



SUSTAINABLE BUILDINGS PILOT PROJECT

Phase 1

March 3 2005 Workshop

Backgrounder Package

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SUSTAINABLE BUILDINGS PILOT PROJECT

Project Rationale and Focus

The building industry is one of the nation's largest manufacturing activities, and for several years. The City of Kelowna and FortisBC have provided a variety of conservation programs aimed at the building design and construction industry. Programs have included technical assistance, incentives, and education in the areas of energy efficiency, air quality, water conservation, pollution prevention, and solid waste management. Initially, these programs were generally offered in a fragmented manner, with each City department providing its own set of programs independent of other departments. Although the programs have been successful, much more can be done to transform the market in order to make sustainable building the standard practice in the City.

Building structures impact areas beyond their immediate footprint, affecting air and watershed quality and transportation patterns of communities and consuming a significant amount of resources during their construction and occupancy. The City has become increasingly aware of the importance of sustainable building efforts in the overall scheme of environmental stewardship. The relationship between energy conservation and greenhouse gas (GHG) reduction is a major issue. Air quality improvement through energy conservation is high on the priority list for citizens, health professionals and air quality specialists. In Kelowna and the Central Okanagan Regional District, there is strong interest to improve air quality and energy conservation has a strong partnership for establishing external funding initiatives.

Sustainable Building Pilot Project

The Sustainable Building Pilot Project is supported and has been developed by The City of Kelowna's Energy Management Committee (EMC) in response to the opportunity presented from the Community Action on Energy Efficiency (CAEE) Pilot Project, sponsored by Natural Resources Canada and the BC Ministry of Energy and Mines the spring of 2004.

The EMC seeks to obtain input from all stakeholders regarding how the City would implement and enforce sustainable building development. The primary objectives of the Sustainable Buildings Pilot Project are to:

- Take advantage of the CAEE support for additional resources to pilot a Sustainable Building initiative to the development, professional and contractor communities,
- Partner with FortisBC and a property owner with a major development project underway in the City, to determine specific measures and criteria for sustainable buildings in Kelowna.

The Sustainable Buildings Pilot Project comprises two phases. Phase 1 of the pilot project involves members of the development and construction industry and the City of Kelowna getting together to prepare a definition of sustainable building in Kelowna BC and to identify planning, design, and building processes and elements that can be improved upon and accelerate the City's move towards sustainability. There will be two workshops in Phase 1. The first workshop, planned for March 3, 2005, will provide the preliminary definition of sustainable building and identify changes that the City could consider to facilitate development improvements and that the development community could incorporate in their projects.

The participants from the first Phase 1 workshop will review the documented results and prepare input for a second Phase 1 workshop, expanded to obtain the feedback and comments from a larger number of members of the development community. Workshop 1 participants will be asked to serve as active discussion leaders in Workshop 2 breakout groups. The results from the second Phase 1 workshop will refine the sustainable building definition and recommend actions for implementation by the City and the development community.

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The results of Phase 1, particularly the definition of sustainable building in Kelowna, will require a vision of how a sustainable building looks, feels, and performs in the City.

Phase 2 of the pilot project will reach out to the broader building-owner, tenant, and operations manager community, as well as interested residents in Kelowna to participate in a daylong design charette. Along with the Phase 1 results, there will be a development project, one that is proceeding in the City, presented as a case for the design charette.

Phase 1 results and documentation, along with Phase 2 design vision will be incorporated in a Sustainable Building Primer, a small book to serve as a roadmap to sustainable building in Kelowna. The pilot project partners will be able to use the primer, which will document this process as well for other municipalities, with other municipalities and regions throughout Canada.

Project Partners

- City of Kelowna
- FortisBC
- Natural Resources Canada
- BC Ministry of Energy and Mines

WORKSHOP 1, MARCH 3rd 2005

Format

The session has been designed to include interested parties without expanding the scope or schedule beyond the traditional workshop format. This is being achieved by holding the workshop with an audience in attendance. Those at the workshop table will be full participants in the process throughout the agenda.

Members of the audience may be called upon by workshop participants at the table for additional information. Otherwise, time allowing, the workshop facilitators may take questions from the audience.

This format will be relaxed for the luncheon roundtable scheduled for 12:30 pm.

Objectives

Sustainable Building Pilot Project Workshop 1 will:

1. Establish a working definition of Sustainable Building and identify indicators of sustainable building design, construction, operation practices;
2. Identify and clarify city codes and standards that are perceived as barriers to development of sustainable buildings;
3. Identify changes to city codes and strategies that can address code conflicts with the development of sustainable buildings;
4. Identify design elements measures that are efficient and may be implemented in the case study of the Sustainable Building Pilot Project; and
5. Review existing federal & provincial programs that offer incentives to improve energy and/or environmental performance of buildings.

