

Sustainability NOW

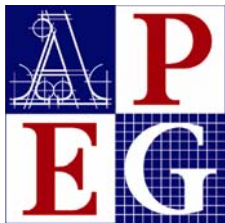
Newsletter of the Sustainability Initiative of the
Association of Professional Engineers and Geoscientists of BC

If not now, when? If not us, who?

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Professional Engineers
and Geoscientists of BC
www.apeg.bc.ca

The Greater Vancouver GreenGuide

Greater Vancouver is known as one of the most liveable regions in the world and a major centre for sustainability. Few resources exist to tell the story of sustainability in our region and to showcase our successes to visitors and residents.

The Greater Vancouver GreenGuide was officially launched on June 15, 2006, as an essential step towards promoting "sustainability in action" in the Greater Vancouver region. It was developed through a partnership between the Design Centre for Sustainability at UBC, the Sheltair Group and Holland Barrs Planning Group; with collaboration from the Greater Vancouver Regional District.

For the first time, the GreenGuide brings together in one place the green buildings, green neighbourhoods, green infrastructure, open spaces and social, economic and environmental programs that embody built examples of urban sustainability in Greater Vancouver. The goal of the GreenGuide is to help Greater Vancouver celebrate the initiatives that are underway and share these lessons as we continue to turn ideas into action.

The GreenGuide consist of a 208-page, highly graphical, 4.5"x9" pocket-sized guidebook, accompanied by a large-scale foldable map that allows users to locate projects easily. It documents and highlights key sustainability features of 111 projects, provides suggested tours and tells our region's sustainability story.

This user-friendly resource was designed to target a diverse audience that includes local and visiting environmental pro-

fessionals, architects, planners, landscape architects, and engineers. It will also be useful to local residents, developers and members of the general public interested in sustainability.

One of the case studies featured in the GreenGuide is the APEGBC Headquarters in Burnaby. Now ten years old, this building sets a precedent for green design, particularly for superior natural lighting technologies. Architects worked alongside APEGBC engineers in an integrated approach to design this successful space. The electrical systems maximize passive solar energies for lighting and heating. Most noticeable in appearance are precisely shaped "sails" that are suspended within the interior of the structure. These sails distribute natural and artificial light evenly into the interior space. Extensive glazing and fritted glass louvers on the east and south faces also contribute to enjoyable workspace for APEG employees.

The guidebook with map will sell for \$18.65 CAD, excluding GST. The GreenGuide is now available at the following locations:

- UBC Bookstore
- Duthie's Bookstore
- BCIT Bookstore

Multiple copies can be ordered online at:
www.greatervancouvergreenguide.ca

— Lourette Swanepoel
The Sheltair Group

Federal Government Contributes \$11 Million in Support for BC Energy-Efficient Buildings

The federal government is working with the government of BC on the Province's energy-efficiency and conservation goals. Support came in the form of \$11 million worth of federal funding for BC's Energy-Efficient Buildings Strategy, and was announced in mid-July by Minister of Energy, Mines and Petroleum Resources, Richard Neufeld together with Nina Grewal, MP for Fleetwood-Port Kells, on behalf of the Minister of Natural Resources for Canada, Gary Lunn.

The funding supports implementation of actions contained in the strategy released by the Province last fall, Energy Efficient Buildings: A Plan for B.C. This strategy, the first of its kind in Canada, aims for energy savings equivalent to the electricity consumption of 340,000 homes and natural gas consumption of 200,000 homes by 2025, with the ultimate goal of sustainable environmental management and job creation through energy conservation.

Acknowledging advances in energy-efficient designs and technologies for buildings, as well as rising energy costs, the Province worked with public- and pri-

vate-sector stakeholders to develop cost-effective energy-efficiency targets for new and existing buildings. "BC is a leader in innovative alternative energy solutions, including energy efficiency," said Minister Neufeld. "We launched our Energy Efficient Buildings Strategy—the first of its kind in Canada, encompassing all types of buildings—because it helps consumers and communities save money, it creates jobs and reduces the environmental impact of energy use." Minister Neufeld.

The federal funding comes from the Opportunities Envelope, a program designed to support cost-effective projects or programs brought forward by the provinces and territories to reduce greenhouse gas emissions.

More information on "Energy Efficient Buildings: A Plan for BC" can be found on the Ministry of Energy, Mines and Petroleum Resources site at:

www.em.gov.bc.ca/AlternativeEnergy/Alt_Energy_%20Home.htm#SECTIONS.

