



Economic Development Alliance
of Southeast Alberta

Green Building Cluster Opportunity Identification

Report

Through preliminary meetings with different companies in the building sector, the Economic Development Alliance (EDA) of Southeast Alberta has identified that there is a growing trend towards businesses to offer green product options to their clients. EDA believes that opportunities associated with regional strengths and assets as well as expansion possibilities of successful companies exist, possibly meeting foreign direct investment objectives. Further, developing a cluster around “green” in the building sector will encourage intergovernmental cooperation given that the Province of Alberta has stated that its strategic objectives for the building products sector is to grow GDP in residential construction of green products and services, as well as lead development of residential green construction to position Alberta as a global leader.

Seven organizations that are part of the value chain in the building sector were interviewed in southeast Alberta in order to identify opportunities in the area of “green”. Interviews aimed at gathering information were conducted, the results of which are detailed in APPENDIX A.

Green Building

Energy-efficient building. Environmental building. Eco-building. Sustainable building. High-performance building. Buildings constructed to incentive or rating programs. There are many terms that are bandied about in the name of “green”. Many of these are synonymous or perhaps overlapping. But these terms that are often heard beg the question: What is Green Building?

While energy was the first “green” issue to be tackled in buildings, other key issues have emerged: ecological damage, water consumption, emissions and solid waste, and indoor environmental quality (including air quality, ventilation, thermal comfort, lighting and noise/acoustics). While these issues formed the basis of the green building industry, today, planning, social and economic considerations come into play especially where the concept of sustainability is considered.

As the set of issues grow, the ambiguity around “green building” continues. **Given the reality that not all issues can be dealt with at once, any organization dealing with green building will have its own set of standards or definitions based on trade-offs or multi-rating systems.** Therefore, a building with exceptional indoor air quality may not be energy efficient, and yet it will fall within a definition of “green building”. The ambiguity increases given that many green building features are subtle or even invisible.

According to Industry Canada¹, common green building traits include:

¹ Å Business Case for Green Buildings in Canadaö. Industry Canada. Mark Lucuik, Wayne Trusty, Nils Larsson, and Robert Charette. March 2005.

Location

- Not on fragile landscapes
- Not contributing to urban sprawl
- Close to mass transportation

Site

- Focus on surface water reduction (holding ponds, porous paving)
- Zeriscape landscaping (no irrigation)
- Lower impact on local ecology
- Increased green space (small building footprint, minimal surface parking)

Building Exterior

- Window canopies or light shelves
- Alternative energy systems (solar or wind)
- Green roofs
- Efficient, targeted exterior lighting (minimizing light pollution)

Building Interior

- Minimal materials (exposed structural materials)
- Flexible layouts (movable walls, raised floors)
- Occupant controls of heat and light (as opposed to large zone thermostats or light switches)
- Abundant natural light and access to views
- Good air quality
- Plumbing fixtures with reduced water usage characteristics
- Operational promotion of “green” practices (such as recycling)

Hidden Attributes

- Highly efficient building envelopes
- Materials selected to meet building goals (low environmental embodied effects, low VOCs (Volatile Organic Components))
- High efficiency mechanical systems integrated with electrical, structural, and architectural elements
- Efficient lighting systems
- The use of equipment without materials or components that could damage the environment (e.g. ozone depleting substances in air conditioners)
- The use of maintenance materials (e.g. detergents) that also meet the green goals
- Continued measurement and optimization of system performance over time.

Again, the above characteristics are not included in all green buildings. **Each green building is unique in that it will reflect specific site, fiscal and operational parameters.**

While there has been a discussion of the unique aspects of each green building, there are two common denominators: green building design process and integration of environmental and social goals.

From a design perspective, a key difference between green and conventional building is integration. Conventional building relies on the expertise involved from design to construction to be focused and reactive solution oriented. That is, conventional building experts are focused on providing a solution that is oriented to a particular phase of design or construction.

For example, a cooling specialist will provide a solution to a hot room, rather than focus on what is causing the room to be so hot. Therefore, conventional buildings tend to be functional, but perhaps inefficient.

In contrast, green buildings use an integrated design process in which a multi-disciplinary team of building professionals work together from the pre-design phase to the occupancy stage to optimize the building for environmental sustainability, performance and cost saving. The underlying premise is that the building consists of interconnected or interdependent systems that each have an impact or effect on the other.

Green buildings also integrate social and environmental goals. The environmental considerations involve direct and indirect ecological impacts, such as reduced greenhouse emissions or reduced water use. Social considerations can be directly related to a building (such as safe and comfortable air or natural light) or could extend beyond the building (promoting the use of mass transit or urban densification).

In reviewing a few of the definitions of “green building” or “green building programs” that are provided by various organizations, it is apparent these two common denominators are inherent:

“Green homes incorporate environmental considerations and resource efficiency into every step of the building and development process to minimize environmental impact. The design, construction and operation of a home must focus on energy and water efficiency, resource efficient building design and materials, indoor environmental quality, and must take the home’s overall impact on the environment into account.”

- National Association of Home Builders - National Green Building Program (U.S.)

“CMHC’s Equilibrium housing integrates a wide range of design strategies, technologies, products and techniques to significantly reduce a home’s energy consumptions and environmental impact.”

