The following Motions and Documents were considered by the Board Learning and Discovery Committee at its February 25, 2013 meeting:

Agenda Title: **University of Alberta's Comprehensive Institutional Plan (2013)**

APPROVED MOTION: Subject to Ministerial approval as per the Post-Secondary Learning Act, Section 78(3), THAT the Board Learning and Discovery Committee, on the recommendation of the General Faculties Council Academic Planning Committee, recommend that the Board of Governors approve the *2013 University of Alberta Comprehensive Institutional Plan* (*CIP*), as set forth in Attachment 1, and empower Administration to make any editorial changes to the CIP, as needed, as long as the changes do not have the force of policy.

Final Recommended Amended Item: 7

Item No. 7

OUTLINE OF ISSUE

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Motion: Subject to Ministerial approval as per the Post-Secondary Learning Act, Section 78(3), THAT the Board Learning and Discovery Committee, on the recommendation of the General Faculties Council Academic Planning Committee, recommend that the Board of Governors approve the *2013 University of Alberta Comprehensive Institutional Plan* (*CIP*), as set forth in Attachment 1, ~~to take effect upon final approval~~ and empower Administration to make any editorial changes to the CIP, as needed, as long as the changes do not have the force of policy.

NOTE - BOARD MOTION:

Subject to Ministerial approval as per the *Post-Secondary Learning Act*, Section 78(3), THAT the Board of Governors, on the recommendation of the General Faculties Council Academic Planning Committee, the Board Finance and Property Committee and the Board Learning and Discovery Committee, approve the *2013 University of Alberta Comprehensive Institutional Plan* (*CIP*), as set forth in Attachment 1, to take effect upon final approval.

Item

Action Requested	☐Approval ☒Recommendation ☐Discussion/Advice ☐Information
Proposed by	Martin Ferguson-Pell, Acting Provost and Vice-President (Academic); Debra Pozega Osburn, Vice-President (University Relations); Phyllis Clark, Vice-President (Finance and Administration);) Don Hickey, Vice-President (Facilities and Operations); and Lorne Babiuk, Vice-President (Research).
Presenter	Martin Ferguson-Pell, Acting Provost and Vice-President (Academic); Lorne Babiuk, Vice-President (Research); Colleen Skidmore, Vice-Provost and Associate Vice-President (Academic).
Subject	2013 University of Alberta's Comprehensive Institutional Plan (CIP)

Details

Responsibility	Provost and Vice-President (Academic); Vice-President (University Relations); Vice-President (Research); Vice-President (Finance and Administration); and Vice-President (Facilities and Operations)
The Purpose of the Proposal is (please be specific)	Under guidelines from Advanced Education and Technology (AET), the University of Alberta has prepared the Comprehensive Institutional Plan (CIP) that incorporates the University's access plan, research plan, capital plan, and budgets into one comprehensive document. The CIP is for final approval by the Board of Governors and is then filed with the appropriate Ministries of the Provincial Government. The CIP is written in support of the University's vision and mission as outlined in *Dare to Discover* and its Academic Plan, *Dare to Deliver*. The CIP outlines the University's academic and research priorities as articulated in the Academic Chapter, which in turn drives the University's capital and resource allocation priorities.
The Impact of the Proposal is	To enable the University to move toward fulfilling its vision and mission and to authorize the Administration to allocate resources as outlined in the institutional budgets.
Replaces/Revises (eg, policies, resolutions)	CIP 2012.
Timeline/Implementation Date	Fiscal year 2013-2014.

Estimated Cost	See attached documentation for detail.
Sources of Funding	See attached documentation for detail.
Notes	The focus of the CIP for the Board Learning and Discovery Committee relates to matters within the mandate of the Committee.

Alignment/Compliance

Alignment with Guiding Documents	*Dare to Discover* and *Dare to Deliver*
Compliance with Legislation, Policy and/or Procedure Relevant to the Proposal (please quote legislation and include identifying section numbers)	1. ***Post-Secondary Learning Act* (*PSLA*)** Section 26(1) states: "Subject to the authority of the board, a general faculties council is responsible for the academic affairs of the university and, without restricting the generality of the foregoing has the authority to […] (o) make recommendations to the board with respect to affiliation with other institutions, academic planning, campus planning, a building program, the budget […] and any other matters considered by the general faculties council to be of interest to the university[.] […]" 2. ***Post-Secondary Learning Act* (*PSLA*)** Section 78 states: "**Business plans** **78(1)** Each year a board must prepare and approve a business plan that includes (a) the budget, and (b) any other information required by the Minister. **(2)** The business plan approved under subsection (1) must be submitted to the Minister on or before the date specified by the Minister. **(3)** The board may not submit a budget in which consolidated operating expense exceeds consolidated operating revenue unless the board has the approval of the Minister to do so. […] **Access plan** **78.1** Each year a board must prepare an access plan in accordance with the regulations and submit it to the Minister on or before the date specified by the Minister." 3. ***Post-Secondary Learning Act* (*PSLA*)** Section 80 states: "The board must submit to the Minister any reports or other information required by the Minister." 4. **Board Finance and Property Committee (BFPC) Terms of Reference, Section 3.c.** states that the Committee shall "[…] review and recommend to the Board the annual and other budgets and major issues of policy related to budgets[.][…]"

	5. **Board Learning and Discovery Committee (BLDC) Terms of Reference/Mandate of the Committee (Section 3)**: "Except as provided in paragraph 4 hereof and in the Board's General Committee Terms of Reference, the Committee shall, in accordance with the Committee's responsibilities with powers granted under the Post-Secondary Learning Act, monitor, evaluate, advise and make decisions on behalf of the Board with respect to matters concerning the teaching and research affairs of the University, including proposals coming from the administration and from General Faculties Council (the "GFC"), and shall consider future educational expectations and challenges to be faced by the University. The Committee shall also include any other matter delegated to the Committee by the Board. Without limiting the generality of the foregoing the Committee shall: […] f. undertake studies and review academic matters that pertain to the quality of the educational experience at the University; g. monitor educational and research trends, community expectations and demands; […] i. ensure that the academic teaching and research activities at the University are administered and undertaken in a manner consistent with the vision and mission of the University; j. consider future educational expectations and challenges to be faced by the University[.] […]" 6. **GFC Academic Planning Committee Terms of Reference/3. Mandate of the Committee**: "The Academic Planning Committee (APC) is GFC's senior committee dealing with academic, financial and planning issues. […] APC is responsible for making recommendations to GFC and/or to the Board of Governors concerning policy matters and action matters with respect to the following: **1. Planning and Priorities**: To recommend to GFC and/or the Board of Governors on planning and priorities with respect to the University's longer term academic, financial, and facilities development. […] **4. Budget Matters […]** b. To recommend to the Board of Governors on the annual budget, excluding budgets for ancillary units."

Routing (Include meeting dates)

Consultative Route (parties who have seen the proposal and in what capacity)	Board Learning and Discovery Meeting (BLDC) (briefing) – November 19, 2012; President's Executive Committee (PEC) (review of draft) – January 31, 2013; GFC Academic Planning Committee (briefing/discussion) – February 6,

	2013; Board of Governors (briefing) – February 8, 2013
Approval Route (Governance) (including meeting dates)	GFC Academic Planning Committee (for recommendation) – February 13, 2013; Board Learning and Discovery Committee (BLDC) (for recommendation on the Academic Chapter) – February 25, 2013; Board Finance and Property Committee (for recommendation) – February 26, 2012: Board of Governors (for final approval) – March 15, 2013
Final Approver	Board of Governors

Attachment:

1. 2013 Comprehensive Institutional Plan – University of Alberta

Prepared by: Andrea Smith, Senior Administrative Officer (SAO), Office of the Vice-President (University Relations), andrea.smith@ualberta.ca

2013

Comprehensive

Institutional Plan

University of Alberta

FINAL PRE-DESIGN DRAFT: February 12, 2013

Executive Summary

In periods of uncertainty and change, a bold vision for the future is essential. The University of Alberta has such a vision: to be one of the world's top public universities for the public good. This vision is tied to the future—a knowledge-based, innovation-fueled future characterized by blurred international boundaries, intensified economic competition, and urgent global challenges. Yet, this vision is also rooted in the history and traditions of the University of Alberta, especially our continued commitment to President Henry Marshall Tory's founding promise that the university will strive for the uplifting of the whole people.

The province of Alberta, too, has a vision: to forge a stable, diversified economic system defined by creative leaders and visionaries, in both the public and private sectors, who connect the province to the world at large. It seeks an educated and skilled workforce. It needs a collaborative, cutting-edge research community, and an effective, innovative health system.

As it stands at the crossroads of its future, the province of Alberta needs what the University of Alberta delivers.

High-quality of teaching, learning, and research at the University of Alberta equips students with the knowledge and tools to be active and engaged citizens, leaders, and entrepreneurs. Indeed, graduates of the University of Alberta drive innovation and change in all sectors of society. They advance Alberta throughout the world—and most of them do so from right here in the province. Seventy-seven per cent of all University of Alberta alumni stay, find employment, and create businesses in Alberta. How significant is their impact? The U of A added $12.3 billion to the provincial economy in 2009-2010 alone, according to a recent economic impact study conducted by business professors Anthony Briggs and Jennifer Jennings. That is equivalent to approximately 5 per cent of Alberta's gross domestic product.

In the last decade, boosted by strong provincial investment in capital and operating budgets, the University of Alberta's national and international reputation has consistently risen. In fact, the U of A is the only university in the province with the depth and breadth of research and teaching capacity, and reputation for excellence, to become a leader in Canada's post-secondary scene and a top public university in the world.

What does this mean for the province? The University of Alberta:

- Connects Alberta to the world and the world to Alberta, by attracting and retaining world-class talent;

- Fuels positive economic and social change, innovation, diversification, and growth in Alberta, by supplying highly-skilled, talented human capital and sophisticated, high-quality research and development capacity;

- Elevates the province's national and global profile by building top-level international partnerships and by transferring made-in-Alberta ideas and innovations to the global community and marketplace; and

- Draws attention to Alberta's strengths as its alumni have an impact throughout Alberta, across Canada, and around the world through their leadership and accomplishments.

As nations throughout the world recognize the critical need for strong educational systems in today's economy, Alberta cannot become complacent. The University of Alberta recognizes that the Government of Alberta is facing significant financial challenges due to decreasing resource revenues. Faced with these challenges, the province is striving to make decisions that will lead to economic diversification, beneficial social outcomes, and ultimately, to prosperity, in its fullest sense, for Alberta.

Countries around the world, faced with similar financial constraints, are choosing to invest in education and research. They are choosing to invest in their flagship research universities differently than other institutions in their public systems. Taking a differential approach, they are supporting and leveraging the vital role that world class research institutions play in advancing a region's economy and enhancing its competiveness. They recognize graduate students' critical role in creating a vibrant economic ecosystem and are meeting the unique costs associated with supporting internationally competitive research environments.

Alberta can do the same. The opportunity now exists to realign the current financial model so that the University of Alberta can continue to build on existing areas of excellence, further enhance the province's profile, attract higher levels of funding from external partners, and most importantly, allow the provincial government to reap the benefits of a growing and diversified economy and Alberta's enhanced international competitiveness.

If the province chooses not to advance in this direction, and does not significantly change the current funding model, the University of Alberta will have to make significant decisions to manage an inevitable shrinking of the academy. The university will not continue with across the board re-allocations which have now begun to impact the viability of the entire organization. Instead, the university will take major steps to strategically re-align its operations to reflect new financial realities, and invest in its strategic strengths going forward.

We have already begun to envision the U of A of the future. Our aim is to be visionary and strategic, to keep pace with trends now underway in the world's most highly regarded and forwarding thinking institutions, and to think boldly about new ways we can build on our strengths and enhance our reputation for excellence in quality in both teaching and research.

Environmental Scan: Setting the Stage

In order to be competitive within an increasingly interconnected world, Alberta must attract and develop top talent: innovative leaders and visionaries in both the public and private sectors who can engage with the best in the world to advance the province as a global leader. Alberta needs to attract and nurture people with the skills and capacities to build an energetic, innovative and entrepreneurial society, characterized by a thriving creative culture. As Alberta's 2012 Strategic Plan states, "education and innovation will be the key to how Alberta grows and changes to meet the challenges of a rapidly developing world. We will need an educated, skilled workforce and a collaborative, cutting edge research community to develop the resources we are fortunate to have, as well as to diversify into new and exciting industries."

Alberta is home to enviable natural resource wealth. Its economy has fared better than most during the recent years of global economic turndown. However, like many regions throughout the world, the province now faces difficult choices, as a result of a slower-than-anticipated global economic recovery and correspondingly low resource revenues. The path towards greater economy stability for the province will be paved by talent, new knowledge, and innovation, leading to a forward-looking, vibrant, and diverse economic ecosystem. A strong commitment to consistent, adequate, long-term funding for post-secondary education and innovation is essential to reaching that goal and securing Albertans' prosperity long into the future.

As the province's flagship institution, the University of Alberta is strategically positioned to be the province's key partner in achieving the goal of a diversified, knowledge-driven next generation economy. With its established and growing international reputation for excellence in research and teaching, the University of Alberta attracts and develops talent that will help to fulfill the province's future potential for economic and social leadership and prosperity.

The University of Alberta graduates more than 9,300 students per year, many in high-demand areas such as engineering and health services, two areas recently identified as having skilled labour shortages in Canada. With the knowledge and skills gained through intensive study, hands-on learning, and immersion in cutting-edge research, University of Alberta graduates add benefits to their communities that accumulate for decades. Each graduate brings advanced expertise and leadership to various sectors of the economy and society, resulting in greater health and wellness, improved educational outcomes, and enriched cultural organizations, as well as new businesses and community organizations, innovations in existing enterprises and public policy, and expanded international engagement and investment.

The long-term benefits of investments in post-secondary education are indisputable. However, in order to keep—and advance—Alberta's global position, the risks to the province's competitiveness and productivity must be addressed:

1. Low levels of participation in post-secondary education among 18–24-year-olds.
2. Lower than average levels of Aboriginal and rural population participation rates in post-secondary education, a risk compounded by the fact that the fastest growing segment of Alberta's population is Aboriginal.
3. Low completion rate of bachelor's degrees.
4. An aging population leading to a decline of skilled labour in the workforce.
5. Low numbers of international students being attracted to Alberta.

To help the province ameliorate these challenges, the University of Alberta has developed several strategies and initiatives to build much needed human capital. These begin with the recruitment and retention of high calibre individuals—undergraduate and graduate students, post-doctoral fellows, professors and staff—including increasing numbers from other countries, rural areas, and Aboriginal communities.

Human capital in the 21st century is highly mobile: people move from one province or country to another to live and work, transferring knowledge between geographical regions and developing new ideas, innovations, and solutions in the process. If Alberta effectively leverages these people connections to create knowledge transfer, it will increase competitiveness, secure economic prosperity,

and advance Alberta's position in the global economy.

Attracting international students, educating graduate students, and nurturing the early careers of post-doctoral fellows are three essential strategies for building research, innovation, and highly-skilled labour in a knowledge-based economy. The economic impact of international students alone should not be underestimated. According to a report from Statistics Canada published in 2012, international students spent more than $8 billion on educational services in Canada in 2010 alone; Alberta's share of that revenue was almost $487 million. Graduate students and post-doctoral fellows are indispensable to the advancement of research and innovation, providing the highly-skilled labour needed to power vibrant research teams and clusters. In addition, a rich, diverse graduate education learning environment becomes a magnet for attracting more talent, further research funding and new partnerships; undergraduates also benefit from this idea-rich creative learning experience.

Within Alberta's efficient six sector model, the U of A and the other comprehensive academic and research institutions (CARIs) are the key to sustaining and improving Alberta's global competitiveness through graduate education and research. Institutions in the province's other five post-secondary sectors also meet important provincial aims for providing broad access and diverse educational options to students of varying needs, backgrounds, locations, and skills. This differentiation of roles within Campus Alberta's six-sector model reflects a growing trend in post-secondary systems throughout the world.
Many nations are aligning their resources to better compete within the global marketplace. Despite the economic downturn of 2008, and continued economic turbulence worldwide, these countries have continued to invest in education, research and development and innovation at the heart of their political agendas. An essential part of the investment plan has been to differentiate sectors within national post-secondary education systems and, further, to designate a small percentage of the institutions within that system to become the centres of research and education excellence needed to attract talent and funding and to excel on the global stage.

China, for example, has targeted a comparatively small group of about 39 institutions as "lead" institutions within its large system. These institutions have more graduate students than undergraduate students and receive funding from both the national and local governments in recognition of the high cost of competing on the world stage. These costs include competing for the best researchers, funding the high cost of major research (including facilities, equipment and technicians), and building essential infrastructure such as libraries. With this focused, differentiated support, these "lead" institutions have rapidly grown in research excellence, attracting some of the top talent from within China and around the world.

Aside from strategic investments in education, research and development, nations worldwide also are aggressively pursuing international collaborations that allow them to leverage their own strengths in partnerships with centres of excellence elsewhere. These investments and linkages will increase by necessity as competition in the global arena comes from both traditional and new, emerging economic powerhouses.

At the University of Alberta, the overall aim of such partnerships is to facilitate research and teaching with international impact and influence, and showcase our capacity to be leaders in the search for solutions to global challenges. Alberta needs and deserves the benefits that a globally recognized institution brings to its citizens, who move internationally, and its industries, which engage globally. Alberta's ability to capitalize on strategic opportunities, find effective solutions to issues of provincial

interest, and provide leadership in areas of international importance is directly linked to this university's ability to attract the world's best, to partner with global innovators and to engage at the highest levels on the international stage.

A global university is not just a competitor on the international stage. It is a contributor to, and a leader in, the global community. The most critical risks and challenges in the world today —such as climate change, resource scarcity, food security, disease, and armed conflict—are not confined within national borders and cannot be addressed by individual nations. The solutions to these challenges require collective, international efforts across economic, political, academic, and business sectors. Alberta and the University of Alberta are in a position to lead—especially in areas such as energy, water, food security, and health. Now is the time to invest in the talent, knowledge and innovation—for the benefit of Alberta, Canada, and the world.

The Academy

The University of Alberta will continue to invest in ways that are aligned with its mandate and position as the province's flagship university. These investments are guided by two principles. The first is the U of A's commitment to excellence in the people that define its academy and in the environment and opportunities we provide them to conduct the highest quality learning, teaching, innovation, discovery, and creative activities. The second is our commitment to growing and developing that excellence, impact, influence, and leadership in areas that span all domains of human inquiry.

These principles direct strategies for advancing on the U of A's academic priorities:

- Achieving the balance of high quality professors, post-doctoral trainees, graduate students and undergraduate students within the academy that facilitates exceptional learning, teaching, discovery, and creative activities;
- Producing graduates and trainees who are prepared to think critically, to assume positions of leadership in public and private sectors, to act entrepreneurially, to create cultural and technical innovation, and to be successful in the global marketplace;
- Providing secure information and communications technology infrastructure and systems that support research, creative activities, and digital learning technologies and pedagogies to enhance the on-campus, in-class experience and online learning environments.
- Serving as a valued and innovative leader and partner of other post-secondary institutions as a CARI member of the six sector Campus Alberta and across Canada in achieving shared academic and organizational aspirations;
- Forming international collaborations that amplify the quality and impact of its teaching and learning, knowledge advancement, innovation, and global citizenship;
- Being among the top public institutions that are internationally recognized for areas of excellence and impact across the breadth of discovery, innovation, and creative activities.

Undergraduate student retention, experience and success continue to drive our approach to addressing these priorities. The University of Alberta is also engaged in an academy-wide transformation of graduate student education and experience. The purpose of this renewal is to ensure that recruitment, programming, financial support, co-curricular and professional development opportunities, and

organizational structures are optimal for attracting, retaining and graduating internationally-competitive Canadian and international scholarship-level students.

The University of Alberta's programming will continue its emphasis on quality and on integration with its research, innovation, and creative activities both within its five campuses and through 'hands on' learning opportunities with community, public, and private sector partners. There will be continued investment in programs, degrees and certificates that increase cross-cultural, and global readiness skills, study abroad programs, joint degrees with top-tier foreign institutions, and international industrial placement programs. New strategies and investments have been initiated to advance both the development and the use of innovative e-learning capabilities for teaching and learning. The U of A will also continue to develop collaborative and articulation programming, to ensure a flexible and diverse array of educational opportunities for undergraduate students.

The U of A will also continue to invest in academic programing for entrepreneurship, increasing its six existing entrepreneurship programs to include a new one targeted at graduate students and post-doctoral fellows across the STEM disciplines. These programs leverage the U of A's applied research centre on technological entrepreneurship and commercialization planning and assessment; student-centred venture catalyst competitions; entrepreneurship workshops for graduate students and post-doctoral fellows; and industry collaboration programs through TEC Edmonton and other partners.

Like other top public research institutions in North America, the U of A continues to place a high institutional priority on international engagement and activities that amplify the quality and impact of its teaching and learning, knowledge advancement, innovation, and global citizenship. The University of Alberta's internationalization strategy permeates the entire academic enterprise and includes strategies and investments to enhance international undergraduate and graduate student recruitment, retention, and success; to develop cross cultural, global readiness teaching and learning programs and research capacity; to create study abroad and international internship opportunities for Alberta students; to pursue international research consortia and partnerships that can also be leveraged to create distinctive learning and teaching opportunities; and to join international efforts to address complex scientific questions and to develop solutions to current and future challenges.

Outcomes of this strategy include increased foreign research revenue; international projects that connect Alberta and Canadian companies with foreign jurisdictions and potential partners; increased number of joint degree and shared credential programs with top foreign universities; and foreign internship opportunities for Alberta students. These outcomes have emerged from the U of A's long and careful cultivation of its international name recognition as a university with the kind of research, teaching, and learning capacity that interests the top institutions in China, Germany, Brazil, and India. The U of A will continue to pursue carefully selected international initiatives that advance the broadest range of its institutional objectives and contribute to its continued success within the new global environment.

In keeping with a public university of its size, stature and mandate, the U of A engages in research and creative activities across all domains of human endeavour. Advances, insights, and impact increasingly span traditional disciplinary units and boundaries. For this reason, the University of Alberta will continue to sustain and develop areas of excellence and impact within each of the following broad themes: *Humanities and Fine Arts; Social Structures and Systems; Science and Technology; Energy; Environment; Food and Bioresources;* and *Health and Wellness.* The U of A evaluates its impact through benchmark comparison with highly-regarded Canadian and U.S. public research institutions, and through the

contributions our professoriate makes to national and international consultations on policy, legislation, and culture. Our continued commitment to this full spectrum of inquiry positions the U of A to make the comprehensive, cross-disciplinary contributions towards the scientific, social and cultural innovations needed to support Alberta's key objectives and outcomes for its citizens: effective resource and environmental management, a broadened economic base, and resilient and healthy individuals and communities.

Capital Plan

Over the past ten years, the University of Alberta has undergone tremendous growth. Total student enrolment has increased 20 per cent, fulfilling access goals of both the province and the university. Graduate student enrolment has nearly doubled. During the same period, there has been a concomitant increase in research productivity and international profile and reputation.

In the competitive world of post-secondary education, the U of A must strive to provide consistent, high-quality learning experiences and infrastructure that attracts, retains, and engages outstanding faculty, staff, and students. As the university changes, so must its space needs and requirements. The university has leveraged significant and continued capital funding by proactive planning for the construction of new learning and discovery spaces and the advancement of much needed reduction in deferred maintenance. The university's ability to quickly respond to funding opportunities and partnerships as they arise is only made possible by actively engaging in planning and design activities that anticipate future needs.

Continued investment for renewal and repurposing, deferred maintenance, and new facilities remains key to the university's ability to meet its own and the province's objectives. With the recent completion of large-scale, capital projects, the university now has the opportunity to sustainably maintain, and where appropriate, repurpose aging assets and infrastructure as new funding is made available. As areas and buildings are vacated by programs relocating to newly constructed buildings, smart, forward-thinking planning requires that the university look beyond simple renewal and explore repurposing opportunities. By coupling renewal and backfill projects, the U of A provides a best-value model for creating projects that look toward future operational and academic needs at a reduced capital cost. However, strategic investment in new infrastructure and buildings still remains vital in maintaining the delivery of first-in-class academic programs. To that end, wherever possible, the university will seek opportunities to leverage existing funding, utilize the equity in its current physical assets, and explore various partnerships and project delivery models.

As in previous years, the following Capital Plan endeavours to take a balanced approach in identifying planning, engineering, and/or construction needs. Going forward, the following five strategic focus areas guide the university's capital planning efforts:

- Ensure that we continue to maintain the condition and functionality of the university's physical assets, which play a critical role in our ability to attract, support, and retain the best students, faculty, and staff;

- Couple backfill requirements with renewal projects to provide a best-value model for capital projects that meets the pedagogical needs of tomorrow's learners and the requirements of researchers in a more cost effective manner while positively enhancing utilization of our space;

- Fund pre-design services for strategic institutional capital priorities, creating an inventory of projects that can respond to future funding opportunities and be readily implemented through a variety of project delivery models;

- Provide purpose-built, supportive student housing for up to 25 per cent of full-time enrolment to keep pace with U15 peers, enhance completion rates, and ensure accessibility for rural and under-represented Albertan students as well as international students; and

- Strategically plan and construct critical new facilities, respecting the varied needs of the university's five campuses as they each serve unique and separate constituencies within Alberta.

Institutional Budget

As are most post-secondary institutions across North America, the University of Alberta is faced with significant financial challenges. Although the university has received critically important financial support from the provincial government through modest increases to the Campus Alberta Grant, these increases, combined with restrictions on tuition revenue, and the new economic reality of low interest rates, have resulted in general revenues increasing at a slower rate than general operating expenditures.

The current Campus Alberta grant funding model does not fully account for the costs that a research-intensive university of U of A's capacity incurs, most notably the investments required to undertake world leading research and provide leadership in graduate education, while sustaining access to an outstanding undergraduate student experience. As the Government of Alberta moves through its transition to results-based budgeting, the university will also be embarking on a strategic transformation, ensuring that the institution is able to maximize its resources to deliver the outcomes required by the province.

Consolidated Budget

Prepared under Canadian Generally Accepted Accounting Principles (GAAP), the University of Alberta's 2013-14 consolidated budget reflects the entire enterprise of unrestricted and restricted funds. This includes general operations, ancillary operations, research activities and capital projects. General and ancillary operations are considered un-restricted within the consolidated budget versus research and capital projects which are considered restricted. The difference between unrestricted and restricted funds, is the degree of university control over the use of the funds. All unrestricted funds fall fully within the authority of the Board while restricted funds form part of the consolidated budget but can only be used for the purposes for which funding has been received, primarily research activity and capital construction.

For 2013-14, the budget reflects a shortfall of revenue over expense of $18 million, or 1.0 percent of the university's budgeted consolidated revenue. This includes a 1.5 percent budget re-allocation, which

will be applied across the institution for 2013-14. There are three major factors driving this shortfall. The first is the impact of the amortization expense of capital in the unrestricted operating fund. As the university continues to capitalize its new buildings, the associated expense will continue to increase. Although transfers are made to offset the capital expense, the net impact remains where capital expense is higher than the capital transfers driving some of the consolidated deficiency. The second factor is the treatment of endowment income under the new public sector accounting standards. Previously, the University budgeted endowment income based on unrealized gains or losses. Under the new standards, the University can only budget actual revenue not including unrealized gains. For 2013-14 this has resulted in a reduction in budgeted revenue of approximately $10 million. At the same time, the University uses an agreed to formula for the calculation of the endowment payout which is based on forecast market returns, protection of the capital and administrative costs. The net affect under the new standards is that the budgeted revenue is less than the calculated endowment payout adding to the deficiency. Without this accounting adjustment the deficiency would be $8 million dollars. The other primary factor, and one of greater concern is a structural deficit in the operating fund, driven by general expenditures that are increasing more rapidly than the university's unrestricted revenue.

If the university were to fully balance its 2013-14 consolidated budget, the university would require a budget cut across the institution of approximately 4 per cent in addition to the 1.5 per cent budget re-allocation already factored into the operating fund. The university is acutely aware that this budget deficiency is not sustainable and has initiated the necessary steps to bring the operating fund into balance which will then carry over into the consolidated budget. However, to avoid the profound impact on the teaching and research environment of immediately reducing operating expenditures, the university will take a balanced approach that is financially responsible while reflecting the ongoing commitment to invest in areas of academic excellence and of strategic priority to the university and the province. The university is finalizing a detailed plan that will identify realistic revenue enhancements and a series of structural changes that will enable the university to bring is budget into balance. The role of government in enabling the university to achieve its plan will be critical.

Key highlights of the university's revenue assumptions include:

- a two per cent increase to the base Campus Alberta Grant
- modest decline in federal research funding from 2012-13
- 2.15 per cent increase to credit tuition fees and 1.92 per cent increase to mandatory non-instructional fees
- continued phased approach to full implementation of market modifier tuition
- continuation of the non-permanent Common Student Space, Sustainability and Services (CoSSS) fee
- marginal growth in investment income and modest growth in endowment income due to market conditions
- continuation of the IMP grant at current levels of $22 million per year

On the expenditure side, the university's staff agreements extend to 2014-2015 with a negotiated across-the-board increase of 1.65 per cent in each of 2013-2014 and 2014-2015. Both statutory and non-statutory benefits are increasing with non-statutory benefits increasing between 3.5 and 15 per cent. All other expenditures are increasing at the range of 2 to 4 per cent.

Key highlights of the University's expenditure assumptions include:

- growth in salaries and benefits driven by salary settlements (1.65 per cent ATB and 2.1 per cent merit)
- benefit cost increases ranging from 3.5 to 15 per cent
- a 1.5 per cent re-allocation in the operating budget
- relatively stable utility expenditures
- modest growth in scholarships
- all other expenditures stable or marginally reduced

The budget challenges that lie before the university are substantive, but so are the opportunities. With a balanced approach, support from the provincial government, a clearly defined plan and realistic expectations, the university will generate the necessary new revenues, will implement the required structural changes, and will bring the university's consolidated budget into balance going forward.

Resource and Risk Implications

Even as it navigates the current financial storm, the province of Alberta must make strategic, long-term, visionary decisions on how best to support and leverage its flagship university to achieve provincial aspirations. The University of Alberta shares the province's bold vision for a future that is powered by innovation and ingenuity; indeed, the university will be critical to the province's success, and the university looks forward to working with government to advance provincial priorities.

Driven by *Dare to Discover*, the university has identified a series of resource gaps, outlined in the Resources and Risk Implications chapter, that are linked to its responsibility in providing comprehensive and diverse educational choices that prepare Albertans for citizenship in the world and address Alberta's need for undergraduate and graduate alumni who will contribute to the economic, social and cultural prosperity of tomorrow. These gaps have been identified in a context where the university continues to implement strategies to maximize the use of its existing resources. Addressing these resource gaps will facilitate connection to international communities, enable the U of A to undertake world leading research and create innovative research agreements that will link researchers, graduate and undergraduate students, international foundations, industry and government. These resource needs assume the government's commitment to provide 2 percent increases to the Campus Alberta grant in both 2013-14 and 2014-15. Resource gaps include investment in the University of Alberta as the province's flagship university, enhancing internationalization, supporting digital learning and information technology, investing in capital infrastructure, and restoring payments from the Access

to the Future Fund.

Risk Implications

Like all internationally competitive research-intensive universities, the University of Alberta must deal with a variety of risks that have the potential to hinder its growth and the realization of its vision, mission, and strategic objectives. Many of these risks have been identified throughout this document.

1. The substantive and continuing economic uncertainty, low interest rates, concerns over rising costs of education, government deficits, and a budget model where expenditures are increasing more rapidly than revenue present the university with a series of fundamental budget risks.

2. Enrolment growth must be managed from the perspective of meeting the labour demands of the province and supporting the research mandate of the university. This will require the university striking the right balance of undergraduate to graduate students to position the university as an internationally competitive research-intensive institution.

3. Without the appropriate number of leaders, teachers, researchers, and support staff contributing to their full potential, the university will not be able to provide the quality of the learning experience or participate in world leading research expected of an internationally competitive research university.

4. For the university to remain relevant to its students and meet the needs and expectations of its faculty to engage in the highest calibre research, it requires continuous investment in leading-edge IT infrastructure, highly skilled personnel, and support.

5. The continuation of appropriate levels of Infrastructure Maintenance Program funding to avoid a return to increasing levels of deferred maintenance is vital. In addition, limited or no funding of capital for new, expansion, and/or renewal projects will impact the capacity of the university to meet the strategic goals of the institution and negatively impact the economic goals of the province.

6. An institution that aspires to be among the top research-intensive universities in the world can only achieve that goal through the establishment of strategic collaborations and partnerships with an extensive range of stakeholders. The university requires access to and flexibility in funding that would enable it to leverage tens of millions of research dollars from provincial, national, and international sources.

7. In moving towards the vision of being one of the world's great public universities, the University of Alberta's national and international profile will increase. The university must address the current economic and financial challenges it faces in such a way that it does not negatively impact its increasing national and international reputation for an exceptional place to learn and work.

8. While the university must assume risks in support of its mandate as an internationally recognized research-intensive institution, it must also promote appropriate risk management

plans and strategies that develop responsive attitudes and behaviors at all levels of the organization in order to maintain a healthy and safe environment for all.

Through its integrated enterprise risk management framework, the university will monitor, manage, and mitigate these and other emerging risks in an effort to avoid substantial impact on the university's ability to fulfill its strategic objectives.

Environmental Scan

Introduction

Alberta is at a crossroads. During this transformational period, provincial leadership must make tough and visionary decisions to guide Alberta through these economically uncertain times—decisions that will shape our collective future. The University of Alberta will be a critical partner in achieving that future. The University of Alberta, as the province's leading research-intensive post-secondary institution, is a cornerstone to Alberta's success. It is also a gateway through which Albertans and Alberta industry can access the world and, in turn, a key entry point for global talent and innovation to come to Alberta. In fact, global companies are attracted to Alberta by the research and innovation partnering opportunities presented by the university. With every innovation, every discovery, every global partnership formed, every alumnus working in the international market, the University of Alberta is advancing the global Alberta brand.

Many countries have recognized the imperative for investment in education and innovation. These countries are competing with Alberta and simply maintaining the status quo here at home will mean falling far behind on the global stage. In order to ensure economic stability and advance growth, Alberta must develop top talent, skilled leaders, and thinkers who will build an energetic, innovative, entrepreneurial, and competitive society. Consistent, adequate, long-term funding for post-secondary education and innovation, specifically with strong support for the flagship institution, is essential to securing Albertans' prosperity long into the future. As Alberta's *2012 Strategic Plan* states: "education and innovation will be the key to how Alberta grows and changes to meet the challenges of a rapidly developing world. We will need an educated, skilled workforce and a collaborative, cutting edge research community to develop the resources we are fortunate to have, as well as to diversify into new and exciting industries."

The Alberta Environment

In 2011, Premier Alison Redford signaled that education would be a priority to her government, saying in her State of Alberta address that "[k]eeping Alberta strong involves investing in our engine of innovation – people. World-class output requires world-class input. Our economy depends on intelligent, capable and productive people." She noted the need for outstanding post-secondary institutions. She reiterated these arguments in her June 4, 2012 mandate letter to the new cabinet, stating that education and entrepreneurship "are the cornerstones of a dynamic economy." Then, in spite of the difficulties caused by the economic situation, Premier Redford reaffirmed her commitment in her January 2013 address to the province, where she said the government will continue to provide the services of education and healthcare that Albertans have identified as their priorities. It is significant that the premier made the ministry responsible for higher education in the province also responsible for enterprise. This new structure clearly recognizes the importance of the strong links between higher education and private industry as well as the impact that higher education has on the province's current and future economy.

The University of Alberta lies at the heart of Alberta's knowledge and innovation enterprise. It graduates more than 9,300 students per year, many of them ready to enter high-demand areas such as engineering and health services, two areas recently identified as having skilled-labour shortages in

Canada. With an undergraduate or graduate degree in hand, a University of Alberta graduate adds benefits to his or her community that will accumulate for decades. Each one brings advanced expertise, leadership and innovation to various sectors of the economy and society, resulting in greater health and wellness, improved educational outcomes, and enriched cultural organizations, as well as new businesses and community organizations, innovations in existing enterprises and public policy, and expanded international engagement and investment.

The impact that the University of Alberta has had—and continues to have—on the province is difficult to quantify. However, in September 2012, the University of Alberta released a study of the economic impact that the university and its alumni have on the province. That document revealed that the university is one of the largest drivers of the provincial economy, with an economic impact of $12.3 billion in the fiscal year 2009/10 alone (approximately five per cent of Alberta's 2009/10 Gross domestic product (GDP)). The study also showed that research at the U of A has a larger effect on the provincial economy than the study's comparator universities have on their respective provincial economies. U of A research over the last 30 years was estimated to have an indirect annual impact of $5.7 billion, higher than that of University of British Columbia ($5 billion).

Demographic Risks

The long-term benefits of investments in post-secondary education generally, and in the University of Alberta particularly, are indisputable. However, in order to keep—and advance—our global position, the following risks to the province's competitiveness and productivity need to be addressed head on:

- Low levels of participation in post-secondary education among 18–24-year-olds.
- Low numbers of international students being attracted to Alberta.
- Low number of students participating in graduate and post-doctoral studies.
- Lower levels of Aboriginal population participation rates in post-secondary education.
- An aging population leading to a decline of skilled labour in the workforce.

According to the Organisation for Economic Cooperation and Development (OECD), Alberta's 15-year-olds consistently score among the best in the world in math, science, and reading, and yet, Alberta has one of the highest high school drop-out rates and the lowest post-secondary participation rates in Canada. According to the *Campus Alberta Planning Resource 2012,* the post-secondary participation rate of Albertans aged 18–34 was 17.5 per cent in 2011, compared to 26.8 per cent in Quebec, 24.8 per cent in Ontario, and 24.5 per cent in British Columbia. The Canadian average was 23.8 per cent.

Beyond that, there are comparatively low numbers of master's and PhD students enrolled in Alberta. According to data from the Association of Universities and Colleges in Canada and Statistics Canada, 2011 fulltime graduate student enrolment per thousand of population in Alberta was at 3.3, compared to 3.9 in Ontario, 4.4 in British Columbia and 5.4 in Quebec.

One of the few populations in Alberta that continues to grow is the Aboriginal population, but Aboriginal post-secondary participation lags behind the wider Alberta population's participation rates. Statistics Canada projects that, by 2017, Alberta will have the second-largest Aboriginal population in Canada, with a large cohort entering the workforce. It is therefore necessary to ensure greater Aboriginal rates of participation in post-secondary education, particularly at the university level. The University of

Alberta has several initiatives for the recruitment of Alberta's Aboriginal students and will keep seeking ways to increase enrolments from those important populations.

In addition to the demographic risks associated with younger populations, the *Campus Alberta Planning Resource 2012* also highlights that "the aging population, and a higher percentage of retirement-age Albertans, will mean fewer Albertans able to participate in the workforce."

Clearly, the University of Alberta, along with Campus Alberta partners, has a large role to play in mitigating the demographic risks currently facing the province by attracting, retaining, and preparing talented students from all backgrounds for leadership and success in tomorrow's workforce.

International Students

The attraction of international students will provide one part of the answer to the province's need for human capital for research, innovation, and highly-skilled labour in a dynamic economy. The very presence of international students also has a beneficial effect on the economy which should not be underestimated. According to a report from Statistics Canada published in 2012, international students spent more than $8 billion on educational services in Canada in 2010 alone; Alberta's share of that revenue was almost $487 million.

Currently, international students and faculty members are studying and teaching in universities throughout Alberta, but as mentioned above, recruiting and retaining more of these highly-skilled individuals will be critical to realizing the immediate and long-term economic aspirations of the province. In 2011-12, international students accounted for 11 per cent of undergraduate students, 25 per cent of master's students and 40 per cent of doctoral students at the University of Alberta. Having come here for education, many students decide to stay: 60 per cent of Alberta's international students have stated that they will look for work in the province after completing their studies.

According to UNESCO, Canada currently attracts only 2.7 per cent of the 3.6 million students studying abroad, with the United States attracting the lion's share at 19 per cent. Unsurprisingly, China and India are the top two source countries. The *Campus Alberta Planning Resource 2012* shows that, among Alberta institutions, the University of Alberta consistently attracted the largest number of international students in 2010-2011, with that number significantly increasing over a three year period. However, Citizenship and Immigration Canada put that in context, noting that Alberta attracted only five per cent of all international students entering Canada in 2011. This is the fourth highest number in Canada, below Ontario (42 per cent), British Columbia (30 per cent) and Quebec (15 per cent).

The Government of Canada has recognized the critical need to attract more of the world's best and brightest and, in 2012, convened the Advisory Panel on Canada's International Education Strategy. The panel determined that Canada should accept double the number of international students—at both undergraduate and graduate level. The panel also recommended that Canada strengthen its educational brand and expand its global marketing campaign. As it continues to reach out to international students and international research partners, the University of Alberta is strategically improving its global brand and by extension Alberta and Canada's global brands.

Graduate Students and Post-Doctoral Fellows

With the changing demographics of Alberta's population and workforce, the attraction and support of graduate students and post-doctoral fellows will be important. Graduate students and post-doctoral fellows are engines of leadership in business, academia and government in Alberta, Canada and the world. These talented people are highly motivated to seek environments that provide the resources they need to make discoveries and innovations, to build businesses and, ultimately, have the strongest impact possible on the world. Graduate students and post-doctoral fellows are indispensable to the advancement of research and innovation in the province, providing the highly-skilled labour needed to power vibrant research teams and clusters. In addition, a rich, diverse graduate education learning environment acts as a magnet for attracting more talent, further research funding, and new partnerships; undergraduates also benefit from learning in this idea-rich creative environment.

To meet the province's needs, the University of Alberta aims to define itself by the quality and strength of its graduate education. This will involve increasing the number of domestic and international graduate students and post-doctoral fellows to globally competitive levels, and will require the maintenance of a top-quality environment including the addition of professors to supervise, train and engage these young global leaders. Facilities now geared to undergraduates will also have to be adapted for specific graduate and post-doctoral fellow use.

Fostering and sustaining a strong pattern of students participating in graduate studies will help stimulate the creation of a knowledge-driven economy in Alberta. Through their long-standing and powerful global networks, these individuals create informal and formal connections that cross borders. If Alberta effectively leverages these people connections to create knowledge transfer, it will increase competitiveness, secure economic prosperity, and advance Alberta's position in the global economy.

Campus Alberta

The differentiation of roles within Campus Alberta's six-sector model is vital to the realization of this vision. As the province's lead comprehensive academic and research institution (CARI), the University of Alberta is the key to sustaining and improving Alberta's global competitiveness, precisely through continued expansion of graduate education and research, and the forging of national and international partnerships. Institutions in the other five sectors also fill important provincial post-secondary aims for providing broad access and diverse educational options to students of varying needs, backgrounds, locations, and skills.

Through several initiatives, the University of Alberta has leveraged government investment in our institution to the benefit of others within the Campus Alberta system. The university plays a leading role in creating and facilitating academic and administrative collaboration with partner institutions; it works together to create opportunities for Aboriginal students and students in rural and remote areas; shares academic and administrative resources and best practices in a cost-effective manner which contributes to system-wide efficiencies; and leveraged economies of scale. Investment in the University of Alberta demonstratively benefits all of Campus Alberta.

As the results-based budgeting process progresses, there will be an opportunity to enhance the Campus Alberta funding model, with clear recognition and support of the important role played by the CARIs, and in particular, the leadership role played by the University of Alberta.

Tightening Budgetary Environment

In answer to growing budgetary pressures and Albertans' desire for clear results from government spending, the Government of Alberta enacted the *Results-Based Budgeting Act* in February 2012. This act began a process wherein government departments and programs are being reviewed to seek efficiencies and identify measurable outcomes. As Minister Doug Horner articulated in his November 12, 2012 *Results-Based Budgeting: Report to Albertans*, the three year review is "focused on finding efficiencies, identifying areas for improvement and ensuring our work is effective and delivers results." Minister Horner identified education as one of the chief priorities in this process, noting that "Albertans have told us they want us to deliver results in priority areas—including health care, education, growing our economy, providing supports for seniors and vulnerable Albertans, and investing in our communities." In discussing revenue shortfalls and budget solutions, Premier Redford told reporters on January 14, 2013 that the current fiscal situation may hasten the results-based review process.

Moving forward in the midst of tough economic times, the decisions made by the province will require important decisions on the part of the University of Alberta regarding how best to fulfill its mandate. The adoption of results-based budgeting presents the province with a brilliant opportunity to evaluate the current post-secondary education and innovation funding model and make the changes necessary for the province and its flagship university to play a significant role on the world stage.

The Canadian Environment

Similar to the province, the federal government is also in the midst of ongoing plans to reduce departmental spending in order to balance its budget over the medium term. To locate savings, a subcommittee chaired by Treasury Board President Tony Clement asked all departments to examine five per cent or ten per cent spending reductions, with the results announced in Budget 2012: $5.2 billion in savings. The full impact of these funding reductions on departments and agencies of importance to the University of Alberta, some of which are detailed below, have yet to be fully assessed and will continue to be monitored over the coming year and beyond.

The 2012 federal budget provided additional funding to existing research programs, including the three main research granting councils, Canada Foundation for Innovation, and the National Research Council. These investments support the federal government's objective of continuing to lead the G7 in research and innovation funding. The House of Commons Standing Committee on Finance published its pre-budget recommendations in December 2012, which recommended a continuation of this trend in Budget 2013.

Tri-Council Funding

Allocations for the Tri-Council funding (consisting of the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council of Canada, and the Social Sciences and Humanities Research Council) have been increasingly focused on federal priorities. The 2009 federal budget allocated $17.5 million for the Social Sciences and Humanities Research Council but required the funds to be used only for business-related projects. The 2012 federal budget also provided $37 million to Tri-Council agencies but mandated that these funds be used for academic-industry partnerships. The

funding of governmental priorities creates a gap in fundamental enquiry-based research funding. Fundamental research, longer term in in nature, is necessary and is often the foundation for later, outcome-related, projects. These funding trends, combined with the impact of federal budget restraint on the agencies, have created resource challenges for the University of Alberta that should be factored into the provincial planning process.

