

CURRENT HOUSING RESEARCH

Social, Economic and Technical Research





CMHC—HOME TO CANADIANS

Canada Mortgage and Housing Corporation (CMHC) has been Canada's national housing agency for more than 65 years.

Together with other housing stakeholders, we help ensure that the Canadian housing system remains one of the best in the world. We are committed to helping Canadians access a wide choice of quality, environmentally sustainable and affordable housing solutions that will continue to create vibrant and healthy communities and cities across the country.

For more information, visit our website at www.cmhc.ca

You can also reach us by phone at 1-800-668-2642
or by fax at 1-800-245-9274.

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CURRENT HOUSING RESEARCH

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INTRODUCTION

Under Part IX of the National Housing Act, the Government of Canada provides funds to Canada Mortgage and Housing Corporation to conduct research into the social, economic and technical aspects of housing and related fields.

Current Housing Research is compiled and produced one to two times a year by the Canadian Housing Information Centre. This publication provides information and access to research which is undertaken and sponsored by the Corporation. It is also available on CMHC's web site at http://www.cmhc-schl.gc.ca/en/corp/li/horetore/horetore_004.cfm

The publication contains information on completed research reports, new publications, videos and bibliographies, as well as planned and ongoing research projects. An alphabetical title index of items listed is included at the end for quick reference.

The overall arrangement of "*Current Housing Research*" is by broad subject category. Within each subject category, lists of planned and ongoing projects and completed research reports are described.

Each entry can contain the following elements:

- The project or report title;
- A description of the project or report results;
- The CMHC Project Officer who is managing the project;
- The Division within CMHC which is responsible for the project;
- For External Research Projects, the grant recipient undertaking the research;
- A Contract Identification Number (CIDN);

- The Status of the project: whether the project is in a planned, ongoing or completed phase. "Planned Projects" are those that are not yet underway, but are likely to be initiated in the current year. "Ongoing Projects" refer to research projects which are currently underway. No reports are yet available. Once the project is completed, and a report is available for distribution, it will be listed as a "Completed Report."

- Whether the report resulting from the research project is available and the address where the completed report can be obtained.

To discuss research projects that are recent or ongoing, please call CMHC General Inquiries at (613) 748-2000 and ask for the CMHC Project Officer identified under each project description.

ACQUIRING THE PUBLICATIONS AND REPORTS CITED AS COMPLETED

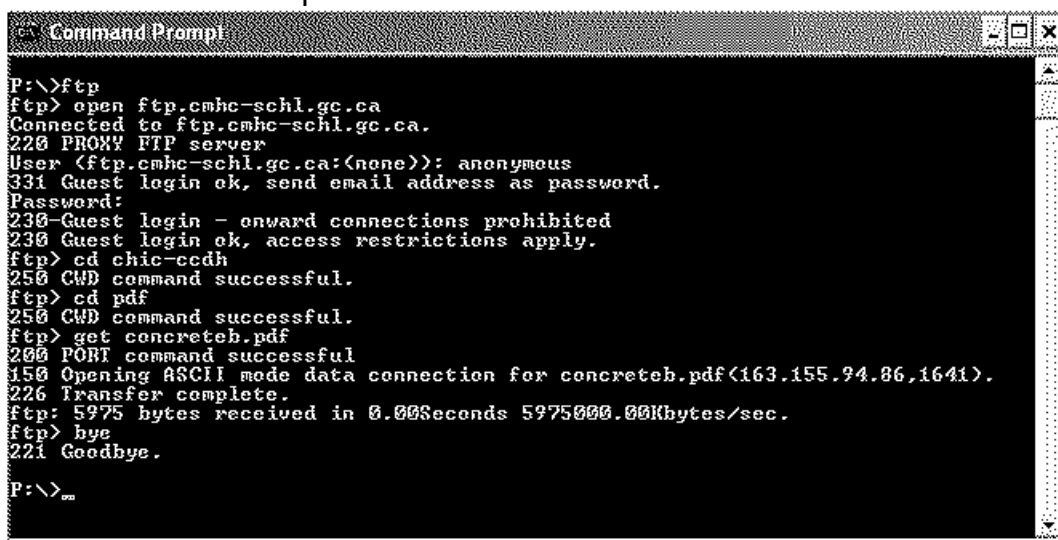
The availability section of each completed entry indicates the contact to obtain the item and whether the item can also be found on the Internet. Most items are available from the Canadian Housing Information Centre and can be ordered by using the information on the order form on the next page. We accept orders by regular mail, fax, phone, and via the Internet.

A number of the items cited are available electronically and the URL is included in the listing. CMHC uses an FTP (File Transfer Protocol) server to distribute reports. FTP has been used on the Internet as a means of transferring files between servers and users for many years and it continues to enjoy very wide use today.

In order to access a file using FTP, software with FTP capabilities is required and there are 3 types of FTP software:

1. Command Line FTP - FTP commands can be entered from a Command line or "DOS Prompt" on all Windows PCs.
2. FTP Client - a purpose built application to connect to FTP servers. These are widely available as commercial products or as shareware or even freeware on the Internet.
3. Some (not all) web browsers - Internet Explorer and Netscape can be used to access FTP files. They use correct protocol when ftp:// is entered in the address bar of the browser.
Example: **ftp://ftp.cmhc-schl.gc.ca/**

Here is an example of using the command line to retrieve a file from FTP.
FTP commands and help are available on PCs



```
Command Prompl
P:\>ftp
ftp> open ftp.cmhc-schl.gc.ca
Connected to ftp.cmhc-schl.gc.ca.
220 PROXY FTP server
User (ftp.cmhc-schl.gc.ca:(none)): anonymous
331 Guest login ok, send email address as password.
Password:
230 Guest login - onward connections prohibited
230 Guest login ok, access restrictions apply.
ftp> cd chic-ccd
250 CWD command successful.
ftp> cd pdf
250 CWD command successful.
ftp> get concreteh.pdf
200 PORT command successful
150 Opening ASCII mode data connection for concreteh.pdf(163.155.94.86,1641).
226 Transfer complete.
ftp: 5975 bytes received in 0.00Seconds 5975000.00Kbytes/sec.
ftp> bye
221 Goodbye.
P:\>
```

CURRENT HOUSING RESEARCH ORDER FORM

If you wish to receive any of the completed reports or research highlights listed, or if you would like to be on the mailing list to receive *Current Housing Research*, please fill out this form and send it to:

Canadian Housing Information Centre
Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa ON K1A 0P7
Fax (613) 748-4069
Telephone 1-800-668-2642
Email: chic@cmhc-schl.gc.ca

COMPLETED REPORTS REQUESTED

Send copies of above reports, research highlights

Add my name to your mailing list to receive *Current Housing Research*

Name		
Mailing Address (please include e-mail)		
City	Province	PostalCode

CMHC'S EXTERNAL RESEARCH PROGRAM

For over 25 years, under the External Research Program, CMHC provided funding assistance to help Canadian researchers carry out research investigations on topics related to housing. The intent of the program was to encourage and draw out new ideas, innovative solutions, and better understanding of housing issues. Although new applications are no longer being accepted, ERP projects underway will be completed. CMHC may publish and disseminate the results through the Canadian Housing Information Centre.

Recipients of ERP grants were selected on the basis of the merit and significance of their proposals by a national committee of housing experts. Committee representatives included experienced researchers and practitioners in government, academic institutions and housing-related professions.

CMHC would like to take this opportunity to thank all of the applicants and winners over the years and congratulate them on their contributions to improving housing in Canada.

TABLE OF CONTENTS

	PAGE
Introduction	1
Acquiring Publications	2
Order Form	3
CMHC's External Research Program	4
Table of Contents	5
Subject Index	6
Technical Research	7 - 33
Social and Economic Research	34 - 58
CMHC Research Report Listings	59
About Your House Fact Sheet Series	60 - 75
About Your Apartment Series	76 - 77
About Your House - North Series	78
Technical Research Highlights Series	79 - 97
Socio-economic Research Highlights Series	98 - 113
Title Index	114 - 119

SUBJECT INDEX

Aboriginal Housing	35
Acoustics	9
Basements, Foundations & Crawl Spaces	9
Building Materials	10
Children's Environments	36
City Planning & Human Settlements	37
Cooperative & Non-profit Housing	38
Doors & Windows	10
Energy Conservation	12
Fires & Fire Prevention	16
Green Roofs	17
Heating and ventilation	17
High-Rise & Multiple Unit Construction	18
Home Ownership	38
Homelessness	39
House Construction	19
House Construction Industry	40
Housing Affordability	40
Housing & Immigration	41
Housing Export Opportunities	42
Housing Finance	44
Housing Indicators & Data	45
Housing Research	46
Indoor Environment	22
Infrastructure	46
Moisture & Mold	23
Northern Housing	24
Persons with Disabilities	47
Renovation & Inspection	25, 48
Rental Housing	49
Residential Development	49
Seniors	51
Social Housing	53
Sustainable Development & Healthy Housing	26, 55
Water Conservation, Reuse & Management	30
Women and Housing	57

TECHNICAL RESEARCH

ACOUSTICS

FLANKING SOUND TRANSMISSION IN WOOD FRAME MULTI-FAMILY DWELLINGS PHASE 5: CONSOLIDATION FOR ELECTRONIC DESIGN GUIDE

This project will consolidate the results of current and previous NRC-IRC flanking projects (Phases 2 - 4) and present them in the form of a best practice design guide that is easily accessible and useable by builders, architects, and engineers. This design guide will be the primary resource to aid in the design and construction of structures complying with possible future Canadian building-code mandated Apparent-STC and Apparent-IIC requirements, or other national model codes that use ISO metrics.

CMHC Project Officer : *Terry Robinson*

CIDN : 39020900

Division : *CMHC International*

STATUS : Ongoing

AVAILABILITY : Product is not yet available

BASEMENTS, FOUNDATIONS & CRAWLSPACES

BASEMENT WALL INSULATION RETROFIT MONITORING

There have been field observations and research findings in the last several years which suggest that polyethylene as a vapour barrier in many wall assemblies may be excessive, and that other vapour retarder systems may be preferable. The last CMHC research showed that the below-grade portion of interior insulated basement wall assemblies might benefit from more permeability, not less. Various interior insulated assemblies have been suggested as alternatives. This project is measuring the moisture performance of different basement interior insulation wall retrofit assemblies in 10 real houses to see if the research findings can be substantiated in the field, and to look out for unexpected repercussions in changing the current wall construction practice. Ten Saskatchewan basements have been retrofitted and are being monitored. This research is ongoing.