- Canadian Mortgage and Housing Corporation

Essentially, green buildings offer healthier and more comfortable interior spaces, and include measures to reduce the building’s ecological footprint.

Industry - Canada

The Green Building industry has been developing worldwide as a result of necessity. The following timeline shows the development:

- 1990
 - BREEAM (UK Green Building Rating System)
- 1990-2000
 - ENERGY STAR
 - ATHENA (Canadian LCA)
 - USGBC
 - BEPAC
 - BREEAM CANADA
 - GREEN BUILDING CHALLENGE
 - WORLD GREEN BUILDING COUNCIL
 - LEED 1.0
- 2000
 - GREEN GLOBES
- 2002
 - CAGBC
- 2005

- LEED CANADA

There has been an increase in interest in green building councils in Canada and the United States, indicating growth in the industry. The Canada Green Building Council (CaGBC) was incorporated in December 2002 and in 2005, it boasted over 700 members. The United States Green Building Council (USGBC) started in 1993 and in 2005, had nearly 6,000 members. Some interest is strategic business positioning while some of it is altruistic.

The timeline above shows that the green building industry in Canada is young. It is worthy of noting however that the industry is experiencing exponential growth. As of March 2005, there were about 150 buildings registered for LEED in Canada. This does not include buildings that have been renovated slightly or buildings that are operated in a green manner.

It is clear that interest among most building stakeholders is increasing, and many building owners are currently demanding green buildings for their new facilities. Many others are greening their existing facilities in the hopes of achieving the benefits.

Industry - Alberta

With annual sales of \$8.6 billion, Alberta's building products industry is one of the largest and strongest in the province, with a world-wide reputation in cold-weather construction and green building technologies. There are a total of 1,200 listed companies in the sector, employing approximately 40,000 people who manufacture a variety of commodity and value-added products. Areas of expertise that impact the green building industry include:

- Green Building Technologies - The "green" trend is apparent in the use of Structurally Insulated Panels (SIPs), on-demand hot water tanks, high efficiency heating systems, Insulated Concrete Forms (ICFs), fibre-cement products, foam and cellulose insulation, etc.
- Insulation -There are a variety of insulation manufacturers, some of which provide green solutions.
- Roofing Shingles - These shingles are quality, durable and innovative, with some that are even made of recycled tires.
- PVC Windows - Windows are manufactured in state-of-the art facilities and made of exceptional quality.
- Energy Efficient Building Envelopes - Alberta companies have perfected building envelopes that retain heat in the winter and remain cool in the summer, ensuring optimal energy use.
- Pre-manufactured Components Production - Assembling pre-manufactured components on-site is creating opportunities for the production of wall, roof and floor systems that reduce variability in house quality, lessen the need for trades people on site and utilize innovative materials.
- Composite Building Products -An abundant supply of raw materials such as saw dust, wood flour and wood shavings can be incorporated into composite building products, which are becoming increasingly popular.

Alberta's demand for more energy efficient buildings, better indoor quality and water conservation is leading to opportunities for manufacturers to expand into energy efficient and environmentally friendly building products. Companies also have the opportunity to invest in green technologies such as solar collector panels, low-VOC coatings and resins, wind turbines, structurally insulated panels (SIPs), on-demand hot water tanks, insulated concrete forms, fibre-cement products, composite building products and more.

Associations and Support

Canada Green Building Council (CaGBC) - CaGBC is the one-stop, go-to national organization for green building knowledge, education, advocacy and verification in Canada. CaGBC is the only national green building organization in Canada. Its goal is to reduce greenhouse gas (GHG) emissions from 100,000 buildings and 1 million homes, with verified 50% reduction in median water and energy use by 2015. CaGBC is spearheading the LEED Canada Initiative as well as the GREEN UP - Canada's Building Performance Program. GREEN UP is a focused effort to develop an affordable and easily accessible tool for energy and environmental management for new and existing buildings. Both initiatives are aimed at large-scale reduction in greenhouse gas emissions, energy savings, and other environmental benefits for all building types and communities across Canada.

CaGBC - Alberta Chapter - The provincial chapter seeks to lead and accelerate the transformation to high-performing, healthy green buildings, homes and communities throughout Alberta. The Alberta chapter was incorporated in May 2004. In collaboration with partners in industry and government, the Alberta Chapter aims to:

- Certify 10,000 commercial/ institutional buildings and 100,000 homes by 2012.
- Achieve zero impact from buildings and communities by 2030. Zero impact refers to sustainable use of energy, water, materials and land (improved efficiency, reduced pollution and environmental impacts). Regarding energy use, zero impact means "carbon-neutral" buildings and communities by 2025.

Green Alberta - Green Alberta was developed from a collaborative effort between the provincial government (Alberta Finance and Enterprise provided the initial seed capital and advisory services to start the venture), C3 Envirotech Solutions (Climate Change Central's Envirotech Solutions branch provided seed capital matching that of Alberta Finance and Enterprise) and EcoAmmo, an Alberta-based company focused on growing sustainability through education. Green Alberta provides a Green Building Products database, the latest information on the industry and consulting services for manufacturers and green service providers in Alberta. .