30 Days of Sustainability

A diverse range of events was held in Vancouver in March of this year as part of a month long sustainability festival entitled "30 Days of Sustainability". The aim of this festival is to educate and to integrate sustainability into our personal, professional and business values. Events included arts celebrations, market-places, lectures, workshops and online discussion groups. Watch for this for next year as organizers plan for this to be an annual event. For more information go to www.30daysofsustainability.com



As part of this sustainability festival, a series of Green Infrastructure Workshops was jointly organized by the BC Ministry of Environment's Sustainable Communities Initiative and 30 Days of Sustainability Society. These workshops provided a platform for practitioners and municipal policy makers to share ideas on leading edge green infrastructure and to learn from local projects. The following are reports from two APEGBC members who each attended a workshop.

District Energy Systems and Community Management

We are all fairly familiar with the traditional energy supply model where a large utility delivers electricity or natural gas to a large number of individual businesses and households spread over a diverse area. The energy is often generated or produced in locations that are many miles away from the end user and then delivered through a major transmission and distribution system. The local community does not typically get involved in the planning process or make decisions about how to best supply the community's energy requirements. In British Columbia, energy planning traditionally takes place at the provincial level. Integrating energy planning into community planning is not a common practice.

Lately, though, the concept of an energy utility has been undergoing some changes in British Columbia as a number of communities begin to provide energy under district energy models and work through the process to set up municipal utilities. District energy, where energy systems provide heating and cooling from centrally located equipment, is both a technological and a business model that facilitates more localized energy planning.

At this workshop, workshop leaders noted that one size does not fit all with district energy. Opportunities are unique to a municipality and may be presented by significant new development, the replacement of major community infrastructure or a particular heat source. The focus might be the centralization of the energy systems or could be the desire for a utility model. Regardless of the model, it is critical to build in long-term flexibility.

The City of North Vancouver has created the Lonsdale Energy Corporation to deliver energy in the Lower Lonsdale area. As a major landowner in this area, the city was in a unique position to design and deliver a district energy system; in this case, a series of mini-plants. Partnerships were critical to the success of the project.

The Resort Municipality of Whistler faces unique challenges of dealing with huge seasonal fluctuations in population. Spurred on by the 2010 Winter Olympics, the community has been engaged in an extensive planning process, "Whistler 2020", which has set specific goals for achieving sustainability by 2060. This broad based community planning process resulted in an extensive energy systems study for the 2010 Athletes Village that now provides the framework for energy planning at Whistler. One result of this planning process has been a downsizing of the original design capacity for the new natural gas pipeline as the community works toward weaning itself off fossil fuels and

evaluates the potential for a combination of waste water heat recovery, landfill gas and geothermal energy.

The City of Vancouver would like to leverage off the concepts incorporated in the South East False Creek Official Development Plan and expand this to a larger sustainability precinct including district energy as well as stormwater management. The planned new development along Great Northern Way presents the opportunity to do something innovative. The City envisions a Neighbourhood Energy Utility with a centralized base load from sewer heat recovery coupled with gas-fired boilers.

As noted by Bill Susak of Lonsdale Energy Corporation, we have become blissfully unaware of the electricity legacy in British Columbia and we have to get a lot smarter in how we use it. We all need to be thinking of where our energy comes from and to try to achieve the highest efficiency and best use of the energy resources we have. District energy systems have the potential to engage citizens and businesses in energy planning in a meaningful way.

— Catherine Marr, P.Eng.
APEGBC Sustainability Committee Member

Managing and Celebrating Stormwater

The evolution of design approaches takes designers from the conventional "crisis management", stormwater=wastewater approach, through low impact mitigative solutions and sustainable development, to restorative, enhancing designs. Water is at the heart of sustainability, and low impact development strategies can bring us one step closer towards it. Sustainability by design dictates that the creation of green spaces in neighbourhoods should be coordinated with drainage strategies. By handling just the first inch of rainfall per day, in-situ infiltration solutions to stormwater management can reduce runoff by 90% in most soil conditions.

Low impact development approaches to rainwater management include strategies that minimize concentrating stormwater through use of infiltration, bioretention, soil amendments, disconnecting impervious surfaces, green roofs and in-situ rainwater collection and reuse. Some design strategies that can be utilized in these approaches include curbless streets, rainwater leaders discharging to splash pads, grass filter strips at edges of pavement, compost amended soil that increases retention and reduces irrigation needs, pervious pavements and raingardens.