CMHC Project Officer : *Duncan Hill*

CIDN : 36970200

Division : *Policy and Research Division*

STATUS : Ongoing

AVAILABILITY : Product is not yet available

RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION

The project involved the retrofitting of several wet crawl spaces to solve the moisture problems. The retrofit work was documented and the crawl spaces are being monitored for a period afterwards to verify the effectiveness of the retrofit measures. The case studies will be used to demonstrate how to fix poorly performing crawl spaces. The project has been prepared in conjunction with First Nations housing authorities and responds to a pressing problem found on many reserves.

CMHC Project Officer : *Duncan Hill*

CIDN : 33050200

Division : *Policy and Research Division*

STATUS : Ongoing

AVAILABILITY : Product is not yet available

BUILDING MATERIALS

COMPRESSED EARTHBLOCK (CEB) - STRAWBALE HYBRID BUILDING SYSTEM

This project will investigate the performance of straw bale insulation in combination with compressed earth blocks, as a hybrid building system. Earth blocks are found in many other parts of the world, but their use in Canadian buildings, so far, has been limited. The researcher will be monitoring energy use as well as some of the performance characteristics of the earth blocks. The project has been initiated. The earthblocks were cast and construction has been proceeding slowly. Because of the wet summer in 2008, 5% cement was added to the mixture for stabilization. Samples of the earthblocks will be tested at Queen's University for compression and bending, and the results compared to other CMHC earth block tests (Dupuy) and more standard construction material such as bricks and concrete masonry. The energy usage of the structure will be recorded to determine the envelope efficiency of the hybrid structure. Both moisture performance and the extent of cracking will also be monitored for one year after the completion of construction.

CMHC Project Officer : *Duncan Hill*

CIDN : 36260216

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

DOORS AND WINDOWS

BEST PRACTICE GUIDE - WINDOWS

In partnership with Natural Resources Canada and the Homeowner Protection Office (British Columbia), CMHC developed this comprehensive and practical technical advisory document for architects, engineers, builders, renovators, window manufacturers, window installers and others involved in the design, specification, construction, installation and interfacing of windows within the exterior wall assembly in both low-rise and high-rise residential construction. This document provides guidance in selecting the appropriate window performance criteria for the intended application and provides installation details to ensure the performance criteria is achieved through the effective continuity of thermal, air, vapour and moisture barriers at the interface between the window units and the wall assembly.

CMHC Project Officer : *Silvio Plescia*

CIDN : 30870200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

EVALUATING THE EFFECTIVENESS OF WALL-WINDOW INTERFACE DETAILS TO MANAGE RAINWATER

Based on the need for effective window-wall interface details to manage water intrusion, CMHC in partnership with the National Research Council (NRC), formed a consortium of interested North American organizations to evaluate specific window-wall interface details to determine how effective the details are in managing rainwater. CMHC and NRC funded the first phase of this multi-year study. The Phase I testing program, highlighting wall-window interface details of interest to CMHC, was completed in the fall of 2008. The window testing program included window frames with and without an integral flange as well as wall assemblies with drainage cavities and wall assemblies with direct-applied claddings. The Phase I final report is available at <http://www.nrc-cnrc.gc.ca/obj/irc/doc/pubs/b-1229.1/b-1229.1.pdf>. The Phase 2 and Phase 3 testing programs, which highlight wall-window interface details of interest to the industry (Building Diagnostics Technology Inc. and E.I. Dupont and Nemours & Company) have also been completed.

The Phase 2 report provides results obtained from evaluating the watertightness of a series of three wall-window interface details representative of construction practice as might be carried out in the

DOORS AND WINDOWS

US and as specified by Building Diagnostics Technologies. The Phase 2 report is entitled: Watertightness, Air Leakage and Rainwater Management of BDTI Specified Assemblies.

The Phase 3 report provides results obtained from evaluating the watertightness of a series of three wall-window interface details representative of construction practice as might be carried out in the US and as specified by DuPont. This report is entitled: Watertightness, Air Leakage and Rainwater Management of Dupont Specified Assemblies.

In both reports the test specimen configuration is described and details of three sets of wall-window interfaces and variations on their implementation are provided. The results of water penetration tests are presented in terms of water entry through deficiencies in the window, water collection within the assembly and the severity of the simulated wind-driven rain loads. Results on water entry for the different wall-window interface configurations are given and the effectiveness of different details is discussed. The final reports from Phase 2 and Phase 3 are available upon request from the National Research Council.

Prepared for the Canada Mortgage and Housing Corporation, Building Diagnostics Technology Inc., E.I. DuPont de Nemours & Co. and Public Works and Government Service Canada. Prepared by M. Armstrong ... et al. Ottawa: National Research Council Canada, Institute for Research in Construction, 2008-2010. 3 volumes

STATUS : New Completed Reports

AVAILABILITY : National Research Council Canada

EXTERIOR WINDOW SHADING DEVICES FOR THE CANADIAN CLIMATE

This project will identify exterior window shading devices that can improve comfort and reduce household energy consumption in the Canadian climate. Existing technologies will be assessed for performance, durability, ease of integration with building envelope elements and user friendliness. The influence of freezing rain, wet snow, or melting/freezing snow on performance and operation will be assessed. Energy savings potential will be modelled to project savings potential for different Canadian climatic conditions, including the North.

CMHC Project Officer : Ken Ruest

CIDN : 38300200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SELECTION OF LOW-E COATED GLASS FOR OLDER RESIDENTIAL HIGH-RISE APARTMENT BUILDINGS IN CANADA

Recent research at the Canadian Centre for Housing Technology (CCHT) and the National Research Council Canada (NRCC) revealed that high-solar heat gain low-e coated glass is the most appropriate spectrally selective glass for houses in Canada. However, no similar research has been conducted for older high-rise residential apartment buildings even though they represent a significant proportion of the housing stock. Thus, a complementary research study has been initiated to determine whether high or low solar heat gain glazing in apartment dwellings would be more appropriate for retrofitting into older multi-unit residential buildings to balance the need to control heat losses while encouraging solar gains to help offset space heating loads.

CMHC Project Officer : Woytek Kujawski

CIDN : 38840217

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

DOORS AND WINDOWS

THERMAL PERFORMANCE OF WINDOW ASSEMBLIES

CMHC in collaboration with the National Research Council, is undertaking a study to investigate the risk of condensation at the window frame perimeter of the interface assembly as a function of both temperature differential and air leakage rate across the assembly. Depending on the types of windows used and the cladding into which the windows are installed there arise different methods to provide drainage that may also affect air leakage through the assembly. This, in turn, may give rise to the formation of condensation along the window, at the sill or along the window sash and glazing panels. Various window installations, including position of the window unit within the wall assembly and different window-wall interface insulating strategies will be subjected to temperature, air pressure differentials and various air leakage rates and paths to investigate the risk to condensation they impose on the window-wall assembly. The project commenced in the summer of 2008. The laboratory testing program has been completed and the final report is being prepared.

CMHC Project Officer : *Silvio Plescia*

CIDN : 33180200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY CONSERVATION

DESIGN SURVEY OF LOW ENVIRONMENTAL IMPACT HOUSING

This research project documented case studies of low environmental impact housing (including net zero energy) in Canada and internationally in similar climates. The goal was to identify criteria and specifications for zero environmental impact housing in Canada, develop best practice models towards achieving this goal, and ultimately share information on these "deep green" housing models for Canadian climatic regions. Case studies were developed, analysed as a group and conclusions were provided. A research highlight is planned for 2011.

CMHC Project Officer : *Woytek Kujawski*

CIDN : 25400200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO

CMHC is participating in the development of an Energy Management Program and pilot project for social housing. CMHC will be working with the Social Housing Services Corporation of Ontario to develop an Energy Management Program that will provide local social housing providers with the tools needed to evaluate and implement energy and water efficiency measures in their buildings. CMHC support will be used to develop or adopt tools for the Energy Management Program including utility tracking and on-line energy/water audit facilities, standard energy audits, and communication documents for property owners, managers and residents. CMHC will also participate in the evaluation of energy and water efficiency projects in 20 buildings selected to participate in a pilot project to evaluate the costs and benefits of the Energy Management Program. CMHC support will be useful to establish the Program in Ontario and will also provide other provinces with useful information on the development of central energy programs for their social housing stock as well.

CMHC Project Officer : *Duncan Hill*

CIDN : 29820200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY AND WATER EFFICIENCY RETROFITS FOR MULTI-UNIT RESIDENTIAL BUILDINGS

This project is updating the CMHC publication that provides building owners and managers of residential multi-unit residential buildings with information on cost-effective energy and water efficiency retrofits to reduce consumption, operating costs and environmental impacts of their buildings. New retrofit strategies will be added and obsolete measures will be removed. The cost-benefit information will also be updated. The work has been received and is under review by CMHC.

CMHC Project Officer : Remi Charron

CIDN : 38370200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY BLOCKS: TOOLS FOR AFFORDABILITY THROUGH ENERGY, CARBON AND COST REDUCTIONS

Can Home Energy Ratings be synchronized with Community Energy Plans to develop energy descent profiles for existing residential neighbourhoods that reduce long-term energy costs? The objective of this research is to create an index tool that links existing databases to show the adaptive energy capacity of housing to achieve EQuilibrium™ housing standards and long-term affordability.

CMHC Project Officer : Duncan Hill

CIDN : 41330207

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY CONSERVATION IN CANADIAN BUILDINGS USING ADVANCED THERMAL INSULATION

The National Research Council of Canada, Institute for Research in Construction (NRC/IRC) received financial assistance from Canada Mortgage and Housing Corporation (CMHC) and the EcoEnergy Technology Initiative (EcoETI) for the purpose of conducting research on the application of advanced thermal insulation that not only offers higher thermal resistance but is also eco-friendly (i.e. renewable, energy efficient, biodegradable and indigenous). A cradle-to-grave analysis of thermal insulating materials in terms of energy consumption and impact on environment will also be undertaken to help in the selection of appropriate insulating materials. This study, currently commencing its second year of work, will be carried out in four tasks over a three year period: Task 1 (Investigation on advanced thermal insulations) has been completed. Task 2 (Cradle-to-grave energy consumption analysis for thermal insulation materials) and Task 3 (Assess the thermal performance of building components constructed with advanced thermal insulation materials) are currently underway. Task 4 (Demonstrate the impact of advanced thermal insulating materials on the potential energy conservation in Canadian buildings) will be completed thereafter. The project is expected to be completed by spring of 2012.