Canada Foundation for Innovation

The goal of the Canada Foundation for Innovation is to ensure that Canada's scientific and innovation infrastructure is on par with the rest of the world, while also providing mechanisms for forging meaningful industry-university partnerships. CFI-supported facilities are among Canada's key knowledge exchange venues where discovery research is linked with sector challenges so that resulting innovations occur faster and more effectively. Ideally, the government will continue its commitment to keeping Canada's research facilities among the best in the world with appropriate funding not only for new facilities but also their maintenance and renewal. In Budget 2012, the Government of Canada included a commitment for the Canada Foundation for Innovation to receive an additional $500 million over five years starting in 2014.

Maintaining and renewing research and teaching infrastructure, from buildings to equipment, from libraries to information technology, is an ongoing challenge for the University of Alberta. While the recent budgetary allocation for the Canadian Foundation for Innovation is welcome, federal funding for advanced research infrastructure has not kept pace with demand, creating a backlog of valuable projects in need of support. In addition, the Natural Sciences and Engineering Council has cancelled several equipment-related funding streams, leaving critical gaps that threaten the viability of current research projects.

Industry-Academic Partnerships

The federal government strives to encourage business investment in research and development. In October 2010, an expert panel was tasked with evaluating federal research and development programs with a business innovation focus. The review, completed 12 months later, recommended substantial changes to the federal business research and development landscape, including the creation of new agencies and coordinating mechanisms and a shift in emphasis away from tax incentives in favour of direct program funding. The panel's report, entitled *Innovation Canada: A Call to Action*, also urged greater attention to gaps in Canada's innovation ecosystem, such as the lack of large-scale public procurement measures, limited collaborations between business, academia, and government, as well as Canada's impoverished supply of venture capital. The final report concluded by recommending that the federal government should work with the provinces to stimulate and advance the innovation agenda.

The 2012 federal budget reflected the panel's advice and provided funding for research and development by small and medium-sized companies, promoted linkages and collaborations, and refocused the National Research Council on helping Canadian businesses develop innovative products and services.

An increasing emphasis has been placed on commercialization and industry-oriented research. As Minister of Finance Jim Flaherty stated in an address in September 2011: "In recent years, the Government has emphasized the need to more closely link publicly funded research to business needs

and to obtain greater economic and social value from federal funding for research." In remarks to the annual Research Money conference in March of 2012, Minister of State (Science and Technology) Gary Goodyear spoke to this theme as well: "We also need to improve our ability to commercialize research into products and processes that create high-value jobs and economic growth."

Given the federal government's considerable interest in academic-industry partnerships, the University of Alberta's level of success with these types of collaborative projects is a key strength. For example, the University of Alberta currently holds 22 NSERC Industrial Research Chairs, more than any other university in Canada, and it continues to expand its participation in this key program, which assists universities with enhancing their science and engineering capacities in areas of interest to industry.

However, the federal government's increasing shift in the direction of commercialization and industry-driven research will affect the national environment in which the University of Alberta operates, as support for both applied and curiosity-driven "blue-sky" research is required to create the foundation for major, transformative innovations.

National Research Council

Perhaps the most pronounced example illustrating the federal government's shift towards commercialization is its efforts to reorient the National Research Council to an industry focus. Minister of State Goodyear noted in a speech that "[w]e are also making changes at Canada's venerable National Research Council to refocus it back to its original mandate—that of demand-driven business-oriented research to help our private sector develop new products and services." In an interview with the *Globe and Mail*, the National Research Council's president, John McDougall, pledged to focus the institution's funding in order to obtain better returns for Canadian taxpayers. Budget 2012 also provided $67 million to support the National Research Council's evolution to a "business-led, industry-relevant" focus.

Universities currently conduct a large share of the industry-focused and sponsored research in Canada while simultaneously conducting the majority of enquiry-driven research. The implications of the shift in the NRC's mandate are still not fully clear but could have a wide-ranging impact on the research-intensive university sector by further reducing the resources available to the enquiry-driven research that is proven to be a foundational component of innovation.

International engagement

In addition to changes to research funding models, the Government of Canada has also adopted an aggressive trade strategy. Negotiations are currently underway with the European Union and India, and Canada has been invited to participate in the high-profile Trans-Pacific Partnership talks involving eight other nations in the region. When the establishment of the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Transformation and Sustainability (IC-IMPACTS) was announced, Prime Minister Stephen Harper stated that "Canada needs to be connected to an international supply of ideas, research, talent and technologies in order to prosper in an increasingly competitive global environment." The University of Alberta, in partnership with the University of Toronto and the University of British Columbia, will be cooperatively managing IC-IMPACTS – further proof that the institution is among Canada's leaders in forming international partnerships. The Government of Canada committed more than $13 million dollars to the Canada-India Research Centre of Excellence initiative in the 2011 federal budget.

The Global Environment

Competition within the global context is fierce. The international higher education and research landscape is shifting quickly in the face of growing demand, ongoing economic challenges, changing international demographics and new technologies.

A September 2012 article in the journal *Science* observed the steadily growing number of Western researchers being drawn to Asia by generous research funding, new scientific challenges, exciting collaboration opportunities, leading-edge facilities, and aggressive recruiting strategies. As noted in a *Times Higher Education* article from October 2012, "the consensus […] is that emerging market universities, increasingly featured in the World University Rankings, will chip away at the historic dominance of Western universities. An analysis of research funding […] in the West compared with emerging markets" also confirms a shift in the landscape of global higher education.

Globalization and competition present risks for universities such as the U of A, but also enormous opportunities. As a report released by the Council of Canadian Chief Executives in July of 2012 noted, "unprecedented demand for higher education in Asia today offers a multitude of opportunities for Canada, from institutional partnerships to facilitate research, to the recruitment of talented international students and researchers, to new markets for Canadian knowledge exports."

Internationalization

As the province's flagship institution, the University of Alberta has taken on an ambitious internationalization strategy to strengthen its ability to take advantage of and invest strategically in emerging international opportunities. Internationalization now permeates all aspects of the U of A's core academic mission and activities, enhancing and enriching the quality of teaching, learning, and research through the recruitment of international students, faculty, staff and researchers; the attraction of key partnerships; and the establishment of the institution as a worldwide hub for research and distinguished scholarly networks. Its approach is focused on targeted regions (China, India, Brazil, Germany and United States) in which success in creating international partnerships can match and advance the strategic directions and interests of both Alberta and Canada. Indeed, the University of Alberta provides superb leadership in creating and operationalizing an international strategy that brings the province to the world stage as the university functionally links Alberta private industry partners with global counterparts.

As a result of its targeted approach to internationalization, the University of Alberta has succeeded in developing a number of high-level, collaborative partnerships that not only build on and strengthen existing areas of U of A research excellence, but also create provincial and national connections with some of the most influential and innovative institutions in world. Two 2012 examples include:

- The Sino-Canadian Energy and Environment Research and Education Initiative (SCENEREI) is the result of a recently signed agreement with one of the top science and technology universities in China, Tsinghua University.

- The India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability, or IC-IMPACTS mentioned above brings together scientists and industry partners from the University of Alberta, the University of British Columbia, University of Toronto and 11 leading institutions in India.

At the University of Alberta, the overall aim of forming international partnerships is to facilitate research and teaching with international impact and influence, and to showcase our capacity to be leaders in the search for solutions to global challenges. Alberta's ability to capitalize on strategic opportunities, find effective solutions to issues of provincial interest, and provide leadership in areas of international importance is directly linked to the university's ability to attract the world's best, to partner with global innovators and to engage at the highest levels on the international stage.

Global competitors

Competitive investments made in higher education and research around the world make investment at home ever more critical, especially given the staggering growth of tertiary participation worldwide. *University World News* reports that the number of students enrolled in higher education is expected to rise from 99.4 million in 2000 to 414.2 million in 2030; the East Asia and Pacific region is expected to have about half of the total enrollments by 2030, a huge shift from its share of 25 per cent of global enrolments in 2000.

OECD statistics show a similar trend. They estimate that by 2020, if current higher education participation rates continue, the number of youth from Argentina, Brazil, China, India, Indonesia, the Russian Federation, Saudi Arabia and South Africa with a tertiary degree will be almost 40 per cent higher than the number from all OECD countries combined. As a result, Canada's position will continue to erode relative to their growth. According to the Association of Universities and Colleges of Canada, in 2008 university attainment rates for the cohort aged 25 to 34 placed Canada fifteenth among OECD countries. Thirty years ago, Canada was a leader among OECD countries in university attainment.

In spite of the economic downturn of 2008 and the continued economic turbulence worldwide, countries continue to place education, research, and development at the heart of their political agendas. They have recognized the critical importance of strategic investment now in order to secure both short-term economic recovery and long-term economic competitiveness in the knowledge economy of the future. To maximize their resources and become globally competitive as quickly as possible, many emerging and rapidly developing economies are avoiding a one-size-fits-all model for their growing national, public post-secondary systems. Instead, they are choosing differentiated models, in which a small percentage of the institutions within the system are designed as leading centres of research and graduate education. These flagship institutions receive differential funding to achieve the kind of results expected of global institutions functioning at the highest competitive level.

China

China's funding for universities reached $12 billion in 2010, with growth of 15 per cent a year. China has surpassed the United States to become the largest post-secondary system in the world. Meanwhile, an estimated $20 billion in purchasing power parity has been spent on building an elite sector in China's PSE sector. The result is that, in the last 16 years, China has quadrupled the number of its tertiary graduates to three million a year while also seeing an 80-fold increase in the number of doctoral degrees

in engineering and natural science for this same period. This remarkable change has enabled China to accelerate its economic growth to an unprecedented level and it is likely to continue. China is graduating immense numbers of highly-skilled students in areas that are critical to innovation: science, technology, engineering and mathematics. Another significant result of China's ongoing investment in higher education is the growing number of world-class researchers attracted to the elite institutions in that country as several public policy initiatives, like the 1,000 Foreign Experts program, draw talent to relocate there.

China has selected a comparatively small group of about 39 institutions that have been targeted for funding and support to act as flagships within the large Chinese system. These institutions are either elite comprehensive institutions like Peking University or specialized like the China Agriculture University. In either case, they have more graduate students than undergraduate students and they receive funding from both the national and local governments in recognition of the high cost of competing on the world stage, including the increasing cost of competing for the best researchers, the high cost of research (including facilities, equipment and technicians), and the cost of essential infrastructure items like libraries. With this focused support, these flagship institutions have rapidly grown in research excellence, attracting some of the top talent from within China and around the world.

India

India is also aggressively pursuing education and research and development as priority areas. The Indian government has committed to ensuring a tertiary education for 30 per cent of its youth by 2025, up from its current rate of 12 per cent. To meet this ambitious goal, India has sought out partnerships with world leaders in education to increase both the quality and accessibility of its education system. It also increased the budget for higher education for 2010-2015 to nine times the amount of the previous five years. In 2006 and 2007, the Indian government created ten premier science and research institutes dedicated to research and teaching in the basic sciences with an aim to become science universities of the highest calibre devoted to both teaching and research.

In addition, India has entered into an agreement with the United Kingdom to establish 14 world-class, research-intensive "innovation universities" in partnership with elite universities such as Oxford and Cambridge. At present, India invests approximately $21 billion into research and development and has committed to increasing the budgets for both higher education and research and development. India is already among the top ten research countries in the world.

Brazil

Brazil has made significant investments into its higher education sector. Announced in June 2011, the Brazilian Scientific Mobility Program or "Science Without Borders" is an international student exchange program that has allotted $1.7 billion to fund the exchange of 75,000 undergraduate and graduate students and researchers in order to improve Brazil's competitiveness and innovation agenda. An additional 25,000 scholarships will be funded by private industry. The program aims to establish linkages with "excellence" through exchanges and partnerships that will see the best students and researchers from the best universities around the world, and within Brazil, study, instruct and research reciprocally. Further, in December 2012, the Brazilian government signed a law that will see 100 per cent of all new national oil royalties spent on education—a staggering amount of money—in part to assist Brazil in meeting its target to devote 10 per cent of its GDP to education by 2020. The oil royalties will also be

devoted to assisting Brazil to transition to a "post-petroleum" reality by educating the highly skilled individuals it needs to become an innovation powerhouse.

Taiwan

In 2005, Taiwan first announced an investment of $1.6 billion to lay the foundation for the creation of elite universities. The national government is continuing efforts to invest in the expansion of higher education as a key component of its economic competitiveness. The ascension of Taiwan in higher education and research is noteworthy for its successes; education reforms have long been considered as one of the critical keys to Taiwan's modernization. According to the World Economic Forum's 2012-13 *World Competitiveness Report*, Taiwan now ranks thirteenth in the world—one place above Canada—for its ability to compete because of gains made in research and development infrastructure and talent.

Europe

Investment in higher education and research and development is not limited to the rapidly expanding BRIC (Brazil, Russia, India and China) economies. As part of the drive to create new growth and jobs and to secure global competitiveness, the European Union is counting down to the implementation of *Horizon 2020*, which aims to "secure Europe's science and technology base and industrial competitiveness to create new jobs and growth." The program's overall budget will be €80 billion, up from €50.5 billion for its predecessor funding framework which is known as the Seventh Framework Programme for Research (2007-2013).

Horizon 2020 will run from 2014-2020 and will combine all research and innovation funding currently provided through the Framework Programmes for Research and Technical Development, the innovation related activities of the Competitiveness and Innovation Framework Programme and the European Institute of Innovation and Technology. *Horizon 2020* is a market-driven approach that aims to create a genuine single market for knowledge, research and innovation, and will create partnerships between the private sector and member states. *Horizon 2020* will be complemented by additional measures to complete and further develop the European Research Area by 2014. These investments come as EU member states face continued and in some cases severe economic upheaval. However, the European Commissioner responsible for research innovation and science, Máire Geoghegan-Quinn, has stated that to not invest in innovation fronts now would be "unthinkable."

Germany

In Germany, the national research budget is approximately €55.7 billion, two-thirds of which is provided by industry, one third by government, and four per cent by foreign investment. The German federal government has adopted a strategy for the internationalization of science and research that includes initiatives for training young researchers, supporting the mobility of researchers, and enhancing the possibilities for international research collaborations. With its reputation for elite higher education and research, it is noteworthy that Germany receives the fifth-largest number of international students. Moreover, Germany currently attracts €11 billion annually in foreign investment. Germany has committed to building on these strengths with continued investments in education and research.

The national Excellence Initiative aims to promote top-level research and to improve the quality of German universities and research institutions in general, thus making Germany a more attractive research location, making it more internationally competitive and focusing attention on the outstanding

achievements of Germany universities and the German scientific community. The first phase of the project ran from 2006 to 2012 €1.9 billion was invested in graduate schools to promote early career researchers, clusters of excellence to promote top-level research and institutional strategies to promote top-level university research. In light of the success of the first phase, the program was renewed for a second phase with an allocation of €2.7 billion.

Germany is also expanding capacity in anticipation of burgeoning enrolments. Despite a projected decline of 15 per cent in its 18-to-24 age group by 2020, Germany's federal government has committed €5 billion to accommodate the 275,000 additional entrants expected between 2011 and 2017.
The above examples show that global investment in post-secondary education, research and innovation is growing. Accompanying that growth is the differentiation and support of a few top institutions within a jurisdiction to act as leaders within the system and as ambassadors to the rest of the world.

New educational technologies

Aside from increased competition worldwide, the global post-secondary education sector is facing the challenge of a changing model for education delivery. New technologies—including Massive Open Online Courses or MOOCs—are shifting the way higher education is delivered and expanding its potential reach. Hundreds of thousands of students all over the world are currently participating in the digitally-delivered courses currently offered by some of the most globally prominent universities, including Harvard and Stanford.

The University of Alberta has entered into a memorandum of understanding with one of the leading MOOC providers, Udacity, to form a research partnership. Researchers in the university's Centre for Machine Learning and its Faculty of Education will be working with Udacity to conduct research on online learning technologies. In addition, the partnership calls for a pilot project to develop a small number of courses in the Faculty of Science that will be offered through the Udacity platform, with the expectation that at least one course can be taken for University of Alberta credit. This initiative sets the university apart from all other Canadian universities.

The full implications of the rise of Massive Open Online Courses (MOOCs) is yet to be determined. However, most players in the higher education sector believe the effects will be far-reaching—perhaps democratizing high-quality higher education, revolutionizing educational delivery formats, improving completion rates and offering options to improve cost-effectiveness. The University of Alberta will continue to develop and explore new technologies which present both challenges and opportunities for the institution. While having a MOOC program is a great opportunity to introduce a wider global audience to the brilliant work being conducted at the University of Alberta, the challenge is to establish sustainable revenue models. Being in the vanguard of this important development will allow the university to have first-mover advantages.

Conclusion

A global university is not just a competitor on the international stage; more importantly, it is a contributor to and leader in the global community. International organizations such as the World Economic Forum and the United Nations continue to remind us that many of the most critical risks and challenges we face—such as climate change, resource scarcity, food security, disease, and armed conflict—cannot be defined by national borders or solved by one country alone. These require

collective, international efforts across economic, political, academic, and business sectors to find solutions. Alberta and the University of Alberta are in a position to lead. Now is the time to invest in the talent, knowledge and innovation.

The Academy

The University of Alberta is recognized not only as one of Canada's leading comprehensive academic and research institutions but also as one of the top 100 public universities in the world. Our reputation attracts highly-qualified undergraduate and graduate students as well as post-doctoral fellows from Alberta, across Canada, and abroad who are seeking exceptional opportunities that integrate learning, research and creative activities, real world internships with public and private sector partners, connections with top-tier international institutions, and community engagement. Such opportunities are the hallmark of leading teaching and research-intensive universities like the U of A because they create exceptional leaders and professionals who bring innovation and insight to all sectors of society.

The strength of the U of A is founded first and foremost on the quality and diversity of our people, programming, research, and resources. An exceptional professoriate is the essential foundation for the rigorous and challenging inquiry-based undergraduate education and learning environment to which we are committed and that only a research-intensive university can produce and evolve. Sustaining our research and teaching capacity is our greatest priority and most urgent need if we are to continue to deliver to our students and the province of Alberta the quality, breadth, and innovative kinds of education and research that are needed to achieve and maintain social well-being and economic prosperity.

Over the past decade, the University of Alberta's five campuses have experienced tremendous growth, which has supported and made possible innovative new programs and stronger connections to communities. These five campuses offer Alberta's students a range of choices for learning within a research-intensive university, from the intimacy of the rural Augustana Campus in Camrose and the French-speaking environment of Campus Saint-Jean to the physical recreation and agricultural research environment of South Campus, the urban vibrancy and integration of Enterprise Square, and the large, dynamic, heavily populated environment of the North Campus. Undergraduate and graduate enrolments have expanded due to provincial investment, and new and repurposed state-of-the-art space for modern forms of education and research has been added. At the same time, over half of our current professors are new to the university since 2001, and we have been increasingly successful in hiring internationally-competitive scholars.

As Alberta's largest comprehensive post-secondary institution, the University of Alberta has a clear mandate to create an excellent teaching and learning environment in academic and professional programs that leverages and produces ground-breaking research, innovation, and creative activity. This environment relies on the quality of the interactions among undergraduate and graduate student populations, domestic and international students, and professors and students. The University of Alberta is committed to advancing knowledge and creating impact across seven broad areas of human inquiry and global challenge: food and bio-resources; energy; environment; health and wellness; humanities and fine arts; science and technologies; and society and culture. This broad base of excellence has defined Alberta's leading university from its inception and ensures that Alberta has the capacity for today's challenges and opportunities and those that emerge in the future.

The University of Alberta continues to build its strong international reputation for high-quality education and leading-edge research. The internationalization strategy is multifaceted and permeates the entire academic enterprise. It includes international student recruitment at the undergraduate and graduate levels; study abroad and international internship opportunities for Alberta students; multi-leveled

partnerships with top-tier international partners; and leadership participation in major international initiatives that seek to solve pressing global issues. These initiatives expand the institution's and province's teaching, research, and innovation capacity by leveraging our resources with those of other jurisdictions. The U of A is creating a recognizable international brand for itself, which can deliver to province of Alberta the kind of tangible and intangible benefits that signature public institutions such as UC Berkeley and UT Austin deliver to their respective jurisdictions.

Continuous, innovative evolution and renewal is essential to maintain and enhance the health and vigour of a comprehensive academic and research-intensive university, and only with strong support from provincial and federal governments will the U of A remain in a strong position to manage the challenges and pressures that its faces during the period of our current academic plan, *Dare to Deliver 2011-2015*. These include:

- Changing demographic trends in the student population;

- Resource constraints that adversely affect the quality of the research and innovation environment available to the existing professoriate, the competitiveness of recruitment offers, and the balance of student and faculty numbers;

- Emergence of new technology that students and professors expect to be integrated into their teaching, learning, and research activities;

- Demands for new programs and research that encompass new forms of learning and knowledge and cross conventional disciplinary borders;

- New structures in federal research funding; and

- Competition for the best students and researchers from increasing numbers of post-secondary institutions around the world.

The University uses these planning choices and areas of investment to advance the following priorities:

- Achieving the balance of high quality professors, post-doctoral trainees, graduate students and undergraduate students within the academy that facilitates exceptional learning, teaching, discovery, and creative activities;
- Producing graduates and trainees who are prepared to think critically, to assume positions of leadership in public and private sectors, to act entrepreneurially, to create cultural and technical innovation, and to be successful in the global marketplace;
- Providing secure information and communications technology infrastructure and systems that support research, creative activities, and digital learning technologies and pedagogies to enhance the on-campus, in-class experience and online learning environments.
- Serving as a valued and innovative leader and partner of other post-secondary institutions as a CARI member of the six sector Campus Alberta and across Canada in achieving shared academic and organizational aspirations;

- Forming international collaborations that create exceptional learning, discovery, citizenship, and innovation opportunities, advancing its vision to be one of the world's top publicly funded institutions.

- Being among the top public institutions that are internationally recognized for areas of excellence and impact across the breadth of discovery, innovation, and creative activities.

To achieve and maintain the quality and success for which the U of A strives, the academic programming and research enterprise must remain deeply and solidly grounded on and matched by essential new or enhanced core physical facilities, sophisticated information technology, and extraordinary knowledge resources.

Access and Enrolment

Priority: The University of Alberta's academy has the balance of professors, post-doctoral trainees, graduate students and undergraduate students necessary for exceptional learning, teaching, discovery, and creative activities.

Talented People

The University of Alberta aims to provide enriched and transformative student experiences, resulting in graduates who are engaged citizens prepared to contribute to the social and economic well-being of the province, the nation, and the world.

The University of Alberta recruits and graduates undergraduate and graduate students from a diverse demographic:

- high school and post-secondary graduates from Alberta, Canada, and abroad;
- transfer students from Alberta's Comprehensive Academic and Research Institution (CARI) sector as well as institutions in other Campus Alberta sectors;
- Francophone and Francophile students seeking a post-secondary degree or diploma in a French-language or bilingual learning environment;
- mature students seeking a university education for the first time and those returning for advanced study;
- First Nations, Métis and Inuit students from urban, rural, and Aboriginal communities;
- students seeking a rural-based education and/or employment following graduation;
- students who are immigrants or from immigrant families;
- students from socio-economic groups for whom university access is a financial challenge; and
- students who are the first in their family to attend university.

Among this diverse array of undergraduate and graduate students are some of Canada's most accomplished and promising minds. University of Alberta students have consistently won Canada's most prestigious scholarships, including 67 Rhodes Scholarships since 1913 (the third most among Canadian

universities), 47 Vanier Scholarships since 2009, and 8 Trudeau Scholarships since 2004, while student athletes have won 61 national championships the inception of the Canadian Interuniversity Sport.

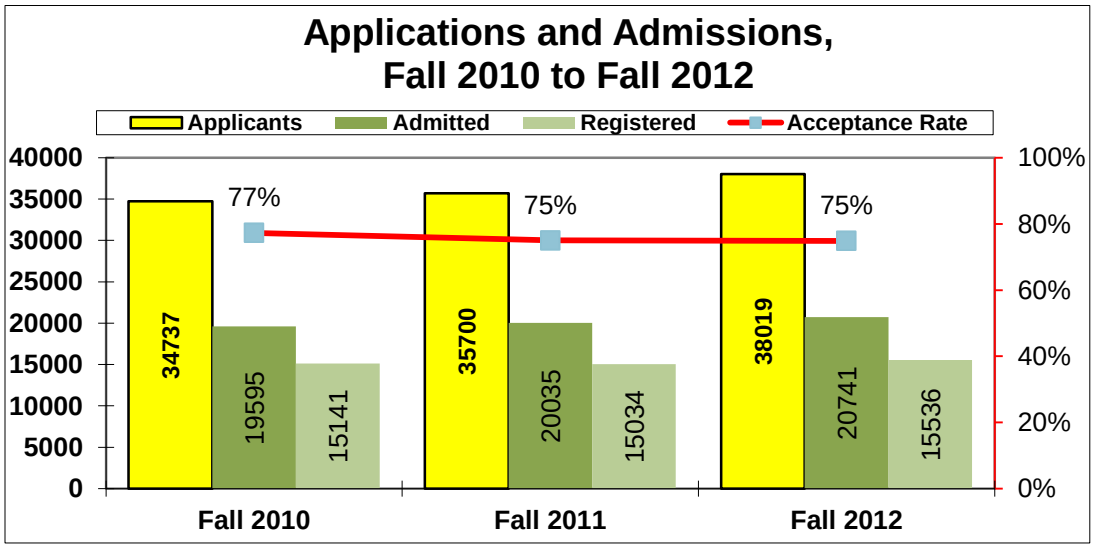
The University of Alberta also recruits and trains highly-qualified post-doctoral fellows from around the world. They are attracted to the province and the University of Alberta by its outstanding research achievements, and opportunities to actively participate in knowledge creation and translation as a way of contributing to the well-being of the global community. They also choose the U of A because of the professoriate and the mentorship available here.

University of Alberta professors are as diverse as the student population they teach. More than half of U of A faculty members have been recruited over the past ten years from top universities in Canada, North America, and around the world. Whether new or established in their academic careers, these professors fit a 21st century globally-connected, entrepreneurial and technologically-savvy profile. In choosing the U of A, they have joined an internationally-recognized professoriate whose exceptional teaching and research strengths are routinely affirmed and celebrated through national and international awards and honours. In 2012, four of ten annual 3M National Teaching Fellowships for excellence in undergraduate teaching were awarded to U of A professors. This brings U of A's total number of 3M laureates to 38 since the founding of the award, the highest number in Canada and well ahead of second-ranked University of Western Ontario with 22. The continuing recognition of U of A faculty with this award reflects the commitment of the professoriate to providing an exceptional undergraduate learning experience within a research-intensive environment.

The University of Alberta uses a number of measures to assess the quality and effectiveness of its access, enrolment, and programming initiatives. These measures and the university's strategies for improvement are provided at the end of this chapter, along with examples of specific outcomes achieved within faculties and professional schools since the 2012 CIP. The following sections present institutional-level considerations and notable achievements.

Access and Enrolment Projections and Plans

Since 2010, applications to University of Alberta programs have increased by 3282 or 9 per cent. With a steady acceptance rate of 75 per cent and registration rate of 39 per cent, the headcount enrolment has grown from 38,241 in 2010 to 39,459 in 2012.



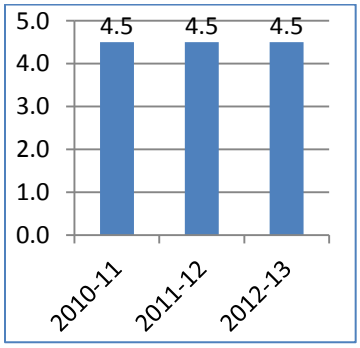
Access to programs at the University of Alberta is adjusted in response to student demand and workforce needs. The Bachelor of Education program, for example, was expanded in Fall 2012 to allow direct entry to the program in year one, rather than in year two following a year of study in another foundational program such as sciences or arts. Demand was such that the target enrolment was met immediately. Managing enrolment through 2016-17 is expected to be a challenge for the Faculty of Education and other direct entry programs particularly in faculties with STEM programs because of student demand. Despite setting increasingly higher high school completion averages and transfer GPAs, exceptionally strong demand for BSc programs in the Faculties of Physical Education and Recreation, Engineering, and Science led to above-target enrolments in Fall 2012. The University of Alberta has a fixed capacity to deliver a quality teaching and learning experience; it will continue to use admission standards to balance the pressure of student demand with the ability to deliver this experience within a research-intensive environment.

Quality teaching and learning experiences are fundamentally based on students' access to and interaction with professors and graduate students. Top universities in North America and around the world strive to achieve three critical minimum target enrolment ratios:

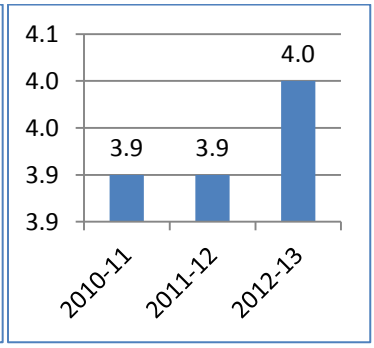
- 1:3 graduate student to undergraduate student,
- 1:4 professor to graduate student, and
- 1:16 professor to overall student number

When achieved, these ratios lead to a qualitatively different educational environment, especially for undergraduate students who are exposed to and integrated into a cross-disciplinary, cross-professional research culture, composed of scholarly teams of graduate students, post-doctoral fellows, faculty, and industrial partners.

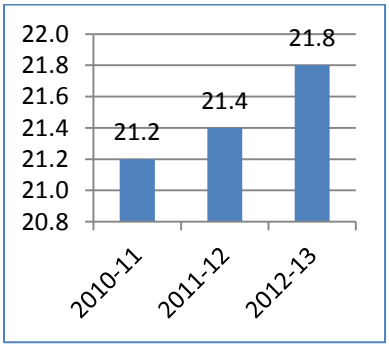
Undergraduate Students to Graduate Students



Graduate Students to Faculty



Students to Faculty



To further improve teaching and research quality and productivity at the U of A, as well as enhance student learning experience, professor to student and undergraduate to graduate student ratios must become far more competitive on national and international levels.

To achieve the ideal ratios mentioned above and reap the resulting benefits, the University of Alberta plans to continue to differentially increase the number of graduate students and grow the complement of professors**.**

The University of Alberta's current, post-EPE institutional benchmark for access is 33,005 FLEs. This benchmark will be maintained through 2016-17. It is composed of:

- the funding benchmark established with the Government of Alberta in June 2003 when a one-time adjustment to the base grant was made to ensure that all student spaces were funded from that point onward; plus,

- funding to support additional enrolment with the merging of Augustana Campus in 2004; plus,

- all ACCESS and EPE funded enrolment to 2008-09, plus

- the modified rate of increase in incremental FLEs from 2009-10 to 2013-14 following cessation of the EPE program in 2009.

Based on the above calculation, individual faculty and program enrolment FLE targets were adjusted in 2010-11 and reviewed and revised slightly in 2010-11 and 2011-12.

Using 2004-05 as the base year, the U of A has been gradually increasing the numbers of graduate students and medical students differentially, while maintaining the undergraduate population. That is, between 2004-05 and 2011-12, graduate student enrolment was increased by 44 per cent (from 4,900 to 7068 FLEs) and medical enrolment by 52 per cent (from 505 to 766 FLEs). By reallocating FLEs from undergraduate to graduate programs within the current benchmark through to 2016-17, the U of A will not only be able to improve the undergraduate to graduate student ratio, but also to continue to encourage and accommodate new programming. See Appendix 1 for five-year planned and projected enrolment targets.

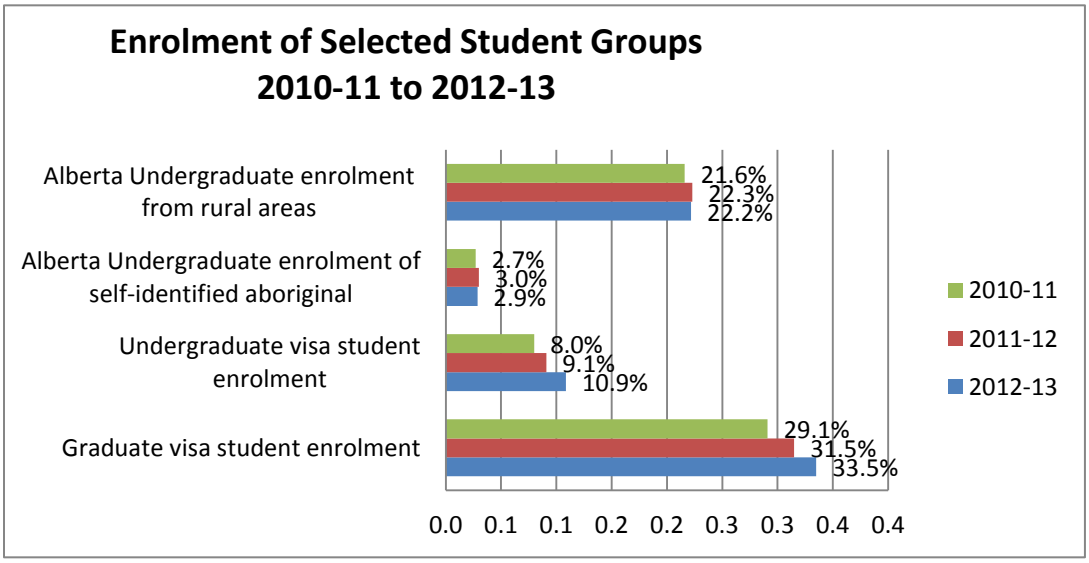
In the health sciences disciplines specifically, steady state enrolment is predicted until 2014 with minor changes each year for additional health graduates who are or may be funded. The graduate targets in the Health Workforce Action Plan for nursing and medicine will remain in place through 2013-14, with the exception of graduate programs in physical and occupational therapy. New base funding is needed to support existing soft-funded physical therapy pilot programs at Augustana Campus and the U of A's Calgary Centre; funding is also needed to expand the occupational therapy program into Calgary. Proposals related to these two programs were submitted to the Ministry of Enterprise and Advanced Education in November 2012. The last intake of students for the current physical therapy satellite programs will take place in September 2013 with graduates in 2015-16. These programs now have 10 students in each cohort but given current demand numbers could be expanded. There is also demand for the U of A to offer the occupational therapy program in Calgary; to do so would require the same resourcing as the physical therapy program for set-up.

The University of Alberta aims for an average variance of about 1.5 per cent in meeting benchmark enrolment targets. Over the past three years (2009-2012), enrolment has averaged 1.63 per cent above target. This is attributable to variances in applications and enrolment due to factors such as fluctuations in student and market demands, expansion and contraction of program choice within the university and across Campus Alberta, and new, improved or deteriorating quality of facilities. In 2011-12 and 2012-13, for example, demand for enrolment in most Bachelor of Arts programs as well as professional post-baccalaureate programs remained steady and at or slightly above enrolment targets. At the same time, demand for Bachelor of Sciences programs in all Faculties offering science, technology, engineering, and math (STEM) programs rose considerably, especially in the Faculty of Science on North Campus with the opening of the state-of-the-art Centennial Centre for Interdisciplinary Science, and especially among

third-year transfer students. Similarly, demand for the BSc in the Faculty of Nursing also rose dramatically in Fall 2012, following the opening of the Edmonton Clinic Health Academy in 2011. In contrast, while demand for the BSc is also growing at Augustana Campus and Campus Saint-Jean, aging science classroom and lab facilities impedes the recruitment of students at those campuses into science programs.

Aboriginal, rural and francophone enrolment

The University of Alberta stands respectfully on lands once known only by Aboriginal peoples and has a particular commitment and responsibility to Alberta's Aboriginal peoples. *Dare to Deliver 2011-2015* commits to celebrating diverse Aboriginal histories and cultures throughout the physical, virtual, ceremonial and intellectual space of the university. As one of the first institutions founded by the new province of Alberta in 1908, the U of A also takes seriously its responsibility to support and participate in the social and economic lives of rural Albertans, and offers outstanding educational opportunities to students in a rural environment as well as leading-edge research on important rural issues. The U of A also offers francophone Albertans, western Canadians, and international students a liberal arts undergraduate education in French at Campus Saint-Jean, located in and an integral part of Edmonton's francophone community.



Aboriginal, rural, and francophone students bring knowledge and insights that inform and expand the U of A's teaching, learning, and research activities. The University of Alberta invests resources in a number of initiatives to increase the representation of these students on our campuses:

Aboriginal students. The University of Alberta hosts the only Faculty of Native Studies in Canada, established in 2006. In 2008, the U of A adopted an institutional objective to be Canada's leading institution for Aboriginal post-secondary engagement, education and research. To reach this goal, the U of A invests in initiatives that advance both Aboriginal recruitment and the distinct elements that define social well-being within Aboriginal communities and regions. These initiatives are integrated into the full range of institutional activities, from education and training programs to collaborative research centres and institutional-level partnerships and agreements.

Aboriginal student enrolment across all faculties and campuses is approximately 3 per cent, a number that the U of A is striving to increase significantly. Both Augustana Campus and North Campus have Aboriginal Student Offices to support current students and to spark new enrolment growth. The Aboriginal Peoples Network and a team of special advisors to the Provost are also charged with enhancing Aboriginal engagement, opportunities, and research. Programming initiatives for Aboriginal professional learning and training include the Aboriginal Teacher Education Program, an off-campus community-based collaborative cohort program offered in partnership with provincial and tribal colleges. The goal of this program is to improve the educational success of Aboriginal children by increasing the number of Aboriginal teachers and teachers with an understanding of Aboriginal culture and perspectives in communities in northern Alberta. Medical training initiatives focused on Aboriginal learners are also well established: the University of Alberta has trained 72 Aboriginal doctors to date, more than any other institution in Canada. In 2012, six new Aboriginal students were admitted to the MD program, while four graduated.

The U of A will continue to invest in the recruitment and retention of Aboriginal students, professors, and staff, as well as provide relevant programming, appropriate support services, and specialized and inclusive gathering places. Notable outcomes since 2012 CIP include:

- Master of Education in Educational Policy Studies (Indigenous Peoples' Education specialization) offered in collaboration with Blue Quills First Nations College.
- Augustana Faculty discussion with Maskwacis Cultural College to increase access for students to the University of Alberta.

Rural students. Augustana Campus offers a rural residential campus experience for students seeking the best of both worlds: a liberal arts and sciences undergraduate education at a research-intensive university. Along with the Faculties of Education and Medicine and Dentistry, it offers practicum placements for students in rural Alberta, and in partnership with the Faculties of Education, Nursing, and Rehabilitation Medicine, delivers select programs based on North Campus to rural students. Augustana Campus's relationship to and partnerships with the city of Camrose also attracts students.

Notable outcomes since the 2012 CIP include:

- To build enrolment, Augustana Campus is developing and expanding transfer agreements with Campus Alberta institutions in Red Deer, Medicine Hat, and Grande Prairie.
- In Fall 2012, ground was broken to begin construction of the new Camrose Performing Arts Centre, a community-university partnership that will enrich the intellectual and cultural lives of students and Camrose residents.

Francophone students. The intellectual and cultural heart of Alberta's francophone communities, Campus Saint-Jean (CSJ) offers liberal arts and science undergraduate education in French. In addition, CSJ offers a bilingual BSc in environmental and conservation sciences, and in partnership with U of A's professional faculties, CSJ also offers bilingual undergraduate degrees in nursing, commerce, and engineering. A majority of teachers in Alberta's immersion and francophone schools have studied at CSJ.

Two examples of outcomes since the 2012 CIP are:

- The U of A is expanding access to French-speaking students seeking pre-baccalaureate education with the introduction in 2013 of college-level programs at Le Centre Collégial de

l'Alberta (formerly Collège Saint-Jean), including a two-year bilingual diploma in business administration.

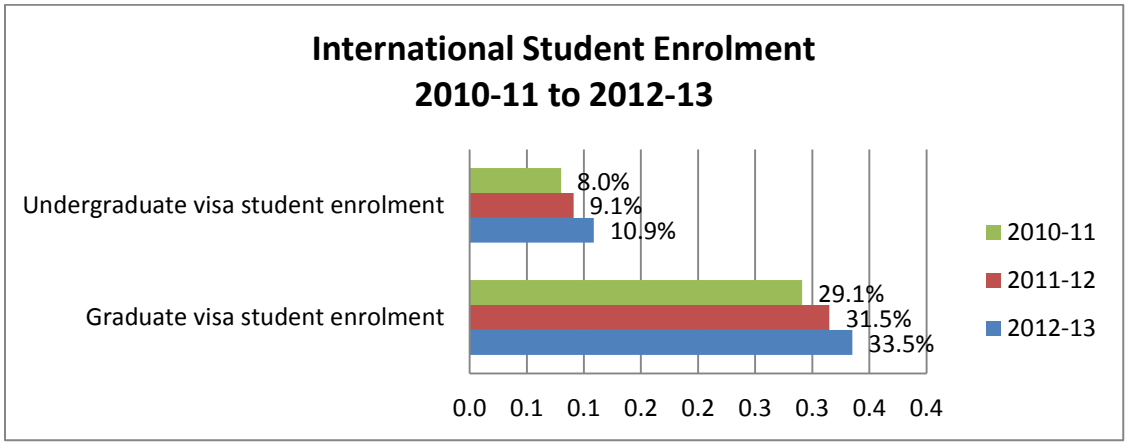
- A new two-year Tourism Management program is being developed for implementation in 2014.

Refer to Appendices 2, 3, and 4 for additional information on enrolment and programming initiatives for Aboriginal, rural, and francophone students, respectively, and to Appendix 8, Research Capacity: Investments and Details, for the U of A's capacity in Aboriginal, rural, and francophone scholarship and research.

International Enrolment

An international dimension is fundamental to all aspects of the University of Alberta's teaching, research and community service mandates. The University of Alberta is emerging as one of the best places in the world to acquire the mindset of global citizenship and the intellectual skills to succeed in an increasingly internationalized job market. To serve as a globally-engaged and internationally-respected university, the University of Alberta is aiming to achieve an institution-wide international undergraduate enrolment target of 15 per cent, and to sustain international graduate student enrolment at approximately 30 per cent.

The U of A is committed to attracting a diverse array of nationalities and academic interests among its international student cohort to foster a diversity of global perspectives, talents, and competencies. International students educated at the University of Alberta have the potential to ease provincial labour shortages among professions needing highly-skilled, innovative, and entrepreneurial workers.



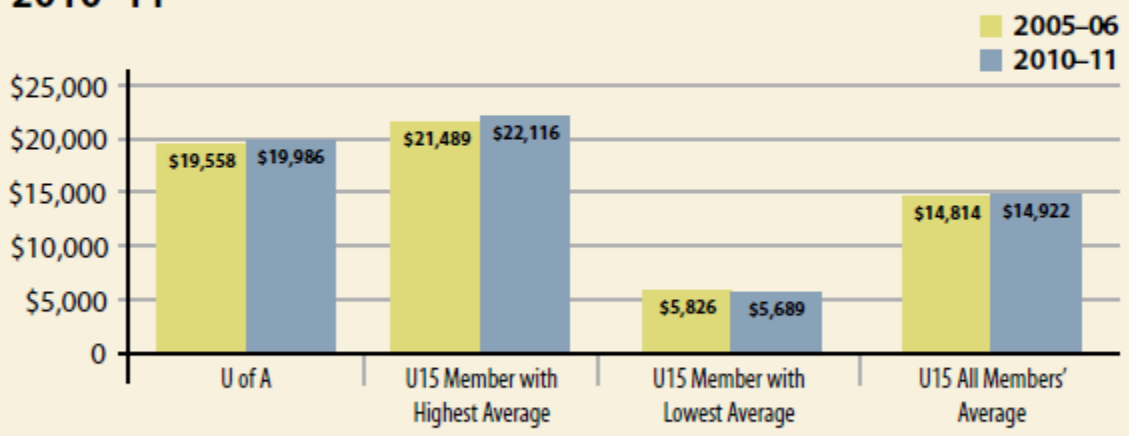
Graduate student enrolment

The University of Alberta is engaged in an academy-wide transformation of graduate student education and experience. The purpose of this renewal is to ensure that recruitment, programming, financial support, co-curricular and professional development opportunities, and organizational structures are optimal for attracting, retaining and graduating internationally-competitive Canadian and international scholarship-level students. Expected results include a new multi-year strategic graduate management plan, quality assurance measures, and student-focused and friendly administrative systems. Over the past ten years, graduate student enrolment at the U of A has risen almost 35 per cent, from 5638 to 7598 students. The University of Alberta aims to enrol 10,000 graduate students, with approximately 30 per cent of them being international students.

Because financial support is critical to the recruitment and retention of top graduate students, the University of Alberta strives to offer appropriate and effective financial packages that are competitive among Canada's top five research-intensive universities. In general, the U of A's average financial support for graduate students is competitive with Canada's leading graduate schools. The U of A's average financial support for doctoral students has remained relatively unchanged relative to other U15 institutions since 2005-2006, increasing approximately 9 per cent to $26,059 per year in 2010-11. Support for Masters students has increased only 2 per cent during this same time, placing it second relative to the U15 cohort.

FIGURE 16

Average Financial Support per Research Masters Student, University of Alberta and U15 Universities, 2005–06 and 2010–11

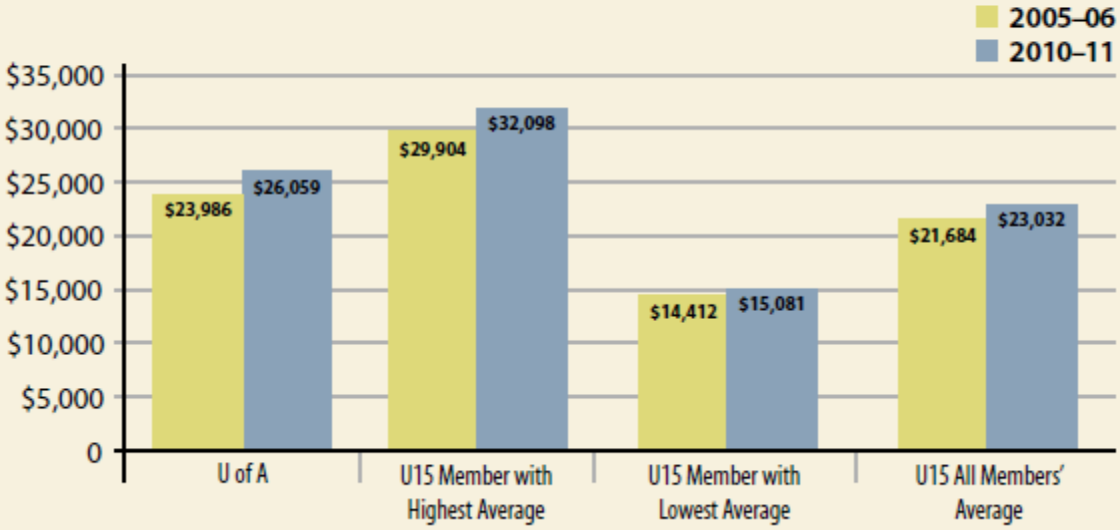


Notes: Results are based on 10 universities in 2005–06 and 14 universities in 2010–11.

