

## HOUSING RESEARCH COMMITTEE

# Home 2000: An Affordable, Healthy Home that Adapts to Changing Lifestyles

by Mark Salerno, Canada Mortgage and Housing Corporation

**Home 2000, one of the highlights of this year's B.C. Home Show, showcases some of the most innovative yet practical ideas in housing today.**

Using off-the-shelf technology, a flexible design and health-conscious, high-quality building practices, Home 2000 demonstrates how to construct a home in which people can be comfortable throughout their lives.

While Home 2000 showcases many of the standard FlexHousing and Healthy Housing concepts developed by Canada Mortgage and Housing Corporation, some of its most advanced features are the ones you may not see.

### Heating and cooling

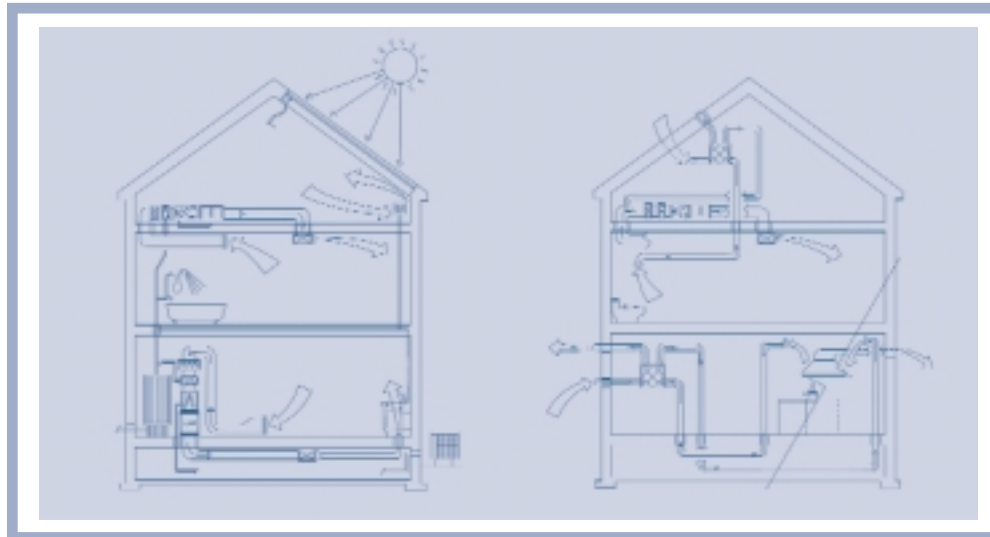
The high-efficiency boiler feeds hot water to a heating coil and air-handling unit on each floor and a fin tube convactor in the attic. Warm air is distributed through

ducts, and separate systems on each floor ensure that air, odours, sound and fires don't travel. The system also includes provision for summertime cooling.

### Ventilation

In addition, a heat recovery ventilator (HRV) operates continuously at low or medium speed to supply fresh outside air

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**In a duplex, heat recovery ventilators on the ground floor and in the attic recover heat from the stale outgoing air and use it to heat the incoming air.**

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# City Solutions Network

## Helping urban decision-makers make sense of the Internet

by C. David Crenna, *The Bayswater Consulting Group Inc.*

### About the National Housing Research Committee

The National Housing Research Committee (NHRC), established in 1986, is made up of federal, provincial and territorial, industry, social housing and consumer representatives. Its objectives include:

- identifying priority areas for housing-related research or demonstration;
- fostering greater cooperation, developing partnerships and minimizing overlap in research activities;
- encouraging support for housing research; and
- promoting the dissemination, application and adoption of research results.

In addition to the Full Committee, the NHRC also operates through working groups to exchange information, discuss research gaps and undertake research projects. Currently, working groups meet on Housing Data, High-rise and Multi-unit Buildings, Homelessness, Sustainable Community Planning and Seniors' Housing.

The NHRC co-chairs are Leigh Howell of Canada Mortgage and Housing Corporation and Tom Young of the Saskatchewan Housing Corporation.

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Over the past two and a half years, The Bayswater Consulting Group, in partnership with Environment Canada, has been undertaking leading-edge research on the value, and the limitations of, the Internet as an aid to urban decision-makers. This group includes mayors, city councillors, senior planners, and industry and community leaders.

While the scope of work is both domestic (Canada and the United States) and global, its focus is on cities facing the greatest population-growth pressures with the most limited resources. It gives priority to issues such as shelter and clean water that have the greatest effect on overall quality of life, as well as the health, safety and prosperity of city residents.

World leaders are optimistic that the Internet is the way to accelerate the pace of improvement in urban fundamentals such as economic development, environmental conditions and social concord. However, our research, which covers more than 1,000 Web sites and electronic tools, shows a substantial gap between the promise and the reality of the Internet.

Some of the main limitations of the Internet include the following:

- many cities are still not properly hooked up to the Internet because of the high costs of connection or a lack of technical capacity;
- e-commerce for municipal operations is in its infancy, and many important technical problems remain unresolved;
- information relevant to the leaders of the largest and fastest-growing cities is limited and is often not presented in the languages they commonly use;
- much of the material comes with inherent biases, whether of ideology, commercial vested-interest or institutional advocacy; and
- users cannot quickly find manageable amounts of trusted and relevant information because of the sheer volume of material and the limits of search engines.