CMHC Project Officer : Silvio Plescia

CIDN : 39720200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY PERFORMANCE OF DIFFERENT ENERGY RETROFIT STRATEGIES FOR RESIDENTIAL WOOD-FRAME WALL SYSTEMS USING VIP - FEWF EVALUATION

This project will assess the thermal performance of wall assemblies retrofitted from the exterior with a vacuum insulation panel (VIP) in comparison with a wall assembly retrofitted with an exterior application of rigid foam board. Advanced modeling tools will be bench marked against the experimental results. Parametric analysis will then be conducted to evaluate the potential performance of these highly insulated wall assemblies over the range of the Canadian climate zones Heating Degree Days (HDD).

CMHC Project Officer : *Silvio Plescia*

CIDN : 41140200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

EVALUATION OF THE IMPACT OF ENERGY EFFICIENCY AND SUSTAINABLE DEVELOPMENT MEASURES ON AFFORDABLE HOUSING

This External Research Program study analyzed the impact of including energy efficiency and sustainable development (treatment of grey water, “green materials”) measures on the operation of community housing buildings. The analysis dealt with actual energy costs vs. projected costs, the costs of maintenance service and the effects on maintenance practices.

CMHC Project Officer : *Woytek Kujawski*

CIDN : 36260210

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

INVESTIGATION OF THE PERFORMANCE AND USE OF VACUUM INSULATED PANELS IN NEW AND EXISTING WOOD FRAME CONSTRUCTION

The Canadian housing industry is moving towards producing buildings with high energy efficiency, as demonstrated by CMHC’s EQuilibrium™ initiative, the RAIC 2030 Challenge and exports of Super E homes. A key component of highly energy efficient housing is a super insulated building envelope. However, using conventional insulation to achieve this leads to very thick building envelope assemblies that present cost, construction, market acceptance and regulatory challenges. This External Research Program study explores the potential for the use of thin highly insulated vacuum insulation panels (VIPs) in new and existing Canadian low rise residential housing in order to meet these challenges in a practical cost effective manner. A report investigating the performance of vacuum insulated panels in wood frame construction will be produced.

CMHC Project Officer : *Barry Craig*

CIDN : 40140206

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

LEAST COST ANALYSIS FOR CANADIAN NEW HOUSING

This External Research Program research project will provide insight on what upgrades could be incorporated into new housing to improve energy efficiency without adding any extra net cost to the homeowner based on life cycle cost analysis. The study will characterize the energy savings against the costs of the energy upgrades to determine at what point declining energy savings no longer support upgrade costs without representing an overall expenditure increase to the homeowner. The research is divided into two parts: 1) Simulation and analysis of energy efficient building upgrade potential for the Canadian residential sector using representative housing data and 2) Simulation and application of the lowest cost upgrade to the house to determine the overall cost with the upgrade(s) to meet the energy efficiency objectives.

ENERGY CONSERVATION

CMHC Project Officer : Woytek Kujawski

CIDN : 40140202

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

PERFORMANCE ANALYSIS OF RESIDENTIAL HOT WATER EFFICIENCY DEVICES

This project will look at the energy savings (if any) that come from replacing conventional residential water heaters with tankless (or instantaneous) appliances. The project will assess domestic hot water energy consumption before and after the retrofits of tankless gas-fired water heaters in at least 50 houses so that savings can be compared. Water usage and homeowner satisfaction will also be surveyed. CMHC has engaged the support of two utilities in Ontario and Saskatchewan to help find test houses. Most of the Ontario houses have been obtained and work is continuing to find houses for the Saskatchewan component of the field testing. Monitoring results are expected through 2010 and 2011.

CMHC Project Officer : Remi Charron

CIDN : 38410200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

RESEARCH PROJECTS AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY (CCHT)

This project provides funding for collaborative research at the Canadian Centre for Housing Technology (CCHT) for a portfolio of research projects initiated by three CCHT partners. These research projects will result in improved understanding of energy performance of building envelope changes to attic venting changes, provide understanding of energy benefits from ground source heat pump heating and air conditioning systems, and how solar technologies can be adapted to seasonal conditions. Knowledge to improve the in-situ performance of PV systems will also be created.

CMHC Project Officer : Ken Ruest

CIDN : 41980200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

STUDY OF ENERGY CONSERVATION OPPORTUNITIES IN THE RETROFIT OF BUILDING ENVELOPES IN LARGE MULTI-UNIT HIGH-RISE RESIDENTIAL BUILDINGS

Many buildings in the Lower Mainland of British Columbia have undergone comprehensive rehabilitation to remedy moisture-related problems. Little or no attention was specifically directed at energy conservation or greenhouse gas emissions. CMHC, the Homeowner Protection Office, City of Vancouver, BC Hydro and Terasen Gas provided funding for this research project to review and assess the effects of building enclosure improvements on the space conditioning energy use in typical high-rise residential buildings in the Lower Mainland of BC and then to develop better strategies that take into account enclosure repairs, energy conservation and greenhouse gas emissions. This project includes the collection of basic building enclosure information and energy (gas and electricity) consumption data for some 39 mid-rise and high-rise buildings in the lower BC mainland. Subsequently, a more detailed analysis will be conducted on several of these buildings to more precisely determine where and how much energy is being consumed. Where buildings have undergone building envelope rehabilitation, this project intends to assess the effects the work has had on the buildings space conditioning energy use. This project is ongoing.

CMHC Project Officer : Silvio Plescia

CIDN : 38330200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ENERGY CONSERVATION

SUPPORT FOR THE DEVELOPMENT OF A NEW CSA STANDARD ON FANS AND MOTORS

The Canadian Standards Association has formed a technical subcommittee on the performance of motor/fan combinations. To ensure that the subcommittee membership includes individuals with residential expertise, CMHC retained the services of a consultant to attend the CSA meetings and provide guidance on residential fan motor efficiency to the standards committee. Several meetings have been held and more will be scheduled prior to voting on the standard.

CMHC Project Officer : *Duncan Hill*

CIDN : 37730200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

THERMAL, ENERGY AND MOISTURE PERFORMANCE OF ALTERNATIVE (NON-WOODFRAME) HOUSING SYSTEMS

This project will characterize the thermal performance of the increasingly popular Insulated Concrete Form (ICF) housing system and assess the impact of ICF's on whole-house (or building) energy use (particularly in comparison with traditional wood-frame construction). This research project will be useful to evaluate and assess the contribution and impact of any thermal mass benefits embedded in the ICF system (i.e. the concrete) in comparison with the nominal RSI values which comprise the individual components of the system. Two ICF wall assemblies were constructed in the summer of 2009 and installed with sensors and monitoring equipment, into the Field Exposure of Walls (FEWF) test facility at the NRC. Monitoring of these walls, exposed to real climate loads, will take place for 1 full year. The project is expected to be completed by February 2011.

CMHC Project Officer : *Silvio Plescia*

CIDN : 38350200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: SUSTAINABLE BUILDING ENVELOPE RETROFITS FOR EXISTING HOUSES, p. 30

FIRES & FIRE PREVENTION

SIMPLE DESIGN TOOLS FOR THE ASSESSMENT OF UPHOLSTERED FURNITURE BURNING IN HOME FIRES

The life safety of occupants and fire fighters will be improved with a better understanding of the effects of upholstered furniture in living and sleeping areas when exposed to fire. This work will provide a simple design tool/model that demonstrates the time elapsed before major fire events occur, and the time elapsed before conditions become untenable. The study will acquire and analyze data, then model and validate it for two houses - one detached unit and one townhouse unit - furnished with typical upholstery. The final report should provide designers with simple tools to evaluate the risk of fire involving different furniture on life safety.

CMHC Project Officer : *Barry Craig*

CIDN : 38840219

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

GREEN ROOFS

HEATING-SEASON ENERGY SAVINGS FROM EXTENSIVE GREEN ROOFS

Green roofs are well known for their ability to cool buildings in the summer, reducing greenhouse gas emissions and energy costs for air conditioning. The benefits of green roofs for the thermal performance of buildings in winter are poorly understood. This research will incorporate data from experimental green roofs into building energy models to calculate expected energy savings during cold seasons for different types of housing.

CMHC Project Officer : Duncan Hill

CIDN : 41330205

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HEATING AND VENTILATION

ASSESSMENT OF THE IMPACT OF A NATURAL GAS FIREPLACE ON HEATING ENERGY CONSUMPTION AND ROOM TEMPERATURES AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY

Gas fireplaces are prevalent in homes across Canada. In the 2007 Survey of Household Energy Use (NRCan, 2007) almost a quarter of all homes (23%) reported having a gas burning fireplace, up from a reported 19% in 2003. Of these homes, 22% reported using the fireplace every day during the heating season.

When a fireplace is operated in close proximity to the house's central thermostat, the heat introduced by the fireplace can cause the heating system to delay its normal cycle of operation – affecting energy consumption and temperatures in the home. Over two winters from 2008 to 2010, researchers at the Canadian Centre for Housing Technology undertook a project to examine the impact of operating a gas fireplace in an R-2000 house. Under a variety of operating conditions, they explored the interaction of the fireplace with the central thermostat, the impact on energy consumption for heating, and changes in room air and surface temperatures. Additionally, impact of the fireplace's standing pilot light and open vent were explored. The results from this project are described in this report.

The objectives of this project were:

- To evaluate the impact of operating a natural gas fireplace on house energy consumption.
- To monitor the resulting room air temperatures, wall and window surface temperatures, to determine if the risk of condensation and mould growth has been increased.
- To monitor any change in furnace operation due to fireplace operation.

Prepared by M. M. Armstrong, M. C. Swinton and F. Szadkowski. CMHC Project Officer: Ken Ruest. Ottawa: Canada Mortgage and Housing Corporation, 2010. 122 pages (4.65 MB)

Note: No. 11-100 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 67314)

STATUS : New Completed Report and Research Highlight

AVAILABILITY: Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu al/Ca1%20MH%2010A73_w.pdf

AIR LEAKAGE CONTROL IN MULTI-UNIT RESIDENTIAL BUILDINGS (MURBS) - DEVELOPMENT OF TESTING AND MEASUREMENT STRATEGIES TO QUANTIFY AIR LEAKAGE

The testing, measurement and quantification of the airtightness performance or air-leakage characteristics of multi-family buildings has not evolved to the same extent that it has in the low-rise, single family home sector. Nevertheless, energy performance, indoor comfort, fire and life safety, amongst other criteria, depend on the airtightness characteristics of not only the envelope but also the unit compartments in multi-family buildings. The objectives of this project will include the updating and summation of the current knowledge related to testing methodologies and protocols for assessing and quantifying the airtightness of multi-family buildings, determining the existence of other international building air-tightness initiatives (whether they are programs or regulations) and evaluating their effectiveness; and to assess whether or not the various construction industry stakeholders, in those jurisdictions, have effectively responded to meeting the air-tightness requirements. This research will further knowledge and understanding of airtightness testing and airtightness performance of multi-family buildings and will provide a foundation for advancing this area of study in the Canadian context.