Source: U15 Data Exchange.

FIGURE 15

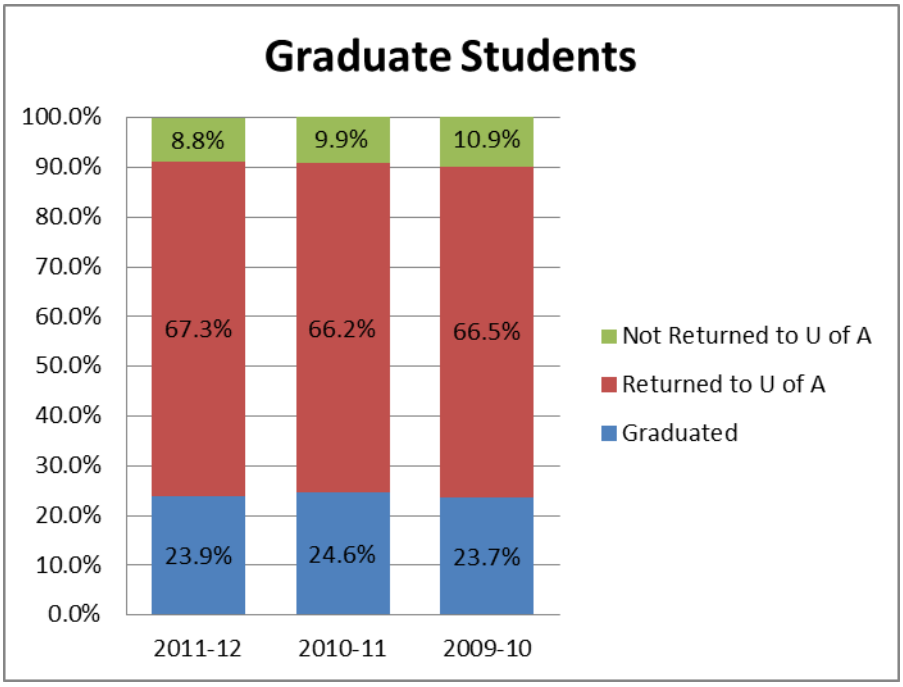
Average Financial Support per Doctoral Student, University of Alberta and U15 Universities, 2005–06 and 2010–11

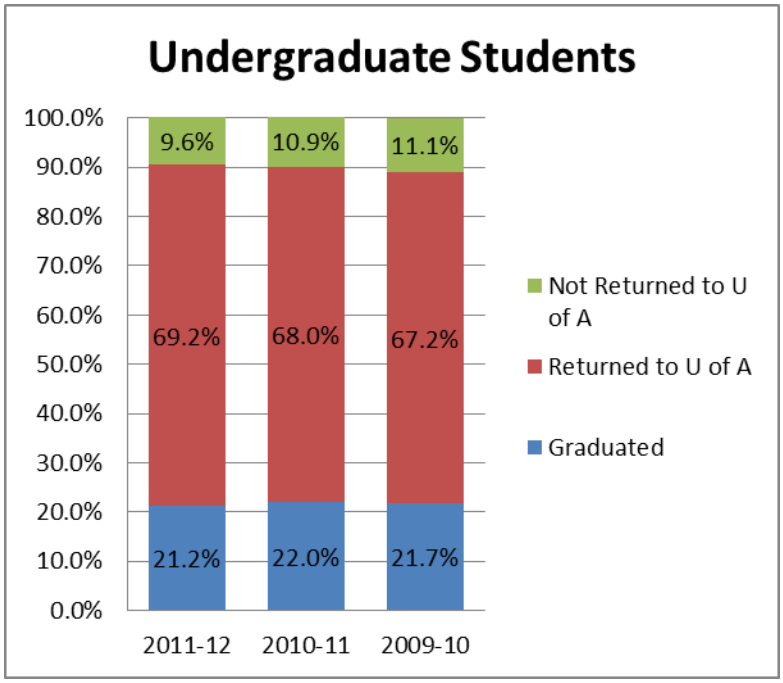


Investment in graduate students offers tremendous social value—graduate financial support costs much less than the total value of masters and doctoral graduate's contributions over their lifetime. Financial support to pursue advanced education partially compensates students for the income they forgo when they choose to pursue graduate studies instead of joining or remaining in the labour market after obtaining their bachelor's degree.

Retention, completion, and the student experience

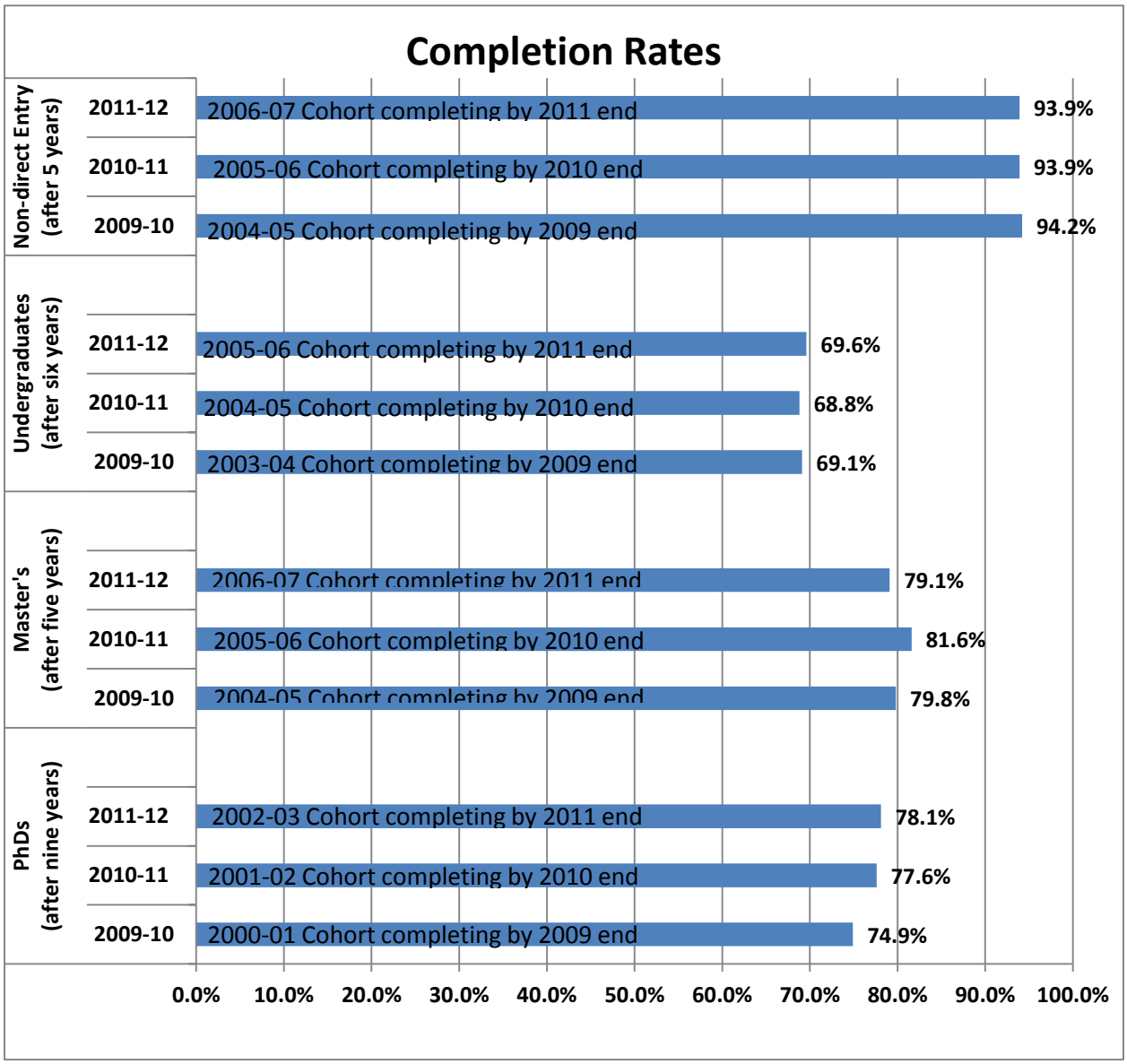
Retention rates, and their improvement where capacity exists, are a focus for attention in the academic plan, *Dare to Deliver 2011-2015*. Trends are being charted and assessed for effectiveness of initiatives and opportunities for improvement over a five-year period. Since 2010, overall undergraduate student retention rates have improved by 1.5 per cent and graduate student retention rates by 2.1 per cent.





Retention Rates

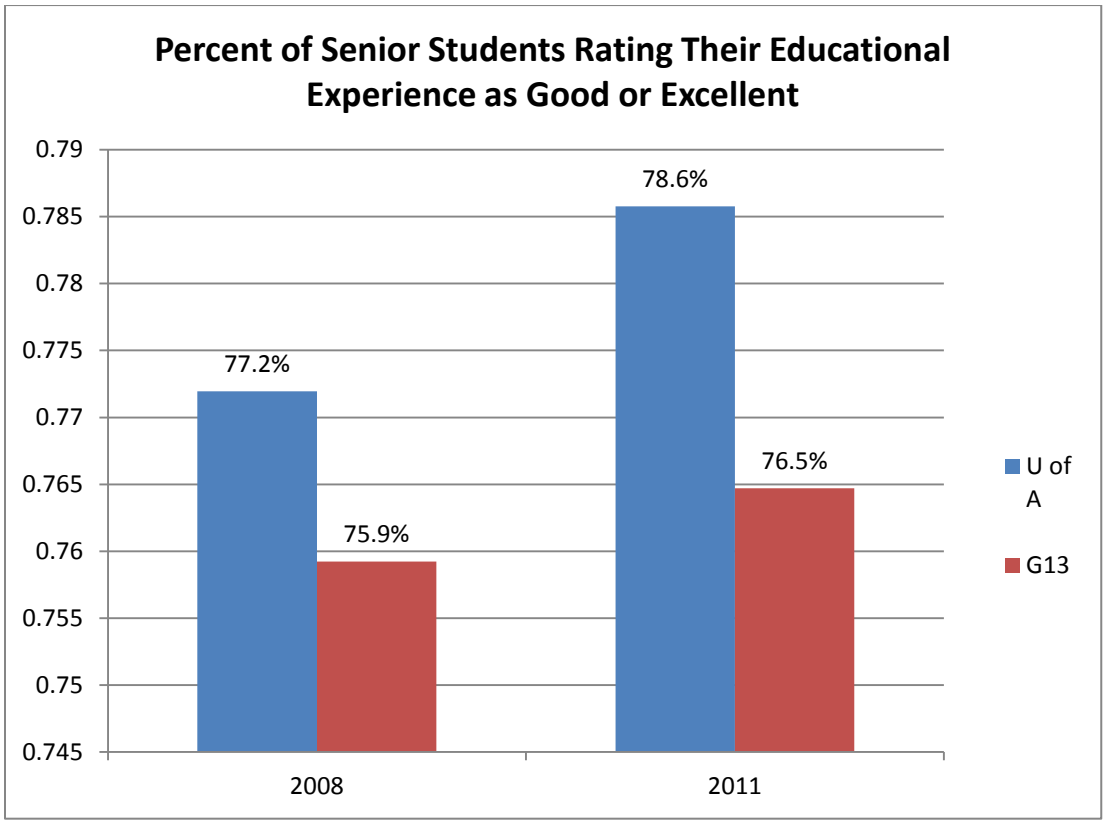
Completion rates for undergraduate programs overall across the U of A have remained steady over the past three years at around 69 per cent. In professional degree faculties, completion rates are steady in the range of 93 per cent. Graduate students' completion rates are approximately 78 per cent across the academy.



Student experience at the University of Alberta encompasses opportunities for academic engagement both inside and outside the classroom, as well as social and community involvement. The U of A promotes student health and wellness alongside career and life development, and intellectual exchange and interaction with professors, staff, and the broader community.

The outcomes of engagement are many but most readily identifiable are the advancement of knowledge, the development of leadership and entrepreneurial skills and ambitions, involvement in communities both near and far, a sense of belonging and affiliation with the U of A, as well as self-formation and personal development. Ideally, all students will seize opportunities beyond their

academic programs and aspire to learn new life skills, deepen or broaden their engagement with their creative, athletic, or intellectual passions, and contribute to their university, communities and the world in countless ways.



Student housing and the programming offered in residences are important features for attracting students from across the province, the nation, and internationally. The University of Alberta houses only about 13 per cent of its student population in campus residences but has a target of 25 per cent. Every campus strives to offer both residential and commuter students multiple ways and means to actively participate in campus life during the hours spent on campus. To that end, the university supports the development of the whole student and dedicates resources to both academic and co-curricular experiences. The U of A supports in various ways over 400 student groups, and offers academic and personal counselling, health and wellness services, and extensive opportunities for students to participate in collegial governance of the institution. Alumni strongly endorse these initiatives through philanthropic donations to the Annual Fund that supports study abroad, leadership and professional development, and undergraduate research opportunities.

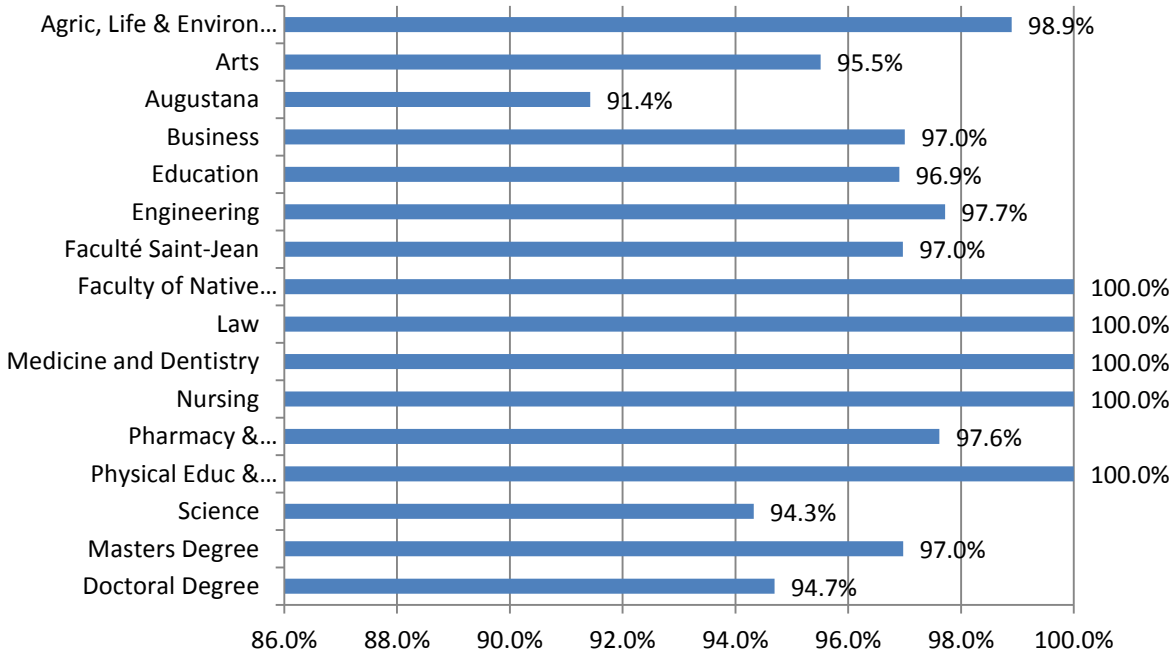
Employment Rates and Labour Force Needs

Statistics Canada reports that the labour force demand for university graduates expanded by 700,000 net positions between 2008 and 2012, despite the dramatic economic issues of that period. High employment rates among graduates from across all disciplines at the University of Alberta, shown in the following Figures N and N, demonstrate the value of a university degree.

Overall Graduate Employment Rate TwoYears After Graduation

Source:
Alberta Enterprise and Advanced Education : Alberta Graduate Outcomes Survey.

Graduate Employment Rate Two Years After Graduation (by Faculty) 2010 Graduates in 2012



The University of Alber ta contributes highly-qualified graduates to several important workforce areas. Please refer to Appendix 5 for the numbers of 2012 U of A graduates in selected fields.

Programming Innovations and Initiatives

Priority: University of Alberta graduates are prepared to think critically, to assume positions of leadership in public and private sectors, to act entrepreneurially, to create cultural and technical innovation, and to be successful in the global marketplace.

Although provincial resources to support new programming have been extremely limited since 2009, the University of Alberta has worked to evolve its programming to meet student and highly-skilled labour market demands. The U of A undertakes a formal, structured review of each faculty on a regular basis, engaging external reviewers from top institutions in Canada and the U.S. These reviews assess program and teaching quality, research quality, and student satisfaction and recommend means for improvement, including reallocation of existing resources, including FLEs, from current programs to those with greater demand or new relevancy.

Flexibility and Mobility

Consistent with other leading global institutions and the University of Alberta's provincial mandate, the U of A is committed to creating a diverse, comprehensive educational environment that sustains intellectual and organizational strength and leadership across the academy. A broad range of programs is offered that allows for flexibility in the pursuit of advanced education and post-secondary credentials, with various entry and exit points for students with differing needs. Well-established methods and programming provide current and prospective students with opportunities to ladder from one level of post-secondary study to another, and to ladder from post-secondary study to additional professional development programs. These varied laddering opportunities include transfer among programs at the U of A, transfer from and into programs at Campus Alberta partner institutions, embedded and free-standing post-baccalaureate certificates, summer institutes, bridging programs, and, soon, pre-baccalaureate college-level programming.

In 2012, the University of Alberta focused on expanding English-language programs to assist highly-qualified prospective and admitted international students improve their language skills and ability to succeed in their degree program. The initiative exceeded its ambitious targets very quickly. From 2011 to 2012, the number of students enrolled in the Bridging Program increased by 67 per cent (from 366 to 612 students).

English for Academic Purposes - Bridging Program students
Student Numbers (Head count)

	2011	2012
Total	366	612
Percentage of BP students within the EAP student population	66.30%	68.92%

Collaborative and articulation programming (where students complete one or two years of study in their home region or country before transferring to complete and receive their degree at the University of Alberta) creates a flexible and diverse array of educational opportunities for undergraduate students. Collaborative programming options for both new and existing programs are part of program renewal.

See Appendix 6 for a list of selected programs offered in partnership with Campus Alberta, Canadian, and International Institutions.
Finally, new programming is essential to meet new and emerging social and economic needs, as well as student demand. Program development in 2012 and 2013 is summarized in Appendix 7.

Knowledge mobilization, entrepreneurship, and leadership

The University of Alberta educates graduates with the knowledge and skills foundational to driving and diversifying Alberta's workforce and economy. The U of A is committed to integrating a research-intensive educational experience with specialized training to enable students to pursue entrepreneurial careers, if they choose, and to become leaders in business, industry, non-profit, and public service sectors.

Programs with entrepreneurship focus

The University of Alberta has a long-standing suite of programs aimed at enhancing Alberta's entrepreneurial capacity for technological, business, and social innovation. These include a Bachelor of Commerce degree in entrepreneurship and family enterprise; an MBA in technology commercialization; an Executive management program; a Senior and Executive Managers' Development Program; and a Citation in Entrepreneurship.

Investments in additional programs and initiatives since the 2012 CIP include:

- Master of Arts in Community Engagement: Trains professionals who are working, or who will work, in community settings in roles that include program evaluation, leadership, social entrepreneurship, program development, and community capacity-building.

- Citation in Social Entrepreneurship: Empowers participants by providing the skills and knowledge to think innovatively, to anticipate and solve problems, and to engage and interact with business communities.

In the coming year, an Innovation and Entrepreneurship certificate program—targeted at graduate students and post-doctoral fellows across the STEM disciplines—will undergo review and approval.

Initiatives to develop entrepreneurship

The University of Alberta will continue to sustain and develop several innovative programs that leverage the entrepreneurial expertise of researchers, staff, and students within the institution, and create opportunities for learning and impact outside the classroom. These include:

- The *Technology Commercialization Centre* supports technological entrepreneurship and commercialization planning and assessment. The aim is to increase Alberta's entrepreneurial

capacity by linking skilled professionals at the science-business interface, and stimulating technology entrepreneurship through partnerships with key stakeholders such as TEC Edmonton, Alberta Innovates-Technology Futures, Enterprise and Advanced Education, NanoAlberta, and Alberta Innovates – Health Solutions.

- The *University of Alberta Venture Catalyst Competition (AVCC)* is a student-led effort designed to encourage entrepreneurship amongst post-secondary students at the University of Alberta. The Technology Commercialization Centre supports and advises this initiative, a feeder into the TEC VenturePrize, as part of a suite of efforts in coordination with TEC Edmonton to enhance entrepreneurship on the University of Alberta campus and across the province.

- *Entrepreneurship 101* is a regular series of workshops and lectures by researchers and professors in the School of Business and the National Institute for Nanotechnology (NINT), assisting post-doctoral fellows in the sciences to develop entrepreneurial skills.

- The *Industry Collaboration Program (ICP)* builds upon the services, resources, and networks in industry and at the University of Alberta to provide opportunities for university students seeking real-life applications, work experience, and employment. The program also creates a value-added environment for industry seeking skilled innovation services.

- The *Undergraduate Research Initiative*, now in its third year, creates and facilitates opportunities for undergraduates to engage directly in research and creative activities under the guidance and mentorship of university research leaders.

- *Graduate and Post-doctoral Fellow Professional Development* programs prepare graduate students and post-doctoral fellows for both academic and non-academic employment and to be competitive in the global market.

- The *Community Service Learning* program provides students with “hands on” learning experiences by aligning university course assignments with volunteer work in local communities, industry, and non-profit organizations. CSL marked its tenth anniversary in 2012, having tripled annual enrolment since 2007 to 750 students in 70 courses and 25 disciplines, and acquiring more than $2 million in external philanthropic funding.

- *Professional upgrading* continues to be a defining element of the U of A’s professional faculties, its Faculty of Extension, and its humanities and sciences core through special programs designed to meet the needs of public and private sector partners.

Initiatives in Leadership

The University of Alberta strives to foster leadership as an essential attribute of local and global citizenship, both in the institution as a whole and within each student. Leadership, as a concept, skill, and activity in itself, is offered as a field of study for credit and non-credit continuing education programming, professional development activities, and scholarship support. U of A leadership initiatives include:

- The *Municipal Management & Leadership Certificate* and *Leadership Development Program* is offered by the School of Business, while the Faculty of Education offers a specialization in *Educational Administration and Leadership*.

- Numerous donor-funded *undergraduate leadership awards* reward and recognize students involved in leadership activities in university, community, cultural, political, sports or other arenas.

- The *Green and Gold Student Leadership and Professional Development Grant* funds undergraduate and graduate students who want to develop leadership skills through participation in professional development activities (supported by University of Alberta Annual Fund donors).

- The *Arts Leadership Cohort* in Lister Hall residences is designed for students who aspire to be involved in their community, develop their leadership skills, and have an impact on campus and in the greater community.

- The *Students' Union Annual Leadership Summit* assists student leaders in developing leadership skills.

Plans are underway for a University of Alberta Leadership College. The vision is to offer an intensive academic, residential environment that will foster the leadership potential of motivated, high-achieving students through international study and travel, community service learning, and undergraduate research experiences.

Provincial and National Collaborations

Priority: The University of Alberta is a valued and innovative leader and partner of other post-secondary institutions in Campus Alberta and across Canada in achieving shared academic and organizational aspirations.

Campus Alberta Collaborations

One of the priorities of the Ministry of Enterprise and Advanced Education is to ensure a dynamic and innovative Campus Alberta system that maximizes and leverages expertise and resources. The University of Alberta serves its mandate as the province's flagship institution in part through leadership in Campus Alberta's academic enterprise, in both programming and research.

Significant institutional investment in the University of Alberta Library, for example, ensures that researchers, instructors, and students throughout Campus Alberta as well as the entire Government of Alberta have free digital and physical access to the holdings of one of North America's top-ranking research libraries. In addition, while the Government of Alberta provides financing, the University of Alberta Library manages the administration of the Lois Hole Campus Alberta Digital Library initiative, an initiative dedicated to making commercially-licenced digital materials and new digital collections widely available.

The University of Alberta continually develops and enhances programming partnerships with Campus Alberta institutions within the CARI sector as well as the other five post-secondary sectors. Details on academic programs that have been established or initiated in 2012 are found in Appendix 6**.**

inteThree notable examples of institutional leadership and sharing of resources and best practices since the 2012 CIP are:

- *Mental Health Initiative.* Providing adequate mental health services to students has become a major focus for North American post-secondary institutions. The University of Alberta has taken the lead in Campus Alberta by advising the government on the severity of the situation among post-secondary students and requesting provincial support to enhance institutions' ability to provide essential services to students. Currently, to ensure that sustainable medical and mental health funding and services are established, the U of A is preparing a proposal for a Family Care Centre to be located on North Campus. While this concept is being developed, the ministry accepted a bridge-funding proposal from the U of A, which subsequently led the ministry to invite proposals from the universities of Lethbridge and Calgary. The U of A's request for $3 million over three years was approved for January 2013. U of L and U of C were each awarded similar $3 million funding.

- *Information Technology.* The University of Alberta's Academic Information and Communication Technologies unit developed a cost-effective way of putting IT infrastructure into classrooms, which has been shared with and adopted by the University of Calgary. The U of A has developed expertise in installing and deploying the Eduroam technology, and shared this expertise with other Campus Alberta institutions. In addition, the U of A has collaborated with Athabasca University, NAIT, EAE, and Cybera to consolidate the hosting of the University of Alberta Learning Management System (Moodle) at Cybera. To complement the Ministry of EAE investment of approximately $235,000, the partners absorbed the remaining hardware, support staff, and ongoing operational costs. Other Campus Alberta institutions have been invited to join this initiative, which has served as a proof of concept in sharing expertise and reducing costs with economy of scale. There are opportunities to extend these types of initiatives to other IT issues, such as identity management, as resources allow.

- *Harmonizing Provincial Health Research Ethics.* The University of Alberta played a leadership role within the Executive Sponsors group for Alberta's Health Research Ethics Boards (HREBs). The HREB consortium signed a reciprocity agreement to harmonize multi-jurisdictional health research ethics applications as part of AI-HS's initiative to define a framework and mechanisms for sharing appropriate health research ethics information. Prior to 2012, the U of A had reorganized and integrated its internal ethics review processes, and built an on-line ethics review tracking system. During 2012, the U of A's Research Ethics Office and Administrative Information System portfolio both shared their organizational and technical experiences about this process with other HREB members, and helped to implement a provincial health research information framework. The University of Lethbridge will use the U of A ethics application and review system for its own internal processes as a result of project charter development with the U of A. The anticipated outcome of this provincial initiative is to further enhance health research investments in Alberta.

National Collaborations

The U of A places a high priority on leading, supporting, and participating in national research and innovation initiatives, and where possible, working in partnership with the Government of Alberta to leverage resources. Accordingly, the university invests internal resources (e.g., base positions, space, and/or funding contributions) in the following national initiatives: The National Institute of Nanotechnology; the Pacific Institute for Mathematics; SNOLAB (neutrino physics, with expansion into studies within seismology and geophysics); TRIUMF (subatomic physics); WestGrid (one of the four regional consortia that operate Compute Canada's supercomputing resources); Canadian Light Source (synchrotron research); and more recently, the IBM-Alberta Centre for Advanced Study (initiated at the University of Alberta and now expanded to the University of Calgary). These investments bring federal and international research dollars into the province, and expand the province's research capacity through access to highly specialized resources and expertise. Complementary investments by the province in such national initiatives raise the profile of the province, the U of A, and all Alberta CARIs nationally and globally.

In support of French-language programming, under the terms of the Canada/Alberta Agreement on Minority-Language Education and Second Official Language Instruction, the University of Alberta received $3,787,659 in 2011-2012 and is expecting the same amount from Heritage Canada via Alberta Enterprise and Advanced Education in 2012-2013. This is an important national collaboration among the university, the provincial government, and the federal government.

The University of Alberta will also continue to partner with other Canadian institutions on common objectives that can leverage complementary expertise and resources. There have been two notable outcomes associated with these investments since the 2012 CIP: the success of the CALDO partnership in recruiting full-funded graduate students from Brazil, and the India–Canada Centre for Excellence (IC-IMPACTS) success. These outcomes advance both the U of A's and Alberta's international objectives and are described in the next section.

Internationalization

Priority: The U of A forms international collaborations that create exceptional learning, discovery, citizenship, and innovation opportunities, advancing its vision to be one of the world's top publicly funded institutions.

Internationalization is an institutional objective, an institutional strategy, and an institutional outcome. The University of Alberta must reach beyond Canada's borders to take its place among globally-engaged institutions and serve as an exchange channel for Alberta capacity and international capacity. Internationalization is also a broad institutional strategy that advances nearly all elements of the U of A's academic enterprise and objectives: recruitment of exceptional undergraduate and graduate students from targeted highly-ranked foreign institutions; education abroad activities and international internship placements for Canadian students; developing and maintaining international relationships, partnerships and projects that enhance teaching-and global-community service; curriculum development in global citizenship; and the creation of international research consortia and partnerships that leverage institutional strength and increase research capacity and support.

The University of Alberta's strategies for internationalization are achieving results. International enrolment at both the undergraduate and graduate levels has been increasing over the past three years. Research funding from foreign sources shows a large increase over the last year's level (See Figure TDB

in the design process). Shared credentials and degrees with top tier international partners have been put in place, and international industrial internship opportunities for Alberta students have emerged through the university's interaction with these partners. Many of these outcomes emerge from the U of A's existing international research consortia, and continued efforts to establish new ones in strategic areas that advance its learning, teaching, and research. The U of A's internationalization strategies and additional details on outcomes are summarized at the end of this chapter. The sections that follow highlight institutional-level considerations and specific notable achievements.

Institutional partnerships

The University of Alberta will continue to build partnerships with top-tier institutions in five priority countries: Germany, China, Brazil, India and (regions within) the U.S. At the same time, the U of A will also sustain and develop other partnerships outside these priority areas should an emerging opportunity also meet strategic goals, especially in the area of global citizenship. The U of A's on-going relationship with the Aga Khan University is one such example.

***China*.** Since the 1990s, the University of Alberta endeavoured to build a relationship of respect and trust with China's top-tier education and research institutions, specifically Fudan University, Tsinghua University, and the Ministry of Science and Technology (MOST). The university has 60 active memorandums of understanding with Chinese universities, research institutes, and government agencies.

Outcomes since the 2012 CIP include the following:

- *New water research initiatives on water borne diseases, toxicology, and human health*: Aligned with the U of A's water initiative, these programs involve the State Key Laboratory of Environmental Chemistry and Ecotoxicology (SKL-ECE), the Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences (Beijing), College of Environmental Sciences and Resources, Zhejiang University, and Harbin Institute of Technology.

- *Sino-Canadian Energy and Environment Research Initiative - Tsinghua University*: This initiative will advance research on clean energy, with a key focus on effectively and responsibly utilizing the energy resources for social, environmental and economic benefits. This initiative will support a broader international research collaboration involving affiliated units, industry, and other stakeholders from Canada and China.

- *Canadian-Chinese Graduate Student Summer School – 2013*: In collaboration with UBC, Dalhousie, Laval, UManitoba, and UOttawa, the University of Alberta will lead development of a program preparing graduate students for success within the international context.

- *Medical Sciences Graduate Program (MSGP) – Shantou University*: The MSGP-Shantou program, a joint PhD program between the University of Alberta and Shantou University Medical College, received its first cohort of students in 2012.

- *U of A Masters of Financial Management – delivered in China*: Offered in partnership with Xi'an Jiaotong University in China, this master's degree is designed for individuals who aspire to fill leadership roles, such as VP Finance, Controller, Treasurer or Chief Financial Officer, in large private and public sector organizations, particularly those with a global orientation.

***Germany*.** The University of Alberta's association with German institutes, universities, and government agencies has matured extensively over the last 10 years. The current foundation of this relationship consists of a major research partnership with the Helmholtz Association of German Research Centres; member institution status in the Technical University of Munich's science and engineering graduate programs; research mobility programs with Bavarian universities in the areas of computing science and earth observation sciences; active exchange programs in the humanities and fine arts with Ludwig Maximilians Universtät and Leipzig University; and the establishment of the sixth worldwide German Canadian Centre for innovation and Research at the U of A.

Outcomes since the 2012 CIP include:

- Joint PhD agreement with Ludwig Maximilians Universtät: The University of Alberta and Ludwig-Maximilians-Universität (LMU) offer a jointly-delivered doctoral degree program in which students complete part of their program abroad at the host university.

- Berlin Summer Program—2013: This program will offer course credit opportunities for U of A undergraduates in language instruction and internships in German cultural and political organizations. This program is the first in a series, with others being developed in China and the USA for launch in 2014 and in Brazil for launch in 2015.

Brazil. In 2010, the U of A identified Brazil as a strategic area for partnerships. In 2011, the university joined with Laval University, Dalhousie University, and the University of Ottawa to create the CALDO consortium. CALDO signed agreements with Brazil's two premier funding agencies, the Ministry of Science and Technology's National Council for Scientific and Technological Development (CNPq) and the Ministry of Education's Federal Agency for the Support and Evaluation of Graduate Education (CAPES). These agencies administer scholarships with Brazil's Science without Borders (SwB) program, which is sending 75,000 fully-funded students to study abroad.

Outcomes since the 2012 CIP include:

- Through the CALDO consortium, the University of Alberta enrolled 52 fully-funded undergraduate students in September 2012, the first year of the SwB program, and an additional nine students in January 2013.

- The U of A is initiating cotutelle agreements with the Federal University of Minas Gerais (Brazil), Technische Universität München (Germany), and University of Campinas (Brazil) in areas of science.

India: In 2009, President Samarasekera launched accelerated strategic outreach in India, to pursue partnerships with India's universities, research institutes, and industries. Active research MOUs and exchanges currently exist in the domains of oil, gas, agriculture, and nanoscience, with the Indian Institute of Technology, Mumbai, the Indian Institute of Science, Bangalore, as well as with industry leaders Tata Consultancy Services, Petrotech, and Oil and Natural Gas Corporation Limited, among others.

Outcomes since the 2012 CIP include the following:

- IC-IMPACTS: A joint proposal submitted by the U of A, the University of British Columbia, and the

University of Toronto was selected by the federal government to establish the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability, or IC-IMPACTS. The centre will work in three areas of strategic importance to both India and Canada: integrated water management; sustainable and safe water Infrastructure; and water-borne disease prevention and treatment. These areas also align with the U of A's water initiative. Research findings will be disseminated with help of local governments, NGOs, trade organizations and public sector in both India and Canada. Co-partners in India include: Indian Institutes of Technology in Delhi, Roorkee and Bombay; Birla Institute of Technology in Pilani; Vallabhbhai Patel Chest Institute; and the International Centre for Genetic Engineering and Biotechnology. Total federal funding: $13.8M over five years.

- Ganga River Basin —Industry/Academia Partnership: In partnership with ETI Dynamics in the United Kingdom, the U of A is bringing together Canadian research institutions and technology companies into a science, technology, and innovation "country cell' that will address aspects of the Ganga River clean-up project in India.

United States: The U of A's U.S. strategy has been underway since 2010 and focuses on regions that complement the university's research activities, and advances recruitment and alumni objectives. Special emphases include increasing the number of visitors funded under the Fulbright Program, and defining roles for the University of Alberta in influential U.S. university and policy associations.

Outcomes since the 2012 CIP:

- 65th Annual Meeting of the Council of State Governments- West: The CSG-West held their annual conference in Edmonton, under the theme of Western Frontiers — On the Edge of Innovation. The U of A hosted a one-day forum event for attendees at the School of Business' Western Centre for Economic Research.

- Alberta Institute for American Studies: An external U.S. panel conducted an institute review and presented several strategic recommendations on enhancing the institute's disciplinary focus and the role it should play in moving forward the U of A's overall U.S strategy.

- Fulbright Program: Six Fulbright-funded U.S. scholars and visitors

Programs for global citizenship and readiness

To meet employer expectations in Canada and abroad, new graduates need the knowledge, skills, and understanding to function effectively in a global marketplace. As a result, students expect their university education to prepare them well for international opportunities. To answer this need, the University of Alberta will continue to recruit faculty experts in the history, sociology, business, education, and economics of globalization, who are able to develop outstanding undergraduate and graduate programs in these areas. The University of Alberta has offered such programs for several years, including a certificate in globalization and governance; a Bachelor of Commerce major in international business; an MBA in International business; and various language programs.

Outcomes since the 2012 CIP include the following:

- Four new multi-faculty, interdisciplinary education abroad programs have been developed in the areas of business and health.

- New certificate programs in European Studies, Latin American Studies, India Studies, International Learning, and Chinese translation.

- New citation for English for Arabic Speaking Students.

The University of Alberta will continue to invest in special training and learning opportunities for international professionals from the public, private, and academic sectors. These activities advance the university's global reputation and relationship building objectives.

Activities since the 2012 CIP include the following:

- *University Management Program*: Offered in 2011-12 to 25 administrators from top Chinese universities, this program will continue in 2012-13 for participants from both Chinese and Iraqi universities.

- *English training projects and management programs*: Designed especially for public professionals from Shanghai, Saxony, Germany, and Japan.

Individual faculties also have units charged with supporting, sustaining, and developing global research, training, and citizenship.

Research Capacity and Impact

Priority: The University of Alberta is among the top public institutions that are internationally recognized for areas of excellence and impact across the breadth of discovery, innovation, and creative activities.

In keeping with a public university of its size and stature, the U of A engages in research and creative activities across all domains of human endeavour. Advances, insights, and impact increasingly span traditional administrative units and disciplinary boundaries. For this reason, the University of Alberta will continue to sustain and develop areas of excellence and impact within each of the following broad themes: *Humanities and Fine Arts; Social Structures and Systems; Science and Technology; Energy; Environment; Food and Bioresources;* and *Health and Wellness.* Public universities that are globally recognized as being best in class have identifiable excellence and impact in specific areas within most or all of these broad themes. Our continued commitment to this full spectrum of inquiry positions the U of A to make the comprehensive, cross-disciplinary contributions towards the scientific, social and cultural innovations needed to support Alberta's identified objectives and outcomes for its citizens: *effective resource and environmental management, a broadened economic base, and resilient and healthy individuals and communities.*

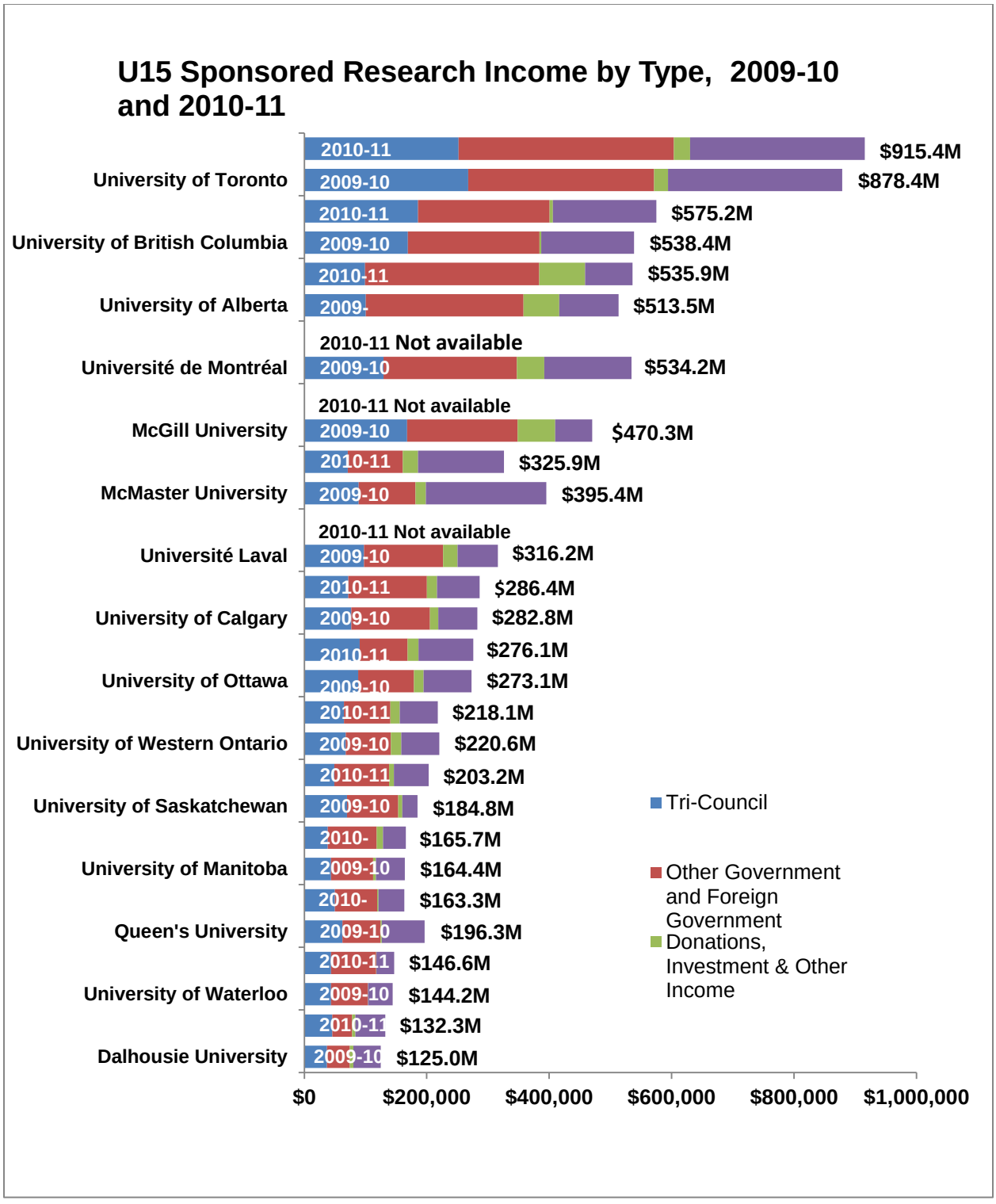
U of A's research capacity consists of its people, and the financial, physical, and human resources it provides to enable them to make significant impact in their fields. Specifically, the U of A builds research capacity by investing in talented faculty members, investigators, and specialized non-academic staff; research chairs; exceptional graduate students and post-doctoral fellows; equipment, resources, and

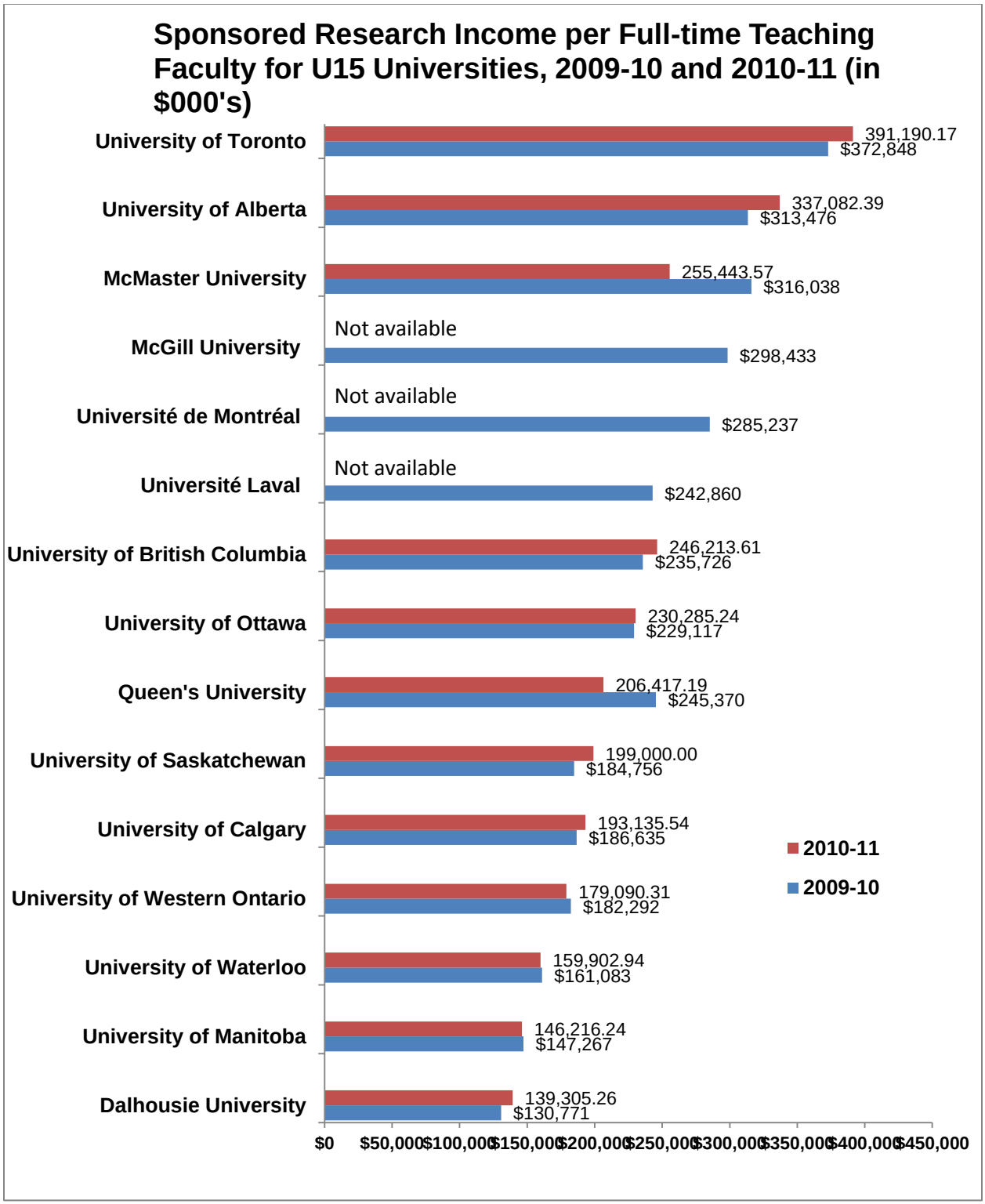
infrastructure for individual faculty as well as multi-user/multi-team activities; centres, institutes, and collaborative initiatives within the institution and in partnership with other Canadian and global institutions; core research resources, facilities, and platforms; and capital infrastructure development undertaken to accommodate the evolving needs of research and to pursue new avenues of impact.

