

A SUSTAINABLE DEVELOPMENT PANEL REPORT

South Campus University of Alberta Edmonton, Canada



**Urban Land
Institute**

www.uli.org

South Campus University of Alberta Edmonton, Canada

Strategies for Sustainable Development

October 16–23, 2009
An Advisory Services Program Report

Urban Land Institute
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About the Urban Land Institute

The mission of the Urban Land Institute is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. ULI is committed to

- Bringing together leaders from across the fields of real estate and land use policy to exchange best practices and serve community needs;
- Fostering collaboration within and beyond ULI's membership through mentoring, dialogue, and problem solving;
- Exploring issues of urbanization, conservation, regeneration, land use, capital formation, and sustainable development;
- Advancing land use policies and design practices that respect the uniqueness of both built and natural environments;

- Sharing knowledge through education, applied research, publishing, and electronic media; and
- Sustaining a diverse global network of local practice and advisory efforts that address current and future challenges.

Established in 1936, the Institute today has nearly 30,000 members worldwide, representing the entire spectrum of the land use and development disciplines. ULI relies heavily on the experience of its members. It is through member involvement and information resources that ULI has been able to set standards of excellence in development practice. The Institute has long been recognized as one of the world's most respected and widely quoted sources of objective information on urban planning, growth, and development.

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About ULI Advisory Services

The goal of ULI's Advisory Services Program is to bring the finest expertise in the real estate field to bear on complex land use planning and development projects, programs, and policies. Since 1947, this program has assembled well over 400 ULI-member teams to help sponsors find creative, practical solutions for issues such as downtown redevelopment, land management strategies, evaluation of development potential, growth management, community revitalization, brownfields redevelopment, military base reuse, provision of low-cost and affordable housing, and asset management strategies, among other matters. A wide variety of public, private, and nonprofit organizations have contracted for ULI's Advisory Services.

Each panel team is composed of highly qualified professionals who volunteer their time to ULI. They are chosen for their knowledge of the panel topic and screened to ensure their objectivity. ULI's interdisciplinary panel teams provide a holistic look at development problems. A respected ULI member who has previous panel experience chairs each panel.

The agenda for a five-day panel assignment is intensive. It includes an in-depth briefing day composed of a tour of the site and meetings with sponsor representatives; a day of hour-long interviews of typically 50 to 75 key community representatives; and two days of formulating recommendations. Long nights of discussion precede the panel's conclusions. On the final day on site, the panel makes an oral presentation of its findings and conclusions to the sponsor. A written report is prepared and published.

Because the sponsoring entities are responsible for significant preparation before the panel's visit, including sending extensive briefing materials to each member and arranging for the panel to meet with key local community members and stakeholders in the project under consideration, participants in ULI's five-day panel assignments are able to make accurate

assessments of a sponsor's issues and to provide recommendations in a compressed amount of time.

A major strength of the program is ULI's unique ability to draw on the knowledge and expertise of its members, including land developers and owners, public officials, academics, representatives of financial institutions, and others. In fulfillment of the mission of the Urban Land Institute, this Advisory Services panel report is intended to provide objective advice that will promote the responsible use of land to enhance the environment.

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Sereda, director, energy management and sustainable operations. Without their help and coordination, this panel would not have been possible.

Finally, the panel extends its thanks to the more than 65 individuals who participated in the panel process through interviews, receptions, and tours that allowed the panelists to better understand the challenges facing the borough and its many entities and organizations.

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Foreword: The Panel's Assignment

The University of Alberta, in conjunction with Alberta Environment and Alberta Energy, asked that an Urban Land Institute (ULI) Advisory Services panel convene to provide strategic advice regarding the development of its South Campus holding.

The University

Established in 1908, the University of Alberta enrolls about 36,000 students in more than 200 undergraduate programs and 170 graduate programs. The main campus consists of more than 90 buildings on 220 acres of land.

The University of Alberta's vision since its inception more than 100 years ago has been to be one of the world's great universities for the public good. In the words of its first president, Henry Marshall Tory, the University of Alberta is an institution directed toward the "uplifting of the whole people" in Alberta, across Canada, and around the world. This vision endures in the university's current vision document, Dare to Discover, and its academic plan, Dare to Deliver.

The University of Alberta is a board-governed public institution whose board members include representatives of the public, staff, faculty, and students, including representatives of the Students' Union and the Graduate Students' Association.

The Province of Alberta

Alberta is one of Canada's Prairie Provinces. It became a province on September 1, 1905. Alberta's total land area is 248,000 square miles; its total population is 3,632,483 (Statistics Canada). Located in western Canada, Alberta is bounded by the provinces of British Columbia to the west and Saskatchewan to the east, the Northwest Territories to the north, and the U.S. state of Montana to the south.



Edmonton is the northernmost city of more than 1 million in North America.

The City of Edmonton

Edmonton is the capital of the province of Alberta. With a metropolitan population of more than 1.1 million, it is the second-largest city in the province after Calgary.

In the Canada 2006 census, the city had a population of 730,372, and its census metropolitan area had a population of 1,034,945, making it the northernmost North American city with a metropolitan population over 1 million. The 2009 civic census showed a population of 782,439. Edmonton has one of the lowest population densities in North America, about 9.4 percent that of New York City (Statistics Canada).

Edmonton has a semi-arid continental climate with extreme seasonal temperatures—although the city has milder winters than either Regina or Winnipeg,



The South Campus of the University of Alberta contains a variety of uses, including athletic facilities, active agricultural research, and underused vacant land.

both located at a latitude farther south. It has warm summers and cold winters, with the average daily temperatures ranging from 10.9 °F in January to 63.5 °F in July. Annually, temperatures exceed 86 °F on an average of four to five days (but can occur often, any time from late May to early September) and fall below -4.0 °F on an average of 28 days. The highest temperature recorded in Edmonton was 100.9 °F on August 5, 1998. Some areas, however, such as the city of St. Albert and Sherwood Park, recorded temperatures of 99.9 °F on July 22, 2006. The coldest temperature ever recorded at city center was -41 °F on January 26, 1972.

Edmonton is the major economic center for northern and central Alberta and a major center for the oil and gas industry. In its autumn 2007 *Metropolitan Outlook*, the Conference Board of Canada forecast that Edmonton's gross domestic product for 2007 will be Can\$44.1 billion (2007 dollars), a 3.6 percent increase over 2006. Edmonton traditionally has been a hub for Albertan petrochemical industries, earning it the nickname "Oil Capital of Canada" in the 1940s. Supply and service industries drive the energy-extraction engine, while research develops new technologies and supports expanded value-added processing of Alberta's massive oil, gas, and oil sands reserves. The oil reserves are reported to be the second largest in the world, after Saudi Arabia.

Despite the apparent focus on oil and gas, Edmonton's economy is now the second-most diverse in Canada. Important industries include a strong technology sector anchored by major employers such as IBM, TELUS, Intuit Canada, Canadian Western Bank, BioWare, Matrikon, General Electric, and Stantec Inc. The associated biotech sector, with companies such as Afexa Life Sciences Inc. (formerly CV Technologies), has recently seen employment growth of 37 percent.

Much of the growth in technology sectors is because of Edmonton's reputation as one of Canada's premier research and education centers. Research initiatives

are anchored by educational institutions such as the University of Alberta as well as government initiatives underway at the Alberta Research Council and Edmonton Research Park. Recently, the National Institute for Nanotechnology was constructed on the University of Alberta campus.

In addition, Edmonton is the center for provincial government, which accounts for a large share of the daily employees in the city proper. In addition to being a regional financial center, it is a hub for both the Canadian National and Canadian Pacific railways and a regional center for health care services.

The Edmonton Transit System is the city's main public transit agency, operating the Edmonton Light Rail Transit (LRT) line as well as a large fleet of buses. Scheduled LRT service began on April 23, 1978, with five extensions of the single line completed since. The original Edmonton line is considered to be the first "modern" light-rail line in North America.

The Opportunity

The university's South Campus is located approximately one-half mile south of the main campus. The northern portion of this 660-acre campus is used primarily for athletic and sports activities and includes the university's football stadium and indoor tennis and curling facilities. The south portion of the South Campus is used primarily for agricultural research. The LRT station and bus transit station are operational on the northwest portion of the South Campus.

The opportunity in the current exercise is to plan and develop a truly sustainable campus for the university and create a model for the province. The university and the Alberta Departments of Environment and Energy sponsored the ULI Advisory Services panel to further that goal.

The Panel's Assignment

The university is preparing plans for further development of the South Campus as an academic center in addition to its current use as an agricultural research station and the location of several large sports and physical education and recreation facilities, some of which are shared with the city of Edmonton and organized city groups. All of the sponsors are interested in the South Campus becoming a leading example of sustainable institutional and community development that can be a model for other Alberta institutions and communities. In addition, the university seeks detailed advice on the appropriateness and sufficiency of the current planning activities.

In developing a model of sustainability for the South Campus, the university is looking for best practices, measures, and standards that are transferable to other communities and institutions in Alberta. The ULI panel has been asked to address the following questions:

- Outline the rationales for and against developing a sustainable South Campus community that should guide the university in its planning and implementation, including the triple-bottom-line and balanced-scorecard approaches. How would the University of Alberta and the university community benefit from a sustainable campus, and how would it address any risks that the university would face by moving away from conventional practices?
- Define what a world-leading sustainable campus would look like in the northern climatic region. Describe the infrastructure, integrated energy

system and building standards, technologies, and best practices that should be implemented.

- Will the current draft Concept Plan and the current work program lead to the model sustainable campus the university desires? What, if any, additional work is required?
- Are changes in design, construction, and operational practices required to ensure that sustainability is achieved and maintained for the life of the South Campus? Please describe them.
- The University of Alberta is proposing to host a World Expo in 2017. The legacy of the Expo for the university will be South Campus infrastructure and buildings. What other alternative development funding models (e.g., P3) are available and appropriate to achieve the development of a model sustainable campus?
- How can the South Campus be successfully integrated with and contribute to the vitality of the surrounding communities and activity areas without significantly affecting research and teaching activities?
- What metrics and benchmarks should the university use to measure sustainability of the South Campus? How should the metrics evolve over time?
- How can the South Campus energy system be sustainably integrated within Alberta's competitive electricity and natural gas markets and industry structure?

For a team of economists, planners, designers, consultants, and developers, the level of challenge is increased by a temporal consideration. Panelists

The ULI panel process included a detailed tour of the University of Alberta's campuses.



often think of planning and executing projects in terms of years or even multiple decades. Applying the panelists' skills and experience to a plan and an environment that will span generations, if not into perpetuity, is a far more challenging task.

At the same time, the clarity of the vision of the university—daring to discover—and its commitment to execution—daring to deliver—coupled with the panel's systematic way of looking at the challenge before it, have yielded a responsive set of findings and recommendations and, the panel believes, a roadmap for the way forward.

Summary of the Panel's Observations

The panel had the following observations that acted to frame their recommendations and conclusions in this report:

- The Edmonton market and economy present the university with an array of economic drivers that can and will significantly shape and facilitate execution of the university's long-range plans.
- The combination of the university's agricultural and scientific research heritage, coupled with its unique landholdings, facilitates the implementation of a wide variety of sustainability measures.
- Far more than just another Leadership in Energy and Environmental Design (LEED) building or an

energy-efficient building system, the university's culture of discovery, research, interdisciplinary academics, and partnering with government and industry provides the opportunity to take a global leadership role in creating significant sustainable measures—enhancing the entire University of Alberta campus environmentally, socially, and economically.

- The university's South Campus, West 240, and related holdings represent much more than just additional land for future university growth—both known and, at least today, somewhat immeasurable. A model of community, in the broadest sense of that word, is clearly within reach and, at the same time, is one that will emerge, evolve, and change over many decades and several generations to come.
- These great opportunities—benefiting from the market, advancing sustainability, growing the influence and leadership of the university as well as its physical presence—must come as the result of a plan: not just a diagram of land use, but a comprehensive assessment of what the university is, what it wants to be, and how it plans to get there. This is a long, thoughtful, detailed, collaborative, iterative process—again, the very characteristics of discovery and problem solving exhibited by the university every single day.