APPENDIX B includes details of Alberta products and companies listed with Green Alberta. It is clear that the building industry has a variety of products to choose from in ensuring homes are built in an energy efficient, environmentally friendly manner. These include: recyclable roof tiles, door cores, window systems for solar control, kitchen cabinets made of recycled materials, cellular concrete products, foam insulation, environmentally friendly flooring, wall systems, fiberglass rebar, recycled latex paint, fans, and climate controlled irrigation systems. Home owners and builders have the opportunity to incorporate "green" materials and systems into their building plans at virtually every phase of the home building process, using materials available in Alberta.

Climate Change Central - Climate Change Central is an Alberta-based, non-profit organization that takes action on climate change through energy efficiency programs and small-scale renewable energy. Climate Change Central provides rebates for specific aspects of green building/renovation in order to encourage adoption of "green".

Canada Mortgage and Housing Corporation - CMHC EQUilibrium Housing Initiative works with leading builders to demonstrate the next generation of sustainable housing in Canada and provides a blueprint for building healthy and sustainable homes that will meet the needs of Canadians now and in the future. Equilibrium homes integrate a wide range of technologies, strategies and techniques to reduce a home's environmental impact to a minimum. The initiative aims to build capacity of Canada's home builders, developers, architects and engineers to design and build EQUilibrium homes and communities across the country; educate

consumers on the benefits of sustainable housing; and enhance Canada's leadership in sustainable housing design, construction services and technologies.

Green Building Assessment Ratings

Leadership in Energy and Environmental Design (LEED)

The United States Green Building Council (USGBC) first released the LEED (Leadership in Energy and Environmental Design) rating system in 1999. While initially, it was focused on new construction and major renovations, over time, the system has focused on new commercial construction, renovation, existing building operations, core and shell projects, homes and neighborhood development.

LEED is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED provides building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:

- Sustainable site development
- Water efficiency
- Energy efficiency
- Materials selection
- Indoor environmental quality

LEED is the most widely accepted rating system for sustainable buildings in North America. With LEED, integrated design and life cycle cost management are keys to controlling costs. Today, LEED rating systems award points for meeting specific performance criteria defined in Prerequisites and Credits. Improved building performance is certified (based on the number of points earned by a project) with one of four ratings - Certified, Silver, Gold and Platinum.

In Canada, the Canada Green Building Council (CaGBC) has exclusive rights to LEED in Canada and introduced it in the fall of 2004. The first new rating system to launch as part of LEED Canada Initiative was *LEED Canada for Homes 2009*, which debuted on March 3, 2009. *LEED Canada for Existing Buildings: Operations and Maintenance 2009* opened for registration on August 3, 2009. *LEED Canada for New Construction and Major Renovations 2009* and *LEED Canada for Core & Shell Development 2009* launched June 21, 2010.

It is important to note that LEED building certifications can be achieved by selecting a required number of credits from a larger set of credits. Therefore, LEED is indicative of a green building, but not how "green" it is. In fact, two buildings can have the same LEED certification levels and have different "green" building characteristics.

EnerGuide for Homes

EnerGuide is a label that consumers are aware of for appliances and vehicles. It is also a rating system for homes. The EnerGuide for homes rating scale indicates how energy efficient a house is on a scale from 0 to 100. A rating of 0 indicates a house has major leaks and no insulation while a house with a rating of 100 is producing as much energy as it consumes. It can even produce more and sell to the grid. The average home constructed today is ranked at 72. A high-efficiency house would be rated at 80. An EnerGuide 80 house costs \$8,000 to \$10,000 more to build but results in 20 to 30 percent more efficiency than the average home. Currently new homes are not required to be EnerGuide labeled, but the Government is working towards establishing minimum levels of energy efficiency through building codes.

R2000

R2000 has had limited acceptance with mass builders, primarily because of risk associated with pass-fail nature of the program, cost and complexity. However, the brand is well known by builders and continues in several provinces.

In provinces such as Ontario, Quebec, Alberta, British Columbia and Manitoba, R2000 has been replaced by other programs. Ontario uses Energy Star, Quebec has Novo Climat, Alberta and British Columbia uses Built Green™, and Manitoba prefers Power Smart.

Built Green™

Built Green™ is an industry driven voluntary program that promotes “green” building practices to reduce the impact that building has on the environment. It is a program that allows builders and home buyers to choose their level of participation: Bronze represents the minimum of achievement level; Silver is the next level; and Gold is the third level of recognition. As of January 1, 2008, the Platinum level is the highest level of achievement in the Built Green™ program. Built Green™ involves rating and labeling the home through Natural Resources Canada’s EnerGuide For New Houses initiative, the mandatory energy efficiency component of the Built Green™ checklist. EnerGuide for New Houses is delivered in Alberta by EnerVision (a not-for-profit organization owned by CHBA-Alberta). To verify energy efficiency, the builder schedules a blower door test/inspection for every home, conducted only by a trained and licensed third-party consultant (a Certified Energy Advisor) just prior to possession.

Only Built Green™ Certified Builder members can build a Built Green™ home. Successful completion of the Built Green™ Builder Training is required to become a Built Green™ Certified Builder Member. The R-2000 builder training curriculum is the foundation of the Built Green™ Builder Training program.