CMHC Project Officer : *Silvio Plescia*

CIDN : 39930200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

DEVELOPMENT OF A POST OCCUPANCY EVALUATION PERFORMANCE ASSESSMENT FRAMEWORK FOR MURBS

This project will develop a CMHC framework for post occupancy evaluation (POE) of the performance of multi-unit residential buildings (MURBs), by enabling evaluation of the performance of MURBs in a systematic manner. The framework will support the development of a monitoring program for any future initiative for MURBs, and MURB projects such as the Tower Renewal project. Information provided by the POE framework will add to the body of knowledge that can support the adoption of innovations by the MURB sector and improve the performance of new and existing buildings.

CMHC Project Officer : *Duncan Hill*

CIDN : 40730200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

DEVELOPMENT OF AN OCCUPANT ENGAGEMENT STRATEGY TO SUPPORT ENERGY AND WATER EFFICIENCY IN MULTIPLE UNIT RESIDENTIAL BUILDINGS

This project will develop an occupant engagement strategy to improve energy/water efficiency and indoor conditions in multi-unit residential buildings. It will be based on a literature search, the development of an engagement strategy (e.g., occupant's guide, behaviour modification approaches, engagement strategies, "reward" possibilities) and the integration of the strategy within a post occupancy evaluation project. The strategy will be tested in a building undergoing a post occupancy performance evaluation to determine the extent to which improvements in performance are possible. The literature search phase has been completed and the project is currently in an engagement strategy phase.

CMHC Project Officer : *Woytek Kujawski*

CIDN : 39730200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

ENGINEERED BUILDING ENVELOPE SYSTEMS FOR OUTDOOR/INDOOR CLIMATE EXTREMES

CMHC is contributing to a National Research Council project to identify indoor conditions and weather in northern and northern-coastal communities, and select appropriate building envelope assemblies for extreme climates. The project assesses the hygrothermal performance of these assemblies by computational and laboratory testing, measures air leakage by means of blower door tests and produces performance parameters for heating and high humidity climates. The project also analyzes the energy and environmental impact of proposed building envelope assemblies. The research findings will be published in a research report, and presented in seminars throughout Canada and the North.

CMHC Project Officer : Barry Craig

CIDN : 29600200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

INNOVATIVE BUILDINGS AND CONTINUING EDUCATION ARTICLES FOR ARCHITECTS

CMHC develops and publishes continuing education articles and case studies of innovative buildings for architects. These publications provide technical information on a variety of subjects, especially those related to buildings and communities. The studies provide examples of innovative systems or processes, which can help improve industry knowledge. New web-based learning articles requested by the architects' associations were co-ordinated with CMHC and two projects on EQUilibrium Housing and EQUilibrium™ Communities are ongoing with the third on Water Sensitive Urban Design being prepared.

CMHC Project Officer : Woytek Kujawski

CIDN : 3366-PLN05

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is available on the web

HOUSE CONSTRUCTION

DESIGN OF WIND-LOADS FOR RESIDENTIAL PHOTOVOLTAIC SYSTEMS

The University of Western Ontario was awarded an External Research Program grant to undertake a research project to evaluate wind-induced loads on roof-mounted photovoltaic (PV) residential systems; the aim of which is to identify configurations that minimize wind loads on solar panels and roof-cladding systems. The study will be limited to typical 2-storey, single-family homes with roof-mounted PV panels or a PV-Thermal system. The research will investigate various parameters including roof slope, solar panel position and orientation with respect to wind-flow, and height of the panels above the roof surface. The research project is ongoing.

CMHC Project Officer : Silvio Plescia

CIDN : 40140204

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

GLOSSARY OF HOUSING TERMS - UPDATE

This project reviews the current edition of "Glossary of Housing Terms" and conducts research to identify new terms and definitions which are missing. The "Glossary of Housing Terms" was last updated in 1995, resulting in the absence of a number of new housing terms, some of which are included in CMHC's new information products. Examples of new housing terms missing from the "Glossary of Housing Terms" include: surfactants, enthalpy recovery ventilator, building science, polyolefin, xeriscaping, pyrite, stachybotrys chartarum and brownfields. All the existing terms and definitions have been reviewed to ensure they are still appropriate and that the definitions are accurate. Construction related acronyms and abbreviations, and terms common to multiple unit residential buildings have also been added. The revised "Glossary of Housing Terms" English manuscript is complete.

CMHC Project Officer : Barry Craig

CIDN : 33070200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

IMPROVED PREDICTION OF SEISMIC RESISTANCE OF PART 9 HOUSES

Currently available approaches for the prediction of seismic resistance of conventional wood-frame construction (that is, buildings conforming to Part 9 of the National Building Code of Canada (NBCC)) are not able to predict the seismic resistance in a reliable manner. Experience in earthquakes and recent shake table tests of two-storey specimens have demonstrated generally good performance, but the limitations of this favourable behaviour are not well defined. A funding grant from the CMHC External Research Program has been provided to Forintek Canada Corporation (FP Innovations) to undertake a research project, to develop simple mechanics-based methods for the prediction of seismic resistance of conventional wood-frame ("Part 9") houses. Forintek investigated the adequacy of the bracing requirements for conventional wood-frame construction as outlined in the 2004 Canadian Wood Council Design Guide (CWC Guide) and the proposed Part 9 of the 2010 NBCC. The results showed an imbalance in the required lengths of braced walls in the short and long directions of rectangular buildings. In most studied cases, neither the 2004 CWC Guide nor the proposals for the Part 9 of the 2010 NBCC meet the seismic requirements of Part 4 of NBCC 2005 for high seismic zones. To address this imbalance between required lengths of braced walls in short and long directions of a rectangular building in conventional wood-frame construction, the researchers at FP Innovations proposed a new calculation method, based on the minimum length of braced wall as a function of the floor area of the building.

CMHC Project Officer : Silvio Plescia

CIDN : 34380208

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is available

RACKING PERFORMANCE OF WOOD SHEAR WALLS CONSISTING OF FINGER-JOINTED STUDS

In order to make lumber more sustainable and to reduce cost and waste, the use of finger-jointed wood studs is now permitted in building codes and is becoming increasingly common in residential construction. However, the strength of these studs when subject to tensile stress is not well understood. This External Research Program project tests the racking strength of finger-jointed wood studs used in shear walls. The data produced by this research will inform the designers of codes and standards of the comparative performance of finger-jointed and regular dimensional lumber studs when used in shear walls. It also measures the effect on racking strength of the number of joints in the stud.

CMHC Project Officer : Barry Craig

CIDN : 38840206

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SEISMIC ISOLATION OF RESIDENTIAL WOOD FRAME AND LOW- AND MEDIUM-RISE MASONRY BUILDINGS

McMaster University has been granted funding through the CMHC External Research Program to investigate the application of a novel and economical fibre reinforced elastomeric base isolation system for both light-weight wood frame and low- and medium- rise unreinforced masonry residential buildings. The objective of this study is to determine if an economically viable base isolation system can be developed to alter the natural period of the building and isolation system out of the range of maximum earthquake intensity for seismically vulnerable residential buildings. The test program will include the scaled model shake table testing of both fixed-base and isolated-base foundation buildings to assess their dynamic response and a parametric analysis will be conducted for four seismic jurisdictions across Canada to assess the effectiveness of the base-isolation system to mitigate or reduce the seismic loads on the building.

CMHC Project Officer : *Silvio Plescia*

CIDN : 38840214

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABLE BUILDING SCIENCE BEST PRACTICES

The objective of this project is to consolidate energy-efficient and sustainable building science best practices into one comprehensive illustrated source that will serve as a text book and training manual for building science courses. It will be used in architectural programs at colleges and universities, and by builders and designers. The result of this research will be a common reference that describes sustainable building science for Canadian construction that is based on rigorous scientific research and testing, and energy conservation measures and that demonstrates best practices. It will be tailored to existing teaching curricula and it will be extremely useful to architects, engineers and building scientists resulting in an accurate and common understanding of sustainable building science principles and their interrelationship with one another.

CMHC Project Officer : *Barry Craig*

CIDN : 35610200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

UPDATE AND ENHANCE CANADIAN WOOD FRAME HOUSE CONSTRUCTION

This project will update and enhance CMHC's best selling publication "Canadian Wood-Frame House Construction" and advance the knowledge of students, builders, building inspectors and home owners regarding how to build wood-frame houses that are more sustainable, energy efficient, durable, and building code compliant. The enhanced publication will also support CMHC's efforts to position Canada's housing as among the best in the world.

CMHC Project Officer : *Barry Craig*

CIDN : 40680200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

CANADIAN RADON MITIGATION CASE STUDIES

The project will investigate the performance of subslab depressurization radon mitigation systems installed in 20 Canadian houses. Field testing will show whether houses with existing systems have problems with exhaust duct leakage or foundation chilling. The testing will also help quantify the possibility of icing with vertical stacks, the proportion of indoor air that is exhausted from these depressurization systems, and the contribution of these exhaust fans to house depressurization. The results of this research will help to shape Canadian radon mitigation training and the radon advice provided to consumers by CMHC and Health Canada.

CMHC Project Officer : Regina De La Campa

CIDN : 39790200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

REVIEW OF THE RELATIONSHIP BETWEEN HOUSE VENTILATION RATES AND HEALTH

This work, being led by Quebec public health agency (INSPQ) and National Research Council (NRC), is attempting to establish the relationship between adequate ventilation and health (or inadequate ventilation and poor health), through literature searches and appropriate field testing. The project should lead to a better understanding of the relationship between house ventilation and occupant health. If the project establishes a strong correlation between good ventilation and healthy residents, it will be useful material for building codes, medical authorities, ventilation standards, and the ventilation industry. The first year involves house and occupant characterization. CMHC is supporting the characterization of the houses. All the houses will have two airtightness tests and 4-5 tracer gas air change rate tests, as well as measurements of the indoor air quality and occupant health status. Starting the fall of 2010, half the sample houses will have their ventilation rate increased by 0.15 air changes per hour, and the health status of the asthmatic children will be monitored for one year to see if the increased ventilation results in health benefits. CMHC will be releasing a Research Highlight on the air change rates and airtightness data of this housing sample.