The University of Alberta uses number of quantitative and qualitative measures to assess the quality and impact of its research capacity investments and initiatives. These measures and the U of A's strategies for improvement are provided at the end of this chapter, along with example outcomes achieved since the 2012 CIP. The following sections present some of these measures along with institutional-level considerations and notable achievements.

Assessing Quality and Impact

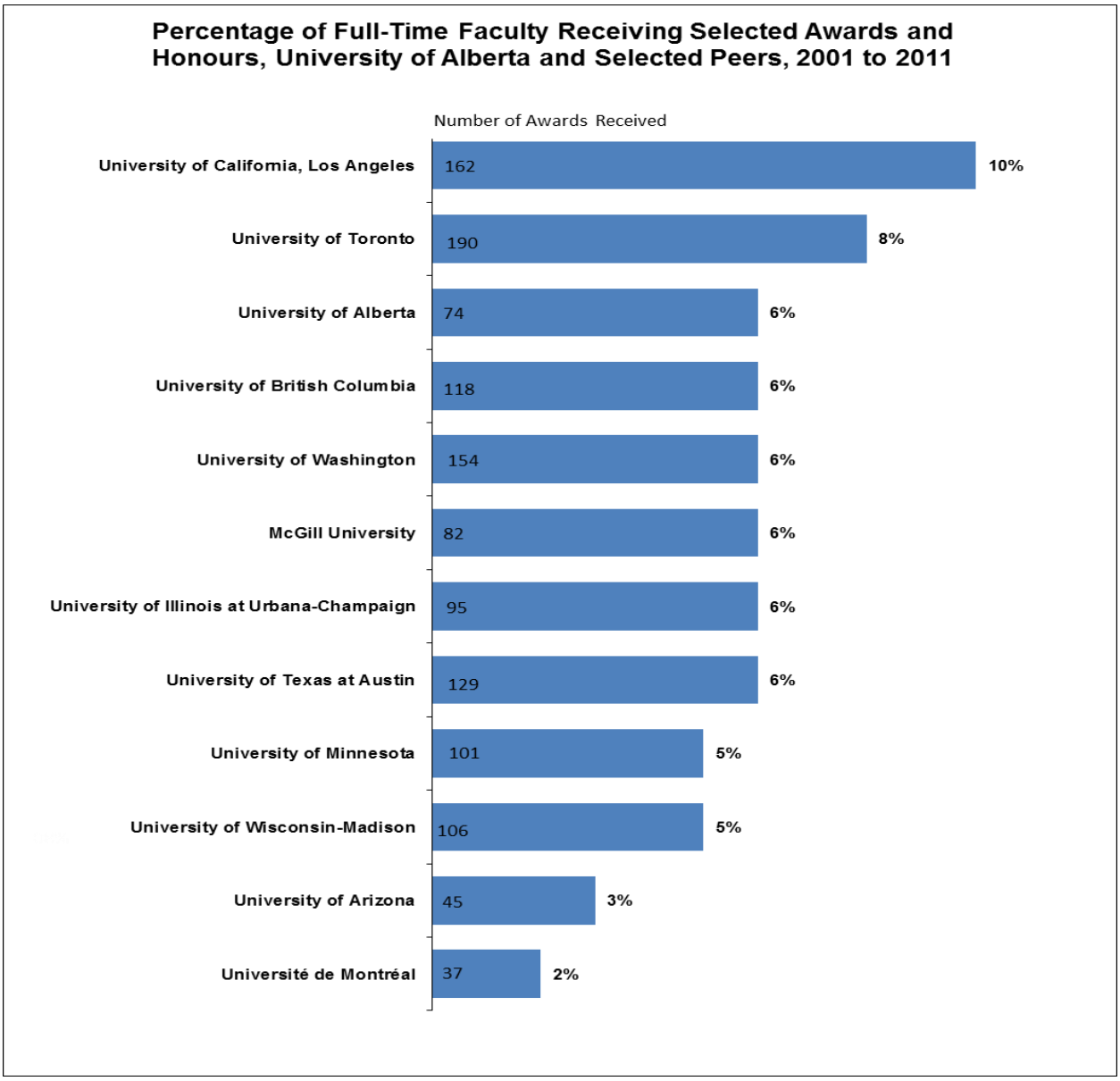
The U of A's 2010-2011 total sponsored research income increased by 4 percent over its 2009-2010 level. For 2010-2011, the University of Alberta ranked third among U15 Canadian universities in total sponsored research income ($535.9M) and second in sponsored research income per full-time teaching faculty member ($337,082). Research income from federal and other sources is an essential element of Alberta's research and innovation capacity, the U of A is continuously invests resources to increase the success of its reseachers in funding competitions and has extended a pilot grants support program to Tri-Council funding.


U15 Sponsored Research Income by Type, 2009-10 and 2010-11
University of Toronto
2010-11
$915.4M
2009-10
$878.4M
University of British Columbia
2010-11
$575.2M
2009-10
$538.4M
University of Alberta
2010-11
$535.9M
2009-
$513.5M
Université de Montréal
2010-11 Not available
2009-10
$534.2M
McGill University
2010-11 Not available
2009-10
$470.3M
McMaster University
2010-11
$325.9M
2009-10
$395.4M
Université Laval
2010-11 Not available
2009-10
$316.2M
University of Calgary
2010-11
$286.4M
2009-10
$282.8M
University of Ottawa
2010-11
$276.1M
2009-10
$273.1M
University of Western Ontario
2010-11
$218.1M
2009-10
$220.6M
University of Saskatchewan
2010-11
$203.2M
2009-10
$184.8M
University of Manitoba
2010-
$165.7M
2009-10
$164.4M
Queen's University
2010-
$163.3M
2009-10
$196.3M
University of Waterloo
2010-11
$146.6M
2009-10
$144.2M
Dalhousie University
2010-11
$132.3M
2009-10
$125.0M
$0
$200,000
$400,000
$600,000
$800,000
$1,000,000
Tri-Council
Other Government and Foreign Government
Donations, Investment & Other Income



The awards and honours received by our faculty are another important indicator of the excellence and impact of the University of Alberta's professoriate. Such awards and honours reflect both the quality of the professors recruited and retained, and the quality of the environment and opportunities provided for them to have impact in their fields. The U of A benchmarks its progress in recruiting and supporting

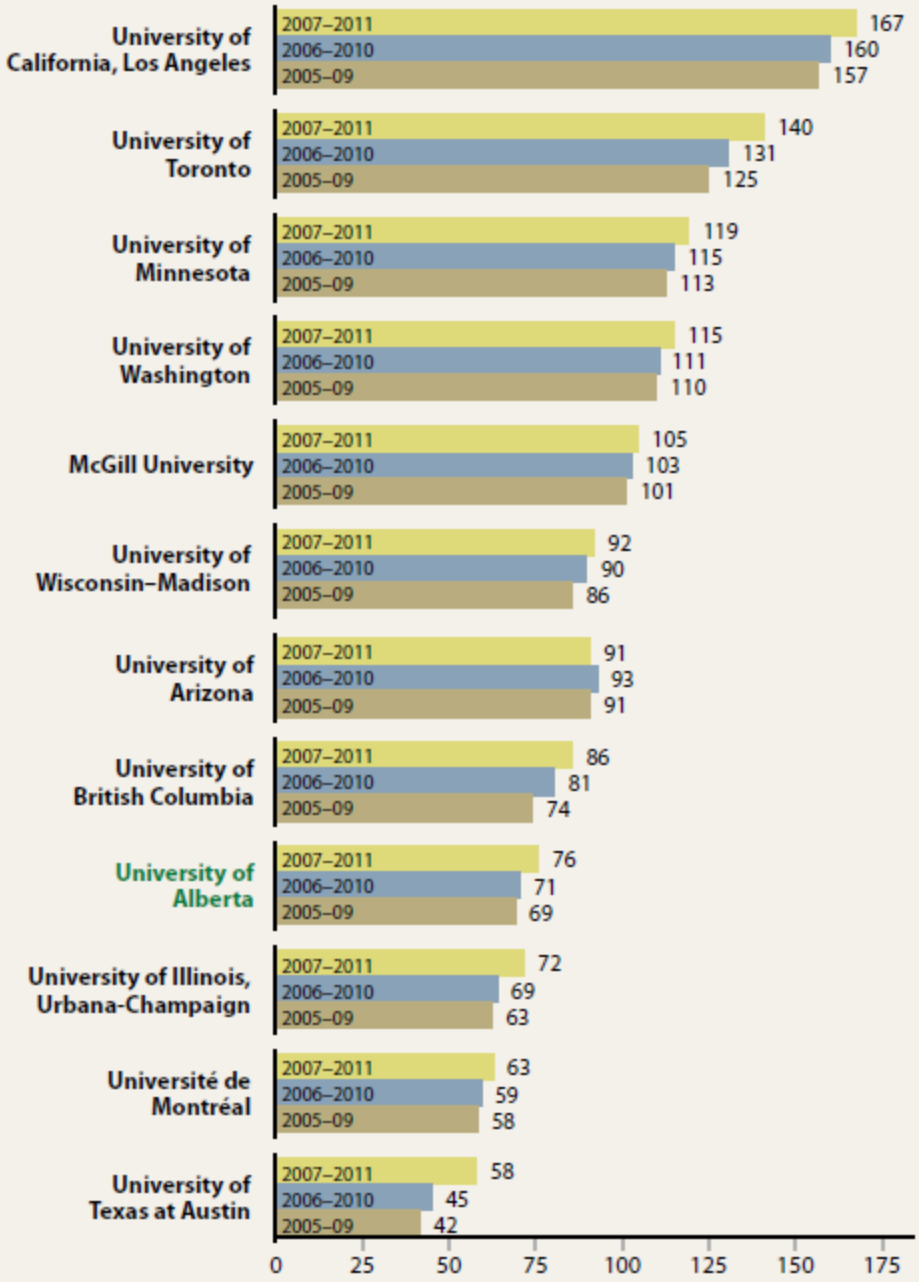
exceptional scholars, as evidenced by faculty awards and honors, against a target peer group of Canadian and U.S. institutions. The U of A also works to ensure that achievements of its professoriate are recognized by distinguished groups, and celebrates that recognition when it occurs.



U of A faculty received several notable awards during 2012. Highlights include Dr Lorne Babiuk, Vice-President (Research)'s receipt of one of the world's most prestigious health research awards, the Canada Gairdner Wightman Award. Greg Hollingshead, Professor Emeritus, was awarded the Order of Canada. Researchers affiliated with the Alberta Glycomics Centre were awarded the 2012 NSERC Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering, the first such award given to researchers at our institution. Four faculty members were elected as Fellows to the Royal Society of Canada, two to the Canadian Academy of Health Sciences, and one to each of the Agricultural Institute of Canada and the American Academy of Nursing.

FIGURE 9

Citations in All Fields per Average Full-Time Faculty, University of Alberta and Selected Peers, 2005–2009, 2006–2010 and 2007–2011



Notes: Staff figures represent averages for the reported years. 2011–12 UCASS figures are not available.

Sources: InCites TM, Thomson Reuters, (2012). Global Comparisons, 5-year trends.
Canadian university faculty counts based on Statistics Canada: Salaries and Salary Scale of full-time staff at Canadian Universities Reports
US university faculty counts based on their respective Common Data Sets for each respective year.

The quality and impact of the University of Alberta's research capacity is also reflected in the requests that U of A professors receive to provide expert advice on policy and legislation. Examples of significant advisory roles held by U of A professors during 2011-2012 include: member of the Expert Panel on Federal Support to Research and Development, appointed by the federal Minister of State for Science and Technology; member of the Human Rights Advisory Council, Canadian Museum for Human Rights; member of the Scientific Advisory Committee, U.S. Bureau of the Census; reciprocal international observer in the Waitangi Tribunal Hearings in New Zealand; and invited witness at the Standing Senate Committee on Legal and Constitutional Affairs, authorized to examine and report on the provisions and operation of the Act to amend the Criminal Code.

Graduate Students and Post-doctoral Fellows

Graduate students and post-doctoral fellows often form the core of research teams working on complex sponsored research projects, creating strong links with private and public sector partners. Because of the level of knowledge and skill graduate students and post-doctoral fellows bring, professors can pursue large-scale, visionary, and sometimes risky, research agendas—agendas that have the greatest potential for producing major discovery and/or innovation. Thus, top faculty members seek to join institutions with a reputation for attracting strong graduate students and post-doctoral fellows.

The U of A has undertaken to evaluate and evolve its institutional strategies and operations for graduate education structures, systems, and programming. This plan encompasses recruitment, financial support, and co-curricular and professional development opportunities and it is a critical strategic initiative undertaken to enhance the university's total research and teaching capacity in the coming years.

The U of A also has a strategic priority to roughly double its current post-doctoral fellow cohort (593). The percentage of post-doctoral fellows to full time continuing faculty continues on an upwards trajectory, increasing from 23.8 per cent in 2010-11 to 28.1 per cent in 2012-2013. Training post-doctoral fellows is a distinguishing feature the CARI's mandate, and thus, is particularly important for the U of A as the province's flagship research institution. A challenge in meeting this objective is that fellows are not counted among faculty, staff, or students in determining direct and indirect institutional operating costs and capital plan development.

Competitive and well managed research resources

The University of Alberta acquires, sustains, and operates highly specialized and diverse research resources, facilities, and services that support discovery, translational, and pre-commercialization activities. The U of A also provides the platform for regional development and the attraction of external private sector interests in biomedical, medical, livestock, and health sectors. These core research resources, facilities, and services support work undertaken with and on behalf of private and public sector stakeholders, to advance the research priorities of the province.

Canada, like other nations, funds programs to ensure that it has globally competitive research and innovation infrastructure. Much of this infrastructure resides within Canada's research-intensive universities, where they are used to train exceptionally skilled graduates and to advance discovery and innovation, often in partnership with external partners. The University of Alberta's success in acquiring these resources depends solely on the excellence of its researchers. The U of A was very successful in

the 2012 Canada Foundation for Innovation (CFI) competition, receiving approximately $14M dedicated to four areas: nanoscience and nanotechology; medical imaging; rehabilitation neuroscience; and environmental chemistry.

There are other institutional core facilities (e.g., animal care facilities, research stations, specialized instrumentation units) that evolve, not directly through infrastructure programs such as CFI, but as a natural requirement of the university's research and training enterprise. The quality of these facilities also contributes to and determines the quality and functionality of Alberta's overall research and innovation capacity.

The U of A aspires to provide competitive research and innovation capacity that operates at the highest level of efficiency for internal and external stakeholders. The university continues to undertake a number of strategies with its available resources to cover direct operating costs. To obtain the greatest efficiency it can through these steps and others, the U of A looks forward to working with the Ministry of Enterprise and Advanced Education to identify new ways to effectively sustain these core research and innovation platforms.

Appendix 9 provides details on funding gaps related to specific specialized research platforms associated with Alberta priorities, to the indirect costs of postdoctoral fellow training, and to sustaining core facilities that serve external stakeholders.

Areas of Capacity and Alberta's Priorities

The University of Alberta takes a lead role in supplying Alberta with the research capacity it requires to achieve the continued and improved social well-being of its citizens, especially within a global context. Three of these objectives, as identified in the 2012 *Alberta Research Innovation Plan,* are the following:

- *Effective Resource and Environmental Management*: manage the cumulative economic, social, cultural, and environmental effects of past, present and foreseeable land-use activity associated with developing all of Alberta's natural resources.

- *A Broadened Economic Base:* develop a bioeconomy that transforms the province's biological resources into new sources of energy, new industrial sectors and value-added products, and new economic opportunities for rural communities and producers.

- *Resilient, Healthy Communities:* provide individual Albertans and communities with effective, inclusive, and accessible structures and systems for health services, education, and cultural engagement so that they can embrace regional and global changes and opportunities.

The sections below present brief descriptions of the University of Alberta's research capacity in its seven thematic areas, with details on recent and projected capacity growth, as well as on the contributions the institution's research capacity makes to Alberta's research priorities. Refer to Appendix 8 for details on the U of A's investment in these areas, through research chairs, centres and institutes, and infrastructure, as well as for information on the university's special capacity within each theme.

The U of A has also undertaken a water initiative that leverages and enhances the water research capacity that exists across 90+ water researchers, and a host of existing centres, international and industrial partnerships, specialized core facilities, and research land holdings. This initiative builds on the university's research capacity developed in four areas over the last several decades: energy, environment, agriculture, and health. Over time, research activities undertaken at the U of A have placed a greater emphasis on water—particularly the pressing global challenges that emerge where issues relating to energy, environment, agriculture, and health intersect. Water research is also forming the basis for new international partnerships in China and Brazil (see International collaborations). The U of A's water initiative will integrate scientific, technological, and socio-economic research approaches to tackle major challenges, such as water usage and conservation in resource extraction and agriculture and water quality. Through close collaboration with Alberta Innovates corporations and with international advisors, the initiative aims to enhance the university's contribution to solving both Alberta's water challenges and global water challenges.

Humanities and Fine Arts

Humanities and fine arts scholarship advances clarity, insight, and understanding about cultural development and interactions; historical influences and contexts; awareness and construction of meaning; and the multiple media and creative activities that individuals, societies, and cultures use to express themselves and their ideas.

The U of A has increased its capacity in the areas of visual expression; indigenous languages and cultures; and philosophy. Intended areas of growth include performing arts; philosophy; indigenous and First Nations scholarship; cross-cultural studies and languages, especially related to East Asia and China.

Impact on Alberta: Alberta's vision for healthy and resilient individuals and communities has identified culture, community engagement, and "inclusion" as central areas of concern. U of A's research capacity enables these notions to be framed and understood within the 21st century context of globalization pressures. Strong capacity exists in the history and cultural expression of peoples, both indigenous and new to Alberta. Application of this capacity has led, for example, to the development of agriculture management policies and programs in other provinces (e.g., Manitoba) as they affect First Nations' participation in an agricultural economy. The University of Alberta's humanities research capacity also underpins some of the institution's new entrepreneurship initiatives and anchors new international activities.

Fine arts scholarship at the U of A sustains and enriches the cultural environment of Alberta's capital region, and drives the region's cultural and artistic economic sectors, enhancing Alberta's competitiveness and global marketability as a jurisdiction for both industries and individuals. The university's investment in this area directly advances the cultural experiences and opportunities of Alberta's citizens through activities at the Timms Centre for Performing Arts, the Camrose Performing Arts Centre, and Convocation Hall. The U of A also contributes through on-going interactions with symphonies, theatre companies, the Edmonton Fringe Festival, the Works, and the Art Gallery of Alberta. Other examples include the university's Festival of Ideas, presented in partnership with the Edmonton Arts Council of the City of Edmonton, and activities undertaken within centres and institutes focused on francophone heritage, central and eastern European cultures, China, and Japan.

Social structures and systems

Social sciences advance the understanding of how social structures, institutions, and systems evolve, act, and interact to influence the behavior, effectiveness, and well -being of individuals, groups, regions, and nations. Society's changing educational, political, economic, and legal objectives are realized through advances and innovations in its social structures and systems.

The U of A has increased its research capacity in the areas of educational measurement and policy; legal studies, particularly corporate, criminal, and aboriginal law; economics, (including natural resource economics), corporate sustainability, business finance; political and social structures; and information privacy, access, and protection. Areas for intended future growth include corporate social responsibility; international business; innovation and entrepreneurship; Aboriginal social structures and systems; and educational technology.

The University of Alberta is the lead institution for the multidisciplinary CIHR Alberta Network Environments for Aboriginal Health Research, which assembles professionals in Aboriginal healthcare, education, public health, sociology, nursing, and nutrition. As well, the U of A's Aboriginal Health and Education initiative investigates culturally appropriate health care and services, and indigenous approaches to health service and delivery issues.

Impact on Alberta. Alberta's research agendas for managing cumulative effects of resource development and for developing a bioeconomy identify notions of "social license," corporate responsibility, community resiliency, and engagement as central challenges. The U of A provides broad socio-economic research capacity for addressing these complex challenges. This capacity can inform policy and program development related to areas such as market-based instrument programs for the provision of natural resources such as water; land use; community response to climate and population change pressures; and the collaborative community management and use of natural resources . Research capacity in professional learning, communities of practice, and life-long learning also directly addresses the labour and workplace needs of both urban and rural communities.

The University of Alberta's continued investment in educational technology, as well as educational research and learning programs with Aboriginal partners, contributes to ensuring effective and inclusive educational systems and structures in both urban and non-urban communities. The U of A intends to develop additional research capacity development in entrepreneurship, innovation ecosystems, and technology commercialization; these topics have emerged as key issues within Alberta's diversification agenda.

Science and Technology

The University of Alberta sustains and develops expertise and impact in the natural and physical sciences, engineering, human behavioral sciences and neurosciences, mathematics and statistical sciences, computing sciences, nanoscience, and nanotechnology. The U of A aims to lead and to participate in national and global efforts aimed at advancing fundamental discoveries, particularly in domains such as space sciences and physics, which require the intellectual resources of multiple nations and institutions.

The University of Alberta has increased research capacity in ecology; plant sciences, food sciences, epigenetics, and bioproduct development; theoretical and applied mathematics; astronomy; nanotechnology and nanoscience; and biomedical engineering. Areas for future growth include these

areas, as well as land use planning; chemistry; drug production and drug toxicology; rehabilitation sciences; and neurosciences.

Impact on Alberta. The U of A's ability to lead and participate in multinational "big science" efforts in areas such as space sciences, climate change, and physics contributes to Alberta's intellectual reputation and global impact, and creates scientific and engineering training opportunities for Alberta students at the most elite science installations across Canada and the world (e.g., CERN). The U of A's capacity also is well established in provincial priority areas of nano, ICT, and "-omics" , which serve as platform sciences for innovations in education, health, the bioeconomy, and sustainable energy and environment.

Research capacity in data analytics, identified is a strategic priority for AIberta Innovates-Technology Futures, continues to advance with the additional opportunities provided by the IBM-Alberta Centre for Advanced Studies. Areas of focus in data analytics that support Alberta priorities include earth observation sciences resource geosciences; remote sensing; and drug design. Theoretical and applied mathematics and statistics serve as additional 'platform' disciplines that enable advances in these areas as well as in economic and social modeling, business and finance, and industrial analytics. The university's capacity next-generation modeling methods, sciences, and technologies for environmental and natural resource applications (e.g., exploration, prediction, and monitoring) continues to support collaborative research projects with several Alberta ministries and with international partners in Germany and Brazil. Work in human cognition and behaviour contributes to evidence-based policies and practices for optimizing child and family development, the development of innovative educational technologies, and the diagnosis and treatment of neurological disabilities, diseases, and disorders, especially related to aging. These broad topics and related ones are signalled as priority concerns by different ministries in their respective strategic plans.

Energy

The University of Alberta's cross-disciplinary and cross-sector energy research addresses all aspects of conventional and nonconventional energy development and distribution, environmental sustainability, and economic analysis, market instruments, and policy.

The U of A has recently increased its research capacity in all aspects of sustainable energy exploration, recovery and processing, including new carbon sequestration policies; natural resource and energy economics; resource geosciences; and hydrochemistry. There is intended capacity building in these and other areas.

Impact on Alberta. Much of the U of A's sustained and continued growth in energy research advances the broad objective of sustainable energy and environment, especially in areas of water usage, treatment, quality, and supply. This work is supported by capacity in chemical engineering, chemistry, nanoscience, and microbiology; economic policy analysis; land use impact; and advanced ICT. The integration of disciplines within energy research, broadly defined, is a key strength of the University of Alberta, enabled by sustained and continued growth in natural resource economics; ecology and environmental sciences; and the emergence of nanoscience and molecular biology, among others. This collective capacity continues to feed into Alberta's broad resource stewardship objectives and specific objectives set by Alberta Innovates – Energy and Environment Solutions, such as reducing or eliminating the use of water and tailings ponds in oil sands processing; effectively treating existing wastewater and tailings ponds; developing science and technology for improved wastewater quality in the future; addressing socio-economic issues arising from the cumulative effects of resource development; and

analyzing the consequences of policy decisions in areas that include market-based approaches to land use and environmental quality objectives. The U of A's strength in energy research is the foundation for its international partnerships in Germany, China, India, and increasingly Brazil, which furthers Alberta's goals for global interactions and connections with international industries.

Environment

Environmental research advances scientific understanding, advanced analytic techniques and technologies, and best practices that are collectively required to sustain healthy ecosystems of water, air, plant, and animal life. It also examines the interaction of ecosystems with the physical health of individuals and the socio-economic health of communities, especially in response to both natural and human induced pressures.

The U of A has increased its capacity in ecology and ecosystems; biogeochemistry for whole ecosystem functioning; natural resources energy and environment; environmental law; environmental health sciences; soil sciences; and sustainable forests, agriculture, and rangelands. Further capacity growth is intended in most of these areas, and also in remote sensing technologies for environmental sciences.

Impact on Alberta: Environmental research at the U of A draws upon physical and biological sciences, public health, chemistry, information and communications technology, computing sciences, law, economics, business, nanoscience, and mathematics. This capacity provides the advanced research foundation for integrated science, economic, and social policy development required for responsible environmental stewardship and the sustained health of individuals and communities, especially outside of urban areas. Much of this expertise is applied directly to the Alberta context, through advisory and research relationships with multiple ministries and the Alberta Innovates Corporation. This includes expertise in the environmental and social considerations for informed land-use; the development of analytic methods and data collection protocols to measure and assess economic, social, and environmental risk; and advanced life sciences research on water-air-soil quality and its relation to human and wildlife health. The U of A's strength in environmental research forms the basis for international partnerships in Germany and China.

The University of Alberta will sustain and continue to develop capacity in the development and deployment of advanced technologies to measure and mitigate the cumulative effects of resources development. Water quality in non-urban communities is one of three strategic focus areas within the university water initiative. This work leverages extant public health and environmental chemistry capacity, and socio-economic capacity necessary for assessing the impact of water quality on the economic and social sustainability of Alberta's small communities, and on recreation and tourism in non-urban areas. This capacity supports Alberta's priorities and objectives for healthy and resilient communities, and for informed environmental stewardship policies.

Food and Bio-resources

Research in food and bio-resources is directed at discovering and applying the knowledge necessary for developing sustainable bio economies; enhancing the health qualities of food and the resilience of crops, plants, and forests in response to human and climate induced pressures; and addressing agribusiness sector challenges in food safety and animal health.

The U of A has increased research capacity in epigenomics; lipid utilization; agribusiness economics; and nano-enabled biomaterials. Areas identified for further growth include bio-resource technologies; food security and safety; sustainable agriculture; cross disciplinary nutrition and food sciences, including nutrigenomics and epigenetics; social responses to ecological changes in food production; water supply and sustainable agriculture and forestry; and chemical ecology.

Impact on Alberta. The U of A's capacity in food production and the bio-economy—bioproducts, biomaterials, and bioenergy — creates the knowledge base for achieving provincial economic diversification. This capacity is built on depth in disciplines that include genetics, food and soil sciences, molecular biology, nanotechnology, and resource economics. Integrated research in petrochemicals, nanoscience, biochemistry, proteomics, and systems biology is leading to the development of value-added products from the waste produced by wood, plants, and crops. The development of a nano-enabled biomaterials program, leveraging the NINT investment, represents a significant new trajectory for Alberta's bio economy.

Nutrigenomics and plant genetics research is also advancing the food value of crops and their resistance to drought and disease. Much of the U of A's food and bio-resource research is done in collaboration with industrial partners from the agri-business sectors and ministries, and includes a strong commercialization component. In addition, the university's water initiative has identified the future of Alberta's water supply as key research focus. Southern Alberta's agricultural and food production regions are currently impacted by climate- and human-induced (e.g., population growth) stresses on water supply, and these stresses are predicted to increase over the coming decades. U of A cross-disciplinary capacity in sustainable agriculture, socio-economic analysis, and climate change can provide Alberta's decision makers with the understanding needed to develop effective policies that will help sustain these regions and communities.

Health and wellness

U of A undertakes a fully integrated approach to human health and wellness research and training, one that addresses the full spectrum of human health determinants, including clinical factors and predispositions, socio-political and economic environments, and individual characteristics and behaviors. Activities advance and integrate discovery research, translational research, and clinical research across medical and life sciences, health professions, computing sciences, economics and law, nanoscience, engineering, and technology assessment.

Capacity has increased in the areas of mental and family health; environmental health sciences; individual behavioural determinants of health (e.g., lifestyle, nutrition exercise; sports medicine); neurosciences for motor and cognitive rehabilitation and skill development; patient health management; pharmaceutical sciences; community health service delivery; knowledge translation and health care systems; prions; cardiology and neurosurgery; biochemistry (prions); microbiology and immunology (viruses); pediatric illnesses and diseases; medical genetics; oncology; health economics; global health; diagnostic imaging; emergency medicine; and dentistry. Intended capacity growth is planned in many of these areas as well as for speech pathology/audiology; pharmacology; family medicine; and internal medicine.

Impact on Alberta. Strategically, the U of A developed its health research expertise and reputation primarily around a small set of health and wellness concerns (e.g., chronic diseases; cardiology; oncology; infectious diseases; mental health; and special populations), with significant capital and operating investment in facilities for medical research, clinical research, and advanced clinical

treatments. It has enhanced its impact with increased investment in translational research; social, cultural, environmental, and population health influences on individual and community health; biomedical engineering; health economics; and patient management and care. The Edmonton Clinic Health Academy supports institutional and provincial objectives for inter- and intra-professional health and wellness research and training.

The U of A continues to advance a range of priorities and objectives for Alberta Innovates - Health Solutions and for Alberta Health Services, from improved health delivery systems to personalized medicine. Research chairs established in conjunction with Capital Health and AI-HS also provide targeted capacity in areas of provincial priority, including emergency medicine, surgical simulation, cardiology, public health, epigenetics, and health outcomes. Finally, the U of A's five-year contract to serve as one of 11 evidence-based practice centres with the US Agency for Healthcare Research and Quality will connect external expertise and capacity with Alberta stakeholders and issues.

Advancing Alberta's Innovation Ecosystem

The University of Alberta strives to be a key contributor to the development of Alberta's innovation ecosystem. The U of A will continue to invest in technology transfer and commercialization initiatives that assist in commercializing ideas developed within the institution, as well as those emerging from Alberta's broader innovation ecosystem. These investments will include developing and supporting entrepreneurship programs (section 2.3), entering into long-term partnerships with municipal, provincial, and federal stakeholders, and developing facilities to foster commercialization with industries. Examples of these include:

- *The medical isotope and cyclotron facility* is a strategic institutional investment to produce medical grade isotopes, creating the potential for a medical diagnostic treatment and imaging sector within Edmonton and Alberta.

- *The National Institute of Nanotechnology* (NINT) is a strategic partnership among the Government of Canada, the National Research Council, the Government of Alberta and the University of Alberta, operated jointly by the NRC and the U of A, undertaken to (1) increase the competitiveness of Canadian companies; (2) create technology solutions to meet the needs of society; (3) expand transformative programs to train the next generation of researchers and entrepreneurs; and (4) enhance Alberta and Canada's stature as global leaders in nanotechnology.

- *TEC Edmonton* is a joint-venture between the University of Alberta and the City of Edmonton that serves as the institution's dedicated entity for incubating spin-off companies; advances a number of technology transfer and partnership objectives; and provides Executives-in-Residence programs, seminars on intellectual property and company development, and entrepreneurship training for faculty, staff, and students.

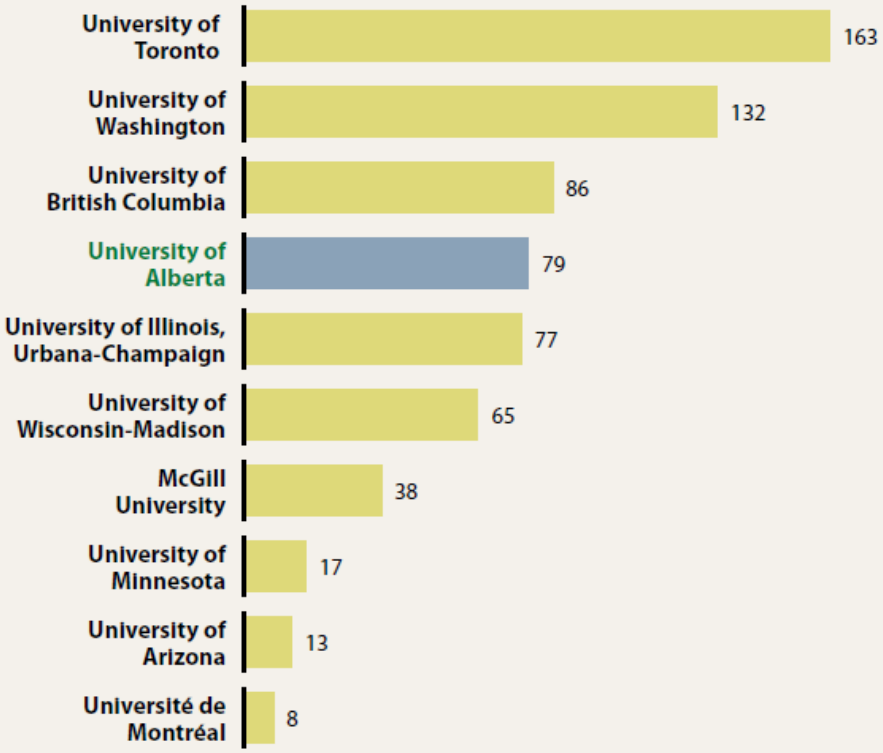
- *The Drug Development and Innovation Centre* facilitates successful approval of pharmaceutical products, offering expertise in accelerated drug candidate commercialization, early risk assessment, analytical testing, and regulatory affairs suitable for small to medium sized enterprises.

- *Agri-Food Discovery Place* links academic leadership with industry partners, provides bio-product processing capabilities, and brings applied research through commercialization to the marketplace in the areas of food safety, ag-industrial technologies, functional food, and natural health products.

The number of continuing spin-off companies is a measure of how a research-intensive university, situated within its particular innovation ecosystem, creates technologies that will contribute to society's well-being and commercialization opportunities. Within the U of A's benchmark group, the University of Alberta performs well, and ranks above, several highly regarded U.S. public institutions.

FIGURE 7

Continuing Spinoffs 1991–2010

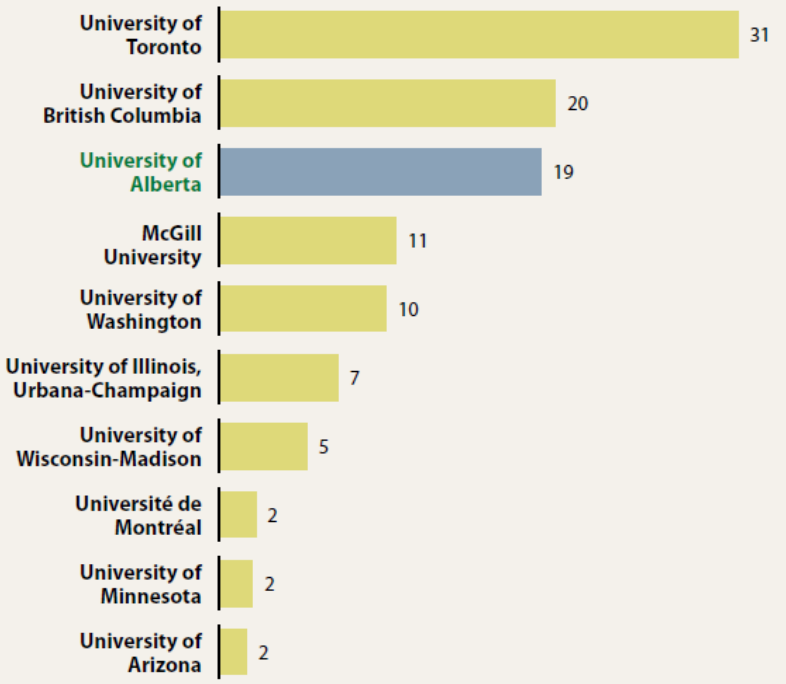


Notes: Startups still in operation reflect companies started at any time during the report period that are still in operation as of the most recent AUTM Licensing Survey.

Source: AUTM Licensing Surveys

FIGURE 8

Continuing Spinoffs per 1 Billion $ of Total Research Expenditure 1991–2010



Notes: Startups still in operation reflect companies started at any time during the report period that are still in operation as of the most recent AUTM Licensing Survey.

Source: AUTM Licensing Surveys

The Digital Environment

Priority: The University of Alberta has secure information and communications technology infrastructure and systems that support research, creative activities, and digital learning technologies and pedagogies to enhance the on-campus, in-class experience and online learning environments.

The information and computing technologies infrastructure at the University of Alberta is complex. It includes networks to connect buildings and campuses; wireless services; and additional specialized local networks. This infrastructure is the foundation of the U of A's digital environment that supports its academic, research, and administrative requirements, and aspirations for efficiency and innovation.

Advances in information and communications technology, especially in the arena of mobile computing, continue to transform learning environments. In 2012, the University of Alberta began to engage more aggressively in developing and expanding the use of advanced learning technologies and their related pedagogies in undergraduate and graduate education. Although the focus of current media attention is online learning, opportunities for innovation go well beyond teaching to include research in education (pedagogy, instructional delivery techniques, learning outcomes assessment), computing science (adaptive learning experiences, automated assessment, collaboration tools, security), humanities (analysis of privacy, collaboration, ethics), and business (case study analysis, market trends, analytics). These are the areas in which the U of A is expanding its engagement in the digital environment.

To leverage such opportunities for innovation and leadership in digital learning and research, and based on a critical mass of internationally known and respected research and teaching expertise already in place, in 2012:

- The University of Alberta signed an MOU with online education provider Udacity for collaborative experimental work on online learning management systems, with the goal of developing, testing, and implementing a small number of high-quality and distinctive massive open online courses (MOOCs) based on select U of A courses. The U of A's strength in educational technology, post-secondary pedagogy, and machine-learning research made it an attractive partner to this U.S. company.

- The U of A's first MOOC, Dino 101, is planned for implementation in Fall 2013.

See Appendix 10 for details on selected e-Learning and digitally-supported teaching and learning activities across University of Alberta campuses, including:

- The U of A's has innovative and popular digitally-supported physical therapy satellite programs in Calgary and at Camrose. These programs were initiated to help deal with the supply and demand issues related to therapists that have occurred in rural and southern Alberta.

Access and Programming Measures

Quality:

- average admissions averages
- application to registration yield
- ratios of undergraduate to graduate students; professors to all students; professors to graduate students
- student satisfaction

The Learning Environment:

- participation rate in Centre for Teaching and Learning programming and number of TLEF applications
- number of national teaching award recipients
- student satisfaction
- number of rural and francophone students
- number of Aboriginal students, faculty, and staff
- number and diversity of international students
- retention and completion rates for undergraduate and graduate students

Student Experience and Engagement:

- application, admission and registration yields
- retention and completion rates
- student satisfaction
- average financial support for students
- number of funded internship and undergraduate research opportunities
- number of study abroad and international internship opportunities

Innovative Programming:

- application, admission and registration yields
- retention and completion rates
- student satisfaction
- average financial support for students
- number of funded internship and undergraduate research opportunities
- number of study abroad and international internship opportunities

Connections and Collaborations:

- number of new collaborative partnerships each year
- participation rates in internship and study abroad programming

Access and Programming Strategies and 2012 Outcomes

Quality

Strategies

- Attract and retain outstanding students.
- Provide foundational support structures for students to create positive student experiences and engagement.
- Recognize and celebrate student accomplishments
- Maintain a system of quality assurance processes and mechanisms to ensure the programs offered by the University of Alberta are of the highest quality.

Outcomes

- ✓ Megan Engel, a master's student in biophysics, was awarded a prestigious Rhodes Scholarship.
- ✓ Expanded the Pharmacy and Pharmaceutical Sciences undergraduate research program to encourage undergraduate students to consider graduate education. Funding has been obtained from CIHR, Alberta Innovates Health Solutions Boehringer Pharmaceuticals, and Canada's Research-Based Pharmaceutical Companies to support this initiative.
- ✓ Reviewed transfer credit issues across U of A campuses with the intent to improve practices and procedures and reduce barriers to students. Resulting recommendations are currently being implemented.
- ✓ The Teaching English as a Second Language program has been re-accredited by the National Association of Teachers of English as a Second Language.
- ✓ The Counselling Psychology doctoral program has been re-accredited for a five-year period by the Canadian Psychological Association.
- ✓ Pharmacy and Pharmaceutical Sciences undergraduate program received a full 6 year accreditation.
- ✓ Public Health received accreditation from the Council on Education for Public Health, the first Canadian public health program to receive accreditation.
- ✓ Nursing received national accreditation by the Canadian Association of Schools of Nursing.
- ✓ Comprehensive review of Physical Education and Recreation undergraduate offerings to be completed in 2103. Resulting program changes will take effect in the 2014-15 academic year.
- ✓ Agricultural, Life and Environmental Sciences has implemented undergraduate program review changes to ensure students have the specific competencies required to meet employer needs.
- ✓ The Bachelor of Science General program was restructured to identify and articulate the core of each major and minor. The new program structure is to be implemented in Fall 2014.
- ✓ The Master of Arts Program in Canadian Studies offered by Campus Saint-Jean underwent significant review during 2011-2012; changes are being implemented in 2012-13.
- ✓ Resource Economics and Environmental Sociology was ranked 1st in Canada and 21st in world by the Economic Research Division of the Federal Reserve Bank.
- ✓ Creation of Student Connect, a 'Student First' focused space, which provides exceptional

registrarial and service needs for student success.

- ✓ Agricultural, Life and Environmental Sciences Student Services Office reorganized to provide a one-stop-shop to advise and assist students.
- ✓ The Graduate Teaching and Learning Program, open to all graduate students and postdoctoral fellows, provides training in university instruction.
- ✓ The Attributes and Competencies Subcommittee of the GFC Committee on the Learning Environment has completed a draft list of attributes and competencies that characterize a University of Alberta graduate.
- ✓ Campus Saint-Jean has developed and is implementing a core set of skills, attributes and values. As well as reviewing language programs en Français, in English as a second language and en Anglais to ensure greater levels of proficiency upon graduation; and reconfiguring each section of Bachelor and Masters programs.
- ✓ Augustana Faculty has completed a draft of Faculty-wide rubrics for the assessment of student learning in Core competencies (information literacy, critical thinking, speaking, writing).
- ✓ Augustana Faculty has developed program-level learning goals and four-year maps to a degree for every major.
- ✓ The Community Wellness Program continues to provide supports and counseling to individual students, monitor the current state of wellness at the University of Alberta, and develop and maintain a campus support system. Highlights include outreach to more than 5,000 students during orientation and providing 1 to 1 counseling to students in need.

The Learning Environment

Strategies

- Ensure a high level of teaching quality.
- Ensure a diversity of students and faculty.
- Ensure the development and maintenance of quality formal and informal learning spaces.
- Enhance the digital environment and online presence of the institution.

Outcomes

- ✓ 2511 faculty, staff, and students attended 136 professional development sessions at the Centre for Teaching and Learning.
- ✓ Engineering has students from over 220 different communities in Alberta. The undergraduate enrolment includes 50 aboriginal students (up from 8 just a few years ago), over 330 students from other provinces in Canada, and 504 international students on student visas.
- ✓ Engineering undergraduate enrolment is at an all-time record level, and is in the top 5% by size (and quality) in North America.
- ✓ Agricultural, Life and Environmental Sciences international undergraduate students grew from 5% to 14% and graduate students increased from 26% to 53% over past five years.
- ✓ Arts increased undergraduate student enrolment to 1004 students from 71 countries (rising from 796 students from 53 countries last year).
- ✓ Completed planning and design of the Physical Activity and Wellness (PAW) Centre.
- ✓ Developed a Safe Spaces Strategic Plan based on community input.
- ✓ Implemented electronic submission of grades. The electronic based system streamlines the grade entry process.
- ✓ Reviewed and approved changes to the Assessment and Grading Policy.
- ✓ Approved the new Encryption Procedure which provides the institutional standard for

encryption of mobile devices that store sensitive information.

- ✓ Physical Education and Recreation incorporated the use of simulation into the Advanced Athlete Therapy Methods and Techniques course. Plans to expand this initiative are underway.
- ✓ Revised undergraduate scholarship processes to develop an electronic scholarship application and administration system that is integrated into Campus Solutions.

Student Experience and Engagement

Strategies

- Improve admissions and registration processes for all students.
- Support programs and initiatives to help increase retention and completion rates.
- Provide enhanced experiential learning opportunities.
- Enhance extra-curricular and co-curricular learning opportunities (i.e., supporting services, activities, and campus facilities that encourage and help facilitate student success).
- Continue to create international opportunities for students.
- Provide foundational support structures for students in order to create a nurturing environment that allows for positive student experience and engagement.
- Provide foundational support structures for Aboriginal students to create an environment that allows for positive student experience and engagement.
- Create a safe and secure environment on U of A campuses that is supportive of a positive student experience.

Outcomes

- ✓ Implementing an online application system for graduate admissions which will allow for electronic submission of documents and will reduce departmental processing times.
- ✓ The Students on Alternate Routes Task Force finalized their report after a review of programs and processes for handling students at risk academically with an aim to improve student retention and maintain the U of A's reputation as a first-rate, fair, and caring institution.
- ✓ Augustana has developed an early feedback system which allows early invention and identification of students experiencing difficulty or not attending classes.
- ✓ The Community Wellness Program continues to provide supports and counseling to individual students, monitor the current state of wellness at the University of Alberta, and develop and maintain a campus support system. Highlights include outreach to more than 5,000 students during orientation and providing 1-1 counseling to students in need.
- ✓ Hosted the first anti-hazing workshop in March 2012 for staff and students involved in residences, sports teams, Greek life and other student groups to inform them about the consequences of hazing and how to engage in alternate activities.
- ✓ The Co-curricular Record (CCR) continues to evolve from its origins as a pilot program in 2011. Students who volunteer in certain University or Students' Union Services are eligible to apply for a CCR.
- ✓ The Emerging Leaders Program is designed to develop and enhance leadership and citizenship skills and knowledge among student leaders. The first cohort of participants in Spring 2012 received a non-credit certificate and recognition through their Co-curricular Record.
- ✓ The Students' Union engaged 4,979 students, staff and faculty in retaking the record for the world's largest dodgeball game on February 3, 2012. The event galvanized student spirit and engagement, fostering an active pride in the U of A among students, staff and faculty.
- ✓ Physical Education and Recreation provided funding to sponsor undergraduate student

participation at the Alberta Recreation and Parks Association Conference.