Dr. Dru Marshall (left) and panel chair Alex Rose address a public reception during the panel's visit in October 2009.



Market Overview

Understanding the socioeconomic trends that are affecting the study area can help planners and public officials identify the potential and pressure for future economic development and the need for specific land uses. ULI believes that successful urban planning and land use policy can best be described as public action that generates a desirable, widespread, and sustained private market

reaction. Therefore, Advisory Services panel reports typically have their foundation in market possibilities.

Edmonton Demographics

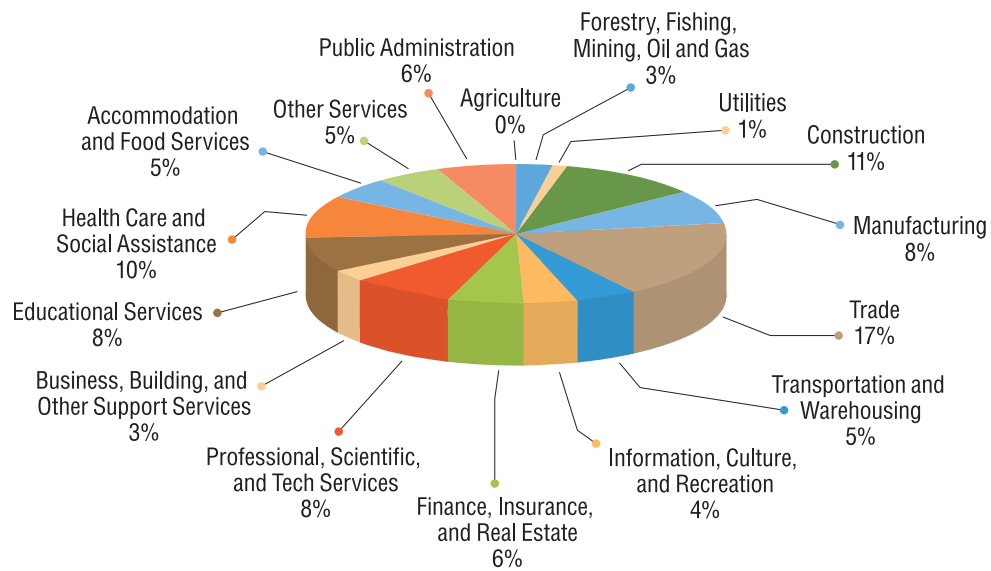
Edmonton enjoys a dynamic socioeconomic base that has been expanding over the last 22 years by almost 9,600 new jobs per year, and this growth rate accelerated to 13,000 new jobs annually during

Figure 1
Major Employers in the Edmonton Market Area

Name	Product/Service	Number of Employees
Alberta Government	Government	35,000
Capital Health Authority	Health Care	20,000
City of Edmonton	Government	9,000
University of Alberta	Education	8,000
Edmonton Public School District	Education	7,300
Katz Group	Pharmaceutical	4,430
Alberta Treasury Branches	Finance/Government	4,100
Caritas Health Group	Health	4,000
PCL Constructors	Construction	4,000
Churchill Corp.	Construction	3,500
Edmonton Catholic Public School District	Education	3,500
Northern Alberta Institute of Technology	Technology/Education	3,500
Grant Macewan College	Education	3,444
Epcor Utilities	Utilities	3,000
Telus Communications	Communications	3,000
	Total	115,774
	Average	7,718
Edmonton Market Area Total		614,367
Major Employers as a % of Market Area Total		18.8

Sources: Alberta Government and THK Associates, Inc.

Figure 2
Edmonton MSA Percent of Total Employment by Industry, 2009



the last decade. Employment sectors that have been growing dramatically include trade; construction; and professional, scientific, and technological services (see figures 1 and 2).

The Edmonton Metropolitan Statistical Area (MSA) currently includes 1,093,700 people living in 457,000 households (see figures 3 and 4). This area is projected to grow by 16,000 people per year over the next decade, compared with its historical growth over the last two decades of 12,600 people per year. The majority of this population growth will result from immigration, which will be fueled by annual employment growth of 12,500 new jobs per year.

This projected employment and population growth will create a dynamic market for expansion of the University of Alberta as well as for the residential and commercial real estate markets in the Edmonton MSA. Annual residential demand should average

10,225 new units with 45 percent of this total being constructed in southwest metropolitan Edmonton, which makes up the environs of the South Campus site. Annual demand in this submarket will be 1,400 rental apartments along with 845 condominiums and townhomes and 2,400 fully detached single-family units. The average sales price of a single-family home in Edmonton is currently Can\$372,000, requiring a family income of Can\$120,000; condominiums sell for an average price of Can\$245,000, requiring an income of Can\$80,000. Currently, the median family income is estimated at Can\$82,500; university salaries are at Can\$75,500 for assistant professors, Can\$94,500 for associate professors, and Can\$115,600 for full professors. With Canada's lack of a national or provincial affordable housing program, faculty and staff have difficulty qualifying to buy a home. Therefore, these housing needs should be a priority at the South Campus.

Figure 3
Projected Population and Households in the Six-County Edmonton Market Area, 2010–2020

Year	Total Employment	Employment Participation Ratio	January 1 Population	Annual Population Change	Population per Household	Households	Annual Household Change
1991	430,700	0.5042	854,289	—	2.7375	312,070	—
2001	507,650	0.5280	961,475	10,720	2.5852	371,908	5,980
2010*	618,141	0.5652	1,093,658	14,690	2.3939	456,853	9,440
2020*	743,435	0.5935	1,252,590	158,932	2.2654	552,910	96,057

Sources: Alberta Government and THK Associates, Inc.
Note: — = Not available. * Projected.

The commercial real estate markets in the Edmonton area are the strongest in North America today and are projected to expand over the next 25 years. The retail sector, which includes approximately 28 million square feet, of which only 2.9 percent is vacant, will grow annually by 750,000 square feet with approximately one-third of such growth occurring in the southwest regional environs of South Campus. The office market, which includes 24 million square feet, of which 6.9 percent is vacant, will grow by 975,000 square feet per year with 150,000 square feet in the environs of South Campus. The industrial market in the Edmonton MSA includes 101 million square feet, of which 3.2 percent is vacant. It will have annual growth projected at 3.1 million square feet per year, but only 160,000 square feet of growth in industrial and research and development space is likely to occur in the environs of South Campus. Greater Edmonton has 12,325 hotel rooms and these are projected to grow by 300 rooms per year with two-thirds of the demand projected in the University of Alberta environs. The

rental apartment market supports these uses with a current vacancy factor of less than 3 percent.

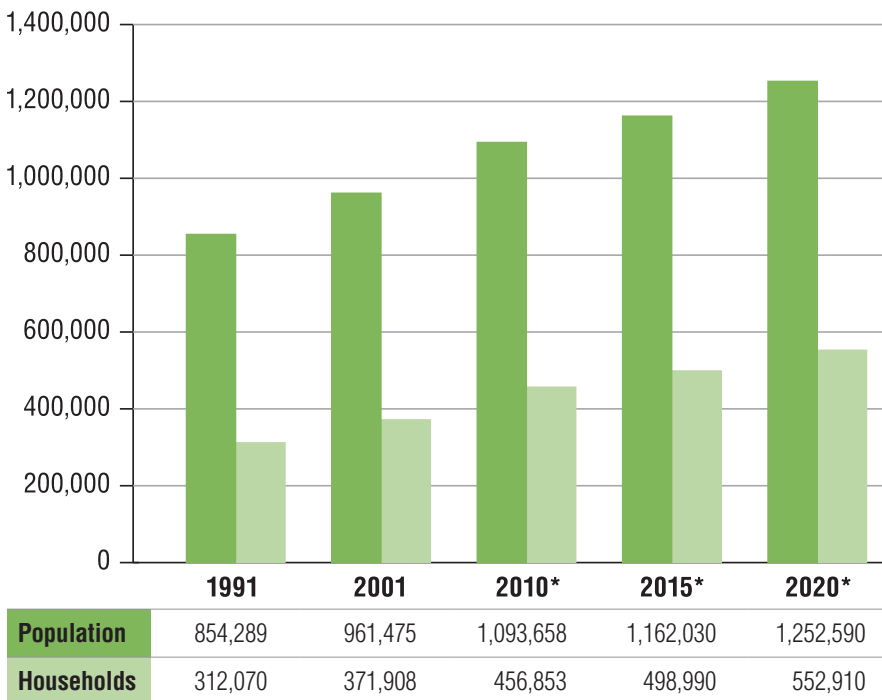
In summary, the South Campus environs are an extremely dynamic submarket with strong demands for a variety of intensive and valuable land uses.

South Campus Submarket

Using this information as a backdrop, this report now discusses projected land use potentials at the approximately 640-acre South Campus, which currently has approximately 580 acres in agricultural or other land uses.

Today, 5.9 percent of Edmonton’s MSA population is within the age band from 18 to 22 years of age. This population represents prime prospects for undergraduate participation at the University of Alberta. Annually, this age sector is projected to grow by 660 people per year, but by 2020, this age band will represent only 5.6 percent of the total population

Figure 4
Projected Population and Households in the Six-County Market Area



Sources: Alberta Government and THK Associates, Inc.

* Projected

base. Another approximately 9 percent is in the prime age group for potential graduate school attendance of 22–28 years.

The current undergraduate fall enrollment of approximately 29,000 students is projected to grow over the next decade to 33,200 students, or by 440 students per year, and this increase should result in the total enrollment, including graduate students, expanding from 37,750 to 43,500 students (excluding extension students). The projected annual growth at the University of Alberta should average 575 students. Approximately 96 percent of this growth is likely to occur on the combined North and South campuses, resulting in total projected student growth of 550 per year. By 2020, 41,750 students will attend classes at the combined North and South campuses of the University of Alberta. These projections assume no revised recruitment or pricing strategies will occur.

Exclusive of housing, the North Campus today includes about 11.7 million square feet of space, or 325 square feet per student. Using this ratio, by 2020 a total of 13.6 million square feet will be in demand, which represents an increase over the next decade of 1.9 million square feet. The panel estimates that approximately 75 percent of this increase could be accommodated on the South Campus. At the North Campus, which includes approximately 220 acres, the building-to-land coverage factor is very intense at almost 1.25, but the panel estimates that a more appropriate building-to-land coverage factor at the South Campus would be 0.5. This factor would mean 64 acres are needed for South Campus expansion by 2020 and 160 acres for expansion over the next 25 years. The *Alberta Access Planning Framework Report*, which was completed in June 2009 by Alberta Province, estimates under its aggressive projections for the University of Alberta full-load-equivalent student growth at approximately 82 percent of these estimates. The University of Alberta's estimates are consistent with the panel's projections. Therefore, the panel's estimated land requirements are generously conservative.

Student Housing, Market-Rate Housing, and Commercial Uses in the South Campus Submarket

Currently, approximately 12 percent of students are housed on campus. University of Alberta officials have plans that would call for as many as 25 percent of students to be housed on campus, which more closely relates to peer-group standards. With 41,750 total students projected for 2020, student housing requirements would equal 6,260 beds if 15 percent are housed on campus, or 10,440 beds with 25 percent housed on campus. With an average mid-rise residential density of 320 beds per acre, between 20 and 33 acres will be needed to accommodate student housing on the South Campus by 2020 and 50 to 85 acres by 2035.

Student housing and academic uses projected for the year 2035 suggest that 245 acres of the subject approximately 580 acres will be needed for urban-related University of Alberta land uses at the South Campus. Because of the strategic infill location of the South Campus and the tremendous market value associated with this real estate—estimated by some local real estate investors at improved or semi-improved values of Can\$200,000 to Can\$1 million per acre—consideration of public/private partnerships may be desirable for use and/or modernization of a portion of the remaining acreage.