It is interesting to note that there are 15,115 homes enrolled in Built Green™ Canada. The top rated builders from October 2009 to October 2010 in the CHBA region are:

Top Alberta Homes	Builder	EnerGuide Rating
Calgary Region	McKinley Masters Custom Homes	92
Calgary Region	Avalon Master Builder - Calgary	91
Medicine Hat	Brost Developments Inc.	87
Medicine Hat	Mulder Builders	86
Calgary Region	Hillson Homes	86
Calgary Region	Rethink Homes Ltd.	86
Edmonton Region	Effect Home Builders Ltd.	86

The top rated builders of all time (as noted by the CHBA) are:

Top Alberta Homes	Builder	EnerGuide Rating
Central Alberta	Avalon Master Builder - Red Deer	100
Central Alberta	Laebon Homes	96
Calgary Region	McKinley Masters Custom Homes	92
Calgary Region	Avalon Master Builder - Calgary	91
Lethbridge Region	Reside Construction Ltd.	89

APPENDIX C details the 16 Built Green™ Canada members in southeast Alberta. Classic Communities, which uses Structurally Insulated Panels (SIP) in its construction has 140 homes enrolled in the Built Green™ program, by far the largest number in southeast Alberta.

Builders are involved with programs such as Built Green™ in order to:

- build reputation,
- lead the competition,
- improve brand recognition.

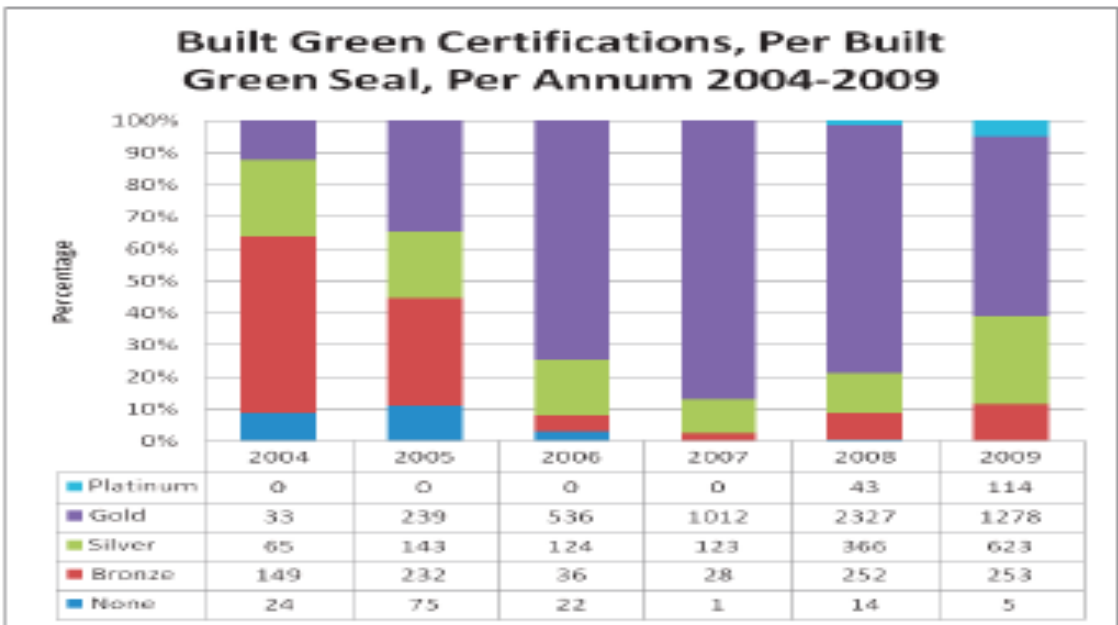
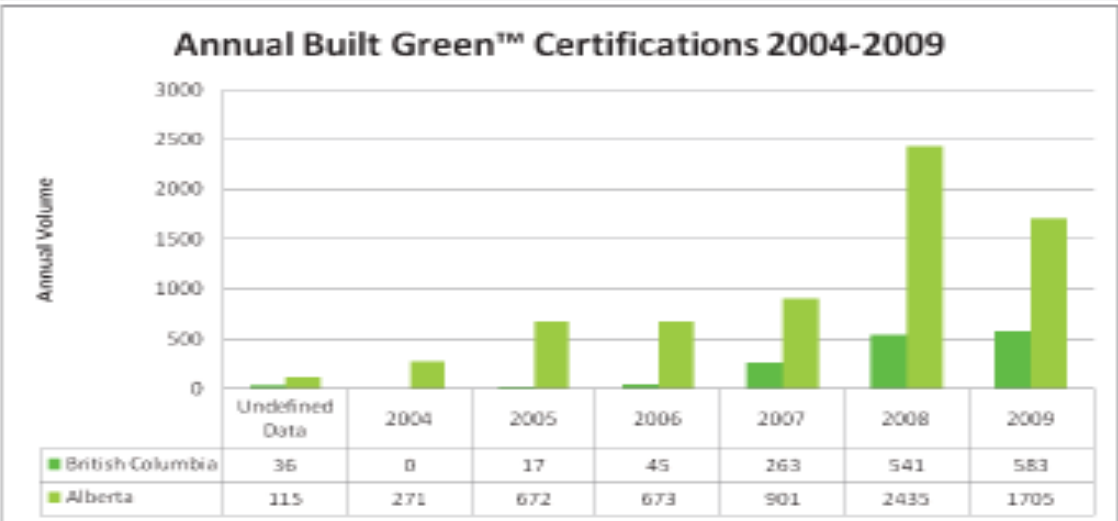
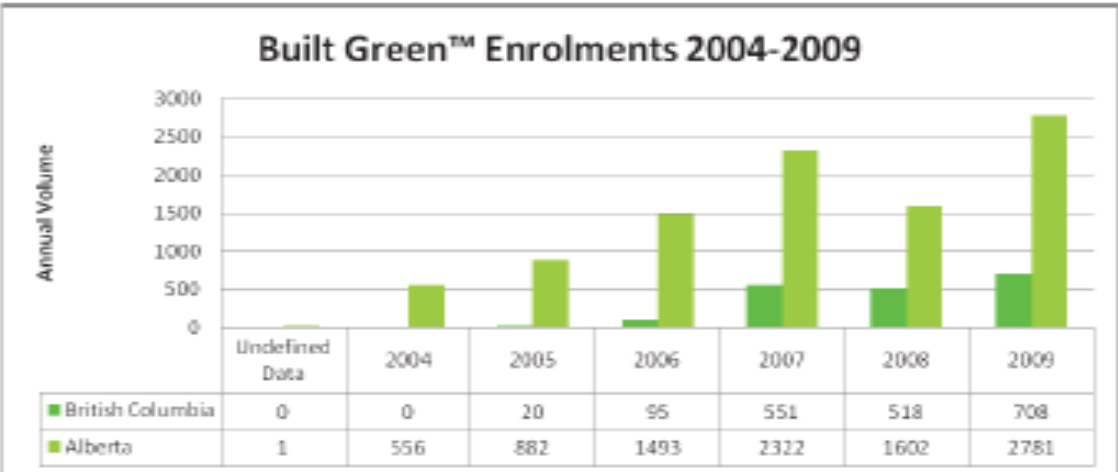
Whether participation in programs such as these translates into market share or profit and whether consumers are demanding these programs in large numbers remains to be seen. Many participate because it is the right thing to do and they get satisfaction from building a quality product.

