Canada Green Building Council, LEED™ Canada Rating System, and LEED Projects in Canada

Alex Zimmerman, President
Sustainability for Buildings?

Practically speaking = “Green” Design:
Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants.
Rating & Labelling Systems Used in Canada

• **LEED™** - from the Canada Green Building Council (Leadership in Energy & Environmental Design)

• **Greenglobes** – based on BREEAM (Building Research Establishment Environmental Assessment Method from British Research Establishment in the UK)

• **GBC 2002** - Canadian-led international effort (Green Building Challenge 2002)

• **Others** - more specialized, less widely utilized
Canada Green Building Council (CaGBC)

- National nonprofit organization founded Dec 2002
- Governed by member organizations, private & public
- License holder for LEED™ in Canada
- Developer of LEED™ Canada and administrator of LEED™ BC Green Building Rating System

www.cagbc.org
the USGBC has about 4,100 member organizations

CaGBC growing ~10% per month: currently 350+ member organizations
CaGBC Members by Category,
329 total, April 5, 2004
LEED™ - Leadership in Energy & Environmental Design

- Consensus-based standard created by US Green Building Council, adapted for Canada by Canada Green Building Council

- LEED examines and assigns points in:
  - Sustainable Sites
  - Water Efficiency
  - Energy & Atmosphere
  - Materials & Resources

Four Performance levels:
1. Platinum
2. Gold
3. Silver
4. Certified
LEED Point Distribution

Total of 69 points possible
In 5 LEED credit categories
LEED Uptake in Canada

- APEGG BC
- Vancouver 2010 Bid Committee
- GVRD
- City of Vancouver
- City of Victoria Dockside Lands
- University of BC
- BC Buildings Corporation

- Alberta Infrastructure Schools Pilot
- City of Calgary Sustainable Buildings Policy
- Manitoba Hydro $150 million building
- Public Works & Government Services Canada, Capital Projects > $10 million
- La Société Immobilière du Québec, Pilots for New Construction & Renovations
Projects & LAPs in Canada

68 LEED Registered Projects*

{3} LEED Certified Projects*

(525) LEED Accredited Professionals (Dec 03)

USA Projects, Mar 04:
1188 registered, 93 certified

**Source: USGBC, Mar 2004
Reasons for LEED Momentum

- Works well for institutional & commercial buildings
- Capital Cost effective (LEED Silver 0-2% premium*)
- Very rapid paybacks
- Third party credibility and outsourced verification process
- Key to meeting Kyoto commitments
Status of Canadian LEED Versions

• LEED BC Adaptation
  – Approved by USGBC July 2003
  – Assessment Teams hired, training soon
  – Registration, CIR & Certification process under development
  – Formally launched April 14 2004

• LEED Canada Adaptation
  – Comments on draft closed end of Sept ’03
  – Adaptation in hands of USGBC for approval: anticipated Apr/May ’04
  – Members approval balloting by late May ’04
  – Expected to be operational Jun ‘04

Future for LEED BC: 18 month period to integrate with LEED Canada, 1 year accepting Registrations, additional 6 months to obtain construction permit
LEED Canada Proposed Changes: Highlights

• General
  – Substitution of applicable base Canadian codes, standards, regulations
  – Some increases in performance targets

• Energy:
  – Additional MNECB/CBIP path
  – More stringent performance minimum
  – Different green power program

• Materials: Changes to calculations for SCMs, local materials & 1 credit for durability added

• IEQ: Changes to testing protocol
Examples:

3 LEED Certified Projects in Canada
LEED Gold: 42 Points

Vancouver Island Technology Park
Victoria, British Columbia, Canada

Version 2.0
GOLD

Sustainable Sites
- Brownfield Redevelopment: Redeveloping this abandoned hospital facility involved checking for soil contamination and removal of asbestos and underground storage tanks.
- Alternative Transportation: Negotiated extensions of several bus routes to site, bicycle parking and showers for 18% of users; negotiated reduction of municipal parking requirements by 50%; designated carpool parking.
- Reduced Site Disturbance: 57.9% of degraded habitat was restored by allowing previously irrigated turf area to restore itself naturally and planting native plants and trees. A no-build covenant protects trees.
- Stormwater Management: 100% of stormwater is treated and infiltrated on site through use of grass swales, grass/gravel pave system and stormwater treatment and retention ponds.

