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Why is CMHC involved in sustainable development?

- research to improve housing quality and affordability
- building on decades of housing research
- new focus with climate change
 - how does the environment impact housing?
 - how does housing impact the environment?

What is EQuilibrium™ Housing?

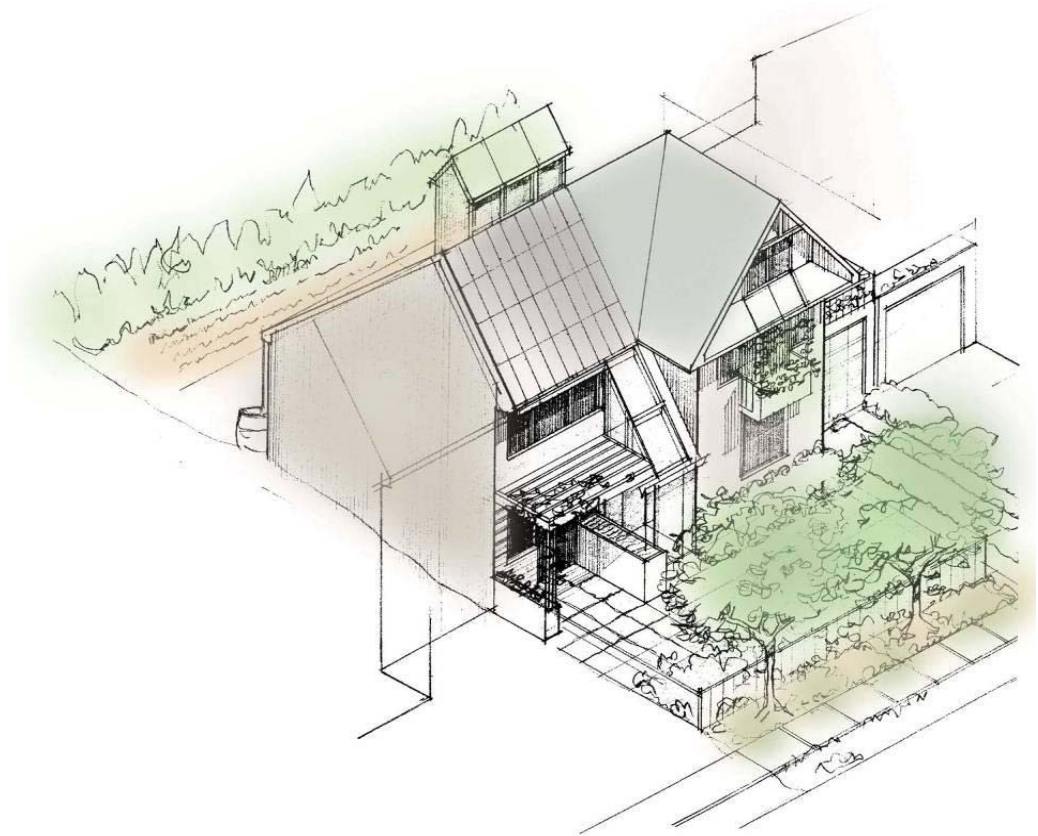
Residential design-build competition for builders and developers to create homes that:

- produce as much energy as they use on an annual basis
(but still connected to the grid)
- use “off-the-shelf” technology
(as easy to use and maintain as a conventional home)
- meet local market demands
(someone willing to buy it based on price and curb appeal)

More than just energy efficiency

Core Principles

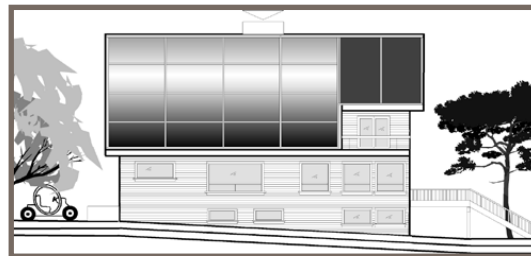
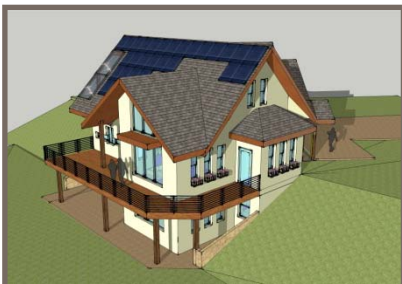
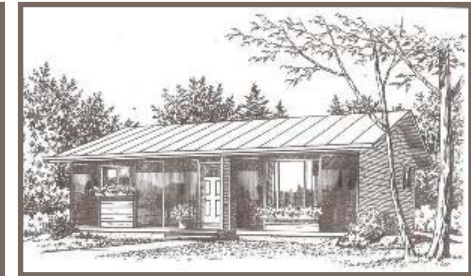
- Health
- Energy
- Resources
- Environment
- Affordability