In fact, builders are getting certified so that they can:

- Gain recognition for green building efforts
- Validate achievement through third party review
- Qualify for a growing array of government incentives
- Contribute to a growing green building knowledge

Industry Performance

The Built Green™ Society of Canada has monitored the growth in certifications, enrollments and homes labeled. As shown in the following graphs the Built Green™ Enrolments as well as certifications have increased steadily in Alberta since 2004.



In Alberta and the Medicine Hat region, the Built Green Statistics are as follows for 2005 to 2009:

ALBERTA

	2010	2009	2008	2007	2006	2005	TOTAL YR TO DATE
Total Homes Enrolled	688	1492	938	1418	776	534	5982
Platinum Label (2009)	23	13	2	N/A	N/A	N/A	38
Gold Label	507	466	1167	414	109	10	2873
Silver Label	421	282	186	17	20	10	918
Bronze Label	86	16	87	5	13	15	302
Total Homes Labeled	1037	877	1402	436	142	36	3929

MEDICINE HAT REGION

	2010	2009	2008	2007	2006	2005	TOTAL YR TO DATE
Total Homes Enrolled	19	19	1	0	0	0	39
Platinum Label (2009)	1	1	0	N/A	N/A	N/A	2
Gold Label	14	9	0	0	0	0	23
Silver Label	4	0	0	0	0	0	4
Bronze Label	3	0	0	0	0	0	3
Total Homes Labeled	22	10	0	0	0	0	32

Grants/Incentives

In April 2009, the Government of Alberta announced a three-year, \$36 million energy efficiency program. Over the next 8 months, over \$5 million in rebate cheques were issued to Albertans. The record number of Albertans that made green upgrades to their homes in 2009 resulted in the province jumping from a D+ rating in 2007 to a B+ rating according to the Canadian Energy Efficiency Alliance's 2009 report card. Overall, consumers were able to combine provincial incentives with the federal ecoENERGY Retrofit program and some municipal programs.

In 2009, Climate Change Central provided rebates for 12,000 home evaluations, 11,500 high-efficiency clothes washers, 5,000 furnaces, 49 new high efficiency homes, 285 domestic hot-water heaters, 200 water-saving dishwashers and 213 low flow toilets.

Below are incentives/grants/rebates available at the federal, provincial and municipal levels.

FEDERAL:

- Genworth Financial Energy-Efficiency Housing Program - Homeowners can get a 10 percent discount on Genworth mortgage insurance when they buy a home that has an EnerGuide rating of 77 plus or R2000, or refinance their home to make energy-saving renovations.
- Citizens Bank of Canada Climate Change Mortgage - Citizens Bank/Van City will take 0.1 percent of the mortgage payments made each year and invest it in a fund to fight climate change.
- CMHC Mortgage Loan Insurance Refund - Home owners can get a 10 percent refund on the cost of their home loan insurance when they buy an energy efficient home, purchase a home and make energy-saving renovations, or renovate their existing home to make it more energy efficient. Home owners can also get an extended amortization up to 40 years through this program.