Water Efficiency
- Water Efficient Landscaping: Native plants and natural meadows require no permanent irrigation.
- Water Use Reduction: Water consumption reduced by 33% through use of dual flush toilets, waterless urinals, electronic sensors on faucets, and low flow shower heads.

Energy and Atmosphere
- Optimize Energy Performance: Exceeds ASHRAE/IESNA 90.1-1999 by 29%; strategies include occupancy sensors to control lighting, CO2 demand ventilation control and Optimal Start system to control fan start times.

Materials and Resources
- Building Reuse: Reused 100% of existing structure and 91% of existing shell.
- Construction Waste Management: 99% of construction waste was salvaged or recycled, saving $80,000 and costing 60% less than other contractor bids.
- Resource Reuse: Salvaged materials comprise 8% of total materials.
- Recycled Content: 33% of materials, measured by LEED’s weighted cost value, contain post-consumer and/or post-industrial recycled content (e.g., rebar, millwork, insulation, aluminum panels and rubber flooring).
- Local/Regional Materials: 31% of materials were manufactured within 500 miles, including glass/gravel pavers, concrete, wood, aluminium panels, roofing, siding, windows, wallboard, carpeting and paint.

Indoor Environmental Quality
- Low-Emitting Materials: All adhesives, sealants, paints, carpets and composite wood emit low or no volatile organic compounds.

Innovation & Design Process
- Innovation in Design: Integrated Site Water Management Plan and Salmon Bear Creek Rehabilitation treats stormwater from other sites and provides for rehabilitation of local creek; participated in a transportation program that resulted in promotion of alternative transportation; green building guidelines and educational program for tenants.

Owner: BC Buildings Corporation
Project Team:
Architects: Ikselink Architecture, Bunting Coady Architects
Engineers: Keen Engineering (mechanical); Robert Freundlich (electrical); First Team Engineering (civil)
Contractor: Campbell Construction
Consultants: JVB Consulting (green building); Chris Jones (energy modeling); Aqua-lex (stormwater)

Building Statistics:
Completion Date: September 2001
Cost: $17 per square foot
Size: 171,750 gross square feet
Footprint: 83,292 square feet
Construction Type: Speculative Office Development
Use Group: High Tech Research Park
Lot Size: 14 acres
Annual Energy Use: 11,040,900 kWh
Occupancy: 981 Staff
Vancouver Island Technology Park

Redevelopment of Glendale Lodge Hospital
VITP Overview

– 97% of degraded habitat restored
– 100% of stormwater treated on-site
– xeriscaping / native landscaping
– energy performance exceeds ASHRAE/IESNA 90.1-1999 by 28%
– Salvaged materials comprise 8% of total materials
– 33% of materials contain post-consumer & post-industrial recycled content
– Low-emitting materials used for paints, adhesives, coatings, and composite wood products
Sustainable Sites

**Landscaping** - native plants
- low water/maintenance plants
- Horticultural Students designing

**Stormwater** - managed through the use of ponds and bio-swales before discharge into creek

**No Pesticides** - qualified personnel with experience in alternate techniques

**GrassPave Parking**

**Eliminate Light Trespass** - down cast lighting

BC Buildings Corporation
Water Strategies

Ultra Low Flow, Dual Flush, Wash-Down Toilets

Showers - flow restrictors

Rainwater - investigated for use in toilets

Waterless Urinals

Sinks - infrared sensors
- aerator taps

BC Buildings Corporation
Deconstruction – 95% salvaged

Cabinets, toilets, sinks, concrete block, wiring, plaster, copper piping, metal pans etc
Alternate Transportation

Bike Paths -
connection to Galloping Goose bike trail and secure bike lockers/shower

