engagement, policy development, and critique, theories of adult learning, and diversities and contexts.	Institution, Ministry	2020
Veterinary Medicine	Master of Veterinary Medical Science	A non-thesis master's program that will also serve as a residency-training program for DVM graduates who wish to pursue a veterinary specialty.	Institution, Ministry	2020
Interdisciplinary	Certificate in Entrepreneurial Thinking	This Certificate will provide students with the opportunity to develop the skills needed to recognize opportunities, embrace challenges and the foundations critical to starting a business.	Institution, Ministry	2020

APPENDIX C: RESEARCH, APPLIED RESEARCH AND SCHOLARLY ACTIVITIES

With over 30,000 students, 500 postdoctoral scholars, and 1,800 faculty actively engaged in discovery, creativity, and innovation supported by 3,200 staff, the University of Calgary (UCalgary) has impact across Alberta as a major driver for both economic prosperity and quality of life for Albertans. As a Comprehensive Academic and Research Institution, our responsibility is to produce the next generation of leaders who experience the best possible training in acquiring and creating new knowledge while at UCalgary. While our research has focal areas of priority, we strive for scholarly excellence in all of the disciplines that comprise our 14 Faculties and we create platforms to support our students and faculty to excel in their individual academic endeavours. Through our interlocked Academic and Research Plans, we have broken down several traditional barriers or trade-offs that are frequently viewed as impediments to national and international performance in research and scholarly activity (e.g. pure versus applied research, modes of collaboration, student engagement). The scholarly environment at UCalgary encourages our students, faculty, and staff to take on the tough challenges facing our society and to draw expertise from across all of our domains to provide evidence-based solutions that will enhance Alberta's reputation on national and global stages. Going forward, UCalgary has identified and initiated a critical emphasis on the development of a sharp focus on innovation and application of discovery research, with the objective to impact the future of Alberta through expanded economy diversification, in alignment with the newly launched Alberta Research and Innovation Framework (ARIF 2018).

ARIF 2018 identifies four interrelated Provincial Outcomes that “empower government ministries and innovation system stakeholders to continue to work together to deliver results and benefits for Albertans. Aspirational innovation targets enable us to work towards achieving our outcomes, and evaluate our collective progress towards them.”

The current Provincial Outcomes are economic diversification and job creation, environmental stewardship and climate leadership, effective resource management, and engaged individuals and communities for a healthy Alberta. The new knowledge created by our students and faculty, through their research and supported by our systems for knowledge translation and innovation, is a major driver to achieve these Provincial Outcomes. We describe below how the research capacity in innovation strategies at UCalgary contributes to these desired outcomes, how we foster excellence in research and scholarly activity through our Academic and Research Plans, and how we also contribute strategically to the research and innovation system in Alberta via collaborations with other institutions.



The Innovation Targets identified in ARIF 2018 inspire transformational solutions to be achieved by 2030 in several sectors. Our university is playing a pivotal role in achieving some of these targets through the research performed by students and faculty working on inspirational solutions and our support systems will move these solutions as quickly as possible from discovery to application. Not only are we contributing to the specific sectors, but we are also working closely with our communities to move key technologies forward rapidly so that the value of applications in these areas is realized by Albertans. Innovate Calgary is undergoing a major refresh as a technology transfer office, our University Research Park (URP) is becoming a reality, and a new Associate Vice-President (Research-Innovation) was appointed earlier this year to coordinate activities both internally through our many innovation hubs and with industry and our provincial, national, and international partners. With this expanded focus on innovation, a full section of this appendix is now dedicated to reporting on our impactful efforts in this area.



Research Plan



We are implementing our new 2018-23 Research Plan (RP) to deliver the vision endorsed by our communities in our *Eyes High Strategy 2017-22*. The RP has two core values: *Impact and Student Experience*. As a research-intensive university, we have an obligation to our society to contribute new knowledge while simultaneously engaging our students in learning guided by processes of discovery, creativity, and innovation, through initiatives like our Program for Undergraduate Research Experience (PURE). We evaluate ideas critically, we foster informed debate, and we design relevant and meaningful learning experiences for our students that enable them to develop curiosity, communication skills, critical thought, perspective, and disciplinary excellence. The knowledge we create and the leaders we educate promote cultural understanding and social justice, improve quality of life, and help to secure a prosperous and sustainable future – all core components needed to achieve our Provincial Outcomes (ARIF 2018).

Our RP identifies three priorities: 1) Matching our Strengths with Opportunities, 2) Increasing our Research Capacity, and 3) Driving Innovation. In each priority, we have explored new models of research, new methodologies, and new forms of collaboration and partnerships locally, nationally, and internationally to build and enhance our capacity. One of our major goals is to break down artificial barriers between pure and applied research by mentoring and training our students, faculty, and staff to recognize the value proposition of their new ideas and to provide them with the tools and structures to translate their knowledge for the benefit of all Albertans. Our institution cannot be categorized into “pure” and “applied” – we are a comprehensive university that will continue to contribute significantly to the diverse outcomes by both creating new knowledge and melding it in a form that provides both short and long-term benefits.

Driving Innovation is a shared priority with the Academic Plan, and delivering on this priority directly supports the aspirational Innovation Targets identified in ARIF 2018. With the incorporation of entrepreneurial thinking in our *Eyes High Strategy 2017-22*, we are charting a bold course for our future.

We are a community of creative individuals willing to pursue new challenges, especially when it benefits our societies and environments, and as a research university, we have engaged scholars and we are leveraging opportunities with partners from industry, not-for-profit organizations, and philanthropists who can help us move ideas rapidly from conception to application. To implement this priority, we are creating cross-campus programs and initiatives, such as the Hunter Hub for Entrepreneurial Thinking, CDL-Rockies, and the Life Sciences Innovation Hub (LSIH). We will help to transform the University into an early adopter and test bed for research ideas and technologies, and we will create pathways and support mechanisms for knowledge translation and commercialization that reflect the comprehensive nature of our scholarship. All of these initiatives, delivered through collaborations with other Post-Secondary Institutions and with our external community supporters, will link a recognized need with a novel idea – key ingredients in driving innovation.

HELPING TO DELIVER PROVINCIAL OUTCOMES

Economic Diversification and Job Creation:

Economies grow when new ideas, new talent, and new capital come together to both create new opportunities as well as providing services valued by our societies. UCalgary impacts our province through its significant contributions in all of these components. Our recent data show that our University is among the top five in Canada in graduation rates, time to completion, and employment rate for our undergraduate students. We are producing the next generation of leaders who are equipped to prosper in innovation-based economies. UCalgary has attracted some of the world's best faculty, postdoctoral scholars, and graduate students, driving us towards our goal of becoming a top five research university in Canada. These recruitments and the excellence of our existing scholars have resulted in significant external research revenue growth, reaching \$419.2 million last year, a 48% increase since the 2011-12 academic year. This funding contributes significantly to creating jobs in the province for research assistants and technicians and training opportunities for undergraduate and graduate students. Round four of our Eyes High Postdoctoral Scholars Competition funded the recruitment of 45 new postdocs (7 more in process at time of this report) in 2018-19. We consistently rank in the top 4-7 in national grant competitions (i.e., Natural Sciences and Engineering Research Council of Canada (NSERC), and Canadian Institutes for Health Research (CIHR)) and competitions for operating and infrastructure funding from Canada Foundation for Innovation (CFI), and in the top 12 for corresponding Social Science and Humanities Research Council (SSHRC) opportunities. Since the implementation of our Academic and Research Plans in 2012, we have moved from ninth to sixth place in Canada, as ranked by ReSearch Infosource Inc. which includes ranking components of external research revenue, citation impact, and reputation. This leveraging of federal funds for both operations and personnel is important for Alberta to achieve both its Provincial Outcomes and Innovation Targets.

Based on the combined efforts of Innovate Calgary and our Research Services Office, UCalgary now ranks in the top five universities in Canada for three key metrics in commercialization and knowledge translation: disclosures, agreements and start-up companies. These are leading-edge metrics for inputs to economic growth. We are also starting to develop special programs to encourage social enterprise through our Knowledge Translation platform across our Faculties, resulting in early successes like MoveImprove (Werklund School of Education and Innovate Calgary) and CareFind (Haskayne School of Business).

UCalgary is actively engaged in discussions and preparations for proposals to advance the innovation and entrepreneurial ecosystem at the municipal, provincial, and national levels that will help to promote a strong economy in Alberta. We are assisting in the industry-led proposals for innovation in clean tech, agriculture, and health that are priority areas supported by the Province of Alberta. With our three

entrepreneurially focused entities (Innovate Calgary, Hunter Hub for Entrepreneurial Thinking, and Creative Destruction Lab – Rockies), we continue to drive the growth of an innovation ecosystem in southern Alberta, thus contributing to the diversification of Alberta’s economy. We are also helping in the development of a national energy innovation network being championed by industry, UCalgary and the University of Alberta. In the past year, we have placed 31 graduate students in MITACs-administered research internships, working on topics ranging from wildlife conservation education to digital design and prefabrication processes. In addition, 63 graduate students have participated in skills-based internships through UCalgary’s Transformative Talent Internship program. These internships have included opportunities in hydrogeology, data science (across multiple industries), evaluating federal relations with Northern and Indigenous Communities and energizing local start-ups in aerospace, capital project cost-control and innovative seniors housing. Further, our graduate students have access to a wide range of entrepreneurship training and professional skills development offerings, equipping them to translate their research into a variety of practical applications. The rapid and effective development of the innovation ecosystem will ensure that the knowledge being generated by our students and faculty will be translated to the benefit of our society. In partnership with the Province of Alberta, 2018 saw the official announcement of the University Research Park, to be developed north of our main campus. As we move through 2019 and beyond, we are actively pursuing the tremendous potential that this opportunity provides as a source of entrepreneurial and commercialization activities for our students and faculty. With additional investment at the municipal level from the Opportunity Calgary Investment Fund and from the federal level through Western Economic Development, the University’s LSIH launched in the URP earlier this year, with significant increases in programming and activity planned for 2019-20.

In short, we are helping to create productive economic growth by attracting and producing new talent, by leveraging provincial funding with external funding sources (e.g. industry, municipal, federal, and international) to create new ideas, and working with our partners to create an environment where great ideas can attract the capital investments needed for them to grow and prosper.

Environmental Stewardship and Climate Leadership:

Besides the tremendous advances we are making through our energy research initiatives to reduce the environmental footprint associated with energy extraction, we are also championing new approaches and technologies to monitor environmental impacts and to create the data inventories needed to assess Alberta’s contribution to curtailing greenhouse gas emissions and reducing water usage. Our New Earth-Space Technologies research theme brings together geographers, scientists, and engineers to create new data gathering technologies across all spatial scales for Alberta. Whether it is cutting edge technologies for detecting methane emissions or deployment of satellite technologies to assess environmental changes over time and space scales, our students and faculty are providing expertise that enables the province to show environmental leadership on the national and international stage. We have received significant funding to develop an open and unified framework to interconnect Internet of Things (IoT) sensing devices, data and applications over the Web, supporting research in climate change, air quality, ground water and ecology. This type of platform enables effective environmental monitoring that can both assess cumulative effects and suggest mitigation strategies to minimize environmental impacts. Our research on new approaches as well as the rapid diffusion of new technologies supports the provincial goal of being best in class in terms of environmental stewardship.



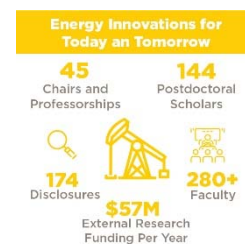
Building on previous investments from the Provincial and Federal governments, along with ongoing investments from UCalgary and The City of Calgary, Advancing Canadian Wastewater Assets (ACWA) is energizing its project work and broadening its outreach. The message is spreading that ACWA is here to

support researchers from all institutions, as well as other municipalities, rural and Aboriginal communities, regulators and industry, in solving wastewater management challenges. ACWA's physical assets and intellectual capital are being made available to all these segments so that a range of challenges, from near-term issues to long-term emerging concerns can be addressed more effectively. With new agreements coming into effect in 2019, ACWA anticipates expanded use of our facilities by multi-institutional partners, including researchers based at the University of Alberta. ACWA's mission is to support R&D, piloting, demonstration, and knowledge transfer, and to assist communities in meeting their water-related health, environmental and social needs.

The provincial government is creating new research collaborations to focus on Environmental Monitoring. We are actively engaged with the Chief Scientist of Alberta charged with overseeing the province's Environmental Monitoring and Reporting Systems to co-locate one of these major research collaborations at UCalgary. As part of this effort, we are currently recruiting a CAIP Chair who will specifically address "cumulative effects assessment." These initiatives will enable international-class research on cumulative effects assessment and how environmental monitoring can inform policy.

Effective Resource Management:

Our province has major opportunities to unlock its vast renewable and non-renewable energy resources while simultaneously demonstrating the best environmental stewardship as we move to a low carbon future. Our research theme *Energy Innovations for Today and Tomorrow* directly addresses the goals of Effective Resource Management and Environmental Stewardship to reduce costs of resource development while simultaneously decreasing the environmental impacts. Our research creates new economic benefits, jobs, and opportunities to export value-added products and processes to the international market, and produces approaches that lead the world in stewardship of natural resources. The Canada First Research Excellence Fund (CFREF) award for \$75 million funds the Global Research Initiative in Sustainable Low Carbon Unconventional Resources (referred to as the GRI). From these federal funds, we have hired six new faculty members (2 in chemistry and 4 in chemical and petroleum engineering), and we support over 80 graduate students, over 40 post-doctoral fellows, and more than 50 individual projects. The GRI program has a foundational partnership with the Southern Alberta Institute of Technology (SAIT) for prototyping and assisting the commercialization of energy technologies that significantly reduce environmental impact and includes \$6.5 million to promote and expand research collaborations with the University of Alberta. So far, there are eight joint research projects with the University of Alberta involving over 20 professors and over 30 HQP (graduate students and post-doctoral fellows). From GRI activities, seven spin-off companies have started, 131 inventions have been disclosed, and we have established 52 collaborations with partners, and supporting organizations spanning seven countries. The interaction between our Academic Plan priority on Internationalization and our Research Plan has also yielded major leveraging on an international scale. Specifically, projects in our Mexico (\$46M total funding) partnership have started with HQPs being hires, data sharing and samples (oils and reservoir rocks) exchanged. A joint research update meeting was held in October 2018 where more than 15 Mexican PIs and other researchers visited UCalgary to update and discuss research progress. The China collaboration (\$14M total funding) is in its final year with over 30 researchers (10 PIs and 20 HQP) involved from UCalgary through a \$1.35M MITACS grant. New collaborations have been established and over 20 peer-reviewed publications have resulted from joint research activities. Knowledge created through these collaborations ensures that best practices for environmental stewardship and regulation will be rapidly diffused in international energy markets.



Energy Innovations for Today and Tomorrow also integrates research across our campus on transitioning to a *Low Carbon Future* that dovetails with the provincial goal of enhancing Clean Energy. Our students and faculty are advancing new technologies on energy conversion using biological and chemical systems that will reduce greenhouse gas emissions, while creating new sources of energy and new energy storage systems. Our significant research capacity in Clean Energy will help the province achieve its carbon targets identified in the Climate Leadership Plan. In 2018 our Energy in Society Research Group entered into a research partnership with Germany’s Max Planck Society (Institute for the History of Science), to facilitate joint work based in the humanities and social sciences, focused on the transition to a low-carbon economy.



Engaged Individuals and Communities for a Healthy Alberta:

Health research conducted at our University encompasses important contributions from all relevant disciplines spanning virtually all of our 14 Faculties. We pride ourselves on having excellent disciplinary strength in areas typically associated with health such as medicine, nursing, and social work. Research advances by students and faculty in these areas are extremely important, and the future bodes well based on the results of stiff competition for federal research funding. This includes funding from the Canadian Institute for Health Research – where we ranked second in the country in the Project Grant Scheme just behind UBC. In addition, a new SSHRC Partnership Grant (\$2M; the second such grant ever received at UCalgary) lead by researchers in our Faculty of Social Work will investigate ways to optimize training for Canadian social workers. However, it is well recognized that solutions for major health problems, issues, and implementation require inputs and knowledge translation from many disciplines beyond the typical disciplines, and UCalgary is championing the exciting integration of this evidence across our campuses. The following are three simple examples that highlight the breadth of health research. (1) The Integrated Concussion Research Program (ICRP) is a university-wide initiative to address the growing concerns about concussions, better the lives of those whom have experienced these injuries and prevent concussion. The ICRP brings together faculty and trainees from the faculties of Arts and Kinesiology and the Cumming School of Medicine, along with the Schulich School of Engineering and faculties of Nursing and Science. (2) Veterinary Medicine is playing an important role in promoting the concept of *One Health*, where research advances in areas such as anti-microbial resistance, zoonosis, and nutrition require extensive collaborative research with colleagues in Science, Engineering, Kinesiology, Arts, and Medicine. This focus will be further enhanced in the coming year with the launch of *One Health* as a new priority crosscutting theme within UCalgary’s RP. (3) The Cumming School of Medicine is advancing a state-of-the-art program in precision medicine and co-leading a pan-Alberta effort in this important area. Leveraging investments in the Centre for Health Informatics that will unlock the power of Alberta’s internationally recognized data, the CSM is poised to improve health outcomes for all Albertans. The knowledge translation from these collaborations impact human health, agricultural production, environmental sustainability, as well as quality of life for rural communities. In short, we have managed to combine our emphasis on excellence

in individual scholarship with the ability to bring together students and faculty from many disciplines to create a powerful research enterprise that is solving important problems.