The City Solutions Network addresses these limitations head-on. For example, it features user-driven guidelines for those who create and maintain Web sites when presenting materials for urban decision-makers. These guidelines address the technical limitations of computers and networks, user capacities and information management.

It also draws on a content analysis and "mapping" process to identify and quantify Web site contents on the basis of greatest relevancy for urban decision-makers. It then proceeds to fill gaps in both the content and presentation of the available data and information, according to priorities expressed by decision-makers.

In addition, it reduces problems arising from institutional and commercial biases by presenting different points of view on solutions to the same issues. It also excludes sponsors from shaping the content of most offerings. An area within the site for selected but non-conflicting institutional and commercial messages is currently being considered.

Finally, the City Solutions Network is organized according to explicit end-user priorities, and is designed to help urban decision-makers sort through other sources of knowledge, information and data.

**For more information about the City Solutions Network, please send an e-mail to:**  
**[bayswatr@istar.ca](mailto:bayswatr@istar.ca)**

# On-site Waste Water Recycling in the North

by Aleta Fowler, Canada Mortgage and Housing Corporation

On-site waste water recycling microsystems promise to bring huge savings in water costs, as well as health and environmental benefits, to households and communities in the North.

Originally developed as part of the Toronto Healthy House to enable water reuse and reduce demand upon natural resources, the microsystem has been adapted for use in the North where water is expensive.

For a northern household, the average cost of water is 125 times higher than in the South. And provision of water and sewer is the single largest utility cost. It comprises an average of 43% of the monthly bill (over \$300 per month at the unsubsidized rate), while electricity is 36% of monthly utility costs.

Because water is expensive, its consumption is below Health Canada's minimum recommended levels of 65 litres per person per day, creating health issues directly based upon lack of supply.

The microsystem, which uses no chemicals and requires very little electricity and maintenance, produces water of "swimming-pool quality." This water is safe for all uses including toilet flushing and laundry (50% of consumption) and showering (25% of consumption). Therefore, the only potable water that needs to be brought into the home is the 25% of water used for drinking and cooking.

By reducing household water needs, the microsystem reduces costs to the

household as well as the large infrastructure costs borne by most communities to provide water and sewer services to their citizens.

To date, three microsystems have been installed in single-family homes in N'Dilo, N.W.T., and more are planned for that community. However, the most cost-effective use of these systems is in multi-family settings, or in connecting several structures to a single microsystem through a "utilidette." (A utilidette is a system of insulated pipes that transport fresh and waste water to and from a central site where the microsystem is housed.)

In Dettah, N.W.T., five microsystems will use a utilidette to service 19 households. In Cape Dorset, Nunavut, five microsystems will service 17 households through a utilidette, and in Iqaluit, Nunavut, a single microsystem has been successfully servicing a very busy bed and breakfast for a couple of years.

## Benefits

In addition to the cost savings and the constant confirmed water supply, the microsystem has health benefits.

While piped systems tend to engender water wastage and trucked systems create unsafe levels of water conservation, the microsystem applications have usages at "healthy" rates between these two extremes. Another environmental benefit is the reduction of lagoon usage and fuel savings as a result of reduced trucking.

## Public response

The cost savings, the water's lack of odour, its lack of abnormal colouration, ease of use and the known supply are so compelling that the technology has been very well received.

At the community level, there are still issues to be resolved regarding upfront costs, the sharing of savings, integration into existing infrastructure, and so on, which vary from community to community. These concerns need to be addressed for successful widespread adoption.



The beneficial microbes housed in this biofilter degrade and oxidize the septic tank effluents.

For more information, please contact Aleta Fowler at (867) 873-2638 or e-mail: [afowler@cmhc-schl.gc.ca](mailto:afowler@cmhc-schl.gc.ca).

# The Housing Conditions of Young Households in Quebec

by François Renaud, Société d'habitation du Québec

A recent survey conducted by the INRS-Culture et société for the Société d'habitation du Québec reveals that housing conditions, including homeownership rates, deteriorated for young Quebec households, particularly from 1991 to 1996. The main cause of the deterioration appears to be difficulties encountered by young people in the labour market.

The study was conducted partly on the basis of a special compilation of Statistics Canada 1991 and 1996 Census data for the Société d'habitation du Québec. It compares the residential situation of different age groups (15-19, 20-24 and 25-29), sometimes using statistics dating back to the early 1980s.

The survey found there had been a decrease in the formation of young households in Quebec. This was attributed to the increasing number of young people who continued to live with their parents and to the reduction in the size of this group relative to the overall population.

At the same time, there was a gradual diversification of household types. The proportion of non-family households

(persons living alone or households composed of two or more persons) grew at the expense of young family households.

The study also demonstrated that the deterioration of housing conditions for the different age groups continued from one year of comparison to the next. As such, as young people moved through the 15-19, 20-24 and 25-29 age cohorts, the housing situation did not improve.

There was also a significant decrease in the rates of homeownership among the young households. Here again, from one year of comparison to the next, the younger groups had a lower rate of homeownership than the group that preceded it, at the same age.

For purposes of comparison, the study also includes a detailed inventory of the principal measures implemented in France to support the residential integration of French youth in the context of an employment crisis.

Finally, the author proposes some measures to resolve the difficulties that currently surround leaving the family

home to move into a home of one's own. One of these measures—an increase in income security benefits for unrelated persons who live together—was the subject of specific announcements at the last Quebec and Youth Summit.