- ✓ Business developed a Competitions Coordinator position in order to provide logistical support to students attending local and national competitions and ensure that students have adequate academic and financial resources.
- ✓ In 2012, University of Alberta MBAs successfully hosted the MBA games, the largest and most comprehensive MBA competition in Canada. MBA students participated in eight competitions winning one and achieving three other top three finishes.
- ✓ Faculty of Engineering students participate in up to twelve major student design competitions each year (Eco-car, formula SAE racecar, great northern concrete toboggan, etc.).
- ✓ Chorale Saint-Jean toured France to much acclaim.
- ✓ Enhanced orientation and settlement services for international graduate students by coordinating existing services and creating new programming.
- ✓ In September 2012, Native Studies along with the Native Studies Student Association implemented a mentorship program for first and second year students.
- ✓ Eight students were introduced to post graduation opportunities during an internship tour of the financial industry in New York City.
- ✓ Agricultural, Life and Environmental Sciences offered student international engagement opportunities including field courses (Mexico, Germany); student exchanges (Japan), community service-learning (Cuba, Mexico); international competitions (won Platinum Award, North American Intercollegiate Dairy Challenge),
- ✓ Business has enhanced the internationalization of its programs including 70 incoming exchange students, 52 outgoing exchange students and two study tours in the spring 2012, one to China and one to Europe.
- ✓ U of A+, a program to assist international undergraduates in their academic success, was launched in August 2011. This program was expanded to two weeks in August 2012 and 68 students from 11 countries participated.
- ✓ The Campus Saint-Jean "Leaders of Today – Me to We" agreement has been renewed allowing a group of students registered in the Bachelor of Education program to teach and do humanitarian work in Kenya.
- ✓ Play Around the World program expanded from Thailand to include sites in Cambodia, offering students a significant international community engagement experience.
- ✓ Agricultural, Life and Environmental Sciences conducted its first-ever highly successful co-curricular "Alternative Reading Week" program in India.
- ✓ Nursing is advocating for stipends to support graduate students to studying full time. In Fall of 2012, full time students with availability of a stipend of $75,000 increased to 20 Master of Nursing students.
- ✓ Created student awards of $5,000 each to support students who use their legal education to provide community service through a volunteer organization.
- ✓ Overhauled the student financial support model for education abroad to a more simplified, transparent and campus-wide model. Awarded approximately 500 scholarships in 2012, up from fewer than 200 in 2011.
- ✓ First time opportunities for Bilingual Nursing program undergraduate student learning in Ghana.

Programming

Strategies

- Continue development of innovative programming to meet the needs of students and the community.
- Increase access to current high-demand programs.
- Ensure appropriateness and relevancy through course and program reform.
- Provide valuable laddering opportunities from high school to post-secondary study, undergraduate to graduate study, and post-secondary study to professional experience.
- Continue to offer a range of lifelong learning opportunities through continuing and professional education programs.

Outcomes

- ✓ Creating a new undergraduate curriculum for the pharmacy program that will lead to the PharmD degree for all Pharmacy students.
- ✓ Comprehensive review of Physical Education and Recreation undergraduate offerings to be completed in 2103. Resulting program changes will take effect in 2014-15.
- ✓ Agricultural, Life and Environmental Sciences has implemented undergraduate program review changes to ensure students have the specific competencies required to meet employer needs.
- ✓ The Bachelor of Science General program was restructured to identify and articulate the core of each major and minor. The new program structure is to be implemented in Fall 2014.
- ✓ The Master of Arts Program in Canadian Studies offered by Campus Saint-Jean went through significant review during 2011-2012 and the changes are being implemented this year.
- ✓ Nursing completed an extensive review of the PhD Program and implemented curriculum changes to help prepare scholars who are global leaders and innovative researchers.
- ✓ The Attributes and Competencies Subcommittee of the GFC Committee on the Learning Environment has completed a draft list of attributes and competencies that characterize a University of Alberta graduate.
- ✓ Campus Saint-Jean has developed and is implementing a core set of skills, attributes and values. As well as reviewing language programs en Français, in English as a second language and en Anglais to ensure greater levels of proficiency upon graduation; and reconfiguring each section of Bachelor and Masters programs.
- ✓ Augustana Faculty has completed a draft of Faculty-wide rubrics for the assessment of student learning in Core competencies (information literacy, critical thinking, speaking, writing).
- ✓ Augustana Faculty has developed program-level learning goals and four-year maps to a degree for every major.
- ✓ Expanded the Pharmacy and Pharmaceutical Sciences undergraduate research program to encourage undergraduate students to consider graduate education. Funding has been obtained from CIHR, Alberta Innovates Health Solutions Boehringer Pharmaceuticals, and Canada's Research-Based Pharmaceutical Companies to support this initiative.
- ✓ Undergraduate engineering programs have been expanded and developed in key areas of student and employment demand (energy, biomedical, nanoengineering) while continuously increasing the quality (academic achievement, leadership abilities) of the new students.
- ✓ Nursing initiated a new Post-Doctoral fellowship program for scholars from low and middle income countries.
- ✓ Agricultural, Life and Environmental Sciences is participating in CONFOR-M which allows students to pursue a joint Canada-European Master's degree in forest science.
- ✓ Engineering implemented a major expansion of its cooperative education program. The number of work term placements increased from 1,148 in 2005 to a record level of 1,578 in

2011. Notwithstanding the continuing difficult employment market in 2011, 97% of the co-op students were placed in paid work terms.

- ✓ Nursing began the piloting of pass/fail nursing clinical experience as a strategy to address student concerns regarding the impact of competition on learning.
- ✓ Pharmacy and Pharmaceutical Sciences received scholarship support for the newly approved dual MBA/BSc in Pharmacy program through a $200,000 endowment from Shoppers Drug Mart.
- ✓ Physical Therapy, in partnership with the Physiotherapy Alberta College and Association, received funds from the federal government to establish an upgrading program for internationally educated Physical Therapists. The program will launch its first course in May 2013.
- ✓ The Master of Nursing stream for Family All Ages (FAA) Nurse Practitioners (NPs) will be accepting new admissions again after a few years where the program was not offered. The proposed change is in response to Ministry of Health interest in NPs for the Family Care Clinics.
- ✓ Extension's Community-based Research and Evaluation program created to support graduate students' efforts to develop their ability to participate in and lead community-based research and evaluation projects.
- ✓ Science joined a North American initiative, Women in Tech Share Online (WitsOn), intended to motivate women to pursue a science/technology career.
- ✓ Education implemented year one direct entry admission enabling targeted and immediate recruitment of excellent high school graduates.

Campus Alberta and Canadian Connections and Collaborations

Strategies

- Increase interdisciplinary, collaborative program and initiative development in order to offer students innovative and relevant educational opportunities.
- Maximize program innovation at the Campus Alberta level in order to create exciting learning opportunities and program efficiencies.
- Maximize program innovation in collaboration with national partners in order to create exciting learning opportunities.

Outcomes

- ✓ The Health Sciences Council is conducting strategic planning focusing on innovative ways to collaboratively promote health and wellness.
- ✓ The Global Education Program coordinated over 30 events in partnership with community, faculty and student groups, promoting dialogue on critical global issues.
- ✓ 480 High School Students from northern Alberta gathered at the 2012 High School Model United Nations Conference, discussing possible "resolutions" to many contemporary global issues. The conference is run entirely by undergraduate students.
- ✓ Engineering hosted a large number of elementary, middle and high school students during the Discover E camps that expose students to the excitement of engineering, technology and science. During 2012, 111 week-long camps were offered in rural and aboriginal communities across western and northern Canada with 2,102 students (38% female) participating. Discover E reached over 9,000 students in many northern communities in Alberta, BC, Yukon and NWT. A

total of 4,376 aboriginal students were reached through Discover E's activities in 2012, which was an almost 40% increase from 3,142 aboriginal students in 2011.

- ✓ Medicine and Dentistry and Public Health have collaborated closely with the University of Calgary, University of Lethbridge, Alberta Innovates-Health Solutions, and Alberta Health Services in the Campus Alberta Health Outcomes and Public Health Initiative.
- ✓ The Campus Alberta Health Outcomes and Public Health partners have been engaged with CIHR on the development of the Strategy for Patient Oriented Research (SPOR) SUPPORT Unit for Alberta.
- ✓ Medicine and Dentistry has been collaborating closely with Alberta Health Services on the development of Strategic Clinical Networks (SCNs). Six SCNs were launched in 2012 and another six will be launched in 2013, each in core areas of clinical care.
- ✓ Health Promotions students from First Nations across Alberta, sponsored by First Nations Inuit Health, completed the Aboriginal Health Promotion Citation program. Currently another 26 are enroled, all of whom are expected to graduate in June 2013.
- ✓ Medicine and Dentistry along with the University of Calgary are defining a biobanking strategy for the province.
- ✓ Rehabilitation Medicine offered three new workshops in partnership with external agencies (Alberta Health Services, Medichair, Spinal Cord Injury Treatment Society, Restorative Therapies, University of Calgary, McCaig Institute for Bone and Joint Health, Alberta Osteoarthritis and Alberta Innovates) which covered topic areas in Sitting Solutions, Functional Electrical Stimulation, and Total Knee Arthroplasty. The workshops attracted over 200 clinicians, U of A students and the public.
- ✓ Both Physical Therapy and Speech Language Pathology operated student clinics to treat clients referred from the community.
- ✓ Rehabilitation Medicine in conjunction with the Glenrose Hospital has developed the first student led rehabilitation clinic in Alberta. Due to the success of this program, there will now be expansion into pediatrics in 2013.
- ✓ Extension hosted the national conference "CLLoC 2012 - Celebrating Lifelong Learning in Our Communities". The conference celebrated the process of engagement between sponsors of lifelong learning and their surrounding communities for the purpose of creating a culture of lifelong learning

Internationalization: Strategies and Outcomes

Strategies

- Selectively expand existing consortia and develop new ones that advance institutional objectives for innovative learning opportunities and for diversified excellence and impact across disciplines
- Develop initiatives that create opportunities for joint projects, student mobility, undergraduate and graduate student recruitment, and international funding
- Pursue global impact opportunities through CIDA and similar funding competitions

Outcomes

- ✓ Awarded the India-Canada Centre of Excellence, in collaboration with UBC and UofT, through a federal competition. This outcome aligns with and advances institutional priorities and objectives of diversified excellence and impact, by integrating the university's initiatives and research capacity in water, nanoscience, and nanotechnology to address complementary global issues in water treatment in India and Alberta
- ✓ China's Ministry of Science and Technology (MOST) approved a $500k/year award for a virology collaboration between U of A and China. This outcome aligns with and advances the diversified excellence and impact objectives, by creating complementary teams addressing large scale research problems in areas of institutional priority and research capacity.
- ✓ The Helmholtz Association has allocated €400k/year for up to three years for phase 1 of expanded collaborations into (a) Infectious Diseases and (b) Ecosystem and Resource Informatics. This outcome aligns with and advances the diversified excellence and impact objectives, by creating complementary teams addressing large scale research problems in areas of institutional priority and research capacity
- ✓ Dean Allen Berger of Augustana Faculty was appointed President of the U.S.-based Council of Public Liberal Arts Colleges; Augustana Faculty is the only international member of this organization.
- ✓ Provided targeted resources for participation and success in EU funding programs

- ✓ Completed the CIDA Public Engagement Fund project "Reaching New Communities," resulting in 300 new community contacts. Over 30 partnerships with community organizations were developed to host lectures, workshops and arts-based programs.
- ✓ Science increased its international partnerships through umbrella agreements with University of Minas Gerais and UniMontes in Brazil; an MOU with the University of Hong Kong that includes a 2 + 2 exchange program with students from Hong Kong; and Research agreements were signed with Gifu University in Japan and University of Camerino in Italy.
- ✓ Physical Education and Recreation established a new partnership with the University of Exeter which enabled students to attend the University of Exeter Summer Institute.
- ✓ Science continued the major collaboration in sounding rocketry and space science with Norway

through the Canada Norway Sounding Rocket (CaNoRock) program. A new $500k proposal submitted to Canadian Space Agency proposes to expand CaNoRock to include graduate student learning with a U of A payload on a funded multi-million Norwegian scientific sounding rocket flight.

- ✓ Science and Extension hosted Japanese high school students for a week long science camp.
- ✓ The Wirth Institute established ties with Croatia and instituted yearly meeting of Austrian centre directors to create a three-continent-wide network of scholars working on Central Europe.
- ✓ Arts is working with the Kenya Government and its Ministry of Foreign Affairs on a project that will train young diplomats entering the foreign service in Kenya and other East African countries.
- ✓ Guest scholar from Gansu Lianhe University (China) for one-year residency at Augustana to research differences between Chinese and Canadian methodology and pedagogy in second language acquisition and work with local staff on best practices for English as a Second Language in the Augustana Writing Centre.
- ✓ Developing graduate recruitment partnerships in China with the Chinese Academy of Agricultural Sciences, the Chinese Academy of Social Sciences, China Agricultural University and the North West Agriculture and Forestry University.
- ✓ Worked on community based occupation therapy within Indonesia, leading to the first Occupational Therapy program in the country which has produced 900 graduates.
- ✓ Developing a program with the University of Leipzig (Germany) to exchange senior undergraduate and graduate students between research labs in the biomedical fields.
- ✓ Expanded the University of Alberta Research Internship Program to include 9 countries and 20 strategic partners. 87 students were placed in research placements in 2012/13.

Research Capacity and Impact Measures

Talented People

- Assessment of the University of Alberta relative to a selected peer group in total research funding and Tri-Council funding *
- Total sponsored research dollars from Alberta companies, Alberta government, and NGOs *
- Total international research investment from foreign national agencies and funding bodies *
- Prestigious national and international awards for faculty, postdoctoral fellows, and graduate students *
- Engagement of faculty in federal and international advisory roles *

National and international research and creative activity initiatives which U of A leads or participates *

- Numbers of fully or partially funded graduate students, international graduate students, and postdoctoral fellows *
- Research consortia and partnerships formed with top-tier international partners
- Success in targeted federal competitions for innovative research, innovation, and creative activities programs
- Success on institutional review visits by Tri-Council, CFI, and other agencies

Diversity in Areas of Excellence and Impact

- Diversity of external private, public, and NGO partners that fund or collaborate on research and creative activities
- Research initiatives with city and rural stakeholders
- Engagement of faculty in federal and international advisory roles on policy*

Competitive and Well Managed Resources for Research, Innovation, and Creative Activities

- Reinstatement of specialized support staff
- Upgraded shared research resources through deployment of special funding
- Success in federal infrastructure competitions *

Impact on Alberta

- Number of private and public sector users of U of A centres, institutes and specialized infrastructure
- Number of graduate student internships occurring in Alberta
- Number of formal undergraduate interns and co-op students undertaken in Alberta
- Number of sponsored or contract research initiatives undertaken with Government of Alberta Ministries
- Number of continuing spin-off companies associated with U of A activities *
- Number of patents, inventions and licenses stemming from UofA research through TEC Edmonton *

- Direct contribution to the regional economy from TEC Edmonton activities (see TEC Edmonton Annual Report)

* *outcomes on these metrics are presented in the main text and figures*

Research Capacity and Impact: Strategies and Outcomes

Strategies

- Invest in competitive recruitment offers to recruit exceptional faculty
- Invest in mechanisms to ensure recognition of faculty accomplishments
- Invest in external and internal research chair opportunities and infrastructure programs to build, retain, or enhance capacity in emerging areas of priority or impact across disciplines
- Invest in centres, institutes, and initiatives that leverage research capacity to address global challenges and integrate these efforts with international strategies and opportunities
- Invest In internal mechanisms that lead to increased success within national and international funding competitions, especially on large cross-disciplinary team grants.
- Invest in graduate student recruitment strategies and partnership programs to recruit exceptional graduate students from Canada and internationally
- Identify ways to fund the full costs of an increased postdoctoral fellow cohort that will complement existing programs
- Expand advancement activities to secure philanthropic and private sector endowment funds for priority initiatives leading to excellence and impact
- Invest in building research consortia with other Canadian universities and select international partners to create new and broader avenues of impact
- Invest as a partner institution in initiatives that align with and advance discovery and creative activities
- Invest in new academic programs and external collaborations that advance knowledge mobilization and technology transfer
- Invest in research administration services and systems to ensure effective and responsive management of agreements and contracts with internal and external stakeholders
- Invest resources as institutional funding contributions on multi-user and multi-team infrastructure proposals
- Use eligible funding sources to temporarily bridge critical, direct cost of research operating shortfalls in multi-user core facilities
- Develop structures, mechanisms, and resourcing frameworks to consolidate shareable facilities for research and creative activities, where possible
- Invest resources in opportunities to establish national, leading-edge facilities that open up new research and innovation avenues
- Increase in foreign postdoctoral fellows and graduate students *
- Increase of formal and active mobility programs for researchers and students

Outcomes

- ✓ Successful proposal for an India-Canada Centre of Excellence, in collaboration with UBC and UofT. This outcome aligns with and advances institutional priorities and objectives of diversified excellence and impact, by integrating the university's initiatives and research capacity in water, nanoscience, and nanotechnology to address complementary global issues in water treatment in India and Alberta

- ✓ China's Ministry of Science and Technology (MOST) approved a $500k/year award for a virology collaboration between U of A and China. This outcome aligns with and advances the diversified excellence and impact objectives, by creating complementary teams addressing large scale research problems in areas of institutional priority and research capacity.
- ✓ The Helmholtz Association has allocated €400k/year for up to three years for phase 1 of expanded collaborations into (a) Infectious Diseases and (b) Ecosystem and Resource Informatics. This outcome aligns with and advances the diversified excellence and impact objectives, by creating complementary teams addressing large scale research problems in areas of institutional priority and research capacity
- ✓ Dean Allen Berger of Augustana Faculty was appointed President of the U.S.-based Council of Public Liberal Arts Colleges; Augustana Faculty is the only international member of this organization.
- ✓ Received two new CRC positions for the insitution, and had seven successful CRC renewals and one CRC advancement from Tier II to Tier I.
- ✓ Six faculty elected to the Royal Society of Canada; mathematics researcher awarded Canada's highest prize in mathematical sciences (CRM-Fields-PIMS prize) and also one of 1 of 7 Killam Research fellowships awarded nationally; nursing researcher was one of four Canadians receiving an American Academy of Nursing Fellowship; chemistry team associated with the Alberta Glycomics Centre awarded the NSERC Brockhouse Prize for interdisciplinary Research in Science and Engineering
- ✓ Engaged with the Canada Institute for Advanced Research on program participation and expansion
- ✓ Joined Carleton University, Laurentian University, Queen's University, and the Université de Montréal as an governing institutional member of SNOLAB, Canada's neutrino physics laboratory
- ✓ Developed and launched Canada's only academic-based Phase 1 clinical research centre within NACTRC, thereby fostering international industry collaborations
- ✓ Canada Foundation for Innovation 2011-2012 Leaders Opportunity Fund awards yielded $8.1M federal contributions towards $20.5M infrastructure investments
- ✓ Canada Foundation for Innovation 2012 Leading Edge Fund/New Initaitives Fund awards yielded $14.5M federal contributions towards
- ✓ Restructured prestigious internal research chairs to work more flexibly for recruitment and retention of exceptional individuals
- ✓ Strategically allocated resources to recruit into Alberta Innovates-Health Solutions CAIP research chairs
- ✓ Created partnership with ETI Dynamics in the United Kingdom, to serve as the Canadian "country" cell to connect Canadian research institutions and technology companies with aspects of the Ganga River clean-up project in India.
- ✓ Resourced a cross-faculty, cross-discipline water initiative, with an international external advisory board

- ✓ Developing a program with the University of Leipzig (Germany) to exchange senior undergraduate and graduate students between research labs in the biomedical fields.
- ✓ Expanded the University of Alberta Research Internship Program to include 9 countries and 20 strategic partners. 87 students were placed in research placements in 2012/13.
- ✓ Pilot project to improve CIHR competition success rate is being expanded for all Tri-councils.
- ✓ Resourced an incentive-based approach to proactive graduate student recruitment to increase the cohort of quality graduate students

- ✓ Developed a set of new entrepreneurship training programs, opportunities, and degree programs
- ✓ Established Shell Enhanced Learning Fund to engage students in energy and environment projects
- ✓ Completed a pilot program to assess duplication and potential sharing of specialized laboratory infrastructure
- ✓ Provided bridge funding to core research resources with demonstrated fiscal pressures related to specialized staff or re-capitalization need
- ✓ Increased international partnerships through umbrella agreements with University of Minas Gerais and UniMontes in Brazil; an MOU with the University of Hong Kong that includes a 2 + 2 exchange program with students from Hong Kong; and Research agreements were signed with Gifu University in Japan and University of Camerino in Italy. (Science)
- ✓ Established a new partnership with the University of Exeter which enabled students to attend the University of Exeter Summer Institute. (Physical Education and Recreation(
- ✓ Continued major collaboration in sounding rocketry and space science with Norway through the Canada Norway Sounding Rocket (CaNoRock) program (Science)
- ✓ The Wirth Institute established ties with Croatia and instituted yearly meeting of Austrian centre directors to create a three-continent-wide network of scholars working on Central Europe.

The Academy: Appendix 1

Enrollment Targets Measured in FLEs

(To be properly typeset for final printing)

		2012-13 Target			
		Undergrad	**Grad**	**Grad**	**Total**
			Masters	PhD	
ALES		1,227.0	229.0	225.0	**1,681.0**
Arts		5,121.0	393.0	366.0	**5,880.0**
Augustana		879.0	-	-	**879.0**
Business		1,819.0	234.0	60.0	**2,113.0**
Education		3,097.0	350.0	233.0	**3,680.0**
Engineering****		3,560.0	708.0	612.0	**4,880.0**
Extension			30.0	-	**30.0**
Law		525.0	6.0	6.0	**537.0**
Medicine & Dentistry		1,070.9	259.0	279.0	**1,608.9**
PGME/DE -exempt		*1,085.1*	-	-	**1,085.1**
Native Studies**		120.0	5.0	-	**125.0**
Nursing		1,354.0	84.0	84.0	**1,522.0**
Pharmacy		506.0	15.0	31.0	**552.0**
Physical Education & Recreation***		822.0	48.0	56.0	**926.0**
Rehab Medicine		-	698.0	32.0	**730.0**
Saint-Jean		494.0	28.0	-	**522.0**
School of Public Health			147.0	30.0	**177.0**
Science		5,488.0	517.0	680.0	**6,685.0**
Open Studies		499.1			**499.1**
					-
Less: Exempt FLEs*		(1,106.7)			**(1,106.7)**
Total FLEs		26,560.4	3,751.0	2,694.0	**33,005.4**

		2013-14 Target			
		Undergrad	**Grad**	**Grad**	**Total**
			Masters	PhD	
ALES		1,227.0	225.0	215.0	**1,667.0**
Arts		5,121.0	393.0	366.0	**5,880.0**
Augustana		899.0	-	-	**899.0**
Business		1,786.0	234.0	60.0	**2,080.0**
Education		3,107.0	340.0	233.0	**3,680.0**

Engineering****		3,560.0	708.0	612.0	**4,880.0**
Extension			30.0	-	**30.0**
Law		525.0	4.0	8.0	**537.0**
Medicine & Dentistry		1,036.0	259.0	279.0	**1,574.0**
PGME/DE -exempt		*1,085.1*	-	-	**1,085.1**
Native Studies**		130.0	8.0	-	**138.0**
Nursing		1,354.0	84.0	84.0	**1,522.0**
Pharmacy		506.0	15.0	31.0	**552.0**
Physical Education & Recreation***		800.0	55.0	56.0	**911.0**
Rehab Medicine			698.0	32.0	**730.0**
Saint-Jean		514.0	28.0	-	**542.0**
School of Public Health			147.0	30.0	**177.0**
Science		5,488.0	517.0	680.0	**6,685.0**
Open Studies		543.0			**543.0**
					-
Less: Exempt FLEs*		(1,106.7)			**(1,106.7)**
Total FLEs		26,574.4	3,745.0	2,686.0	**33,005.4**

		2014-15 Target			
		Undergrad	**Grad**	**Grad**	**Total**
			Masters	PhD	
ALES		1,227.0	225.0	215.0	**1,667.0**
Arts		5,121.0	393.0	366.0	**5,880.0**
Augustana		899.0	-	-	**899.0**
Business		1,786.0	234.0	60.0	**2,080.0**
Education		3,107.0	340.0	233.0	**3,680.0**
Engineering****		3,560.0	708.0	612.0	**4,880.0**
Extension			30.0	-	**30.0**
Law		525.0	4.0	8.0	**537.0**
Medicine & Dentistry		1,036.0	259.0	279.0	**1,574.0**
PGME/DE -exempt		*1,085.1*	-	-	**1,085.1**
Native Studies**		130.0	8.0	-	**138.0**
Nursing		1,354.0	84.0	84.0	**1,522.0**
Pharmacy		506.0	15.0	31.0	**552.0**
Physical Education & Recreation***		800.0	55.0	56.0	**911.0**
Rehab Medicine			698.0	32.0	**730.0**
Saint-Jean		514.0	28.0	-	**542.0**
School of Public Health			147.0	30.0	**177.0**
Science		5,488.0	517.0	680.0	**6,685.0**
Open Studies		543.0			**543.0**
					-
Less: Exempt FLEs*		(1,106.7)			**(1,106.7)**
Total FLEs		26,574.4	3,745.0	2,686.0	**33,005.4**

		2016-17 Target			
		Undergrad	**Grad**	**Grad**	**Total**
			Masters	PhD	
ALES		1,227.0	225.0	215.0	**1,667.0**
Arts		5,121.0	393.0	366.0	**5,880.0**
Augustana		899.0	-	-	**899.0**
Business		1,786.0	234.0	60.0	**2,080.0**
Education		3,107.0	340.0	233.0	**3,680.0**
Engineering****		3,560.0	708.0	612.0	**4,880.0**
Extension			30.0	-	**30.0**
Law		525.0	4.0	8.0	**537.0**
Medicine & Dentistry		1,036.0	259.0	279.0	**1,574.0**
PGME/DE -exempt		*1,085.1*	-	-	**1,085.1**
Native Studies**		130.0	8.0	-	**138.0**
Nursing		1,354.0	84.0	84.0	**1,522.0**
Pharmacy		506.0	15.0	31.0	**552.0**
Physical Education & Recreation***		800.0	55.0	56.0	**911.0**
Rehab Medicine			698.0	32.0	**730.0**
Saint-Jean		514.0	28.0	-	**542.0**
School of Public Health			147.0	30.0	**177.0**
Science		5,488.0	517.0	680.0	**6,685.0**
Open Studies		543.0			**543.0**
					-
Less: Exempt FLEs*		(1,106.7)			**(1,106.7)**
Total FLEs		26,574.4	3,745.0	2,686.0	**33,005.4**

The Academy: Appendix 2 Aboriginal Access, Enrolment, and Programming Initiatives

Initiative	Purpose	Faculty
Bachelor of Science degree in Environmental and Conservation Sciences offered jointly with Yukon College	Provides northern and Aboriginal students an opportunity to access program without leaving Yukon	Agricultural, Life and Environmental Sciences, Native Studies
Discussions with Maskwacis Cultural College about improving student flow	Increase access for students from Maskwacis Cultural College to the University of Alberta	Augustana
Membership in the Alberta Aboriginal Recruitment Network	Attract and support Aboriginal students	Augustana
Staff member appointed to serve as Aboriginal recruitment specialist	Attract and support Aboriginal students	Augustana
Aboriginal Teacher Education Program in collaboration with Northern Lakes College and Northlands School Division	Provides northern and Aboriginal students an opportunity to access program	Education
Adaptation, delivery and evaluation of a school-based drug and alcohol prevention program with the Alexis Nakota Sioux First Nation	Support of the Aboriginal community	Extension
Partnered with Enoch Cree Nation's Family Health Working Group	Exploring strategies for integrating health services	Extension
Examination of a formal education program offered with Native Counseling Services of Edmonton	Positively impact the health of urban Aboriginal women	Extension
Transforming structure for providing cultural support to Aboriginal students	Better support Aboriginal students	Law
External review of Indigenous Academic Program	Improve program. Currently reviewing recommendations for implementation in 2012-2013	Law
Developing a Diversity Policy as per the requirements of accreditation process	Increase enrolment for students from rural Alberta, Aboriginal backgrounds, lower	Medicine and Dentistry

	socioeconomic backgrounds	
Initiated a theme of "social justice" in the undergraduate curriculum	Focus on Aboriginal Health	Medicine and Dentistry
Initiating a Pipeline program for Aboriginal students with an undergraduate university degree who do not meet the minimum GPA standard for admission to the MD program	Increase Aboriginal student enrolment	Medicine and Dentistry
The Rupertsland Centre for Métis Research	Communicates with the broader Métis community to enable ongoing relationships crucial to indigenous student recruitment and retention	Native Studies
"Health Warriors Network" project: participated in filming of a video resource	Promote health careers to First Nations students	Nursing
Piloted student participation in prenatal instruction on two reserves (Samson Healthy Family and Ermineskin Brighter Futures)	Serve Aboriginal communities	Nursing
Alberta Centre for Injury Control and Research (ACICR) priority	Reduce the incidence and severity of injuries in vulnerable populations including Aboriginal Peoples, and farming communities	Public Health
Science Faculty member is working as the Pacific Institute for Mathematical Sciences (PIMS) aboriginal coordinator	Support Edmonton-area First Nations students in mathematics outreach initiatives	Science
SSHRC faculties are developing an Aboriginal research group	Faculty and students with research interests broadly pertaining to Aboriginal matters are being encouraged to share their work, establish collaborative research programs, and seek external funding	SSHRC faculties

The Academy: Appendix 3
Rural Access, Enrolment, and Programming Initiatives

Initiative	Purpose	Faculty
Alberta Centre for Sustainable Rural Communities (ACSRC)	Fosters collaboration in research, undergraduate teaching and policy development	Agricultural, Life and Environmental Sciences, Augustana
Developed MOUs with Grande Prairie Regional College and Medicine Hat College	Target the needs of rural and to some extent Aboriginal students	Augustana
Placed 13 Rural Capacity Interns in projects in rural communities across Alberta	Assist rural communities in addressing capacity issues and to create meaningful rural-based undergraduate student experiences	Augustana
Pilot of Bachelor of Education Collaborative program in Secondary Education with Grand Prairie Regional College	Serve North Western rural Alberta	Education
Aboriginal Teacher Education Program in collaboration with Northern Lakes College and Northlands School Division	Serve 10 northern community sites	Education
Proposed Master of Library and Information Studies (MLIS) on-line delivery	Serve the needs of graduate students locally, in rural areas of Alberta, nationally, and internationally	Education
Master of Education in Educational Policy Studies (Educational Administration and Leadership specialization) in collaboration with Red Deer College, Central Alberta Public and Separate School Jurisdictions, and Zone 4 College of Alberta School Superintendents	This existing program was extended off-campus to meet demands of the profession for qualified school leaders, particularly in central rural Alberta.	Education
Proposing a Master of	Serve the needs of graduate	Education

Education in Teacher-Librarianship and Curriculum Studies (on-line delivery)	students locally, in rural areas of Alberta, nationally, and internationally	
Expanded the rural/regional Family Medicine Residency Program into Fort McMurray	Increase the number of graduates who choose to practice in rural and regional communities	Medicine and Dentistry
MD Ambassadors Program	Outreach program which introduces Edmonton and northern Alberta high school students to careers in the sciences and health professions	Medicine and Dentistry
Integrated Rural and Regional Health Community Clerkship	Offers select medical students the opportunity to live and learn in a rural Alberta community for their entire third year	Medicine and Dentistry
Developing a Diversity Policy as per the requirements of the accreditation process	Increase enrolment for students from rural Alberta, students from Aboriginal background, and students from lower socioeconomic background	Medicine and Dentistry
Rural placement initiative	Bring together learners who are on rural placements	Medicine and Dentistry, Pharmacy and Pharmaceutical Sciences
Initiating a travel bursary program in 2014 for undergraduate pharmacy students accepting experiential rotations in rural sites	Expected to recruit students to practice pharmacy underserved areas	Pharmacy and Pharmaceutical Sciences
Signed an agreement with Alberta Health to perform community health needs assessments in northern communities	Assessments will provide valuable experience for students as well as enhancing relationships in the northern half of the province	Public Health
Alberta Centre for Injury Control and Research (ACICR)priorities	Reduce the incidence and severity of injuries to vulnerable populations including Aboriginal Peoples, and farming communities	Public Health
The Augustana Physical Therapy satellite program	Supports rural practice in Alberta	Rehabilitation Medicine

The Academy: Appendix 4 Francophone Access, Enrolment, and Programming Initiatives

Initiative	Purpose	Faculty
• Business Administration Diploma • Health Care Support • Practical Nursing • Early Childhood Education • Tourism Management Diploma in collaboration with CEGEP de Matane	These college-level programs target Francophones to facilitate quick integration in the labour market or the Alberta education system	Campus St. Jean through le Centre Collégial de l'Alberta
Initiated certification in speech therapy for professionals working in Francophone and immersion schools	To increase the number of Francophone specialists	Campus Saint-Jean
Implementing a cultural competency curriculum in the Undergraduate Medical Education program	Diversity	Medicine and Dentistry with Campus Saint-Jean
Consulted with Campus Saint-Jean regarding pharmacy pre-requisite course work to assure that Francophone students can complete courses in French	To increase the number of French-English bilingual pharmacists	Pharmacy and Pharmaceutical Sciences

The Academy: Appendix 5
Graduates in Selected Fields

	2011	2012
i Healthcare		
1 Physicians	143	152
2 Nurses	496	566
3 Pharmacists	125	128
4 Physical and Occupational Therapists	194	114*
5 Speech Pathologists	52	60
6 Public Health Professionals	66	76
7 Dentists	36	38
8 Kinesiologists	64	76
9 Psychologists	9	12
ii Education and Knowledge Access		
1 Teachers	1238	1249
2 Librarians	30	43
iii Business, Government, and Legal		
1 Commerce/ Business	657	638
2 MBAs	149	150
3 Lawyers	163	170
4 Economists	189	183
5 Translators	29	26
iv Culture, Arts, and Tourism		
1 Theatre professionals	48	41
2 Musicians	53	39
3 Industrial, Graphic, and Theatre designers	45	39
5 Visual artists	45	45
5 Tourism Professionals	30	31
v Resource and Agricultural Economy		
1 Engineers	836	805
2 Geologists	105	97
3 Foresters	19	12
4 Agricultural, Food and Environmental Professionals	375	368

* Variance due to program change which delayed convocation

The Academy: Appendix 6

Campus Alberta, Canadian and International Program Partnerships

Selected programs offered in partnership with Campus Alberta Institutions

Program	Partner	Faculty
Bachelor of Science in Radiation Therapy	University of Calgary, Alberta Health Services (Cancer Care), the Cross Cancer Institute (Edmonton) and the Tom Baker Cancer Centre (Calgary)	Medicine and Dentistry
Bachelor of Science ENCS and BSc Agriculture programs -- new block transfer agreements with Campus Alberta partners facilitating entry for 2013-14	Campus Alberta Institutions	Agricultural, Life and Environmental Sciences
2 + 2 articulation agreements	Medicine Hat College, Grande Prairie Regional College	Augustana
Health Care Support Certificate	Bow Valley College	Centre Collégial de l'Alberta
Bilingual Business Administration Diploma	NAIT	Centre Collégial de l'Alberta
Teacher Education North program	Grande Prairie Regional College	Education
Middle Years program	Red Deer College	Education
Teaching in Rural Communities South program	Medicine Hat College	Education
Aboriginal Teacher Education Program	Northern Lakes College Northlands School Division	Education
Bachelor of Education collaborative pilot program in Secondary Education	Grand Prairie Regional College	Education
Master of Education in Educational Policy Studies (Indigenous Peoples' Education specialization)	Blue Quills First Nations College	Education
Master of Education in Educational Policy Studies (Educational Administration and Leadership specialization)	Red Deer College, Central Alberta Public and Separate School Jurisdictions, and Zone 4 College of Alberta School Superintendents	Education
Proposed Certificate for foreign-educated law graduates (the "NCA	University of Calgary	Law

Certificate Program")		
Bachelor of Science in Nursing (BScN)-Collaborative Program	Red Deer College Keyano College (Fort McMurray) Grande Prairie Regional College	Nursing

Selected programs offered in partnership with Canadian Institutions

Program	Partner	Faculty
BSc in Environmental and Conservation Sciences	Yukon College	Agricultural, Life and Environmental Sciences, Native Studies
Proposed Gestion touristique (Diploma in tourism management)	CEGEP de Matane	Campus St. Jean through le Centre Collégial de l'Alberta
Pilot program for course delivery in the Northwest Territories	Dechinta Bush University	Native Studies

Selected programs offered in partnership with International Institutions

Program	Partner	Faculty/ Unit
Dual Bachelor of Arts degree	Ritsumeiken University, Japan	Arts
University of Alberta in Berlin offers three-part programming: language instruction, internships, and a humanities course	Germany	Arts
French language and humanities courses	Université Catholique de Lille	Arts
9 bilateral agreements and "2+2" undergraduate program agreements	Institutions in Asia, Africa, Europe and South America	Agricultural, Life and Environmental Sciences
Establishment of an international dietetics internship program	University of Ghana's Nutrition Research and Training Centre	Agricultural, Life and Environmental Sciences
Study in Telemark program	Telemark University College, Norway	Augustana
Augustana-in-Cuba program	Universidad de Oriente, Cuba	Augustana
Master of Financial Management (delivered in China)	Xi'an Jiaotong University in China	Business
Dual JD Program	University of Colorado	Law
Joint PhD program	Shantou University Medical College in China	Medicine and Dentistry

Developing a joint research fellowship/Ph.D. training program	Oxford Medical School	Medicine and Dentistry
Developing an MOU to facilitate Graduate Student exchanges and possibilities of Co-tutelle (co-direction of theses)	University of Nantes in France	Native Studies
Joint PhD agreement	Ludwig Maximillian University (Germany)	Science
Proposed Co-tutelle agreements	The Federal University of Minas Gerais (Brazil), Technische Universität München (Germany), University of Campinas (Brazil) and University of Putra Malaysia (Malaysia)	Science
University Management Program	Select universities in China	University of Alberta International

The Academy: Appendix 7
Program Development

Implementation of recently approved programs

Program	First Intake Date
Bachelor of Arts (Planning) / Bachelor of Science (Specialization in Planning)	September 2012
Masters of Arts in Native Studies	September 2012
Master of Financial Management (in China)	May/June 2013
Doctor of Philosophy in Drama – Performance Studies	September 2012
Doctor of Philosophy in the History of Art, Design and Visual Culture	September 2013 (delayed from 2012)
Master of Business Administration/Bachelor of Science in Pharmacy	September 2012
Master of Business Administration/ Master of Library and Information Studies	September 2013

Current program submissions

Program	Faculty	Government Approval
Bachelor of Agriculture - Agronomy major - Plant Biotechnology major	ALES	PENDING. Submitted November 21, 2012
Bachelor of Science in Nutritional and Food Science - Honours in Food Science route - Honours in Nutrition route - revise Nutrition and Food major	ALES	PENDING. Submitted July 23, 2012
Bachelor of Science in Environmental and Conservation Science - Sustainable Agriculture major - Northern Systems major in collaboration with Yukon College	ALES	PENDING. Submitted July 23, 2012
Bachelor of Science in Radiation Therapy	Medicine and Dentistry	PENDING. Submitted November 28, 2012

Master of Arts in Community Engagement	Extension, Graduate Studies and Research	PENDING. Submitted July 23, 2012
Master of Arts in Women's and Gender Studies	Arts, Graduate Studies and Research	PENDING. Submitted July 23, 2012
Master of Coaching	Physical Education and Recreation, Graduate Studies and Research	PENDING. Submitted March 19, 2012
Master of Science in Laboratory Medicine and Pathology	Medicine and Dentistry, Graduate Studies and Research	PENDING. Submitted July 23, 2012
Doctor of Philosophy in Laboratory Medicine and Pathology	Medicine and Dentistry, Graduate Studies and Research	PENDING. Submitted July 23, 2012
Embedded Credit Certificate in Computer Game Development	Arts	Not required
Embedded Credit Certificate in European Studies	Arts	Not required
Embedded Credit Certificate in Global Citizenship	Education	Not required
Embedded Certificate in International Learning	Arts, University of Alberta International	Not required
Embedded Credit Certificate in Leadership	Business	Not required
Embedded Credit Certificate in Writing Studies	Augustana	Not required
Suspension of the Range and Pasture Management Major in the BSc in Agriculture Program	ALES	FINAL APPROVAL. March 21, 2012

Emerging Program Initiatives

Program	**Faculty**	**Funding Source**
Bachelor of Arts with a Arts Management minor	Arts in collaboration with MacEwan University	Existing
Bachelor of Arts with a Business minor	Arts with School of Business	Existing
Bachelor of Arts in East Asian Studies	Arts	Existing
Bachelor of Arts /Bachelor of Science in Interactive Media	Arts, Science	Existing
Bachelor of Arts /Bachelor of Science in Gaming	Arts, Science	Existing

Master of Arts in Public Economics	Arts, Business, Agricultural, Life and Environmental Sciences	Existing
Master of Arts in Medical Humanities	Arts, Medicine and Dentistry	Existing
Master of Education in Teacher-Librarianship and Curriculum Studies (on-line delivery)	Education	Existing
Master of Engineering Course-based Executive program	Engineering	Cost-recovery
Master of Library and Information Studies (MLIS) on-line delivery	Education	Existing
PhD in Writing Studies for Western Canada	Arts	Existing
Certificate in Community-based Research and Evaluation (graduate credit)	Extension	Existing
Certificate for foreign-educated law graduates (the "NCA Certificate Program")	Law in conjunction with the University of Calgary	Cost recovery
Certificate in Disability Ethics	Rehabilitation Medicine	Cost recovery
Certificates in International Agriculture and International Nutrition and Food Security	Agricultural, Life and Environmental Sciences	Existing
Certificates in Writing Studies, Latin American Studies, and India Studies	Arts	Existing
Certificates in International Studies and Theater Studies	Campus Saint-Jean	Existing
Diploma in Tourism (Gestion touristique)	Centre Collégial de l'Alberta	Existing
Diploma in Practical Nursing	Centre Collégial de l'Alberta	Resources required
Citation in Community Engagement (non-credit)	Extension	Existing
Citation in Entrepreneurship (non-credit)	Extension	Existing
Fashion Business Management program	Agricultural, Life and Environmental Sciences, Business	Existing
Honours College (a four-year program dedicated to innovation, creativity and bridging gaps created by compartmentalized education)	Arts	TBD
Land Reclamation International Graduate School	Agricultural, Life and Environmental Sciences, Science	TBD
Mountain Study Abroad program	Physical Education and Recreation, Agricultural, Life and Environmental Sciences, Arts, and Science	TBD
New Training program which will address some of the gaps in current	Pharmacy and Pharmaceutical Sciences, Medicine and Dentistry,	TBD

training of students bound for the pharmaceutical industry	Science	
Therapeutic Recreation program	Physical Education and Recreation, Rehabilitation Medicine, and the Alberta Therapeutic Recreation Association	TBD
Watershed Management program	Agricultural, Life and Environmental Sciences, Science	Existing
Undergraduate Research Stream	Biological Sciences, Faculty of Science	Existing
Internationally Educated Physical Therapists upgrading program	Rehabilitation Medicine in partnership with the Physiotherapy Alberta College and Association (PACA)	Grant funded by PACA
Canadian National Leadership Program (non-credit certificate in military leadership)	Arts, Business, and others	Existing

The Academy: Appendix 8
Research Capacity Investments and Details

The University of Alberta builds capacity in research and creative activities through several means, including investments in research chairs, infrastructure, and the creation of special centres, institutes, and initiative. Some mechanisms are targeted by federal and provincial funding programs, and cannot be used to sustain and develop capacity in other areas of institutional strategic importance and impact.

Research Chairs

Canada Research Chairs (as of December 2012)

Area	Current	Under Review	Under Recruitment
Humanities and Fine Arts	4	1	0
Science and Technology	33	2	2
Social Structures and Systems	7	2	2
Energy	4	0	0
Environment	6	1	1
Health and Wellness	32	6	2
Foods and Bioresources a	3	1	1

Other Research Chair Programs – Targeted Federal and Provincial Priorities

Chair Program:	CERC*	NSERC Industrial*	CAIP**	AI-HS** CAIP	UofA * Tory	UofA * Killam
Humanities and Fine Arts	0	0	0	0	4	0
Science and Technology	1	9	2	2	0	2
Social Structures and Systems	0	0	1	0	0	0
Energy	1	10	2	0	0	0
Environment	0	3	1	0	0	0
Health and Wellness	1	0	0	3	0	0
Foods and Bioresources	0	0	1	0	0	0

* Total held, December 2012; excludes proposals under review

** Allocated or held, December 2012

CERC= Canada Excellence Research Chair

CAIP = Campus Alberta Innovates Program

AI-HS = Alberta Innovates – Health Solutions

UofA Tory and UofA Killam = internal university research chairs

Infrastructure Investments

Canada Foundation for Innovation Awards

2011-2012 Awards:	$20.5M		
	Federal		$8.1M
	Provincial		$7.0M
	University		$1.7M
	In-kind and other cash	$3.7M	*university and/or external sources*

2012-2013 Awards:	$58.9M		
	Federal		$20.6M
	Provincial		*TBD. See Research Capacity Funding Gaps*
	University		$0.8M
	In-kind and other cash	$14.3M	*university and/or external sources*

Innovation and Commercialization Investments

TEC Edmonton	$1.8M / yr
National Institute for Nanotechnology*	$20.6M / yr

** UofA contribution figure is based on salaries, indirect cost of research funding transfers; sublease of 2 floors; additional capital accounts; utility and operating grants; grants that support graduate students and PDFs on NINT projects. Support for NanoFab is included; support for other nano facilities on campus that direct support NINT activities is not included.*

Enhancing Capacity through Centres, Institutes, and Initiatives

The following areas of research capacity have been developed through university investment in centres, institutes, and initiatives. Descriptions provide further detail to clarify contribution to and alignment with the research priorities of the Government of Alberta and its ministries.