To coordinate our health research initiatives, we have created a confederation of scholars in four areas where we have recognized national and international excellence. The three health-relevant research themes – *Brain and Mental Health; Infections, Inflammation and Chronic Diseases; and Engineering Solutions for Health: Biomedical Engineering* – move discoveries rapidly from the bench to the bedside to improve the health and well-being of Albertans.

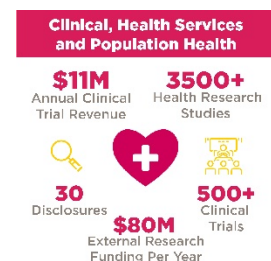


The fourth theme, *Human Dynamics in a Changing World*, investigates grand challenges associated with cultural understanding and the development of smart and secure cities, while protecting the rights of individuals. Our research is yielding progressive and novel facets for urban design that will help to build healthy communities across Alberta and beyond. Newly-funded SSHRC research projects lead by our scholars will address pressing social problems, including access to municipal services for individuals with disabilities, and the impact of open data in smart (wired, digital) cities.

Looking forward, we are excited to undertake leadership or active engagement on a number of provincial and federal opportunities in Quantum Science and Technologies, a key component of our *Human Dynamics* theme. These opportunities include continuing to play a leadership role in the developing *Quantum Alberta* pan-provincial organization, leading Alberta’s Major Innovation Fund investment in *Quantum Technologies* to the benefit of all Alberta researchers in the field, and positioning Alberta within the rapidly developing Quantum Canada landscape.

We have also developed new strategies to promote clinical trials and translation of health research to improve treatments and reduce health care costs. Through partnerships with our generous community, we have created a unique International Microbiome Centre and new imaging facilities, such as the Magnetic Resonance (MR) guided Focused Ultrasound Platform, which enables neurosurgery and neuromodulation to areas of the brain as small as a grain of rice, all without any incisions. Our health researchers are drawn from almost every Faculty at UCalgary and they have joined forces through our research themes to tackle global challenges, to develop new technologies that open up potential markets, and to translate knowledge that creates new health policies and procedures. Exciting collaborations relating to health research are emerging from the implementation of the Indigenous Strategy for UCalgary. Our research improves the health of all Albertans, reduces the cost of service delivery, and helps to create a resilient society that respects cultural diversity.

Our Clinical, Health Services and Population Health platform strategy supports research to improve the health of Albertans via clinical research, research on health services and systems, and research on social, cultural, and environmental factors that affect the health of populations. This platform supports the knowledge translation of our four health-relevant Strategic Research Themes, as well as advances in health research from scholars across all Faculties. For example, the Participate in Research at UCalgary initiative enhances access to opportunities for Albertans to participate in clinical trials, health services research, and epidemiological studies, while increasing community awareness regarding the value of local research.



This platform strategy also enables collaboration on clinical research initiatives with Alberta Health Services. For example, the Non-invasive Neurostimulation Network is informing provincial implementation of Transcranial Magnetic Stimulation therapy for treatment-resistant depression in

adults, and several Brain and Mental Health researchers lead AHS Strategic Clinical Networks to ensure clinical care of Albertans is informed by the latest research. Key initiatives also include enhanced services to UCalgary investigators through the Clinical Research Unit, Clinical Research Fund funding support for UCalgary-led clinical trials, renovations to the Heritage Medical Research Clinic (supported in part by a \$650K grant from Alberta EDT), and a refreshed certification and quality assurance program serving clinical trials from across campus. The platform strategy supports and is supported by the complementary Integrated Management Plan to Accelerate Clinical Trials (IMPACT) initiative. IMPACT is a full-service program which gives inventors and biomedical scientists access to the expertise, advice, infrastructure and opportunities needed to translate their inventions into commercial products – including the design and execution of early phase clinical trials to demonstrate efficacy and safety.

INNOVATION@UCALGARY: CULTURE CHANGE TO DRIVE IMPACT

Canadian universities play an instrumental role in developing innovation and research systems to support Canada’s social, economic and cultural development. UCalgary is building a renewed innovation strategy, (Innovation@UCalgary) that links discovery, creativity, invention and entrepreneurship to solve local, national and global economic and social challenges. We are working with communities, government, industry and other post-secondary institutions to accelerate how we bridge the gap between discovery and innovation at our university. The direct impacts associated with university innovation, knowledge engagement, translation and commercialization through various partnerships include job creation, company creation, and research opportunities for faculty and technicians. Research activity also creates indirect economic impact through social and technical innovations that lead to new technologies, policy and industry sectors, and healthier societies. This recharges resources for future research and discovery.

Innovation@UCalgary will help our university become a leader in innovation. Research and innovation are part of the same organism, leading research universities lead the way in innovation and Innovation@UCalgary aims to place UCalgary in this select group of global institutions.

CULTURAL CHANGE

UCalgary has supported innovation for several decades, but in the last 5 years – and especially in the last 2 years – we have prioritized innovation and impact. We have dramatically improved links to the local innovation community and focused on resourcing via major philanthropic donations. Most Faculties now have active innovation programs, and the university has deployed several programs to increase

Innovation success: UCalgary spinoff company establishes \$1 billion collaboration and licensing agreement with U.S. biotech firm

[Parvus Therapeutics](#), founded by UCalgary researcher Dr. Pere Santamaria, [announced an agreement](#) with Genentech to develop, manufacture and commercialize a class of drugs known as Navacims to treat celiac, autoimmune liver and inflammatory bowel diseases.

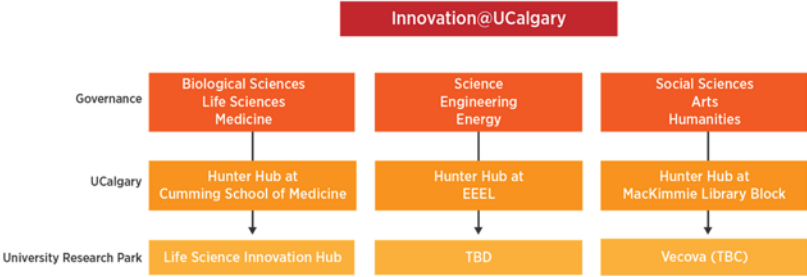
In 2004, Dr. Santamaria discovered Navacims – a precision nanomedicine designed to trigger a naturally occurring mechanism within the immune system to protect against autoimmune disease. Navacims can ‘switch off’ autoimmune attacks in a way that does not compromise the body’s overall immune system the way that current treatments do.

Founded in 2009 with critical support from Innovate Calgary, Parvus has tested treatments extensively in mice with promising results. The new agreement with Genentech will support clinical trials in humans – and if successful, the regulatory work to bring the drug to market.

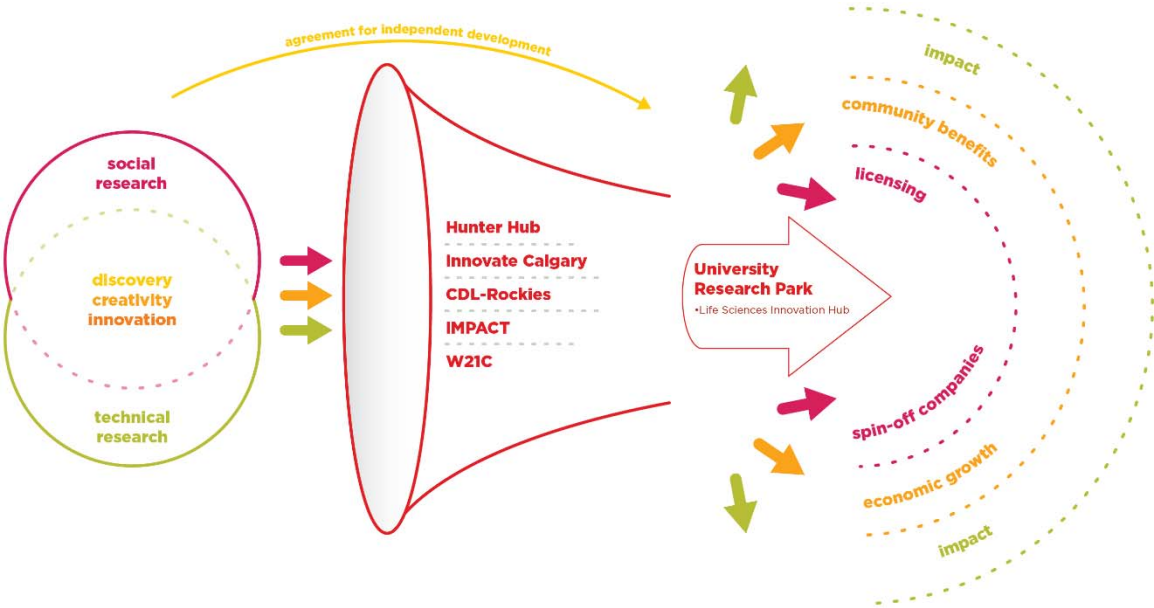
Parvus also entered into an agreement in 2017 with Novartis to develop Navacims for treating type 1 diabetes.

innovation and entrepreneurial activity more broadly and in step with development of its research base. The structure is in place, but to make significant increases, our university must make a cultural shift, which will be enabled through our expanding innovation infrastructure (e.g. LSIH, W21C) and encouraged through new programs and innovation units (e.g. Hunter Hub, CDL-Rockies).

We are setting goals to transform our innovation levels by 2030. To achieve this, we are building on the developments of the last decade, deploying a three-path innovation model and a wide variety of targeted support activities.



Innovation does not map well on to traditional structures such as faculties, but three broad domains of activity (Life, Biological, and Health Science; Science and Engineering; Arts, Social Science and Humanities) can be defined, with most innovation happening at the intersections, including cross-cutting activities covering aspects of Business, Law, and Policy. Our experience is that technical and social innovations can happen from any of the domains – data science innovation, for example, happening in the Arts faculty, and social innovations coming from science, medicine and engineering innovators.



The key components of our Innovation@UCalgary ecosystem are illustrated above and described in detail below, working from left to right in the figure:

Disciplinary domains: Discovery, creativity, and innovation are derived from intersections of individual, research group and Faculty interests. Faculty members lead **technical or social research** and educational programs and host the inventive and enterprising students and staff who drive our innovation enterprise.

When a great idea emerges, the student or staff can pursue the path that makes the most sense to develop their idea beyond traditional structures, which leads into the innovation funnel at the core of the figure:

The Hunter Hub for Entrepreneurial Thinking (HH): HH is an interdisciplinary nucleus for activities that support student, postdoc and faculty innovation experiences, and expands a growing community of entrepreneurs and innovators. It is a fundamental link for our campuses that enriches the student experience and empowers innovation and entrepreneurial thinking across our institution. The Hunter hub is the front end of the innovation funnel that will ultimately attract, support and educate thousands of future innovators and entrepreneurs. The Hunter Hub generates hundreds of venture projects and teams that move naturally into the development environment of Innovate Calgary.

Innovate Calgary (IC): IC has operated as UCalgary's knowledge transfer and business incubation centre for 32 years, but has been re-invigorated in the last 5 years to become a transfer office fit for the 21st century, as reflected by the 75% increase in the number of UCalgary-created start-ups last year. It has new leadership, increased staff, and new approaches to flexible engagement and support of faculty and student technology assessment and commercialization. Since its inception, over 2,200 disclosures have been submitted resulting in 901 patents secured, 549 revenue bearing agreements and 92 UCalgary-based startup companies created. Examples of companies created based on UCalgary research include: LivingWorks, Circle Cardiovascular, Trusted Positioning, Parvus Therapeutics, Epimeron, and Neuraura.

Innovate Calgary currently works with nearly 300 researchers and targets an annual growth of 20%. In addition to traditional industry liaison and technology transfer functions, two key program areas have been put in place:

1. Talent development: By the end of 2019, 25 former UCalgary postdocs and graduate students will be actively involved in a new talent/fellowship program. Each fellow has graduated from UCalgary and has formed their own company, based on a discovery from their research lab. Being an entrepreneur is now a career path for some of our brightest young people. Some of these companies will go on to become part of the broader CDL as a whole.
2. Acceleration and incubation: Place and space are important. In November 2018, the province announced it was transferring the Research Park land, north of 32nd Avenue, to the University. Innovate Calgary is helping UCalgary develop and manage the innovation program in the URP. Starting with the Life Sciences Innovation Hub, we are building places where young and growing companies can benefit from a sense of community

CDL-Rockies: Since 2017, facilitated by Haskayne Business School, the University of Calgary hosts a franchise of the successful Creative Destruction Lab (CDL). In its first two years of operation, over 300 predominantly university grown tech ventures were assessed and 50 of them put to the CDL program for development. CDL-Rockies is a pillar in the commercialization of technology developed within universities. There are only seven CDL locations – five in Canada, one in New York, and one at Oxford, with Calgary acting as the sole host of the CDL Energy stream. UCalgary is proud to boast this innovative program made possible due to the enterprising community of supporters and mentors in Calgary. It taps into the experience of entrepreneurs who have founded, scaled and executed high-growth ventures by creating mentorship partnerships with select start-ups. In 2017, CDL-Rockies raised approximately \$14 million for the ventures in the program and 13 of the 26 companies graduated. Even greater levels of investment are expected in the current cohort. Students and faculty, seeing opportunities to be mentored by leading technology developers and investors, increased their innovation activities at the University of Calgary.

IMPACT and W21C: Innovation in health research requires deep connection with the health care system and ventures outside of the university. IMPACT and W21C are but two examples of this type of activity. **IMPACT** (Integrated Management Platform to Accelerate Clinical Trials) is a unique approach to facilitate the planning, conduct and dissemination of clinical trials, helping external ventures to navigate the clinical trial and regulatory process, and minimizing common hurdles and barriers to success. IMPACT leverages the relationship between CDL and UCalgary, and draws upon existing infrastructure and units, such as W21C.

W21C (Ward of the 21st Century) is a research and innovation initiative co-hosted by UCalgary and Alberta Health Services. With a mission to innovate, create, educate, and evolve to build new paradigms of health care delivery, W21C plays a major role in our innovation efforts in the health care sector.

Projects and companies emerging from the central part of the Innovation@UCalgary funnel can flow into the broader Calgary corporate environment, or move to one of the accelerator spaces in our University Research Park (URP).

University Research Park (URP): The revitalization of the University Research Park supports creation of a new innovation and research cluster at the University of Calgary to help drive innovation in the Calgary region. The URP will provide the necessary resources to incubate innovations, cultivate talent, and apply academic learnings to create beneficial solutions for our community.

The URP will be a catalyst to grow employment opportunities. Over a 20-year period, it will support the creation of 6,300 direct new jobs, including 4,500 private sector jobs with the remaining comprised of technical staff for sponsored UCalgary research. Indirect employment impacts will generate an additional 5,700 jobs for a total of 12,000 jobs in Calgary by 2038. This space for companies and start-ups to interact and work alongside UCalgary students and researchers will cultivate high-quality talent, bring innovation to the forefront, and result in lasting impacts for our communities. In addition to the existing Life Sciences Innovation Hub (LSIH), hubs for science/engineering/energy and social innovation are in the design phase.

Outputs: UCalgary contributes to our country's global competitive advantage, driving socio-economic change and making the world a better place. Great ideas enter the Innovation@UCalgary ecosystem, and outputs emerge in the form of knowledge transfer, newly created ventures, technology licensing, direct community benefits, job creation, and economic growth.

VIRTUOUS CYCLE

Research excellence is important beyond the university – excellence attracts top faculty and students, which in turn creates impactful programs and companies, which contribute to the economic development of our city.

Innovation is part of the broad, inclusive spectrum of research at UCalgary that links discovery, invention, applied research and impactful creation and delivery of a solution or application to society. Solutions encompass a wide variety of forms, including but not limited to commercial applications. Entrepreneurship is crucial. Technology transfer bridges the difficult transition from discovery through to deployed solutions in society. In recent years, we have dedicated much effort to stimulate the virtuous cycle. **Research-intensive entrepreneurship** programs are an important new component to this system. By the end of 2019, we will be mentoring approximately 25 of our best young researchers and their teams, each seeking to translate an important technology or social innovation. Programs like this give researchers the time to develop their technology or social innovation, and to build a new, sustainable company.

Today the world of business is a world of ideas and innovation – and our universities are places full of ideas and innovation. 50 years ago, 80% of the value of the S&P500 was accounted for by tangible assets while today only 20% of the value is accounted for by tangible assets. Alphabet, Apple, and Amazon are household names, but high-growth companies are starting every day – and many of these have their beginnings in a university. Calgary and UCalgary need to be leaders in this new world of business, creating **new funding models** and paradigms through which we can share knowledge with our communities.



Company acceleration is the final piece in the cycle – UCalgary has built and continues to build the infrastructure and supports to enable new ventures to scale up and succeed.

Innovation@UCalgary will provide the framework for UCalgary to grow into a globally leading research and innovation university. We are enabling the components necessary to guide and support students, faculty, postdocs, staff and alumni through discovery, invention and venture development.