PROVINCIAL:

- Project Porchlight (selected cities) - select residents in Alberta can receive a free compact fluorescent light bulb (delivered to their home by volunteers).
- Climate Change Central is offering rebates for:
 - o Air sealing
 - o Central air conditioner
 - o Clothes washer
 - o Domestic hot water
 - o Furnace/boiler
 - o Home energy evaluation
 - o Insulation
 - o New home

MUNICIPAL:

- EDMONTON - City of Edmonton High Efficiency Furnace Rebate for Low Income Households - \$2,000 rebate on the installation of a high-efficiency furnace for low income households within the City of Edmonton that have qualified for assistance through the Residential Rehabilitation Assistance Program (RRAP).
- EDMONTON - City of Edmonton Free Compact Fluorescent Light Bulb - Get a free 13-watt Sylvania ENERGY STAR qualified light bulb.
- EDMONTON - City of Edmonton \$500 High Efficiency Furnace Rebate - \$500 rebate on a high efficiency furnace.
- LETHBRIDGE - SunRidge Built Green™ Homeowner Rebate - Homebuyers in the SunRidge development can get up to \$3,500 in rebates for houses that meet environmental performance targets.
- STRATHCONA COUNTY - Strathcona County Rebates for Green Homes - Homebuilders who achieve R-2000 or Built Green certification are eligible for a partial rebate (up to 30%) on the cost of a building permit.
- CALGARY - City of Calgary Subsidized Composters - Residents can get a backyard composter at a reduced price of \$25 including tax.
- CALGARY - City of Calgary Residential Toilet Replacement Program - Residential metered customer can get \$50 when they replace their old toilet with a new water-saving, low-flush toilet.
- CALGARY - City of Calgary Rebates for Green Homes - Homebuilders who achieve Built Green certification are eligible for a rebate of up to 30 percent of the cost of

a building permit for the home. The value of the rebate depends on the level of certification achieved.

- MEDICINE HAT - HAT Smart - HAT Smart is a City of Medicine Hat program to educate and assist residents and utility customers in learning about initiatives that can help improve the environment and stretch their energy dollars. HAT Smart was developed as a result of City of Medicine Hat 'Community Environmental Roadmap", which provides a framework to better understand the community's environmental priorities, including performance indicators and long-term targets. HAT Smart is funded through the energy conservation charge that home owners face if they exceed the average natural gas or electricity used. The funds are pooled as part of HAT Smart and used for the incentives. About \$350,000 is pooled annually.
 - o The City of Medicine Hat provides HAT Smart New Home Incentives for new homes constructed in Medicine Hat. The New Home incentive program consists of three components:
 - An EnerGuide incentive that is focused on energy efficiency of your new home
 - A Built Green™ (or equivalent) incentive that rewards broader sustainable building practices; and
 - Renewable Energy incentives to encourage investment in residential solar energy systems.
 - o EnerGuide incentives - Medicine Hat residents who take possession of a new EnerGuide labeled single-family or multi-family row home on or after February 16, 2010 are eligible for one of the following incentives:
 - o \$1,000 for new homes that meet or exceed EnerGuide 78;
 - o \$1,500 for new homes that meet or exceed EnerGuide 80;
 - o \$3,000 for new homes that meet or exceed EnerGuide 82; or
 - o \$10,000 for new homes that meet or exceed EnerGuide 86.
 - o Built Green™ Incentives - Medicine Hat residents who take possession of a new Built Green™ (or equivalent) single family or multi-family row home on or after February 16, 2010 are eligible for one of the following incentives:
 - \$1,000 for new homes that are certified BuiltGreen Gold (or equivalent);
 - \$2,000 for new homes that are certified BuiltGreen Platinum (or equivalent);

Renewable Energy Incentives - Medicine Hat utility customers who install a renewable energy system on their new single-family or multi-family row home on or after July 2008 are eligible for the following incentives:

- Up to \$3,000 for Solar Hot Water System
- Up to \$6,000 for Solar Electric System

All applicants must attend a mandatory two-hour Energy Conservation Seminar that is free of charge.

HAT Smart New Home (EnerGuide) incentives and HAT Smart Built Green incentives cannot be combined with the HAT Smart Renewable Energy incentives.

There are a range of rebates available to Medicine Hat Utility customers to help increase the energy efficiency of the home. Some of these rebates also pertain to home renovation. APPENDIX D has a summary of residential incentives available through HAT Smart.

As of the end of November 2010, HAT Smart results were as follows:

- Residential Solar Hot Water - 22 installations complete, 8 installations in progress, and 20 rebates still available.
- Residential Solar Electric Systems - 34 installations complete, 7 installations in progress, 9 rebates still available.
- Commercial - Stu Moore Clothiers - 10 kilowatt solar electric project
- Commercial - Ridge Professional Centre - 30 kilowatt solar electric project

HAT Smart programming is being reviewed and its continuity (as well as the magnitude of the programs available) after March 2011 will be decided by Medicine Hat City Council over the next few months.

Organizations Visited

The value chain in “green building” can include:

- Consumer
- Building design professional
- Construction companies
- Various levels of government (key in providing incentives)
- Real estate professionals (integral in educating the consumer)
- Green product suppliers and manufacturers
- Building financiers
- Building developers
- Certified Energy Advisors (who is a trained and licensed third-party consultant that tests a home for energy efficiency).