CMHC Project Officer : Duncan Hill

CIDN : 35560200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUPPORT FOR IAQ/HOUSE CHARACTERIZATION AND DATA ANALYSIS - MCMASTER UNIVERSITY CHILD STUDY

CMHC is supporting this multi-year, inter-institute collaborative research study to address the influence of indoor environments on asthma and allergy. The study will follow 5000 pregnant women and their children, from birth to 5 years of age, to understand the indoor environmental exposures that may result in allergic and respiratory disease. Among other things, the research will provide information on housing characteristics, occupant factors related to the operation of the houses and the presence of indoor biological contaminants. CMHC has led three rounds of in-depth technical training to research assistants who will use home assessment questionnaires during walk-through home visits with the participating families. The pilot phase of the study closed on December 15, 2008, with 200 mothers and children recruited over a two month period. Important information on recruitment strategies, questionnaires, home assessments and birth events has been collected. The questionnaires and home assessments have been reviewed and improved. The study has now moved to the implementation phase, with over 1000 families recruited among the four centres (Vancouver, Edmonton, Winnipeg and Toronto). A fourth training session is planned for replacement research assistants and will take place before March 2011.

CMHC Project Officer : Regina De La Campa

CIDN : 35580200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

INDOOR ENVIRONMENT

SURVEY OF CHARACTERISTICS IN HOMES WITH ELEVATED RADON LEVELS

This External Research Program project surveyed houses in a radon-prone area of Winnipeg to discover whether there are common house characteristics that elevate (or reduce) radon concentrations in these houses. The contractor will also be looking at the impact of the application of a simple remedial measure, a floor drain trap, on the radon reduction in these houses.

CMHC Project Officer : Regina De La Campa

CIDN : 40140203

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

CONTRIBUTION TO THE INDUSTRIAL RESEARCH CHAIR IN ALLERGENS AND TOXINS FROM MOLDS IN THE BUILT ENVIRONMENT

CMHC is supporting the ongoing research of the National Science and Engineering Research Council Chair on Allergens and Toxins from Molds in the Built Environment at Carleton University.

The purpose of this support is to help address the problem that there is no method to obtain a quick and inexpensive determination of the nature of mold contamination in a house. A more fundamental understanding of the by-products of mold that are harmful to people is needed along with knowledge regarding the thresholds that should be avoided and cheap and reliable ways of classifying moldy and non-moldy houses. The first five year's work of the Chair developed the expertise to identify human allergens, produce antibodies specific to each allergen and isolate and test the effect of toxins on lungs from *Stachybotrys chartarum*, *Aspergillus versicolor* and *Penicillium chrysogenum*, three representative fungi found in houses that require large, medium and low amounts of moisture. The second five years, that started in June 2006, will expand the expertise to a larger number of molds to make it feasible to use these reagents as an inexpensive and reliable way of testing for mold contamination in houses.

CMHC Project Officer : Regina De La Campa

CIDN : 34070200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

LITERATURE REVIEW ON HISTOPLASMA, BLASTOMYCES AND CRYPTOCOCCUS GATTII AND THE IMPLICATIONS FOR THE DESIGN, OPERATION AND MAINTENANCE OF HOUSING

This project is being conducted to compile scientific literature on fungi that may be found in and around housing. A thorough literature review of *Histoplasma capsulatum*, *Blastomyces dermatitidis* and *Cryptococcus gattii*, three fungi that cause infectious diseases in people was conducted by a mycology expert. Histoplasmosis occurs from exposure to feces of birds and bats, while blastomycosis occurs after exposure to the spores in soil. Infections due to *cryptococcus gattii* are limited to Vancouver Island, though cases have been seen in Vancouver. The literature review will form the basis of housing advisories on how to avoid exposure to these fungi in residential settings. The project is a collaborative effort between CMHC and Health Canada.

CMHC Project Officer : Regina De La Campa

CIDN : 36350200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

WATER PENETRATION THROUGH THINNER VENEER WALL

Ryerson University was awarded a grant, under CMHC's External Research Program, to undertake this research project to study the potential for reducing the thickness of masonry cladding (or redesigning masonry units to be lighter and use less material) and still maintain acceptable durability and water penetration performance. The project will focus on issues of resistance to water penetration and durability and will specifically investigate the impact of dimensional changes on the water penetration into the wall (air) cavity. The project is ongoing.

CMHC Project Officer : *Silvio Plescia*

CIDN : 36260215

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NORTHERN HOUSING

CMHC/NWTHC NORTHERN SUSTAINABLE HOUSE (A-BASE)

The project will develop a prototype for the construction of culturally appropriate highly energy efficient housing throughout the Northwest Territories (NWT). It is expected that the design and construction and the cost/benefit analysis of the house will assist in facilitating the use of construction details and practices throughout the NWT and the North that significantly improve building performance. Construction of the house will be completed in 2010. The energy performance of the house will be monitored for a period of 15 months post-occupancy to determine the extent to which the performance targets have been realized.

CMHC Project Officer : *William Semple*

CIDN : 39850200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

FUNDING SUPPORT FOR THE NORTHERN SCIENTIFIC TRAINING PROGRAMME

The Northern Scientific Training Programme (NSTP) supports northern research studies by providing universities with funding to help offset the costs associated with travel and accommodation in the North. This project provides support for community-based research and support to traditional knowledge through the Arctic Colleges and Northern Research Institutes. The project increases research capacity within the North, contributes to the research work, and provides northern peoples with enhanced learning, training and employment opportunities within their communities. The project will provide funding to the NSTP for a period of five years, from 2009 to 2013.

CMHC Project Officer : *William Semple*

CIDN : 37850200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NORTHERN HOUSING

INTEGRATED DESIGN AND EVALUATION OF A CONSTRUCTED NORTHERN SUSTAINABLE HOUSE (E/2 PROTOTYPE)

In this project, two "Northern Sustainable Houses" have been designed by CMHC in partnership with a Tr'ondek Hwech'in First Nations community in the Yukon and the Nunavut Housing Corporation in Arviat, Nunavut. The houses have been designed to consume less than 50% of the Model National Energy Code of Canada for Houses energy requirements, and are suited to the northern culture and lifestyles. The project has incorporated local knowledge and experience of members of the northern communities and territorial housing providers where the houses were located. Construction of the Tr'ondek Hwech'in House was completed in January, 2008. Materials for the NHC Arviat House were sea-lifted to the community during the summer/fall of 2009 and construction will start in the summer of 2010. The evaluation of the projects will include monitoring the energy performance of the constructed houses, carrying out a cost/benefit analysis of the energy savings of each Northern Sustainable House vs. a typical new house in the community, and carrying out an analysis of the success of the cultural issues being addressed in the design. CMHC facilitated design workshops, was the lead in designing the houses, and is undertaking the performance evaluation of the Northern Sustainable House Prototypes. A 15 month monitoring project and report on the completed Tr'ondek Hwech'in House was completed in December 2009. The project is funded in part by the Program for Energy Research and Development (PERD).

CMHC Project Officer : *William Semple*

CIDN : 33240200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: ENGINEERED BUILDING ENVELOPE SYSTEM FOR OUTDOOR/INDOOR CLIMATE EXTREMES, p. 19
ACHIEVING 90% REDUCTION IN ENERGY CONSUMPTION IN SUSTAINABLE NORTHERN HOUSES, p. 26
SUSTAINABLE HOUSING IN THE NORTH, p. 36
ROLE OF PUBLIC HEALTH INSPECTORS IN MAINTAINING HOUSING IN NORTHERN AND RURAL COMMUNITIES, p. 39
SURVEY OF ISSUES AND CHALLENGES TO PROVIDING MARKET HOUSING FINANCE IN THE NORTHERN TERRITORIES, p. 44

RENOVATION AND INSPECTION

DESIGN AND SPECIFICATION OF NET ZERO ENERGY BUILDING ENVELOPE RETROFITS

This research investigates the technical and economic challenges associated with upgrading the building envelopes of older housing as a part of overall renovations that target net zero energy performance levels. This research will help the housing industry understand and undertake highly energy efficient and durable building envelope retrofits to houses. It will include measures to reduce the energy consumption and environmental impact of Canadian housing. It will also provide guidance to how to renew the building envelopes of aging Canadian houses. This will aid in the development of policies and programs to support the environmental agenda of the federal government in the residential sector.

CMHC Project Officer : *Barry Craig*

CIDN : 40230200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

RENOVATION AND INSPECTION

GREEN RENOVATION GUIDE FOR RENOVATORS

Under this project, CMHC will work closely with industry to develop a guide for renovators on sustainable "Green" renovation for their clients. The Guide will be developed with the support of the Canadian Home Builders Association and will include products and practices that can improve the overall environmental performance of a renovation; how to avoid "greenwash"; Healthy Housing tips; how to avoid renovation pitfalls that can undermine the post-renovation performance of a house; and simple diagnostics for common technical problems for various types of residential renovation projects.

CMHC Project Officer : Ken Ruest

CIDN : 40940200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: Socio-economic research on Renovation and Inspection, p. 48

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

ACHIEVING 90% REDUCTION IN ENERGY CONSUMPTION IN SUSTAINABLE NORTHERN HOUSES

This project applies Net Zero (EQuilibrium™) technology to the design of a house to be built in the Yukon with the objective of having the home consume 90% less energy than the amount used by the house were it to be built to the Model National Energy Code for Houses (MNECH). CMHC provided technical information and support for the designs and architectural drawings prepared by the Tr'ondek Hwech'in First Nation Band. A mechanical consultant with experience in the design of renewable energy systems and proficient with Hot2000 computer modelling designed the mechanical systems, provided layout drawings, and simulated estimated energy consumption for a family of two adults and two children. The energy consumption of the dwelling will be monitored for one year following occupancy. The developer provided a description of the design and technologies used, as well as itemized cost comparisons to a similar house conforming to the MNECH and to the house built by the Tr'ondek Hwech'in First Nation Band. The project produced a research report that may assist in designing and building sustainable housing and establish the feasibility of near net zero energy houses in the North.

CMHC Project Officer : Barry Craig

CIDN : 38260200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ANALYSIS OF PASSIVE SOLAR DESIGN FEATURES OF EQUILIBRIUM™ HOUSES

This project will take advantage of the existing EQuilibrium™ homes and the availability of detailed energy simulation tools in order to increase the understanding of how to maximize passive solar energy in houses while limiting the risk of overheating. This will help reduce space heating needs, energy consumption and greenhouse gas emissions while improving comfort conditions.