The panel's research indicates that annually the South Campus environs will have a market for approximately 235,000 square feet of retail space, 346,500 square feet of research and development (R&D) or flex space, and 200 hotel rooms along with 2,245 medium-density residential units. With superior planning, pricing, and marketing, as much as 5 percent of these markets could be accommodated at the South Campus over the next 25 years, and 150,000 square feet of retail space

should be considered for 15 acres at three different locations along with 30 acres for approximately 325,000 square feet of office/flex and R&D space, 10 acres for 500 hotel rooms, and 2,600 residential units on 90 acres. In total, as much as 145 acres could be considered for some type of public/private partnership over the next 25 years at the South Campus. All of these market-driven land uses could work in close conjunction with the University of Alberta both complementary and supplementary to its academic and research functions. The residential components, if appropriately priced and planned, could offer a wide range of university-sponsored homes for faculty, staff, and retired officials. Figure 5 summarizes these projected land uses.

Figure 5
South Campus Land Uses for 2035

Land Use	Square Feet or Units	Acres
Institutional	3,484,000 sq. ft.	160
Student Housing	16,000–27,200 beds	50–85
Retail	150,000 sq. ft.	15
Office/R&D	325,000 sq. ft.	30
Hotel	500 rooms	10
Residential	2,600 units	90

The panel believes that the Edmonton area and the South Campus submarket are a dynamic, vibrant, and growing concern. Unlike many other places in Canada and North America, the South Campus area will not have to struggle to attract favorable land uses. What the university can do is ensure that its sustainability and growth goals for the South Campus are aligned with this strong market position.

Sustainability

T rue sustainability starts with a vision of what the campus will look like and the goals, policies, and action strategies to achieve that vision. The panel recommends that the university strive to be in the top 20 “green” universities by 2020. This means healthy five-minute living on a deep-green, winter-friendly, memorable South Campus. Although the university has begun to incorporate many of the needed sustainability approaches into its master plan for the South Campus, the panel offers a number of observations and suggestions.

Background: The Regional Challenge

Each person in Canada is responsible for roughly 23.1 tons (Natural Resources Canada, 2005 data) of carbon dioxide-equivalent (CO₂e) emissions each year; the average Albertan is responsible for triple that amount, or 72.9 tons each year (Environment Canada, 2006). This rate of greenhouse gas (GHG) emission ranks Canadians as the ninth-worst polluters in the world on a per capita basis (World Resources Institute, 2000). Canada signed the Kyoto Protocol agreeing to reduce GHG emissions by 6 percent below 1990 levels by 2020. As of 2005, Canada’s emissions had risen 26 percent over 1990 levels.

The Oil Sands

As of 2006 at the Athabasca oil sands near Edmonton, production of one barrel of oil released almost 170 pounds of GHG. According to Environment Canada (2008), almost 40 percent of Canada’s national increase in CO₂e emissions from 1990 to 2008 came from oil sands industries. The oil sands have been the target of intense criticism by environmental groups and the international community, with long-term negative implications for the region’s public image.

The Grid

Alberta’s electricity grid is predominantly coal fired, contributes one-quarter of the province’s CO₂e

emissions (Pembina Institute, 2009), and is the dirtiest in Canada with a carbon intensity per megawatt-hour that is 155 times higher than Quebec’s.

The Cattle Industry

Agriculture, driven largely by beef production, contributes 22 percent of Canada’s total CO₂e emissions. Most of the 36 percent growth in emissions from animal production over the 1990–2006 period occurred in Alberta (Environment Canada, 2008).

Turning Weaknesses into Global Leadership Opportunity

In a global context, Alberta is broadly acknowledged as a climate change underachiever. Many students and the international community will evaluate the University of Alberta’s efforts to go green at least partly against this regional backdrop of lack of climate change action—and will do so perhaps more sharply than for other universities. Simply put, the university is not playing on a level playing field.

Incremental green improvements at the university could easily be construed as half measures and complacency in the long term. More generally, campuses across the continent that purport to be green will be increasingly scrutinized for “greenwashing” over the next few decades as the effects of climate change become more acute. Nevertheless, Alberta badly needs a carbon-neutral demonstration project and a public rallying point for forward-thinking research and experimentation—particularly in the fields of renewable energy and sustainable food production.

The panel believes that with the unique opportunity of the South Campus, the University of Alberta can establish an international reputation for sustainability, *but bold measures will be needed*. To differentiate itself from the many “basic green” strategies the university’s competitors have undertaken, the panel

recommends that the university embrace a long-range mission of “deep green” sustainability:

If everyone on Earth lived like the community at the University of Alberta’s South Campus, we’d arrest climate change and live sustainably within the limited resources of our one planet.

Creating a Deep-Green Campus and Educational Program in a Hydrocarbon Region

Following through on this ambitious mission will create an enduring legacy that overshadows other green developments well into the future and secure the University of Alberta’s visionary global leadership. A deep-green campus that targets true sustainability will establish the University of Alberta as one of the most influential green universities in North America and South Campus as a high-profile model for the nation.

Goals of a Deep-Green Sustainable Campus

A deeply sustainable campus seeks to achieve the following goals:

- Set performance-based metrics and report on progress against them in a transparent manner.
- Positively contribute to its environment, region, and surrounding communities.
- Strive for carbon neutrality at a minimum and carbon absorption at best.
- Create memorable and enduring places to live, work, and study.
- Minimize the use of motor vehicles and maximize opportunities for walking, cycling, and other forms of nonmotorized transportation.
- Maximize opportunities for student, faculty, and neighborhood interaction.
- Openly share its lessons learned so that others can build on its success.

Goals for the South Campus

To foster environmental sustainability on South Campus, the university should pursue the following goals and objectives:

- Understand and connect to the bioregional context.
- Understand the land, and leverage the site’s natural systems and agriculture heritage.
- Refine the master plan to be more sustainable from the start.
- Maximize the use of public transportation, and reduce automobile dependency while improving mobility and access.
- Develop an integrated approach to infrastructure design, development, and management.
- Implement an integrated green building system.

Triple Bottom Line

Universities committed to sustainability create a decision-making process that enables them to monitor their activities continuously against sustainable goals and objectives. Many universities rely on the concept of a triple bottom line of economic, environmental, and social sustainability to evaluate a campus’s conformity with sustainability goals. Sustainable campuses strive to make decisions that foster a triple bottom line.

Objectives to Guide Development at the South Campus

The panel recommends that, in order to achieve the triple-bottom-line success, the University of Alberta use the following objectives to guide the South Campus development in a balanced, sustainable manner:

- Build the campus around collaborative learning and foster a culture of lifelong learning.
- Institute capacity for continuous, progressive improvement.
- Establish social, natural, and physical connections as a core principle of the campus.

- Construct a winter-friendly campus that takes a positive approach to Alberta's winter weather.
- Move toward carbon neutrality through progressive planning, construction, and efficient use of resources.
- Continuously increase the health of the campus human and natural system.
- Embrace the South Campus's legacy of agriculture research to foster public education about the role of food in achieving global sustainability.

Economic Sustainability

Economically sustainable activities contribute to—rather than compromise—the social and environmental dimensions of sustainability. The university has many opportunities to generate financial return from its R&D activities. Executed correctly, many programs for sustainable operations and construction can cost less than their conventional counterparts: less electricity is purchased; less potable water is used; less waste is generated. Sometimes these reduced operating costs come at the price of increased capital outlay: the North Campus's district energy system is one such example. Therefore, the university needs to explore all of its opportunities for reducing costs and sharing risks, such as the following:

- Public/private partnerships;
- Life-cycle analysis; and
- Aligning with key regional employers to identify a workforce development and job training week.

Social Sustainability

Socially sustainable campuses provide opportunities for student, faculty, employees, and neighbors to live, work, study, and enjoy recreation, all while taking pride in and actively participating in the life of the university. The successful campus plan will provide the foundation for a healthier, happier, and more memorable campus life. A primary tool in achieving this goal will be undertaking a Performance-Based Campus Lifestyle Plan that establishes goals and objectives with measurable metrics to evaluate performance. Creating such a plan is no small task and will require completing a 360-degree audit on quality of campus life, establishing benchmark indicators for

health and happiness, evaluating recreational needs and resources, and understanding how healthy diets affect university lifestyles.

Foster Stronger Community Connection and Collaboration

The following approaches should be considered as the university attempts to encourage a stronger, better-connected community.

- Establish a pedestrian- and bicycle-trail network throughout the South Campus with connections to the river, the LRT stations, and surrounding neighborhoods.
- Connect with the capital region and the surrounding neighborhoods.
- Create community gardens. The gardens should feature raised beds with high-quality soil for vegetable cultivation. The university should rent the garden plots to neighbors for a nominal fee on a first-come, first-served basis.
- Plan and build an outdoor ice rink that students, faculty, and neighbors can use. The ice rink could be a focal point for winter activities and a social gathering place.
- Create a Campus Main Street that includes a bookstore, coffee shop, and other facilities that will serve the needs of students, faculty, employees, and members of the surrounding communities alike.
- Establish a sustainability center for the university. The center can host forums, exhibits, guest lecturers, and tours. The center's mission would be to advance sustainable development research and education with a focus on sustainability in Nordic environments and on the role of food and its effect on global sustainability. Focus a specific curriculum on renewable energy education.

Celebrate Agricultural and Aboriginal Heritage

Enhance a sense of local identity, history, and civic pride, with regular events, festivals, and farmers markets hosted on site. Local artists will be showcased, with opportunities for kids to get involved in creating public art. Recommended approaches include the following:

- Emphasizing the university's agricultural legacy:
 - Use agricultural themes in public art and architecture.
 - Preserve the heritage barn and create a museum of the site's agriculture history and legacy.
 - Share the wealth of rich soil conditions on the site with the local community, providing access to a third of all open space for organic community vegetable gardens for use by students and neighbors.
 - Maintain an interdisciplinary agricultural research facility on South Campus with a focus on sustainable food production.
- Honoring the region's aboriginal heritage:
 - Provide housing, gathering spaces, and landmarks; interpretive signage; and public art that celebrates aboriginal culture and history throughout the entire site.
 - Consider naming buildings, streets, and landmarks after aboriginal and agricultural motifs.

Promote Equity, Diversity, and Affordability

Create new jobs (including green-collar jobs) close to home, daycare, and shopping, with all of those jobs meeting standards for fair wages and conditions; provide affordable homes to help meet Edmonton's needs; and ensure that stores have a selection of fair-trade goods, giving poor producers in developing countries a fair price for their hard work. A local-first loyalty program will encourage consumers to shop locally, boosting the local economy. Recommended approaches include

- Living wage;
- Buying local;
- Fair trade;
- Access for the disabled;
- Affordable housing; and
- Office of sustainability reporting to the university president.

Emphasize university responsibility to have faculty study diminishing the carbon and toxic impact of food supply.

Environmental Sustainability

Environmentally sustainable communities strive to integrate natural and human systems to optimize long-term community health and well-being. Universities accomplish this goal by using various techniques that include natural infrastructure, green building systems, progressive planning, community organization, and high mobility. The university can apply these techniques to shape land use, campus design, horizontal and vertical construction, and long-term operations and programming. The

Case Study: Dockside Green

Dockside Green, widely recognized as Canada's greenest neighborhood to date, has earned high praise for its engagement with aboriginal groups who were the original historic users of the Dockside Green site. A preliminary meeting with Chief Andy Thomas from the Esquimalt Nation and Chief Robert Sam from the Songhees Nation resulted in a collaboration to "heal" the contaminated site. A few months later, the project had a blessing ceremony with eight chiefs and their families, and the developer pledged to be ecologically responsible on the land. In October 2006, the developers and the Esquimalt and Songhees First Nations signed a memorandum of understanding to create a framework for cooperation and communication. As part of their mandate for sustainability, the Windmill Development Group Ltd. and Vancity Enterprises Ltd. have committed to local job creation with particular support for First Nations job-site training. The program has been so successful and has generated so much excitement that that Construction Association wants to implement it as a regional program. For more details on the strategy and process, please consult the memorandum of understanding: http://www.victoria.ca/cityhall/pdfs/currentprojects_dockside_frstnt_mou.pdf.

panel recommends that the university consider the techniques described in the following subsections.

Emphasize Healthy Winter Living

Create an exceptional and life-changing university experience throughout the winter months.

