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# **Construction Solutions Conference**

## **June 1<sup>st</sup>, 2005**

### **Building Durability for Sustainable Development**



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**Presented by David Bengert**  
**President, BuiltGreen™**  
**Society of Canada**

# Today's Agenda

- 
- What is BuiltGreen™ Alberta and how does it work?
  - What makes a BuiltGreen home more durable?
  - What are the benefits?
  - Summary



# What is BuiltGreen™ Alberta?

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1. **BuiltGreen™ Alberta is a voluntary program that is owned and managed by the BuiltGreen™ Society of Canada. The Society has representatives from each Home Builder Association in Alberta**
  2. **The program encourages builders to build homes that are more energy efficient, use less natural resources, use recycled components, have better indoor air quality and an overall lower environmental impact.**
  3. **The BuiltGreen™ program was developed by a volunteer committee representing builders, trades, suppliers and manufacturers from the home building industry.**
  4. **Every builder must have at least one person take the R2000 builder training and the Hot2000 software training**



# What is BuiltGreen™ Alberta?

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- 4. Every home is modeled for energy efficiency, then tested for air tightness and depressurization. The final results are certified by Enervision for NRCAN**
  - 5. The EnerGuide software can model options for energy efficiency and show the savings in energy consumption. The cost of the option can then be compared to the savings to calculate the payback time or the lowering of monthly operating costs.**
  - 6. 5% of all BuiltGreen™ homes will be randomly tested by an independent firm to verify the checklist items**



# How does the program work?

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- **All builders must first take the R2000 builder training**
  - **Next the home must be computer modeled using the HOT 2000 NRCAN software. Information such as home orientation, home dimensions, insulation values, type of heating system, window type and window design are input into the software in order to calculate a rating. The home must obtain a minimum rating of 72 on the *EnerGuide* scale.**
  - **Select specification items from the checklist, then register the home with the local HBA.**



# BuiltGreen™ Alberta Checklist

**CONTAINS: 181 individual items**

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The BuiltGreen™ checklist is comprised of eight sections. The first section is the **ENERGUIDE RATING**. Points are awarded based on the minimum *EnerGuide* rating with additional points selected from each of the seven other areas of the checklist to give a cumulative total. The program has three achievement levels

**BRONZE LEVEL:** *EnerGuide* Rating of 72, this is about 11% more energy efficient than standard construction

**SILVER LEVEL:** *EnerGuide* Rating of 75, this is about 18% to 21% more energy efficient than standard construction

**GOLD LEVEL:** *EnerGuide* Rating of 77, this is about 25% to 30% more energy efficient than standard construction



# BuiltGreen™ Alberta Checklist

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**OPERATIONAL SYSTEMS: Select from 38 items  
MINIMUM of 15 POINTS TO BE SELECTED.**

**This section awards points for construction methods and types of products that contribute toward lower energy consumption as well as alternative heating and electrical systems.**

## **OPERATIONAL SYSTEMS:**

### **Sample of 38 items**

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- Programmable thermostat with dual set back and fan only switch, thermostat to be programmed by builder prior to occupancy (3 points)**
  - Install photovoltaic electrical generation system which supplies 50% of electrical needs for home (8 points)**
  - Dishwasher is an *Energy Star* labeled product (1 point)**
  - Minimum 50% of light fixtures are fluorescent or have compact fluorescent light bulbs installed ( 2 points)**
  - Install ground source heat pump system, either radiant or air ducted for space heating and cooling. ( 10 points)**
  - 50% of electricity used during construction of home is generated by wind power (2 points)**



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## **BUILDING MATERIALS: Select from 36 items**

**MINIMUM of 15 POINTS to be selected. This section deals with building components that make up the structure of the home. Items involve alternatives to using large dimensional lumber, products with a recycled component, utilizing wood products that come from sustainable managed forests and reducing the overall amount of lumber used.**



# Building Materials: Sample of items

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- **Dimensional lumber from a third-party certified sustainable harvested source used for roof framing (1 point, Certificate)**
  - **Dimensional lumber from a third-party certified sustainable harvested source used for wall framing (2 points, Certificate)**
  - **Engineered floor joist system (2 points, spec sheet or field verification)**
  - **Engineered lumber products used for all exterior window or door headers ( 1 Point, spec sheet)**
  - **Engineered stud material for 10% of stud wall framing ( 1 point, spec sheet)**
  - **Finger-jointed plate material and/or Engineered plate Material ( 1 point, spec sheet)**



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## **EXTERIOR and INTERIOR FINISHES: Select from 38 items**

**MINIMUM of 10 POINTS to be selected. This section focuses on the finish materials used both inside and outside of the home. The items listed include using longer lasting products, products with recycled content and products that are harvested from managed forests.**

# Exterior and Interior Finishes:

## Sample of items

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- **Natural cementitious stucco/stone/brick or fiber cement siding, any combination of products for 100% of exterior cladding (4 points)**
- **Deck or veranda surfaces made from 100% recycled materials (3 points)**
- **Exterior trim materials are manufactured from OSB (2 points)**
- **Minimum 35 year roofing material (4 points)**
- **Minimum 25% recycled content roofing material**
- **MDF casing and baseboard used throughout home (2 points)**



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## **INDOOR AIR QUALITY: Select from 34 items**