Zoning changed - allows daycare, restaurants and necessary shops

Bus system - arrangement with transit to provide buses to site

Preferred parking to Carpools
Green Operations Building
White Rock, British Columbia, Canada

Owner: City of White Rock

Project Team: Busby & Associates

Architects: Keen Engineering (mechanical), Fact & Epp (structural), Flagel Lewandowski (electrical)

Engineers: Keen Engineering

Contractor: KDS Construction

Building Statistics:
Completion Date: June 2003
Cost: $185 Can per sq foot
Size: 6785 gross square feet
Footprint: 3573 square feet
Construction Type: Industrial
Lot Size: 2 acres

LEED Gold: 44 Points

Green Operations Building, LEED Project # 0225
LEED Version 2 Certification Level: GOLD
July 28, 2003

44 Points Achieved
Certified: 36 to 49 points 62% 70 to 95 points Gold 40 to 69 points Silver 36 to 59 points Bronze 1 to 35 points None

Materials & Resources

<table>
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<tr>
<th>Sustainable Sites</th>
<th>Possible Points: 14</th>
<th>Materials &amp; Resources</th>
<th>Possible Points: 13</th>
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<td>1 Dwell 5 Construction Waste Management, Off-Site Materials Recycled</td>
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<td>1 Dwell 7 Alternative Transportation, Existing Capacity</td>
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<td>1 Dwell 13 Landscape &amp; Exterior Design to Reduce Heat Island, Roof</td>
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Water Efficiency

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Energy & Atmosphere

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Innovation & Design Process

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<td>1 Dwell 5 Measurement &amp; Verification</td>
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<td>1 Dwell 6 Green Power</td>
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Certifications:
- LEED Gold: 44 Points
Operations Building Overview

• Located over an abandoned Sanitary Treatment Plant

• Green design measures:
  – A 1,448 sq. ft green roof
  – Potable water consumption reduced by 87%
  – Low-emitting materials
  – 60% better than the Canadian Model National Energy Code (50% of ASHRAE 90.1-1999).
  – Photovoltaic arrays provide 5% of the project’s total energy supply.
  – 100% of power procured through BC Hydro’s Green Power Certificates.

Busby + Associates Architects
Semiahmoo Library & RCMP Station
City of Surrey, British Columbia, Canada

Owner: City of Surrey
Design Build Project Team
Architects: Musson Cattell Mackey Partners - Darrel J Epp Architect
Contractor: Norson Construction

Engineers:
- VEL Engineering (mechanical), Weiler, Smith Bowers (structural), Flagel Lewandowski (electrical)

Building Statistics:
- Completion Date: August 2003
- Size: 30,000 gross square feet
- Footprint: 10,000 square feet
- Construction Type: Institutional

LEED Silver: 33 Points

Semiahmoo Library and Community Policing Station
LEED Project # 0504
LEED Version 2 Certification Level: Silver
January 22, 2004
Semiahmoo Library & RCMP
Community Policing Station Overview

- Design-Build competition
- Green design measures:
  - 88% of construction waste recycled or salvaged
  - Potable water consumption reduced by 41%
  - Over 62% of materials from within 500 miles
  - 45% better than the Canadian Model National Energy Code (50% of ASHRAE 90.1-1999).
  - 5% of the building materials with recycled content
  - CO2 monitoring system for HVAC control
Semiahmoo Library & RCMP Station
City of Surrey

High Performance Building Envelope; High Quality Lighting & Mechanical

MCMP Architects
Semiahmoo Library & RCMP Station
City of Surrey

Day Light Control

MCMP Architects
Semiahmoo Library & RCMP Station
City of Surrey

Natural Ventilation

Recycled Content

MCMP Architects
LEED Platinum?

MEC Montreal & Winnipeg Stores
MEC Montreal & Winnipeg Stores

Materials re-use
Conclusion

We have momentum
We are making a difference
We can do it . . .
. . . And we should!
For more information please visit

www.cagbc.org

Questions

info@cagbc.org