Recommended approaches include the following:

- Healthy, active lifestyles should focus on friendlier, safer communities with convenient all-season fitness facilities, where fresh, healthy diets are the norm. The overarching design approach to physical development should incorporate the latest happiness and wellness research.
- Alberta's unique climate creates both benefits and challenges. The South Campus must embrace the winter season with a positive approach that benefits students, faculty, and staff and increases the university's competitiveness in the global educational marketplace. To help overcome the negative aspects of prolonged winter weather, such as a visually monotonous environment dominated by white and gray, increased heating and energy consumption, and seasonal affective disorder or psychological depression related to lack of sunlight, the South Campus should develop an explicit set of winter design guidelines, such as the following:
 - Use solar radiation in the orientation of buildings and outdoor spaces, and provide a southern exposure to maximize the penetration of heat and sunlight.
 - Use buildings to protect outdoor spaces from prevailing winds. Design building surfaces to help reduce wind speed.
 - Use bright colors and lighting treatments when designing buildings and landscape treatments to offset the darkness and monotony of the winter season.
 - Create active winter boulevards, like the Rideau Canal in Ottawa, that allow winter travel on skates or cross-country skis.
 - Promote a dense, compact development pattern that allows for five- or ten- minute living.
 - Develop a pedestrian "underground" that with District Energy tunnels connect facilities to transit.

- "Five-minute living" is clustered around a new village square, athletic complex, and daily farmers market. The community is planned to ensure every student and resident is no more than a seven-minute walk to the cinema, groceries, restaurants, offices, daycare, and shops offering local, sustainable, and fair-trade products and services. Streets are narrow; sidewalks are wide. Children can walk to school and safely play in the streets.
- Evolve the concept plan to emphasize planning with a long-term view. Over the coming decade, green building will become the new "business as usual" in North America. LEED Platinum buildings will be commonplace. To create enduring market differentiation, the University of Alberta should foster transit-oriented development and plan for green buildings and infrastructure. Each action should include a detailed cost-avoidance benefits analysis and a firm statement of increased upfront costs of integrated design.
- Provide a progressive framework for developing South Campus as a model sustainable master-planned campus, including the following:
 - Rethink or relocate the athletic facilities at the LRT station to create a model transit-oriented campus. Facilities such as Foote Field and the Saville Centre may need to be rethought or relocated to provide opportunities for higher-density uses adjacent to the LRT station.
 - Ensure that the plan fosters a mix of uses including student housing, research and classroom space, dining facilities, and activity nodes.

Create a Large Urban Park and Garden for Edmonton

The university's large landholdings provide an opportunity to create a large urban park and food-producing garden that can create value by maximizing density and views along the park. Dedicate approximately 25 percent of open space to this use.

Sustainable campuses connect the ecosystem of their site to the ecosystem of their watershed. In the case of South Campus, the university should build regional connections with the city of Alberta, the surrounding neighborhoods, Whitemud Creek, and the North Saskatchewan River.

Reduce Auto Dependency While Improving Access and Mobility

A sustainable campus makes it easy for students, faculty, and staff to access the campus without relying on private automobiles. The reduction of vehicle miles traveled is a key measure for achieving environmental sustainability. South Campus should minimize parking and feature a multimodal system. The system should include the LRT, a campus shuttle system, bicycle trails, and pedestrian pathways. Specific recommendations can be found in the “Encourage Sustainable Transport” section below.

Implement an Aggressive Green Building and Construction Waste Program on South Campus

Green building has rapidly become the most accepted tool for building structures that are more resource efficient, healthier to occupy, and less damaging to their site and region. Key elements of a green building program address where the building is sited and its orientation, how the site is prepared, how the building is constructed, what materials are used, and how the building is operated. The University of Alberta should take the following steps to implement a systematic green building program:

- Complete a projection of campus energy use, water use, and waste operation over South Campus’s buildout using conventional building techniques.
- Establish aggressive targets for reduction from this potential.
- Construct all South Campus buildings to a recognized national standard (LEED, LEED ND, Living Building Challenge, One Planet Communities), ideally one that is performance oriented. Anticipate a 2 to 5 percent cost premium over conventional methods.
- Explore energy-efficient ways to bring warmth, light, and color to a dark winter environment.

Build on the Success of the North Campus District Energy System

The district energy system at the North Campus has been very successful in producing energy for the university at significantly discounted cost and with 30 percent less CO₂e emissions than grid power. The panel recommends that the considerable

operational experience of the campus utility team be leveraged in creating a next-generation district energy system at South Campus that would phase into carbon-neutrality by 2017. The panel report suggests that South Campus be built out at a rate of 460,000 square feet per year. The panel understands that one and one-half years of buildout at this rate would create the immediate financial justification to simultaneously develop a South Campus central plant and infrastructure.

A carbon-neutral central plant at South Campus affords unique opportunities for learning and should be designed not just for frequent tours and visits but also as a renewable-energy learning laboratory. The panel recommends that the sustainable energy center be constructed with signature architecture in a visible location (the panel’s plan has recommended siting in a farmer’s field) and be positioned as a flagship architectural feature for the university in its marketing and promotion. In pursuit of this goal, the panel recommends that the university

- Study opportunities for capture of waste heat at South Campus, such as from a sewer main;
- Study opportunities for diversifying energy production and distribution using lower-temperature thermal distribution;
- Produce an in-depth regional inventory of potential carbon-neutral waste feedstocks for the system; and
- Determine potential for waste biomass from wood, answering the following questions:
 - How much wood waste is generated in the region?
 - What is happening to the wood waste that is generated now?
 - What is the availability of this wood waste for other uses?
 - Can a supply of wood waste be guaranteed with long-term contracts?

A rough estimate of wood waste can be ascertained by applying the U.S. or Canadian national average of wood waste as a percentage of municipal solid waste (wood waste is 5.3 percent of all trash) to the annual tonnages of municipal solid waste from the capital

region. Such an estimate would be conservative because it does not include wood waste generated from the tree and landscape industry, or land clearing from the construction industry.

Use Waste Biomass from Agricultural Byproducts

Agricultural byproducts offer another, and particularly appropriate, potential source of energy, given that the South Campus is the location of agricultural research. Questions to be answered are

- How much biosolids and what type of biosolids are produced in the region?
- What is happening to the biosolids that are produced now?
- What is the availability of these biosolids for other uses?
- Can the supply of wood waste be guaranteed through long-term contract?

The panel understands that a shift from natural gas to carbon-neutral feedstocks will create a high volume of truck visits to the central plant, and circulation planning should account for this traffic. Given the intrinsic carbon footprint associated with these truck visits, the panel recommends that the feedstock study attempt to locate a feedstock supply that is as close to South Campus as possible. The plant may require

Case Study: District Energy St. Paul

District Energy St. Paul currently provides heating to 80 percent of St. Paul, Minnesota's central business district and adjacent urban areas. The system uses a 65-megawatt-thermal municipal wood waste combined heat and power plant with an electric capacity of 33 megawatts. The fuel stock for this plant is approximately 300,000 tons of waste wood each year that would otherwise go to landfill, which is collected and brought to the site by municipal vehicles and residents, and is chipped on site. Waste wood is considered a carbon-neutral fuel stock.

Source: <http://www.districtenergy.com/>

additional space on site for processes such as wood chipping or treatment of biosolids. The panel also recommends to its sponsors, Alberta Energy and Alberta Environment, that special legislative and financial support be given to the campus utility in establishing a district energy franchise in the vicinity of South Campus to pilot a large-scale, carbon-neutral district energy system that would heat, cool, and power university facilities, market housing, nearby provincial facilities, and the Expo 2017 bid.

Provide Sustainability Education

Sustainability education develops skills, knowledge, and values that promote behavior in support of a sustainable environment. The university should develop interdisciplinary classes, informal learning opportunities, and professional development activities that support university sustainability activities. All of the relevant schools and departments, including engineering and agriculture, life, and environmental sciences, should be involved.

Develop a Performance-Based Sustainability Plan

A need exists for good baselines to ensure that the sustainability plan is efficient and appropriate. To create this baseline, the panel recommends a 360-degree campus carbon-footprint audit focusing on buildings and utilities (operations and construction), transportation, food, and waste. The panel also recommends that the university set 2030 aspirational performance targets. Based on the latest science from the Intergovernmental Panel on Climate Change, by 2050 global emissions need to be reduced by 50 percent of 1990 levels. Given the predicted increase in population, a fair share of carbon dioxide emissions would be in the region of one ton per capita by 2050. To provide an exemplar model well ahead of the 2050 deadline, South Campus should aim to realize a target of one ton of carbon dioxide per resident by 2030. The panel recommends that the university measure and publish performance against sustainability targets annually.

Build Zero-Carbon Buildings

Reduce building emissions by 100 percent. Build some of the most energy-efficient buildings in Canada, beating the Model National Energy Code by 50 percent. Heat, cool, and power them with 100 percent renewable energy provided by a state-of-



the-art, carbon-neutral district energy system that builds upon the extraordinary success of the North Campus district energy utility. The panel recommends approaches that include demand reduction, capturing waste energy, and a zero-carbon energy district (waste biomass and biosolids).

Encourage Sustainable Transport

University transportation systems provide services to a specific group (students) within a relatively compact location (campus). As such, they are one of the few relatively nimble components of a deep-green campus initiative that can be quickly changed and produce immediate, short-term results. For example, a campus with a large bus fleet that converts to natural gas can show a noticeable reduction in nitrous oxide (a factor in ozone) and particle emissions. Likewise, right-sizing buses (15- to 20-passenger models as opposed to 50-passenger models) for less-traveled routes can show a marked energy savings. The panel believes that the following transportation-oriented issues need to be explored in the context of the larger greening of the campus:

- Explore leveraging the LRT, including locating academic and residential buildings immediately adjacent to the LRT station at South Campus.
- Prepare a bicycle and pedestrian plan that continues to improve connections to the larger city system.
- Prepare an initiative on improving pedestrian and bicycle access between the Main Campus and the South Campus.
- Prepare and implement a car-sharing program for students and faculty. Implement a pilot student bicycle-sharing program and a faculty car-sharing program.
- Research and modify parking policies that reduce vehicles miles traveled, coordinate with transportation management initiatives, efficiently use existing structures, and minimize new surface parking.

- Replace existing fleets with alternative-fuel or hybrid shuttles.
- Place a priority on the careful and thoughtful design of streets, sidewalks, and public spaces to make pedestrian activity a functional and pleasant experience.
- Reduce campus road widths and explore use of permeable paving that will succeed in a harsh winter environment.

Incorporate Sustainable Water

The panel recommends that the deep-green campus initiative include specific actions that minimize the use of water and appropriately manage stormwater. Water sustainability at the university should involve comprehensive integration of adequate and appropriate water supplies for the university's education and research mission balanced with the hydrologic environment and the health of the ecological systems dependent on it. The panel suggests using the goals of low-impact design for new development. These goals include conserving existing hydrology, minimizing impervious surfaces, maintaining natural water flow, preventing pollution, and creating a public education program. The panel suggests that the university take the following steps:

- Incorporate aggressive demand-reduction goals into all facility planning.
- Use native landscaping.
- Incorporate green roofs into new construction (to the extent possible in Edmonton's climate).
- Explore using pervious concrete and asphalt where technology proves practical.
- Incorporate rain gardens into landscape design.
- Incorporate interior cisterns for water and snowmelt collection.
- Build water-quality swales to ensure cleaner stormwater runoff.

Bus and LRT access is a central organizing feature of the northern portion of the South Campus. The potential for additional uses in the LRT station area is abundant and appropriate.

- Incorporate graywater recycling into all new development.

For new buildings, the university should ensure that aggressive water-efficiency goals are met and that each component, faculty, office, or division of the university is aware of these goals before embarking upon the fundraising and planning necessary to build new structures.

Set a Zero-Waste Goal

The university should move toward an ultimate goal of zero waste. Zero waste is a philosophy that encourages the redesign of resource life cycles so that all products are reused. Any trash sent to landfills is minimal. The process recommended is one similar to the way resources are reused in nature. Recommended approaches include reducing consumption, reusing and reclaiming, recycling and composting, and producing energy from waste.