Humanities and Fine Arts

Canada's Francophone Heritage: Francophonie, minority-language rights and legislation, as well as intercultural research, distinguishes the U of A nationally and supports provincial and federal mandates to recognize and preserve the Canada's francophone heritage.
Canadian Studies Centre; Institut pour le patrimoine de la francophonie de l'Ouest Canadien

Cross Cultural Studies:

Central and eastern European: emphasis on Ukranian and Austrian history and society
Wirth Institute for Austrian and Central European Studies; Canadian Institute for Ukrainian Studies; Peter and Doris Kule Centre for Ukrainian and Canadian Folklore; the Kule Institute for Advanced Studies.

China: emphasis on contemporary China, Chinese energy policy, politics, economy, social issues, culture and Canada-China relations.
The China Institute at the University of Alberta

Japan **:** Japanese language and culture from cross disciplinary perspectives
The Prince Takamoda Japan Centre. Japan Canada Academic Consortium. Member institution: Japan-Canada Academic Consortium.

Indigenous Peoples: language and linguistic history; cultural, social and legal frameworks.
Canadian Indigenous Languages and Literacy Development Institute; Rupertsland Centre for Métis Research; Aboriginal Teacher Education Program

Information Sciences & Humanities: deployment of advanced computing technologies for historical, economic, health, social, and cultural research.
Canadian Institute for Computing in the Arts

Ideas and Institutions: past and current systems of ethics, truth, social and cultural development, and political theory; interdisciplinary anthropology archeology; current cultural thought and social innovation
Baikal Archaeology Project; The Cortona Italy School; Festival of Ideas.

Written and Performed Word: study and production high-calibre production of literature and theatre.
Canadian Writing Research Collaboratory; the Canadian Literature Centre; Canadian Centre for Theatre Creation; The Timms Centre for the Arts

Music Performance and Theory: Innovative music research, performance, and leadership for international-caliber concerts and choral experiences; cross disciplinary work in acoustic engineering, sound, and performance for advances in sound quality and improving vocal health of music teachers.
Canadian Centre for Ethnomusicology;

Visual Expression: all aspects of art from its history to methods of production, with particular investment in printmaking, industrial design, and visual information communication.
Enterprise Square Campus Gallery

Social Structures & Systems

Resilient Communities: frameworks, policies, and mechanisms that enable community innovation and vibrancy in urban and rural settings
Community University Partnership, City-Region Studies Centre, Alberta Centre for Sustainable Rural Communities

Science and Society: legal, policy, and economic consequences associated with scientific and technological advances, especially in health
Health Law Institute; John Dossitor Centre for Ethics; Institute of Health Economics (Partner Institution)

Corporate and Public Citizenship: the role of businesses, corporations, and public groups in defining the social good of communities and their enhanced quality of life, locally and internationally.
Canadian Centre for Corporate Social Responsibility; Centre for Public Involvement.

Entrepreneurship and Innovation: political, social, and economic aspects of innovation ecosystems, technology and knowledge transfer, and commercialization, especially at the science—business interface.
Technology Commercialization Centre; Centre for Entrepreneurship and Family Enterprise; Alberta Business Family Institute

Globalization: citizenship education, human rights education, and education for social justice and social development; cultural musical expression
Centre for Global Citizenship Education & Research; Canadian Centre for Ethnomusicology

Law, Justice, and Legal Frameworks: law, administration justice, social justice, and the interpretation and evolution of legal; interdisciplinary studies of constitutional issues.
Alberta Law Reform Institute; Centre for Constitutional Studies; Health Law Institute.

Educational Frameworks: scientific, mathematical, and technological literacy for citizens; curriculum and pedagogy; teacher education
Centre for Mathematics, Science and Technological Education; Centre for Research for Teacher Education and Development; Curriculum and Pedagogy International Network

Political and Economic Systems: economic, social, political and international influences on the economy and society, from both regional and national perspectives; the design, execution, and analysis of public opinion sampling and surveys
Institute for Public Economics; Population Research Laboratory

Canada's North American Context: policies and policy processes of the United States, US cultures, histories, politics, and economies; Canada's U.S.-specific challenges and opportunities
Alberta Institute for American Studies

Science and Technology

Information Communication Technologies: computational intelligence, especially machine learning and data mining; wireless and broad-band communications, applied electromagnetics, information security and sensor networks; data analytics for geophysics, energy exploration, space sciences and drug design; advanced ground and satellite observation systems
Alberta Centre for Machine Intelligence; IBM-Alberta Centre for Advanced Studies; Centre for Earth Observation Sciences

Biochemisty, Chemistry, and 'omics': protein structure and function; lipids and membrane structure; glycomics; analytical chemistry and computational advances; metagenomics and metabolomics for infectious diseases, chronic diseases, and antiviral therapies; translational clinical biomarker discovery for personalized medicine; biochemistry and molecular biology of plant, animal, and human development and disease
Alberta Glycomics Centre; Metabolomics Innovation Centre; Li Ka Shing Institute of Virology

Nanoscience and Nanotechnology: integrated research in condensed matter physics, surface science engineering, inorganic and organic chemistry, and chemical engineering to advance metabolic sensor systems; hybrid nanoscale electronics; new materials and processes for energy generation and storage; nanotoxicology.
National Institute for Nanotechnology; Alberta Centre for Surface Engineering and Sciences; Integrated Nanosystems Research Facility; Nanofab, Ultrafast-Nanotools Facility

Mathematics and Analytical Methods: geological and geophysical imaging analytics; organic and inorganic analytic chemistry; biostatistics, psychometrics, sampling and surveys; qualitative methodologies; mathematical biology
Pacific Institute of Mathematical Sciences (Member); International Institute for Qualitative Methodology; Centre for Research in Applied Measurement and Evaluation; Alberta Glycomics Centre

Materials and interfacial science and engineering: condensed matter physics & high temperature superconductivity, physical chemistry, and nanoscience research for new catalysts, materials, and biomaterials; synthesis of new molecules for improved plastics, alloys, electronic components, and fuel cells.
Alberta Centre for Surface Sciences and Engineering; National Institute for Nanotechnology

Human Development: mechanisms of neurological and cognitive development and behavior, especially aging and neurological disease.
Centre for Neuroscience; *Centre for Prions and Protein Folding Diseases*

Foundations and Behavior of Matter: theoretical and experimental high energy physics; astrophysics; solar physics and near-earth space phenomenon
Sudbury Neutrino Observatory Lab- SNOLAB (Member Institution); Institute for Space Sciences, Exploration and Technology

Earth Sciences: mineralogy, petrology, geochemistry, and geochronology; gas and hydrocarbon chemistry, petroleum hydrogeology;
Canadian Centre for Isotopic Microanalysis; Helmholtz-Alberta Initiative

Engineered Structures and Processes: geotechnical and geo-environmental engineering for large earth structures, cold regions and permafrost engineering; pipelines and transport systems; risk management for environmental engineering and natural hazards.
Markin/CNRL Natural Resources Engineering Facility; Canadian Rail Research Laboratory

Energy

Economics and policy: Applied economic analysis on risk and regulation in energy and electricity markets, within Canada and internationally; social and cultural impacts of resource extraction and land use policies; environmental deregulation and marker-based approaches to meet land use and environmental quality objectives.
Centre for Applied Business Research in Energy and the Environment; Oil Sands Research and Information Network; Alberta Land Institute.

Conventional and Unconventional Fossil Fuels: all aspects of bitumen upgrading, new non-aqueous and advanced extraction technologies; carbon sequestration; reduced environmental impact of fossil fuel production and exploration
Centre for Oil Sands Innovation; Helmholtz-Alberta Initiative; Oils Sands Tailing Research Facility; Centre for Intelligent Mining Systems

Resource Geosciences: petroleum exploration, exploitation management and monitoring; theoretical and applied seismology, geodynamics, and geomagnetism; 4-D rock physics and geophysical logging and data processing
Helmholtz-Alberta Initiative

Tailings and Water Management: integrated research in chemical engineering, ecology, metagenomics, and molecular biology for environmentally sustainable treatment of tailings, and water from resource extraction.
Oil stands Tailings Research Facility; Centre for Oil Sands Innovation; Helmholtz-Alberta Initiative

Clean Coal and Mining. Coal cleaning and upgrading, pollution control strategies, greenhouse gas emission reduction, value-added products, and underground goal gasification; advanced ICT for mining; surface mining equipment design and operations
Canadian Centre for Clean Coal/Carbon and Mineral Processing Technologies; Helmholz-Alberta Initiative; Centre for Intelligent Mining

Alternative Energies— geothermal energy; biofuels; solar cells and photovaltaics; power quality and advanced power distribution systems; nanoscale advances in advanced materials for solar cells; photovoltaics;
National Institute for Nanotechnology ; Biorefining Conversions Network

Environment

Biosystems and Ecosystems: plants, forest, and soil interactions; plant physiology, structure, genetics, growth and adaptation processes; biological and genetic processes of plants and animals in response to environmental stresses; boreal, alpine, and arctic ecology and wildlife; wildlife biology and management; paleontology and evolutionary systemics
Alberta Biodiversity Monitoring Institute (Partner Institution); Centre for Earth Observation Sciences

Aquatic ecosystems: wetlands, hydrogeology, rivers systems, glaciers, polar ice); plant/animal interactions and effects; assessing, modeling, and mitigating climate and human-induced influences on water and air quality

Socio-Economics of Environmental Resource Development. Political, social, economic and cultural requirements and consequences; land use policy and practices; policies and frameworks for sustainable rural communities; social responses to ecological change
Centre for Applied Business Research on Energy and the Environment; Alberta Land Institute; Canadian Circumpolar Institute; Alberta Centre for Sustainable Rural Communities

Animal and Human Health. Public health challenges related to water quality and waterborne diseases, animal-to-human pathogen spread, and soil and air contaminants; disease spread through wildlife; neurodegenerative disorders and chronic wasting diseases in wildlife and livestock.
Centre for Prions and Protein Folding Diseases; Centre for Earth Observation Sciences

Climate Change. Assessing and forecasting the impact of climate change on ecology, ecosystems, with emphasis on Alberta's boreal forests, water supply, and agricultural sectors; land and ecosystem changes in northern Canada and the Arctic; biodiversity throughout the western hemisphere
The Canadian Circumpolar Institute; *Centre for Earth Observation Sciences*

Land Reclamation and Soil Remediation: ecosystem protocols and hydrological sciences for land reclamation; genetics and molecular biology for biodegradation of petroleum hydrocarbons in contaminated groundwater.
Helmholtz Alberta Initiative

Food and Bio-resources

Biofuels, bioenergy & biomass conversion: understanding and design of enzyme, catalysts, and other processes for biomass conversion and the development of higher value products from feedstock; nano-enabled biomaterials
National Institute for Nanotechnology; Biorefining Conversions Network

Swine, Livestock, and Poultry Sciences: optimizing production and quality of traditional and new species, and on novel traits through genomics, breeding, protection systems; food safety, food quality, production efficiency and sustainability, and environmental health;
Dairy Research and Technology Centre; Poultry Research Centre; Swine Research and Technology Centre; Livestock Gentec; Agri-Food Discovery Place

Sustainable Forestry: science, technology, and best practices to reduce soil erosion, water and fertilizer use and supply; plant genetics; environmentally-sustainable forestry practices and enhanced wood production
Centre for Enhanced Forest Management

Agricultural resource economics: market based instruments for the regulation of resource allocation; interaction of energy based stresses, climate induced stresses, and human population increases on water for agricultural sectors; regulation issues related to food and consumers; agribusiness financing and business analysis.

Crop and Plant Sciences: genomics, biotechnology, breeding, crop protection systems, and agricultural practices, and management to enhance production, and to identify mechanisms and traits for stress- and disease-resistant species.

Healthy Foods: Development of agricultural biotechnologies for healthy food production, utilization of crop components and functional food production; development of probiotics, nutraceuticals and specialized seed oils
Agri-Food Discovery Place; Phytola Centre

Health and Wellness

Advanced Interventions and Treatments: translational, clinical, and cross-disciplinary focus on chronic diseases, cancer, obesity, and improved organ and tissue transplantation; regenerative medicine; biomarker based technologies for personalized treatment and diagnostics; advanced materials for implant devices and rehabilitation treatments; population health, health services, and health systems.
Alberta Transplant Institute; Institute for Reconstructive Sciences in Medicine; Alberta Diabetes Institute; Muttart Diabetes Research and Training Centre. Alberta Cardiovascular and Stroke Research Centre; Mazankowski Alberta Heart Institute

Cross Cultural Health: Indigenous people's health and health training; complementary and alternative medicine; global health.
Aboriginal Health Initiative; Complementary and Alternative Research and Education Program - Integrated health and Healing

Health Equity: social determinants of health equity; ethical, legal and policy consequences of rapid advances in health innovations disparities in health.
John Dossetor Health Ethics Centre; Health Law Institute

Healthy Life Spans: cross disciplinary research and training on individual, social, organizational, and community determinants of health living and health aging; nutrition; exercise, health promotion, and safe workplaces and behaviours; maternal and child health.
Alberta Centre on Aging; Alberta Institute for Human Nutrition; Alberta Centre for Active Living; Women's and Children's Health Research Institute

Health Services and Outcomes: research on improved health service design and delivery; assessment of health service policy and technologies; primary care and rural health care
Interdisciplinary Health Research Academy; Institute of Health Economics; Alberta Research Centre for Health Evidence; Women's and Children's Health Research Institute

Inter-professional Training: Cross cultural, primary care and rural health care; evidence-based best practices in health sciences team education, health professional collaborative practice; and the use of technology to support and enhance teaching and learning.
Edmonton Clinic Health Academy; Interdisciplinary Health Research Academy; Health Sciences Education and Research Commons

Medical Imaging Sciences: in vivo imaging of human diseases for improved diagnosis and treatments, especially chronic and neurological diseases, cancer, and drug development
National High Field Nuclear Magnetic Resonance Centre (NANUC); Edmonton PET Centre; Centre for Biological Imaging and Adaptive Radiotherapy; Peter S. Allen Magnetic Resonance Research Centre.

Virology, Immunology, & Infectious Diseases: virus discovery, metagenomic and microbial genomic analysis, viral disease prevention and treatment; infectious causes of inflammatory disease; translation of research technology into clinical and commercial practice; pathogen and biomarker discovery; bioinformatics; molecular and comparative immunology
Li Ka Shing Institute of Virology; Alberta Transplant Applied Genomics Centre; Advanced Microscopy Unit

Centre of Excellence for Gastronintestinal inflammation and Immunity Research; Alberta Glycomics Centre; Alberta Transplant Applied Genomics Centre; Advanced Microscopy Unit

The Academy: Appendix 9

Research Capacity Funding Gaps

Research Capacity Envelope Program:

Anticipated Submissions

The University of Alberta will apply to the Ministry of EAE's Research Capacity Envelope Program for $36.M to match $36.M in federal investments in research infrastructure. Due to the nature of budget finalization and equipment acquisition, this application will be for a forward commitment of funds to be released over 2 – 3 fiscal years.

Other Infrastructure Re-Capitalization

During 2012, the University of Alberta engaged in a formal process that identified three additional research capacity areas for recapitalization. These are

- infectious diseases : $8.7M
- risk assessment for environmental disease: $2.3M
- advanced molecular imaging for medical research: $11.8M

The university has established significant research capacity and impact in these areas through investments in faculty recruitment and through contributions towards previously funded core facilities, in partnership with the provincial and federal governments. These core facilities support strategic provincial priority areas; the molecular imaging facility provides services to 15 industrial and government research clients.

Direct Cost of Operating Core Research Services

The University of Alberta develops, acquires, and sustains core infrastructure and services for Alberta's research and innovation enterprise. Examples of this infrastructure includes animal care facilities, which enable innovation and discovery related to human and livestock health; research stations that support sustainable agriculture and environment; and highly specialized equipment for advanced imaging. This infrastructure provides a competitive innovation arena for Alberta's current industries and sectors, and demonstrates to those industries not yet invested in the province that their work can be executed here, in partnership with Alberta's flagship institution. Near-commercialization development and testing for medical, health, and drug development could not be done with the provision of the facilities provided at the U of A.

The direct operating expenses of these facilities greatly exceed revenue streams provided by service fees and researcher grants, and they are ineligible to be covered by any indirect cost of research funding. Operating costs for these facilities are currently outside Alberta's Research Capacity Program's mandate. Fiscal pressures on the U of A's Campus Alberta Grant reduce the internal funding available to sustain the infrastructure foundation that Alberta looks to the U of A to acquire, operate, and sustain.

The U of A requests that its Campus Alberta grant reflect the differential expenses of providing the province's core advanced research and innovation facilities and services.

Direct and Indirect Costs of Research Gap – Postdoctoral Fellow Support

Attracting and training a large complement of exceptional PDFs is one of the mandates of Alberta's CARI sector and an institutional priority for the University of Alberta. Direct and indirect costs associated with PDFs are not included in university's Campus Alberta Grant, because these individuals are not counted as either staff FLEs or student FLEs.

The U of A requests that its Campus Alberta grant reflect the differential direct and indirect costs of training post-doctoral fellows.

The Academy: Appendix 10

eLearning

Programs with alternative delivery

Program	Faculty	Delivery
Bachelor of Science degree in Environmental and Conservation Sciences offered jointly with Yukon College	ALES, Native Studies	Online delivery and video conferencing
Master of Arts in Canadian Studies	Campus Saint-Jean	Classroom or distance delivery
Master of Education in Teacher-Librarianship and Curriculum Studies	Education	Online delivery
Master of Arts in Communications and Technology	Extension	Blended delivery
Applied Land Use Planning Certificate (non-credit and professional development)	Extension	Blended delivery
Information Access and Protection of Privacy Certificate (non-credit)	Extension	Online delivery
Occupational Health and Safety Certificate (non-credit)	Extension	Online delivery
Master of Public Health in Health Promotion Studies	Public Health	Online delivery
Certificate in Pain Management	Rehabilitation Medicine	Online delivery
Certificate in Stroke Rehabilitation	Rehabilitation Medicine	Online delivery

eLearning Initiatives

Initiative	Faculty
Development of an iTunesU site for media, podcasts, video segments, public performances of Arts-related teaching and research projects	Arts
Multimedia group provides support for the conversion of old media formats to digital formats, and supports the creation of podcasts, video production and lecture capture	
"Apple Learning Tour" session on iBooks Author and iTunesU	
New version of the Language Lab, which includes a video component useful for learning sign language	Campus Saint-Jean
Speech-Coach, a linguistic diagnostic tool involving complex algorithms	
Text-to-speech tool that now allows for "on-the-fly" rendering	
SMART User Certifications. During the past 18 months approximately 950 students have attended training sessions so that they can better integrate	Education

digital technologies in their classroom.	
The “Inclusive Education: Adapting Instruction for Students with Special Needs” course has been reformatted for blended delivery	
Continue to developing eLearning materials to support some large, first-year and second-year undergraduate courses	Engineering
Online Medical English Course which allows offshore delivery of course contents overseas	Extension, Medicine and Dentistry
Interdisciplinary 410 Health Team Education course incorporates online elements to accommodate distance delivery	Health Sciences Council
Completed an extensive Faculty-wide eLearning review and have adopted a new framework involving changes to existing processes and supporting technologies	Medicine and Dentistry
Development and commercialization of Brainspan, an interactive gaming application for medical education	
NS 200: Aboriginal Canada - Looking Forward, Looking Back course will be offered via videoconferencing in Fall 2013	Native Studies, Augustana
Increased inventory of laboratory skills videos online	Nursing
Initiated online preceptorship programming for preceptors of undergraduate students (certificate awarded upon completion of 13-week program)	
Lectures can now be viewed in Flash format as well as on mobile devices	
Piloted online mid-term and final exams	
Courses offered to practicing pharmacists utilize distance learning technologies	Pharmacy and Pharmaceutical Sciences
Pharmacy student practice skills (courses, practice laboratories, and experiential education) supported by eLearning technologies	
A special topics course, Introduction to the Space Environment and Space Weather, is being offered by videoconferencing in collaboration with the University of Calgary.	Science
Voice-over PowerPoint presentations so that students are able to review course content at any time	Rehabilitation Medicine
Developed an e -clinic using standardized patients so that students are able to work with clients over the course of an academic year.	
Highly focused webinar sessions are delivered by experts in a web-based synchronous learning environment.	
Satellite campuses have been established in Calgary and Camrose using real-time web/video cast technology	

CAPITAL PLAN

Over the past ten years, the University of Alberta has undergone tremendous growth. Total student enrolment has increased 20 per cent, fulfilling access goals of both the province and the university. Graduate student enrolment has nearly doubled. During the same period, we have seen a concomitant increase in our research productivity and international profile and reputation.

In the competitive world of post-secondary education, the U of A must strive to provide consistent, high-quality learning experiences and infrastructure that attracts, retains, and engages outstanding faculty, staff, and students. As the university changes, so must its space needs and requirements. The university has leveraged significant and continued capital funding by proactive planning for the construction of new learning and discovery spaces and the advancement of much needed reduction in deferred maintenance. The university's ability to quickly respond to funding opportunities and partnerships as they arise is only made possible by actively engaging in design activities that anticipate future needs.

Continued investment for renewal and repurposing, deferred maintenance, and new facilities remains key to the university's ability to meet its own and the province's objectives. With the recent completion of several large-scale, capital projects, the university now has the opportunity to sustainably maintain, and where appropriate, repurpose aging assets and infrastructure as new funding is made available. As areas/buildings are vacated by programs relocating to newly constructed buildings, smart, forward-thinking planning requires that we look beyond simple renewal and explore repurposing opportunities. By coupling renewal and backfill projects, the U of A provides a best-value model for creating projects that look toward our future operational and academic needs at a reduced capital cost. However, strategic investment in new infrastructure and buildings still remains vital in maintaining the delivery of first-in-class academic programs. To that end, wherever possible, the university will seek opportunities to leverage existing funding, utilize the equity in our current physical assets, and explore various partnerships and project delivery models.

As in previous years, the following Capital Plan endeavours to take a balanced approach in identifying planning, engineering, and/or construction needs. As we look forward, the following five strategic focus areas guide our capital planning efforts:

- Ensure that we continue to maintain the condition and functionality of the university's physical assets, which play a critical role in our ability to attract, support, and retain the best students, faculty, and staff.

- Couple backfill requirements with renewal projects to provide a best-value model for capital projects that meets the pedagogical needs of tomorrow's learners and the requirements of researchers in a more cost effective manner while positively enhancing utilization of our space.

- Fund pre-design services for strategic institutional capital priorities, creating an inventory of projects that can respond to future funding opportunities and be readily implemented through a variety of project delivery models.

- Provide purpose-built, supportive student housing for up to 25 per cent of full time enrolment to keep pace with U15 peers, enhance completion rates, and ensure accessibility for rural and underrepresented Albertan students as well as international students.

- Strategically plan and construct critical new facilities, respecting the varied needs of the university's five campuses as they each serve unique and separate constituencies within Alberta.

Aligning with Alberta's Priorities

The University of Alberta's Capital Plan forms the basis of the institution's request for capital funding from the Government of Alberta—the U of A's primary funding partner. It outlines both short-term priority projects, which address current space, program, and renewal needs in light of expected differential growth, and long-term forecasted needs anticipated over the next ten years. Through the Capital Plan, the university continues to align with government priorities and goals as identified through the Ministry of Enterprise and Advanced Education and the Ministry of Infrastructure. At the same time, the plan is also a critical tool in seeking and securing opportunities to leverage capital planning priorities with public, private, and institutional partners. Flexibility and consultation between university and provincial officials is essential as Alberta Infrastructure further develops and implements such directives as achieving sustainability through LEED®, Green Globes™ and BOMA BESt™ certification, prudent management of capital grant expenditure in capital project implementation, and identification of deferred maintenance.

As we move forward through the institution's second century, the U of A's vitality and vibrancy can only be maintained through well-supported, well-planned, and strategic repurposing and renewal of its facilities. Currently, the university's facility inventory (supported and unsupported) totals 1.65 million square meters, and while we realize that there are limited dollars for new capital, we continue to plan and partner to accommodate strategic and critical expansion needs across the university's five campuses. Examples of current partnered initiatives being considered include the Twin Arena project (South Campus), Student Residences/Housing (various sites), Phase 1 District Energy Plant for South Campus, a Leadership College (North Campus), and various downtown initiatives.

Given current marketplace and best-value procurement models, envelope funding for planning and preliminary engineering of critical projects puts the U of A and government in the position to quickly enter the construction market as funds become available. This planning process begins with updating and refining elements of the Long Range Development Plan (LRDP)—specifically related to land use—to ensure that the university can continue to plan and develop its campuses to meet the short- and long-term needs of the institution. Envelope funding also allows the university to strategically advance high priority projects of the university, which, in turn, provides more refined project scopes and budgets necessary to identifying the most appropriate implementation strategy, including public-private partnerships (P3) options. The U of A was able to capitalize on and meet the aggressive timeframes of the federal Knowledge Infrastructure Program (KIP) because of this kind of shared long term vision for the future.

With past capital funding, the U of A has recently completed and opened several new and renewed formal learning and research spaces. However, enrolment increases and student demand continue to

strain existing academic support space like fitness facilities, formal and informal collaboration/social space, libraries, collections and storage, housing, and daycares. Facilities and spaces like these help to attract and retain students, faculty, and staff because together they form an environment that is conducive to successful academic experience. When properly developed, student housing can be a key driver leading to successful learner outcomes and strong alumni relations with the institution. The university will continue to work with government to explore various development models for student housing that both minimize initial capital investment and result in housing options that are attractive and supportive for students.

In response to the measures and goals outlined in the university's academics plans, and in light of differential growth of our graduate programs, differential space requirements for graduate versus undergraduate space, program enhancements, changing pedagogy and program delivery methods, and the need for additional academic support space, a number of strategic new and expansion projects across the five campuses of the university are in process and will be needed in future. While all U of A campuses work together as a whole, each serves distinct and separate constituencies within Alberta and have unique capital priorities, putting the university in a unique position within the Campus Alberta model.

The long term capital priorities outlined at the end of this chapter advance the goals of the institution and provide a rationale for addressing areas of greatest need. Outside of identifying needs and capital requests to government, the Capital Plan provides a mechanism for the university to target and leverage partnered funding. The U of A remains committed to seeking partnership opportunities that leverage provincial funding and maintain the momentum of the university's initiatives in support of its vision and government's priorities for post-secondary education.

Highlights of 2012-13

Initiatives

- *10-Year Strategic Preservation Plan for Maintenance and Functional Renewal*: The U of A and the provincial government continue to refine data, reporting, and collection tools (RECAPP) for methods to assess priorities and understand the scope of conditional and functional problems, and to identify potential funds for remediation. Prioritization of the application of available funding is required to strategically address those facilities in poor condition and requiring functional improvement to meet the needs of increased and changing programming.

- *Campus Planning*: Four years of consultation with respect to our changes in our Long Range Development Plan, as it pertains to the South Campus, concluded in March 2013. The university will now be taking the revised plan through our governance process to seek final board approval before providing the documentation to the Minister of Enterprise and Advanced Education under the terms and conditions outlined in the Post-Secondary Learning Act.

- *Energy Management Program*: Given the success of the current program, the university has initiated a second generation of the Energy Management Program. As in previous years, we propose that this program be financed through borrowing and paid back through resulting energy savings.

- *Gathering Place*: The University, in partnership with many of our Aboriginal partners, has completed an initial functional program and site study for a gathering place on our North Campus. Its primary focus will be to support the cultural functions of Aboriginal students, the University of Alberta, and the greater community at large. It is also intended to function as an interdisciplinary centre of learning to facilitate a high quality dialogue between Aboriginal students and staff, across all academic disciplines of the university.

- *Leveraging/Collaboration*: The University of Alberta continues to explore leveraging and collaboration opportunities with respect to our assets, people, and skills as a means of advancing the institution and providing a degree of stability.

- *Student Housing*: The university's goal to house up to 25 per cent of its full-time enrolment in purpose built, supportive housing remains and the university continues to develop plans and business cases for further development. Additionally, activities are taking place simultaneously (LRDP amendment, Sector Planning of Michener Park, housing partnerships and modernization studies) to aid us in a development program that will provide the context for future development.

Government of Alberta Funding

- *Dentistry Pharmacy Repurposing*: Dentistry Pharmacy is a landmark building on our North Campus and the university is committed to developing a plan that will see this building remain as a critical center within the campus environment. Government has provided the much needed funding required to determine how this landmark can be recast to serve the university. A number of studies have been undertaken and a final design development report for the shell and core of the facility is expected to be completed for the summer of 2013. The outcome of this activity will provide a comprehensive report that will outline potential use, project delivery options, and budgets for further funding consideration.

- *Infrastructure Maintenance Program*: Current funding levels of the Infrastructure Maintenance Program (IMP) grant, together with recent one-time special project funding, have allowed the university to maintain its trend in reducing its deferred maintenance liability. Maintaining the current funding levels of our IMP grant is critical for both preventing increases in our deferred maintenance liability and reducing the risk of catastrophic failure of some of our buildings systems. In addition, increases to either base funding or additional one-time grants are required to limit the growing risk to this liability (Refer to Figure 18 in the "Current State of Assets" section of the report).

- *Preservation Projects*: Projects funded and undertaken in recent years have resulted in reductions in the Facility Condition Index (FCI) of some facilities. Refer to Figure 17 in the

"Current State of Assets" section for a listing of current preservation projects and their associated reduction in FCI.

- *Renewal and Backfill Projects*: Prudent project management of capital projects has resulted in positive project variances as these projects have been completed. Working closely with government, a number of repurposing and renewal projects directly related to these projects have been identified.

Partnerships with Communities, Post-Secondary Institutions, and Private Organizations

- *Camrose Performing Arts Centre*: This project was made possible through strong capital and program partnerships with the city and county of Camrose. Located on Augustana Campus, construction of this facility started in the fall of 2012 with an anticipated completion date of January 2014. This facility will serve a large number of local and surrounding area groups. Through future expansion plans, this project also accommodates opportunities to develop and construct space to further support Augustana's Fine Arts program.

- *Canada Foundation for Innovation (CFI) Contributions*: Over the last ten years, the university has received approximately $204 million from CFI for major infrastructure purchases, including equipment, renovation, and new construction. This funding has directly leveraged approximately $279 million from other sources, including the province of Alberta, corporate partners, and other funding agencies.

- *Enterprise Square Galleries*: In December of 2012, the City of Edmonton approved funding for joint programming and operation of the Enterprise Square gallery space which focuses on arts and culture. This space will be used to showcase the city and university's respective museum collections and the work of local artists.

- *TEC Edmonton:* TEC Edmonton has provided tremendous growth and program opportunities for all partners. They have indicated their desire and need to expand within Enterprise Square and are currently seeking funding for this work.

- *Islamic Garden*: In June 2009, His Highness the Aga Khan announced plans to create a traditional Islamic garden within the university's Devonian Botanic Garden (DBG) in recognition of the growing partnership between the university and the Aga Khan University. Due to recent planning exercises and a recent visit of His Highness, the Islamic Garden will be moved to a different location within the DBG than original planned. The design team is working towards finalizing the concept plan and budget. The Ecological Learning Centre is a critical piece of garden infrastructure that is intended to integrate this and other gardens within the Devonian Botanical Garden site, providing learning and research space, community outreach programs, and support the visitors and tourism.

- *Pan-AM Junior Games*: In partnership with Alberta Athletics and the city of Edmonton, the Pan-AM Junior Games will be hosted in Edmonton at Foote Field in the summer of 2015. The

university's involvement in these games is just one example in how we build partnerships and share world-class facilities to build a stronger reputation for our city and province.

Project Completion

- *Edmonton Clinic Pedways*: Connecting the Kaye Edmonton Clinic, Edmonton Clinic Health Academy, and the Walter C. Mackenzie Centre via an overhead pedway system was the last, but critical, component to the original program of the Edmonton Clinic facilities. This pedway network provides a connection to the city of Edmonton LRT platform, which will allows students, staff, and general public to easily travel between the three facilities, with the added benefit of reducing ground-level 114th Street crossings.

- *Medical Isotope and Cyclotron Facility*: The Medical Isotope and Cyclotron Facility is a partnership between the University of Alberta, Alberta Health Services, Enterprise and Advanced Education, Alberta Infrastructure, Alberta Health, Natural Resources Canada, and Advanced Cyclotron Systems that produces a stand-alone, medium-energy cyclotron facility with an integrated radiopharmacy. This facility will be used as a research and academic facility that houses both University of Alberta and Alberta Health Services teams working on medical isotope research and the production of medical isotopes. The medical isotopes produced in the facility will be used locally to diagnose and treat patients with cancer, cardiac, neurological and other diseases.

- *Glen Sather Clinic and Dentistry Clinic*: With the recent completion of the Kaye Edmonton Clinic, the University of Alberta's Glen Sather Clinic and Dentistry Clinic were relocated and opened. This new space enabled these two programs to expand clinical services and collaborations and ease patient access to their facilities.

- *Pharmacy Phase I*:

Major Funded Capital Projects Underway

- *Agricultural, Life & Environmental Sciences (ALES) Research Stations*: Facilities at several ALES locations are being upgraded to meet expanding research and infrastructure requirements including sites at South Campus, St. Albert, Kinsella, and Mattheis Ranch. Work includes new buildings, renewal of various existing farm assets, basic underground services, and expansion of our rolling stock equipment inventory.

- *Innovation Centre for Engineering*: Even with the renewal and repurposing of the existing Chemical and Materials Engineering building, there is a continued and pressing need to develop additional program space for the Faculty of Engineering. The university continues to advance on the construction of the base shell and core of this facility, with construction completion scheduled for September 2013. This facility will provide a contiguous home for the administrative office of the faculty, as well as necessary research and collaborative space for the

faculty's graduate students. The fit-out of this project is highlighted in Table 3 – Highest New and Expansion Priorities.

- *Physical Activity and Wellness (PAW) Centre*: Construction of this facility began in late 2012 in response to growing demand for additional recreation and fitness space as well as research and programming in the Faculty of Physical Education and Recreation. This project is funded in partnership with the Students' Union, Graduate Students' Association, Alberta Lotteries, private donors, and institutional dollars. Funding requests for this centre have been removed from the Capital Plan.

- *Pharmacy Fit-Out*: Phase II of the Pharmacy fit-out within the Medical Sciences building has commenced. This space is connected to both the Katz Group Centre for Pharmacy and Health research and Edmonton Clinic Health Academy and provides needs space for the dean's office, student services, and teaching and research space. Scheduled completion is September 2014.

- *Student Housing*: Construction of approximately 250 Beds within East Campus Village has commenced and will be ready for occupancy in September 2013. These new residences will provide housing for undergraduate, international, and graduate students, and will support the university's goal of providing on-campus housing of up to 25 per cent of its full-time student population.

- *South Academic Building Repurposing*: A portion of the South Academic Building has been repurposed and renewed to accommodate the growing need for wet lab space for the Faculty of Agricultural, Life and Environmental Sciences. This space has attracted world leading researchers in the areas of soils reclamation and water research.

Key Focus Areas and Capital Planning Considerations

The Capital Plan assumes that government guidelines and directions, including sustainability initiatives, must be met in undertaking planned projects. The university continues to work with government to develop a sustainability model for the institution that would be approved by all parties to facilitate sustainable design and operational practices.

The university's highest project priorities (See tables #, #, and #) have been identified as requiring additional funding support from the Alberta government. Due to continual review of budgets and scopes of previous and emerging projects, the priorities and estimated costs within the Capital Plan may not match the university's list of capital projects or values as outlined in the 2013/2014 BLIMS submission. Project cost estimates are reviewed and updated annually and adjusted as required. The projected cash flow requirements for completion of priority projects are outlined in the Major Capital Requirements: Ten-Year Forecast, located in Appendix 1. Estimates have been adjusted to align with current market conditions and the university's and government's experience of the current construction costs and projected market escalation.

Focus Area 1: Continue Reduction in Deferred Maintenance Liability

Infrastructure Maintenance Program (IMP) funding remains critical, especially as a source of funding that continues to be leveraged in partnerships with other internal and external funders, multiplying the value of the money many times over.

Recognized deferred maintenance specifically identifies condition-related deficiencies recommended for remediation within five years under a series of events that are established by the provincial government. At the time of this report we are still awaiting release of information from Alberta Infrastructure on the 2012 updated audit values. Last year, the estimated total liability of recognized deferred maintenance on supported and unsupported university facilities totalled $820 million: $684 million for supported facilities and $123 million for unsupported (ancillary) facilities.

Elements like code upgrades, hazardous material removal, functional program upgrades, barrier free access upgrades, indoor air quality upgrades, and various energy and operational efficiency upgrades are not recognized by government as deferred maintenance. It is estimated that this liability is in the range of $400 million.

The provincial reporting process for deferred maintenance uses Facility Condition Index (FCI) values, which are calculated by totalling the value of deferred maintenance and dividing it by the estimated replacement value of the facilities. While the institutions' reduction in its deferred maintenance liability has flattened as a result of limited new, one-time funding grants, the FCI for specific targeted buildings has improved significantly as reported in the annual "Good News" reports issued to the government.

Assumptions

The University of Alberta has assumed that, as a minimum, the current IMP funding levels will be maintained. The main focus will be on the continued preservation, repurposing, and renewal of its facilities. It is hoped that the economic slowdown will continue to present opportunities for more competitive bidding and excellent value for approved projects.

Any building planned for renovations will have associated decant space available during construction, and any facility planned for major renovation or renewal will remain in use for an extended period of time after the renewal program is complete. Also, the university and government assume that a portion of annual IMP funding available must be either initially uncommitted or have the potential to be reallocated to allow for contingency and emerging issues that arise during each year's operations.

Finally, the institution must support whatever a building's primary function is, now and in the future. This strategy is aimed at ensuring effective and efficient building use, and maintaining the university's existing inventory while transforming learning environments to meet the needs of tomorrow's learners, educators, and researchers.

Objectives

- Continue to maintain the condition and functionality of the university's physical assets, which play a critical role in our ability to attract, support, and retain the best students, faculty, and staff.

- Reduce the risk of buildings' system failures which could result in building closures.

- Identify and proactively address deferred maintenance in a collaborative way with government, and identify assets at, or near, the end of their functional life.

- Aid in the assignment of preservation funding. The university will continue to address renewal programs such as roofing, building envelopes, piping, sidewalks, life safety, and security. The university will support these programs by allocating a portion of IMP dollars across the institution, as accepted by the province and within the guidelines set by the IMP.

- Obtain sufficient resources to meet priority and contingent needs for maintaining and upgrading existing facilities.

- Maintain the reliability of our utility plant through focused investment in the functional renewal that deals with both deferred maintenance and increased efficiency with new technology.

Initiatives

- *Three-Year Infrastructure Maintenance Program Expenditure Plans*: This initiative was adopted by the university in 2004 and formalized with a request by government for an initial submission in 2008. The rolling three-year plan has been part of the university's annual reporting to government and is carried as a financial update in our quarterly reports to provide timely progress reports on the use of grants.

- *Update to the 10-Year Strategic Preservation Plan for Maintenance and Functional Renewal*: This initiative began in 2005 and was updated in 2010–2011. The next update is scheduled for 2014-2015 and will provide the university and government with updated strategies and project prioritization to maintain and renew the institution's owned facilities, as a result of new IMP funding commitments, IMP guidelines, and changes in building renewal priorities.

- *Life-Cycle Costing*: The U of A will be working with government to prepare a planning document related to infrastructure, deferred maintenance, renewal, and repurposing needs that would provide a long-term life-cycle cost approach addressing all aspects of a facility. This plan would allow for a long-term funding approach to address the backlog of deferred maintenance and facilities renewal and/or repurposing requirements. This plan, which must be data driven, will break new ground regarding the process for funding requests.

- *Preservation - Good News Stories*: Initiated in 2010, the university has now prepared a trio of "Good News Story" brochures on achievements in reduction of deferred maintenance and renewal of facilities. The university intends to continue reporting on an annual basis.

- *Heating Plant Expansion and Renewal*: The university will seek government funding to ensure the continued supply of reliable services to our campus and the surrounding government buildings served by our central plant. The possibility of leveraging this investment with

additional institutional borrowing to install a new co-generation plant that could produce both steam and power simultaneously will also be examined. This project would reduce the campus' overall carbon footprint, reduce our demand to the Alberta grid system, and increase our capacity to produce reliable power.

- *Building Certifications*: Commitment to working within available budgets and maintaining sustainable construction practices, the University has started a trial process to ensure that major renovation and renewal projects are certified under "Green Globes". Projects that are targeted for sustainable construction certification are listed in the quarterly report.

Key Issues

- *Sustainability*: By renewing targeted buildings that are functional and structurally sound, the university can lower the carbon footprint and energy requirements in older assets. The potential social, environmental, and economic benefits can be dramatic.

- *Operational Continuity*: An inability to maintain the operations, functionality, and utilization of capital assets places the institution at risk of negatively impacting current and future research, teaching, and learning.

- *Alternate Funding*: The university continues to work with government to explore projects that could provide an opportunity for a brownfield redevelopment within a P3 project model and explore how our land assets could be leveraged in providing needed endowment reserves.

Focus Area 2: Combination Physical/Functional Renewal Projects via Backfill Opportunities

Assumptions

Recent investment in new facilities has created an opportunity to creatively address both the physical and functional renewal of our buildings, resulting from the U of A's institutional mandate to grow research capacity as a comprehensive academic and research institution. However, older facilities are not designed to accommodate the increased functional and operational demands associated with the research-intensive programming in the university's vision and mandate. Therefore, the coupling of functional and physical renewal projects through backfill projects provides a best-value model of capital projects that minimizes the need for new buildings and meets the pedagogical needs for tomorrow's learners and researchers at a significantly reduced capital cost.

Objectives

- Maximize the opportunities to identify and proactively address deferred maintenance in recently vacated space, through joint renewal and repurposing projects.

- Support the academic and research goals of the institution and maximize use and life of existing infrastructure, by ensuring that space is functional for current and future learning and research.

Initiatives

- *Backfill Program*: The completion of the Edmonton Clinic Health Academy and Centennial Centre for Interdisciplinary Science has resulted in freeing a number of aging and outdated learning and research spaces within existing facilities on our campuses. This plan will provide a review of academic needs and how they could be best accommodated within these spaces. Conceptual scopes and budgets will be established to facilitate ongoing dialogue with government on how best to address these joint renewal and academic needs.

- *Functional Deficiencies Data*: The University of Alberta, in partnership with government and other post-secondary institutions, is in discussions to develop a system that will supply data, currently unavailable, for functional deficiencies in buildings. This will be a long-term initiative.

- *Project Identification*: Working with various faculties' general space programs, the university will identify backfill opportunities that exist within buildings where there are high deferred maintenance needs.

- *Student Housing*: The university has recently completed studies with respect to the modernization of HUB and Lister Centre student housing communities, and has initiated sector planning for the redevelopment of family housing at Michener Park. We are also working with the community to finalize land use and preservation plans for East Campus Village.

Key Issues

- *Reduce Capital Requirements*: Renewal and repurposing of target buildings that are functional and structurally sound result in lower overall capital costs when compared to the cost of a comparable new green field building .

- *Space Utilization*: The university is reviewing space utilization to determine how underutilized space could provide logical and comprehensive swing space during renewal or repurposing projects.

- *Renewal and/or Repurposing*: Adequate funding for repurposing space in key older buildings is still a challenge. Deferred maintenance is an ongoing issue, but when renewal projects are coupled with modernization projects, the entire functionality of the building is upgraded to meet the needs of today's learners, teachers, and researchers.

- *Backfill*: While not normally thought of as being a part of preservation, nearly every project has some backfill and adjacency impacts. Upgrades required in adjacent facilities have an impact on the cost of major projects, such as when these spaces can accommodate required swing space to lower project costs associated with multiple phasing of larger renewal projects.

Focus Area 3: Envelope Funding for Pre-Design Services

Assumptions

Prior to entering design phases for a capital project, certain services, beyond the capacity of the institution's staff, must be procured in order to clarify needs (e.g. general and functional space programming), outline scope and size, identify solution alternatives, select the preferred solution, and determine a relatively firm cost. When dealing with existing facilities, it is imperative to understand the facility's constraints within which the project team must work. In addition, services of external professionals are often required to assist with significant initiatives, such as studies and master plans to clearly define objectives, future use, and adjacency issues. Past project experience has reinforced the value of preliminary engineering efforts, resulting in projects being delivered on time and on budget.

The traditional funding model sees projects initiated once full funding is secured; projects generally take three to five years to deliver, depending on scale and complexity. However, the university has also had significant success using partnerships to deliver its capital priorities, resulting in reduced capital requirements compared to the more traditional approach. To effectively develop and explore partnership opportunities, significant up-front work is required to properly scope, budget, and vet potential projects. The university is seeking pre-design funding to create an inventory of projects ready to move forward as new capital funding and/or partnership opportunities become available.

Pre-design services must provide a clear tie between campus development and the immediate and long-term strategic vision of the institution. The university understands that approval of pre-design does not constitute approval for, or promise of, future capital funding for a specific project. However, being ready as funding becomes available, the university can potentially save millions of dollars in inflationary costs that might be incurred if construction is delayed.

There are a number of examples where upfront pre-design has aided the university to actively engage and leverage partnership funding opportunities. For example, taking a staged approach with the Li Ka Shing Centre for Health Research Innovation and the Katz Group Centre for Pharmacy and Health Research buildings allowed for a proactive and quick response to the demands of the federal KIP program.

Objectives

- In the short term seek funding for pre-design services related to strategic and critical projects or initiatives both to provide greater scope and budget certainty and to enable responses to new funding in a timely manner. As greater levels of funding become available, seek a long-term funding envelope program that would include government contributions through capital grants as well as partnered contributions from internal sources where possible.

- Provide strong and clear campus planning documents that are rooted in leading urban design and sustainability principles. The plans will seek to provide the necessary direction, ensuring the academic program needs of the university are met, with careful consideration to the expressed interests of the surrounding neighbourhoods.