CMHC Project Officer : Duncan Hill

CIDN : 40650200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

EARTH TUBES - APPLICABILITY IN THE CANADIAN CLIMATE

This project will investigate the available literature for evidence regarding the performance of residential earth tube ventilation systems. The aim is to determine the extent to which information is available that can validate or dispel whether or not earth tubes are a good option for reducing ventilation related energy use in houses in northern climates and under what conditions this may be the case. There are concerns that earth tubes do not save significant energy and may represent an indoor air quality concern if adverse conditions arise in the buried duct system. Depending on the information found and its relevance to Canadian climate conditions, the necessity for more research on the topic will be determined.

CMHC Project Officer : Ken Ruest

CIDN : 39710200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

EQUILIBRIUM™ COMMUNITY DEMONSTRATION INITIATIVE

Equilibrium™ Communities is a four-year, \$4.2M collaborative sustainable community demonstration initiative of CMHC and NRCan under the ecoACTION umbrella. The objective is to accelerate sustainable community development in Canada through demonstration of sustainable planning and development at the neighbourhood scale. The initiative provides financial assistance for technical activities and showcasing the performance of neighbourhood development projects which, through their planning, design, implementation and operation, will provide measurable improvements over traditional approaches. See <http://www.cmhc-schl.gc.ca/en/inpr/su/eqsucoin/index.cfm> for published products to date, including project overviews and a product on the 18 indicators that formed part of the selection criteria. More products will be made available as the Initiative progresses.

CMHC Project Officer : Susan Fisher

CIDN : 39550200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is available on the web

NSERC CANADIAN UNIVERSITY NETWORK ON "SOLAR ENERGY UTILIZATION IN BUILDINGS"

CMHC is supporting a new Natural Sciences and Engineering Research Council of Canada (NSERC) funded University Network on "Solar Energy Utilization in Buildings", to achieve the objective of enhancing the capacity of the residential industry to develop solar buildings with substantially reduced purchased energy needs. The overall vision of the Network over its five year period will be to advance the adoption of new knowledge, tools, practices and technologies for cost effective construction of solar zero-net-energy buildings in Canada. The main objectives of the Network over its five-year research program are the following:

1. To develop effective techniques for integration of solar collection, storage and utilization systems in the building envelope.
2. To develop and improve solar energy utilization technologies so as to reduce cost and raise overall efficiency.
3. To develop and demonstrate affordable, reliable, building integrated, distributed power generation systems based on solar energy for residential and commercial buildings.
4. To develop simulation design tools and methodology that may be effectively utilized throughout the design process.
5. To transfer these outputs to the end users.
6. To contribute to the development of government policies and programs aimed at fostering the adoption of solar technologies in buildings.

CMHC will seek opportunities to transfer the knowledge gained through the network research to stakeholders in the housing industry.

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

CMHC Project Officer : *Duncan Hill*

CIDN : 34020200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

PAYBACK PERIOD FOR "SUSTAINABLE" BUILDING FEATURES IN SINGLE FAMILY DETACHED DWELLINGS

This project built a framework to profile the attributes of various "sustainable" building features available for single family detached dwellings and to estimate the payback periods of different sustainable features. Generic sustainable features were profiled to increase the understanding of consumers, and industry, of the costs and benefits of "building sustainable" in the single family market. After final approval and adjustments, if necessary, the initial 5 sustainable building feature profiles will be published to enable consumers and the home building industry to objectively evaluate "sustainable" features that they wish to incorporate into their homes.

CMHC Project Officer : *Woytek Kujawski*

CIDN : 38320200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

REGIONAL PILOT DEMONSTRATION OF NET ZERO ENERGY HEALTHY HOUSING

This project involves the development of a national net zero energy healthy housing demonstration and implementation initiative through an industry partnership to advance new Canadian housing towards a net zero energy consumption and low environmental impact goal. The concept involves the design, construction, demonstration and monitoring of net zero energy healthy houses in a project called the EQUilibrium™ Sustainable Housing Demonstration Initiative. Initially, a total of fifteen projects from across the country were selected in two separate national competition calls, with thirteen projects of these continuing towards the construction/demonstration/monitoring phases of the Initiative. Construction has been completed on 10 projects with the rest expected to follow in the next two years. All constructed EQUilibrium™ Housing projects are open for public and professional tours for a minimum time period of six months. Demonstrations permit CMHC and the EQUilibrium™ Housing Teams to show their achievements to the residential building industry and consumers. Upon completion of the demonstrations, the houses are sold and CMHC monitors the performance of the houses for one year post occupancy. Based on the outcome of this demonstration initiative, CMHC will explore with its partners and stakeholders opportunities to expand this initiative more broadly across Canada. The EQUilibrium™ Sustainable Housing Demonstration Initiative is based on CMHC's five principles for Healthy Housing (Health, Energy, Resources, Environment, and Affordability). It combines passive solar, energy efficient design, construction and appliances, with commercially available grid tied renewable energy systems to achieve net zero energy consumption on an annual basis, reduced green house gas (GHG) emissions, and low environmental impact. The intended results and impacts of the EQUilibrium™ Housing initiative are to develop strategic alliances between industry and government to reduce the energy intensity of our housing sector, mitigate household energy cost increases in the medium term, foster a growing renewable energy and sustainable housing industry in Canada, increase consumer awareness and demand for sustainable housing, and support Canada's goal of reducing pollutant and GHG emissions. The development of the EQUilibrium™ Housing initiative in Canada will also help to ensure Canada's inclusion in competitive international housing markets and our next generation of value added exports. Detailed information on the EQUilibrium™ Housing Initiative and each of the projects is available on the CMHC web site www.cmhc.ca.

CMHC Project Officer : *Thomas Green*

CIDN : 35490200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is available on the web

SUPPORT FOR THE DEVELOPMENT OF A TECHNOLOGY ROADMAP (TRM) FOR SUSTAINABLE HOUSING IN CANADA

Canada Mortgage and Housing Corporation (CMHC), in partnership with Industry Canada (IC) and Natural Resources Canada (NRCan), will support the development of a Technology Roadmap (TRM) for Sustainable Housing. The TRM will be used to focus industry and government resources on realizing opportunities for, and addressing challenges to, sustainable housing. The TRM will be developed through industry consultations and the organization of industry working groups that will identify key areas of work and possible pathways forward.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 37670200
STATUS : Ongoing

SUPPORT FOR THE GREENING OF THE CÔTEAU VERT PROJECT

This research project is documenting the development of a new green affordable housing development - Côteau Vert in Montreal, Quebec. The study provides information on the process that the development team took to assess, prioritize and ultimately select green products, equipment, systems and practices to be included in the buildings. This includes an analysis of the related costs, benefits and implementation/operational considerations. Quality assurance, commissioning and monitoring protocols were developed to support the implementation of the innovative features. This research project provides information for the residential construction industry on one development team's experience regarding the selection and implementation of green building features and technologies in the design of an affordable multi-unit residential building project.

CMHC Project Officer : *Woytek Kujawski*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 37560200
STATUS : Ongoing

SURVEY OF REGULATORY BARRIERS TO SUSTAINABLE HOUSING

This project will assess the extent of regulatory barriers faced by the first EQUilibrium™ design-build teams in the design and construction of their sustainable housing projects. This will provide CMHC with an opportunity to assess regulatory barriers to real, and very recent, sustainable housing projects. The outcome of this work will enable CMHC to better support the next generation of EQUilibrium™ housing and other sustainable housing efforts, contribute to improving residential building standards and construction practices, and support the federal government's environmental agenda.

CMHC Project Officer : *Douglas Rowland*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 40220200
STATUS : Ongoing

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

SUSTAINABLE BUILDING ENVELOPE RETROFITS FOR EXISTING HOUSES

This project will develop fact sheets on energy and cost-effective strategies to improve the performance of the building envelopes of existing houses and increase awareness of the cost and environmental impacts of these improvements. The fact sheets will include generic information about materials and components used in building envelopes, and detailed information about installation and connection of materials and components to ensure optimal performance. The fact sheets will illustrate different strategies to improve walls, foundations, openings and penetrations and compare the estimated costs and energy savings of each. Best practice details (from CMHC guides) will illustrate and explain critical construction procedures and concerns. The fact sheets will contain references to useful information and services, such as CMHC publications and the ecoENERGY program. They will contain information about recycling and disposal of construction materials and their effects on the environment, and will increase the reader's awareness of the environmental impact of changes to their houses, and the ways to achieve the best energy efficiency and durability for the least expense. A consultant with substantial knowledge of Canadian wood-frame construction and sustainable housing has been engaged to review literature on the subject and adapt CMHC best practices to address energy efficient building envelope retrofits.

CMHC Project Officer : Barry Craig

CIDN : 38340200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

UPDATE OF PRACTICES FOR SUSTAINABLE COMMUNITIES

This phased project will revise and update CMHC's publication, Practices for Sustainable Communities. The project will be carried out in two phases. Phase One will determine the appropriate revisions that will reflect current trends and best practices and address the needs and interest of municipalities and developers and builders, including determining the scope, organization and structure, content and format. The information resource will be updated in Phase Two.

CMHC Project Officer : Cynthia Rattle

CIDN : 39570200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: SUSTAINABLE BUILDING SCIENCE BEST PRACTICES, p. 21

SUSTAINABLE HOUSING IN THE NORTH, p. 36

Socio-economic research on Sustainable Development & Healthy Housing, p. 55-57

WATER CONSERVATION, REUSE & MANAGEMENT

ALTERNATIVE WATER READY HOUSING

This project will help the adoption of alternative water systems in housing by providing information on how housing can be built to include provisions to accommodate the future installation of alternative water systems (e.g. rainwater, treated grey water) in an affordable manner. This will provide homeowners with an opportunity to improve the performance of their homes in a phased approach and will help build a broader market for innovative housing products.

CMHC Project Officer : Catherine Soroczan

CIDN : 40600200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

ENERGY INTENSITY OF WATER SYSTEMS

This project will provide an increased understanding of the energy required to deliver water to and return wastewater from houses and housing developments. This, in turn, will help provide a more complete understanding of the energy consumption and green house gas (GHG) emissions associated with housing. Consideration of energy inputs into the water system would provide valuable information to water and wastewater agencies in assessing both upstream and downstream cost/benefits when scoping new water supply or treatment technologies as well as assessing the economics of alternative approaches.

CMHC Project Officer : Catherine Soroczan **CIDN :** 40580200
Division : Policy and Research Division **STATUS :** Ongoing
AVAILABILITY : Product is not yet available ***NEW***

EVALUATION OF WATER CONSERVATION PRACTICES

This research will provide municipalities with guidance in creating a cost effective water efficiency plan (WEP). The use of a standardized WEP will allow for practical and useful comparisons between water efficiency programs implemented across Canada. A template WEP will be developed to incorporate the variety of necessary parameters to be considered such as water source, population size and growth, regional socio-economic, climatic and geographic conditions, infrastructure status, target changes in water demands and wastewater flows, projected capital works and related costs, and cost/benefit. The WEP template will include a software database for creating a water efficiency plan plus a report documenting the key components of water efficient planning.