The Société d'habitation du Québec is also working on a measure to address the problem of decreasing homeownership by young households in Quebec.

The study is entitled *Les difficultés de l'insertion résidentielle et la détérioration des conditions de logement des jeunes ménages au Québec (The Difficulties of Residential Integration and the Deterioration of the Housing Conditions of Young Households in Quebec)*. Interested researchers can consult or order the survey from the Web site of the Société d'habitation du Québec at [www.shq.gouv.qc.ca](http://www.shq.gouv.qc.ca).

## Continuum of Supports Plan

The Regional Municipality of Peel (west of Toronto) has a powerful planning tool with which to address the challenge of homelessness—the Continuum of Supports Plan. This matrix maps various groupings of people experiencing homelessness onto a range of government and community-service agency interventions.

The matrix works by identifying various groupings of homeless people and listing the root causes of the problem, such as abuse, family breakdown, discrimination and so on, for each. Also listed are each grouping's unique needs, the

characteristics of the required responses, the support services provided and the delivery methodology.

The value of this approach is that it clearly shows there are many reasons why people find themselves homeless or at risk, and why the response of the community has to be just as diverse.

In effect, the Continuum of Supports Plan serves as an orderly overlay to the whole morass of what is deemed to be mental health problems. It breaks down the problems by types and needs and translates them into collective solutions to be shared by a range of support agencies.

Bob Yamishita, co-ordinator for housing/homelessness for the Region of Peel, and his staff developed the approach using their own front-line insights and in response to the increasing number of community support agencies. They have been applying it successfully since the mid-1980s.

According to Bob, the Plan is effective because it combines a non-judgmental analysis with a broad set of responses. It is also driven by the complex needs of people and does not shoehorn individuals into a set of programs with a prescribed set of outcomes.

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# New Data Releases from the 1998 Survey of Household Spending

by Willa Rea, Statistics Canada

## **1998 Public-use Microdata File (Catalogue number 62M0004XCB)**

The *1998 Public-use Microdata File* from the *Survey of Household Spending* was released in the summer of 2000. This file contains microdata for over 15,000 households from across Canada, including the territories. It provides almost 250 variables covering dwelling characteristics, household expenditures, and ownership of household equipment such as appliances, audio and video equipment, and vehicles.

Dwelling characteristics include: type of dwelling, repairs needed (major, minor, none), tenure, year of move, period of construction, number of rooms, number of bathrooms, principal heating equipment and fuel, age of principal heating equipment, principal heating fuel for hot water and principal cooking fuel.

Household equipment includes: washing machines, dryers, dishwashers, refrigerators, freezers, air conditioners, telephones, cellular telephones, compact disc players, cablevision, videocassette recorders, computers, modems, Internet use from home, televisions and vehicles.

Expenditure categories include: shelter expenses, furnishings and equipment, cost of running the home, communications, child care, food, alcohol and tobacco products, clothing, gifts, medical and health care, transportation and travel, recreation, reading materials, education, taxes, insurance payments and pension contributions.

Characteristics of the household, reference person and spouse of reference person are also provided.

## ***Spending Patterns in Canada, 1998* (Catalogue number 62-202)**

Released in late summer 2000, this publication (available either electronically or in paper) presents statistical highlights and key tables from the *Survey of Household Spending*. The publication includes analytical text, summary tables, a detailed expenditure table, notes and definitions, and information about survey methodology and data quality.

New for 1998 are tables and analytical text presenting information about dwelling characteristics and household equipment. This information is presented in separate tables and is also incorporated

into the analysis to complement household spending information. Tables are presented by income quintile, household type, housing tenure, province or territory, selected metropolitan area, and size of area of residence (rural or urban).

**For more information about the survey results and related products and services, or to enquire about the concepts, methods or data quality of the *Survey of Household Spending*, contact Client Services in the Income Statistics Division at (613) 951-7355 or 1 888 297-7355; fax: (613) 951-3012; e-mail: [income@statcan.ca](mailto:income@statcan.ca).**

***The Public-use Microdata File contains microdata for over 15,000 households from across Canada.***

# Alternate Tenure Arrangements

by David Scherlowski, Canada Mortgage and Housing Corporation

To help increase awareness of the range and type of affordable housing options available in Canada, Canada Mortgage and Housing Corporation (CMHC) has carried out research and produced a report entitled *Alternate Tenure Arrangements*.

The report examines life leases, equity co-ops, leaseholds, shared equity and cohousing. These forms of alternate tenure arrangements have the potential to create housing that is affordable relative to market levels, particularly over the long term.

## Methodology

The research involved a review of current literature on alternate tenure arrangements available in Canada and the development of 30 case studies. The case study research included visits to each of the projects and interviews with the project administrators, sponsors and residents.

## Life leases

A life lease permits the purchaser to occupy a dwelling unit for life in exchange for a lump sum payment (entrance fee) and a monthly payment to cover the project management fees and maintenance and operating costs.

In many cases, the entrance fees do not increase over time, meaning this form of housing becomes increasingly affordable in future years. The non-profit nature of almost all life-lease projects can also result in savings in capital and operating costs.

## Equity co-ops

An equity co-op is a co-operative housing development financed by its members. In one example of their affordability, two-bedroom ground-oriented units in a 13-year-old equity co-op in Surrey, a suburb of Vancouver, have sold for \$69,000 since the day the project opened in 1987. In 2000, this is less than one third of the cost of new row-units.