To achieve this, we are:

- Developing and promoting an innovation culture together with our community;
- Transforming cultural models for research and teaching to enable innovation;
- Developing an ethos of assessment, ambition and continuous development;
- Actively developing innovative programs for women and minorities;
- Embedding innovation support functions within research teams and across the campuses;
- Building on-campus innovation spaces for students, postdocs and staff;
- Organizing, resourcing and promoting major campus-wide innovation events;
- Creating and supporting student innovation groups and student/postdoc pitch competitions;
- Developing a cohort of entrepreneurial role models;
- Integrating UCalgary innovation ecosystem into the Alberta Rainforest;
- Delivering actual solutions and jobs through leadership and cultural change;
- Leveraging Government support and creating UCalgary Innovation support fellowships and programs for faculty, postdocs, and graduate students; and
- Not being afraid to change our culture and processes to succeed.

In 2017, UCalgary put entrepreneurial thinking at the core of *Eyes High*, our strategic vision. The Hunter Hub for Entrepreneurial Thinking opened its doors in December 2017, catalyzing the effort to embed entrepreneurial thinking into our institution's DNA.

Entrepreneurship is about actions and intentions, while entrepreneurial thinking is about attitude and beliefs to navigate personal and professional endeavours. Entrepreneurial thinking is not a skill that people inherently possess, but a mindset that requires consistent practice to build a system of thinking that will help individuals navigate our increasingly complex world. We assist in developing that mindset through programming on campus that encourages our community to think experientially and interact with researchers, like-minded innovators and entrepreneurial thinkers. Disruptive technologies such as AI and blockchain are entering society resulting in occupations and industries needing to adapt and evolve alongside a constantly shifting technological and social fabric disruption process. As a result, it is imperative to prepare students with relevant training to successfully adapt to a somewhat unpredictable global socio-economic and technological reality and provide us with the inventive steps and innovative solutions for what will be a very different world.

UCalgary is committed to driving innovation that has social impact and value. In 2018, UCalgary became a founding member of the first Canadian Cohort of the Carnegie Classification on Community Engagement. The Carnegie Foundation Carnegie defines Community Engagement as the collaboration between institutions of higher education and their larger communities for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity. To this end, we will be engaged over the next two years in a process of highlighting, supporting, and evaluating the many partnerships that are essential to our social innovation and impact.

The Alberta economy is changing and diversifying. Calgary is on its way to becoming a truly entrepreneurial city. Peter Cohan, the author of *Startup Cities*, indicates there are six factors that are needed to support innovative and start-up communities: pillar companies, universities, human capital, investment capital, mentor networks and values. We possess all of these traits, and we now need to

continuously advocate for an innovative culture and create strategic collaborative efforts throughout and beyond the university.

IDENTIFYING AND IMPLEMENTING PRIORITIES, AND SYSTEM LINKAGES:

Based on national and international rankings of scholarship, faculty, students and staff, we identified six strategic research themes where we have significant capacity across our 14 Faculties and where we have the ability to solve some of society's most demanding challenges.

Each theme identified grand challenges that our scholars wanted to solve through active collaborations. Solving these challenges typically involves contributions from highly diverse disciplines. Once the strategies were produced and presented to our General Faculties Council and Board of Governors, we invested \$1 million for each of the groups to build new collaborations, and to investigate opportunities with partners from other institutions and organizations in Alberta and abroad. Each area has established a confederation of scholars to mobilize and integrate our research capacity, share facilities and equipment, and identify new scholars (students, trainees, and faculty) needed to build capacity. Five of the six themes each involve over 200 faculty members from multiple Faculties. The sixth theme (New Earth-Space Technologies) is slightly more focused, but it still engages more than 100 faculty from five Faculties.

In addition to these six strategic priority themes, early in 2019 we added two new emerging Research Themes: Child Health and Wellness and One Health. With investment from the University in 2019 and collaboration across multiple Faculties, we will initially launch these crosscutting emerging themes as exploratory initiatives, but with high hopes for their eventual growth to the levels of success and benefits to Alberta achieved by our existing themes.

We have also increased our research capacity through partnerships with local institutions, provincial and national programs, and international entities. There are too many of these partnerships to list here, so we provide a few examples that highlight our collaborations, leveraging, and anticipated impact.

In the coming year, we will be heavily engaged with researchers at our partner Alberta universities in strategic research areas made possible by the Provincial Major Innovation Fund initiative. This will include leading both the further development of Quantum Alberta through the *Quantum Technologies* grant and the *Antimicrobial Resistance – One Health Consortium* launch. UCalgary researchers will also participate in the *Centre for autonomous systems in strengthening future communities* initiative, lead out of our partner institution, the University of Alberta.

The LSIH, located in our URP, will form a cornerstone of our Innovation ecosystem. Launching in 2019 and enabled by funds from both Western Economic Development (\$3.125M) and the Opportunity Calgary Investment Fund (\$8.5M), the LSIH will provide programs to facilitate the flow from discovery to the marketplace in the Life Sciences sector.

UCalgary researchers are national leaders in understanding the avoidance, detection, and effects of youth concussion. Funded through a \$9,438,473 (USD) grant from the National Football League, UCalgary will lead a nationwide study entitled "Surveillance in High Schools to Reduce Concussions in Youth." This consortium brings together hospital and university expertise in the pursuit of making sports safer for our youth.

More than 10 years ago, we partnered with The City of Calgary to create the Urban Alliance, a strategic relationship which matches research needs identified by the City with our scholars (faculty and students) to engage in collaborative projects, for the benefit of all Calgarians. There are many research projects currently underway that span the full range of questions faced by a major, rapidly growing urban centre. For example, we are working with the City to advance cutting-edge wastewater treatment technology to

protect human and environmental health, to develop innovative ways to use City fibre infrastructure to detect real-time traffic movement, and to design new partnerships to effectively address the need for affordable housing. We have major initiatives underway to tackle the diverse challenges and opportunities of Calgary as a smart city, and more broadly drive forward the Digital Innovations landscape in Alberta.

UCalgary is partnering with the Government of Alberta, Alberta Health Services, Alberta Innovates UAlberta and Ulethbridge on the Alberta Precision Health Strategy. The strategy will position Alberta as a leader in precision health, including better prediction and early diagnosis of disease, advanced diagnostic testing and discovery of new treatments for disease that enable individualized therapy.

UCalgary, the University of Alberta, and Alberta Health Services-CancerControl are collaborating on a major initiative to jointly select and implement a clinical trial management system (CTMS). The CTMS platform will significantly enhance the clinical trial infrastructure in Alberta, allowing for the optimized management of the 1,800 clinical trials that are being conducted in the province. The CTMS will reduce the administrative burden for researchers, improve budgeting and financial management, and enable central reporting of clinical trial activity. Ensuring that the CTMS is integrated with the future provincial electronic medical record system (ConnectCare) will provide greater patient safety and improve subject recruitment.

At the national level, we have helped to transition Carbon Management Canada from a Network Centre of Excellence (NCE) to Carbon Management Research Institutes – a small number of national research institutes focused on reducing greenhouse gas emissions and building a low carbon economy. UCalgary hosts the first of these institutes, the Containment and Monitoring Institute (CaMI). CaMI is located in southeastern Alberta, near Brooks, and is led by UCalgary researchers, but draws together academic and industrial researchers and entrepreneurs from across Canada and internationally. It is a major field site where new technologies can be explored for carbon sequestration and the efficient monitoring and auditing of injected CO₂, as well as fugitive methane emissions and control. It will help the Province of Alberta deliver on its goal of being a leader in environmental stewardship for the natural resource sector. CaMI is funded by generous grants from the Government of Canada and industry, with new research funds coming from Norway, the United Kingdom, and the United States.

LOOKING FORWARD

Our new Academic and Research Plans were refreshed a year ago to support our institution's bold vision articulated by our Eyes High Strategy 2017-22, and we are implementing these plans. The Research Plan priorities directly align with the objectives presented in ARIF 2018. Delivering on our priorities will advance the goals identified in the Provincial Outcomes and will accelerate achievement of the Provincial Innovation Targets in particular sectors where we have world-class research. We have attracted over 150 new faculty members to our academy. There is a renewed energy on our campuses and a desire to demonstrate the impact a research-intensive university can have on improving our society and quality of life. Our existing priority research themes continue to thrive and contribute, with newly identified crosscutting themes adding exciting opportunities across the Health and Wellness sector. Whether it is attracting outstanding new researchers, landing major research grants, or announcing world-leading discoveries and innovations, UCalgary's research and scholarship continues to be a major driver of our Eyes High aspirations.

APPENDIX D: UNDERREPRESENTED LEARNERS

The University of Calgary's Eyes High Strategy 2017-22 extends its commitment to fully integrating the university with the community. An important element of this commitment is ensuring that qualified students from all groups in our diverse community find an intellectual home at the University of Calgary. We have turned this commitment into action, focusing our efforts related to accessibility on attracting, preparing and retaining students from underrepresented populations throughout Alberta. The 2018-23 Academic Plan sets as its first priority *Prioritizing People* and commits to recruiting and retaining talented people from a diversity of backgrounds. We recognize the need to monitor the composition of the student body to ensure diversity, but also to put in place the appropriate support services to allow the students who come to our campus to succeed.

The university is investing significant resources in turning these commitments into reality. The following sections will highlight key programs that are in place to serve underrepresented learners across Alberta.

D.1 REACHING OUT TO UNDERREPRESENTED LEARNERS

D.1.1 Enhanced student recruitment

As the University of Calgary has expanded its recruitment efforts, we have paid special attention to groups and communities that, in the past, have been less likely to attend university. These include students living outside major metropolitan areas, Indigenous students, mature students, and students from families with lower incomes or who attend high schools with lower rates of participation in post-secondary education.

The University of Calgary added a new Community Liaison Advisor position in 2018 to connect directly with local community associations, cultural organizations and social support service agencies to assist newcomers and students from lower socio-economic backgrounds who want to attend the University of Calgary. This position assists students from pre-application through to the first day of classes.

D.1.2 Increased focus on Indigenous recruitment

The University of Calgary launched its Indigenous Strategy, *ii' taa' poh' to' p*, in November 2017. This strategy commits to “establishing a welcoming, inclusive, and culturally competent campus community that respects, includes, and promotes Indigenous ways of knowing, teaching, learning, and research. In fulfilling this commitment, the university is looking at ways to improve our outreach to Indigenous learners.” The university has built a dedicated outreach program to attract more Indigenous students to campus. This includes a dedicated Indigenous recruitment officer whose focus is to build relationships and support students in the Treaty 7 region and across the province, and establish more personal connections with Indigenous students and their communities. A key recruitment event is Indigenous U where the University of Calgary hosts local Indigenous students and counsellors on-campus to learn about the advantages of studying at the University of Calgary, and learn about the specific supports and services available for Indigenous students.

In addition, the Cumming School of Medicine offers the Aboriginal Health Program (AHP) to encourage, advocate and enhance Indigenous programming, specifically recruitment, retention, community involvement as well as curricular activities. Faculties at the University of Calgary are in the process of developing their own Indigenous strategies and there are many faculty-level initiatives aimed at recruiting and supporting Indigenous learners. Funding from the Province of Alberta has also assisted Indigenous students in reducing financial barriers to pursuing undergraduate or graduate education.

At the graduate level, SAGE UCalgary (Supporting Aboriginal Graduate Enhancement) strives to support and nurture the recruitment, retention and completion of Indigenous graduate students. This program aims to ensure graduates students have safe spaces to share their experiences with their peers, mentors,

and campus community and to develop their professional, academic, and personal skills. The group organizes events such as the Indigenous Students Writing Café designed to support Indigenous students' success with grants and awards.

D.1.3 Underrepresented learner recruitment

The University of Calgary has expanded its recruitment initiatives to attract students from a variety of backgrounds into programs where they have been under-represented. This includes first generation students, newcomers to Canada, refugees and rural and remote students. Our recruitment initiatives include events to connect to groups that may have less knowledge of the opportunities for study at the University of Calgary through school and community organizations. To support these groups, our Continuing Education division offers ESL training and programming directed towards newcomers and successful transition to life in Canada.

In an effort to increase access to underrepresented learners, the University of Calgary has developed pathways programs for students with non-traditional backgrounds. The Cumming School of Medicine's *Pathways to Medicine* program supports and mentors students from low-income families, rural areas, non-traditional backgrounds and Indigenous communities to consider a career in medicine. In the Werklund School of Education, the Bridge to Teaching program provides students from rural and remote communities as well as Indigenous learners with a pathway to enter the bachelor of education degree. In the Schulich School of Engineering, the Biology pathway to Engineering is designed to increase access for women and other underrepresented learners who are more likely to have taken Biology 30 in high school rather than the standard Physics 30 requirement. Across the University of Calgary, there is an awareness of the importance of extensive outreach campaigns with the goal of diversifying our student population.

The University of Calgary strives to create a pathway to higher education for all students, including students with disabilities. Student Accessibility Services works collaboratively and innovatively with the campus community to create an accessible, equitable and supportive learning and living environment that enhances each student's academic and personal development.

D.1.4 Expanded pathways for students – dual credit

The University of Calgary is a partner in Alberta Education's dual-credit program, which provides an additional learner pathway to post-secondary studies for high school students, allowing them to earn high school and university credits simultaneously. The dual-credit program serves both high achieving high school students, but also under represented learners who may otherwise be unlikely to apply to the University of Calgary. Dual credit courses provide a supportive environment for students to take a university-level course alongside their peers and explore a learning pathway prior to graduation. The University of Calgary tracks dual-credit participants upon program completion to identify those who attend the University of Calgary. The University of Calgary offers three long-standing dual-credit courses in collaboration with the Calgary Board of Education (CBE), Rocky View School Division, Foundations for the Future Charter School, and Westmount Charter School in the areas of Psychology, Mathematics, and Physics. A fourth dual-credit program in Kinesiology was launched during the 2018-19 academic year in partnership with the CBE's High-Performance Athlete Development program. In summer 2019, additional dual credit courses in Computer Science and English will be offered. Dual credit opportunities benefit students wanting to pursue studies across a wide range of disciplines and programs.

D.1.5 Continuing Education Focus on Underrepresented Learners

To address research needs within the healthcare sector, Continuing Education's collaboration with Patient and Community Engagement Research Innovates (PaCER), within the O'Brien Institute for Public Health, explores innovative ways to engage patients and communities in healthcare, planning and research. In

this program, participatory-grounded theory (PGT) research methods are taught to patients and community members in remote communities, which enable them to conduct peer research with groups of patients under the guidance of a PaCER mentor. The audiences served by this program include non-traditional, Indigenous and marginalized learners.

Given the low representation of Indigenous peoples in STEM faculties and professions, Continuing Education is delivering a Power to Choose program, currently in its eighth year. By collaborating with University of Calgary faculties up to 60 Indigenous children and youth participate in a week-long camp (youth stay overnight on campus) exploring Science, Technology, Engineering and Math (STEM) disciplines that are often not available in their home communities. The mission of the Power to Choose summer camp program is to empower Indigenous youth with the power of choice in their jobs and life by engaging Indigenous children and youth in STEM disciplines from a young age.

D.2 STUDENT SUPPORT FOR UNDERREPRESENTED LEARNERS

D.2.1 Student Success Centre

As important as attracting students from all backgrounds to our campus are, our efforts to ensure their success is our utmost priority. Through the Student Success Centre, learning support is provided in a variety of areas, including writing, mathematics, exam preparation, and study skills to help students achieve their academic goals. The Student Success Centre fosters a culture of success that enables students to realize their full potential. While the university has many supports that are offered to students who reach out for help, we also take a pro-active approach to identifying and supporting students who are academically at risk through our Thrive Priority Support Network. The Thrive program aims to connect undergraduate students in need of support to the right campus resources at the earliest possible moment.

The Academic Turnaround Program (ATP) is a program of dedicated support that allows students who have been required to withdraw for failure to progress academically to remain in the university under special academic probation. Each year 450-500 students participate in the program, which represents approximately 51% (average over the last three years) of students required to withdraw. Of those participating in the program, the average success rates are around 63% after one year, and of those 84% will typically go on to graduate. The program is an important retention strategy and provides additional supports to those who struggle in their first year of university.

D.2.2 Student Supports and Inclusive Post-secondary Education

Student Accessibility Services facilitates an accessible learning environment for students with disabilities including temporary impairments and permanent disabilities. Students are supported in order to identify reasonable academic accommodations for their academic pursuits. Supports include access to an accommodated Exam Centre (one of the largest exam centres for students with disabilities in Canada), a dedicated access advisor and learning strategist. In addition, the Nat Christie Adaptive Technology Centre is available where students can be trained on, and make use of, a range of assistive and adaptive hardware and software options – and a quiet study area.

The Inclusive Post-Secondary Education (IPSE) program at the University of Calgary supports individuals who have developmental disabilities access an authentic university experience. Students are included in both the academic and social life at the University of Calgary and St Mary's University in Calgary. During the spring and summer months, IPSE supports students in building their resumes through meaningful volunteer work, competitive paid employment opportunities and personal development activities. The program is funded, in part, by the Government of Alberta.

The University of Calgary strives to be a welcoming community where all people live, learn, work, and thrive, including inclusivity for neuro-diverse people. The University is working on initiatives including becoming a neurodiverse-supportive post-secondary education campus; building employment capacity on and off-campus; and nurturing independent living and quality of life.

D.2.3 Indigenous Student Access Program

Each year, around 30 Indigenous students participate in this cohort-based, transition-year access program that provides an opportunity for Indigenous students who are not yet fully admissible to faculties to take university-level credit courses designed to improve academic success and gain access to faculty-based programs. The program consists of first-year university classes, as well as supports such as advising, cultural support, peer support, and tutorials.