EQuilibrium™ Housing Initiative Objectives

- Foster market acceptance of sustainable housing
- Build capacity to deliver sustainable housing and communities across Canada
- Ensure access to quality, healthy housing that mitigates household energy costs
- Reduce the energy and resource intensity of the Canadian housing sector
- Contribute to a clean environment and reduced greenhouse gas emissions
- Develop Canada's next generation of value added exports for competitive international markets

CMHC EQUilibrium™ Demonstration Projects



Riverdale NetZero Project: Zero Energy Duplex

Edmonton, AB
Habitat Design Studio &
Howell Mayhew Engineering



Two unit semi-detached form

- 1,870 ft², 3 bedrooms per unit
- South-oriented design passive solar design
- One-car garage



\$106,000 in costs to reduce home energy bills by 100%
(out of reach for most homeowners)

BUT

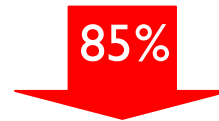
only \$18,000 in costs to reduce home energy bills by 85%
(the final 15% is what costs so much)

“Green” Features

Impact on Energy Bill

Cost

Better insulation, windows, heating systems, appliances, passive solar design



\$18K

Solar panels for hot water and indoor heat



+ \$36K

Solar panels for electricity



+ \$54K

TOTAL

\$106K

Avalon Discovery 3

Avalon Master Builder
Red Deer, AB



EQuilibrium™ Demonstration: Avalon Discovery 3



EQuilibrium™ Demonstration: Avalon Discovery 3



our homes are
**100%
GREEN**

HOME

ABOUT
AVALON

BUILDING
GREEN

OUR
HOMES

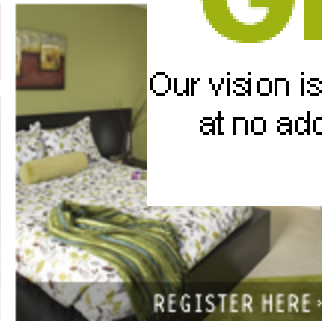
CONTACT
US

We want a home that won't cost the earth!



... and we'll pay
the utility bills
for a YEAR!

LOVE YOUR WORLD



Our vision is to build net zero homes
at no additional cost by 2015.



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CANADA MORTGAGE AND HOUSING CORPORATION

EQuilibrium™
HEALTHY HOUSING
FOR A HEALTHY ENVIRONMENT

EQuilibrium™ Demonstration: NOW House

Now House™

Retrofit of a 60 year old wartime house

NOW House Project Inc.

Toronto, ON



EQuilibrium™ Housing Demonstration Project



The Now House™: Post-war 1 ½ Storey Home Renovation

Toronto, ON
Work Worth Doing design studio

EcoTerra: Eastman, Quebec

LES MAISONS
Alouette



Capteurs solaires
photovoltaïques.



Fenêtres triples,
double low-e,
double argon.



Optimisation de
l'éclairage naturel
en fonction
de la surface
des murs et
de l'orientation sud
de la maison

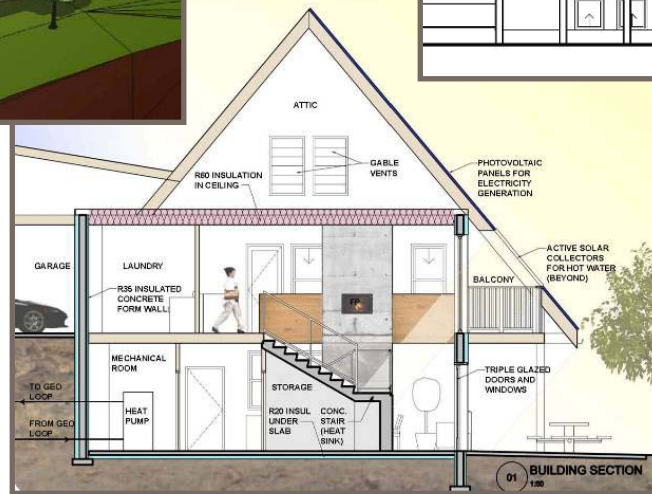


From foundation to 90% complete in one day



The Green Dream Home

CHBA CI, and Thompson Rivers University
Kamloops, BC



- CHBA Central Interior lead
- Partnership with Thompson Rivers University design and building trades students
- Local Dream Home Lottery prize for 2010 benefiting local charity (YMCA/YWCA)