## Leasehold

Because the residents of housing built on leased land must relinquish the land and often the improvements to the landlord when the lease ends, leasehold housing is usually less expensive than housing built on land owned by the occupant.

## Shared equity

Shared-equity arrangements make homeownership easier and more accessible for people with low incomes. Buyers in shared-equity arrangements can earn equity in their homes over a period of years by a combination of good payment records and participation in the management and operation of their housing project.

## Cohousing

In cohousing (collaborative housing) communities, each household has a private self-contained residence but also shares common facilities with other residents. Cohousing tries to include residents of all income levels.

## Sources of financing

Some of the equity co-ops and the life-lease projects examined in the research were financed entirely by member equity. Others relied on mortgage financing from traditional lenders such as banks and credit unions, as do residential leasehold and cohousing communities. Some shared-equity projects rely significantly on funding from municipal and provincial governments.

## High levels of satisfaction

Generally, consumers of all the forms of tenure assessed in this report were very satisfied with the choice of tenure they had made. The source of satisfaction varied, but was often related to a strong sense of community that residents had not experienced in their former accommodation.

**For more information on Alternate Tenure Arrangements, please contact David Scherlowski at (613) 748-2428 or e-mail: dscherlo@cmhc-schl.gc.ca.**

**Alternate tenure arrangements have the potential to create housing that is affordable relative to market levels.**

# The Benefits of Urban Growth

by Don Johnston, Canadian Home Builders' Association

A report prepared for the Canadian Home Builders' Association (CHBA) last January—*Restoring the Balance: Financing Municipal Infrastructure Required for New Development*—concludes that the costs of municipal infrastructure should be shared more broadly than is currently the case.

According to the report, the benefits of municipal infrastructure—facilitating development and enhancing housing affordability and economic growth—suggest a greater sharing of these costs among all three levels of government. This is in contrast to the current heavy reliance on development-cost charges (DCCs).

DCCs shift the burden of financing the infrastructure required for new urban development “mainly onto first-time homebuyers and renters.” They raise the cost of new development, which is reflected in higher housing prices and rents—not only in the new developments themselves but also throughout the community. While existing homeowners benefit from the higher housing prices, first-time homebuyers face a greater barrier in purchasing their first home, and tenants face higher rents.

DCCs also “work at cross-purposes to the goal shared by most governments in Canada of creating an environment in

which families have a reasonable opportunity to own a home.”

These same governments also seek to promote economic growth, but municipalities are left to finance the new municipal infrastructure that is the prerequisite for this growth. “The result is DCCs—which raise the costs of development and discourage growth.”

CHBA has since commissioned a second report that seeks to identify the benefits of urban development to communities, provinces and Canada. The questions it will address are:

- How does urban development affect the local and broader economy?
- How are the economic benefits of urban development distributed among local residents and business firms?
- What are the intergenerational economic benefits of investment in urban development?

The preliminary structure of the second report is as follows:

*Introduction*—This includes the lead-in from *Restoring the Balance* and the goals of the second report. It also identifies the paradox that infrastructure is not typically seen in a cost-benefit framework but viewed as a cost to be borne by growth, despite the fact that growth is recognized

as having broad benefits to society and the economy.

*The benefits of growth*—This section outlines arguments from the literature about how residents of municipalities, regions, provinces and countries benefit from growth.

*The essential role of municipal infrastructure in facilitating growth*—The key message of this section is that a lack of sufficient municipal infrastructure discourages growth, and everyone suffers because there are fewer jobs and lower incomes.

A second key message is that wherever growth in number of households is accommodated, there will be infrastructure costs. These costs should be broadly shared rather than simply imposed on the new homebuyer.

*Conclusion*—Growth is good; infrastructure is necessary for growth; and costs need to be shared more broadly among all three levels of government.

A draft of the second report should be completed by early fall.

**For more information, please contact Don Johnston at (613) 230-3060.**

## *Continuum of Supports Plan continued from page 4*

### **Partnership solutions**

Typically, a Continuum of Supports solution is a partnership of two or more agencies. The partners bring different skills to the table to solve a variety of problems and provide a collective solution.

In this way, the Plan also serves as consensus-building tool that helps get all support providers, such as medical and community services agencies, working together.

One example of the effectiveness of the Continuum of Supports Plan is “Eva’s Phoenix”, a North York youth-serving agency.

In partnership with the City of Toronto, Eva’s Phoenix built an enclosed, self-contained “village,” where young homeless people could work together and support each other. The partners included other youth-serving agencies, Canada Mortgage and Housing Corporation, Human Resources Development Canada,

the Canadian Auto Workers, and local businesses such as car dealers and building contractors.

The young people received the kind of training they needed, including carpentry, during the construction of the village from the businesses that had signed on as partners. In return, the businesses received labour and helped contribute to the health of the community.

