net-zero energy home coalition

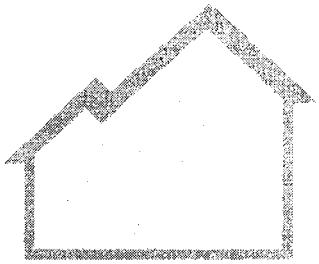
Overview

In 2003, informal discussions began among a group of forward looking home builders and developers of new decentralized energy systems about how future Canadian homes could be better designed for responding to Canada's clean air and climate change objectives. They also discussed concerns about reliability and supply of electrical power for future homes and the cost of upgrading the electrical system to deal with growth in demand.

The group considered how residential energy could be supplied in a sustainable fashion that minimizes greenhouse gas production. The group also looked at opportunities for decentralized, on-site generation and reduced electrical energy consumption. The conclusion was that renewable energy technologies and energy efficiency/conservation technologies are available that allow homes to consume no electricity from the power grid, on an annual net basis, and to significantly reduce greenhouse gas emissions. However the technologies need some initial support to help move down the learning/volume cost reduction curve.

The group recognizes that federal and provincial governments have an opportunity to go beyond, and build upon, early adopter programs in Europe, the United States and, Japan that supported specific renewable energy technologies or specific energy efficiency technologies to develop a program that delivers a total integrated solution - the **Net Zero Energy Home**. The potential of this new program builds upon Canada's pioneering work in energy efficient home construction, embodied in the R2000 standards, adding residential-scale renewable energy production for household needs and additional energy conservation technologies.

In 2004, the group formalized its efforts into the Net Zero Energy Home Coalition and began formulating an action plan to involve other stakeholders and government in turning the vision into a reality.



Who We Are

We are a multi-stakeholder group consisting of corporate, not-for-profit, environmental non-governmental organizations and, academic representation. Our members include, Thomasfield Homes, Climate Change Central, Alberta Research Council, DuPont Canada Inc., Earth Energy Society of Canada, Xantrex Technology Inc., Canadian Solar Industries Association, Milton Hydro Distribution Inc., Spheral Solar Power (a division of ATS Automation Tooling Systems Inc.), Canadian Energy Efficiency Alliance and, EnerQuality Corporation.

Pollution Probe, Dr. Andreas Athienitis of Concordia University and Howell-Mayhew Engineering Inc. serve as advisors to the coalition.

Vision Statement

Through the combined use of onsite renewable energy generation and energy efficiency technologies and appliances, new home construction design by 2030 will meet a net-zero energy standard resulting in the benefits of an expanded renewable energy industry in Canada, cleaner air, climate protection and, recognition for Canada as the world's first to adopt a national residential strategy for net-zero energy building design and construction

The Net-Zero Energy Home

Definition

A net-zero energy home at a minimum supplies to the grid an annual output of electricity that is equal to the amount of power purchased from the grid. In many cases the entire energy consumption (heating, cooling and electrical) of a net-zero energy home can be provided by renewable energy sources.

At a minimum, a NZEH would produce approximately equal electricity to that consumed by energy-efficient appliances and lighting (plug load). While certain NZEH designs may be capable of offsetting both plug load and heating ventilation/air

conditioning energy requirements, an incremental approach is anticipated and as such a NZEH commitment with respect to plug load energy replacement will evolve to include all energy through an optimal combination and integration of electrical and thermal technologies (e.g. photovoltaics, ground source heat pump, solar thermal, passive solar, floor heating with integrated storage).

Proposal

- A national plan that combines R-2000 or higher energy efficiency standards with a minimum 3kW photovoltaic rooftop array or equivalent onsite renewable energy generation source
- Target: new home construction
- Implementation timeline: 2006-2030
- Combination of GST exemption (up to 75% of GST) and PST or equivalent exemption (100%)
- Incentive based---early adopter approach
- Phased-in approached beginning with pilot projects in major urban centres across Canada
- Incremental deployment of program
    - 4% R-2000 homes per year
    - 2% onsite renewable energy generation source (minimum of 3kW) per year

Benefits

Enhanced collaboration across industry sectors

The increasing growth in energy demand requires a systems approach to energy production and management with integrated solutions that combine technology and innovation across several industry sectors. The net zero energy home delivers the integration of Canadian energy efficient design, construction, equipment, lighting and appliances, an integrated control mechanism, with onsite renewable energy systems.

Diversified green power generation sources will increase Canada's competitiveness

Relying on traditional paradigms of centralized power generation will limit Canada's ability to compete to its fullest in the 21st century. Current and emerging economic leaders like Japan, United States and Germany are adopting integrated strategies for energy generation that enable the gradual transformation of their respective energy markets, improving overall reliability, security and, efficiency of their electricity

infrastructure through more diverse and dispersed sources of generation. The net zero energy home allows for reductions in peak load demand thus providing utilities the ability to better manage its generation and supply of electricity loads to its customers and offering greater flexibility for exporting excess supply to markets inside the North American marketplace. A full deployment of net-zero energy homes in Quebec would provide a minimum of 54 billion kilowatt hours of conserved energy in addition to over 2600 megawatts of new green power generation.

Cleaner air and climate protection

Net zero energy home is a vehicle toward our objectives of improved health and cleaner air for our citizens. It lends to a sustainable future for Quebec's urban and rural communities for coming generations by reducing NOx, SOx and, GHG emissions by up to 16 megatons through to 2050.

Regional and economic development

Successful distributed generation programs elsewhere in the world have resulted in expanded manufacturing bases in sectors such as the earth energy, solar thermal and photovoltaic industries. Based on the Pembina Institute's estimates that every million dollars invested in onsite renewable electricity systems eight jobs are created, the Net Zero Energy Home proposal will generate a total of 76,000 new jobs for Quebec.

Global leadership

Net Zero Energy Home builds upon Canada's pioneering work in energy efficient home construction, embodied in the R2000 standards. The addition of residential-scale renewable energy production for household needs and additional energy conservation technologies offer the potential for provinces and indeed all of Canada to become the world's first to adopt a national residential strategy based on Net Zero Energy Home design and construction.

Genera Inquiries - Gordon Shields, Coalition Facilitator; 613 823-8079

For technology specific inquiries please call:

Solar Energy - Rob McMonagle, Canadian Solar Industries Asso; 613-736-9077
Earth Energy - Bill Eggertson, Earth Energy Society of Canada; 613-371-3372
Energy Efficiency and Metering - Rick Ronchka, EnerQuality Corp; 905-820-9599