D.2.4 Indigenous Careers Advisor

Careers Services has created a dedicated career advisor for Indigenous students who assists students with their successful transition into the workplace and provides advice to employers on hiring and supporting Indigenous students in employment.

D.2.5 Native Ambassador Post-Secondary Initiative

The Native Ambassador Post-Secondary Initiative (NAPI) Program is designed for Indigenous youth, ages 13-24. It consists of two main streams: Educational Outreach and Youth Leadership Training. Both avenues provide educational information, motivation and inspiration that will encourage youth to make informed decisions, develop a vision for their future, and contribute positively to their community. The goal is to develop leadership skills, build self-awareness, offer knowledge, and encourage Indigenous youth to pursue post-secondary education.

D.2.6 Writing Symbols Lodge

The University of Calgary's Writing Symbols Lodge (formerly The Native Centre) welcomes, respects, and supports the rich diversity of Indigenous learners, their communities, cultural traditions, and aspirations in post-secondary education. It provides a culturally appropriate environment that encourages and supports the success of Indigenous students in their studies through academic, personal and cultural support services and programs. The Writing Symbols Lodge assists Indigenous students with program advising, registration, post-secondary sponsorship information, volunteerism, employment, and personalized support and referrals. It also offers community-based programs and cultural events that engage the campus and the greater Indigenous community.

D.2.7 Q Centre

The Students' Union's Centre for Sexual & Gender Diversity (Q Centre) is a safe, comfortable and inviting space for the LGBTQA+ community at the University of Calgary. Featuring a library and peer support services, the program coordinators and volunteers plan events and direct clients to relevant resources. The Q Centre's Queer Mentoring initiative strives to provide sexual and gender minority undergraduate students with opportunities to empower themselves by pairing them with established, queer-identified role models.

D.2.8 Faith and Spirituality

The University of Calgary embraces the growing diversity in its faculty, students and staff and is committed to creating a safe, inclusive, healthy and respectful campus culture — one that values diversity and the dignity of every person and is grounded in equity and inclusivity. The Faith & Spirituality Centre seeks to cultivate a pluralistic community by encouraging cultural and religious literacy, community building, and social change as an integral part of the student experience. It continues to expand faith-based supports with chaplains representing Muslim (Shi'a, Sunni, Ahmadiyya), Buddhist (Pureland) Christian (Anglican, Baptist, Catholic, Christian Reformed, Lutheran, Orthodox, Pentecostal, United/Presbyterian), Hindu, Jewish (Chabad), Sikh and Baha'i faiths. The Vitruvian Space provides dedicated space to our community for religious observance and spiritual well-being. Ablution stations are integrated in the space as well as specialized venting mechanisms to allow for sacred practices such as smudging. The Kaleidoscope Project, a week-long immersive program, promotes spiritual and religious growth and learning among students through exploring religious and cultural diversity in Calgary. A related continuing education course entitled "Building Religious & Cultural Inclusion in the Workplace" was developed and has begun to attract a diverse group of campus professionals and members of the Calgary community. A new program for students, *Intersections in Diversity*, focuses on intersectionality and anti-oppression by immersion in the history and experiences of marginalized groups in Canada through meaningful dialogue and collaboration.

APPENDIX E: COMMUNITY INITIATIVES AND REGIONAL STEWARDSHIP

The University of Calgary's *Eyes High* Strategy 2017-22 extends its commitment to fully integrating the university with the community. Important elements of this commitment include offerings that enable knowledge exchange and foster skill development, collaborations with community organizations, and program and research partnerships across Alberta. We will grow our partnerships with industry, government, non-profit organizations, local Indigenous communities and alumni. The 2018-23 Academic Plan set as its second priority *Connecting Communities*, leveraging the university's geographical location to foster relationships with the city and the region to explore new ideas and new collaborative partnerships. Our 2018-23 Research Plan aims to create a culture where innovative, entrepreneurial, creative, and critical thinking thrive and will result in measurable impacts to our city, communities and to society. We will nurture collaborations with local Indigenous communities; strengthening community-engaged scholarship and learning approaches; and developing new learning pathways by creating collaborative partnerships with other post-secondary institutions to optimize resources. The university is investing significant resources in turning these commitments into reality. The following sections will highlight illustrative examples of key programs and initiatives that connect us with our community.

E.1 ACADEMIC PROGRAMS IN THE COMMUNITY AND REGION

The University of Calgary has always been a strong Campus Alberta partner and we pride ourselves on strong relationships with our post-secondary colleagues across the province. We provide some illustrative examples of various types of partnerships below.

The University of Calgary's Faculty of Social Work has served students across the province for many years. From campuses in Calgary, Edmonton and Lethbridge, the faculty has been a leader through delivery of its innovative Learning Circles program on-site in rural and remote Alberta communities. Increasingly, through its online Virtual Learning Circles program, additional learners remain in their home communities to complete their degree.

In partnership with the University of Alberta, the University of Calgary has a reciprocal space exchange on each campus. The Faculty of Social Work offers its program in Edmonton on the University of Alberta campus, while our Downtown Campus in Calgary hosts the University of Alberta's programs in Rehabilitation Medicine. This allows students in the two cities access to specialized programs in their home communities and eliminates potential duplication while also reducing costs to both institutions.

In fall 2015, the Werklund School of Education, with support from the Ministry of Advanced Education, introduced a new Bachelor of Education stream designed for Albertans in rural and remote areas. This innovative program allows students to remain in their communities for the majority of the program while taking advantage of strong transfer agreements that the University of Calgary has with its Campus Alberta partners. The program not only allows students outside major urban centers to obtain an education degree but also greatly increases the odds that these students will become the teachers of tomorrow in rural and remote communities across Alberta. A newly approved bridging program to this community-based 4-year Bachelor of Education program will provide students who do not meet the subject requirement for English 30-1 or do not have a competitive average for admission the opportunity to upgrade. This new initiative was designed to assist Indigenous learners whose rural high schools do not offer English 30-1.

The University of Calgary's Energy Engineering program is designed as a pathway for graduates of approved energy technology diploma programs such as the program offered at SAIT. It provides a seamless transition to a University of Calgary engineering degree that can be completed with an additional two years of study. Graduates hold both an engineering technology diploma and an engineering degree.

The Energy Engineering pathway addresses the energy industry's need for engineering graduates who bring a unique mix of technology and engineering science skills and knowledge to the workplace.

The University of Calgary has strong partnerships with both Red Deer University and Medicine Hat College ensuring that learners across Alberta have access to one or more University of Calgary degree programs in their home communities. The Red Deer University partnership allows students to transfer up to two years of college credit. It also allows them to obtain either a Bachelor of Arts degree in Psychology and Sociology or a Bachelor of Science degree in Psychology by completing the required University of Calgary courses offered entirely on site at Red Deer University, keeping students and graduates in their home communities. Courses are taught by faculty from both institutions. The Bachelor of Nursing program at Medicine Hat College is a four-year partnership program offered entirely on site at Medicine Hat College, allowing students in Medicine Hat and surrounding areas access to a baccalaureate nursing program without having to relocate. By opening the doors to degree programs across Alberta, the University of Calgary is serving labour market needs across the province by increasing the likelihood of learners remaining in their home communities following graduation.

The University of Calgary is a champion of co-curricular service learning involving mutually beneficial collaborations between students and community organizations to determine and meet real, defined community needs. Our *ucalgarycares* program consists of a series of co-curricular service-learning programs for University of Calgary students who seek to get involved with communities at the local, national or international levels. One of the aims is to enhance civic consciousness and provide help to community organizations that need support, such as the Calgary Food Bank, Alpha House, and The Mustard Seed. The *ucalgarycares* Indigenous Leadership and Engagement program is a collaborative service-learning program that takes place at the Kluane First Nations community in southern Yukon. The program engages both Indigenous and non-Indigenous students in learning that focuses on social justice, reciprocity, Indigenous ways of knowing, and cross-cultural awareness. Volunteer activities in the community include building sustainable greenhouses, a local fishing derby, working at a build site for a local housing complex, and assisting researchers at the Arctic Institute of North America.

E.2 CONTINUING EDUCATION AND COMMUNITY NEEDS

University of Calgary Continuing Education is actively engaged in serving and collaborating with local communities to address mutually identified learning needs to enhance access to University of Calgary programs for Calgarians. University of Calgary Continuing Education and Calgary-based RoboGarden Inc. have partnered to address identified skills shortages both locally and beyond by developing short-cycle, technical skills development programming for adult learners through a unique cloud-hosted, gamified, Artificial Intelligence e-Learning platform.

Continuing Education and University of Calgary Career Services are collaborating to deliver a federally funded program called Digital Skills for Youth (DS4Y) in Calgary and across the Prairie Provinces. Recent graduates who are unemployed or underemployed are eligible to enrol in fully funded Continuing Education courses, choosing from nine different pathways to fulfil any gaps in their digital skillset, thus putting them on the road to a robust career. Employers post a job through Career Services, in a field that requires digital skills and provide a six-month internship to the employee. This initiative is part of the Government of Canada's Youth Employment Strategy.

Continuing Education addresses mutually identified learning needs for not-for-profit organizations, and municipal and provincial government agencies by providing tailor made training and development programs.

Continuing Education offers members of the public the opportunity to connect and engage with University of Calgary researchers through OneDay@UCalgary. In these unique and affordable one-day classes, University of Calgary academics bring compelling and timely topics to life. Sample topics include The Great Melt: Geopolitics and the Changing Arctic, Everything you need to know about Canadian Politics, Philosophy of Money, and the Art of the Northern Renaissance and the Dutch Golden Age. In 2018-19, total enrolment in our continuing education programs totaled 20,684.

E.3 KNOWLEDGE ENGAGEMENT

The University of Calgary emphasizes community connection and enhanced learner outcomes through our research activities. As a research-intensive university, the University of Calgary is committed to knowledge engagement, a term coined by the University to encompass knowledge translation, knowledge mobilization and community-engaged scholarship. Knowledge engagement is a process that brings together diverse groups—post-secondary institutions, corporations, community organizations, health and social service providers, academics, policy and decision makers, government and the public—to address mutually identified problems. It is a dynamic and reciprocal process that creates, synthesizes and applies knowledge and evidence to benefit our communities. Our extensive research community collaborates with local, provincial, national, and global stakeholders, enabling knowledge exchange and the co-creation of new knowledge. Some university-community knowledge engagement projects are designed to enable students to contribute to developing solutions to identified problems in the community and thus enhance their experience as students and future leaders in our communities.

For example, the Urban Alliance is a community-based research platform and research partnership between the City of Calgary and the University of Calgary. This partnership has led to the establishment of research chairs, attracted significant new research funding, and facilitated more than 120 research projects involving over 100 researchers, students and practitioners.

A long-standing research partnership is ACWA (Advancing Canadian Wastewater Assets) that involves scientists and students working side-by-side with municipal wastewater operators to solve environmental water problems within a full-scale municipal wastewater treatment plant. With 3.8 kilometers of naturalized streams, scientific experts in ecology, biology, toxicology, microbiology, process engineering, medicine and public health – along with municipalities and industrial partners – are working to ensure clean and affordable drinking water for the planet.

makeCalgary is a community-based research platform led by the School of Architecture, Planning and Landscape. Each academic year, makeCalgary identifies a research challenge for collaborative exploration to design elements of a resilient, healthy, vibrant, and equitable city. This initiative provides our students with practical, hands-on experience dealing with real community issues and provides valuable resources and support to the community.

The University's Knowledge Engagement Implementation Committee (KEIC) has put forward a set of concrete recommendations that will support current knowledge engagement initiatives, inspire future initiatives and provide the University of Calgary with strategies for coordinating knowledge engagement work across campus and in our communities. More specifically, the recommended actions aim to increase opportunities for networking and collaboration among researchers, students and members of the community and provide supports for identifying problems, prioritizing them, assessing solutions, articulating the results in ways that ensure that they can affect change in the communities we serve. KEIC recommendations also support priority aims of developing ways to measure the impact of knowledge engagement and enhancing recognition of knowledge engagement work. KEIC sees value in communicating to the University and the broader community how knowledge engagement work

enhances the academic enterprise. Ultimately, knowledge engagement is aimed at creating impact – one of the central value propositions that guides our current academic and research plans.

E.4 COMMUNITY PARTNERSHIPS

Universities help build and support the environment that leads to socio-economic and cultural development. Community engagement is at the heart of the *University Relations Strategy 2018-22* and supporting unit plans like the *Community Engagement Plan 2018-22*. Our *Community Engagement Plan* includes five key objectives: position the University of Calgary as a city builder through strategic partnerships with other community anchor institutions; position the university as a thought leader in the community by sharing and translating knowledge while enabling public discourse; amplify University of Calgary community engagement activities and celebrate their impact; lead and support service activities across the campus; and develop the University of Calgary as a center of excellence for community engagement.

The university actively engages with community anchor organizations, including cultural and civic partners like Calgary Economic Development (CED), Calgary Municipal Land Corporation (CLMC), Calgary Stampede, Calgary Pride and Calgary Public Library (CPL). We also actively engage with our neighbours through the South Shaganappi Area Strategic Planning Group (SSASPG), a committee of communities surrounding both the university's Main Campus and Foothills Medical Campus. Our faculties and other units also lead a tremendous amount of community engagement activity with key partners.

The University of Calgary collaborates with partners on key community events and initiatives. For example, our relationship with the Calgary Stampede has matured into a mutually beneficial partnership in recent years. In addition to hosting Stampede events on campus and participating in Stampede events in the community, our animal science specialists at the Faculty of Veterinary Medicine provide critical advice and innovative research to support advanced animal care practices at the Stampede. Our historians and experts in the Faculty of Arts have literally written the book on the Calgary Stampede and offer an interdisciplinary course every year on the culture of the Calgary Stampede. Together with the Calgary Stampede, the university hosts the award-winning Campfire Chats on National Indigenous Peoples Day, featuring tipi painting, dancing, drumming and storytelling from community leaders and Traditional Knowledge Keepers from the Treaty 7 region of southern Alberta.

Libraries and Cultural Resources (LCR) has a longstanding tradition of making our library and archival collections open to the community for research and study as well as in partnering with community organizations to share archival collections. Recently, the University and the Glenbow Museum announced the creation of the *Glenbow Western Research Centre (GWRC)* and the move of the Glenbow library and archives collections to LCR. This initiative not only aligns Glenbow's collections with teaching, learning and research at the university but it means that the Glenbow collections will continue to flourish and grow over time and that students, researchers, and the entire community will have improved access to these important collections. In addition, LCR partners with The Military Museums (TMM), by providing library and archive services as well as rotating art exhibits in the *Founders Gallery* to complement the archives, galleries and activities at the TMM. The University of Calgary Press engages the Calgary community when it publishes scholarly monographs and edited collections, as well as works of original poetry and fiction. Because the Press is a leading Open Access publisher, it has more than 100 titles available for free download by the community. Our partnerships and collaborations with the Calgary Public Library are also numerous, including *Idea Igniters*, a conversation series exploring social, economic and cultural issues in our community that are designed to energize and inspire.

We are a silver-level partner of CED's Action Calgary, a corporate partnership program that engages Calgary's visionary thought leaders to help the city build on its energy and shape tomorrow's Calgary. In addition to senior leadership engagement with CED, the university actively engaged in the development of CED's strategy titled *Calgary in the New Economy*. CED has also invested in the relationship with the university and is a key player on community-wide initiatives. Their growing support facilitates the university's strategic engagement with Calgary's business and civic leaders.

The university has a partnership with the City of Calgary and the Calgary Chamber of Commerce in the creation of Calgary Technologies Inc. (CTI) whose mandate is to accelerate the impact of innovation-driven ventures by providing access to space, programs, mentorship and capital. This partnership has led to 71 spinout companies being developed or assisted, and 2,100 discoveries securing 800 patents since its inception.

Community partnerships are a key element embedded into many of academic programs. The programs and opportunities within faculties are numerous, for example, in our Haskyane School of Business, students enrolled in MGST 715 – Strategic Business Analysis undertake projects for small and large businesses, start-ups, not-for-profit, government and other organizations as part of a field experience. In the Faculty of Law, students are given the opportunity to practice their legal skills for the benefit of the community. Through a partnership with Innovate Calgary, free legal services are provided to entrepreneurs. The Faculty also has a public interest law clinic, a Student Legal Assistance clinic, a Taxpayer Assistance Program and an environmental law clinical program where experiential learning opportunities supplement what is happening in the classroom.

Our students are also actively involved in service projects in the community, some of which involve both research and help for those in need. The Scholars Academy has a very active Cohort Service Project that gives each member the chance to be part of a community-based project. Recent collaborations include work with the Kids Cancer Care Foundation, Calgary Reads, and the Office of Sustainability. The Graduate College, with its 60 Graduate Scholars, has engaged in outreach activities with a number of community organizations, working with youth in the Syrian refugee community to give them a connection to the University, and engaging with Beakerhead, a community organization that promotes creativity and science. They also reached out to the community to host conversations about a range of issues, including the merits of an Olympic bid, the impact of screens on children's development, and low carbon futures. These conversations included almost 2,000 community members.

The University of Calgary supports community agencies like the United Way of Calgary and Area – raising \$701,000 for the 2018 United Way campaign, a new record for the university. Since 2011, the university community has raised more than \$4.5 million for the United Way. The benefit of this investment is that every dollar stays in the local area, providing funds for programs that have profound impact on people's lives.