CMHC Project Officer : Catherine Soroczan **CIDN :** 30550200
Division : Policy and Research Division **STATUS :** Ongoing
AVAILABILITY : Product is not yet available

NEXT GENERATION WATER BALANCE MODEL

CMHC has supported the development of the Water Balance Model - an on-line decision support tool to evaluate the impact of land use planning and site design on stormwater runoff and watershed health. This project will review the newly updated Water Balance Model tool and then field test it on the Don Valley Watershed in order to determine its effectiveness as a modelling tool, its reporting capabilities, and general ease-of-use. Separate work will be undertaken to incorporate a module to account for onsite water reuse.

CMHC Project Officer : Catherine Soroczan **CIDN :** 38400200
Division : Policy and Research Division **STATUS :** Ongoing
AVAILABILITY : Product is not yet available

RAINWATER HARVESTING DESIGN MANUAL

Rainwater Harvesting (RWH) has been undertaken sporadically in Canada and has been recently allowed under some provincial codes. However, the lack of technical information on RWH is an impediment to wide scale adoption. Education and training on rainwater system design and installation practices are among the key issues to be addressed to help ensure rainwater harvesting systems are designed and installed properly and perform in a safe and effective manner in residential settings. Accordingly, this project will develop rainwater system design guide and training materials.

CMHC Project Officer : Catherine Soroczan **CIDN :** 39810200
Division : Policy and Research Division **STATUS :** Ongoing
AVAILABILITY : Product is not yet available

SUPPORT FOR NATIONAL ON-SITE WASTEWATER RESEARCH PROGRAM

CMHC in conjunction with the Canadian Water and Wastewater Association and the provincial on-site associations of Ontario, Alberta, and B.C. will work with national stakeholders across the country to address research and policy gaps in the area of decentralized wastewater management. The network will identify and prioritize all research and policy issues, and leverage funding to address these issues and communicate the results across the country. As a starting point, CMHC will support targeted research for the development of on-site wastewater technology verification and installation standards. To date CMHC has supported the Bureau du normalisation du Québec (BNQ) in the development of a national standard for on-site wastewater technology verification. The CAN/BNQ 3680-2009 Onsite Residential Wastewater Treatment Technologies standard is now available through the BNQ website. A second initiative will support the development of a national on-site wastewater installation standard through the Canadian Standards Association.

CMHC Project Officer : Catherine Soroczan

CIDN : 35720200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is available

SUPPORT FOR THE CREATION OF A NATIONAL WATER REUSE PROGRAM

CMHC will work with stakeholders from various government levels, associations, private industry and research centres to establish a Canadian national residential water reuse research and development program of work. This program will address gaps including: policy needs, risk analysis, design standards, pricing strategies, technology performance criteria, enhanced pilot testing and technology demonstration, national guidelines and regulations and innovative technology support for export to developed markets. The first project under this program has been the development of a draft national water reuse guideline for toilet application. In July 2010, Health Canada posted the guideline "Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing" on its website

http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/reclaimed_water-eaux_recyclees/index-eng.php

CMHC Project Officer : Catherine Soroczan

CIDN : 35730200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUPPORT FOR THE CSA STANDARD FOR RESIDENTIAL POTABLE WATER CISTERNS

This project will strengthen national requirements for the safe provision of potable water to houses that use cisterns for potable water storage, including those located in First Nation and isolated rural communities. The project will also be of benefit to those seeking to design, build or renovate sustainable housing that does not rely on conventional water infrastructure.

CMHC Project Officer : Catherine Soroczan

CIDN : 40620200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

TESTING PROTOCOL FOR ALTERNATIVE RESIDENTIAL WASTEWATER TREATMENT

CMHC will work with the Canadian Standards Association (CSA) and partners from across Canada to develop a new standard for the evaluation of small scale water recycling, or reuse, systems. A rigorous technology verification standard will support the acceptance of water reuse by providing industry with a common standard to test their systems to and demonstrate compliance with. The standard will provide regulatory authorities with some assurance that compliant systems will perform and system designers with a performance reference when specifying alternative residential wastewater treatment systems.

CMHC Project Officer : Catherine Soroczan

CIDN : 39830200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

WETLAND WASTEWATER TREATMENT FOR ISOLATED DWELLINGS

This project will evaluate the performance of two wetland treatment systems in reducing wastewater contaminants from isolated dwellings including the effects of freeze thaw on operation and performance. A pilot hybrid wetland will be built at the Ontario Rural Wastewater Centre. The Centre has also built a pilot septage reed bed filter system in Eastern Ontario. The project will consider hydraulic and organic loading rates of septage and holding tank wastes and the impacts of the vegetation on treatment as well as climatic effects (precipitation, temperature).

CMHC Project Officer : Catherine Soroczan

CIDN : 38420200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SOCIO ECONOMIC RESEARCH

ABORIGINAL OFF-RESERVE HOUSING TRENDS IN A SOCIO-ECONOMIC CONTEXT

The objective of this project is to develop an accurate, up-to-date picture of Aboriginal housing conditions for those not living on reserves, along with their mobility to reserves, with 10-year trending for important variables.

CMHC Project Officer : Ian Melzer

CIDN : 41030200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

CASE STUDIES OF THE CRITICAL PRECONDITIONS FOR ACHIEVING MARKET-BASED APPROACHES TO HOUSING IN FIRST NATION COMMUNITIES

This project consists of eight case studies of First Nation communities that have an established housing system with market characteristics. The studies will identify for each community the necessary and sufficient condition that enabled the market-like system to be implemented or to evolve. The findings from each community will be compared with each other to highlight commonalities and unique solutions and will also be discussed in the light of certain homeownership initiatives on tribal trust lands in the US.

CMHC Project Officer : Antoine Pomerleau

CIDN : 36800200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING PROFILE OF ABORIGINAL PEOPLE IN CANADA BASED ON THE 2001 ABORIGINAL PEOPLES SURVEY

Public policy concerns have been raised about Aboriginal housing and its relationship to other characteristics of individuals and households, in particular health and education. In order to address these issues Canada Mortgage and Housing Corporation (CMHC) commissioned a literature review, a profile of Aboriginal households, and a study of the impacts of housing conditions on health and education. The present report provides a profile of Aboriginal households and housing conditions in Canada. It contains a wide-ranging profile of Aboriginal housing and households, both on- and off-reserve. In addition, it explores the inter-relationships between housing characteristics, household characteristics and individual characteristics, such as health status and educational attainment. These findings are intended to help form the basis for any future multivariate analyses.

Prepared by Jeremy Hull, Prologica Research, Winnipeg, Manitoba. CMHC Project Officer : Candace Fedoruk. Ottawa: Canada Mortgage and Housing Corporation, 2010. 140 pages (698.44 KB)

STATUS : New Completed Report

AVAILABILITY: Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010H57_w.pdf

ABORIGINAL HOUSING

SMALL FOOTPRINTS ON UNBROKEN LAND / HEALING BROKEN LAND

The project will contribute professional advice and services towards a new First Nation development project located on wild unbroken land in coastal BC and / or on previously used industrial or agricultural broken land. Starting with planning workshops and the development of a community plan, then moving towards establishing a renewable energy platform based on a business plan that establishes a continuous revenue stream, a sustainable development strategy and design solution will be produced for housing construction under Section 95 funding and other recently announced programs to produce 150± homes over 5 years. This will be combined with infrastructure funding from Indian and Northern Affairs Canada, Western Economic Diversification Canada, Natural Resources Canada and Human Resources and Social Development Canada. This project will produce a practical demonstration of sustainable planning, design and development models for rural and remote communities elsewhere in Canada. Fully planned and developed communities, complete with renewable energy systems, road, water, waste water and other essential infrastructure, will occur in several First Nation locations. Development models will be produced that encourage incorporation of sustainability principles and that are built upon economic development and capacity building. The ultimate outcome is 100-150 new homes built by community members in a community planned by the community through workshops and design charrettes.

CMHC Project Officer : Allan Dobie

CIDN : 35290200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABLE HOUSING IN THE NORTH

This research was undertaken to produce a user-friendly plain language research report that provides a background of “northern” (North of 60) housing in Canada, identifies the types of challenges encountered in northern housing in Aboriginal (Inuit, First Nations, Métis) communities and provides best practice examples of sustainable housing (durable, affordable in construction through use of local materials when possible and in maintenance through provision of energy, water and waste water management at a manageable cost). In addition, the report examined sustainable housing components that have proven to be successful in Canada, and in northern countries that have geographic, climatic and resource challenges similar to those in northern Canada and which may be used, or adapted for use, in Canada. The project is complete and the report is being prepared.

CMHC Project Officer : William Semple

CIDN : 32740200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION, p. 9

CHILDREN'S ENVIRONMENTS

HOUSING, NEIGHBOURHOODS AND CANADIAN CHILDREN'S HEALTH OUTCOMES

This External Research Project will use Cycles 1 to 5 of the National Longitudinal Survey of Children and Youth (NLSCY) to examine whether and how much a family's housing choices (owned home, unassisted rental, assisted housing; single family, row housing, etc.) affect child health outcomes. The research will seek to identify which housing and neighbourhood characteristics associated with home ownership, rental, assisted housing and/or type of housing have impacts on health outcomes, and which do not, and how these characteristics interact with housing choices to affect child health outcomes.

CHILDREN'S ENVIRONMENTS

CMHC Project Officer : Mark Holzman

CIDN : 36260205

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ROLE OF AFFORDABLE HOUSING IN THE WELL-BEING OF CHILDREN: AN EXPLORATORY LONGITUDINAL STUDY

The purpose of this External Research Program study is to develop a feasible and methodologically rigorous longitudinal research strategy that will be used to conduct a multi-city study to understand how the receipt of affordable rental or home ownership housing through the Affordable Housing Program impacts children's development and well-being. The second objective is to pre-test the developed research strategy by conducting a small-scale pilot study. The findings from the pilot will provide useful preliminary data on the impact of affordable housing on the well-being of children, particularly outcomes related to educational attainment. The findings will also be used to further refine the developed research methodology.