The degree to which the players in the value chain participate in the sector varies, depending on their level of awareness and education pertaining to the benefits of green building. In order to understand the value chain in south east Alberta, the following organizations were consulted for their views on “green building”, its opportunities and challenges:

- TerrAlta -Alternative Energy Options (Marcus Campbell)
- Mulder Builders -Certified Built Green™ Builder (David Mulder)
- Brost Developments - Certified Built Green™ Builder (Gerhard Brost)
- Wilde Possibilities - Builder (Glen Winter, Kerry Wilder, Peter Wilder)
- Felesky Commercial Realty - Commercial Realtor (Val Felesky)
- Medicine Hat Real Estate Board - Residential Realtor (Jen McKenzie)
- HAT Smart - Incentive Programs (Russ Smith)

As a value chain, the feedback was as follows:

- **Consumers** are aware of green building and green options such as solar, thermal and energy efficiency measures such as low flow toilets. Energy efficiency is of importance, but there is a limit to what they will pay for it. The incentives provided through HAT Smart certainly help. There is a very small portion of the consumer market that is willing to pay for alternative energy options, given these economic times. The payback period is deemed to be too long.
- **Builders** are facing a tough market. The tough economic times have resulted in a “buyers” market. During boom times, many builders got certified as Built Green™ builders, as in the City of Medicine Hat, this was one way to get early access to lots. A few builders, such as Mulder Builders and Brost Developments, have built EnerGuide 86 and 87 (respectively) homes. They have had a difficult time re-couping the additional costs of building these green homes (even after applying rebates and incentives to the

bottom line). While consumers are interested in “green”, budget typically plays a large role in the decision making. As a result, builders are finding ways to build smarter and incorporate energy efficiency through tighter building envelopes and better building materials. While the homeowner is educated about the merits of better windows and tighter exterior, these are hidden attributes that pay off on a month to month basis and not necessarily an obvious selling feature at point of re-sale. During these tough economic times, builders are using smart building techniques and energy efficient options as a means to differentiate themselves from other builders and brand the quality of their work.

- **The City of Medicine Hat HAT Smart** program is well used. The uptake on the program is three to five times that of the provincial average on a per capita basis. However, the existing HAT Smart program ends in March 2011 and City Council has to decide on whether the program will be continued and to what degree it will fund initiatives and provide incentives.
- **Government of Alberta** has some incentives and initiatives. However, these are not to the degree that residents in provinces such as Ontario are enjoying. The sentiment from a builder, supplier and municipal government perspective is that the provincial government needs to take more of a leadership role in order to increase the awareness and uptake of green building and incorporation into energy conservation and use of alternative energy decisions.
- **Government of Canada** has limited incentives and initiatives. Again, more federal support is required to encourage adoption of alternative energy and conservation measures in the building sector.
- **Suppliers** of alternative energy techniques and components such as geothermal and solar are struggling to educate the consumer. In tough economic times, it is difficult to ensure that the consumer understands and “buys into” the month over month payback rationale for using the new technology. Certainly, incentives and initiatives are critical in the decision that consumers have to make as they struggle between balancing the economics and social aspects of using alternative energy.
- **Real Estate Professionals** have not experienced consumers asking for energy conservation or alternative energy features at the residential or commercial level. Top of mind items still include basics like kitchen and bathroom features, location, layout of the house, number of bedrooms, etc. On the commercial side, the economics of the lease is a salient feature. There is a buyers market both on the residential side and the commercial side. Residential realtors are faced with a downward pressure on homes and lower housing sales. Commercial realtors are faced with excess space in the City with buildings such as the previously Canadian Tire and Wal-Mart space still needing occupants. Both residential and commercial realtors note that as renovations need to take place, consumers are making energy conservation decisions. However, the consumers that are concerned about making the switch to using alternative energy such as solar or geothermal are still a huge minority.
- **Financial Institutions** are concerned with the consumer’s ability to pay back loans and mortgages. Therefore, lending decisions are based on the consumer rather than on the smart use of energy efficient or alternative energy components in a home. The big banks do not have any programs available that provide incentives to home owners to make the switch to more green features in a home.

In summary, throughout the value chain, in balancing economic and social reasons for incorporating energy efficient and alternative energy measures into a new home or a retro-

fit, the vast majority of the players are concerned with bottom line and making decisions that make economic sense. At all levels, “what’s in it for me” comes into play and trumps the altruistic reasons, especially given these economic times.

The issues and opportunities within the green building sector that were apparent from the interviews are summarized in the table below.

