
The Net-Zero Energy Home

Powering Canadian Homes Through Energy Efficiency, Supply & Innovation

Workshop on Maximizing Energy Efficiency and Renewable Energy in BC
March 23, 2006



Coalition Members

Climate Change Central

Canadian Energy Efficiency Alliance

Thomasfield Homes

Avalon Master Builder

**Southern Alberta Institute of
Technology**

Milton Hydro

EnerQuality Corporation

BASF Canada

Alberta Research Council

Spheral Solar Power (a division ATS Automation
Tooling Systems Inc.)

Xantrex Technology Inc.

DuPont Canada Inc.

Earth Energy Society of Canada

Canadian Geo-Exchange Coalition

Canadian Solar Industries Association



Net-Zero Energy Home---Vision

A framework that exploits Canada's renewable energy technology capacity with a consumer driven culture of conservation

This entails improving cost effectiveness of technologies through building integrated design and innovation, an integrated energy strategy, regional and provincial partnerships, expanded manufacturing and skills development.

Transformational change of renewable energy use in the residential sector---from niche to mainstream

All new home construction by 2030



Net-Zero Energy Home--Objectives

- Increase awareness of net zero energy concepts and facilitate wider access to relevant technologies for all stakeholders
- Become an important element of energy supply mix strategies
- Identify Canada as a leader in deployment of NZEHs
- Encourage the right regulatory framework to allow companies to invest—reduce barriers
- It will be funded by industry, governments, consumers
- A forum for networking and idea exchange



Definition

A net-zero energy home at a minimum produces an annual output of energy that is equal to the amount of energy it consumes.

- Heating, cooling and, electrical of a net-zero energy home can be provided by conventional renewable energy sources.
- Achieved incrementally---Solar is a starting point for many homeowners and first focus is on net-zero electrical energy use.
- A “whole house” strategy is needed to properly integrate technologies and reduce costs
- **FIRST STEP IS ENERGY EFFICIENCY**
 - **EnerGuide rating of 85 or higher**
 - **Energy Star Appliances**



Net-Zero Energy Home--Opportunity

- The technology exists today—much of it in Canada
- Builds on the work of existing programs such as R-2000, EnviroHome, Energuide for Houses, Energy Star Home, Built Green Alberta
- Canadian global leaders in manufacturing and supply----Spherical Solar Power, Carmanah Technologies, Xantrex Technology
- Ongoing provincial changes—PEI, ON, BC
 - Net-metering, feed-in-tariffs, building codes
 - Ontario Standard Offer Contract for renewables a huge step forward!



Net-Zero Energy Home—Experiences Elsewhere

- **Launched in 2001 by The US DOE**
- **Goal:**

Combine energy efficiency and renewable generation to build marketable homes that approach zero energy on a net annual basis

A natural progression in response to concerns over energy price security, reliability and sustainability



Net-Zero Energy Home—California Experiences



Morrison Homes: Lakeside

10% of homes ZEH,

Also available as option

Excellent press, traffic

\$18,000 premium, selling all ZEH lots

Premier Homes: Premier Gardens

94 homes, all ZEH

Some entry-level homes

Excellent press and traffic

350 people on waiting list



Key Elements--California ZEH

- ✓ **Well designed efficiency package**
- ✓ **State or Utility buy-down of PV**
- ✓ **Utility net metering**
- ✓ **Utility time-of-use rate**
- ✓ **Building integrated PV**
- ✓ **Better to sell as standard, not option**



Net-Zero Energy Home--Technologies



Menu of options allow the consumer flexibility in designing their Net-Zero Energy Home

- ❖ Energy balancing through the grid
- ❖ Net-metering gives customer full credit for energy produced
- ❖ Time of use metering encourages consumers to match energy load with energy production.

Net-Zero Technology MENU:

- R2000 + building efficiency standards
- Energy Star Appliances
- Photovoltaic Roof
- Passive Solar heating and solar daylighting
- Earth Energy Systems
- Heat recovery technologies
- Solar thermal
- and others



Challenges

Seeding The Market

- ✓ Long term investment risk for manufacturer and suppliers. Developing markets in Germany, the rest of Europe, Japan and portions of the USA are reducing the risk. Canada is still a risk for suppliers without export capacity (e.g. home builders, system integrators).

✓ **Regulatory Risk**

- ✓ Regulatory and operating environment uncertainty domestically

Builder Risk

- ✓ Capital costs and initial minimal utilization



- **Why focus on government?**
 - **Experience in every other jurisdiction has shown that government support is key to successful deployment**
 - **Financial support for early adopters**
 - **Clears up regulatory and institutional bottlenecks**
 - **Creates a roadmap for all stakeholders**



Net-Zero Energy Home—Government Support

- ✓ July 20th federal government announced \$1 million kickstart toward a 5 year demonstration initiative of up to 1500 Net-Zero Energy Healthy Homes (NZEHH)
- ✓ The first stage—see demonstrations of 10 to 15 NZEHH in planned sustainable communities—within 18 months
- ✓ Demonstration will help with exposure to markets, learning curve, create platform for larger scale deployment of grid-tied and localized green power systems



NZEHH Plan—Anticipated Next Steps

- ✓ Develop requirements/guidelines for an RFP—
NRCan and CMHC
- ✓ Consumer/Industry market research study--CMHC



Role Ahead---A Collaborative Approach

- ✓ Coalition--a window of expertise and advice for a NZEH strategy
- ✓ Continue advocacy nationwide
- ✓ Continuing to expand membership and link with interested builders and other stakeholders
- ✓ Project Advisory Committee with CMHC and other departments



www.netzeroenergyhome.ca