Switch to Sustainable Food

Despite all the discussion of the causes and cures for global warming, little attention has been given to the two fundamental human activities of farming and eating. These two activities are responsible for more GHG emissions than all the world's cars, trucks, trains, planes, and ships combined. By 1992, the food supply system was responsible for 42 percent of Canada's ecological footprint, compared to less than 10 percent shortly after World War II (International Development Research Centre). The average North American meal is estimated to travel 1,250 to 1,850 miles from farm to fork. Consequently, over 20 percent of fossil fuels consumed in the United States are used to transport food. The Food and Agriculture Organization of the United Nations estimates that when the methane released by cattle-raising is taken into account, the planet's 1.5 billion cattle are "responsible for 18 percent of greenhouse gases, more than cars, planes and all other forms of transport put together," and that this is projected to double by 2050. Most of the 36 percent growth in Canadian emissions from animal production from 1990 to 2006 occurred in Alberta (Environment Canada, 2008). The food component of the deep-green sustainable campus must begin with research on two critical factors:

understanding the university's food-carbon footprint, and finding and contracting with sources of lower-carbon food for each season.

Healthy living is the cornerstone of a sustainable lifestyle and the deep-green approach to the university. South Campus diners will enjoy nourishing and delicious food that respects ecological health at every step of its path from the field to our tables. Recommended approaches include the following:

- Producing food on site;
- Operating a world-class farmers market 12 months a year;
- Contracting with sustainable sources for food services and on-site vendors, including building terms into food services contracts to procure foodstuffs from local and organic agricultural producers wherever economically viable;
- Educating diners and residents about the impact of food—for example, a University of Chicago study (2006) found that the standard North American diet produces 1.5 tons more of CO₂e emissions than a vegan diet; thus, reducing the consumption of meat, especially beef, on campus by 50 percent would create a huge net reduction in carbon emissions; and
- Creating a sustainable food research program in a sustainability center.

Leverage Nature, Conservation, and Outdoor Recreation

The Edmonton area has a high quotient for outdoor recreation. The proximity of the Whitemud Creek, the North Saskatchewan River, and other outdoor activity areas allows students and city residents ample opportunity to experience the outdoors and opportunities for hiking, camping, kayaking, crewing, birding, and picnicking, especially during warmer months. During winter months, cross-country skiing, skating, and snowshoeing activities are also possible. The university should undertake an inventory of available outdoor recreational activities desired by students and faculty and match it with available venues or locations for such activities.

Planning and Development Strategies

To implement the top 20 by 2020 approach outlined previously, the university will need to make a significant effort in planning, development, and design of the South Campus. The document entitled South Campus District Plans (as represented in Working Paper No. 2) provides much of the background and environmental analysis necessary to move in this direction. However, the university will need a better understanding of the South Campus within the context of the larger Edmonton real estate and economic development environs. Moreover, the university will need a better strategy to help integrate and incorporate the surrounding neighborhoods into the campus plan.

Fitting the South Campus into the Larger Physical, Social, and Economic World

An important part of the planning process is understanding how the South Campus fits into the larger context of the university, the city, and the province. The market analysis provided earlier in this report clearly shows an economic and land use connection to a larger region.

The Edmonton area, including the city, entities of the provincial government, and the university, acts as the focal point for the natural resources of the Front Range. Research, education, training, and regulation associated with the oil and timber industries are headquartered in Edmonton. The processing, refining, and distribution of these resources are also located in the greater Edmonton area. From there, these major resources are sent to the rest of Canada and abroad. As the gateway to these resources, the region acts as gatekeeper. This role of the province, city, and university is demonstrably linked to how the region is perceived and how desirable it will be to live, work, and learn in Edmonton. Likewise, Edmonton is a winter city and as such should consider all aspects

Case Studies: Successful Sustainable Campuses and Their Relationships with Surrounding Communities

Most large research universities and facilities in North America and around the world have ongoing and evolving engagement initiatives with their surrounding communities. Although they concentrate primarily on the appropriate land use and support infrastructure, some locations have made a special effort to combine academic research with economic development. Some have made considerable strides in fashioning what appears to be a seamless connection between academia and the corporate world. Following are some notable instances in this regard.

University Associates–NASA Ames partnership, Sunnyvale, California: This is a new prototype for an environmentally sustainable community that contributes to the economic vitality of the region while providing a unique collaborative environment in which to deliver innovative education and research.

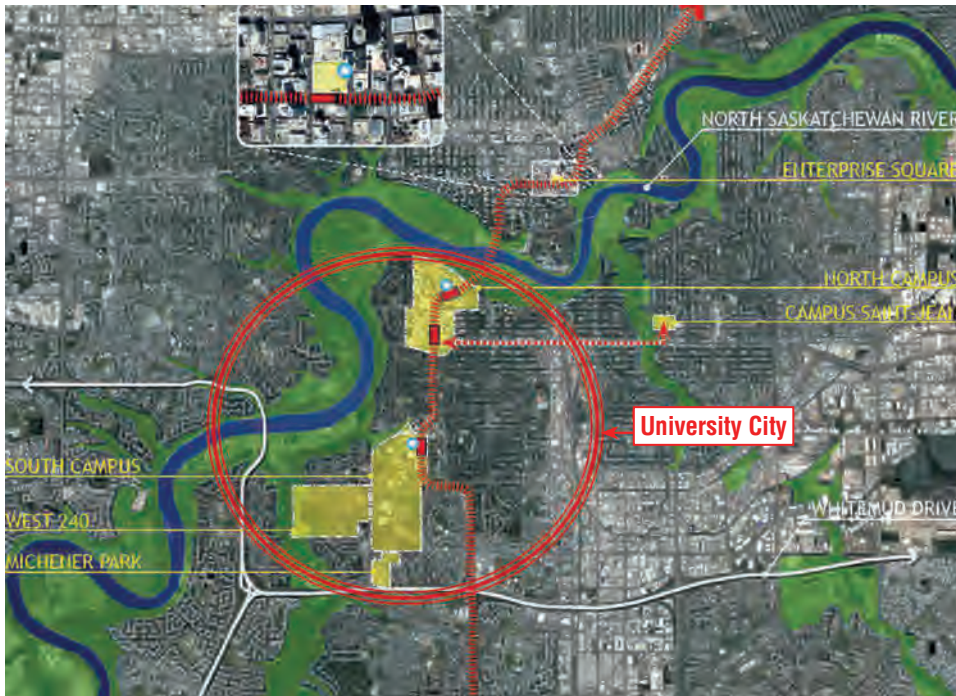
Rice University, Houston, Texas: New vertical mixed-use commercial and academics are located at the university's main campus.

Forrestal Park, Princeton, New Jersey: A collection of offices, labs, and research space in a parklike setting takes advantage of its unique location near Princeton University.

University of Virginia Research Park, Charlottesville, Virginia: This research park provides a collaborative venue for academic research and commercial technology. It supports a variety of businesses, from R&D to light manufacturing and knowledge-based commerce, as well as connections between the university and private enterprise.

Stanford Research Park, Palo Alto, California: The Stanford Research Park was created in 1951 in response to demand for industrial land near university resources and an emerging electronics industry tied closely to the university's school of engineering. Today, the park is home to more than 150 companies with about 23,000 employees in electronics, software, biotechnology, and other high-tech fields. R&D and supporting service companies occupy some 10 million square feet in more than 160 buildings spread over 700 acres.

Arizona State University Research Park, Tempe, Arizona: This vibrant corporate community with ties to a comprehensive research university is home to research development companies and corporate and regional headquarters.



A notional approach to linking the North Campus and the South Campus is the idea of establishing the University City.

of successful and sustainable winter city living in its planning and execution of new development.

Establishing a University City

The University of Alberta is a major economic anchor in Edmonton that is projected to continue to grow in the future. Edmonton's diversified economy has influenced the physical fabric of the city, resulting in distributed urbanized districts centered on different economic sectors, such as the Downtown, Northwest, and South East Industrial centers.

As the importance of the research and academic pursuits of the University of Alberta continues to propel growth and position Alberta on the global new economy and new technology stages, highlighting the importance of Edmonton as a university city becomes a major opportunity. The University of Alberta is an important city anchor on the banks of the Saskatchewan River, but it has outgrown its main campus and is now considering how to incorporate its property currently known as South Campus. The panel recommends that as a driving idea the entire sector of the city from Main Campus to Whitemud Expressway be positioned as "University City."

The concept of separate campuses perpetuates the divide and the second-citizen status of South Campus and West 240. The North and South campuses should be thought of as one campus: such a connection can be achieved by linking the Main Mall of North Campus to a New University Village via an enhanced 114th Street recast as University Parkway and taking advantage

of the city's LRT. This dual-anchored campus approach will establish the entire district as University City, thus helping erase the current inequity between the two campuses. The components of University City are the North Campus (Main Campus), the 114th Street spine and adjacent neighborhoods, the University Village (South Campus), the Agricultural Research Campus, and West 240.

North Campus (Main Campus)

In the early part of the 20th century, the university's grand plan was conceived as a formal campus pattern

of central mall flanked by academic quads. From the panel's perspective, the last 100 years of growth on campus have obfuscated the original plan to the point where very little usable or discernible open space exists.

The panel supports current efforts to reestablish a formal rectilinear campus/park plan with dormitories, academic centers, and administrative buildings focused on the quad that acts as the central organizing feature for the North Campus. The removal of the existing administration building at the south side of the quad opens up the axis and connects to the 114th Street corridor to create the spine that is the new central organizing feature of the University City within Edmonton.

The panel's recommendations for the North Campus are as follows:

- Reinforce the heritage structure of the campus while embarking on a campaign to rebuild residential and academic buildings that are scheduled to be rebuilt.
- Identify buildings and facilities that are poor performers physically, academically, or architecturally.
- Commission a landscape master plan that builds on the currently planned restoration of the main quad.
- Establish new academic and residential quads or focal points that provide a memorable experience for students, faculty, and administration.
- Designate new active and passive open space.

- Create new retail and service uses convenient to the student body.
- Design and build ad hoc recreational amenities.

Recast 114th Street as University Parkway and Adjacent Neighborhoods

Traversing just over one-half mile from the south side of Main Campus to the north side of University Village, 114 Street acts as the conduit connecting the Main Campus with the University Village with Edmonton’s LRT as well as bike paths and pedestrian walkways. This distance is walkable except on the very coldest days. The panel recommends working with the city of Edmonton and adjacent neighborhood stakeholders to enhance 114th Street to function as a parkway with streetscape, greenways, appropriate landscaping, street furniture, pedestrian facilities, wayfinding, and signage. It should have appropriate arrival points, nodes to enhance the relationships with the adjacent residential neighborhoods. Also, 114th Street should be the model in Edmonton for a “winter street” providing multimodal access during winter months, such as a ski trail, and paying specific attention to snow clearing for pedestrians and cyclists.

South Campus

South Campus landholdings of the University of Alberta and provincial land (Alberta Infrastructure) at the intersection of 114th Street and Belgravia Road present an opportunity to create a world-class, fully sustainable mixed-use academic and research village where living, working, and recreation are all possible in one walkable, transit-supported neighborhood. Imagine a completely synergistic University Village with academic, research, and technology offices and labs, residential neighborhoods, and unique facilities such as the School for the Deaf.

The existing South Campus Station is an incredibly valuable piece of infrastructure that is currently surrounded by low-density facilities representing a time when the density demanded by the university and provincial growth were not predicted. With the projected demands for space by the university and the province, rethinking how to take advantage of the LRT station as a key anchor is critical so that maximum value can be created and maximum sustainable living can be achieved. The panel recommends that the University of Alberta and the province combine forces with the adjacent communities to explore how their

Winter Streets

Northern communities or “winter cities” have great opportunities to mitigate negative effects of the winter season while reinforcing the many positive aspects to create a vibrant, sustainable, and livable environment for a prosperous future. A key part of this approach is understanding, accepting, and enhancing winter streets. Physical barriers specific to winter streets must be addressed as part of the early stages of planning. Examples of physical barriers specific to winter include narrowed curb lanes for cyclists caused by snow buildup and for pedestrians, slippery, lumpy, or uncleared sidewalks and pathways. Cyclists can make their own adaptations with studded tires and special clothing, while walkers can buy antislip devices for their winter boots.