Initiatives

- *Secure Funding for Pre-Design Services*: In October of 2009, a letter was submitted to government outlining the importance of pre-design funding in the current economy. The letter outlined two potential approaches to pre-design funds. The first was a list of projects and estimated design costs per project, with funds proposed to be disbursed over three fiscal years. The second approach was to work with government to establish an annual funding allowance. At that time, the suggested annual planning request was $3–4 million.

- *Project Readiness and Responsiveness*: Within this framework, projects yet to be approved would be partially advanced prior to project approval. Taking this action provides significant benefits since better defined project scopes and budgets provide a higher level of program and cost certainty. It also facilitates a quantitative and qualitative approach in matching the project with the most appropriate delivery model, whether that is a traditional design bid build or a more entrepreneurial P3 approach. Lastly, it positions the institution and government to respond quickly to the ever-changing construction marketplace and new potential funding programs.

Key Issues

- *Backfill Planning and Repurposing*: With the completion of a number of new buildings, there is an opportunity to leverage renewal with redevelopment. Given the goals and aspirations outlined in the CIP and the existing deferred maintenance associated with these buildings, there are a number of factors that require consideration in assessing the residual capacity resulting from new construction. Upfront planning will enable the university to create a renewal and repurposing plan to ensure today's assets can deliver tomorrow's programs (as identified in the respective General Space programs for the various faculties and administrative units) in the most sustainable way.

- *Increased Research Intensity*: As a research-intensive institution, there is a growing need to convert administrative and undergraduate space to accommodate growth in graduate, doctoral, and post-doctoral programs. These research programs require significantly more physical space and infrastructure than the university's aging inventory can accommodate. Advanced planning is essential to investigate how to best renew and repurpose these areas to maximize utilization.

- *Increasing Area of Aging Infrastructure*: While new construction has accommodated the planned growth of the institution, the university must continue to respond to the university's learning goals. There are a number of targeted buildings for which planning work must be completed: Dentistry/Pharmacy, Medical Sciences Building, the Clinical Sciences Building, and the South Academic Building (formally Civil Electrical Engineering Building). Advanced pre-design funding for condition concept studies and reports would provide the opportunity to responsibly accommodate future growth, while aligning with the expectations of government.

- *Campus Planning and Community Expectations*: The university continually engages its neighbours and stakeholders in the planning and design of its campuses as they develop. Communities increasingly demand that the university's planning documents be detailed enough

so they are fully aware of the impacts of development. Critical to a project, such as development of sector plans for the South Campus, is the creation of a framework that provides clarity and understanding, as well as an interpretive plan that guides a multitude of designers and planners for the next 30-plus years.

- *Long Range Development Plan*: The LRDP needs to be updated to reflect new lands acquired, such as Enterprise Square, St. Albert lands, Devonian Botanic Garden, Kinsella Ranch and Mattheis Ranch. As well, there are a variety of sector plans that need to be updated, resulting changes that will, in turn, need to be reflected in the LRDP.

Focus Area 4: Student and Workforce Housing

Assumptions

The university continues to respond to pressures for additional student residences, faculty and staff housing, as well as accommodation for visiting researchers. Research indicates that the quality of housing facilities and the academic programs contained within correlate with academic performance and the attraction, retention, and success of students, faculty, and staff. The university aims to provide purpose-built housing for up to 25 per cent of full-time students, which is in line with our peer institutions.

To fulfill the objectives of the university's white paper on student housing, the academic plan, and the priorities of the Government of Alberta, the university plans to increase on-campus, purpose-built, supportive and accessible housing, and also answer an increasing need to integrate support programs and academic learning space into student housing that meets the needs of targeted groups such as graduate, rural, Aboriginal, and international students. Faculty, staff, and mature students with families are also increasingly seeking housing options at the university, and must be included in current planning.

Objectives

- Use the findings and recommendations contained in the U of A's white paper "Student Housing – for Now and for the Future" (August 2009) to provide the context of further discussion and planning concerning housing on campus.

- Continue working with Enterprise and Advanced Education, other ministries, and stakeholders to develop creative housing solutions that meet the goals of the university, students, and their families.

- Emphasize the importance of funding for residential program space that supports the academic mission and student success.

Initiatives

- *Residence Services Accommodation and Program Study*: The *Residence Services Accommodation and Program Study: Dare to Deliver* presents a road map with respect to how residences might

develop in the future as well as what types of programs and activities should occur in support of the development of the whole person. The university will be using this document as a guide in planning and developing additional space to provide opportunities and access to rural, Aboriginal, underrepresented, and international students, as well as students with families.

- *Condition and Functionality*: The university does not receive targeted deferred maintenance funding for student residences. Student residences have high infrastructure needs and these are compounded by the university's inability to recover the current backlog costs of maintenance or modernization via rental revenues. In 2010–2011, the university began reviewing strategies that would help build a reserve fund to be accessed for maintenance and renewal of student residences (Residence Services Capital Reserve Strategy, June 2010), and our newest student housing complexes have building reserve integrated into the rental rates. Changing student demographics and requirements as well as improved understanding of program delivery are driving the need for modernization in several of our older student residence communities. The university will continue to work with government to identify one-time and continuing deferred maintenance funding for student housing in order to prevent closure of much needed residence spaces.

- *Capacity*: The university continues to explore strategies to add student residence capacity on its campuses, as well as to provide workforce housing options on the West 240 lands on South Campus.

- *Partners*: The university will continue to meet with private sector developers to explore viable options to achieve our residence and housing targets.

- *Property Taxes*: The university will continue to discuss means of eliminating municipal property tax assessment on student housing, thereby directing more funds to critical deferred maintenance.

- *Lights-On-Funding for Academic Program Areas within Residence*: In some student housing communities (especially in first and second year residences) as much as 20 per cent to 35 per cent of the gross area is being utilized to provide space that accommodates co-curricular programming, study halls, and other student support services. If these spaces did not exist in residences, there would be pressure to provide these spaces elsewhere on campus. The university will continue to work with government to find ways to acknowledge these aspects of student development and discuss ways to bring lights-on funding to academic program areas in residence spaces, which are currently being supported through rents.

Focus Area 5: New Space

Assumptions

Over the last few years the university, through the support of government, has added approximately 150,000 square metres of new and expanded space, most of which has already been accounted for in approved program expansions. As the university continues to take a measured response to growth, there is still a need for strategic construction of critical new facilities. It is also important to recognize

that the needs of the U of A's five campuses vary, each serving unique and separate constituencies within Alberta.

The institution has identified a number of new expansion projects critical to the mission, vision, reputation, and global competitiveness of the institution, a majority of which were identified prior to the economic downturn. Some of the highest priority projects include the following: a building expansion to accommodate science programs at Campus Saint-Jean and Augustana campuses; a new School of Business building to accommodate growth within the faculty; a new School of Music within the Faculty of Arts; fit up of the Innovation Centre for Engineering; relocation and program accommodation at South Campus for the faculties of Agricultural, Life & Environmental Sciences and Physical Education and Recreation.

There are also a number of critical academic support facilities that have been identified for expansion, including the Cameron Library and Information Pavilions (Book and Records Depository [Bard] and a Curatorial Facility) and the Gathering Place. These academic support facilities are discussed in greater detail in the next section.

Objectives

- Outline the capital needs of the institution in order to deliver the vision and programs included within this Comprehensive Institutional Plan. Space must not only provide simple access, but also ensure that the entire educational and life experience is supported for student success.

- Confirm the state of the current inventory of academic support facilities; identify adequacy, appropriateness and availability; and engage government in discussions to outline the importance of these facilities and remediate identified shortfalls in these integrated program areas.

Initiatives

- *Priority Setting*: Continue to work with government to align priorities for new capital and partnerships.

- *Strategically Advance Planning*: Continue to work on advanced planning of high-priority projects so they are in a state of readiness once new capital funding becomes available.

- *Partnerships*: Continue to explore partnerships through donations and alternate financing and project delivery models to leverage any available funding and/or reduce initial capital investment.

Key Issues

- *Provincial and Global Economies*: Currently the key issue affecting new space and corresponding capital is continued economic uncertainty and volatility. The university needs to continue to

work with government to develop strategies that maximizes and leverages limited government resources.

- *Lack of Adequate Academic Support Space*: Over the past ten years, there has been a concentrated focus on funding projects that lead directly to much-needed increase in access. This has now put a strain on our academic support spaces, which has not grown proportionally with recent increases in enrolment.

Additional Planning Considerations

Campus Alberta

The university continues to work with its post-secondary partners to explore opportunities for sharing resources, both physical and operational, for the mutual benefit of Campus Alberta. The university has a significant intellectual resource base and capacity to assist and support Campus Alberta institutions as requested. When reviewing capital and operational needs of the sector, synergies and economies of scale could be realized through joint use of our physical assets (i.e.: Book and Records Depository, Curatorial Research Facilities, Student Housing). There is also an opportunity to leverage the operational and administrative skills within the Campus Alberta model to the advantage of the various Institutions and the Ministry.

Financial Strategies to Support Capital

- *Borrowing*: It is critically important that the university work with government and its financial entities to develop alternative financial models that address current fiscal constraints within government. Borrowing is part of planning and building an internationally recognized research-intensive institution that will attract the best and the brightest faculty and students in the years to come.

- *Alternate Financing Arrangements*: Along with pursuing innovative partnerships for property development, the university also looks for alternative financing arrangements (i.e. bond issues and P3s) where feasible and advantageous. Increasingly, the funding of projects in this plan will reflect the partnerships noted above and will include funds from multiple sources. Donations, as well as partner contributions, will be sought and used to complete needed facilities. Leasing options will also be considered to lessen the demand for capital funding. The university will continue to seek ways to involve the private sector in the repair, development, and operation of new and existing housing inventory.

- *Partnership Development*: Opportunities to develop partnerships could allow the university to leverage funding and develop its physical resources in a cost-effective manner. While this priority initiative presents a major opportunity for the university to develop its physical resources in an innovative and cost effective manner, it also presents significant challenges to both the institution and province. First, the institution, along with government as its primary funding partner, must work within current public policy. Second, the university must carefully

weigh the advantages apparent in a partnership arrangement against the potential loss of control over the future of its resources.

Information Technology

Although grants cover purchases for information technology, there is a need for agreement on government support of maintenance and replacement for core information technology services. A key element to this support is that it must flow from a new funding source and not be redirected from the existing facilities' deferred maintenance grant. Information technology is foundational in a modern building. It can be used to control security, power usage, air conditioning, elevators, telephones, and many other core services. This infrastructure eventually wears out and/or needs upgrading to continue meeting operational, teaching, and research needs.

Other Influences and Challenges

- Facility operating costs for high intensity research facilities may still be greater than the funding provided through the base operating grants. The university must carefully monitor actual costs in these facilities to determine if a significant shortfall continues and report to government accordingly.

- While the university appreciates and acknowledges the government's efforts to provide lights-on funding for the Centennial Centre for Interdisciplinary Science and Edmonton Clinic Health Academy, failure to provide adequate operational support and bridging would result in a significant operational shortfall to the institution that would directly impact overall operational service for existing facilities. As buildings are repurposed to accommodate additional research-intensive programming, there may also be a need to review operating costs and associated funding requests for differential lights on funding to accommodate the program change within the building.

- The deferred maintenance liability cannot be significantly reduced unless an increase in grant funding and/or one-time funding is received for preservation and renewal projects. Although not recognized as deferred maintenance, there is also a need to expend significant amounts on functionality issues for which data is not readily available.

- The lack of available and affordable childcare options on campus is becoming a deterrent, not only to the recruitment of staff and faculty, but also to the attraction and retention of graduate students and students from traditionally underrepresented groups, such as Aboriginal people.

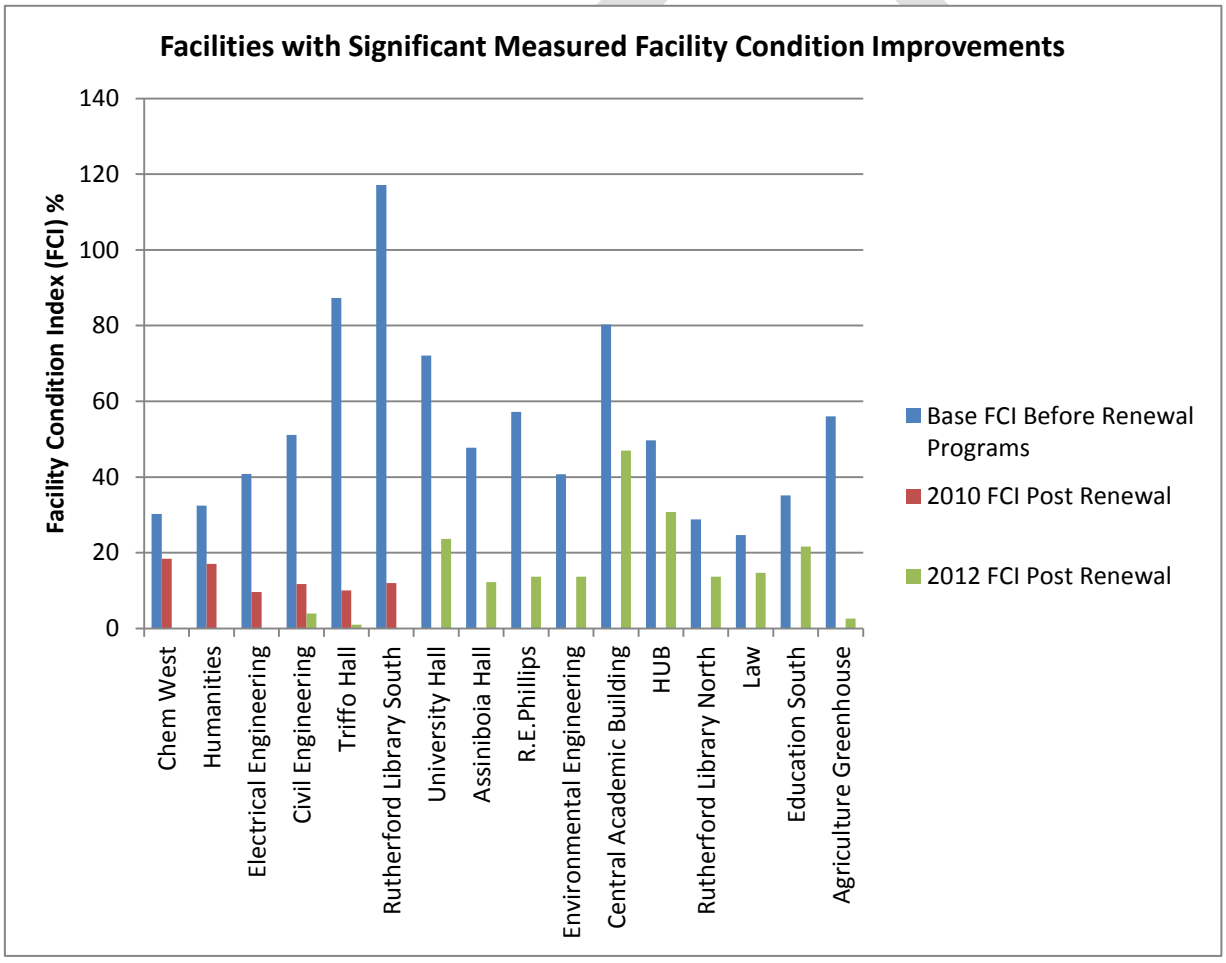
- New construction is required to achieve LEED® Silver certification level. The university continues to engage government to look for the most economical means of validating building designs and operations in the interest of achieving the university's sustainability goals and is actively pursuing alternative, cost effective strategies to provide equal or greater certification levels at a lower cost. Consideration for alternate certification systems allowing for more prudent application of grant funds must be considered.

Current State of Assets

The university manages a portfolio of facilities totalling 1.65 million gross square metres over more than 500 buildings, of which 50 per cent are over 40 years of age. As part of reporting to government we also report on our buildings Facility Condition Index (FCI). Approximately 17 of our buildings have an FCI over 30 with Dentistry Pharmacy being the highest at 66.

Deferred Maintenance Program

The university is grateful for the continuation of increased IMP base funding support, which was received in 2012-13, and for variance reallocations, which have helped to address some serious condition and functional deficiencies. The U of A, with assistance from the Government of Alberta, continues to make progress in reducing the overall deferred maintenance value, which has resulted in significant improvements to the Facility Condition Index for a number of our buildings (*see* Figure XX).



The university will continue to provide a separate report on the progress made and the benefits of its deferred maintenance program. While current levels of regular IMP grants and replacement of older facilities have resulted in slight decreases to the measured deferred maintenance liability, current

funding is inadequate to eliminate the backlog of infrastructure renewal required without supplementary one-time grants for large, high-priority projects. Additional deferred maintenance funding envelopes and/or one-time grants for deferred maintenance are needed for the university to make significant inroads in reducing the deferred maintenance liability. Within current fiscal constraints, should there be a pull back on one-time funding assistance for preservation projects, the trend of a slight decrease to deferred maintenance is expected to reverse.

Figure XX (Facility Deferred Maintenance vs. IMP and One-Time Funding) illustrates current comparisons between deferred maintenance backlog, current funding commitments, and the trend over the last five years.

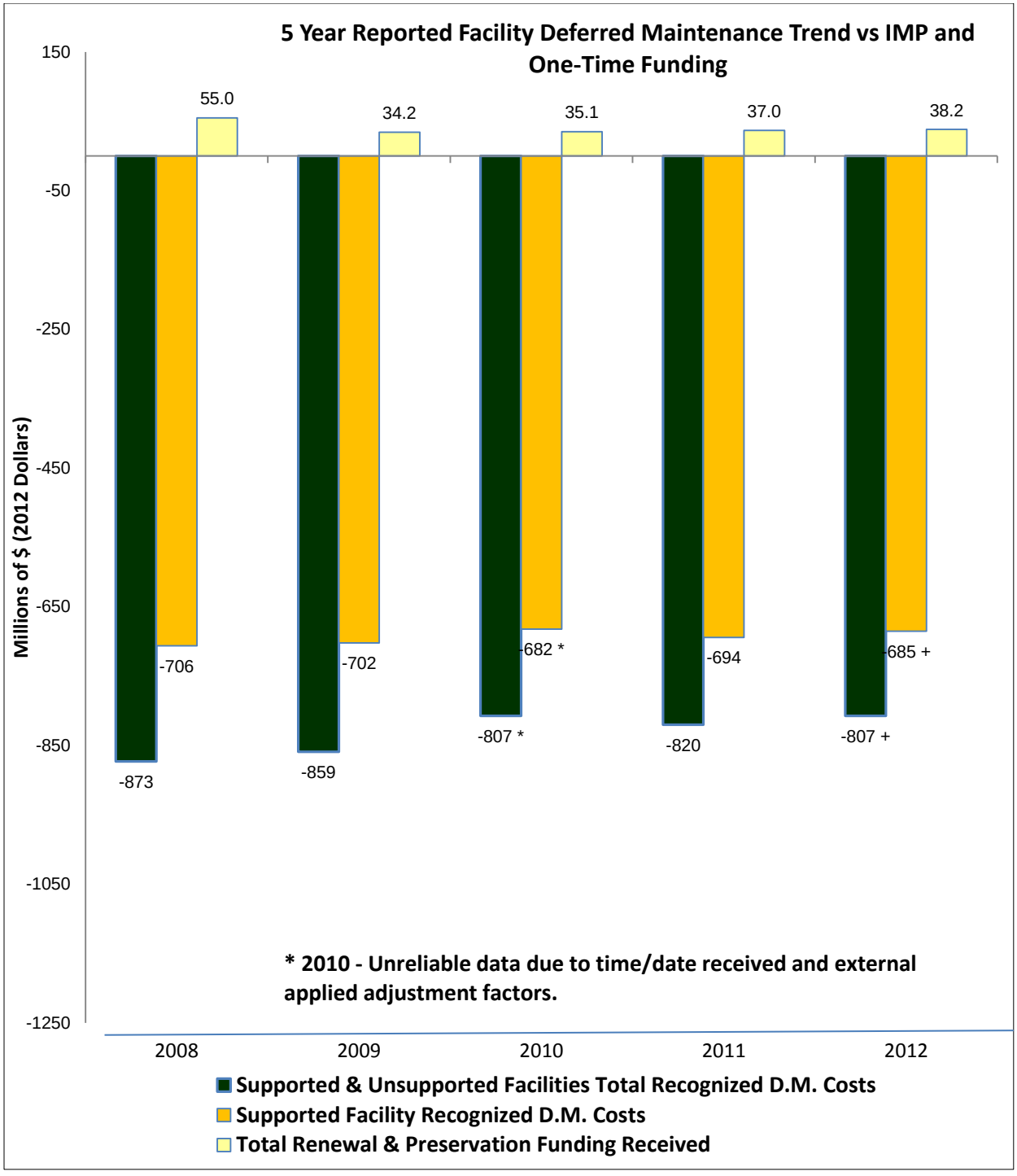
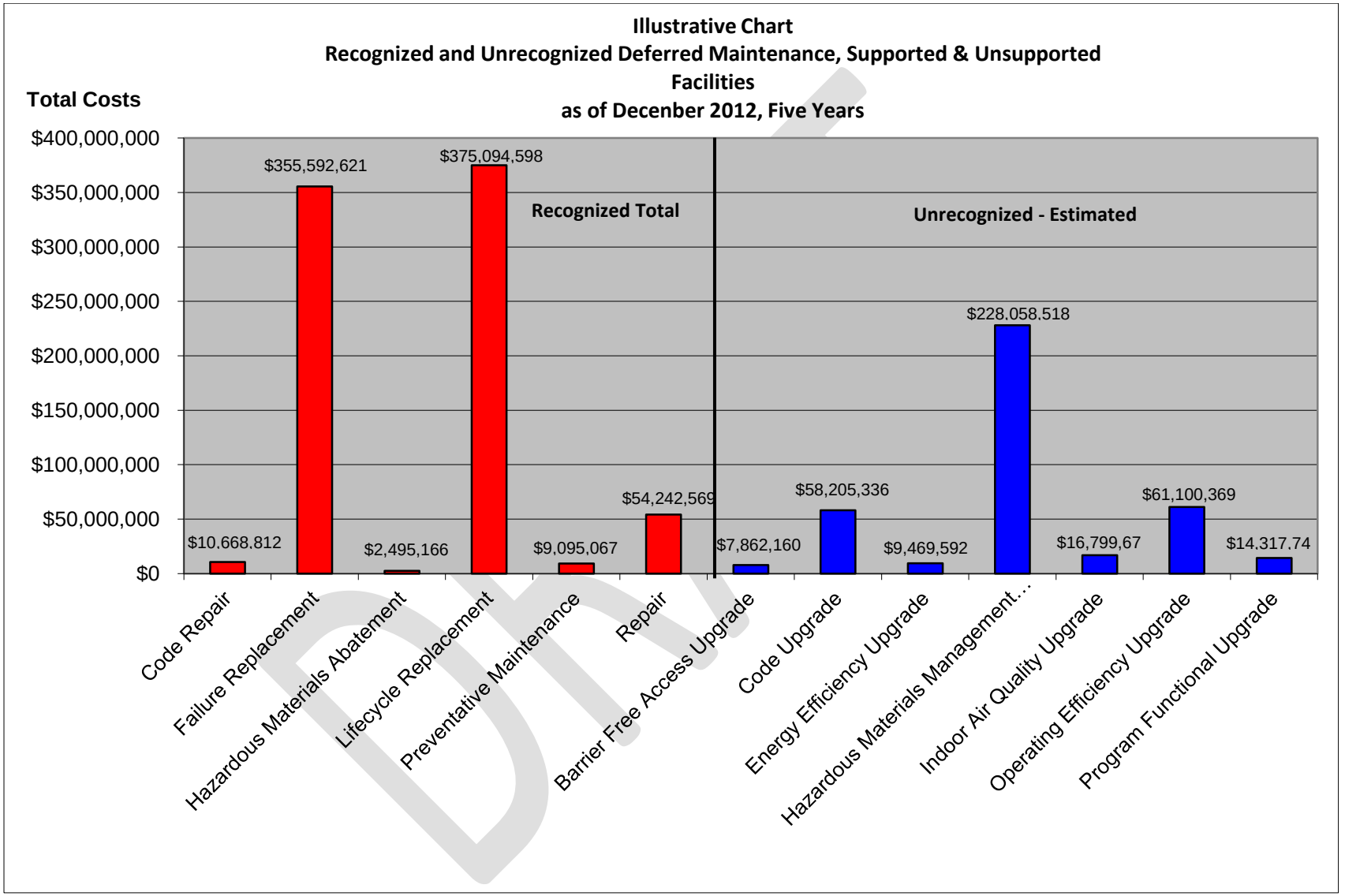


Figure XX (Recognized Deferred Maintenance for Supported and Unsupported Facilities, as of December 2012), shows the deferred maintenance backlog for supported and unsupported facilities by type of event. The largest area of deferred maintenance in our unsupported facilities is within our older student residences. While our newer facilities have a rental rate that supports a capital reserve as part of the

operating budget, our older product does not. Strategic funding for the renewal of some of these older facilities is necessary to prevent unintended closures of this infrastructure.

Functional renewal costs associated with deferred maintenance are not recognized by government as deferred maintenance. It is expected that a systematic audit of functionality deficiencies will uncover substantially higher dollar figures. To date, the university has only completed an audit on asbestos and the associated removal costs.


Illustrative Chart
Recognized and Unrecognized Deferred Maintenance, Supported & Unsupported Facilities
as of Decenber 2012, Five Years
Total Costs
$400,000,000
$350,000,000
$300,000,000
$250,000,000
$200,000,000
$150,000,000
$100,000,000
$50,000,000
$0
Recognized Total
Unrecognized - Estimated
$10,668,812
$355,592,621
$2,495,166
$375,094,598
$9,095,067
$54,242,569
$7,862,160
$58,205,336
$9,469,592
$228,058,518
$16,799,67
$61,100,369
$14,317.74
Code Repair
Failure Replacement
Hazardous Materials Abatement
Lifecycle Replacement
Preventative Maintenance
Repair
Barrier Free Access Upgrade
Code Upgrade
Energy Efficiency Upgrade
Hazardous Materials Management…
Indoor Air Quality Upgrade
Operating Efficiency Upgrade
Program Functional Upgrade

Note: Failure replacements are audited events that are recognized as required to be done. Life cycle events are events that are projected typically in year five.

Risk Management and Life Safety Issues

Despite continued funding pressures and deferred maintenance backlog, some projects must proceed in order to respond to emergency situations. These projects may have to be funded from internal or alternate sources until specific grant funding is available from government. Also, contingency funds from existing funding can be inadequate to cover major system failures in large, aging facilities. Due to a number of major failures over the past three to four years, the university has advised government officials that adjustments may be required to the three year rolling IMP plan to deal with emergent issues. The university continues to proactively monitor and coordinate with government on the growing operational pressures within our aging infrastructure so that we can maintain access and minimize the risk of shutting down teaching, learning, and research space.

Capital Funding Requests

Pre-Design Projects Requiring Funding

Pre-design services work is critical to the long range planning of the institution because it demonstrates how best to maximize utilization of land holdings, buildings available for repurposing, or projects critical to the delivery of the institution's academic program. The projects listed below represent priority planning projects that are planned over the next three to four years. **Due to the critical nature of these projects, some of the planning projects have proceeded with partial funding in advance of needed and formalized government funding (denoted by*).**

Table 1 Pre-Design / Design Projects Requiring Funding (listed in alphabetical order)		
Project	Description	Request ($)
Agricultural, Life & Environmental Sciences (ALES)	Planning for the growth and emerging priorities of the faculty in research and teaching and the feasibility of consolidating faculty departments in a single facility on the South Campus, including the assessment of other lands.	2,500,000
Augustana Science Building and Classroom upgrade	Planning and design schematics to facilitate the renewal and expansion of the current labs servicing the Augustana science program and provide classrooms that meets today's pedagogical needs.	500,000
Biomedical Engineering Building (Pre-Design)	Pre-design to build infrastructure and acquire equipment necessary to facilitate development of Canadian Institute of Bio-Medical Engineering on the U of A North Campus.	1,250,000
Campus Saint-Jean – Science Expansion *	Expansion and infrastructure improvements of the existing facility to meet the needs related to the expansion and improvement of science programs, partnerships with other faculties, and dedicated research space.	1,500,000

Campus Wide Renewal Project Planning	With limited decant space the institution needs to develop a holistic plan that allows the institution to plan how various renovations and renewals can occur with minimal disruption to teaching, learning, and research.	2,500,000
Cameron Library and Information Pavilion - Phase 3 (Curatorial)	With one of the largest collections in the country, the strength of our collections is critical to the not only researchers at the University of Alberta, but to those across Campus Alberta. Given that the current facility is not suitable for this program and is putting the collection at risk, replacement of this facility is becoming more pressing. Pre-design services would confirm the size of the facility, establish the operational requirements to maintain the integrity of our collections and possible tie into a larger Campus Alberta model.	1,000,000
Gathering Place *	Design for a centre focused on students, faculty, and staff to serve as a community gathering place that embraces and provides an inclusive and supportive learning environment to increase participation by First Nations peoples within the post-secondary sector.	500,000
Institutional Backfill/Repurposing Planning	With the recent turnover of new facilities there is a need to provide a coordinated review of critical institutional areas affected by changing use and occupancies. Primary building inventories would include Clinical Sciences, Medical Sciences Building (ECHA influenced) and Biological Sciences (CCIS influenced). Coordinating efforts would provide a consolidated approach for a “best fit” solution.	900,000
Long Range Development Plan (LRDP) Updates	The University needs to update its LRDP plans for North Campus, Michener, Enterprise Square, and Devonian. Considerable stakeholder engagement and consulting costs are associated with this work given the increased demands by our surrounding communities for detail and time to review. These plans are critical to the university’s ability to maintain its ability to develop its lands to deliver on its Mission and Vision.	1,000,000

Physical Education and Recreation (PER) new faculty building and research consolidation	Planning for the growth and emerging priorities of the faculty in research and teaching and the feasibility of consolidating faculty departments in a single facility on the South Campus, including the assessment of other lands.	2,500,000
School of Business	Development of a building for the School of Business in a partnered opportunity with private sector. A building for the School of Business also accommodates backfill requirements of social sciences and supports their growth needs.	1,850,000
School of Music	Development of a building that could house the School of Music program in partnership with a private sector developer. Concept pre-design, business case development to facilitate fund development, building schematics and delivery strategies.	1,500,000
South Campus Master Plan *	Sector planning needs to be completed for the land use and for a phased and sustainable utilities/infrastructure strategy that will accommodate projected long-term growth on this site and the possible relocation of some of the existing operations to off-site research stations.	2,500,000
TOTAL		**$20,000,000**

Unfunded Priorities

The following are the university's highest priorities in the categories of preservation and new and expansion, for which the institution is requesting consideration of government approval and funding. Due to continual review of budgets and scopes of previous and emerging projects, the priorities and costs within the Capital Plan may not necessarily match the university's list of capital projects outlined in the 2013-14 BLIMS submission. However, the university assumes that projects identified as priorities in this update will, for the most part, be carried forward in its BLIMS submission.

Project costs are adjusted annually with current values representing rounded to 2013 construction dollars. Escalation values are provided by Alberta Infrastructure at the time of final entry. The projected

cash flow requirements for completion of these projects to support both the university's vision and the University of Alberta's CIP are included in Appendix 2.

Table 2 Highest Preservation Priorities (listed in alphabetical order)		
Project	Description	Request ($)
Agriculture Forestry Lab Renewals *	Upgrade base building infrastructure to allow for full functional renewal of laboratory spaces. This will permit increased program use in the facility.	3,150,000
Biological Sciences Renewal Program – Phase 1	Phase 1 of renewal program for Biological Sciences. Significant upgrades to mechanical and electrical base building infrastructure to support current and future needs.	59,600,000
Cameron Library Information Pavilions Phase 1 *	Phase 1 redevelopment and upgrade of Cameron Library to create an integrated learning environment with comprehensive user support, group study rooms, and a variety of settings for group discussion and quiet study zones.	10,500,000
Campus Saint-Jean Electrical Distribution *	Upgrade the existing site electrical distribution and main service to effectively manage the aging infrastructure issues and to facilitate future expansion objectives.	3,200,000
Campus Wide Fire Alarm Modernization *	Replace/retrofit/renew fire alarm infrastructure in university buildings.	11,300,000
Campus Wide Fire Suppression Upgrade *	Replace/retrofit/renew fire suppression infrastructure in university buildings.	11,200,000
Chemical and Materials Engineering Building – Renewal (Phase 2)	Renewal and repurposing of the building to provide needed wet lab space for Engineering and address building envelope and operational issues. Phase 2	63,400,000

	is the continuation of the project and would fully renew the existing building. Due to the critical need for this space, the Faculty of Engineering is providing bridge financing of $5,000,000 toward Phase 2 of the renewal in advance of government funding.	
Chemistry West – Phase 3 of Renewal – Building Envelope Perimeter Heating and Interior Upgrades	Upgrades for remaining floors on the north portion of the facility to the same standard as floors 4 and 5. Remaining floors to be upgraded on north 50% - basement, L1, L2, and L3. Replacement of perimeter heating system with individual controlled room zones.	18,000,000
Chemistry West – Floor Renewal *	As the base building upgrade and renewal work is now completed, the delivery model for the remaining fit outs can be accommodated as smaller phases of work.	4,000,000
Chemistry West & Chemistry East – Electrical Vault / Emergency Power Upgrade *	Electrical services for the facility are at capacity; no emergency power is available for building life safety systems. New electrical room and generator required.	8,600,000
Clinical Sciences Building: Phase 1 Design and Renewal	Building renewal and backfill with the completion of Edmonton Clinic Health Academy is complete. Focus is for renewal and repurposing. The project would be approached in three phases of renewal of the tower. Phase one is for design and building prep for phased renewal	11,287,500
Clinical Sciences Building: Phase 2 Renewal and Repurposing	Building renewal and backfill with the completion of Edmonton Clinic Health Academy is complete. Focus is for renewal and repurposing. Phase 2 would accommodate 1/3 of the project and allow for decanting of remaining tower.	31,500,000
Convocation Hall Renewal	Renewal of hall stage, front lobby and interiors; all timed to coincide with building's Centenary.	2,500,000

Dentistry/Pharmacy Building - Renewal	Functional renewal of the building once the Edmonton Clinic Health Academy is complete and faculties have relocated. The existing building, constructed in 1921, has a high deferred maintenance liability and must be completely retrofitted before new tenants can be moved in. Selection of consultants for pre-design has taken place. The project will require advance work in the West Lecture Theatre to accommodate decant needs. Costs include modifications required to accommodate LRT entrance relocation and link to South Academic Building.	270,000,000
Earth Science Building – Central System Upgrade *	ESB has had a significant increase in wet lab space. This has driven the need for base building mechanical and electrical upgrades. Initial studies indicate the upper floor can be isolated from the existing base systems and would allow the existing systems to manage the remainder of the building.	19,059,000
Heating Plant – Boiler #7	Purchase and installation of new boiler required to ensure plant reliability. About 50 percent of the plant's boiler capacity is close to 40 years old.	40,000,000
Medical Sciences Building: Phase 1 Renewal *	Select building renewal and repurposing/backfill to occur once the Edmonton Clinic Health Academy is complete.	28,200,000
Medical Sciences Building: Phase 2 Building Upgrade	Full facility renewal program and backfill.	90,500,000
Replacement of Remote Control Monitoring System (RCMS) *	Current remote control monitoring system provides control and monitoring of the major mechanical systems and space conditions in all major buildings, both on and off main campus. Replacement of obsolete system which is critical to day-to-day operation of university buildings.	16,000,000
Roofing Program *	Campus-wide program for upgrading of roofing systems for a three-year period to deal with roofing systems that are in the 12 to 15 year range	8,000,000

	and will be nearing the end of life expectancy.	
Universiade Pavilion: Building Envelope Upgrade *	Renewal of building envelope to replace failing panels.	16,000,000
University Hall – Building System Upgrades *	Complete replacement of mechanical systems serving University Hall. Will require architectural renewal to accommodate changes. Work has been progressing on a select deferred maintenance project basis to support overall building renewal	10,000,000
Van Vliet East & West – Upgrade of Mechanical Systems *	Complete renewal of building mechanical systems currently in very poor condition. Given student support of the Physical Activity and Wellness Centre project, there is an opportunity to partner for partial renewal of Van Vliet. Partial renewal deferred maintenance funds for this phase of work would be $4 million.	12,000,000
Various Facilities – Electrical Vault Upgrades *	Campus-wide upgrades of electrical vaults currently in poor condition and close to failure.	18,000,000
TOTAL		$765,996,500

Table 3 Highest New and Expansion Priorities (listed in alphabetical order)			
Project	Description	New Space (m2)	Request ($)
Agricultural, Life & Environmental Sciences Bldg – South Campus	Planning for the growth and emerging priorities of the faculty in research and teaching, and the feasibility of consolidating faculty departments in a single facility within South Campus. Assessment of the impact of other lands being	58,650 - 61,000	366,000,000

	utilized by the faculty on its operations and programs.		
Augustana Science Expansion and Renewal and Classroom Building Upgrade	Expansion and renovation of the existing building and infrastructure to meet the needs of the student enrolment and science program requirements. This is coupled with the need to repurpose of the old library space to classrooms with the completion of the Library/Forum project	24,000	30,000,000
Cameron Library & Information Pavilions (CLIP) – Phase 2: Book and Records Depository (BARD)	Renovation and expansion of a recently purchased Federal Archive building to support our need for a Book and Records Depository (BARD) facility. The purchase of this buildings facilitated the removal of our previous ask of $85 million for a new facility.		20,000,000
CLIP – Phase 3: Curatorial Facility	New space for Museum and Collections Services (MACS) to provide centralized space for collections with proper temperature and humidity controls.	32,437	195,000,000
Campus Saint-Jean Science Building	Expansion and renovation of existing facility to meet the needs related to differential program enrolment throughout the entire campus, the creation of new programs and partnerships with other faculties, and dedicated research space, which will allow opportunities for reuse within the backfill area. The university is targeting an additional $10M in federal support. Total project estimate is $46.4M	5,319	36,400,000

Innovation Centre for Engineering – Fit-out	Shell and core construction of an adjacent North Tower expansion ($60,000,000) has proceeded with funding through the Faculty of Engineering. The fit-out is required to provide teaching and research space to accommodate the program growth within the faculty. This project will also consolidate and co-locate department's offices and administrative units.	29,406	42,700,000
Ecological Learning Centre – Devonian Botanic Garden	New facility to allow Devonian Botanic Garden (DBG) to open year-round and support community outreach. Addition of parking lot and sound walls, as well as a new formal gate. The university is targeting $10M of fundraising. Total Project estimate is $41M	3,861	31,000,000
Gathering Place	Centre focused on Aboriginal students, faculty and staff to serve as a community gathering place that embraces and provides an inclusive and supportive learning environment. Project will be aligned with current Education Tower location and be aligned with the building's current infrastructure and program areas. The university has secured a donation of $1M to initiate the project. Project is estimated at $18M	2,100	18,000,000
Housing – East Campus Village	Development of 500 to 750 additional bed spaces to enhance the university's ability to accommodate projected growth. The request represents a cost of $117,000 per bed with an equity component of 30 per cent.	32,900	35,000,000

Housing – Michener Park	Renewal and replacement of all building systems for row houses, walk-ups, high rise, and supporting infrastructure. Assumes a 30 per cent equity component.	N/A	18,000,000
Pedway – Underground 115 Street & 87 Avenue	Construction of an underground pedway to allow easy and safe access between the Physical Activity and Wellness Centre and the Edmonton Clinic Health Academy. This will finalize the connection of the Health Sciences precinct to the campus north of 87th Avenue.	N/A	9,800,000
Metabolic Research Facility	Replacement and relocation of the outdated and aged metabolic facility on South campus. The current facility is at the end of its life and relocation is part of the long term vision of the South Campus.	TBD	TBD
Science Backfill	Various backfill renewal and repurposing of space as a result of the completion of CCIS (BioSci, Earth Sciences, Chemistry, South Academic Building)		20,500,000
School of Business Building/Social Sciences Departments	Development of a building for the School of Business in a partnered opportunity with private sector. A building for the School of Business would facilitate accommodation of the backfill requirements of the social sciences and support their growth needs. The social sciences are currently experiencing significant shortfall of space.	27,000	172,400,000
School of Music	Development of a building that could house the School of Music	12,400	100,000,000

	Program in partnership with a private sector developer. The budget represents the potential equity required within the partnership arrangement.		
South Campus – Infrastructure for Shared Use Facilities	New infrastructure to support the development of the NE sector of South Campus – deep sewer, water supply, road lighting, and improvements specifically to support the siting of community complexes on campus. Work has proceeded in support of projects and timelines to accommodate federal grant timing.	N/A	7,000,000
South Campus – Utility Infrastructure	Initial Infrastructure to provide first phase of utility and services in support of campus growth and to accommodate infrastructure located on adjacent Government of Alberta land (could also be provided through a P3 model).	N/A	127,150,000
TOTAL			$1,228,950,000

Institutional Budget, 2013-14

As are most post-secondary institutions across North America, the University of Alberta is faced with significant financial challenges. Although the university has received critically important financial support from the provincial government through increases to the Campus Alberta Grant, these increases, combined with restrictions on tuition revenue, and the new economic reality of low interest rates, have resulted in general revenues increasing at a slower rate than general operating expenditures.

The current Campus Alberta grant funding model does not fully account for the costs that a research intensive university of U of A's capacity incurs, most notably the investments required to undertake world leading research and provide leadership in graduate education, while sustaining access to an outstanding undergraduate student experience.

The University of Alberta recognizes that Alberta is facing significant financial challenges of its own due to decreasing resource revenues. Faced with these challenges, the province must choose the path that leads to economic diversification, beneficial social outcomes, and ultimately, to prosperity, in its fullest sense, for Alberta. Countries around the world, also faced with similar financial constraints, are choosing to invest in education and research. They recognize the critical role of graduate students in creating a vibrant economic ecosystem and the unique costs associated with supporting internationally competitive research activities. They are choosing to invest in their flagship research universities differently than other institutions in their public systems. Taking a differential approach, they are supporting and leveraging the vital role that world class research institutions play in advancing a region's economy and enhancing its competiveness. Alberta can do the same. The opportunity now exists to realign the current financial model so that the University of Alberta can continue to build on existing areas of excellence, further enhance the province's profile, attract higher levels of funding from external partners and most importantly, allow the provincial government to reap the benefits of a growing and diversified economy and Alberta's enhanced international competitiveness.

If the province chooses not to advance down this path, and does not significantly change the current funding model, the University of Alberta will have to make significant decisions to manage an inevitable shrinking of the academy. The university needs to look at a long-term view of where it needs to be in the context of Campus Alberta. It will not continue with across the board re-allocations which have now begun to impact the viability of the entire organization, nor can the university continue to do what it has been doing since 1908, and still have the capacity to meet government needs. Instead, the university will take major steps to strategically re-align its operations to reflect new financial realities, and invest in its strategic strengths going forward.

University Budget

In 2011, the Public Sector Accounting Board (PSAB) issued a financial reporting framework for government not-for-profit organizations. This framework applies to all institutions under the direction

of the government of Alberta, which includes post-secondary institutions. The university has been transitioning to the PSAB standards over the last two years, incorporating the required accounting adjustments and modifying its budget tables to better align with the PSAB standards. This transition will continue over the next several years as the university receives further clarification from the provincial government on the application of the standards. There are two substantive changes in the University's budget for 2013-14. The first is the presentation of the university's budget in a consolidated Generally Accepted Accounting Principles (GAAP) format only versus the presentation of a cash-based operating budget and a consolidated GAAP budget as in previous years. The presentation of a consolidated GAAP budget is also consistent with the Post-Secondary Learning Act which requires the Board to approve a consolidated GAAP budget. For day to day operating purposes, the university will continue to use the necessary management and accounting reports for oversight of the university's operating activities. The second substantive change is the treatment of the University's endowment income and expense which has a direct impact on the University's excess/deficiency . This impact will be discussed in detail below.

Consolidated Budget

Prepared under Canadian Generally Accepted Accounting Principles (GAAP), the University of Alberta's 2013-14 consolidated budget reflects the entire enterprise of unrestricted and restricted funds. This includes general operations, ancillary operations, research activities and capital projects. General and ancillary operations are considered un-restricted within the consolidated budget versus research and capital projects which are considered restricted. The difference between unrestricted and restricted funds, is the degree of university control over the use of the funds. All unrestricted funds fall fully within the authority of the Board while restricted funds form part of the consolidated budget but can only be used for the purposes for which funding has been received, primarily research activity and capital construction.

For 2013-14, the budget reflects a shortfall of revenue over expense of $18 million, or 1.0 percent of the university's budgeted consolidated revenue. This includes a 1.5 percent budget re-allocation, which will be applied across the institution for 2013-14. There are three major factors driving this shortfall. The first is the impact of the amortization expense of capital in the unrestricted operating fund. As the university continues to capitalize its new buildings, the associated expense will continue to increase. Although transfers are made to offset the capital expense, the net impact remains where capital expense is higher than the capital transfers driving some of the consolidated deficiency. The second factor is the treatment of endowment income under the new public sector accounting standards. Previously, the University budgeted endowment income based on unrealized gains or losses. Under the new standards, the University can only budget actual revenue not including unrealized gains. For 2013-14 this has resulted in a reduction in budgeted revenue of approximately $10 million. At the same time, the University uses an agreed to formula for the calculation of the endowment payout which is based on forecast market returns, protection of the capital and administrative costs. The net affect under the new standards is that the budgeted revenue is less than the calculated endowment payout adding to the deficiency. Without this accounting adjustment the deficiency would be $8 million dollars. The other primary factor, and one of greater concern is a structural deficit in the operating fund, driven by general expenditures that are increasing more rapidly than the university's unrestricted

revenue.

If the university were to fully balance its 2013-14 consolidated budget, the university would require a budget cut across the institution of approximately 4 per cent in addition to the 1.5 per cent budget re-allocation already factored into the operating fund. The university is acutely aware that this budget deficiency is not sustainable and has initiated the necessary steps to bring the operating fund into balance which will then carry over into the consolidated budget. However, to avoid the profound impact on the teaching and research environment of immediately reducing operating expenditures, the university will take a balanced approach that is financially responsible while reflecting the ongoing commitment to invest in areas of academic excellence and of strategic priority to the university and the province. The university is finalizing a detailed plan that will identify realistic revenue enhancements and a series of structural changes that will enable the university to bring is budget into balance. The role of government in enabling the university to achieve its plan will be critical.

