



Equilibrium™

HEALTHY HOUSING
FOR A HEALTHY ENVIRONMENT

BC Building Envelope Council – AGM & Conference
Vancouver BC
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Research and Information Transfer

www.cmhc.ca

Canada 



CMHC's Policy and Research Division

- Over 60 years of housing research
- Research areas include:
 - Efficiency of Housing Markets
 - Needs of Communities
 - Needs of individuals
 - Building Performance and Technology
 - Improved Data
 - Research is posted on CMHC's website at www.cmhc.ca
 - Our latest initiative is:



CMHC's EQUilibrium™ Sustainable Housing Demonstration Initiative

- National residential design-build-demonstration initiative led by CMHC
- To develop technologies for houses, and eventually for communities
- Will improve the quality of houses
- Will benefit future generations



Now House™
Toronto, ON



EQUILIBRIUM™
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CMHC's EQUilibrium™ Sustainable Housing Demonstration Initiative

Core principles:

- Health
- Energy
- Resources
- Environment
- Affordability



CMHC's EQUilibrium™ Sustainable Housing Demonstration Initiative – Vision

- Uses readily available technologies
- Links different technologies
- Aims to reduce the homeowner's need for energy
- Can be applied to a variety of housing models
- Builds interest and capacity



Solar hot water collectors



Slab hot water radiant heat distribution system



Photovoltaic roofing tiles

Features of an EQuilibrium™ House

- Climate-specific design
- Passive solar design
- Usage of natural daylight
- Energy and resource-efficient construction methods, materials and appliances
- Integrated renewable energy systems



ÉcoTerra™
Eastman, QC

Features of an EQuilibrium™ House

- Connected to the utility grid
- Can access additional energy
- Can sell energy production surplus



Inspiration—the Minto ecohome
Ottawa, ON

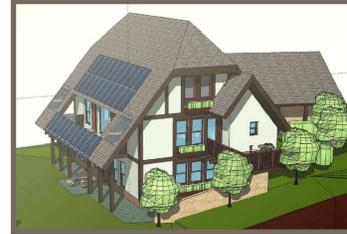
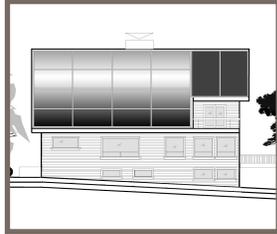
Key Research

- Monitoring to compare with predictions from modelling and national averages.
- Electricity Metering
 - Primary KWH
 - DHW electricity consumption
 - Renewable energy system electrical generation
- Fuel metering
- Water Metering
- Thermal Energy
- IAQ
 - ACH/hr, CO, CO₂, Formaldehyde, RH & temp, Radon, VOC's, tracer gas

Key Research

- Affordability – key information for builders and consumers
 - Materials and systems
 - Best cost efficiencies
 - Impacts on operating costs
 - Impacts on construction costs
 - Overall carbon footprint
 - Impact on real estate value / resale

The 15 Demonstration Projects



The Demonstration Projects

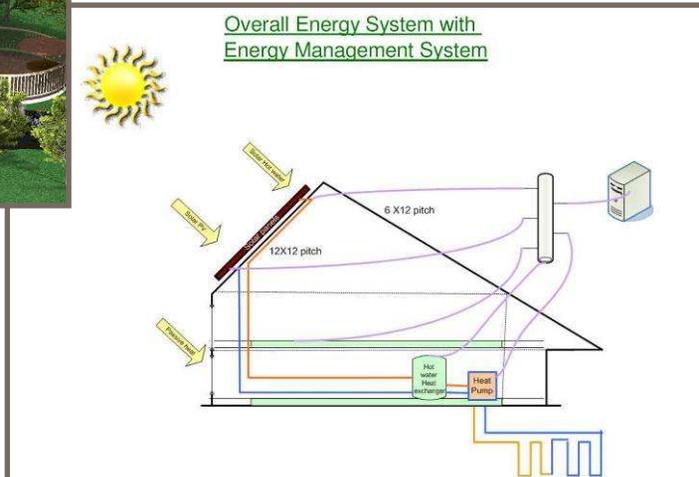
- 77 proposals were evaluated
- 15 teams were selected
- CMHC offers marketing, technical and financial support
- 7 projects are now completed – Monitoring is to commence after occupancy. 3 have started monitoring
- 3 recent additions – Moncton NB, Kamloops and Burnaby BC brings the Initiative into maritime and interior desert climate zones