But why limit nonvehicular to just cyclists and walkers? Why not embrace winter-friendly modes of active transport such as cross-country skiing, snowshoeing, or ice-skating? To accommodate these activities, urban ski trails could be provided as a part of the early stages of pedestrian circulation planning. Other guidelines for winter streets include the following:

- Designate critical pedestrian areas that should receive priority when clearing walkways.
- Ensure that transition areas such as curb cuts and bus-stop platforms are properly plowed to ensure pedestrian safety.
- Ensure that particularly hazardous areas, such as steps and ramps, are heated to prevent snow and ice from accumulating.
- Identify specific existing pedestrian trails that can be groomed for multiuse, such as walking, snowshoeing, or cross-country skiing during the winter season.
- Design crosswalks to be slightly raised to prevent water and ice from accumulating in these areas, potentially posing a hazard to pedestrians.
- Separate sidewalks and other pedestrian pathways from the roadway. This separation protects pedestrians from the spray of slush and water from passing cars.

Located on the northern portions of the South Campus, the University Village will include a variety of compact, mixed-use development interspersed with open space and a high-quality walking environment. Five key quads would define the University Village: the Alberta Research and Technology Park, the Neighborhood and School for the Deaf Quad, the Physical Education Quad, the Academic Quad, and Heritage Park. All of these districts will be knit together with a block system designed to provide a flexible approach to locating new uses, structures, and buildings.



land can be combined to develop the planning ideas conceived in previous plans to further maximize the lands' potential to contribute to the success of Alberta and Edmonton.

The panel had the opportunity to study the plan developed from 2002 to 2008 by the university and its consultants. This plan was limited to the university land. Key points of the previous plan were

- Creating a walkable district adjacent to the LRT;
- Creating a memorable place such as Main Street and University Walk; and
- Strengthening environmental goals such as respecting drainage patterns of the land.

The panel recommends that when the combined plan is studied again, opportunities exist to further the tenets of the plan and achieve some key enhancements:

- Creating an incrementally implementable plan;
- Creating multiple districts and neighborhoods;
- Enhancing connectivity with adjacent neighborhoods;
- Highlighting the value of the Agricultural Research campus;
- Increasing density directly adjacent to the LRT; and
- Integrating the network of open space and landscapes.

The plan envisions three districts: University Village, Agricultural Research Campus, and the Whitemud Creek Park neighborhoods.

University Village

Within the University Village are five key quads: the Alberta Research and Technology Park, the Neighborhood and School for the Deaf Quad, the Physical Education Quad, the Academic Quad, and Heritage Park. All of these districts are knit together with a block system designed to provide a flexible approach to locating new uses, infrastructure, structures, and buildings. Common traits of the area will be compact, mixed-use development interspersed with open space and a high-quality walking environment. The block pattern presents the opportunity to customize parcels for a wide range of development needs on small and large lots.

The five key quads include the following elements:

- Physical Education Quad: three- to eight-story housing with ground-floor retail, two- to four-story classroom and office, with track and field as focal point;
- Alberta Research and Technology Park: five-story office and research buildings with a quad;
- Neighborhood and School for the Deaf Quad: three- to five-story graduate student and faculty housing with a school for the deaf;
- Academic Quad: three- to five-story buildings on podiums with two floors of classrooms or office and three floors of residential; and
- Heritage Park: new football stadium, aboriginal center, and rowhouse-style live/work units facing a park.



The Agricultural Research Campus will ensure retention of the important agricultural research facilities that are so much a part of the history and legacy of the university.

Agricultural Research Campus

The University of Alberta's Agricultural Research and Ecological Sciences department has developed a global reputation for innovative and critical research into commercial and health-related agricultural research. As growth on the South Campus occurs, the agricultural faculty will require office and lab space in the academic zones as well as a reserve for the critical agricultural research that needs to occur free of rural influences that occur on the lands held by the university outside the urban limits.

The land south of 60th Avenue is approximately a quarter section, or 160 acres, of highly valuable agricultural research zone. This zone will house both secure research labs and active fields for academic research as well as lands dedicated for the university's new urban-farming programs.

As part of the sustainability programs for the campus, the South Campus will be powered by a district energy plant. The plant can be positioned in this area because of its proximity to the core of the campus.

Whitemud Creek Park Neighborhoods

The university currently holds 240 acres of land known as the West 240. The plan recommends exploring the opportunity to use these lands as key workforce housing to support the success of university and provincial investment in the University Village as well as for a major park for University City that serves as a key link to the Whitemud Creek Park. The University City Park would be surrounded by three- to five-story buildings focused on a range of housing needs.



The Whitemud Creek Park neighborhoods will explore the opportunities for market-rate and workforce housing as well as a substantial park that links the University Village with the properties along the North Saskatchewan River.

Implementation

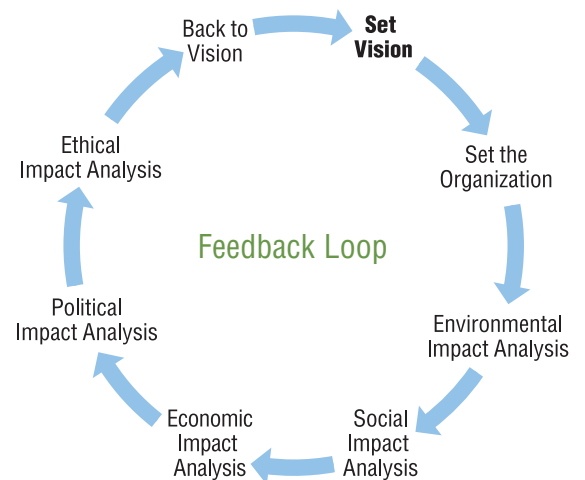
The University of Alberta is in an excellent position to become a leader in sustainability. The university is the province's leading academic research and teaching institution, recognized for its leadership in engineering, health science, sciences, creative arts, and the humanities. The university's priorities are well aligned to create a vibrant academic and research campus with a diverse community at the South Campus.

Perform a Needs Analysis

The panel advises the university to perform a needs analysis for the South Campus Concept Plan, outlining the immediate, midterm, and long-term goals for moving forward in refining the evolving South Campus Concept Plan. The panel encourages the university to focus on its "Vision for a Great University," "Dare to Discover," and "Dare to Deliver" when identifying the university's needs. Although the university may have its own approach to complete such analysis, the panel felt it was important to suggest the essential steps: setting the vision, setting up the organization, doing an environmental impact analysis, doing a social impact analysis, doing an economic impact analysis, doing a political impact analysis, and doing an ethical impact analysis. The accompanying diagram shows a simplified approach, organized as a feedback loop.

Organize for Success

The university will need to put the appropriate development team together to continue with the refinement of the South Campus Concept Plan. This team needs to be empowered to manage the planning process, design, and construction efforts and to coordinate the outreach with all stakeholders, internal and external. The university needs to collaborate with the community to link the needs of the community with the university's plan. The planning and development team should also have access to administrative and faculty leaders.



The panel recommends that the university hire a very experienced professional in large-scale, long-term real estate development and master planning. This person would report to the office of the president and would have authority to manage the overall development of the project. He or she would manage the university's relationship with governmental and private sector entities and oversee the planning and physical development of the South Campus plan. In addition, the team should have an economic development specialist to coordinate the commercial development opportunities as well as a sustainability officer who will be responsible for embedding sustainability throughout the South Campus Concept Plan. All team members will be working closely with energy, management, and sustainable operations of the University of Alberta, Alberta Environment, Alberta Energy, and the provincial minister of the environment.

Emphasize Community Outreach and Communication

For the South Campus Plan to advance successfully, a healthy communications plan must be adopted. It

must include every stakeholder who will be affected by the changes and recommendations put forth. This plan must be one that consistently speaks to the needs of the university and the surrounding community.

The South Campus Concept Plan as it evolves will affect several unrelated and contrasting stakeholders. They fall into two groups: (1) an internal community comprising students, faculty, and administrators; and (2) an external community comprising adjacent neighbors who are represented by the University of Alberta Consultation Community Groups, which has 13 members total; the School for the Deaf and others whose daily routines are closely intertwined with the framework of the University of Alberta; the public sector; and the private sector. Engage the city of Edmonton, the mayor's office, and the university's board of governors. Be accountable for communication, and put all agreements with stakeholders in writing.

The Consultation Community Groups consist of representatives from the neighborhoods that surround the North and the South campuses. The panel recommends that the university continue to hold the bimonthly meetings and engage the community in a series of planning workshops to truly understand the needs and wants of its neighbors. Engage the School for the Deaf to understand its future facility needs and to see how the South Campus Concept Plan can play a role. The university houses the Western Canadian Center for Deaf Studies at the North Campus. Can any synergies be identified by creating a collaborative partnership?

Communication of the planning, development, and phasing of the South Campus Plan in ways that are clear, transparent, and easily accessible is critically important. The initial attempt to engage the community of stakeholders appears to the panel to have been inconsistent, lacking in transparency, and perhaps not planned as well as required. The university had not engaged the community in the planning process, thereby creating much skepticism and little community buy-in to the plan.

A Web site should be established to post information, official university announcements, notification of community meetings, and collaborations with public/private entities regarding the South Campus. To provide a clear view of the project status, the

Web site should be used as the primary project communications tool, updated and maintained weekly. The University of Alberta should strive to keep its neighbors informed about the latest project developments.

The panel further recommends that the university undertake a campuswide student and faculty survey to better understand the views, desires, and needs of each population. Having the students' and faculties' perspectives would aid in the development of a high-level vision for the South Campus Plan.

The university should consider hosting open houses, internally for students, faculty, and staff, and externally for residents, community and civic organizations, elected officials, the business community, and other key parties. The main goal of these open houses is to communicate the focus of the project effectively to a broad range of stakeholders in a very clear and transparent way.

Demand-Planning-Vision

The South Campus and its surrounding area is an extremely dynamic submarket with strong demands for a variety of intense and very valuable land uses. As noted in the "Market Overview" section of this report, a projected need exists for various land uses including student housing, residential catering to the university needs, retail, institutional, office and R& D, and lodging (see figure 5).

The panel recommends that the university outline a development program using the outcome of the South Campus Master Plan, which will be based on the needs of the university, the surrounding residents, and the community at large. The panel examined the supply and demand of the South Campus Market Area and the university district. It also relied on projections from the province and the university regarding future enrollment, employment, income levels, existing market conditions, and projected housing demand. Relying on future needs, the panel put together a mix of uses that will create synergy that will draw in neighborhood residents, the university community, and people throughout the Edmonton area. The panel believes that these recommendations will produce an exciting new environment that will link the new plan with the existing community, creating a vibrant community where people live, learn, work, and shop.

Student Housing

With the province's tremendous investment in LRT on the University of Alberta's property, the most economically viable first step is to build housing at the LRT, increasing density in the South Campus at transit locations and opening opportunities for other types of development serving students, faculty, staff, and the neighborhood.

Student housing should be located at or near the LRT, creating a true transit-oriented development that will inspire commercial retail uses to locate nearby, serving students and the neighboring community and creating a truly sustainable compact development. The various types of student housing to be considered should be undergraduate, including freshman and second-, third-, and fourth-year students; graduate students; married students; and aboriginal students.

Michener Park

The panel recommends that Michener Park be closed and the housing moved to a new married-student housing center at the South Campus. The university could then sell the Michener Park property, generating capital to use at the South Campus, or lease the property on a long-term lease, or joint venture the property with a private developer.

Aboriginal Center

The panel also recommends that a plan be put in place to build a mixed-use building that will house the Aboriginal Center on the ground floor and housing over it for aboriginal students. This approach would provide a more complete separation between residential and nonresidential areas, currently not demonstrated at the HUB International building. Myriad examples of successful mixed-use buildings in the city and province can be used as examples for this approach.