**For more information about the Continuum of Supports Plan, please contact Bob Yamashita at (905) 453-1300, ext. 2930, or e-mail: [robert.yamashita@region.peel.on.ca](mailto:robert.yamashita@region.peel.on.ca).**

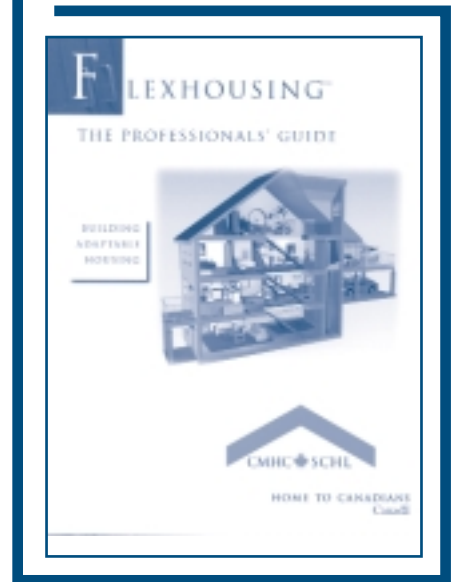
# New CMHC Release

## ***FlexHousing: The Professionals' Guide***

***FlexHousing: The Professionals' Guide*** is CMHC's new companion Publication to *FlexHousing: Homes that Adapt to Life's Changes*. Written for home builders and designers, this book explains the business case for incorporating FlexHousing features during home construction and renovation. It also provides drawings of many FlexHousing details for use in stock plans.

Whether they're constructing single-family homes, row houses, townhouses, or low- or high-rise apartment blocks, builders will find these details can be built in from the beginning.

For professionals or anyone wanting to know how to incorporate the special FlexHousing features homebuyers increasingly demand, this book is an essential reference guide.



### *Home 2000 continued from page 1*

to all living spaces and exhaust moist, stale air from the bathrooms and kitchens.

With the flick of a switch, occupants can increase its speed to quickly clear stale air from a room. At the same time, heat from the outgoing stale air is transferred to incoming fresh air, lowering the home's energy consumption.

As with the heating and cooling system, separate HRV systems on each floor ensure that air, odours, sound and fires are contained.

### **Solar energy**

Home 2000's building-integrated photovoltaic (BIPV) roof panels can capture solar energy to supply most of its electricity. If they create a surplus, the BIPV panels can even feed back electricity to the main power grid for use by others.

Consumers may think systems like this are expensive, but they're not. Affordable, off-the-shelf technology is available in a range of sizes including one that's just right for the summer home or cottage.

### **British Columbia Institute of Technology**

Home 2000 is located on the campus of the British Columbia Institute of Technology (BCIT), where it is open to the public for tours at designated times. BCIT's Photovoltaic Energy Applied Research Lab (PEARL), which designed Home 2000's building-integrated solar power system, is one of the Institute's newest applied research specialties.

Exploring ways to integrate efficient solar panels into building construction—right from the design and building stage—is at the heart of PEARL's research.

### **Good neighbours**

Home 2000's wood-frame building technology, construction materials, design innovation and workmanship are the result of a team effort. The partners were Britco Structures Ltd., Canada Mortgage and Housing Corporation, British Columbia Institute of Technology, The Greater Vancouver Home Builders' Association, Forest Renewal B.C., the Canadian Plywood Association, The University of British Columbia—School of Architecture, and over 70 product and service suppliers.

**For more information on this project, please contact Mark Salerno at (604) 666-5338 or e-mail: [msalerno@cmhc-schl.gc.ca](mailto:msalerno@cmhc-schl.gc.ca).**

# Sustainability

## NRCan's EnerGuide for Houses Program

A successful promotion of energy-efficient retrofits in existing homes

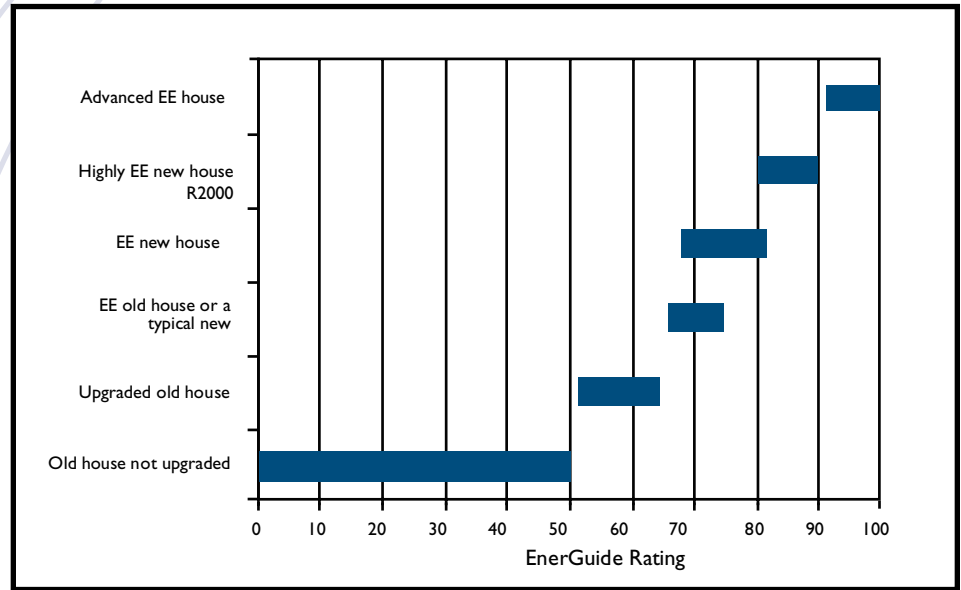
by Anil Parekh and Sylvain Blais, Natural Resources Canada

The EnerGuide for Houses (EGH) Program, launched across Canada in April 1998, is an initiative of the Office of Energy Efficiency of Natural Resources Canada (NRCan).