A modern engineer can find her roots in nature when contemplating the 'beaver' that collected water behind dams, the 'prairie dog' that dug pipe-like tunnels below the ground's surface where surface runoff would discharge in flash-floods and the 'buffalo' that would dig large wallows to provide relief to its bare behind, leaving behind basins that would complement the prairie dog's pipe-like tunnels and provide storage capacity for larger storm events. The beaver, the prairie dog and the buffalo used local materials and local labour to build a distributed drainage system that didn't cost them a billion bucks! Perhaps the modern engineer will find it increasingly easier now to return to her roots in her daily work...

— Maggie Wojtarowicz, E.I.T., LEED® A.P.
APEGBC Sustainability Committee Member

"Sustainability by design dictates that the creation of green spaces in neighbourhoods should be coordinated with drainage strategies."

How to Become Carbon Neutral in Life and Work

The average Canadian lifestyle results in about five tonnes of greenhouse gases being emitted to the atmosphere each year. The main source of these emissions are driving our vehicles and heating our homes, but the five tonnes doesn't include air travel, which can significantly increase our personal greenhouse gas emissions. For example, even a domestic return flight from Vancouver to Ottawa results in over three quarters of a tonne of greenhouse gases being released per passenger.

If you are reading this article, you are probably aware that the earth's climate is changing and that carbon dioxide is strongly suspected as being one of the primary agents driving this change. Perhaps you are wondering what you can do to reduce your contribution to greenhouse gas emissions? Recently, an option has become available to those who want to address this problem. It is called "offsetting".

There are now a number of different organizations that make it possible for individuals or businesses to offset their carbon emissions, and hence reduce or neutralize their greenhouse gas emissions. These organizations do this by investing – on your behalf – in projects that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur. The best projects not only reduce emissions, they also provide sustainability and development benefits. For example, "Offsetters" (a Canadian not-for-profit organization) invests in a project providing efficient lighting for villages in South Africa, and a project to disseminate efficient cooking stoves in Bangladesh, among others. Best of all, even high quality offsets are remarkably inexpensive. At less than CAD\$20 per tonne of greenhouse gases, the price to offset an entire year of emissions will cost the average Canadian only \$80.

Carbon dioxide emissions are released as an unavoidable product of combustion. So when gasoline burns in your car's engine, or natural gas burns in your home's furnace, or coal combustion in a distant power plant provides you with electricity, carbon dioxide is being released into the atmosphere as a direct result of your travel and lifestyle. Of course, there are many ways we can reduce our impact without having to resort to buying offsets. By taking transit to

work instead of driving, for example, we consume less gasoline. Improving your home's insulation, (or just turning the thermostat down a notch in the winter), will reduce consumption of natural gas or heating oil. It is a simple proportional relationship: burning less fossil fuels corresponds to producing less greenhouse gases.

However, as yet it is almost impossible to completely eliminate our use of fossil fuels and their corresponding release of greenhouse gases. Although it is recognized that in the long term we all need to reduce our emissions individually, in the short term offsetting is an important way to help reduce greenhouse gas emissions.

To purchase your offsets, all you need to do is visit the website of one of the organizations listed below. They provide simple tools that enable you to calculate the greenhouse gas emissions you are responsible for. Try offsetting some of your emissions. Better still, consider going all the way and become climate neutral in both lifestyle and travel.

For more information:

Offsetters: a not-for-profit corporation registered in Canada that enables you to offset the carbon dioxide emissions from your lifestyle and air travel. www.offsetters.com

Cooldrivepass: a new Canadian organization that allows drivers to offset their vehicles' carbon dioxide emissions. www.cooldrivepass.com

Climate Care: founded in 1998, this UK organization is a world leader in the provision of sustainable offsets. www.climatecare.org

Terrapass: the carbon offsetting option for vehicle drivers in the US; launched in 2004. www.terrapass.com

—Conor Reynolds, P.Eng.
APEGBC Sustainability Committee Member

Sustainable Building Centre Opens at Granville Island



Vancouver's Sustainable Building Centre opened March 25, 2006 in the heart of Granville Island. Staffed by sustainable building industry professionals, the centre is a destination for inspiration, advice and practical problem solving for builders and the public. People can learn more about green building by talking to knowledgeable staff, exploring the displays or browsing the SBC's resource library on sustainable building information, products and services. Questions can also be posed through the online discussion forums.

On Saturdays throughout the summer the Sustainable Building Centre will be hosting its "Guest Expert" series. On each Saturday between 2 and 4 pm, a different green building professional will be available to answer sustainable building questions

The SBC is located at 1575 Johnston Street, just east of the Granville Public Market on the second floor above Roger's Chocolates.