University of Calgary Senators are connectors between the university and our community in part through initiatives such as Lecture of a Lifetime and Chancellor's Club that highlight our faculty, researchers and students to the community. We also have an active connection to our community through our over 173,000 alumni. One of our unique advantages is that approximately two-thirds of our alumni live and work in the Calgary area. Lifelong learners, seekers of new knowledge and innovation, and thought leaders in their respective disciplines, they have become meaningful contributors and active citizens, locally and globally. We continue to strengthen our connection to this important part of our community to achieve our vision and create mutual benefit. We are growing and maintaining an active alumni network, and establishing a stronger and more recognizable alumni profile in order to build our community together.

The University of Calgary has been building its presence in the community over the past years, making it easier for members of the public and interest groups to connect, to experience and learn about the broad spectrum of initiatives and events that the University of Calgary has to offer. The downtown campus offers meeting and conference space and attracts corporate and business leaders as well as providing governmental and post-secondary venues. The School of Public Policy is located in the downtown campus, as is the Haskayne School of Business executive MBA program, and our alumni engagement group. The University of Calgary's newly established City Building Design Lab (CB Design Lab) is located in the former downtown Central Library Building. CB Design Lab is a first-of-its-kind-in-Canada research initiative that employs entrepreneurial and design thinking to help redefine the future of city building. CB Design Lab brings together major players within the construction industry (consultants, contractors, owners, developers, municipal and provincial government, and civil society) to work with academic researchers and students to develop practical innovations in planning, design, construction, and operational management that will make cities more resilient, equitable, vibrant, prosperous, and healthy. In 2017, the University of Calgary's Haskayne School of Business became a new site for the Creative Destruction Lab (CDL), called the CDL-Rockies. The CDL is a unique milestone-based mentoring and financing program for science-based companies that helps commercialize early stage technology ventures. In 2018, a new CDL-Rockies cohort was launched focusing on startups in areas such as energy, infrastructure, digital oil and gas, power generation, bioenergy and energy efficiency.

Our award-winning National Awareness Program (NAP) connects with regional, provincial and national audiences through a variety of social media featuring topics of public interest to display the meaningful impact of the university's research and scholarship, and to foster community engagement and public advocacy. Each topic typically contains several articles, videos, two live webinars, downloadable e-books, links to resources as well as tweets, Facebook, LinkedIn, blog posts featuring research experts, alumni, students and our community leaders. We also leverage NAP through our Idea Igniters series in partnership with the Calgary Public Library. Idea Igniters display the depth and breadth of the university's research, innovation and teaching-and-learning in a real world, community atmosphere.

Over the next years, we will become increasingly connected to industry and non-profit partners with our focus on work integrated learning. Work-integrated learning is the process through which students come to learn from experiences in educational and practice settings. It includes the kinds of curriculum and pedagogical practices that can assist, provide, and effectively integrate learning experiences in both settings. Our goal is 100% of University of Calgary students will graduate with an experiential experience by 2024-25. This goal will require increased connectivity with our community partners.

E.5 MEASURING IMPACT

The University of Calgary is committed to maximizing, evaluating and measuring its community impact. Since 2014, University Relations has utilized an evaluation matrix based on the REAP (Reciprocity, Externalities, Access and Partnership) self-assessment model founded at University of Bradford in England. The model was extensively studied and it is based on four key principles of community engagement activity:

1. Principle of reciprocity: There is a two-way flow of knowledge, information and benefits between the university and its partners in community engagement activities.
2. Principle of externalities: There are benefits created by community engagement activities that extend beyond benefits created specifically for the partners. These contribute to building social trust and networks that contribute to building a learning and knowledge based society, and create social and cultural value for broader society.

3. Principle of access: Community partners have a right to use university facilities and resources, as opposed to receiving a one-off provision of goods or services.
4. Principle of partnership: Partnerships deepen and develop through the extended reciprocity and improved access. They are an output and outcome of CE activities, which should eventually also become key inputs to improving and enhancing those activities.

These principles provided a foundation for a decision and evaluation matrix that reflects the University of Calgary's strategic focus on community engagement. The matrix incorporates a series of qualitative metrics in order to assess community engagement activities against the *Eyes High Strategy 2017-22* and the goals defined in our 2018-23 Academic Plan and 2018-23 Research Plan, and other institutional strategic priorities. Each qualitative impact indicator is assessed on a scale of one to five, where one represents low impact, three is moderate impact, and five is high impact. A weighted average formula calculates a total score that indicates measurable impact for each community engagement activity. This measure is complemented with quantitative metrics such as attendance and social media impact to derive a broad assessment of the impact of our community engagement activities. The matrix serves as both a decision making and evaluation tool to identify and measure community engagement activities.

E.6 NATIONAL AND INTERNATIONAL NETWORKS

The University of Calgary is a founding member of Community First: Impacts of Community Engagement (CFICE) and Community-Campus Engage Canada (CCEC), emerging national networks and communities of practice focused on strengthening Canadian communities by increasing the capacity, infrastructure and impact of equitable community-campus partnerships of all types, including student experiential learning, community-engaged research, and social innovation.

The University of Calgary is also a founding member of the Carnegie Community Engagement Classification Canadian Pilot Cohort. The Carnegie Foundation's Classification for Community Engagement is an elective classification and has been the leading framework for institutional assessment and recognition of community engagement in US higher education for the past 13 years. Carnegie defines Community Engagement as the collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity. The goals of community engagement are built on this definition; they include strong partnerships between post-secondary institutions and the public and private sectors to enrich scholarship, research, and creative activity; enhance curriculum, teaching, and learning; prepare educated, engaged citizens; strengthen democratic values and civic responsibility; address critical societal issues; and contribute to the public good.

The elective classification involves data collection and documentation of important aspects of institutional mission, identity and commitments in the areas of community engaged scholarship and learning and requires substantial effort invested by participating institutions. A Canadian Pilot Cohort has been convened to explore the Classification and consider how it might support community engagement in the Canadian context. Like other founding members of this cohort, the University of Calgary is committed to co-creating and sustaining our campus as a hub for our communities—contributing to educational achievement, community engagement, and economic activity. Our institution sees value in strengthening inter-organizational relationships and participating in a learning community of like-minded institutions to share successful practices and approaches to civic and community engagement and in implementing institution-wide measurements and evaluation methods of community engagement.

APPENDIX F: CURRENT MINISTRY INITIATIVES

F.1 SEXUAL VIOLENCE PREVENTION

While sexual assault is an issue in our society, post-secondary institutions are uniquely positioned to make sexual assault prevention, education, and accountability a priority on campuses. In June 2017, the University of Calgary approved a Sexual Violence Policy that applies to all members of the university community. The policy was the result of more than two years of work by faculty, students and staff across the university. The policy is a fundamental element in creating and sustaining a safer campus environment for all community members. We agreed with our community that the policy would be reviewed after it has been in place for two years and this review is due in 2019-20.

An important component of the policy and of our efforts to prioritize prevention, education and accountability initiatives is the Sexual Violence Support Advocate (SVSA), who was hired in May of 2018, and who acts as a centralized resource for one-on-one support, guidance on reporting processes and timelines, and educational outreach. The SVSA also identifies gaps in process and changes required.

In order to reduce the incidents of sexual violence, enhance the rigour of our investigations, reduce stigma, and dispel myths and increase awareness, key staff members have to have access to continuous training and education. A number of key personnel involved in support, investigations, adjudication and review of sexual violence cases have undergone Forensic Experiential Trauma Interview (FETI) training to minimize trauma for all those involved. Additionally, further training and education opportunities are regularly provided and a number of projects are currently underway to educate our community and involve them in creating solutions. For example, the members of the 'Sexual Violence Prevention via Healthy Masculinities' project are working with athletic teams and coaches, 'Ask First' is a joint project with the Women's Resource Centre and a student club, Consent Awareness and Sexual Education (CASE). Through these projects, faculty, students and staff aim to create a campus culture where victim blaming is no longer tolerated and the concept of consent is understood and practiced in the community, so all students feel safe and respected. These projects also aim to empower students to create change in their own communities by using their voices and starting conversations that challenge negative stereotypes of victims and myths about sexual assault.

F.2 STUDENT MENTAL HEALTH

The University of Calgary's Mental Health Strategy was formally launched in December 2015 and is currently being implemented with a number of initiatives which connect with the community to provide a network of support for students, staff, and faculty. The Mental Health Strategy is comprised of the following six interconnected strategic focus areas: raising awareness and promoting well-being; developing resilience and self-management; enhancing early identification and response; providing direct service and support; aligning institutional policies, processes and procedures; and creating and sustaining a supportive campus environment. Under these six strategic areas of focus, the Mental Health Strategy includes 28 recommendations, all of which are either implemented or currently underway. While most campus mental health strategies focus on student wellbeing only, our strategy extends to the entire campus community including faculty, students, and staff.

F.2.1 Mental Health Strategy Implementation

In 2017-18, the Campus Mental Health Strategy added the focus area of addictions; in 2018-19, the focus was on suicide prevention, mental health messaging, and reaching diverse and unengaged audiences.

Student mental health services goals for 2019-20 are related to harm reduction, regional collaboration and a review of the student counselling model.

F.2.2 Mental Health Care Services Access

Accessing mental health care has been a focus for 2017-19. Efforts to increase accessibility to services across campus include extended hours for Student Wellness Services and counsellors embedded in other locations or faculties. We are working to enhance support during critical transition times, adding a coordinated (stepped) care model and solution-oriented single sessions. We have been successful in reducing wait times, and establishing a triage model during initial appointments, particularly for those in immediate crisis. Following intake, we refer clients to the level of resources they require, including counselling, online resources, group therapy, peer support, or community support. Our services focus on problem solving in three to five sessions, after which we refer clients to external resources for more long-term care. Weekly case consultations between our health and mental health teams assist in managing student-at-risk cases. Furthermore, a collaboration between the University of Calgary, Woods' Homes, and the Distress Centre provides our community with 24-hour health supports, service in over 200 languages and after-hours in-person appointments.

We have increased capacity through developing a case management team of social workers who provide outreach to students, with specific named resources for Indigenous students and International students. This team of social workers engages with students at risk, and provides outreach and harm reduction programming. Our upstream work promotes community awareness, training, psycho-educational workshops, and engaging peers. In 2017, the university opened the Campus Community Hub that helps students to flourish in our community through positive wellness interventions of playing, interacting, helping and learning. Peer support is increasing with activity-based programs in the Campus Community Hub, with five unique peer support team opportunities. We are currently working on indigenizing health outreach and resilience programming. Wellness staff work with the Faith and Spirituality Centre in cross-cultural work, understanding diversity and promoting inter-cultural competency with student leaders and staff who support students. Our Intersections in Diversity program focuses on multiple at-risk populations.

We intersect with the public sector in a variety of ways, including a regional committee on which all nine post-secondary institutions serve together with representatives from Alberta Health Services (AHS) and the K-12 system. Priorities are on easing the transition from high school to university, developing a facilitated referral model with AHS, and building community collaboration. The University of Calgary is an original member of the provincial community of practice, Healthy Campus Alberta, serving on the design and human resources teams. This vibrant community engages in training, development, and supportive outreach among all 26 post-secondary institutions in Alberta as well the First Nations colleges.

F.2.3 UCalgaryStrong

UCalgary Strong is a campus-wide initiative aimed at equipping the University of Calgary community with the skills required to become grounded leaders, build a cohesive community, and to develop personal resiliency that help students to cope with stressors inherent in post-secondary life. Two signature events are held each year: Carnival in September to start of the academic year and Festival in April as a family friendly event to celebrate the end of winter semester. Both attract between two and three thousand students each year.

APPENDIX G: INTERNATIONALIZATION

Our original *Eyes High* strategy (2011) envisioned our university as a global intellectual hub where students, staff and faculty produce new ideas that have global impact. The renewed *Eyes High* Strategy 2017-22 has reaffirmed this commitment to develop next-generation researchers and leaders with broad worldviews who share new knowledge and discoveries generously, and address society's challenges proactively. We have been recognized as a university that provides a gateway to the international landscape of languages, ideas, arts, culture, and science for all domestic and international learners.

Calgary is a global energy and business centre. Our city demands graduates who have a global orientation, are competitive in an international marketplace, and can adapt to diverse cultural, economic, and governmental environments. In order to respond to these demands, an International Strategy was officially launched in March 2013. The strategy outlines four goals to ensure that the University of Calgary is successful in attracting top international scholars and students and identifies ways to leverage our expertise and share capacity with targeted institutions around the world. It encourages faculty, staff, students and post-doctoral scholars to explore the world through linkages with partner institutions and drives the University of Calgary to become a globally recognized source for objective information, research expertise, and productive collaborations across all sectors of government, industries and non-governmental organizations. In recognition of our global engagement efforts, the University of Calgary has been named the winner of the 2017 Institutional Award for Global Learning, Research and Engagement by the Association of Public and Land-grant Universities (APLU).

Implementation of the International Strategy is a continued priority for the University of Calgary and is critical to achieving our *Eyes High* Strategy 2017-22. We are committed to achieving the four strategic goals and three targets identified in the International Strategy and we work closely with our local, provincial, national and international partners in the realization of this vision. In September 2019, the University of Calgary will undertake an external review of our International Strategy followed by a strategy renewal to ensure that the goals and targets are aligned with our energized *Eyes High* Strategy 2017-22 and the 2018-23 Academic Plan and 2018-23 Research Plan. The renewal of the International Strategy will be completed in the context of discussions on international education with the Government of Alberta.

G.1 INTERNATIONAL GOALS AND TARGETS

Goal One – Diversity

Increase the diversity of our campus communities in terms of students, faculty and staff represented from a variety of countries.

Target: 10% of the undergraduate population will be international.

Target: 25% of the graduate population will be international.

To support achieving the diversity targets for students, the University of Calgary developed an undergraduate international student recruitment model that focused our international recruitment efforts in three key areas: 1) direct entry, 2) partnership programs with foreign universities, and 3) an International Foundations Program.

The demand for international students to study at the University of Calgary is increasing in the area of direct entry, where a student meets or exceeds all academic and language requirements for entry to our institution. Applications from international undergraduate students for 2018-19 were up 36% compared to 2017-18, and the trend is continuing this year. It is anticipated that we will reach our goal of 10% international undergraduate students in fall 2019 (9.2% in 2018). Interest in graduate programs from

international students remains high and the university has already surpassed the 25% goal (26.8% in 2018). We remain committed to focused and expanded recruitment while ensuring that all international student growth is over and above our domestic targets.

Partnership programs are largely based on an articulation model and leverage existing and new partnerships with highly ranked international universities, to attract talented international students to the University of Calgary. Over the next year, in collaboration with faculties including Graduate Studies, we will continue to expand our partnerships and create bridges for other international education and research collaborations, focusing on increasing graduate-level mobility and two-way collaborations, diversity of partnerships, types of programming options available, and viability of existing and new markets.

Our English Language Program (ELP), offered through Continuing Education, provides multiple program options to meet the needs of our English language learners who are not degree students at the University of Calgary. Recently proposed changes to the ELP will allow for a seamless transition for students who may wish to pursue a degree at the university or another institution of their choice.

Goal Two – Cross-cultural competencies

Improve the global and cross-cultural competencies within our campus communities.

Target: 50% of our students will have an international experience before they graduate.

In an effort to achieve our second strategic goal of cross-cultural competencies, a target of 50% of students acquiring an international experience was established. An international experience is a credit or non-credit program or activity, typically no shorter than 5 days, that takes place abroad and is organized either by the University of Calgary or its partners. Examples include: group study, exchange, semester abroad programs, internships or practicums as well as service learning and international volunteer experiences. This is an ambitious goal and we have established an interim target of 30% by 2020, a target we are on track to achieve (25.2% in 2017-18).

In further support of this goal, many of our faculties offer courses and programs with an international dimension. A striking example is the International Indigenous Studies program, an interdisciplinary program in the Faculty of Arts that examines the situation of Indigenous groups in a variety of societies. Our faculties are also expanding opportunities and funding support for students and post-doctoral scholars to work and study internationally. Our field schools offer many students the chance to take some of their courses in exciting settings and experience elements of life in a new culture. The University of Calgary offers one of the largest suites of study abroad programs in Canada.

In 2016, the University of Calgary International (UCI) launched new funding and expanded opportunities to encourage international study, research, and training for students, faculty, and administrative staff with a focus on the development of cross-cultural competencies. Travel grant applications and travel grants have increased by 68% and 61%, respectively. Over the next year, the programs will continue to be enhanced with a focus on expanding participation and increasing impact as we strive towards our international experience goals. The University of Calgary has signed a new agreement with MITACS through its Globalink Research program that will provide opportunities for senior undergraduate and graduate students (Master's or PhD), and Postdoctoral fellows to gain international research experience through collaborative research opportunities. This program will support 200 outgoing students from the University of Calgary and will host 100 incoming international students over the next 3 years.

Engaging internationally is not just about our students going abroad, but also about offering the knowledge, skills and understandings that allow students, faculty and staff to work, study and engage in

cross-cultural environments on our own campus. Following the work of the Internationalization Task Force on Cross-Cultural Competencies (2015-18), an Implementation Committee has been created that will take the Task Force's recommendations and develop an Intercultural Capacity Framework for the University of Calgary. We are also developing a suite of programs to support students, faculty and staff in the area of cross-cultural competence. A certificate program in Global Leadership is under development that will provide undergraduate students with the knowledge and skills required to be successful in an increasingly global society. A professional development program in Intercultural Competency for staff and faculty is set to launch in 2020.