The EGH Program attempts to further Canada's objectives in greenhouse gas emission by promoting energy-efficiency retrofits in the existing-housing market. Its main goals are to raise consumer awareness of the benefits of energy efficiency and to identify and prioritize energy-efficiency upgrades by providing homeowners with information to make informed decisions. The EGH evaluation, which is based on the principle of "the house as a system," focuses on how to enhance the home's energy performance while maintaining or improving the indoor environment.

Both the private and public sectors are cooperating to implement the program. Agents in each region of the country market and deliver the service to homeowners (at up to \$150 for each evaluation), while NRCan is responsible for national promotion, quality assurance and management.

The service involves a visit from an EGH advisor, who, at the request of the



homeowner, investigates the home's energy-related features and estimates its annual energy requirements. A detailed report is then prepared, recommending appropriate energy-efficiency retrofits and measures to maintain or improve the ventilation and comfort level, and an EGH-rating label is produced.

Once the homeowner implements the recommended retrofits, a second evaluation is done to update the energy-efficiency rating and label. The houses are

rated on a scale of 0 to 100, and must be habitable to qualify for a rating. Typical EGH ratings for Canadian houses are shown above.

Since the program was launched, 14,744 houses have been evaluated. Of this number, 1,173 have been re-evaluated after the recommended retrofits. About 12,000 houses are expected to be evaluated every year for the next four years.

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Province	EGH evaluations	
	Pre-retrofit evaluations	Post-retrofit evaluations
Atlantic	425	31
Central	4610	134
Prairies	3131	57
B.C.	6304	939
Northern Territories	274	12
<b>Total</b>	<b>14,744</b>	<b>1,173</b>

# Elements of Uncertainty and Risk

## Observations from the Headwaters Project in Surrey, B.C.

by John L. Blakney, Pacific Resources Centre

Creating sustainable urban communities requires the merging of economy, equity and ecology. Today, we have the design knowledge and technical expertise to make the connections necessary to move from conventional methods, which place a great burden on our natural capital, to sustainable concepts that nurture and protect.

But moving away from the conventional creates uncertainty and resistance. We expect municipal officials, developers and professional designers to take risks and move us forward. But if something goes wrong, who is accountable and what happens to personal creditability, and careers?

With stakes like these, it is natural to expect caution; and caution can lead to a minimizing of risk by resorting to more conventional systems, thereby eroding the intended sustainable-community features.

For example, instead of finding ways to increase consumer willingness to care and maintain for grass swales and soft street-shoulders, the solution becomes “slotted curbs.” The result is increased development costs and, eventually, higher house prices.

Similarly, concern over anticipated complaints from residents about lots that might, from time to time, be marginally wetter than lots drained by pipes leads to a reluctance to implement infiltration systems. The result is the use of piped systems that damage streams.

One of the lessons of the Headwaters Project, a sustainable community development in the Clayton District of Surrey, B.C., is that sustainable development requires not only a change in the standards we apply but also a change in the way we do business.

The Headwaters Project explores an initiative that builds confidence in moving forward and ensures no one person, department or agency stands alone in the creation of an urban sustainable community at East Clayton.

First of all, there are many benefactors of sustainable policies and standards whose mandates are to produce cleaner air, cleaner water and to protect the fish and their habitat. Our approach was to ask these agencies, which share in the rewards of sustainable urban development, to share equally in the risk.

Through a joint-strategy that brought together the benefactors (the regulators and program deliverers) the developers and builders, the municipal officials, consumer representatives and others, we developed a collective approach that increased everyone’s comfort level with the risks. The result was an integrated process involving everyone who could influence the outcome of the plan policy, its standards and their implementation.

In addition, the benefactors are working collectively to enter into agreements to identify tools and instruments, which while not necessarily eliminating the risk, allow it to be shared along with the rewards.

The implementation of the East Clayton Neighbourhood Concept Plan means that this future urban community in Surrey, B.C., will be a sustainable interwoven community fabric in which everything—economy, equity and ecology—is interlinked. Pull one strand and the whole fabric changes in strength and character.

### *NRCan’s EnerGuide continued from page 9*

An analysis of the data showed the following predominant trends:

- About 82% of the pre-retrofit evaluations were for houses 15 years old or more.
- Of the houses for which post-retrofit evaluations exist, the majority were over 20 years old.
- In the average home, the recommendations resulted in a 20%-25% energy reduction.
- On average, homeowners perform about two thirds of the recommendations, resulting in a 10%-15% energy reduction.
- The retrofits reduced energy bills by \$75-\$200 a house.
- The energy-efficiency upgrades reduced the greenhouse gas emissions of the average home by about 2 tons a year.
- About 70% of homeowners implemented one or more of the recommended retrofits but had not called for a post-improvement evaluation.

**For further information, please contact Sylvain Blais at (613) 943-2361 or Anil Parekh at (613) 947-1959.**

# New Funding Gives Environmental Innovation a Boost

*The following article is a summary of an announcement of two new environmental funds that appears on the Web site of the Federation of Canadian Municipalities (FCM) at [www.fcm.ca/pcp/fundinfo-e.html](http://www.fcm.ca/pcp/fundinfo-e.html).*

Building more sustainable communities is a step closer to reality following the signing of two agreements on March 31, 2000, between the Federation of Canadian Municipalities and the federal government.