**MINIMUM of 15 POINTS to be selected. This section focuses on the quality of the air within the finished home. Products listed here include materials that are low in VOC's, products made from all natural materials as well as various air cleaning and ventilation systems.**

# **INDOOR AIR QUALITY:**

## **Sample of Items**

- 
- 
- **Low formaldehyde OSB (Phenol resins only) used for sub floor sheathing (3 points)**
  - **Install hardwired carbon monoxide detector outside main sleeping areas ( 3 points)**
  - **All ceramic tiles are installed with low VOC adhesives and plasticizer-free grout (2 points)**
  - **Water-based lacquer finishes are used on all site built and installed millwork, including doors, casing and baseboards. (3 points)**
  - **Low formaldehyde particle board/MDF used for cabinets or shelving ( Standard is ANSI A208.2-1994 concentration 0.3 ppm) ( 2 points)**



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## **WASTE MANAGEMENT: Select from 13 items**

**MINIMUM of 7 POINTS to be selected. This section deals with the handling of waste materials on the construction site and encourages recycling.**

# Waste Management: Sample of Items

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## **WASTE MANAGEMENT: Sample of items**

- **Minimum 25% (by weight) of waste materials collected from construction site are diverted from waste stream (2 points)**
- **Trades working on the construction site remove their own waste materials and recycle a minimum of 10% ( 1 point per trade for a maximum of 4 points)**
- **Install built-in recycling center in kitchen, laundry or garage with two or more bins (3 points)**
- **Use of recycled materials derived from local construction sites. One point for each different product used.**



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## **WATER CONSERVATION: Select from 13 items**

**MINIMUM of 7 POINTS required. This section contains products and conservation methods that will reduce the amount of water used in the home for personal and landscaping uses.**

# **WATER CONSERVATION:**

## **Sample of items**

- 
- 
- **Install CSA approved toilet averaging 1.6 GPF or less in one bathroom. Add one point for each additional toilet installed (2 points for first toilet)**
  - **Install CSA approved double flush toilet in one bathroom. Full flush to use no more than 1.6 GPF or less. Add 2 points for each additional toilet (3 points for first toilet)**
  - **Install hands free lavatory faucets. One point per faucet (1 point)**
  - **Front loading clothes washer (3 points)**
  - **Provide a list of drought tolerant plants and a copy of the local municipality's Guide to water usage to homebuyers with closing package, and add an additional point if builder incorporates water-wise landscaping on showhome (1 point)**



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## **BUSINESS PRACTICES: Select from 9 items**

**MINIMUM of 6 POINTS required. This section deals with the environmental business practices of the home builder as well as the environmental practices of the manufacturers that the builder deals with.**

## **BUSINESS PRACTICES: Sample of items**

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**Finished products used in the home are manufactured within 800 km in order to reduce the energy used in transportation. ( 1 point per product to a maximum of 5 points, spec sheet or invoice)**

- Environmental certification for building (builder or manufacturer) ( 5 points, Certificate)**
- Require manufacturers to use reusable, reduced, or recyclable packaging ( 1 point, copy of Builder Letter)**
- Manufacturing plant meets or exceeds hazardous air pollution and water regulations through pollution prevention ( 1 point, Manufacturers Letter)**

# Blower Door Test & EnerGuide Label

- **Build the home and have the mandatory blower door test conducted. The blower door is a fan mounted on an adjustable panel that can fit into any exterior door opening of your home. This test is preformed on every home prior to occupancy by an independent company. Final results of the test will verify the EnerGuide Rating**



ENERGUIDE		
<b>FOR HOUSES POUR LES MAISONS</b>		
16 Yourstreet Ave, Ottawa, Ontario K1P 0J9		
<b>77</b>		
▼		
Basic/ Basique	Improved/ Amélioré	High/ Haut
Level of energy efficiency/Niveau d'efficacité énergétique 70-74	75-79	80+
▲ Energy Efficiency Target/ Objectif d'efficacité énergétique		
<b>Estimated annual energy consumption</b> Estimation de la consommation annuelle d'énergie		
electricity/ électricité :	gas/ gaz :	oil/ mazout :
<input type="text"/>	<input type="text"/>	<input type="text"/>
File number/N <sup>o</sup> de dossier : _____		
Date of construction/Date de construction : _____		
Builder/Constructeur : _____		
Energy evaluation performed by/Évaluation énergétique effectuée par : _____		
An energy report has been provided to the homeowner. Un rapport d'évaluation énergétique a été fourni au propriétaire. Date: _____		
www.nrcan.gc.ca / www.nrcan.gc.ca 1 800 O-Canada		
		



# How can a BuiltGreen Home be more durable and help sustainability?

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- **Points are awarded for using structural components that either reduce the amount of lumber used or for wood that comes from a third party certified sustainable source.**
  - **Points are awarded for cabinets, hardwood flooring or millwork that uses wood from a third party certified sustainable source.**
  - **Points are awarded for products that have a recycled content.**
  - **Points are awarded for products that last longer or need less maintenance.**
  - **The air tightness test can identify areas of air leakage into the wall cavity**

# Benefits to the homeowner

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- **Lower monthly operating costs**
- **Increased comfort**
- **Lower maintenance costs**
- **Improved indoor air quality**
- **Increased market and resale value**
- **Lower environmental impact**



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# What colour is *your* future?

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