International Student Services together with the Faith and Spirituality Centre recently launched a program called Intersections in Diversity that immerses students in the history and experiences of marginalized groups in Canada by fostering empathy, encouraging meaningful engagement, and empowering students to get involved in making the community a better, more positive, safer space. Across the university, staff are also being trained to deliver Intercultural Development Inventory (IDI) assessments and Intercultural Conflict Styles (ICS) assessments to help build intercultural competence in our community. The Kaleidoscope project, a residential intercultural experience offered during the winter reading week, focuses on building cultural competence through engaging with faith and diaspora in Calgary. The project is now offered as a continuing education course for the wider community. The University of Calgary continues to organize cultural days including Germany day, Mexico days and China days. The university is also planning to organize a USA oriented day in fall 2019 and a Scottish and Dutch Day in 2020.

Goal Three – Partnerships

Enhance opportunities for international collaborations and partnerships in research and education.

The University of Calgary is committed to enhancing and developing its academic and research partnerships with institutions around the world. Over the next year, the focus will be on enhancing our existing international academic and research partnerships and leveraging these relationships to provide new opportunities for our students and faculty. We will continue to develop new opportunities for international collaboration in areas of strategic importance to the University of Calgary and our partner institutions. In addition to programmatic partnerships, we will also focus particularly on our global research sites in Beijing and Mexico City, which are both focused on unconventional energy resources.

In 2017, the University of Calgary developed a unique ranking system to evaluate university partnerships to advance its international goals and vision. The International Partnership Assessment Rating Index (IPARI) helps us to assess current university partnerships, identify top partners in each country, develop new strategic partnerships, and to decide whether to re-engage a stalled partnership. IPARI uses a points system to assess partnerships in three categories: academic programs and collaborations, mobility programs and research collaborations, and impact. Based on IPARI analyses of 2017-18, we have active partnerships with 208 universities in 61 countries.

- a. 30 (14%) of active university partners are for mobility purposes
- b. 65 (31%) of active university partners are for research purposes
- c. 96 (46%) of active university partners are for mobility and research purposes
- d. 14 (7%) of active university partners are for academic programs and research purposes
- e. 3 (2%) of active university partners have activities related to academic, research and mobility

Our IPARI system has attracted interest by many universities across Canada and overseas, and as a result, we have developed an online version that will be available for use by other institutions in 2019-20.

In 2019-20, we will continue to develop our partnership-based recruitment model which includes articulation agreements, PhD *cotutelle* (currently 24 University partners in eight countries) and dual/joint master's degrees. Partnership-based recruitment supports and strengthens our ability to engage with other international universities in areas of education and research. Articulation agreements, commonly known as 2+2 or 3+2 programs, have been established with 14 Chinese universities in engineering and science with additional agreements anticipated in future years including expanding these models to the disciplines of Arts and Business. These models allow students to study at both their home university and the University of Calgary, ultimately receiving degrees from both institutions. The University of Calgary continues to develop new collaborative degree programs at the master's and doctoral levels, which provides the foundation for joint research and joint training of graduate level international and Canadian students. Over the next year, our focus will be on the development of these collaborative degree program proposals.

In 2018-19, the University of Calgary embarked on a digital marketing campaign that offered two webinars, an e-book as well as other best practices and models regarding internationalization. We continue to offer additional webinars focusing on "Becoming a global intellectual hub" by highlighting the best practices and programs developed by the University of Calgary. We will further expand this work through the creation of a program focused on leadership development of higher education leaders from international partner institutions.

Goal Four – International development

Leverage our areas of expertise to collaborate with international partners on development needs.

The University of Calgary's international development work is guided by the United Nation's Sustainable Development Goals, international assistance priorities of Global Affairs Canada, our institutional research themes and the goals outlined in our 2018-23 Academic Plan. We plan to launch a 3-Dimensional International Development Action Plan (3D-IDAP) in 2019 that builds on these goals, priorities and themes. Leveraging our unique strengths, in 2019-20, the university will continue to be engaged with multiple countries and partners in the areas of education and research based on our 3D-IDAP in Low-and Middle-Income countries (LMIC) and in the development of social entrepreneurship programming and strategy through seed grants to early researchers and partner organizations in LMIC.

Building upon the University of Calgary's unique areas of expertise and capacities in research and education, 3D-IDAP aims to support academic staff in developing solutions that improve the quality of life for disadvantaged children, men and women in the developing world, through mutually beneficial partnerships. Over the next year, our international development projects will focus on five thematic areas: a) Education, b) Human Dynamics and Rapid Change, c) Renewable and Affordable Energy c) One Health, d) Environment, and e) Governance, Peace and Security, and Human Rights, with four crosscutting themes of Gender, Innovation and Entrepreneurial Thinking, Sustainability, and Indigenous Perspectives.

The University of Calgary will continue to engage our students in international development. The Faculty of Arts' Development Studies Program offers University of Calgary students the opportunity to examine issues such as poverty, hunger, environment and governance around the globe through courses enriched with experiential learning opportunities and enhanced by opportunities for students to carry out community development projects with local non-governmental organizations (NGOs) and social agencies. The Canadian Queen Elizabeth II Diamond Jubilee Scholarships (QES) program has offered University of Calgary students the opportunity to work in Sri Lanka, Kenya, India and other countries, immersing them in local culture, and giving them the opportunity to make a real difference in the communities where they worked. Annually, 30-40 University of Calgary students undertake internships and research abroad,

interning at organizations such as the University for Peace in Costa Rica, the Centre for Urban and Regional Excellence in India, and the Bahir Dar Institute of Technology in Ethiopia. In response to QES calls for proposals, we also submit project proposals that include inbound scholarship opportunities for our partner institutions from LMIC countries, enabling international students to come to the University of Calgary as future leaders in international development. To raise awareness about international development issues, International Development week is held on our campus each year in February, informing faculty, students and staff about poverty reduction and international humanitarian assistance in the developing world. Participants focus on innovative solutions to global challenges, and discuss the role of the university in international development. By leveraging the university's research and academic strengths in line with the United Nation's Sustainable Development Goals and the Global Affairs Canada's Feminist International Assistance Policy priorities, our researchers aim to create sustainable impact through innovation and build capacity to improve conditions in LMIC countries. We offer faculty and postdoctoral scholars a suite of grants designed to support their development work. We connect them to external funding resources such as Global Affairs Canada's various scholarship programs including the Emerging Leaders in the Americas Program (ELAP), the Canada-CARICOM Leadership Scholarships Program, and the Canada-ASEAN Scholarship program, and to networks like Academics Without Borders to help them find partner institutions to work with on specific development initiatives.

G.2 INTERNATIONAL REPORTING AND ACCOUNTABILITY

Annually the University of Calgary is required to report on our international programming, including significant partnerships and programs that contribute to the enhanced internationalization of our campus. This reporting occurs in our Annual Report; however, key examples from our strategic academic initiatives and those that will be a continued focus for the 2019-20 year are identified below. It is important to note that the bulk of these initiatives are funded either through foreign governments (e.g., activities in Qatar or Mexico) or through the international student differential tuition fees.

International Energy Lawyer's Program (IELP) partnership

Established in 2012, the IELP is a joint Juris Doctor (JD) program with the University of Houston that allows students to earn both Canadian and American law degrees in four years. Upon program completion, students may apply for admission to the bar in both Canada and the US, and, with skills and knowledge in energy law, are highly employable across North America. In addition to the regular degree studies, the IELP is structured to facilitate internships in the energy industry. In 2018-19, four University of Calgary students were studying in Houston, while five University of Houston students were in Calgary.

Qatar Nursing program

In 2007, the University of Calgary entered into an agreement with the State of Qatar to establish a nursing school in Qatar (UCQ). In January 2018, the university and the State renewed the agreement for five more years. UCQ offers both Bachelor of Nursing and Master of Nursing degrees with students coming predominantly from the Gulf Region. The agreement also allows students from the Calgary campus to undertake a practicum in Doha. This agreement is completely funded by the State of Qatar. Over the next four years, we anticipate that the enrolment in our Qatar programs will increase to just over 800 students.

Master of Public Health – Mwanza, Tanzania

The Cumming School of Medicine has partnered to create and deliver a Master of Public Health degree in Mwanza, Tanzania. This work is one component of a multifaceted partnership with the Catholic University

of Health and Allied Sciences (CUHAS) that includes research activities, medical electives and research field training for University of Calgary students. An innovative PhD training program will provide an opportunity for graduates to enroll at the University of Calgary with research focused on issues of importance in Tanzania. To date, the University of Calgary has had seven PhD students from CUHAS pursue studies at our institution. The goal is to build joint University of Calgary and Tanzanian research teams and to strengthen the global health research capacity in both institutions.

Global Energy Executive Master of Business Administration

Based in Calgary, the Global Energy Executive MBA program at the Haskayne School of Business is an international program that combines academic excellence with deep energy industry expertise. Students, who are typically high-level executives in energy companies from around the world, enroll in the program which is delivered over 20 months with continuous online learning, in combination with five intensive in-person modules in key energy centers around the world. Students are enrolled in cohorts – the program started in 2011 and has been offered every second year to a cohort of approximately 20 students.

Global Research Initiative in Energy

The University of Calgary is leading a Global Research Initiative (GRI) for Unconventional Oil and Gas. As part of our Energy Research Strategy, this initiative aims to establish three world-leading research and education sites (China, Mexico, and Middle East) in partnership with governments, industry and educational institutions that are focused on unconventional hydrocarbon resources in key energy locations around the world.

- a. China – The first Global Research Site was established in Beijing, China in October 2014 through a partnership with a major Chinese oil and gas company, the Kerui Group. The university is working with the training arm of Kerui, the Victor Institute of Petroleum Training, and has started offering training programs related to energy and the environment. Additional programs are planned for 2019-20 and beyond.
- b. Mexico – The University of Calgary, in collaboration with Mexican universities and research institutes, has commenced the 21 projects supported by \$46 million in funding for four knowledge networks to produce joint research projects that will aid energy reforms in Mexico. This funding commitment follows from a long-term collaborative partnership the university signed in December 2015 with the Mexican Ministry of Energy to stimulate knowledge creation and practical energy industry solutions between the university and leading Mexican research institutions. The Mexican Global Research Site is progressing well with 13 research partners. Relationship development with the new Mexican government will be a focus over the next twelve months. The University of Calgary is continuing a visiting Mexican Chair program in collaboration with the Mexican Ministry of Foreign Affairs.
- c. Middle East – The University of Calgary has secured a partnership with Technion, the Israel Institute for Technology, by leveraging its world-class capacity in chemistry and chemical engineering. Together, collaboration in Material Science, Imaging and Catalysis is already underway and the two institutions are working together on innovation and discovery. Supported in part by the Canada First Research Excellence Fund (CFREF), the University of Calgary and Technion will continue to facilitate technical workshops and interactions among researchers, exchange samples and data, create opportunities for co-supervision of graduate students and postdoctoral fellows, and establish a visiting program for our scholars to work together on joint projects.

APPENDIX H: CAPITAL PLAN

H.1 INTRODUCTION / SUMMARY

This Capital Plan directs the development of the University of Calgary's physical infrastructure in response to the academic and research goals and objectives outlined within the Comprehensive Institutional Plan (CIP). Focused on the *Eyes High Strategy 2017-22*, and driven by priorities articulated within the recently approved 2018-23 Academic and Research Plans, the Capital Plan forms the basis for the institution's capital funding request to the province. This plan outlines the principles and processes used to determine our infrastructure requirements, capital planning priorities, capital project priorities, and the associated resources required to meet the academic and research vision. The Capital Plan has been developed through broad consultation within the institution, surrounding communities and ministry personnel. While comprehensive in scope, this plan is intended to be responsive to emerging learning, research and funding opportunities.

The University of Calgary is situated in one of the professional centric cities in Alberta and is one of the few institutions within the Campus Alberta model with a recognized space shortage against the government's projected enrolment targets. While we have maximized our ability to accommodate supported enrolment targets, our space allocation is still well below our peer institutions, which results in an increased wear-rate on our new and aging infrastructure. The university, with additional government support, has internally invested over \$300 million to advance our priority projects to begin addressing the space and pedagogical constraints we are currently facing. While there is still work to be done to address space shortfalls fully, these projects provide needed and necessary new space and the pedagogical environment to maintain delivery of our programs in a supportive environment to allow us to deliver on our commitment to excellence in both student experience and academic and research impact.

The owned built-environment of the University of Calgary exceeds 1,000,000 gross square metres (gsm) on multiple campuses, with approximately half our buildings being over 40 years old. The compounding effects of aged infrastructure, deferred maintenance, an overall lack of space and shortages of specific, strategic space types create a significant barrier to the execution of our mandate and growth plans in response to government workforce needs and projections. The result is a continued institution-wide shortfall in essential classrooms, laboratories, theatres, administrative support space, and core campus service facilities. We are very appreciative of the challenges in supporting capital investment as a result of the current economic conditions, but this should not preclude action on current and long-term demand solutions.

To meet the aspirations outlined within the CIP and our *Eyes High Strategy*, we need to maintain, renew, repurpose, and expand our campus facilities. The university continues to take a pragmatic and balanced approach in its determination on how best to accommodate the infrastructure needs of our campuses, through the development of five strategic planning principles:

1. Advancement of planning and design activities on priority projects to ensure they are effectively scoped and budgeted, and ready for implementation as funding opportunities arise.
2. Leverage renewal projects with repurposing needs to address the pedagogical requirements for today and tomorrow.
3. Identify critical new infrastructure that will provide additional space for activities that cannot be accommodated through repurposing and renewal alone.
4. Proactively identify and manage our deferred maintenance liability to minimize the risk of building failures and potential closures.

5. Explore alternate funding mechanisms to leverage provincial funding and advance the mission of the institution.

With reference to Government of Alberta priorities and to support the academic and research outcomes outlined within the CIP, and following CIP guidelines, the University of Calgary has identified the following highest-priority capital projects that the university feels are essential to be completed over the next 3-5 years.

Table 23 – Highest-Priority Capital Projects

Priority	Project Title	FLEs	Budget (\$ millions)
1	Foothills Campus Code Upgrades and Decant – Phase 1	185	450.0
2	Kinesiology Complex Expansion and Renewal	400	230.0
3	Interdisciplinary Science and Innovation Centre – Phase 2	565	45.0
	Total	1,150	725.0

In addition to these highest-priority capital projects, the university has identified other capital priorities that are instrumental in achieving the desired outcomes outlined within the CIP and our *Eyes High Strategy* over the next ten years. The university takes a long-term strategic approach at looking at capital projects as we recognize the importance of identifying emerging physical infrastructure needs to support and drive our academic and research activities in pursuit of our mandate and vision. A summary table of these projects is included at the end of this chapter and will be used to inform our June 2019 capital proposals submission to the government through the Buildings and Land Infrastructure Management System (BLIMS).

H.2 HIGHEST PRIORITY CAPITAL PROJECTS SEEKING GOVERNMENT SUPPORT

In support of the academic and research outcomes outlined within the CIP, and following the CIP guidelines, the university is submitting three top priority projects for consideration. The University of Calgary has a balance of capital projects that include new, expansion, renewal/repurposing, and general preservation and we feel it best practice to identify all projects that require funding in the next five years for the university to maintain and achieve the goals outlined within the CIP.

The project briefings below are intended to outline the scope and funding required to address our identified highest-priority projects. Each of these projects supports the academic and research aspirations as described within the CIP. There may be some variation between the CIP and the final BLIMS submission as the university continues to develop project scopes through its advanced planning and design efforts and initiatives, but they will not result in any substantive or material change in programming, need or priority.

H.2.1 Institutional Priority 1: Foothills Campus Code Upgrades and Decant – Phase 1

Total Project Estimate: \$450.0 million (\$45.0 million in institutional support via donations)
Additional FLEs: 185

The Cumming School of Medicine and the Faculty of Veterinary Medicine are innovative schools committed to excellence in education, research, and service to society. Significant provincial and federal research funding has been invested in supporting these leading faculties at the Foothills Campus. Comprised of four interconnected buildings, Foothills Campus is almost 175,000 gross square metres in building area. The Teaching, Research & Wellness (TRW) and the Health Research Innovation Centre

(HRIC) buildings were completed in 2006 and house some of the university's most advanced teaching and research facilities. Adjacent to them are the Heritage Medical Research Building (HMRB) and the Health Sciences Centre (HSC), opened in 1987 and 1972 respectively. This project is to address the fundamental code and functionality issues within HSC (our oldest facility), while at the same time providing space for planned future growth.

The proposed upgrades in the Health Sciences Centre will provide modern and functional lab space required for today and tomorrow's researchers, as well as maximize the utilization of the space. While areas of HSC have been upgraded through renovation projects, substantial portions of the critical infrastructure are long past their realistic lifespan and significant system failures are regularly occurring, causing serious disruption to daily teaching and research activities. The building structures are sound and robust enough to support ongoing operations while the facility is undergoing maintenance and building code improvements necessary for the university to achieve its academic and research mandate and vision. A four-phase project plan has been developed to address the primary need for the renovation and repurposing of HSC, while at the same time addressing additional space needs. Phase one of this project represents the critical initial building block to ensure future phases can be executed as funding becomes available.