Relocation of the Recreational Facilities

As suggested earlier in this report, the northern part of the South Campus must include more dense residential and institutional uses. The panel recommends that a plan be put in place to relocate some of the physical education and recreational facilities currently built around the LRT. One proposal could include the addition of student housing over the new GO Community Centre recreation facility,

revisions to the facades of existing recreation buildings, and the clustering of new buildings with residential on top around the soccer field and track facility. Foote Field could be relocated to a park that includes the Heritage Barn. Saville Sports Centre should be rebuilt as a state-of-the-art facility with upper-level housing. A market exists if the housing is located and configured in a way that appeals to today's students with computer labs, study rooms, practice rooms for music students, studio space for art students, laundry facilities, and game rooms adjacent to a mix of uses, including retail, dining, and entertainment. This type of development will draw members of the community as well as faculty and staff to the dynamic mix of commercial uses.

Other Housing Opportunities

Other housing opportunities that the university can pursue in public/private partnerships are

- Affordable faculty housing;
- Affordable staff housing;
- Intergenerational housing (retired faculty, alumni, retired staff); and
- Market-rate housing in a potential joint venture or a long-term lease to a private developer to generate long-term cash flow for the university.

Institutional

The university's demand for space at the South Campus over the next decade is approximately 1,425,000 square feet. The university can build physical education and agricultural classrooms, research space, and faculty office space. The university has an opportunity to make strategic moves from the North Campus to the South Campus, linking the two campuses via 114th Street and the LRT.

The panel recommends that the university look at de-intensifying the North Campus and creating dynamic opportunities at the South Campus. For example, restoring the original quad and opening up the spine of the university along the 114th Street corridor will offer many opportunities in this regard.

Commercial Retail

The increased density proposed for the South Campus will support a variety of neighborhood,

community, and town center retail uses, arranged in an outdoor setting around an energized public center. Recommended tenants should include specialty food stores, restaurants, cafés, pubs, convenience retail, a drugstore, and clothing stores. A detailed market study should be done to test and refine this mix, to provide a critical mass of urban retail that makes a compelling destination.

Office and R&D

The university has an opportunity to capitalize on the annual demand of 150,000 square feet of office and R&D in the area surrounding the South Campus. The opportunities include leasing office space to corporate research partners or incubators that are derived from the research being done on the campus. Because of the proximity of provincial offices, the needs analysis should include an analysis of the province's long-term office space needs.

Hotel

The university clearly has a need for a conference-style hotel on campus. The university has an opportunity to develop a conference center hotel with perhaps 500 rooms to be used by the North and South campuses. Research symposiums and conferences, both public and private, can be held at the University of Alberta's South Campus. Such a hotel should meet the needs of the university at large and the specialized needs of small to medium conferences with meeting rooms tailored to corporate and academic conferences, training, and extended-stay rooms. Such a hotel should be highly amenitized, with upscale audiovisual equipment, small private spaces for informal meetings, meeting rooms with natural light that can be converted quickly to dark presentation space, and wireless Internet and power receptacles throughout the facility.

Public Space

As noted throughout this report, one key to a truly sustainable community is the successful use of public space to define, refine, and offer the amenities of the institution to its students, faculty, and staff and to the wider community. The quality of public space has always been an outward sign of an institution's intent and pride. The panel recommends that public space be

provided throughout the project area, incorporating open space that can be used on an ongoing basis and seasonally.

Improve Interaction with the Private Sector

Financing and supporting a long-term sustainability plan will require the university to explore a variety of relationships with entities outside the university realm. Already the panel has seen excellent relationships developed with Alberta Energy and Alberta Environment on a variety of initiatives. Developers seek out opportunity and leverage potential. They do so with an eye on the long-term benefits of investment and acquisition. Developers are among the most entrepreneurial and pioneering businesspeople in modern society. They are forward thinking, understanding national development trends in the residential, retail, office, and industrial markets. They are the cutting edge of the built environment, urban design, and land use.

The panel recommends that specific land use components in this panel report, as well as those underway before the panel's visit, be considered for increased private sector involvement. Specific locations for such involvement include the opportunities suggested in this report for West 240, Michener Park, the northern portions of the South Campus, and the site for the Aboriginal Center.

One approach could be the use of a request for qualifications that will allow the university to enter into exclusive negotiations with a development entity that can be designated as the "deal maker" to bring about the process that will achieve the university's goals for each site. The deal maker or master developer acts as the university's agent to carry out the redevelopment of the property. The deal maker can conduct the due diligence regarding the financial feasibility of the proposal and explore the financial approaches that will be necessary to support the infrastructure for each site. As part of the startup cost, the university should consider covering the expenses of the master developer through this phase, while the master developer retains the flexibility of structuring its own land deal in accordance with the goals of the plan.

Consider Capital Funding Opportunities

The current economy will require the university to consider all possible options for capital funding. Recognizing that the plan for South Campus is a long-term capital investment, the panel suggests that each of the following funding mechanisms be evaluated and considered:

- Province capital funding;
- Student fees and surcharges;
- Self-funding bonds;
- Contracts;
- Grants;
- Resident fees;
- Parking fees, permits, and fines;
- Recreational fees;
- Revenue from real estate;
- Industry joint ventures;
- Public/private partnerships;
- Business improvement districts;
- Accelerate loan payments to reduce loan principal;
- Tax increment financing; and
- Special assessment districts.

Be Persistent

Achieving a vibrant and sustainable South Campus will be an iterative and long-term process, but the university must show initial and near-term success in the concept of sustainability. The university also must show persistence in achieving its goals. The current master-planning process is a good start, but

reassessment of the overall goals is necessary with the focus on not only environmental sustainability but also social and economic sustainability as equal measures of the university's success. The overall supervision of the physical infrastructure (the university's primary role in guiding this effort) is not a one-time fix to address existing perceptions. It should be viewed as a dynamic process, requiring ongoing attention and enthusiasm. The panel believes that one element of a sustainable development is constant consideration by those who live and work there. Larger stakeholder involvement in this planning process is required, including not only university administration and faculties but also improved coordination with adjacent neighborhoods and business community.

The success of this vision will require bold moves and dedicated leadership. The university, the province, the city, and private sectors must work together to execute important action plans to achieve the ideals envisioned for the South Campus and University City as a whole. Bold does not mean foolish, nor does it mean achieving unconditional consensus for each initiative or individual development proposal. The university must listen to a diverse set of stakeholders and formulate actions that are in the best interest of the community. Again, persistence in reaching the three goals of environmental, social, and economic sustainability is the key.

Conclusion

The ULI panel came to Edmonton with the understanding that its recommendations for the South Campus would be important and useful tools for the university in realizing a more sustainable built environment for its students, faculty, and staff as well as the larger community. Clearly, there are many things to explore, many things to discuss, and many things to determine. The panel's recommendations are a roadmap of how get there, albeit one that by the very nature of the challenge the university has placed before itself and the early stage of that journey may provide more questions than answers. That is all right. As ULI has learned in its various academic and professional pursuits, the learning and problem-solving process in its purest form achieves the best long-term results.

What messages does the panel deliver to the university?

- This process is very long term—planning right, filling in the blanks, and eventually executing that framework plan.
- There is a large amount of growth coming to the university community—academic and community alike. This creates a remarkable opportunity to

achieve the university's objectives relative to sustainability and achievement of leadership status.

- The confluence of the university's valuable assets—its heritage, its intellectual capital, its drive to discover, and its physical holdings—makes achievement of the university's vision and plan infinitely more probable than might otherwise be possible.
- Possessing such valuable assets and resources comes with a responsibility—a responsibility to plan, a responsibility to preserve, a responsibility to engage, a responsibility to push the boundaries of conventional thinking.
- Leadership in sustainability and achievement of a dynamic and ever-expanding environment for discovery and delivery require persistence in executing each of these responsibilities.

In the end, the challenge before the University of Alberta as it enters its second hundred years is the same as that placed before the thousands of students who pass through this university each year: work hard, collaborate, think beyond the normal boundaries, reach high, and accomplish more than you ever thought you could.



UNIVERSITY OF
ALBERTA

About the Panel

Alex J. Rose

*Panel Chair
El Segundo, California*

Rose serves as senior vice president, development and asset management, for Continental Development Corporation in El Segundo, California. He is responsible for managing all development, acquisition, construction, and asset management activities for the developer of suburban office, medical, and R&D parks, whose holdings cover nearly 5 million square feet in California's Los Angeles County South Bay and city of San Francisco markets. Rose oversees acquisitions and new project development; planning and execution of all tenant improvement, core and shell renovation, and new construction work; major facilities maintenance and upgrades; project budgeting and cost controls; internal project management; architect, engineer, and contractor management; and asset and property management.

Over the past 15 years, Rose has overseen the development and acquisition of over 1 million square feet of Class A office, medical, and retail space and the physical transformation of over 1 million square feet of single-tenant R&D facilities into multitenant office space, restaurants, retail, and entertainment uses. Rose's current projects include the repositioning and conversion of a 400,000-square-foot mid-rise data center to a mix of public and commercial uses, the repositioning a 500,000-square-foot office park to medical uses, the redevelopment of a 108-acre chemical plant site into 850,000 square feet of promotional and lifestyle retail, and the redevelopment of multiple obsolete retail properties into medium-density residential-over-retail infill residential/retail mixed-use projects. Rose also has extensive experience in title insurance and is a licensed California attorney with experience in general civil and bankruptcy litigation practices.

Rose received his MBA from the University of Southern California (USC), his JD from Southwestern

University School of Law, and a BA in political science from the University of California, Los Angeles (UCLA). He has served as a trustee of ULI; chairs ULI's Los Angeles District Council Executive Committee; and is a member of ULI's national District Council leadership group, its philanthropic Annual Fund Committee, its Infrastructure Finance Advisory Group, and its Small Scale Development Council. Rose has chaired and served on numerous national ULI Advisory Services panel assignments focusing on downtown and transit-corridor redevelopment and revitalization and office development issues and has participated in several ULI office sector workshops. Rose has also served as a mentor to numerous students and young professionals through formal mentoring programs organized through ULI as well as UCLA and USC undergraduate and graduate programs in business and real estate.

Rose has been a member of numerous other community, industry, legal, UCLA and USC-affiliated groups, including the National Building Museum, Los Angeles Conservancy, and El Segundo Employer's Association (a business-community based organization focusing on community infrastructure improvements). He has also participated in programs such as Leadership Manhattan Beach and New Schools Better Neighborhoods (a private and public citizen's advisory board researching and developing standards and methodologies for the development of over 100 new community-asset public schools in the Los Angeles metropolitan area).

Margaret L. Cafarelli

San Francisco, California

With over 25 years of experience in real estate development, Cafarelli has a passion for all facets of master planning and developing sustainable infill mixed-use projects that incorporate high-density residential dwellings with commercial office and retail components. A vocal proponent of green building practices, she leads her collaborative work teams to think outside the box to create dynamic living and

work spaces for vibrant city living. As a resident of San Francisco and Santa Barbara for the past 20 years, Cafarelli has focused her attentions on the development of the highest quality multiuse developments in the Bay Area and Santa Barbara County.

Known for her aesthetic vision, meticulous attention to detail, and ability to effectively negotiate all aspects of a development, Cafarelli is viewed as a “go to” partner for many investors. Her visionary and collaborative work style has contributed to the success of many projects, such as The Mercer (www.mercerwalnutcreek.com) and Aqua Via (www.aquavialiving.com).

Her current focus is the creation of a highly sustainable and innovative urban infill mixed-use development in downtown Santa Barbara and the launch of a new business unit within Urban Developments that focuses solely on “green student living.” As the strategic leader for Urban, Cafarelli is driven by two core values: sustainable building practices and collaboration: “Our goal is to incorporate green building practices in every project. It’s our responsibility as a company to do the right thing on behalf of our partners and communities in which we work. We believe that collaborative efforts achieve the most dynamic, unique and architecturally appealing product. By doing so, you enhance not only profits, but you build environmental and social capital.”