The agreements establish two multi-million dollar funds to encourage investment in best-practice and innovative municipal environmental projects.

According to the FCM, the creation of the \$100-million Green Municipal Investment Fund (GMIF) and the \$25-million Green Municipal Enabling Fund (GMEF) is unprecedented recognition of the critical role municipal governments must play in sustainable development.

The Fund initiatives will increase the deployment of renewable energy technologies and focus on improving the energy- or process-efficiency of:

- municipal buildings;
- heating and cooling systems;
- public transportation services;
- solid-waste management;
- water distribution; and
- waste water treatment services.

## **Green Municipal Enabling Fund**

The Enabling Fund will offer grants to eligible recipients for feasibility studies that assess the technical, engineering,

environmental or economic viability of proposed municipal environmental projects.

The feasibility studies will assess projects that would generate financial savings in municipal operations, but over 5-10 years, rather than the traditional 1-5 years. Projects with payback periods of 5-10 years would aim for energy or process improvements of 35-50% or more above business as usual. The Fund, which will cover half the cost of feasibility studies, will operate for five years.

## **Green Municipal Investment Fund**

The Investment Fund will offer a range of financial services aimed at improving the financial performance of proposed projects. It will provide interest-bearing loans, loan guarantees, and grants to eligible recipients carrying out municipal environmental projects.

The GMIF will work with municipal governments to target initiatives that improve the eco-efficiency of their operations. Like the Enabling Fund, it will support projects that generate savings over 5-10 years, rather than 1-5 years, and would aim for energy or process improvements in the 35-50% range.

The GMIF will operate in perpetuity as a

revolving fund, where repaid loans are recycled to invest in new projects.

Municipal governments, particularly small or rural communities, will be able to access interest-bearing loans (generally covering no more than 15% of the costs of projects) or loan guarantees from the Investment Fund to supplement their own grants or financing, or those from provincial or territorial governments. Interest and fee income earned by the Investment Fund will be used to support innovative pilot projects with payback periods in excess of 10 years.

Private-sector involvement in municipal projects can include direct financial participation. Alternatively, the Funds could work with private-sector firms selected through standard municipal RFP processes to secure better financing to lower project costs.

## **Applications**

Application forms for the Green Municipal Investment Fund and the Green Municipal Enabling Fund have been available since July 2000. The first application deadline is September 1, 2000. The first projects to be supported will be announced in December 2000.

**Two multi-million dollar funds will encourage investment in best-practice and innovative municipal environmental projects.**

# New Requirements for the R-2000 HOME Program

by Anil Parekh, Natural Resources Canada

Starting this fall, Natural Resources Canada (NRCan) and the Canadian Home Builders' Association (CHBA) will implement important changes in the technical requirements for homes built and certified under the Office of Energy Efficiency's R-2000 HOME Program.

The R-2000 Technical Requirements provide the foundation for the design and construction of energy-efficient, environmentally friendly and healthy homes. The R-2000 Program is a key reason Canada is a leader in worldwide housing technology.

The revised standard will improve the energy efficiency of new housing, while minimizing incremental costs for builders and new homebuyers. A typical R-2000 home is now about 30% more energy-efficient than a conventional new home. Once the changes take effect, R-2000 homes will be about 35%-40% more energy-efficient.

Studies on the cost-impact of the new requirements show an estimated increase of \$100-\$500 in the construction costs of a typical R-2000 home.

To ensure R-2000's predominant position in worldwide housing technology, NRCan and the CHBA began an evaluation of the standard in August 1998. The goals of the evaluation were to ensure the technical standard reflects current energy-efficient trends and technologies and to provide a clearer definition of the technical requirements without increasing the cost of building an R-2000 home.

The CHBA endorsed the new R-2000 Technical Standard last April after a significant review process by the housing industry.

## Key Changes to the R-2000 Technical Standard

- Clarification and simplification.
- A new pre-approval method for determining compliance with the R-2000 energy target. This will permit builders to demonstrate that a house (or a group of similar house designs) complies with the R-2000 target independent of small changes that may be introduced after the original design is complete.
- A new requirement that mandates basement walls have full-height insulation.
- The addition of minimum performance requirements for windows.
- Altered airtightness requirements to give builders greater flexibility in meeting the R-2000 energy target.
- The addition of requirements for the proper sizing of heating and cooling systems in accordance with CSA F280.
- A new requirement that prohibits co-venting of natural gas, propane and oil-fired space and water heating appliances.
- A new phased-in requirement for electronically commutated furnace motors.
- Minimum performance requirements for cooling systems (split-system air conditioners: 12 SEER; single-package central air conditioners and heat pumps: 10.5 SEER; ground- or water-source air conditioners: 10.5-11 SEER).
- A new requirement for mandatory carbon monoxide detectors in homes with combustion appliances.
- A new requirement for commissioning heating and cooling systems.
- A reduction in the maximum water usage of toilets from 13.25 liters per flush (3.5 gpf) to 6 liters per flush (1.6 gpf).

# Energy and Water Consumption in High-rises

by Duncan Hill, Canada Mortgage and Housing Corporation

At the fall 1999 meeting of the High-rise Working Group, Canada Mortgage and Housing Corporation (CMHC) reported on a project to compile data on building characteristics and energy- and water-consumption data.