Revenue and expense details are presented in Table X. Please note that the projected deficiency excludes an estimated $8 million provision for the university's share of the Universities Academic Pension Plan (UAPP)'s unfunded pension liability expense. The provision represents the 2013-14 allocation of the net actuarial losses on the accrued benefit obligation, which are being amortized over the expected average remaining service life of the employee group.

The statement of financial position and statement of changes in net assets is presented in Appendices 3-4.

Table X Consolidated Budget, 2013-14 ($'000)

Consolidated Budget, 2013-14 ($'000)

	2012-13		Budget	Projected		
	Budget [1]	Forecast	2013-14	2014-15	2015-16	2016-17
REVENUE:						
Provincial Government	768,750	775,790	805,671	827,004	841,154	856,872
Federal and Other Government	178,327	182,712	183,215	186,474	191,940	197,914
Tuition and Related Fees	277,728	287,258	305,474	316,672	325,222	332,351
Grants and Donations	89,840	115,647	105,773	107,992	111,953	115,926
Investment Income	32,003	31,717	39,333	43,110	46,888	52,414
Sales of Services and Products	219,488	199,418	181,123	184,486	187,950	190,353
Amortization of Deferred Capital Contributions	117,796	114,669	119,542	123,427	126,452	128,341
Total revenue	**1,683,932**	**1,707,210**	**1,740,131**	**1,789,166**	**1,831,560**	**1,874,171**
EXPENSE:						
Salaries	838,528	858,720	884,485	908,560	936,364	965,355
Employee Benefits	169,096	168,311	180,602	194,412	207,205	219,770
Materials, Supplies and Services	320,885	330,225	303,202	311,460	323,655	334,544
Maintenance	70,881	74,074	72,102	72,955	70,961	72,246
Utilities	51,214	42,977	45,679	48,775	51,536	52,103
Scholarships and Bursaries	92,772	88,545	96,569	102,474	109,021	116,089
Amortization of Capital Assets	174,085	168,397	175,525	180,317	184,322	186,894
Total Expense	**1,717,461**	**1,731,250**	**1,758,164**	**1,818,954**	**1,883,063**	**1,947,001**
Excess of Revenue Over Expense	**(33,529)**	**(24,040)**	**(18,033)**	**(29,788)**	**(51,503)**	**(72,830)**
Investment in Capital Assets	(7,412)	(34,699)	(19,728)	(1,249)	10,691	(4,886)
Transfer from Endowment	17,600	17,600	10,000	10,000	10,000	10,000
Increase (Decrease) for the Year	(23,342)	(41,139)	(27,761)	(21,036)	(30,812)	(67,716)
Unrestricted Net Assets, Beginning of Year	(50,691)	(15,612)	(64,751)	(92,512)	(113,549)	(144,361)
Universities Academic Pension Plan	(1,352)	(8,000)	-	-	-	-
Unrestricted Net Assets, End of Year	**(75,384)**	**(64,751)**	**(92,512)**	**(113,549)**	**(144,361)**	**(212,076)**

(1) 2012-13 budgeted investment income restated to PSAB standards for comparability.

*Due to the timing of budget development relative to implementation of the new framework, the budget may be revised, or restated, to ensure alignment with the framework.

Consolidated Revenue

Budgeted revenue for 2013-14 is $1,740 million. As illustrated in Figure XX, 46 percent or $806illion comes from the province of Alberta, mostly through the Campus Alberta grant, sponsored research funding and capital funding. Of the $806 million, $614 million represents the Campus Alberta Grant, the primary source of unrestricted funding for the university's day to day operating activity. For 2013-14, the university has assumed a 2 percent increase to the base Campus Alberta Grant, founded on a commitment by the provincial government to provide predictable funding to post-secondary institutions with three years of 2 percent annual grant increases starting with the 2012-13 budget year. A 1 percent grant increase represents funding of approximately $6 million. Therefore, without the planned 2 percent grant increase for 2013-14, the university's consolidated budget deficiency will increase by $12 million to an estimated deficiency of $30 million.

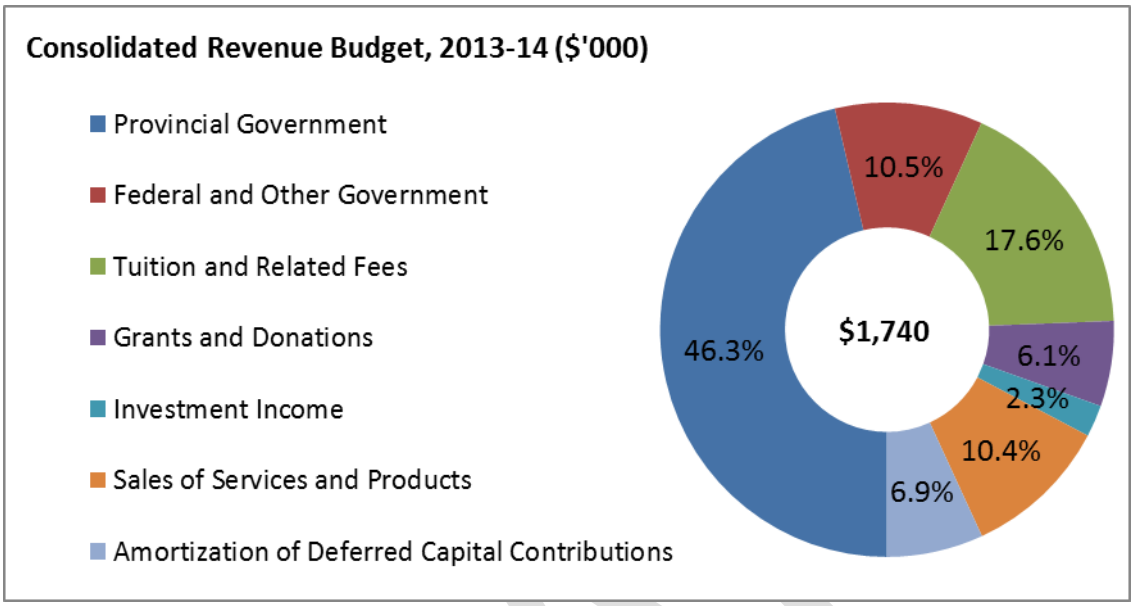
The federal and other government revenue of $183million largely reflects the funding received by the university in support of its research mandate. The revenue source is impacted by the federal government's level of investment in Tri-Council funding, the high level of competition for research funding and the University's overall grant application success rates. The quality of the University's faculty and the support provided to faculty in preparing grant applications are key factors in securing additional research funding.

Tuition and related fees are budgeted at $305 million and at 17 per cent is the second largest source of consolidated revenue. This includes all instructional fees, market modifiers, and non-instructional fees. The fee revenue is largely unrestricted, resides in the operating fund and is used for the day to day general operations of the university. Included in tuition and fees is the Board approved increase to general tuition fees, program fee differentials, and market modifiers of 2.15 per cent and an adjustment of 1.92 per cent to all other mandatory-non-instructional fees including the CoSSS fee. The CoSSS fee is budgeted to generate $11.5 million of revenue in 2013-14.

The third largest source of revenue comes from sales of services and products representing 10 percent of total consolidated revenue, or $181 million. This revenue is primarily derived from ancillary operations such as residence services, the bookstore, parking, and food services. For 2013-14, these revenues were adjusted based on a Board approved weighted increase to residence fees of 2.36% as outlined in the table X on page X and adjustments to parking rates. Sales of services and products revenues are also derived from operating activities across all faculties and units. Examples include sales associated with physical education and recreation activities (passes, camps, etc.), medical clinical assessments, and rental of equipment.

For the 2013-14 fiscal year, investment income (including both interest and endowment income) is budgeted at $39 million. Two years ago, the university was projecting interest income to be approximately $30 million in 2013-14 based upon economic and interest rate forecasts at the time. In response to continued global economic uncertainty, the Euro region moving back into recession, slowing economic growth in Asia, and continuing uncertainty in the economic recovery in the United States, revised projections have interest rates continuing at historically low levels and not recovering as previously forecast. Consequently, interest income is budgeted at only $13 million for 2013-14 increasing marginally over the next three years. Interest income although small as a percentage of total revenue has been an important source of unrestricted revenue for the operating fund. Given that

interest rates are forecast to remain at historically low levels for the immediate to mid-term, the university must seek new sources of revenue. For 2013-14 endowment income has been reduced by $10 million from previous forecasts pursuant to the public sector accounting standards whereby only actual endowment returns are budgeted versus budgeting based on unrealized gains.



Consolidated Expense

For 2013-14, consolidated expense is budgeted at $1,758 million. As Figure XX illustrates, investments in salaries and benefits to maintain teaching, research and other critical activities account for 60 per cent of total expense. The budgeted increase in salaries and benefits is driven by an across the board (ATB) increase of 1.65 per cent negotiated with the two staff associations, the application of merit which accounts for approximately a 2.1 per cent increase and increases in both statutory and non-statutory benefit expense. Both the university and the two staff associations demonstrated tremendous leadership in negotiating the current salary agreements. The agreements reflect a balance between the University offering competitive salaries in an internationally competitive market place while reflecting the financial pressures faced by the University.

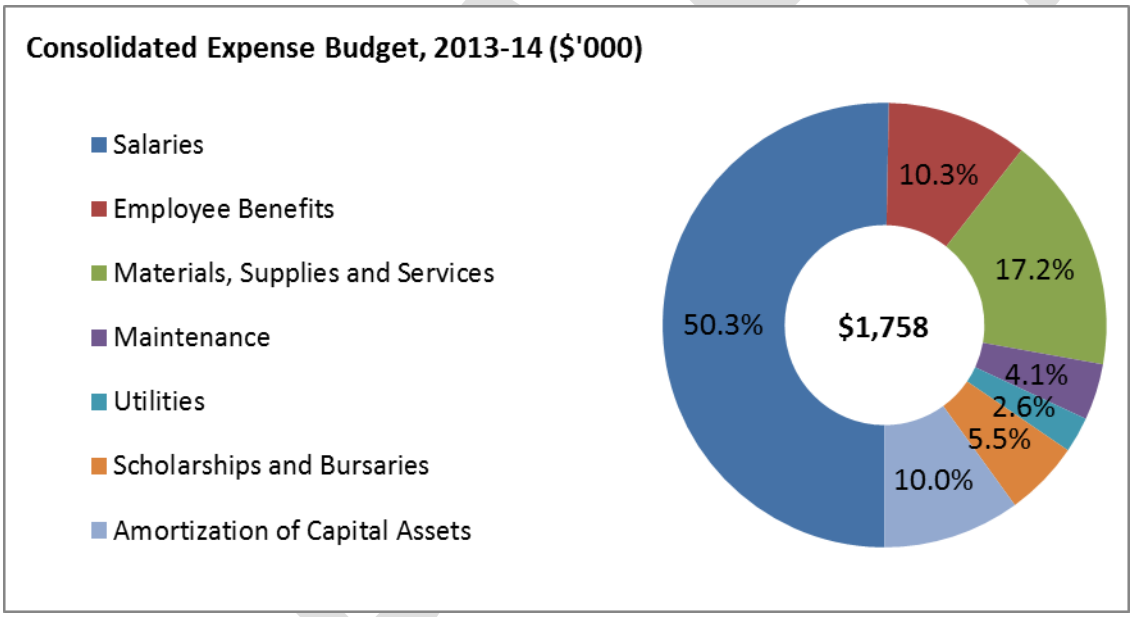
Of significant concern to the university is the rate of increase to the university's benefit program costs including its pension plan contribution rates. For example, dental benefit plan costs are budgeted to increase 12.6 per cent for 2013-14 from forecast 2012-13 year-end. It is important to note that with the exception of pension plan contributions, non-statutory benefit plan contributions are all 100 per cent paid by the employer. The largest percentage increase budgeted for benefits in 2013-14 is support staff pension plan contributions. Following an actuarial review of the Public Service Pension Plan and in response to market conditions, contribution rates by the employer will increase by 15 per cent. Employer academic pension plan contributions are budgeted to increase by 5 per cent in 2013-14. This is preceded by an estimated increase in academic pension plan contributions of 10.4 per cent in 2012-13.

The next largest expense is for materials, supplies and services. Budgeted at $303 million, these expenses provide essential support across the campuses from information systems/technology, research lab expenditures, library resources, maintenance, to day-to-day operations such as insurance premiums, communications, and classroom support.

A further significant expense in the consolidated budget is $175 million for the amortization of capital assets. Under Canadian GAAP, amortization recognizes the useful life of an asset, through an annual expense which is calculated based on the estimated useful life of the asset. These assets include such things as buildings, scientific and computing equipment, software, and learning resources.

For 2013-14, scholarships and bursaries expense is budgeted at $96.5 million. The investment in scholarships and bursaries for our students is vital if we are to attract the best and the brightest students from across Alberta and around the world and assist those students who may require financial assistance in attending a world leading university.

All remaining expense items have been budgeted based on a detailed fiscal estimate process that includes inputs from key units across the University, a review of past expenditures, changes in University operations and the incorporation of contractual obligations where applicable.



Budget Assumptions and Sensitivities

The university prepares its budgets using a comprehensive integrated planning and budget process, involving key stakeholders from across the institution. Key budget assumptions and sensitivities are cornerstones of the university's multi-year budgeting process. The goal is to achieve improved accuracy in forecasting elements of the budget and provide common assumptions for budget planners across the university.

The university has two primary sources of unrestricted operating fund revenue; the Campus Alberta Grant and tuition plus interest income and miscellaneous revenues. These two primary sources make up approximately 90 per cent of the university's operating revenue. Both of these revenue streams are largely controlled by government and are currently increasing at approximately two per cent per year.

In terms of operating expenditures, salaries and benefits make up approximately 80 per cent. These expenditures are increasing on average at four per cent per year. The balance of the university's operating expenditures, driven by contractual obligations and inflationary pressures, are increasing between two and four per cent per year.

With the assumption of an increase in the Campus Alberta Grant of 2 per cent and a tuition increase of 2.15 per cent with primary expenditures increasing at approximately 4 per cent, the gap between operating revenue and expenditures is creating a structural deficit in the operating budget of approximately $12 million in 2013-14 (not including amortization expense). This gap, which will compound each year, is unsustainable. In previous years, the university leveraged a combination of budget re-allocations and investment income and other revenue sources to offset the difference between its operating revenues and expenditures. Across the board budget re-allocations is neither sustainable nor strategic. Furthermore, short to mid-term interest income forecasts show no significant increase in interest rates and therefore little change in interest income revenue. For 2013-14, the university has budgeted short-term interest rates at 1.4 per cent, with rates increasing to 2.2 per cent by 2016-17. Tuition increases must adhere to the forecast of the Alberta CPI as stipulated in the tuition fee regulation. Tuition increases over the next three years are therefore forecast at 2.2 per cent in 2014-15, reducing to 2 per cent in 2016-17.

Going forward, the government, to achieve its goals, must assess how it will support Alberta's flagship university and leverage its mandate as an internationally recognized research intensive institution. The differential costs of a research intensive university must be funded while providing the tools and flexibility to the university to generate new sources of revenue and re-align its programs in response to evolving needs.

Key highlights of the University's revenue assumptions include:

- a two per cent increase to the base Campus Alberta Grant
- modest decline in federal research funding from 2012-13
- 2.15 per cent increase to credit tuition fees and 1.92 per cent increase to mandatory non-instructional fees
- continued phased approach to full implementation of market modifier tuition
- continuation of the non-permanent Common Student Space, Sustainability and Services (CoSSS) fee
- marginal growth in investment income and modest growth in endowment income due to market conditions
- continuation of the IMP grant at current levels of $22 million per year

On the expenditure side, the university's staff agreements extend to 2014-2015 with a negotiated across-the-board increase of 1.65 per cent in each of 2013-2014 and 2014-2015. Both statutory and non-statutory benefits are increasing with non-statutory benefits increasing between 3.5 and 15 per cent. All other expenditures are increasing at the range of 2 to 4 per cent.

Key highlights of the University's expenditure assumptions include:

- growth in salaries and benefits driven by salary settlements (1.65 per cent ATB and 2.1 per cent merit)
- benefit cost increases ranging from 3.5 to 15 per cent
- a 1.5 per cent re-allocation in the operating budget
- relatively stable utility expenditures
- modest growth in scholarships
- all other expenditures stable or marginally reduced

The budget challenges that lie before the university are substantive, but so are the opportunities. With a balanced approach, support from the provincial government, a clearly defined plan and realistic expectations, the university will generate the necessary new revenues, will implement the required structural changes, and will bring the university's consolidated budget into balance going forward.

Budget Sensitivities

Revenue Approximate Value

- one per cent on Campus Alberta grant: $5.9 million
- 0.25 per cent on short-term interest rate: $1.5 million
- one per cent increase on credit tuition: $2.2 million

Expense Approximate Value

- one per cent increase in salary settlements: $4.5 million
- one percent on benefits approximately $1.3 million
- $1/GJ increase on natural gas: $2.6 million (ancillary budget)
- one per cent operating budget reduction: $6.1 million

Institutional Budget Risks

The primary budget risk facing the university is the growing gap between the university's operating revenues and expenditures, creating a structural deficit in the operating fund. This must be addressed through a combination of new revenues and structural changes that align the university's operating expenditures with its revenues.

Specific factors impacting the university's budget risks include:

- *Campus Alberta Grant annual increase*. Annual increases of 2 per cent does not match the corresponding annual increase in salary, benefits and general inflationary pressures, consequently annual budget re-allocations will be required. A minimum 4 per cent annual increase to the grant is needed. Continued budget re-allocations are eroding the University's capacity to fulfill its mandate and vision. The highest risk to the 2013-14 budget is the government's commitment to a 2 per cent grant increase. If the increase is not provided, the

University will require a minimum 2 per cent budget cut.

- *Legislative constraints on tuition*. U of A graduate tuition remains well below market rates. Legislative constraints on annual tuition increases prevent the university from responding to market conditions, aligning tuition levels with its key competitors, and recognizing the higher costs of program delivery in specific faculties.

- *Interest rates*. Interest rates in the immediate to mid-term are forecast to remain at historically low levels due to economic conditions.

- *Alternative revenue*. The capacity of the university to generate alternative sources of revenue to offset insufficient grant increases and historically low investment income returns.

- *Pension plan contribution rates*: The continuing increase in pension plan contributions represents a significant risk to the university. Without structural reforms to the pension plans, the level of pension plan contributions as a percentage of total benefit costs will be unsustainable.

Capital and Ancillary Budget

Capital

The university's capital budget reflects $127.8 million in capital projects and a further $27.3 million in capital program spending for a total capital budget of $155.1 million. This includes projects underway or proceeding and annual capital programs in support of health and safety, energy management, building systems, renovations and site replacement and/or upgrading.

Capital projects ultimately support the university's academic plan and are in alignment with the goals and objectives within the Comprehensive Institutional Plan. They also align with provincial priorities in addressing space and program needs, and focus on renewal and preservation of facilities. Further, these projects have been approved through the university's capital expenditure authorization request policy and, as required, approved by the Board of Governors.

Table X lists the capital projects for 2013-14. The three major capital projects at various stages of construction for the fiscal year include the new residences in east campus village, ongoing construction of the Innovation Centre for Engineering and initiation of the Physical Activity and Wellness Centre. These three projects account for of $70.2 million of the $127.8 million in capital projects. The capital budget also includes just over $27 million in capital program spending. This includes $22 million in funding from the provincial infrastructure maintenance program (IMP) which is assumed to continue in the upcoming year.

In addition to approved projects, there are a number of priority capital projects around pre-design and renewal that require funding (*see* Table X). Detailed information on the university's capital plan can be found in pages XX to XX.

Capital Projects (underway or proceeding):	Prior Years Actuals	Forecast to Complete			Total Estimated Final Cost
		2012-13 Preliminary	2013-14	Future Years	
Agricultural Research Infrastructure - St Albert / Kinsella / Mattheis	4,709	6,080	1,400	-	12,189
Balmoral Centre - ERC / Cyclotron	8,892	20,108	-	-	29,000
Dentistry Pharmacy Redevelopment	104	1,896	3,700	-	5,700
Devonian Botanic Garden - Infrastructure Upgrades	-	-	5,000	8,000	13,000
East Campus Village - 89th Ave Grad Residences	20	5,980	21,026	-	27,026
Edmonton Clinic Health Academy	365,472	7,255	10,000	6,284	389,011
Edmonton Clinic Health Academy (South - Dental Operatories)	2,491	103	-	-	2,594
Federal Building (BARD replacement)	-	6,500	7,500	-	14,000
HM Tory - Phase 2 Building Systems Upgrade	5,355	885	1,100	1,100	8,441
HRIF Project (Li Ka Shing / Katz Group) Base Bldgs	234,500	472	-	-	234,972
HRIF Project (Li Ka Shing / Katz Group) Fit Outs	104,134	4,138	-	-	108,271
HRIF Project (CTRIC cGMP Fit Out - Li Ka Shing Level 7)	2,408	8,890	2,500	2,000	15,797
Innovation Centre for Engineering (ICE)	33,543	32,354	23,863	-	89,760
Pharmacy Fit Up	29,470	6,220	10,000	3,777	49,467
Physical Activity & Wellness Centre (PAWC)	1,660	6,740	25,400	23,200	57,000
Scientific Support Facilities	44,948	652	5,000	2,826	53,426
South Campus Infrastructure - Phase I	4,536	817	-	-	5,353
South Campus - Intersection 63 Ave / 122 Street	12	150	1,738	-	1,900
Other Capital Projects	668,836	15,999	9,585	2,203	696,622

Total	**1,511,089**	**125,240**	**127,812**	**49,389**	**1,813,530**
Annual Capital Programs:					
Infrastructure Maintenance Program			22,000		
Energy Management			5,370		
Total			**27,370**		
			155,182		

* The Capital Budget was finalized on October 30, 2012 and contains values which may not align with or may not include projects identified in the CIP.

Institution Priority Projects (Escalation not included)	**2013-2014 Forecast**	**2014-2015 Forecast**	**2015-2016 Forecast**	**2016-2017 Forecast**	**Total**
Augustana - Science Bldg & Classroom Upgrades	1,000	10,000	19,000	-	30,000
CSJ - Science Bldg	1,500	20,000	22,500	-	44,000
Chemistry West - Phase 3 of Renewal - Perimeter Heating Upgrade	4,500	-	-	-	4,500
Chemical Materials Engineering Bldg - Phase 2 Renewal	13,500	15,000	18,000	9,500	56,000
Dentistry Pharmacy Repurpose	10,000	50,000	80,000	50,000	190,000
Heating Plant Boiler #7 & Turbine	4,000	29,000	30,000	5,000	68,000
Innovation Centre for Engineering (CME Expansion In-Fill - Fit Out)	6,000	20,000	14,000	-	40,000
Residences	7,500	22,500	5,000	15,000	50,000
Science Backfill Requirements - CCIS	6,450	10,000	9,165	-	25,615
TOTAL	**54,450**	**176,500**	**197,665**	**79,500**	**508,115**

Funding for future projects not approved and not proceeding. 2012-2013 Dollars. For Information Only

Ancillary Services

The University operates six ancillary operations including the Bookstore, Enterprise Square, Housing, Parking, the University Health Centre and Utilities. These ancillary operations provide services to the campus community in support of the University's mission and vision. In the case of Utilities, in addition to providing services to North Campus they provide services to a number of other organizations.

Bookstore
The Bookstore is faced with a number of challenges that will need to be addressed in the coming years including the replacement of its point of sale system, physical upgrades to its main store location, efficiencies in its current multi-store locations and increasing competition from on-line and other sources. With new leadership in place the Bookstore will be developing strategies and detailed plans in response to these challenges.

Enterprise Square
Enterprise Square is the University's campus located in downtown Edmonton. It is occupied by combination of University units and commercial operations. It is currently fully occupied with the exception of approximately 4,932.0 sq. ft. on the main floor and 16,000.0 sq. ft. on the third floor. Real Estate and Property Management Services is responsible for the leasing of space within Enterprise Square. The maintenance of high occupancy levels is important to generate the necessary revenues to offset the buildings operating costs and mortgage commitment. The Ancillary is experiencing positive cash flows that is enabling it to maintain the necessary operating and capital reserves.

Housing and Conference Services (including Augustana)
The student residences and commercial properties (HUB Mall, Newton Place) are all at or close to maximum capacity. The Conference Centre continues to be a popular venue for meetings and conferences. Summer occupancy (Lister Centre) numbers have stabilized in 2012-13 however challenges remain given the current economic climate and competition with hotels in Edmonton. A number of initiatives were undertaken in 2012-13 including:

- Commenced construction of new student residences (89th Avenue Student Residence) that will add 244 bed spaces (double and quad rooms), expected to be occupied beginning September 2013.

- Completed a comprehensive analysis and unit review of the Residence Services.

- Completed major window replacement in MacKenzie residence tower as part of the continuing deferred maintenance program.

- Implemented initial changes to transition the Lister residence community to a first-year and transition student-only community in September 2013.

- With Aramark additional expansion of food services facilities on North Campus.

Major risks to Housing and Conference Services include**:**

- Residence rent rates are in many cases at or near market, reducing flexibility with respect to additional revenue generation.

- Deferred maintenance risk at Michener Park residence.

- Continued deferred maintenance challenges in the older ECV residences, the general level of deferred maintenance in other residences, and the need for modernization and functional renewal.

- Inflation of some operating costs (labor, maintenance, construction) will exceed CPI (this year 1.92per cent), as per institutional Budget Planning Document forecasts.

- Continued recession-like climate: impact on conference activity.

On November 27, 2012 the Board approved a weighted increase of 2.36 per cent to its residence rates. All rate increases will be effective May 1, 2013. Residence rent increases are required to offset increases in salary and benefit costs for the residence operation, general inflationary pressures, and to address deferred maintenance issues, several of which have direct health and safety implications, or projects which offer the opportunity to reduce energy consumption. The following table provides examples of market adjustments for 2013-14 by residence.

Re**ntal Rates by Residence, 2013-14**

Residence/Unit	**Effective May 1, 2012**
Augustana (double room 8 month room & board)	$780
East Campus Village Apartments (2 Bedroom)	$636
East Campus Village Houses	$424 to $1041
Résidence Saint-Jean (8 month)	$600
HUB (2 Bedroom)	$583
Lister (Double, 8 months)	$358

Michener (2 Bedroom Row House)	$823 to $893
Newton (1 Bedroom)	$993 to $1,070
Schaffer (Single)	$672

The University of Alberta currently has 4,694 *(update this number)* residence bed spaces for approximately 12.5 (*update)* per cent of the total student population including Augustana Faculty (11.3 *(update)* per cent excluding Augustana).

Parking Services
On November 27, 2012 the Board received for information parking rate increases of 1.92 per cent or CPI for monthly and annual rates. Visitor rates will remain unchanged for 2013-14. All rate increases will be effective April 1, 2013. After initial declines in demand due to the successes of the Travel Demand Management (TDM) program, year over year parking demand has stabilized with the exception of non-university personnel (contractors). Parking Services capital reserves will continue to grow in anticipation of South Campus development and other capital and maintenance priorities.

Major risks to Parking Services include:

- Overall parking demand will decrease over time due to alternate transportation options.
- Parking rates are in many cases at or near market, reducing flexibility with respect to additional revenue generation.

University Health Centre
The University Health Centre (UHC) provides an extensive range of health services to the University student community. A major focus of the UHC in the last few years has been to expand its student mental health services. The goal of the UHC is to significantly enhance these services, developing a more distributed, proactive and preventative model than the current model that is in place. Led by the University of Alberta, the provincial government announced $3 million in funding over three years in January, 2013 to pilot a new health delivery model with a primary focus on student mental health services.

Utilities
The utilities ancillary provides services not only to University operations on the North Campus but to Alberta Health Services, the Cross Cancer Institute, the Jubilee Auditorium and Canadian Blood Services. There are three major factors that impact the utility budget: weather, natural gas prices and pool (electric) prices. Utilities continually review and revise rate models in light of its experience and expectations for loads, prices and market activities and where appropriate enter into long-term pricing contracts.

Total revenue budgets along with operating and capital reserves for each ancillary is identified in Table X.

Ancillary Budget, 2013-14 ($"000)

	2012-13		Budget	Projections		
	Budget	**Forecast**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
Augustana: Residence, Conferencing, and Food						
Revenue						
Revenue - Internal	49	49	50	52	53	54
Revenue - External	2,890	2,891	2,956	3,030	3,110	3,173
Total Revenue	**2,939**	**2,940**	**3,006**	**3,082**	**3,163**	**3,227**
Reserve Balances:						
Operating Closing Balance	1,000	1,000	1,000	1,000	1,000	1,000
Capital/Maintenance Closing Balance	2,767	3,048	3,063	3,144	3,225	3,310
Bookstore						
Revenue						
Revenue - Internal	3,700	3,262	3,162	3,320	3,486	3,661
Revenue - External	24,481	22,406	22,855	23,312	23,778	24,253
Total Revenue	**28,181**	**25,669**	**26,017**	**26,632**	**27,264**	**27,914**
Reserve Balances:						
Operating Closing Balance	(196)	(148)	-	-	-	-
Capital/Maintenance Closing Balance	(1,880)	(8,174)	(8,471)	(8,554)	(8,581)	(8,544)
Ancillary Services*						
Revenue						
Revenue - Internal	3,893	7,388	7,662	8,013	8,185	8,355
Revenue - External	51,570	51,558	53,796	56,081	57,517	58,799
Total Revenue	**55,463**	**58,946**	**61,458**	**64,094**	**65,702**	**67,154**
Reserve Balances:						
Operating Closing Balance	(2,030)	64	127	637	1,233	1,869
Capital/Maintenance Closing Balance	15,174	18,740	20,676	24,962	28,649	17,798
University Health Services						
Revenue	**5,677**	**5,936**	**6,148**	**6,236**	**6,363**	**6,580**
Reserve Balances:						
Operating Closing Balance	353	708	456	152	(42)	-
Capital/Maintenance Closing Balance	200	200	200	200	200	79
Utilities						
Revenue						
Revenue - Internal	72,949	64,904	74,572	76,838	80,833	81,836
Revenue - External	21,507	19,434	22,216	22,753	24,037	24,116
Total Revenue	**94,456**	**84,338**	**96,788**	**99,592**	**104,870**	**105,952**
Reserve Balances:						
Operating Closing Balance	9,566	3,351	3,351	3,351	3,351	3,351
Capital/Maintenance Closing Balance	19,147	23,504	23,504	23,504	23,504	23,504
TOTAL REVENUE	**186,716**	**177,828**	**193,417**	**199,635**	**207,362**	**210,827**
Reserve Balances:						
Operating Closing Balance	8,693	4,974	4,934	5,140	5,542	6,220
Capital/Maintenance Closing Balance	35,408	37,317	38,972	43,255	46,997	36,147

*Ancillary Services includes: Enterprise Square, Commercial Property, Parking Services and Housing & Food Services

Resource and Risk Implications

Even as it navigates the current financial storm, the province of Alberta must make strategic, long-term, visionary decisions on how best to support and leverage its flagship university to achieve provincial aspirations. The University of Alberta shares the province's bold vision for a future that is powered by innovation and ingenuity; indeed, the university will be critical to the province's success, and the university looks forward to working with government to advance provincial priorities.

Driven by *Dare to Discover*, the university has identified a series of resource gaps that are linked to its responsibility in providing comprehensive and diverse educational choices that prepare Albertans for citizenship in the world and address Alberta's need for undergraduate and graduate alumni who will contribute to the economic, social and cultural prosperity of tomorrow. These gaps have been identified in a context where the university continues to implement strategies to maximize the use of its existing resources. Addressing these resource gaps will facilitate connection to international communities, enable the U of A to undertake world leading research and create innovative research agreements that will link researchers, graduate and undergraduate students, international foundations, industry and government. These resource needs assume the government's commitment to provide 2 percent increases to the Campus Alberta grant in both 2013-14 and 2014-15. Resource gaps include investment in the University of Alberta as the province's flagship university, enhancing internationalization, supporting digital learning and information technology, investing in capital infrastructure, and restoring payments from the Access to the Future Fund.

Sustaining the Alberta's Flagship University

The University of Alberta must not lose the momentum gained during previous years of growth in government funding, which enabled strategic investments in students, staff, professors, programs, and infrastructure. The great performance and outcomes achieved by the university has played, and will continue to play, a critical role in the province achieving its goals. In addition to sustaining the current government commitment of a 2 percent grant increase, the U of A requires an additional 2 percent increase in support of its role as Alberta's leading research intensive university. Like all CARI institutions, the University of Alberta has specific costs associated with its research mandate focused around graduate students, faculty who support those graduate students and the core research facilities required to deliver the research. Furthermore in response to the growing demand by highly qualified high school and college transfer students for BSc degrees in the areas of science, technology, engineering and mathematics (the STEM disciplines) the university has identified a resource gap of $20 million to alleviate strained and now insufficient instructor and technical/lab staff support.

The university must continue to grow the numbers of high calibre graduate students and post-doctoral fellows. Graduate students, the engines of innovation, are vital to the province's economic diversification and competitiveness and require more resources than undergraduate students. They require different types of space, competitive funding, and most importantly, more individualized time with internationally recognized faculty who can mentor and support them in their learning and research endeavors. The fact is that graduate students cost more than undergraduate students.

In addition to the need for more graduate students and faculty to supervise these students, the university operates highly specialized core research facilities essential in supporting internationally competitive research. Examples of these facilities include animal lab facilities, level two and level three bio-containment labs, specialty fabrication labs for machining, plastics, glass blowing and electrical, biochemical analytics labs, biotron and aquatic facilities, and greenhouses. These facilities not only support research at the University of Alberta, but enable collaborative sponsored research with public and private sector partners. These special facilities require expensive leading edge equipment and supplies and must be operated by highly skilled and trained specialists. As one example, the university spends almost $9 million per year of its operating budget on animal health facilities in support of sector-driven research, technology innovation and clinical trials in the areas of the health sciences, agriculture and biosciences. The innovation system looks to its research intensive universities for such research capacity, often established initially with the aid of competitive federal infrastructure programs. However, the ongoing direct cost of operating and sustaining such broad research capacity is not adequately funded.

The unique needs of research intensive universities including the growth in graduate student numbers, the required number of professors and support for core research facilities adds additional costs to the university. These costs could be offset by the differentiated funding to the University of Alberta in the form of a further 2 percent increase to the Campus Alberta grant.

The University of Alberta seeks government's commitment to the 2 percent increase to the Campus Alberta grant and an additional 2 percent commitment for a total of a 4 percent increase to the Campus Alberta grant to address the direct and indirect costs of sustaining and growing its research capacity through additional investments in faculty, graduate students, post-doctoral fellows, and core research facilities

The University has identified a resource gap of $20 million in response to the growing demand for access to STEM programs by highly qualified students.

Investing in Internationalization

The U of A's internationalization strategy is multifaceted and permeates the entire academic enterprise. It includes international student recruitment at the undergraduate and graduate levels; opportunities for Alberta students to study abroad; increased mobility of international students coming into the province through joint degree programs; and the establishment of research consortia. These initiatives leverage the institution's and province's teaching research and innovation resources with those of other jurisdictions, and establish the University of Alberta as a desired partner in China, Germany, India, and Brazil. The university aspires to create a recognizable international reputation, which can deliver to Alberta the kind of tangible and intangible benefits that signature public institutions such as UC Berkeley and UT Austin deliver to their respective jurisdictions.

The establishment of international consortia brings enormous return on investment. The track record of the university in this regard shows indisputable results. The government need only look at the results of the Helmholtz Alberta Initiative and the agreements signed between the U of A and several of China's top tier universities. The benefits to the province of such international agreements are substantial. With a strategic focus on five countries—Germany, China, India, Brazil and regions of the U.S—the university will continue to increase these highly beneficial relationships.

Such partnerships require matching dollars in order to leverage the investment from other jurisdictions. It is vital that when the university enters into discussions with potential partners that it has the confidence that matching dollars will be available.

The University of Alberta recommends greater flexibility in the structure of Alberta Innovates and within the government that actively supports the funding of international consortia while establishing dedicated funding for matching purposes.

Investing in Digital Strategies and Information Technology

To stay relevant in a rapidly changing world, a research-intensive university must sustain and continually renew, and re-think its learning, teaching and research information technology infrastructure. This is vital if the university is to attract and retain the best and brightest students, professors and staff, engage external industry and international partners and grow the research enterprise. At the same time the university must sustain its existing information technology infrastructure while continuously improving the effectiveness and efficiency in the delivery of that technology.

Funding of the university's information technology infrastructure can be grouped into four core areas. In response to a rapidly changing world, investment in innovative digital learning initiatives that expand institutional reach and enhance teaching effectiveness is essential. In addition, continual investment is required in network sustainability and deferred maintenance; security; a graduation student registration system; and smart classroom evergreening.

Digital learning initiatives: In 2012, the University of Alberta began to engage more aggressively in developing and expanding the use of advanced learning technologies and their related pedagogies in undergraduate and graduate education. The university's digital strategy objective is to both develop and offer the highest quality digital learning technologies and pedagogies to enhance the on-campus, in-class experience and online learning environments. The University of Alberta is well positioned to research and develop blended and online learning. In addition to expert researchers in pedagogy and strength in computer technology research, the university has a long history of working with such approaches.

Through strategic partnerships with other leading universities and innovative companies, the University of Alberta has the potential to make major contributions to the evolving state of teaching and learning at the post-secondary level. With the necessary investment of $2 million, the university will advance

three digital learning pilot projects: 1) Udacity MOOC(s) in Faculty of Science; 2) the hybrid learning environment in Faculty of Education; and 3) related research projects in the Alberta Innovates Centre for Machine Learning. The University of Alberta has the opportunity to be a participant in the adoption and research of digital learning technologies, and to better position itself for the changes that are coming. These changes, if managed well, have the potential to benefit students and support of the university's mission to create and sustain a vibrant and supportive learning environment while benefiting all of Campus Alberta and Albertans.

Network sustainability and deferred maintenance: The university's network services can be divided into four service areas including campus area network, university wireless, centrally managed local area networks, and unit managed local area networks. Over the last five years the university has invested operating dollars to establish evergreening funds for its centrally supported services or developed specific funding structures that allows for evergreening of the systems. The largest challenge the university faces is the degree of decentralization of its LAN structures. This operational model as confirmed by the Auditor General presents the university with a high level of risk regarding data and systems security. Over the years decentralized LAN units have not adequately evergreened their cabling, switching, routing and firewall systems. . The magnitude of this issue is now being identified as the university endeavors to streamline its operations and introduce efficiencies through the centralization of core IT services. The university's information technology team has identified a five-year consolidation plan which is estimated to cost $38 million in one-time funding and $2.4 million in base funding. This consolidation strategy implemented over five years will greatly reduce IT data security and systems risks, enhance efficiencies, reduce overall operating costs and ensure evergreening of the systems going forward.

Security: After people, information is the most critical and valuable asset in the university's teaching, research and community priorities. Therefore, it is crucial to safeguard the university's information and information technology resources. Safeguards deployed by the university include people, technology, process and best-practice based controls. As advances in information and communications technology continue to transform the digital learning environment, the deployment of appropriate information safeguards must keep pace. The university's response is to invest in security training of IT staff. Because this training is so expensive, the university with two partner institutions led a Canadian-wide initiative to coordinate online security awareness training. The result has been a reduction in training costs by 80 percent per seat. The university is also investing in Windows based security training for 50 of its IT staff. Finally the university is investing in the auditing of the university's most mission-critical IT systems to assess system security. These security initiatives, although expensive, are being funded within the university's existing IT budget.

Graduate student registration system: A fundamental barrier to the goal of the university to grow its graduate student numbers is the university's graduate student registration legacy system. Due to the complex nature of graduate student recruitment and the extensive role that individual departments play in the recruitment and documentation confirmation process, a suitable enterprise-wide system has not been implemented. This has now changed and the opportunity exists for the university to vastly improve and streamline its graduate student recruitment and enrolment processes. This system is essential if the university is to recruit the best and the brightest graduate students from around the world. The university has identified a resource need of $3 million to implement a new graduate student registration system,

Evergreening smart classrooms: In the past two years, to meet student demand and improve the quality of the learning experience, the university fast-tracked the upgrading of smart classrooms and increased the number of lab workstations. The number of smart classrooms increased from 135 to 331 in two years and the number of work stations increased from 1533 to 1864 in four years. Although the university has invested $3.3 million in evergreening funds for its labs and smart classrooms, the rate at which classrooms and labs were upgraded over the last few years means that current funds will not match the evergreening requirements come 2016. Additional evergreening funding of $2 million will be required to address this need. A source of additional evergreening funds has not been identified.

In developing the university's digital learning and information technology strategies a resource gap of $41 million in one-time funding (phased in over five-years) and $6.4 million in base funding has been identified.

Investing in Capital Infrastructure

In the competitive world of post-secondary education, it is important for the university to provide high-quality learning experiences and infrastructure that attracts, retains, and engages outstanding faculty and students.

The university has been able to leverage significant and continued capital funding and planning to build new learning and discovery spaces and advance much needed deferred maintenance. Going forward, the university has identified three priority areas for infrastructure investment including deferred maintenance funding, planning and development dollars and capital funding for critical projects on each of the university's distinct campuses.

Given the age of the university's buildings, adequate funding to protect against infrastructure operational failures is vital if the university is to avoid risks such as building closures. The university has identified not only the need to sustain current Infrastructure Maintenance Funding of $22 million per annum, but additional envelope funding of $20 - $30 million per annum to address the university's deferred maintenance liabilities. Although capital funding will be limited in the short-term, going forward the university requires the ability to quickly respond to new funding opportunities and partnerships. To effectively develop and explore partnership opportunities, significant planning and pre-design work is required to prepare the university to properly scope, budget, vet and respond to these opportunities. The University has identified the need for a funding envelope for continued planning and pre-design of priority projects and initiatives of $3 to $4 million per annum. To address critical constraints in the university's ability to deliver on the collective visions of the university and government, and to ensure that critical capital projects for each of the university's distinct campuses is addressed, the university has identified the following one-time capital funding requirements.

- Campus St. Jean: New Science Buildings ($30 million)
- North Campus
    - ICE fit-up ($40 million)

    - Dentistry Pharmacy Re-purposing ($275 million; could be phased over a number of years)
- Augustana Campus: New Science Building and Classroom Upgrade ($30 million)
- Other: BARD replacement and expansion ($20 million),

As in the past, the university will continue to investigate strategies for the leveraging of existing assets through partnerships, alternative and private funding.

The university is seeking funding for critical deferred maintenance, planning and pre-design and capital projects as indicated.

Investing in the Access to the Future Fund

Endowments are permanent funds in which the principal is preserved and invested, earning returns that support their intended purpose in perpetuity. Strong endowments are critical and necessary funding for universities around the world. They provide a relatively stable and predictable source of ongoing funding that allows academic institutions to sustain their efforts over time and tackle large-scale, complex problems that may take generations to solve. Endowment funding also helps attract and retain exceptional faculty and students, sending a signal of significant commitment and support for their work and allowing them to commit to in-depth study.

The University has made a strategic decision to diversify its funding base by growing its endowment to at least $1.5 billion by 2020. An endowment at this level would put the university on the path to being competitive with its peer universities. At $800M, the university's endowment is currently smaller than UBC, University of Toronto and University of McGill, as well as benchmark U.S. institutions, for both absolute and per student values.

With the University's desire to grow its endowment, it directed donations made as a result of the Access to the Future fund to its endowment. Founded in March 2005, the Access to the Future Fund successfully stimulated $425M in philanthropic support. The program was suspended for two years in April 2011 with only $25M in donations having been matched by the province.

The suspension of the program frustrated and disappointed a significant number of donors, making it much more difficult to engage with them for further donations until their matching gifts are received. It is vitally important to the University of Alberta that the remaining balance of the Access to the Future funds be paid out.

The university is seeking the reinstatement of the Access to the Future fund, to increase the institution's success in securing philanthropic funding that supports broad-based excellence.

Risk Implications

Like all internationally competitive research-intensive universities, the University of Alberta must deal with a variety of risks that have the potential to hinder its growth and the realization of its vision, mission, and strategic objectives. Many of these risks have been identified throughout this document.

9. The substantive and continuing economic uncertainty, low interest rates, concerns over rising costs of education, government deficits, and a budget model where expenditures are increasing more rapidly than revenue present the university with a series of fundamental budget risks.

10. Enrolment growth must be managed from the perspective of meeting the labour demands of the province and supporting the research mandate of the university. This will require the university striking the right balance of undergraduate to graduate students to position the university as an internationally competitive research-intensive institution.

11. Without the appropriate number of leaders, teachers, researchers, and support staff contributing to their full potential, the university will not be able to provide the quality of the learning experience or participate in world leading research expected of an internationally competitive research university.

12. For the university to remain relevant to its students and meet the needs and expectations of its faculty to engage in the highest calibre research, it requires continuous investment in leading-edge IT infrastructure, highly skilled personnel, and support.

13. The continuation of appropriate levels of Infrastructure Maintenance Program funding to avoid a return to increasing levels of deferred maintenance is vital. In addition, limited or no funding of capital for new, expansion, and/or renewal projects will impact the capacity of the university to meet the strategic goals of the institution and negatively impact the economic goals of the province.

14. An institution that aspires to be among the top research-intensive universities in the world can only achieve that goal through the establishment of strategic collaborations and partnerships with an extensive range of stakeholders. The university requires access to and flexibility in funding that would enable it to leverage tens of millions of research dollars from provincial, national, and international sources.

15. In moving towards the vision of being one of the world's great public universities, the University of Alberta's national and international profile will increase. The university must address the current economic and financial challenges it faces in such a way that it does not negatively impact its increasing national and international reputation for an exceptional place to learn and work.

16. While the university must assume risks in support of its mandate as an internationally recognized research-intensive institution, it must also promote appropriate risk management plans and strategies that develop responsive attitudes and behaviors at all levels of the organization in order to maintain a healthy and safe environment for all.

Through its integrated enterprise risk management framework, the university will monitor, manage, and mitigate these and other emerging risks in an effort to avoid substantial impact on the university's ability to fulfill its strategic objectives.