Upcoming Guest Experts

Saturday August 26, 2006:

Freda Pagani, *Director, Sustainability at UBC*

Saturday September 2, 2006:

Sophia Kelley, *cofounder of VREC*

Saturday September 16, 2006:

Morgan McDonald, *Founding Director, BC Sustainable Energy Association (BCSEA)*

Saturday October 14, 2006:

Walter Wardrop, *Industrial Technology Advisor, National Research Council's IRAP Program*

For more information, call 604-682-5960 or visit:

www.sustainablebuildingcentre.com



APEGBC Sustainability Events

Life Cycle Costing Workshop

On May 9, 2006 APEGBC was pleased to present a workshop on Life Cycle Costing. The workshop was led by Robert Charette, PE and introduced the 23 participants to ASTM and ISO Building Economic Standards. They learned the skills necessary to apply the Life Cycle Costing methodology to the evaluation and analysis of investments in buildings, specifically in the field of energy efficiency and Green Buildings. The participants found the session to be well presented, organized and comprehensive. The hands-on practice of the workshop format was very well received.

Upcoming Events

August 30 — Stormwater Management Analysis

Location: Terrace, BC

September 28, 2006 — Fluvial Geomorphology

Location: Cranbrook, BC

October 12—14, 2006 — APEGBC 2006 Annual Conference & AGM

Location: Victoria, BC

Information: www.apeg.bc.ca/prodev/prodevents.html

UBC Sustainability Street



UBC introduces a new kind of street smart! UBC Sustainability Street showcases UBC's world-first achievements in sustainable urban design, demonstrating new approaches to managing waste, energy and water in an urban environment.

"There's an urgent need for affordable and transferable solutions to urban environmental challenges," says David Grigg, Associate Director, UBC Campus and Community Planning. "With

UBC Sustainability Street, we're showing what's possible, using technologies that can easily be replicated – both here in Vancouver and elsewhere."

Sustainability Street represents the world's first closed-loop system of water recycling and re-use that integrates storm water management, wastewater treatment and ground source heating.

A storm water system collects rainfall and naturally filters contaminants before the water enters the groundwater table and surrounding streams. Wastewater from nearby buildings is treated with the Smart Microbial Process (developed by Vancouver-based Vision Envirotech International with assistance from UBC faculty), converting it into clean reusable water which is stored in the ground. Heat pumps use the treated wastewater and storm water to generate energy, replacing one of the Earth and Ocean Science's building's natural-gas-fuelled

heating and cooling units.

The site also incorporates a small-scale biodiesel production unit that converts waste cooking oil generated on campus into clean-burning biodegradable fuel to power campus maintenance vehicles.

"These solutions could easily be applied elsewhere," adds Jorge Marques, UBC Sustainability Office Energy Manager. "The closed-loop water recycling and re-use system would definitely benefit drier climates where fresh water is scarce, and in wetter climates like Vancouver, it prevents the erosion and ecosystem damage that happens when municipal storm water is discharged directly into waterways. The geo-exchange technology is an alternative to burning carbon fuels that can reduce energy costs by 20 to 60 percent over conventional heating and cooling systems. And the technology behind the biodiesel facility produces an economic and efficient fuel."

Sustainability Street has transformed the formerly non-descript thoroughfare of Stores Road into a visually appealing pedestrian-oriented promenade. Imaginative landscape architecture by Space 2 Place and innovative communications by Elio Creative complement the environmental processes and promote awareness of the interrelationships between people, the built environment and the natural world.

— UBC Sustainability Office

Sustainability Events in the Community

September 15 — ECOSMART Foundation: Building Performance Evaluation (BPE) forum for the Vancouver's Building Design Community

*Location: Vancouver, BC—Industry Canada, 300 West Georgia St.
Information: www.sbt.ca*

September 20 — U.S. - Canada Architectural/Engineering Partnership Seminar

*Location: Vancouver, BC
Information: Judy Simonite 604-685-3382*

September 20 & 21—Climate Action Tour 2006

*Location:
September 20—University of Victoria, Victoria, BC
September 21—UBC Robson Square, Vancouver, BC
Information: www.climateactionnetwork.ca/climatetour/*

Sustainability Now

Editor & Editing Subcommittee

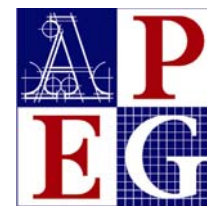
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