In January 2000, we engaged 10 consulting firms to collect information on building dimensions, window areas, insulation values, orientation, mechanical and electrical systems, number of suites and floors, and energy- and water-billing data for 2-3 years. Firms were selected for the Maritime, Quebec, Ontario, Manitoba, Saskatchewan and British Columbia regions.

The information collected for each building will be sufficiently complete to use with the U.S. Department of Energy's DOE 2.1 Building Energy Simulation Program. This will allow CMHC to assess energy-consumption patterns in multi-unit residential buildings and evaluate various

scenarios for retrofitting buildings with energy-efficient upgrades.

In total, the pilot project audited 40 buildings. CMHC will use this information to create a baseline for energy and water use in multi-unit residential buildings. This baseline will permit a comparison of energy and water use among buildings based on region, age, building characteristics, occupancy type, and other variables.

CMHC will also provide the information in the form of fact sheets to building owners, managers and energy professionals. In addition, it will use the information to support the *Energy and Water Efficiency Opportunities Manual*, which it is developing in cooperation with the Ontario Ministry of Municipal Affairs and Housing.

The Corporation is also contributing the building data to a joint NRCan-CMHC-Public Works and Government Services

Canada (PWGSC) project that will evaluate the contribution of energy consumption in large buildings to greenhouse gas generation in Canada.

CMHC will audit more buildings once it has evaluated and upgraded the pilot-project survey instruments, and identified additional housing data needs. It will coordinate the next phase of data gathering with public- or private-sector housing agencies that are doing similar work or are interested in working with CMHC to gather energy-water utility data on their own stock.

**For more information about this project, please contact Duncan Hill at (613) 748-2984 or e-mail: [dhill@cmhc-schl.gc.ca](mailto:dhill@cmhc-schl.gc.ca).**

## Tools of Change

### Promoting health and sustainability in the home and community

Tools of Change ([www.toolsofchange.com](http://www.toolsofchange.com)) is a free, bilingual Web site for people who plan and run programs that promote healthier or more environmentally sustainable actions and habits in the home, workplace, school or community. If that's you, this site can help you save time, while improving the impact and financial attractiveness of your programs and services.

Tools of Change links a growing bank of detailed case studies with planning guides and worksheets to help you and your colleagues learn more quickly from your collective experiences.

Interactive guides help you apply community-based social marketing tools more effectively in your own programs to gain participation and change people's behaviours. Examples customized according to your interests, including energy and water efficiency, indoor environments, waste reduction, sustainable landscaping and sustainable transportation, illustrate the guides.

You can save your planning work between sessions and, when you're done, your work is organized for you into a draft communication plan that can be downloaded to common word processors for further refinement.

The sponsors of the Web site are Health Canada, Natural Resources Canada, Environment Canada, Canada Mortgage and Housing Corporation, the Federation of Canadian Municipalities, the National Round Table on the Environment and the Economy, and Cullbridge Marketing and Communications.



# So You Want to Save the World for Your Children?

by Don Fugler, *Canada Mortgage and Housing Corporation*

By now, everyone has heard the dire predictions of global climate change—lakes drying up, oceans flooding coastal cities, forest fires, tornadoes, ice storms—and these are the benign effects!

It's true that the earth's climate is getting warmer, largely due to the burning of fossil fuels. It's also true that this will lead to major climate changes, most of which will require forests, lakes, wildlife and people to adapt; and it isn't likely to be easy.

Canada Mortgage and Housing Corporation (CMHC) and other agencies have committed research funds to help Canada meet its Kyoto commitment to reduce greenhouse gas creation to 6% less than 1990 levels by 2012. The research findings and programs will help Canadians reduce the consumption of oil, gas or electricity in their homes, design communities that require less transportation by car, vehicles that burn less gas, and workplaces that run more efficiently.

But what about you? If someone asked your household to reduce its greenhouse gas creation by 30%, would you know where to start? Do you know what energy is required to sustain your lifestyle?

To provide answers, CMHC has developed a consumer questionnaire that helps consumers add up home-heating fuel use, electricity, car travel, and so on, to identify their biggest consumption areas. It also asks questions most people probably haven't considered, such as:

- Is your airline travel causing more greenhouse gases than your car travel?
- What are the energy implications of buying a new house or car?
- What is the significance of the food you eat, compared to driving your car, in terms of energy use?

For example, the researcher managing this project calculated his family's contribution and found that airline travel constituted over 55% of the greenhouse gases created by his family over the last year. For him, it might be more efficient

to cancel a business or personal trip than worry about weather-stripping the doors.

Other people may not travel as far but will consume huge amounts of electricity for appliances. Our questionnaire can help you decide where to make the biggest contribution to reducing greenhouse gas creation.

The questionnaire has been published in a magazine and a newspaper and will probably be available on the CMHC Web site later this year. So far, the response has been tepid. It appears people do not want to do the calculations that would make their estimates accurate.

CMHC's Research Division is currently working with Communications and Marketing to make the questionnaire more attractive and easier to use.

**For a draft copy of the questionnaire, please contact Don Fugler at (613) 748-2658 or e-mail: [dfugler@cmhc-schl.gc.ca](mailto:dfugler@cmhc-schl.gc.ca).**

**If someone asked your household to reduce its greenhouse gas creation by 30%, would you know where to start?**