She is a full member of ULI and a member of ULI’s Sustainable Development Council. Urban is a silver sponsor of the ULI–San Francisco District Council and a member of SPUR (San Francisco Planning + Urban Research Association). Cafarelli is also a member of the U.S. Green Building Council and a member of the International Council of Shopping Centers. In 2007, she completed the Executive Program in Business Strategies for Environmental Sustainability, Stanford University Graduate School of Business, Palo Alto, California.

A celebrated philanthropist, Cafarelli is consistently involved and committed to the local communities where she lives and works. For the past several years, she has been a volunteer and supporter of St. Anthony’s Foundation, a nonprofit that serves the neediest of the needy in San Francisco’s Tenderloin District. She is also a board member of the Music Academy of the West.

Dan Conway

Aurora, Colorado

Conway is a real estate marketing and research authority specializing in residential, commercial/industrial, and golf course developments. He has had over 40 years of experience as an urban land economist.

For the last 25 years as president and director of economics and market research for THK Associates, Conway has conducted numerous residential, commercial, industrial, and golf course economic feasibility and market studies, socioeconomic impact assessments, and financial planning studies in all 50 of the United States, as well as a number of foreign countries. Projects of particular interest include an international market center and industrial market analysis for the Dove Valley Business Air Park in Arapahoe County, a residential and related uses market analysis for several major developments in Douglas County including the 1,342-acre Parker City site, and numerous golf course feasibility studies throughout the country. Specific communities where Conway has completed a wide range of research and analysis include Las Vegas and Reno, Nevada; Oxnard, Palm Springs, and Carmel, California; Kansas City, Missouri; Oklahoma City and Tulsa, Oklahoma; Austin, Texas; Albuquerque and Santa Fe, New Mexico; Seattle, Washington; and Phoenix and Tucson, Arizona.

Most recently, Conway has gained recognition as a sought-after speaker on the golf course development circuit. His numerous presentations at the Crittenden Golf Development Expos have been widely attended and universally applauded. His book, *The Cost and Revenues of a Unique Golf Club*, has furthered his reputation as one of the industry’s leading authorities. Under Conway’s guidance, THK Associates completes over 75 golf course feasibility studies and golf driving-range market studies and appraisals each year.

Conway is a frequent guest speaker for economic associations and trade organizations and is a member and frequent speaker to the Urban Land Institute. He has been a real estate and urban land economic honorarium instructor at the University of Colorado and at the University of Denver. He has

published many articles including “Market Analysis, the Road to Profit, Prosperity and Peace of Mind” for the *CCIM* magazine. Conway frequently testifies as an expert witness for litigation in market and urban economic feasibility analyses, lost profits and value analyses, and has been qualified as an expert witness in numerous states.

His other professional and community activities have included membership on the board of directors of a federally chartered national bank and membership in the Mile High Transplant Bank. He also participated on the Archbishop’s Inner City Sun School Committee to assess the future needs of elementary education in the inner city of Denver.

Craig Davis

Cary, North Carolina

Davis founded Craig Davis Properties, Inc., in 1988. He is now chairman of the 55-person, full-service commercial real estate development firm, which specializes in commercial “need-based” development, acquisition, management, leasing, and build-to-suit opportunities. Craig Davis Properties has built a diverse portfolio consisting of Class A office, industrial, retail, laboratory, and educational initiatives encompassing more than 6.2 million square feet of space for some of the largest and most respected U.S. companies, investors, and universities.

Davis’s primary responsibilities focus on strategic positioning for the firm, ownership structures, and investment opportunities. He interfaces directly with private and institutional investors. He heads the revenue generation for the firm through regionalized offices based in Raleigh-Durham, North Carolina, and Charlotte and Hampton, Virginia.

Davis has led his company to receive the honor of Developer of the Year in the Triangle area in 1997 for the largest development project and most square footage developed, and again in 1998 for the Venture Center project at North Carolina State University (NCSU)’s Centennial Campus. The company was also recognized in 1999 and 2000 with a Platinum Rule award in the category of People Development. He is a developer associate with the Society of Office and Industrial Realtors and a member of the Urban Land Institute and is on the board of advisers for the NCSU

College of Management. He is also on the board of the Wolfpack Club and NCSU Facilities Enhancement Committee. Davis supports and is involved with the Jimmy V Foundation, the Tammy Lynn Center, Prevent Blindness of North Carolina, and Hopeline.

Davis received his BA from North Carolina State University and has spent his entire career in commercial real estate, with over 25 years of experience in all facets of the commercial real estate industry.

Stephen Engblom

San Francisco, California

Engblom is AECOM’s global director of master planning. He is an accomplished urban designer and architect who has worked across North America and globally in South America, Asia, Europe, and the Middle East since 1989. He has worked extensively with a broad range of clients to develop innovative environments that enhance the sense of place while establishing strong environmental stewardship, economic strategies, and addressing corporate and institutional mandates.

Engblom’s work in campus planning and urban regeneration strives to deliver the sustainable social, environmental, and economic triple bottom line. Rather than treating sustainability as an independent project component, his comprehensive approach integrates sustainable best practices. Engblom’s work has garnered numerous awards from the American Society of Landscape Architecture and the American Planning Association. Engblom has authored numerous articles for industry and popular journals, lectured, and taught at major universities and institutes around the world.

Recent projects include the Sage Hills Master Plan, a new community on Vancouver Island anchored by educational and recreational campuses; Laguna Carén Master Plan, a new university campus and town for the University of Chile in Santiago designed to coexist with an ecological reserve; and the front-end planning and strategy for the Shanghai World Exposition 2010 Master Plan, a 600-hectare site designed for all expo functions and supporting uses.

Edward McMahon

Washington, D.C.

McMahon holds the Charles Fraser Chair on Sustainable Development at the Urban Land Institute in Washington, D.C. He is an attorney, community planner, lecturer, and author. As the Senior Fellow for Sustainable Development, McMahon leads ULI's worldwide efforts to conduct research and educational activities on environmentally sensitive development policies and practices.

Before joining ULI in 2004, McMahon spent 14 years as vice president and director of land use planning for the Conservation Fund in Arlington, Virginia. He is also cofounder and former president of Scenic America, a national nonprofit organization devoted to protecting America's scenic landscapes. He is the author or coauthor of 15 books and over 200 articles. His books include *Developing Sustainable Planned Communities*, *Green Infrastructure: Linking Landscapes and Communities*, *Balancing Nature and Commerce in Gateway Communities*, and *Better Models for Development in Pennsylvania*. He also writes regularly for *Urban Land* magazine, *Planning Commissioners Journal*, and other periodicals. Over the past 20 years, McMahon has drafted numerous local land use plans and ordinances. He has organized successful efforts to acquire and protect urban parkland, wilderness areas, and other conservation properties.

McMahon serves on several boards and commissions, including the National Trust for Historic Preservation, Preservation Maryland, and the Governors Institute for Community Design, and the Orton Family Foundation.

McMahon has an MA in urban studies from the University of Alabama and a JD from Georgetown University Law School, where he taught law and public policy from 1976 to 1985.

John M. Prosser

Denver, Colorado

In August 2008, Prosser retired after 40 years as professor of architecture and urban design and still maintains his private practice begun in 1969. He has served as dean of the college and has taught at other universities throughout the nation, as well as Oxford Brooks in England and the National University of Ireland in Dublin where he was a visiting fellow at the Urban Institute Ireland in 2003 and 2004 and a visiting scholar in 2003, 2004, 2005, 2007, 2008, and 2009, all during fall terms. Prosser served as a planning and architectural consultant for a number of projects including the Denver International Airport environs (private sector), the Denver Technological Center, and the Denver Botanic Gardens. From 1981 until 2005, he chaired and still serves on the systemwide University of Colorado Design Review Board, which assesses all Colorado University projects on nine campuses, in six vegetation life zones. Currently, Prosser is also a member of three federal, local, and private architectural review committees.

His practice has covered numerous other large-scale diverse projects over four decades. His 1970 plan for Auraria Higher Education Campus resulted in the retention of the historic Ninth Street Park, St. Cajetans', Tivoli, and Emmanuel Chapel. Similarly, he has developed strategic planning concepts for Graland Country Day School, Fountain Valley Prep School, Pueblo Community College, Fort Lewis College, and Denver University. One especially unique project was his historic preservation plan for Colorado College. For 30 years, he managed environmental impact assessments for projects of a few acres up to 150 square miles.

In July 2001, he served on a ULI Advisory Services panel for the redirection of the outreach Kennedy Space Center research operations. Later that year, Prosser became senior adviser, director of planning for Endur Enterprise Computing Campuses, and in the fall of 2002, he was a key participant in a ULI study for the new Florida State University 1,300-acre satellite campus. His most recent ULI panel was for the St. Joseph, Missouri, comprehensive plan in summer 2007.

Additionally, in the summer of 2005, Prosser was retained by William McDonough + Partners, Charlottesville, Virginia, as an urban and regional planning consultant to review and advise their office macro studio section in producing new community designs in North Carolina, Virginia, and Hawaii and for the first of seven new cities in Liuzhou, China. In spring 2007, he was the urban design consultant to McDonough on the long-range general development concept for Google World Headquarters in Mountain View, California. Beginning in spring of 2008, Prosser was hired by the Rocky Mountain Institute as an urban planning consultant to review and recommend potential sustainability aspects for the proposed Tianjin, China, Eco-City master plan.

Prosser has been recognized for his outstanding contributions to the profession with numerous national, state, and local awards, and he has been listed many years in *Who's Who in the World*, *Who's Who in America*, and *Who's Who among America's Teachers*. Prosser served on the Denver Parks Advisory Board for 14 years and is a long-time member of the Urban Land Institute where he was on the Community Development Council for 15 years. Then for the next five years he was a member of the Affordable Housing Council until 2007. Prosser received his BS in architecture from Kansas University and MFA in architecture from Carnegie Mellon.

Greg Searle

Chelsea, Canada

Searle is an experienced international consultant, facilitator, entrepreneur and an expert on sustainable lifestyles. As a sustainability facilitator, he has led bid-winning and selected design teams on large mixed-use neighborhood projects across North America from pre-master planning onward on a range of often difficult infill sites. The resulting sustainability action plans and green lifestyle programs have set the most ambitious and comprehensive targets for green communities yet seen in North America, significantly differentiating them from typical green projects.

Searle leads the One Planet Communities program for North America and sits on the Steering Committee for the global program, which is administered by BioRegional. The program creates coalitions with

developers, municipalities, and grassroots groups in influential U.S. regions to build zero-carbon demonstration neighborhoods that model a truly sustainable future—places where people of all backgrounds and incomes live healthy lifestyles with an 80 percent reduction in total carbon footprint.

BioRegional, an independent nonprofit environmental organization with world headquarters in London, is the recent recipient of the prestigious Skoll Award for Social Entrepreneurship, and the authors of the sustainability strategy for the winning London 2012 Olympic bid. BioRegional is best known as cocreator of the BedZED urban eco-village that the U.K. Solar Awards called “Perhaps the most influential of all housing projects this century.”

Searle founded BioRegional North America in 2006 to bring the One Planet Communities program to North America. It is guided by a board of directors comprising many of the most experienced green architects and real estate developers on the continent. He is the lead author of the *Green Living Manifesto*.

Searle has given more than 50 workshops and keynote speeches in cities such as Amman, Barcelona, Houston, London, and Vancouver, and at GreenBuild 2006 (Denver), GreenBuild 2009 (Phoenix), and AIA 2008 (Boston). He speaks on groundbreaking case studies such as BedZED, Sonoma Mountain Village, and One Brighton. Searle has also been invited as a guest lecturer on sustainability at universities in Canada, the United States, and Mexico.

Searle lived at BedZED while studying the long-term impacts of the sustainable lifestyles program that operated there. He applied this learning in helping create an eco-lifestyle reality TV show, *Wa\$ted*, now in its third season on Discovery's Planet Green channel. He manages an on-location team that provides ecological footprint reduction science and tactics to help overconsuming American families achieve as much as a 30 percent reduction in their ecological footprints in just two months.

Searle previously served as a consultant to the United Nations and the World Conservation Union. He is also the cofounder, director, and former chief technology officer of an award-winning knowledge management software company, Tomoye Corporation.



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