The Demonstration Projects

Moncton VISION Home:

A two-storey detached home

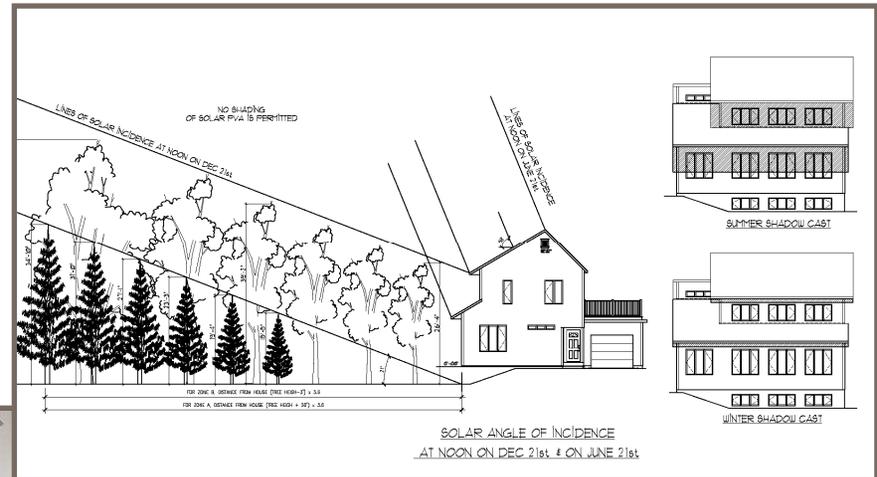
Moncton, NB



The Demonstration Projects

ÉcoTerra™:

A two-storey detached home
Eastman, QC



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The Demonstration Projects

Abondance le Soleil:

An energy and resource-efficient triplex

Verdun, QC



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The Demonstration Projects

Alstonvale Net Zero House:

A single-family detached house

Hudson, QC



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The Demonstration Projects

Inspiration - the Minto ecohome:

A single family home

Ottawa, ON



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The Demonstration Projects

Now House™:

Retrofit of a 60 year old wartime house

Toronto, ON



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The Demonstration Projects

Riverdale NetZero Project:

An energy-efficient duplex

Downtown Edmonton, AB



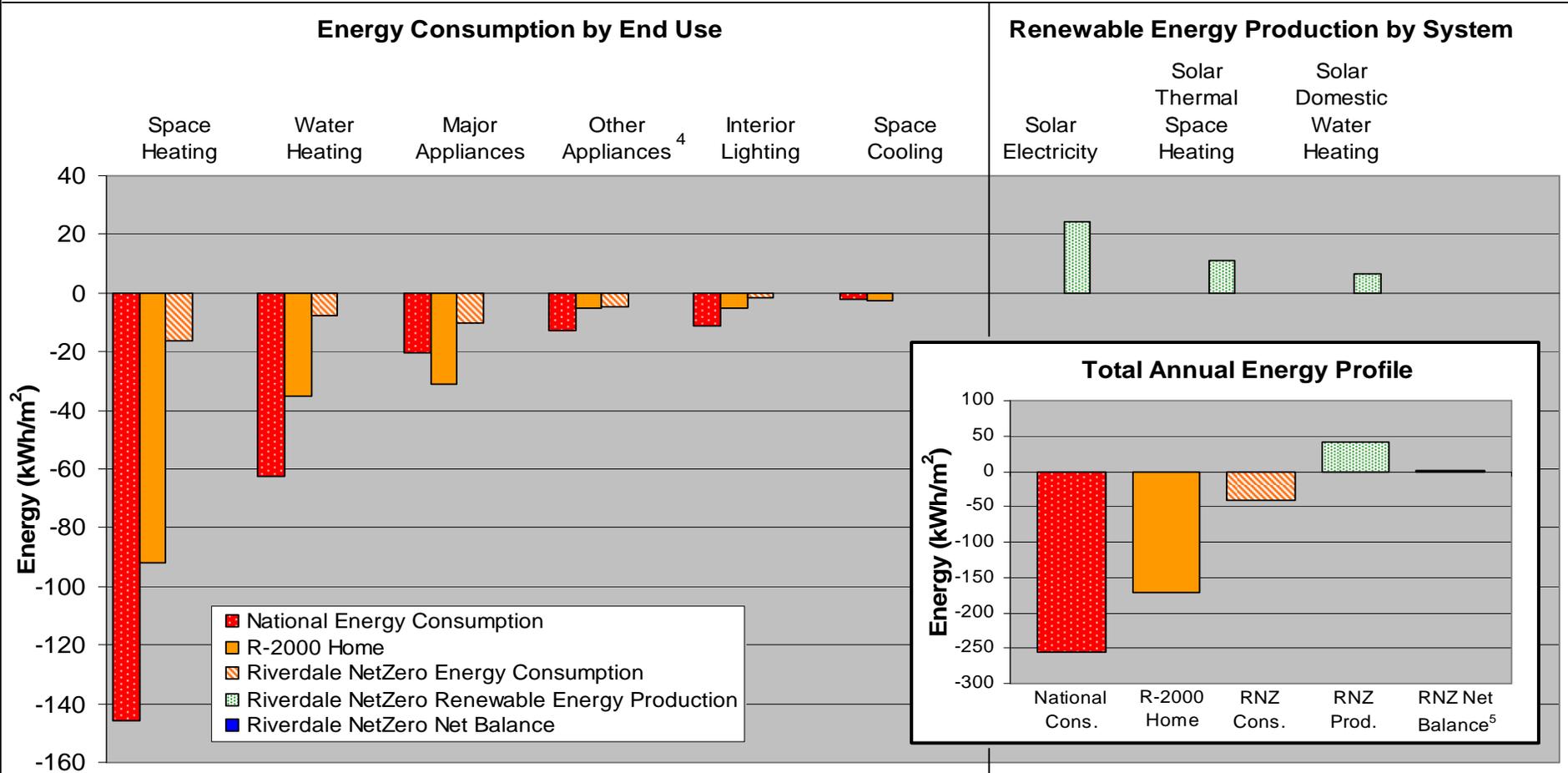
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EQuilibrium Demonstration: Riverdale NetZero

CMHC EQUILIBRIUM HOUSING INITIATIVE

Comparison of Canadian National Average¹, R-2000 Home² and Riverdale NetZero³ (RNZ)
Annual Residential Energy Profile



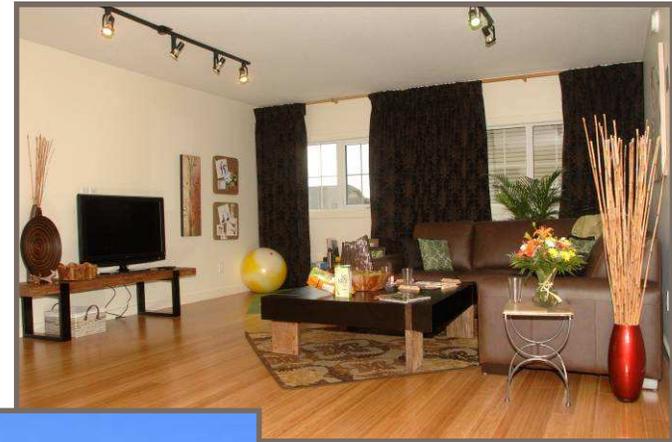
1 Source for Canadian Residential Sector Energy Data: Residential Secondary Energy by End Use, 2004; *Energy Use Handbook Data: 1990 and 1998 to 2004*, Natural Resources Canada, 2006.
 2 R-2000 Home values are based on the CHHT houses built to an earlier R-2000 standard.
 3 Values are predicted based on Hot2000 modelling - TG
 4 "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.
 5 Net Balance = Energy Consumption + Renewable Energy Production

The Demonstration Projects

Avalon Discovery 3:

A single family home

Red Deer, AB



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The Demonstration Projects

The Laebon CHES Project:

An energy-efficient bungalow

Red Deer, AB



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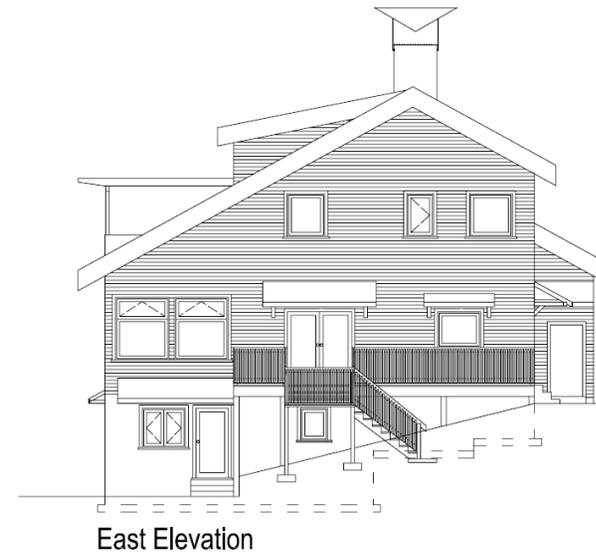
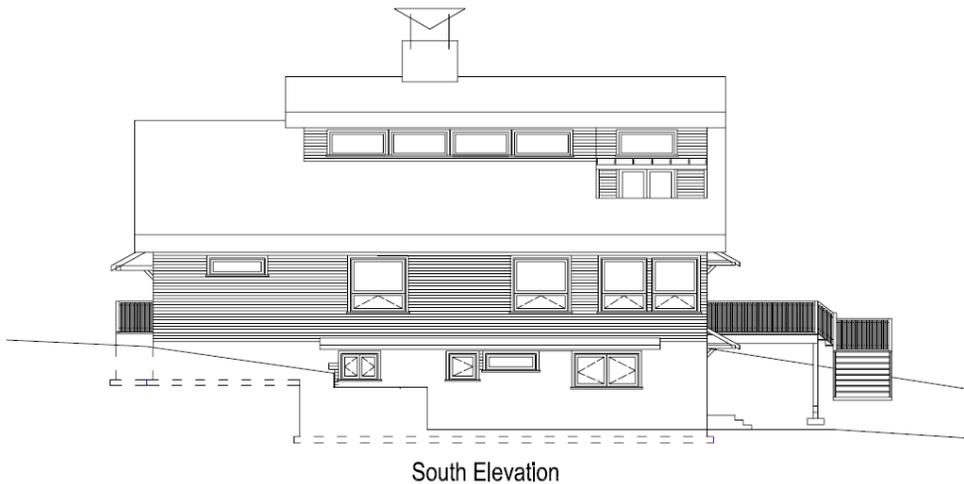
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The Demonstration Projects

Harmony House:

A two-storey home with the capability for two housing units

Burnaby, BC

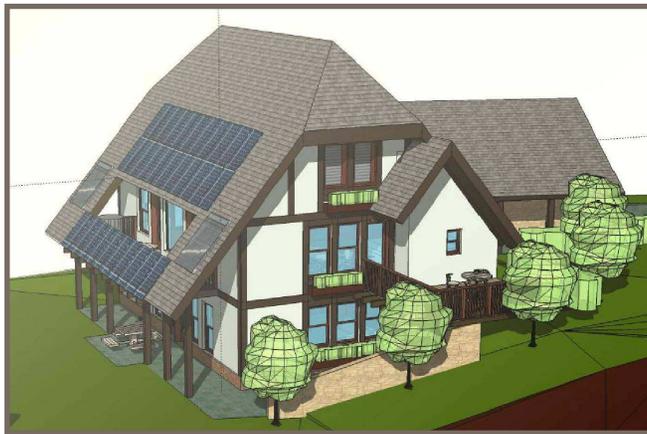


The Demonstration Projects

The Green Dream Home:

A two-storey detached home

Kamloops, BC



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EQuilibrium™ Communities

What is Next ?

EQuilibrium™ Communities
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Natural Resources
Canada

Ressources naturelles
Canada

Canada



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ecoACTION Collaboration

- CMHC / NRCan collaboration
- Joint initiative under the ecoACTION umbrella (branding, communications, approvals)
- 50 / 50 cost-shared
- Managed jointly by Working Group co-chairs
 - Sustainable Communities Policy and Research, CMHC
 - Sustainable Buildings and Communities, CanmetENERGY, NRCan

Equilibrium Communities

- Energy
- Land Use and Housing
- Water, Waste water and Storm Water
- Transportation
- Natural Environment
- Financial Viability

Note: competition closes today

Winners will be announced OCT / NOV 09



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