The project will be initiated by the construction of a new 25,000 gross square metre facility, providing 16,000 gross square metres of decant space and 9,000 gross square metres of new program space for research and clinical imaging, precision health testing, pediatric transition and a biobank. The new decant facility is critical to the success of the project by providing the necessary flexibility to create a vacated envelope that ensures minimized disruption of existing academic, research and clinical activities, lower construction costs, and a reduction of day-to-day operational inefficiencies. Once completed, 16,000 gross square metres of program area will be moved from the HSC building into the decant facility. The estimate for this new facility is \$212 million and is expected to take five years to complete.

Once the decant facility is completed and the first occupants have been relocated, remaining occupants will be restacked to create a redevelopment zone in the southeast corner of HSC encompassing all four floors within the redevelopment envelope. With a cohesive 16,000 gross square metres of building area vacated within HSC, the first of four building repurposing and renovations phases can begin. The scope of these renovations will include this portion of the building being brought back to raw structure and rebuilt to current code and design standards. This work will ensure another 50 years of productive academic and research building use for the university and eliminate the building's \$43.8 million deferred maintenance liability; the university's second highest deferred maintenance liability. The estimate for this phase of the project is \$238 million and is expected to take three years to complete.

Phases two through four extend beyond the ten-year timeline. Each phase is discrete and planned to occur sequentially, with each taking approximately two to three years to complete at an average cost of \$175 million.

H.2.2 Institutional Priority 2: Kinesiology Complex Expansion and Renewal

Total Project Estimate: \$230.0 million

Additional FLEs: 400

The health and wellness of our university community are paramount to support the academic and research mission of the institution, as well as other strategies like our Mental Health Strategy. The last expansion of the Kinesiology Complex was in 1988 as part of the Olympic Games. Since that time, our campus community has grown by nearly 47% and the Faculty of Kinesiology program has expanded

significantly. The teaching, research, clinic and active sport spaces are severely over-capacity and in fair to poor condition.

Planning work to advance strategies, programming details, estimates and schedules for the expansion and renewal of the academic, health and recreation facilities of our Kinesiology Complex has continued and the original programming has been modified in consideration of our consultations and partnership with the City of Calgary's redevelopment of the Foothills Athletic Park.

The project is expected to take approximately four to five years for the design and construction periods to complete upon approval of this business case by the Government of Alberta. The university has advanced its renewal plan into two major phases; sequenced for maximum efficiency to minimize disruption to the current academic and recreational programming and operations and address approximately \$12.5 million of deferred maintenance liability.

Phase 1 of the project will include an expansion to Kinesiology Block B (KNB) built in 1987 to support critical academic, clinical study and research capacity. This phase will provide a connected, stand-alone expansion of approximately 6,500 gross square metres to KNB. The three-story expansion would be placed on the north side of the KNB structure to add instructional and research capacity for learning and study spaces for program majors, clinical study and academic support and will maintain the academic and research activity in the northeast zone of the Kinesiology Complex. The fitness centre will be converted into academic space, dry laboratories, and offices. The phased project delivery ensures mitigation of impact to internal and external stakeholders and will support the decanting requirements for Phase 2. The estimate for this phase is \$75 million.

Phase 2 supports a vertical expansion and renovations to the original Kinesiology Block A (KNA) built in 1961 with renewed and expanded recreational facilities along with partial redevelopments to existing KNB spaces. It will consist of the full renewal and vertical expansion of KNA from approximately 12,000 gross square metres to over 24,000 gross square metres. The scope for this phase includes:

- new aquatics centre
- five gymnasia
- expanded fitness centre, locker and change rooms
- new indoor running track
- new student and program support spaces

This phase will also provide new academic space for Faculty of Kinesiology research and teaching programs, modernization of base building systems, and upgrades to increase the energy efficiency of the 30-year-old facility. The estimate for this phase is \$155 million.

H.2.3 Institutional Priority 3: Interdisciplinary Science and Innovation Centre – Phase 2

Total Project Estimate: \$45.0 million

Additional FLEs: 565

The Interdisciplinary Science and Innovation Centre (ISIC) has been one of the university's highest priority projects for the past five years, required to address one of the most significant operational and academic risks to the institution. The project will provide critical new space, along with an existing and planned expansion of teaching and research spaces currently housed within the Science A complex, which are very out of date and do not support the pedagogy of today's teaching labs and classrooms. The innovative new building of approximately 34,300 square metres will meet modern expectations for technology-rich, specialized research and support spaces required for the current and future programming for our life and environmental sciences curriculum in the Faculties of Science, Arts, Kinesiology, Veterinary Medicine,

Schulich School of Engineering and Cumming School of Medicine. Once completed, the new ISIC building will support an additional 985 new Full-Load Equivalent students (FLEs) in undergraduate and graduate education.

In December 2018, the Board of Governors approved the use of \$245.0 million in institutional funds to advance Phase 1 of the project allowing for the full design of the building and the co-location of dispersed labs into a more centralized location with core-lab services available to all researchers. The colocation of interdisciplinary researchers will enhance and drive our university's vision and support entrepreneurial thinking in a new way. Phase 2 of the project will be constructed as a shell and core, ready for fit-up upon securing the additional funding of \$45 million. Phasing of the project enables the university to address a long-term accreditation risk with available institution funds while ensuring that priority sciences curriculum space can be constructed efficiently as additional funding is secured.

H.3 DEFERRED MAINTENANCE

While the University of Calgary is a young institution, we have grown rapidly with significant infrastructure that requires constant and ongoing stewardship through our capital renewal program. The foundation of an effective capital renewal program is a robust and credible database of facility condition information. As of March 31, 2019, the university is currently managing a recognized deferred maintenance liability of \$536.0 million for our supported infrastructure. This is inclusive of approximately \$34.0 million that will be addressed as part of the approved MacKimmie Complex and Professional Faculties Building Redevelopment and Mathison Hall projects.

Predictable annual funding of \$45.0 million is required (approximately 1.0% of the current replacement value of our capital assets) for the university to maintain our physical infrastructure. This need is reflected in Table 27 under "Other Priorities, Deferred Maintenance Fund". The figures presented in Table 27 represent the difference between the \$45.0 million and the anticipated government support through the Infrastructure Maintenance Program (IMP), with minor ramping and escalation. Our projection of future IMP funding assumes that the university will receive a proportionate share of the government's commitment to increase the Capital Maintenance and Renewal budget from \$119 million to \$190 million in 2021-22 for the post-secondary sector.

The university is very appreciative of the continuation of the IMP grant and targeted one-time grants to address the preventative and critical maintenance across our campuses. This funding is essential to keep our deferred maintenance liability at acceptable levels. Given that IMP is the only annual funding received for critical maintenance, it is invaluable for managing this liability. In the 2018-19 budget, the provincial government has maintained the annual allotment at \$22.45 million and we trust that this support will continue to increase in the coming years. To demonstrate the importance of our highest capital priorities, government support for our three highest priority projects would reduce our deferred maintenance liability by \$56.3 million. We will continue to work with the government in examining ways to leverage provincial funding in efforts to address teaching and research needs and our deferred maintenance.

Three-year Rolling Implementation Plan

IMP funding is directed into three primary streams and the university has worked closely with Alberta Infrastructure to leverage IMP funding, where possible, in support of other granting programs to work to reduce deferred maintenance across our campuses as follows:

1. Code and regulatory compliance work. Examples include asbestos abatement, improvements to campus accessibility, elevator replacements and boiler upgrades necessary to meet contemporary regulatory requirements.
2. Maintaining building systems integrity. This area of focus involves the replacement of aged heating, ventilation, and air conditioning, electrical and mechanical systems before catastrophic failures occur. Predictive maintenance techniques are used to ensure the lifespan of the equipment is optimized and replacement occurs on a timely basis.
3. Functional renewal programs of similar work across multiple structures; where common issues span numerous buildings, a program of replacement is organized to achieve a common approach and economies of scale. Examples include washroom, theatre, and classroom renovations.

Table 24 provides a summary of our three-year rolling plan, showing planned 2019-20 expenditures of \$22.45 million. These values do not include our planned carry-forward for 18-19 projects currently in construction. Future projections are based on the 2018-19 budget that indicated no increase to the Capital Maintenance and Renewal budgets for post-secondary institutions (PSI) over the next two years. We do note that in 2021-22, the government has projected a significant 60 % increase in the Capital Maintenance and Renewal budget, and for budgetary purposes, we have assumed that the University of Calgary will receive a proportionate share of this increase.

Table 24 – Three-Year Infrastructure Maintenance Program

(\$ millions)	2019-20	2020-21	2021-22
Regulatory and Code Compliance	1.10	1.20	3.04
Building Systems Integrity	19.29	19.00	27.44
Functional Renewal Programs	2.06	2.25	5.44
Total	22.45	22.45	35.92

Table 27 highlights our 10-year forecast for capital investment. Within the table is an outline on how a combination of increased IMP funding to a more sustainable level of \$45.0 million annually, continued investment through new one-time grants and the creation of a new 10-year Deferred Maintenance Program could provide the needed support to reduce our liability and provide stable, predictable and sufficient funding moving forward.

H.4 MATCHING PROVINCIAL FUNDING FOR EXTERNAL GRANT AWARDS

At the University of Calgary, we have a strong record of accomplishment in our pursuit of research grant support for targeted research activities and infrastructure. We aim to continue our success with the Canada Foundation for Innovation (CFI) John R. Evans Leaders Fund (JELF) and the matching provincial Small Equipment Grants Program, and we estimate seeking \$4.8 million in matching support for research equipment applications in 2019-20.

H.5 FUNDING SOURCES AND TIMELINES

Table 25 and 26 provide further details regarding funding source, timelines and approvals received for projects scheduled to begin before 2023 as per the CIP guidelines.

Table 25 – Type of Project and Funding Source

Project Type	Project Description	Total Project Cost	Funding Sources	Government Approval Received
New / Maintenance	MacKimmie Complex and Professional Faculties Building Redevelopment	\$290 million	97% GoA (Received) 3% donation (Received)	Yes
New	Mathison Hall	\$90 million	55% PSI funds (received) 45% donation (Received)	N/A (Board Approved, Institutionally funded)
New	Interdisciplinary Science and Innovation Centre (Phase 1)	\$245 million	84% PSI funds (received)	N/A (Board Approved, Institutionally funded)
Proposed Maintenance/ New	Foothills Campus Code Upgrades and Decant	\$450 million	89% GoA 11% donation	No
Proposed Expansion/Maintenance	Kinesiology Expansion and Renewal	\$230 million	100% GoA	No
Proposed New	Interdisciplinary Science and Innovation Centre (Phase 2)	\$45 million	100% GOA	No
Proposed Maintenance	Science A Classroom / Makerspace	\$103 million	100% GoA	No
Proposed New/Maintenance	Craigie Hall	\$161.5 million	100% GoA	No

Table 26 – Project Timelines and Status for projects completed within the next five years

Project Description	Estimated Project Timelines	Expected Project Start	Expected Project Completion
MacKimmie Complex and Professional Faculties Building Redevelopment	April 2016 – August 2022	April 2016	June 2022
Mathison Hall	December 2018 - August 2022	December 2018	Estimated August 2022
Interdisciplinary Science and Innovation Centre (Phase 1)	January 2019 – August 2023	January 2019	Estimated August 2023
Foothills Campus Code Upgrades and Decant	April 2020 – August 2030	Estimated April 2020	Estimated August 2030
Kinesiology Expansion and Renewal	April 2021 – August 2026	Estimated April 2021	Estimated August 2026
Interdisciplinary Science and Innovation Centre (Phase 2)	April 2021 – August 2023	Estimated April 2021	Estimated August 2023
Science A Classroom / Makerspace	April 2022 – August 2025	Estimated April 2022	Estimated August 2025
Craigie Hall	April, 2024 – August, 2029	Estimated April, 2024	Estimated August, 2029

H.6 PROJECTED 10-YEAR FUNDING FORECAST

Table 27 provides a projected 10-year cash flow for projects not currently funded by government or other sources, as well as additional priority projects deemed critical over this period. Given the interconnectivity of our Capital Plan, we use this forecasting tool to ensure that we are identifying opportunities to leverage planning, design and construction activities to maximize a return to the university while minimizing disruption of academic activities.

Table 27 – Ten-Year Capital Forecast

(\$ millions)	Rank	Total Project Funding Required	Total GOA Request	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30
PRIORITY PROJECTS													
RENOVATION - Foothills Campus Code Upgrades and Decant (Phase 1)	#1	450.0	405.0	3.0	7.0	52.0	85.0	65.0	41.0	42.0	51.0	52.0	52.0
EXPANSION - Kinesiology Expansion and Renewal	#2	230.0	230.0		14.5	29.0	32.0	98.5	56.0				
NEW - Interdisciplinary Science and Innovation Centre (Phase 2)	#3	45.0	45.0		10.0	20.0	15.0						
REPURPOSE - Science A Classroom/Makerspace	#4	103.0	103.0			10.5	48.5	44.0					
NEW – Craigie Hall	#5	161.5	161.5					11.0	34.0	46.0	47.0	23.5	
RENEWAL - Social Science Building Renewal	#6	100.0	100.0						11.0	23.0	23.5	24.0	18.5
NEW – Indigenous Gathering Place	#7	TBD	TBD						TBD	TBD	TBD		
RENOVATION - Education Classroom Block Redevelopment	#8	92.5	92.5						5.5	46.0	41.0		
NEW - Central Services Relocation	#9	53.5	53.5							6.0	23.5	24.0	
RENOVATION - MacEwan Hall & Student Centre Loading Dock Redevelopment	#10	54.5	27.0								6.0	24.0	24.5
TOTAL		1,290.0	1,217.5	3.0	31.5	111.5	180.5	218.5	147.5	163.0	192.0	147.5	95.0
OTHER PRIORITIES													
Utility Reduction Program (Years 4 through 8) ¹		32.5	32.5	6.5	6.5	6.5	6.5	6.5					
Social Science Façade Replacement and Photo Voltaic (PV) Installation ²		15.0	15.0	8.0	7.0								
Barrier Lake Research Station Renewal, Phase 2		15.0	15.0			8.0	7.0						
Spy Hill Lab Expansion (formerly Clinical Skills Building Expansion)		45.5	45.5						22.5	23.0			
Deferred Maintenance Fund ³		130.0	130.0	23.5	10.0	10.5	11.0	11.5	12.0	12.5	12.7	13.0	13.3
Building Envelope Repair and Replacement		130.0	130.0	25.0	25.5	26.0	26.5	27.0					
Deep Utilities Upgrade (Campus-wide Program)		26.0	26.0	5.0	5.1	5.2	5.3	5.4					
Critical Mechanical and Electrical Infrastructure Upgrade (Campus-wide Program)		60.7	60.7	6.1	6.2	6.4	6.5	6.6	6.8	6.9	7.0	7.2	7.3
Infrastructure Capacity Upgrade (Campus-wide Program)		27.5	27.5			5.3	16.2	6.0					
TOTAL		482.2	482.2	74.1	60.3	67.9	79.0	63.0	41.3	42.4	19.7	20.2	20.6

1. Government funded through a supported OIC for borrowing.
2. This project is included within the larger #6, Social Science Building Renewal project.
3. Based on 1.0% replacement value of our supported infrastructure less current and projected IMP funding.

H.7 EMERGING CAPITAL PRIORITIES

In addition to our noted highest-priority projects, the University of Calgary has identified a number of other priority projects to ensure we achieve the desired outcomes outlined within the CIP and our *Eyes High Strategy 2017-22*, which are summarized in Table 28 with brief descriptions and order-of-magnitude estimates.

The complete list of projects in Table 27 will guide the development of our BLIMS submission for FY2020-21 (submitted June 2019). As we continue to develop project scopes through our planning and design efforts, there may be some variation between the information in this table and the final BLIMS submission. Projects only proceed when duly authorized and funded.

Table 28 – Other Capital Priorities: Major New, Renewal and Expansion

(\$ millions)	Estimated Project Budget	Targeted Outside Funding	Future Funding Request To Government
Other Priority Projects			
Institutional Priority 4: Science A Central Classroom / Makerspace (repurposing)	103	-	103
<p>The Science A Central Classroom/Makerspace project will create a central, flexible and innovative learning environment to support the experience of all learners on campus. With high-service functions such as chemistry laboratories being relocated to the EEEL building or placed in ISIC, Science A will be converted to a mainly low-service environment with open, multi-purpose spaces for diverse learning opportunities, including evolving creative environments equipped with ‘makerspace’ facilities and services.</p> <p>The future vision for the Science A building (1960) is a mix of learning spaces, flexible classrooms, dry laboratories with small equipment, and group and individual study spaces. ‘Maker’ activities can be supported by the Science workshop. The building, at the heart of the main campus, would become a centerpiece for unstructured, atypical learning activities, supporting students in many programs.</p>			
Institutional Priority 5: Craigie Hall	161.5	-	161.5
<p>Upon completion of the Science A Central Classroom/Makerspace project, the building would be used as decant space for the demo and replacement of Craigie Hall which is past its expiration date and whose structure is not suitable for university’s future academic and research needs. The new Craigie Hall would be sited in the location of the existing complex, but its west side would allow for an external circulation pathway to extend northward to the TFDL quad from the main south entry to the campus.</p>			
Institutional Priority 6: Social Sciences Building	100	-	100
<p>The Social Sciences building (1969) supports academic activity for many departments in the Faculty of Arts. It requires programmatic updating to make the building more effective for current requirements and configuration needs. Building systems are also old, inefficient and difficult to support. In 2016, the building envelope was found to be failing and an extensive temporary repair had to be executed. The exterior requires complete renewal relatively soon. Early review and planning suggest both programmatic and system upgrades can be executed sequentially, much like the recently completed Education Tower redevelopment. This budget includes the minor preservation PV façade project.</p>			
Institutional Priority 7: Indigenous Gathering Place	TBD	-	TBD

In alignment with the recently approved Indigenous Strategy, the Indigenous Gathering Place will be a new building dedicated to Indigenous peoples’ knowledges and education. This space would support Indigenous programs, promote Indigenous knowledges in learning, teaching and research, and provide ceremonial space that welcomes Indigenous and non-Indigenous staff, students and guests; and, house the Centre for Indigenous Oral Traditions and Languages, promoting this work across disciplines.