Participants

In order to adequately address the complex workshop objectives, representatives of diverse stakeholder groups are invited. It is essential for the success of the effort to draw on the collective expertise and experience of architects, engineers and other designers, developers, building owners and users, city code officials, policy makers, and incentive providers (utilities, federal and provincial representatives)

Planning Professionals

- Mark Holland, Principal - Holland Barrs Planning Group
- Blair McCarry, Senior VP - Keen Engineering
- Michael Von Hausen, President – MVH Urban Planning & Design Inc.

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Agenda

8:00	Room Opens - Coffee & Refreshments	
9:30	Welcome Address	Walter Gray, Mayor City of Kelowna Kelly Cairns, FortisBC
9:45	Workshop Objectives	CAEE Project Management
10:00	<u>Sustainable Buildings Planning & Experience</u> Identifying and Overcoming Challenges in Sustainable Buildings	Mark Holland; Blair McCarry; Micheal Von Hausen
10:30	Sustainable Buildings in Kelowna - What are they?	Roundtable Moderated by Blair McCarry, Keen Engineering
11:15	<u>Municipal Infrastructure</u> The City of Kelowna and the Buiding and Development Permitting Process	Mo Bayat, City of Kelowna Ryan Smith, City of Kelowna
11:45	Lunch – Sponsored by FortisBC	
12:30	Realities for Sustainable Buildings <ul style="list-style-type: none">• Policy• Design for continuous improvement• Partnerships• Incentives beyond the coded: design of incentives	Roundtable Moderated by Mark Holland, Holland Barrs Planning Group
1:15	FEEDBACK DISCUSSION - Michael Van Hausen	
1:30	Building for Sustainability - Cost, performance and health lessons from the practitioners: <ul style="list-style-type: none">• Barriers in City's Codes and Bylaws• Materials• Building interior and owner/tenant behaviour• Role of DSM Programs	Roundtable Moderated by Michael Von Hausen, MVH Urban Planning & Design Inc.
2:15	FEEDBACK DISCUSSION - Mark Holland; Blair McCarry	
2:30	Break	
2:40	<u>Session 2 – Government Infrastructure</u> Goals of Existing Federal & Provincial Programs	Ian Fall, Natural Resources Canada Andrew Pape Salmon, BC Ministry of Energy and Mines
3:20	Workshop wrap-up	CAEE Project Management Team
3:40	Closing Reception	
4:30	END	

GREEN BUILDING DEFINITIONS

The following is a sample list of Green Building definitions. They do not represent a comprehensive list and have been included in this package for discussion purposes only.

Green Buildings BC

High Performance (Green) Buildings offer superior performance in a variety of areas, including:

- Functionality
- Energy and water efficiency
- Quality of the indoor environment (air quality, thermal comfort, lighting)
- Waste management and air emissions
- Site disturbance and storm water management
- Transportation options for occupants
- Longevity (durability, adaptability to changing building user needs)

(...) without necessarily increasing capital costs.

Some strategies that are typically used to achieve high performance include:

- Thermally efficient roofs, walls and windows that reduce heating loads and enhance thermal comfort.
- Building shape and orientation, thermal mass and daylighting strategies that reduce cooling loads.
- Significantly smaller HVAC systems and efficient electrical lighting strategies that capitalize on daylighting.
- Water efficient supply and waste fixtures.
- Adaptable interior designs, providing visual access to the outdoors and access to daylight.
- Interior finishes and installation methods having lower VOC emissions. Interior finishes and installation methods having lower VOC emissions.
- Landscaping strategies that require little or no irrigation, permit groundwater replenishment and provide on-site stormwater management.
- Siting to minimise stress on natural systems either by building on previously contaminated sites or avoiding ecologically sensitive areas.

Source: http://www.greenbuildingsbc.com/new_buildings/definition.html

Tufts University

Also referred to as "green" or "environmentally-sound" building, sustainable building is essentially the use of design and construction methods and materials that are resource efficient and that will not compromise the health of the environment or the associated health and well-being of the building's occupants, builders, the general public, or future generations. Sustainable design and construction decisions take into account the relationship between the health of our built environments, the health of our natural environment, and our own health. Such decisions are based on a wide range of considerations, including:

1. Land Use Context (Site Selection)

Siting new developments near public transportation and existing infrastructure, and away from sensitive habitats and floodplains

2. Land Impacts (Site Planning)

Preserving and reusing topsoil; preventing erosion and flooding; protecting water (quality) and conserving water (quantity),

3. Energy and Water Use

Capturing solar or other renewable sources of energy; using efficient and water-saving fixtures, equipment, and design strategies

4. Materials / Solid Waste

reducing material use; reusing and recycling construction and demolition debris; using materials with recycled content and with lower-impact manufacturing methods and by-products

5. Occupant Health and Well-Being

ensuring indoor air quality (via proper ventilation and minimization of toxic finishes and equipment); enhancing daylighting

Source: <http://www.egret.net/sbquestionnaire.htm> (Tufts University)

King County, Washington

Green building, or sustainable building, is defined by King County as: “Designing, constructing and operating buildings and landscapes to incorporate energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and indoor environmental quality in all phases of a building's life” (1999 Northwest Regional Sustainable Building Action Plan).