Issues and Opportunities

Issues	Opportunities
<ul style="list-style-type: none"> • Cost - Green buildings typically cost more than conventional buildings to design and build. Green buildings can have varying levels of “green”. In general, the greener a building, the higher the capital costs. • Depressed Housing Market - the economic downturn has resulted in a downward pressure on housing. This has resulted in a price-conscious, competitive environment. • Lack of Demand - Costs associated with “green” during these economic times is resulting in a lack of demand. • Incentives - Federal, provincial and municipal incentives are available to offset some of the costs of some green building upgrades. However, these are uncertain (including HAT Smart), fragmented and need to be strengthened. • Competition with Standard Features - For home buyers, standard features of a home such as kitchen and bathroom amenities rank above “green” features. • Overhead Costs of Certification - Although builders are creating homes that are at least to a bronze level, many are not getting them certified due to the costs associated with certifying a home (\$1,500 to \$2,000 plus time spent on paperwork) as well as getting certified as a Built Green™ Builder. • Property Values and Absorption Rates - There are few studies on the correlation between property values and green buildings, therefore this relationship may be one that is of interest mainly to speculative developers. • Lack of Knowledge and Awareness - The people within the building industry that have a thorough and accurate understanding of what a green building is and how a green building is achieved is still relatively low. This lack of 	<ul style="list-style-type: none"> • More Informed Buyers - Consumers are buying their second and third homes and they are more educated than the average; they have higher incomes and they report adopting other environmental habits (e.g. recycling, using transit, etc.). There is an increase in interest and research conducted among today’s consumers. Home buyers are interested in energy and cost savings; quality; uniqueness of design; indoor air quality; security of supply. • Awareness - Since the awareness is increasing, but still relatively low, there is an opportunity to educate builders and home owners on the variety of ways to build green. Also, Built Green™ and other initiatives provide the flexibility on how “green” a home can be. This allows homeowners to affordably make a difference. Awareness on this aspect can be increased. • Engaged Builders - Builders are keen on product differentiation, keeping up with technology, message of quality, brand recognition and reputation. Most popular features are: windows, furnaces, water heaters, toilets, air tightness and insulation. Less popular features are advanced features such as solar PV. • Labour Availability - There is available labour for the building sector, allowing for increase in building activity. • Market differentiation/competitive advantage - Green builders have the opportunity to use these qualities to differentiate themselves from conventional builders. Marketing in conjunction with local and national building programs help builders develop a brand and take advantage of media coverage and publicity that stem from this interest. • Municipal Government Commitment -

knowledge extends from lay people to lenders. With building developers being financed by lenders, it will be important that lenders distinguish conventional and green building construction. While the increased interest is forcing stakeholders to become informed quickly, this interest is not equal amongst stakeholders. Building designers and building specialists show greater interest, while developers, lenders and even owners seem to have little understanding or interest in green buildings.

- **Lack of Specific Financing** - Lenders are not interested in looking at the additional costs associated with green components such as solar or geothermal in a home. They are concerned with the mortgagee's ability to pay back the loan. Therefore, affordability and financing remain as challenges.
- **Building Code Requirements** - Most building designers rely on building codes in the design of their buildings. The National Building Code of Canada (NBC) is a set of minimum regulations and requirements for public health, fire safety, and structural sufficiency of buildings. Canadian building codes need to be modified to promote and better reflect green opportunities.
- **Increased Liabilities** - Green buildings tend to utilize non-standard materials and systems, which may result in increased risk of failure if proper expertise is not utilized.
- **Tendering and Contracting Styles** - Three typical traits of traditional contracting and tendering styles pose a challenge: low cost approach, focus on time and lack of emphasis on performance. Lowest cost is not always associated with quality (often associated with green building); shortest time frame for design and construction is not always the case in green building where an integrated design and construction process is critical; and designers, constructors and operators are often mandated to meet capital cost budgets rather than performance criteria.
- **Adoption of Life Cycle Approach** - Most building stakeholders focus on minimizing direct costs or, at best, using short time frame pay back periods rather than to consider long-term operating costs.

HAT Smart is a unique program in Alberta and shows the City's commitment to environmental sustainability.

- **Credibility** - A certified green home demonstrates to the buyer and to the community a builder's commitment to the environment, the homeowner and the community. This can assist with branding.
- **Exporting** - The United Kingdom government has set out ambitious targets for its industry which will see all new homes built to a zero-carbon standard by 2016 and all buildings by 2019. The Great British Refurb is also a long term strategy to renovate all existing buildings to a zero-carbon standard by 2050. The Alberta Government is committed to assisting companies in the Greenbuild sector establish links in the U.K.
- **Expansion** - The U.S. green construction market is estimated by the Government of Alberta to be \$12 billion, providing opportunities for Alberta companies to expand.
- **Political Influence** - Stronger provincial leadership is needed in the area of incentives and programs. Policies and programs have the opportunity to influence business. There may be an opportunity to lobby government to create a conversation and assume a stronger leadership position.
- **Reduction of Dependency on Public Utilities** - Energy efficient appliances, lighting systems, HVAC equipment result in lower energy consumption compared to conventional features. Using less water through water-conserving faucets, showers, toilets, and irrigation systems results in lower water consumption. Employing technologies such as photovoltaic panels for solar electricity and water heating, and geothermal heat exchangers could reduce dependence on public utilities.

- **Common Lease Structures** - Most leasing arrangements, particularly in commercial/office sectors, do not provide incentives to undertake modifications that might be beneficial to the environment.
- **Weak Research in Improved Productivity** - Studies that indicate that green buildings improve productivity are broad in nature and do not focus on the unique attributes of green buildings.
- **Incomplete or Poor Quality Database** - Reliable and thorough information respecting tangible benefits of green buildings is not yet readily available and therefore, leaves stakeholders with little data.
- **Uncertainty around HAT Smart** - HAT Smart is an incentive program that may not be able to be sustained in the long-run. Therefore, businesses whose model depends on incentives may face challenges in the future.
- **Technology** - The technology surrounding solar and geothermal can still be improved, especially from a cost perspective. At this time, it is affordable only to a small percentage of the market and dependent on incentives to ensure a more reasonable payback.
- **Value Chain** - The value chain is not convinced of the benefit of green.
- **CHBA Medicine Hat Region** - The CHBA in Medicine Hat is relatively young and may need assistance with awareness initiatives associated with green building.