Alstonvale Net Zero House

Hudson, QC

Sevag Pogharian Design

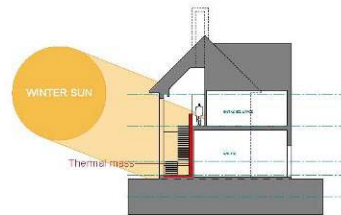


Figure 1: Cross section

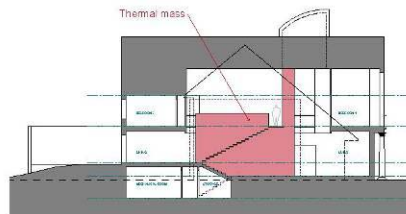


Figure 2: Longitudinal section



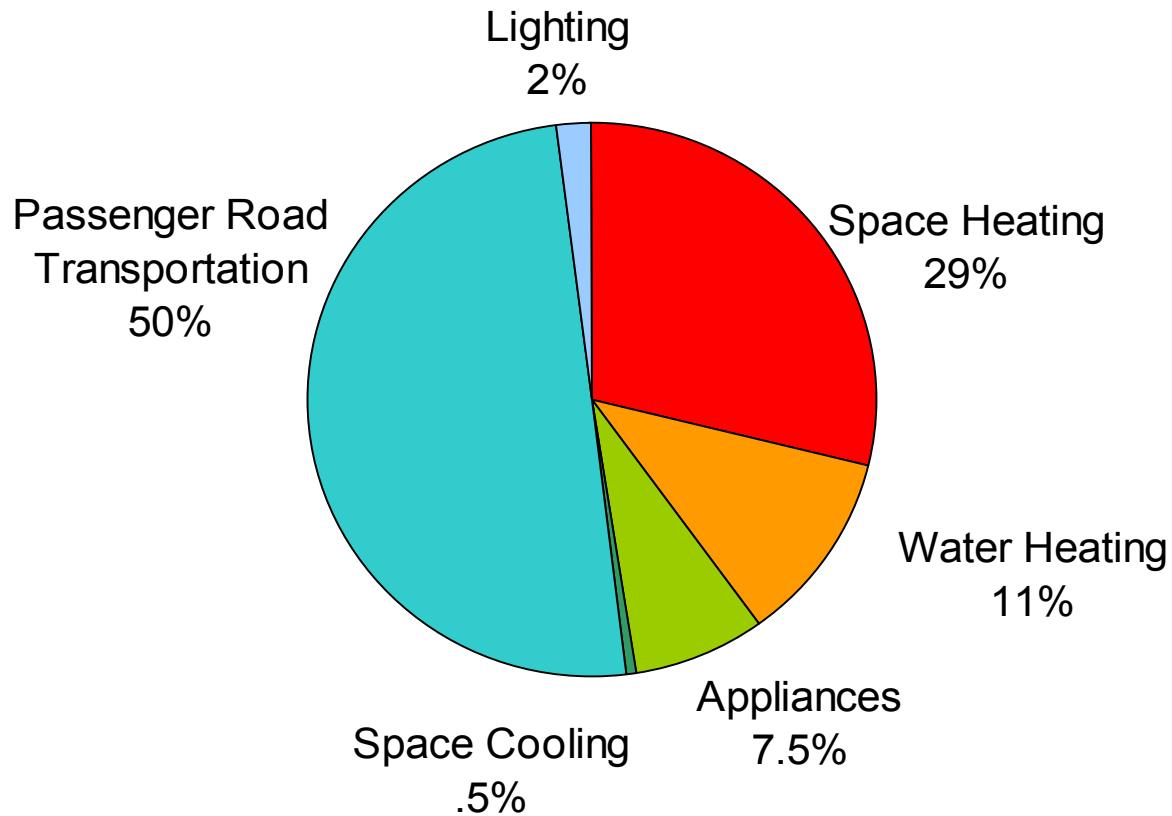
The ANZH strives towards **net zero energy lifestyle** by:

- Achieving the target of a **net zero energy house**: the house generates all the energy required for domestic needs;
- Achieving the target of **net zero energy transportation**: the house generates all the energy required for local transportation needs, assuming an electric drive vehicle; and
- Achieving the target of **net zero energy food**: the house integrates home-scale agriculture to enhance the household's food energy balance.

Next: A Zero Carbon Footprint Community Consortium...

Canadian Individual Greenhouse Gas Emissions

Total: 5.6 tonnes of CO₂/person/year



Source: NRCan National Energy Use Table

EQuilibrium™ Communities

- National competition (closed Sept 22, 2009) aimed at bringing to market energy-efficient, sustainable and profitable communities that benefit consumers, the environment, and the economy.
- Extends the EQuilibrium™ principles to the community or neighbourhood

EQuilibrium™ Communities cont'd

- Submissions will be evaluated based on criteria for:
 - energy
 - land use and housing
 - water, waste water and storm water
 - transportation
 - natural environment
 - financial viability

For more information on the EQuilibrium Communities initiative, visit
<http://www.ecoaction.gc.ca/equilibrium-eng.cfm>