Source: <http://www.metrokc.gov/dnrp/swd/greenbuilding/index.asp>

Washington State Department of Ecology

The terms sustainable building and green building are used interchangeably throughout this site and are defined as designing, constructing and operating buildings and landscapes to incorporate energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and indoor environmental quality in all phases of a building's life. *NW Regional Sustainable Building Action Plan*

Source: <http://www.ecy.wa.gov/programs/swfa/cdl/>

Stanford University Sustainability Guidelines

A sustainable building may be termed “green,” “high performance,” or “energy- and resource-efficient.” At Stanford University, “sustainable buildings” refer to buildings that use energy, water, and other natural resources efficiently and provide safe and productive indoor environment. Achieving these goals requires an integrated development process.

Source: http://cpm.stanford.edu/process_new/Sustainable_Guidelines.pdf

United Nations Environmental Program

The concept of sustainability in building and construction has evolved over many years. The initial focus was on how to deal with the issue of limited resources, especially energy, and on how to reduce impacts on the natural environment. Emphasis was placed on technical issues such as materials, building components, construction technologies and energy related design concepts. More recently, an appreciation of the significance of non-technical issues has grown. It is now recognised that economic and social sustainability are important, as are the cultural heritage aspects of the built environment.

Still, sustainable construction adopts different approaches and is accorded different priorities in different countries. It is not surprising that there are widely divergent views and interpretations between countries with developed market economies and those with developing economies. Countries with mature economies are in the position of being able to devote greater attention to creating more sustainable buildings by upgrading the existing building stock through the application of new developments or the invention and use of innovative technologies for energy and material savings, while developing countries are more likely to focus on social equality and economic sustainability.

Source: <http://www.unep.or.jp/ietc/focus/EnergyCities1.asp>

State of California – Green Building Design and Construction

A *sustainable or green building*, is a structure that is designed, built, renovated, operated, or reused in an ecological and resource-efficient manner. Sustainable buildings are designed to meet certain life cycle based objectives. These objectives include:

- Protecting the health of building occupants;
- Improving employee productivity;
- Using energy, water and materials more efficiently;

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- Incorporating recycled-content building materials;
- Adding compost and yard waste prevention practices into the landscape design; and
- Reducing the environmental impacts associated with the production of raw materials, building construction, and building maintenance and operations.

The results: enhanced occupant health and productivity, significant cost savings, and a better environment.

Source: <http://www.ciwmb.ca.gov/GreenBuilding/Basics.htm>

California Sustainable Design Training Manual

Sustainable Design is "...to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits..."

Source: <http://www.ciwmb.ca.gov/GreenBuilding/Training/StateManual/StateManual.pdf>

City of Seattle

Sustainable building integrates building materials and methods that promote environmental quality, economic vitality, and social benefit through the design, construction and operation of the built environment. Sustainable building merges sound, environmentally responsible practices into one discipline that looks at the environmental, economic and social effects of a building or built project as a whole. Sustainable design encompasses the following broad topics: efficient management of energy and water resources, management of material resources and waste, protection of environmental quality, protection of health and indoor environmental quality, reinforcement of natural systems, and integrating the design approach

Source: <http://www.cityofseattle.net/sustainablebuilding/SBpolicy.htm>

City of Austin

A green home is one that's healthy, comfortable, efficient, durable and low maintenance-all the things that most people expect from quality building. A green home provides you with all these benefits in a way that's also easier on the environment.

Source: www.ci.austin.tx.us/greenbuilder

Buildsmart

(Operated by the GVRD)

Green Buildings embody a design intent that minimizes the overall environmental impact of buildings by being resource-efficient, improving indoor air quality, minimizing construction and demolition waste, having environmentally sound operations and maintenance regimes, and being able to adapt to future technologies and programs

Source: <http://www.buildsmart.ca/pdfs/SustainableBuildingDesignGuide.pdf>

www.buildsmart.ca

International Centre for Sustainable Cities

A sustainable city enhances and integrates the economic, social, cultural and environmental well-being of current and future generations

Source: <http://www.icsc.ca/>