Institutional Priority 8: Education Classroom Block	92.5	-	92.5
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Originally constructed in 1967 the Block section of the Education Complex requires significant architectural, mechanical and electrical upgrades. The scope of this renovation would include the building being brought back to raw structure and rebuilt to current code and design standards and the addition of another floor. Once complete, the redeveloped 12,500 m2 facility would significantly address the university's need for high demand classrooms and provide an inviting and welcoming entry to the campus from our southern bus loop.

Institutional Priority 9: Central Services Relocation	53.5	-	53.5
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Services supporting the entire university operations (including supply chain, distribution, facilities maintenance and development) are located in the aging Physical Plant building (1969), an accommodation that is increasingly ineffective as the university grows and evolves. Relocation to a more central location will allow for renewal of the infrastructure as well as allow more efficient support, and release the current site for a small outdoor stadium, and/or academic health and wellness activities associated with Child Development Centre and Alberta Children's Hospital, as per the Long Range Development Plan.

Institutional Priority 10: MacEwan Hall & Student Centre Loading Dock Redevelopment	54.5	27	27.5
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The majority of this proposal will be a renovation to move a central loading dock serving multiple buildings to make a safer condition wherein pedestrian and vehicular traffic are more effectively separated.

OTHER MAJOR PROJECTS

Utility Reduction Program (Years 4 to 8)	32.5		32.5
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Includes various annual building system upgrades, recommissioning, lighting and energy performance initiatives. Supported through borrowing and projected utility cost avoidance.

Social Science Façade Replacement and Photo Voltaic (PV) Installation	15.0	-	15.0
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As part of capital priority #6, will replace failed pre-cast panels and installation of a photovoltaic system.

Barrier Lake Research Station Renewal, Phase 2	15.0	-	15.0
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Renewal of housing and program support buildings (following from SIF-funded renewal of the Science Labs and Main Lodge buildings).

Spy Hill Lab Expansion (formerly Clinical Skills Building Expansion)	45.5		45.5
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To replace the temporary structures for research labs within a controlled and safe facility. This will also align with our desire to create a joint disease investigation program through placement of agriculture and forestry researchers with university researchers.

Deferred Maintenance Fund	130.0	-	130.0
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Due to reduced funding in previous years, additional funds are required to address increasing deferred maintenance liabilities over the next ten years. (Based on 1% replacement value of our supported infrastructure less current and projected IMP funding).

Building Envelope Repair and Replacement	130.0	-	130.0
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A significant renewal program is required to provide critical repair and/or replacement of aging building envelopes. This work will remedy functional deficiencies and, in many cases, decrease our operating costs because of improved performance. This program is scheduled as a five-year program.

Deep Utilities Upgrade	26.0	-	26.0
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Upgrade to storm, sanitary and water systems throughout campus.

Critical Mechanical and Electrical Infrastructure Upgrades (Campus-wide Program)	60.7	-	60.7
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A ten-year program to upgrade campus mechanical and electrical infrastructure. Work to occur in Central Heating and Cooling Plant, Tunnels and base building electrical rooms.

Infrastructure Capacity Upgrade (Campus-wide Program)	27.5	-	27.5
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As capital expansion projects are completed, campus infrastructure will need to expand to meet growing cooling and electrical demand. The projected expenditure will facilitate the construction of a cooling plant on the east side of the campus along with the addition of a new Switch Station in close proximity.

APPENDIX I: INFORMATION TECHNOLOGY

I.1 INTRODUCTION

The Alberta Government's Economic Growth and Diversification Act, passed in June 2018, demonstrates a clear understanding of the vital role technology plays in our current and future economies. This is a challenge the University of Calgary (UCalgary) is positioned to play a lead role to meet. UCalgary Leadership has already committed to expand several existing programs and create others to educate and retrain the talented and nimble workforce needed in an increasingly diverse economy.¹¹ This challenge aligns with the priorities outlined within the institutional Academic and Research Plans, supported by the strategies outlined in the Strategic Framework for Learning Technologies and the newly created Information and Technology Strategic Plan. These plans and strategies guide UCalgary's Information Technologies department (IT) in establishing the framework for investment in existing and future technologies. As such, it is imperative that UCalgary maintains leading edge technologies to ensure learners are able to learn anywhere, anytime and via any method. Access to advanced technologies has proven critical in attracting top talent across all disciplines, allowing them to excel in their respective areas of research through the use of advanced computing, analysis and visualization capabilities. Our current and planned computing services and capabilities are differentiators for students, researchers and scholars who choose UCalgary.

This translates into a need for ubiquitous, reliable and secure network and computing resources with the ability to scale rapidly to meet the constant leaps in analytics and machine learning that push our computing and storage capacity and support innovation. High capacity connectivity enables the exchange of information and collaboration necessary to sustain a global intellectual hub. The ability to meet those demands has moved from being a competitive edge to a necessity.

Securing investment for sustaining and advancing technology solutions for the institution is critical to achieving the university's Eyes High strategic vision. As UCalgary continues toward our goal of being recognized as one of Canada's top five research institutions, increasing demands for higher-level skills, technology and innovation will require strategic investments in information technologies, with a longer-term horizon in mind.

I.2 2018-19 INFORMATION TECHNOLOGY PLAN REVIEW

In 2018-19, we focused on a number of initiatives that were necessary for the ongoing success of UCalgary students, ensuring the continued accessibility, affordability and quality of our institutional offerings, and of our Academy, both from a teaching and research perspective.

IT infrastructure support for the campus continued to be a top priority. The primary focus continued to be on foundational infrastructure and processes including system replacement, high speed secure connectivity, data management and governance ensuring accessibility and availability of computing resources for student, academic and research advancement. Institutional investment in large scale computing increased over the last year. The resulting enhancements have provided increased ability to move into large-scale analytics and computing services in an effort to support our research initiatives and

¹¹ <http://calgaryherald.com/opinion/columnists/moran-and-cannon-developing-tech-talent-is-critical-to-calgarys-economic-growth>

the goal of attracting and retaining top talent. From a student perspective, we have expanded wireless connectivity and implemented increased monitoring to assure a more reliable on-line experience.

Security remains a top priority. UCalgary continues to improve our security posture by contracting a managed security service provider as well as enabling a real-time analysis of security alerts through the newly acquired security information and event management software (SIEM). UCalgary continues to refine and implement a Security Controls Framework designed to meet or exceed regulatory, legal and policy requirements. Our controls framework includes Key Risk Indicators, which are regularly monitored and reported on a quarterly basis as part of the institution wide Enterprise Risk Management process. Centralized monitoring, utilizing both in-house and externally provided managed services provides visibility into our environment, with rapid diagnostics of security events and deployment of mitigating countermeasure capabilities. Those capabilities include risk management processes, automated response and a centralized Emergency Response Team. Security policies, last updated in 2016, are currently under review to reflect changes in architecture, overall security posture, business focus, and the institution's understanding of the changing threat/risk horizon.

IT completed a variety of faculty and community related projects to enable scholars to conduct research securely within our Calgary community, and to ensure quality learning experiences. The past year's IT initiatives have included:

- a Research Management System to support researchers with their grant applications and funding requirements. This will improve the efficiency and quality of grant applications and enable financial management;
- an analysis to migrate 17 petabytes of cancer research data to a securely managed IT environment to reduce the risk of loss or corruption;
- the Faculty of Science IT moved from faculty-supported to central IT-supported to ensure a collaborative, consistent, safe and secure environment for students, faculty and research scholars;
- the implementation of Impero Lab Manager allowed greater control of lab computers for exams and classroom needs, such as the addition of specific applications or restriction on services such as the internet;
- ongoing work continued with our research community, including the Cumming School of Medicine, to improve the computing power resources of the institution. This resulted in an initiative to upgrade the institution's computing clusters to include newer, more powerful CPU cores and the introduction of GPU and TPU cores in response to current and future demand for large data analytics and machine learning;
- the deployment of *One Drive* to faculty, staff and students has allowed for safe and secure data storage that allows controlled collaboration while maintaining appropriate controls;
- continued expansion and refinement of Wi-Fi services to provide stable and fast service to address the concerns of students, faculty and staff;
- UCalgary centralized the provision of computers to faculty. This change has further contributed to a stable secure environment while also providing faculty with a variety of computing systems options; and
- a proof of concept is underway for the use of Multi-Factor Authentication as well as Advanced Threat Protection and Safe Attachments aimed at reducing the risks posed by email as an attack vector.

All initiatives were undertaken in an effort to reduce distractions created by the use of technology for faculty, staff and students to allow them to concentrate on their priorities.

Finally, IT continued to invest in its administrative systems with a focus on mitigating risk on key institutional systems, including:

- the replacement of computing infrastructure with new equipment by end of 2019, specifically supporting our ERP and student information systems with completion of a secondary mirrored site implementation in 2020;
- the upgrade to the latest version of D2L, Teaching and Learning’s key system and the extension of the D2L agreement for 5 years assures there will be minimal disruption to our students and faculty using this key application;
- an RFP was issued to replace the existing donor relationship management system and a vendor was selected. The implementation has been initiated and will be completed in 2019. This will remove the existing risks associated with aging technology such as supportability and functional decline;
- IT completed the migration of SharePoint to the 2017 version to ensure ongoing vendor support and provide greater flexibility to our students, academics, researchers and staff; and
- the completion of the migration of all web-based technology to Caas (Containers as a Service) provides greater stability and scalability with minimal disruption. This will allow UCalgary to move to micro services over time, potentially allowing us to manage the environment without the need for downtime in maintenance.

These initiatives are a snapshot of the types of projects undertaken by IT in the past year that improved the quality of the student experience and highlight our ongoing focus on improving the technology environment for our researchers, faculty and staff. In addition, we have strengthened the collaboration and aligned processes between IT and the Facilities Management department, which has improved the delivery of IT components for Facilities’ capital projects. Cooperative projects such as the implementation of security cameras across the campus and secure storage have increased the safety of faculty, staff, students and campus visitors. We now have more than 1,800 closed circuit cameras fully networked into our campus security operations centre.

I.3 2019-21 INFORMATION TECHNOLOGY PLANS

IT will continue to focus on programs that deliver value in four critical areas: ensuring ongoing accessibility for Alberta and international learners; affordability of IT services and technologies; quality of research and pedagogy; and coordination of opportunities in the post-secondary education sector.

I.3.1 Accessibility

Ensuring the accessibility of the educational system for Alberta learners requires investment in new technologies and new skill sets for our staff.

IT is critical to remote access within the educational system. As distance learning becomes more prevalent and as faculties roll out plans to offer more distance education programs, IT must have the necessary infrastructure and support mechanisms to empower distance learners. This requires IT to continually maintain and upgrade backbone technology on campus to allow distance learners a seamless and effective connection to the university.

Working with University Relations, IT will continue to enhance the university websites to provide a seamless and effective user experience. For many prospective students, academics and staff, the website is the first touchpoint with the university and as such needs to support a positive experience with quick and easy access to information resources. For those currently associated with the university, ucalgary.ca serves as a portal to access important information and collaboration tools. As the most publicly accessible point of electronic access, these systems need to be able to handle the increasing demands for access as well as being resilient to cyber-attack risks. To meet these needs a number of projects have been initiated

this year, and will need to continue over the next three years, to replace and enhance the underlying infrastructure and flexibility for all web services. Our goal is to ensure a safe, secure and reliable experience for all prospective and current students, academics and staff.

Unauthorized access, use or manipulation of our data and computing resources as a result of increased accessibility poses significant risks to our university with financial, reputational, regulatory and liability risks being the most prominent. Assurance that only authorized and authenticated individuals or entities access the resources they are authorized to access is a key control that will require significant investment to ensure fit for purpose access controls that meet our needs with no impact on the usability of our systems and data distribution mechanisms.

Investment in our people is essential in order for them to be prepared to implement and maintain new technologies. A focus on employee training and development is critical so our employees can support the university community and provide effective technology solutions to faculty, staff and students.

Additional investments to enhance the security of our network will focus on best-in-class security standards. Introduction of new processes combined with implementation of new monitoring tools will equip the university to prevent cyber-events, and where necessary, remediate quickly and effectively should a cyber-event occur. Implementation of a controls framework that meets or exceeds our regulatory, legal and policy requirements will be a focus in the coming three years. The framework will provide a means of measuring our maturity regarding security and service delivery objectives. Accurate measurement of our efforts will provide greater assurance that investments in IT are effective and achieving the desired results. This aligns with our focus on risk mitigation and protection of the intellectual property of the university and of faculty, staff and students.

Our remote access, file storage and backup systems are approaching end of life. Ongoing upgrades to these systems are critical to ensure both quality and accessibility for our students, faculty and staff.

1.3.2 Quality

In today's universities, IT products and services are foundational to quality learning experiences and innovative research by ensuring the appropriate computing facility are available to better enable research, teaching and learning, the entire ecosystem is enhanced. Quality of IT begins with a robust and secure foundational IT infrastructure. A secure foundational IT infrastructure combined with effective monitoring tools and vigilance are necessary to guard against increasing cyber threats to protect the information assets of the university.

Pedagogical innovations like the flipped classroom require an investment in video capture, production, and hosting for scholars. This allows students to access recordings of key material on demand. It also ensures that those learners who would benefit from the ability to review key material as part of their learning style will have ongoing access to content.

IT has identified a number of projects that will contribute to the quality of research at UCalgary. For example, Secure Compute is a multi-year initiative to provide researchers with a secure and scalable collaborative space and the data storage they require in order to meet the needs of their research endeavors. A related example is the High Performance Computing (HPC) initiative, designed to provide access to HPC services with high capacity networks. This capability is a necessity for the attraction and retaining of top talent as well as the ability to qualify for a growing number of grants. These are multi-phase and multi-year projects that will provide enhanced IT capabilities, such as large data analytics, cluster computing and high-speed networks to researchers across UCalgary and in future years to researchers within the province and beyond.

IT is focused on providing infrastructure foundations to ensure the competitiveness of our research community, and, in turn, to enable UCalgary to continue its Eyes High journey to be recognized as one of Canada's top five research universities. In order to attract high quality research scholars and top students, we require platforms and applications that support big data and advanced analytics.

Increased use of Key Performance Indicators, Key Risk Indicators and Service Level Objectives will provide ongoing measurement of the services and capabilities provided by IT. This will provide an increased level of confidence that our investments in IT infrastructure and initiatives are producing the desired results and will have a positive effect in increasing a safe, secure, reliable and robust experience for our students, staff and academics.

I.3.3 Affordability

Balancing the cost of the technologies with the need to be adaptive to future needs is critical to IT. The university has identified a number of future projects that will help to keep our technology platforms sustainable while ensuring that IT can meet the growing needs of the campus community.

To move ahead effectively, we are embracing several core principles. The principle of simplicity states, "choose the simplest solutions and aim to reduce operational complexity of the enterprise" which results in a lower-cost footprint for the university. The principle of reuse, buy, build states, "we maximize reuse of existing assets. If we cannot reuse, we procure externally. As a last resort, we build custom solutions." Reusing our core infrastructure allows IT to spread the cost of IT investment over a variety of uses. By procuring externally, we are better able to control the cost of the application through robust vendor management and we are better able to forecast the total cost of ownership. The principle of consistency states, "control the variety of technology platforms we use." By limiting the number of supported applications, we reduce the need for specialized skills sets and are better able to optimize the use of our human capital. Finally, delivering a higher level of data integrity and data integration will ensure commonality and alignment across the academy that will create a higher acceptance and agreement of information that flows across the university.

Additionally, the continued implementation of self-service options for students, faculty and staff will reduce support costs and support increased "anywhere and anytime" options.

I.3.4 Coordination

Opportunities exist to collaborate across institutions to meet the increasing demands of the post-secondary institution sector with respect to IT infrastructure, security and widely used applications. Organizations such as the Alberta Association in Higher Education for Information Technology (AAHEIT), and its evolution into a new entity hosted by Cybera and UDigit, work in conjunction with institutions to procure standard applications and manage vendor relationships. Leveraging these organizations will be critical in the coming year as vendors seek to increase costs for post-secondary institutions during the renewal process. With the increasing reliance on systems and applications, the need for secure and scalable data centres is increasing at all post-secondary institutions. The sector has opportunities to coordinate needs and procure scalable and reliable data centre capacity to meet the needs of participating institutions. Since connectivity requirements will continue to see increased growth, at an estimated doubling of required capacity every 18 months, leveraging our collaborative relationships will be a key factor for the success of our sector.