CMHC Project Officer : Ian Melzer

CIDN : 38840202

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

CITY PLANNING AND HUMAN SETTLEMENTS

COMPARING PREVIOUS TO CURRENT LOCATION: URBAN FORM, SELF-SELECTION BIAS AND TRAVEL PATTERNS

This study would shed light on the relative influence of self-selection bias vs. urban form and demographic variables on travel patterns (e.g. reducing car travel, enabling walking, transit-use and cycling and encouraging mode choice). Since urban form is an area that planners, municipalities and developers can affect, the findings would be of interest to them in helping them build neighbourhoods that maximize modal choice and help reduce car travel.

CMHC Project Officer : Susan Fisher

CIDN : 41850200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

PRACTICAL DESIGN GUIDE FOR URBAN HEAT ISLAND MITIGATION MEASURES

There is little or no mention of the issue of heat islands in development practices, community plans or planning regulations. The main objective is to develop a practical design guide to help municipalities manage and address heat island problems, by analyzing Montréal and Toronto.

CMHC Project Officer : Duncan Hill

CIDN : 41330201

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

COOPERATIVE AND NON-PROFIT HOUSING

GOVERNANCE CHALLENGES IN NON-PROFIT HOUSING ORGANIZATIONS

This project focuses on gaining a better understanding of the organizational and operational challenges facing board members and managers of non-profit housing organizations in Quebec. The research examines management strategies that the boards of directors and managers are adopting in the face of increasingly complex financial, maintenance, and support services arrangements. Further, the research looks at factors that motivate individuals to serve on the boards, and it examines the ways in which management succession affects the operation of the organizations.

CMHC Project Officer : *Hoda Shawki*

CIDN : 38840204

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

UPDATING “YOUR GUIDE TO RENTING A HOME” AND “GUIDE TO CO-OP HOUSING”

This project will provide for updating of the substantive content of CMHC's online rental guide (“Your Guide to Renting a Home”) annually, and of CMHC's online “Guide to Co-operative Housing” every second year; of the live links contained in these guides every four months, and of the non-link information contained in these guides annually. It will also provide for the handling of enquiries as received and the potential addition of new sections to the guides.

CMHC Project Officer : *Jim Zamprelli*

CIDN : 39660200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOME OWNERSHIP

COHORT PROGRESS TOWARD HOUSEHOLD FORMATION AND HOMEOWNERSHIP: A COMPARISON OF IMMIGRANT VISIBLE MINORITY GROUPS IN LOS ANGELES AND TORONTO

This External Research Program project will determine how robust the homeownership hierarchies of Canada and the United States are to different units of analysis.

CMHC Project Officer : *Ian Melzer*

CIDN : 41330202

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEXT STEPS: EVALUATING TRANSITIONAL HOUSING FOR THE HOMELESS

This External Research Program study seeks to provide information that can determine the role that transitional shelters can play in the continuum of responses to homelessness. The research will assess the effectiveness of the Next Steps Transitional Shelter program in Victoria, British Columbia; will analyze individual outcomes through a macro-policy lens focused on adequacy of income, housing availability, access to health services, and social inclusion and supports; and will review the effectiveness of integrating research with a service provider's intake and exit processes.

CMHC Project Officer : *Hoda Shawki*

CIDN : 40140213

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ROLE OF PUBLIC HEALTH INSPECTORS IN MAINTAINING HOUSING IN NORTHERN AND RURAL COMMUNITIES

The purpose of this External Research Program study is to better understand the role of northern and rural public health inspectors in maintaining housing stock in accordance with health standards and how northern and rural housing challenges are addressed by public health inspectors.

CMHC Project Officer : *Hoda Shawki*

CIDN : 40140208

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

USING PHOTOVOICE TO EVALUATE THE IMPLEMENTATION OF SUPPORTIVE HOUSING IN OTTAWA

Photovoice is a participatory action research method that combines photography with other forms of qualitative data collected from interviews, focus groups, or writings. This External Research Program study will use photovoice in the evaluation of eight supportive housing agencies that form the Ottawa Supportive Housing Network (OSHN). The research will develop methods for evaluating the implementation of supportive housing by network members using photovoice, will use photovoice to evaluate the implementation of the participating programs, and will assess the value of photovoice as a program evaluation method.

CMHC Project Officer : *Hoda Shawki*

CIDN : 40140211

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSE CONSTRUCTION INDUSTRY

MEASURING THE EMPLOYMENT EFFECTS OF RESIDENTIAL CONSTRUCTION AND RENOVATION

The project will build upon earlier research and enhance CMHC's and the housing industry's understandings of the magnitude of the contribution that the residential construction sector makes to employment in the Canadian economy.

CMHC Project Officer : Michel Laurence

CIDN : 39861000

Division : Market Analysis Centre

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING AFFORDABILITY

ACTION RESEARCH ON TRANSPORTATION AND HOUSING AFFORDABILITY

The question driving this External Research Program project is what is the potential for increasing housing choice and affordability in large Canadian cities through the application of sustainable transportation policy? The main goal of the research is to identify municipal transportation policies with the potential for the most positive impact on housing choice and affordability.

CMHC Project Officer : Meg Ogden

CIDN : 38840209

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ESSENTIAL SERVICE WORKERS AND HOUSING AFFORDABILITY: INTERNATIONAL POLICY RESPONSES

Over the past decade, cities and metropolitan areas in many parts of the world have experienced a sharp increase in housing prices and a decline in housing affordability. In some cases, these changes to local housing markets have led to concern that in addition to affecting low-income households, a lack of affordable housing might make it difficult to attract or to retain moderate-income households working in occupations that can be categorized as providing essential services to the community.

The goal of this research was to study mechanisms used by the governments of ten OECD countries to assess the housing situation of essential service workers, as well as the policy responses these governments developed to increase access to affordable housing for essential service workers in high-cost markets.

The research found that essential worker housing affordability has emerged as a policy concern in England, somewhat in the United States, and in some local contexts in the other OECD countries under consideration. It is only in England, however, where national programs were put in place to address the issue. The project thus sought to identify what factors enabled many countries to avoid the issue, despite experiencing large real increases in housing costs.

Prepared for Canada Mortgage and Housing Corporation. Prepared by Paul Connelly, Connelly Consulting Services in association with Steve Pomeroy and Ashley Chester. Ottawa: CMHC, 2010. 190 pages (2.82 MB)

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu_al/CaI%20MH10E77_w.pdf

HOUSING AFFORDABILITY

STATE OF MUNICIPAL HOUSING ACTIVITY IN METRO VANCOUVER: AFFORDABILITY AND DIVERSITY

This research will answer the question: To what extent are municipalities in Metro Vancouver taking steps to address housing affordability and diversity in their communities? This External Research Program project will document the extent to which municipalities in Metro Vancouver are adopting and implementing measures laid out in the Metro Vancouver Affordable Housing Strategy (2007) to address issues of housing affordability and diversity. It will also create a resource that can be used by Metro Vancouver municipalities and others to learn what actions municipalities have taken to promote housing affordability and diversity.

CMHC Project Officer : *Ian Melzer*

CIDN : 41330203

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING AND IMMIGRATION

GHANAIAN AND SOMALI IMMIGRANTS IN TORONTO'S RENTAL MARKET: A COMPARATIVE CULTURAL OVERVIEW OF HOUSING PROBLEMS AND COPING STRATEGIES

This External Research Program study seeks to identify the housing challenges faced, and the coping strategies used, by Ghanaians and Somalis in the Toronto rental market, and how these are influenced by the cultural and the institutional context.

CMHC Project Officer : *Jim Zamprelli*

CIDN : 41330206

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

MOBILITY EXPERIENCES OF IMMIGRANTS AND THE CANADIAN-BORN, AND HOMEOWNERSHIP

This project aims to answer two key research questions. First, do immigrants relocate in Canada more than the Canadian born, and if so, at what geographic levels? Second, among immigrants and the Canadian born who relocate, for whom is it more likely to end in homeownership?

Relocation trends and the resultant population distribution have important implications for regional development, allocation of public resources, local infrastructure, social capital, economies and services, and for the interaction of residents. The distribution of immigrants, in particular, is also of considerable interest to policy-makers as high concentrations of immigrants in selected urban centres and in neighbourhoods through initial settlement, secondary or subsequent migration, or residential movements, contribute to uneven social and economic development at multiple geographic levels.

This study used microdata from the 2006 Canadian Census of Population – 20 percent sample. The data are based on the long-form questionnaire of the census and contains social and economic data on individuals and households as well as data related to mobility and housing.

Prepared by Ann H. Kim. CMHC Project Officer: Richard Gabay. Ottawa: Canada Mortgage and Housing Corporation, 2011. (External Research Program Report) 83 pages (1.23 MB)

STATUS : New Completed Report

AVAILABILITY: Canadian Housing Information Centre and

[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/CaI%20MH%20IIM52%20_\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu al/CaI%20MH%20IIM52%20_(w).pdf)

HOUSING AND IMMIGRATION

UPDATING AND EXPANDING THE NUMBER OF MUNICIPALITIES IN THE SETTLING IN CANADA MINI WEB SITE

This study is aimed at improving and expanding the "Settling-in-Canada" tool on CMHC's web site which provides information to newcomers, both in Canada or abroad, on alternative settlement communities beyond the three largest CMAs in Canada.

CMHC Project Officer : *Judith L Binder*

CIDN : 41620200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

HOUSING EXPORT OPPORTUNITIES

CAPACITY STUDY OF THE CANADIAN PREFABRICATED PANEL MANUFACTURING INDUSTRY

This study will provide a lexicon of successful export behaviours in the manufactured housing industry and rank them in terms of their importance in achieving successful business. Each will then be described in detail and suggestions offered as to how they may be better disseminated among manufacturers. An estimate of the actual capacity of the Canadian industry able to provide the level of service necessary will also be made. The successful contractor is to identify specific packages of training and technology transfer which can enable these and other companies to achieve success abroad.

CMHC Project Officer : *Oliver Drerup*

CIDN : 39970900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

CASE STUDY FOR THE INTEGRATION OF TECHNICAL, REGULATORY AND COMMERCIAL, SUPPORT FOR HEAT RECOVERY VENTILATORS IN THE UK/IRELAND MARKETS

This project seeks to improve the Canadian heat recovery ventilator (HRV) industry's understanding of the technical, regulatory and commercial challenges to UK/Ireland market penetration and expansion. It will endeavor to increase the number of Canadian HRV manufacturers in possession of U.K. and/or EU regulatory approvals, which will lead to increased sales of Canadian HRVs to the U.K/Ireland and increased Canadian content of Super E housing system exports.

CMHC Project Officer : *Terry Robinson*

CIDN : 38780900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING EXPORT OPPORTUNITIES

MARKET INTELLIGENCE AND OPPORTUNITY STUDY ON THE NORTH AND SOUTH CAROLINA HOUSING MARKET

The purpose of this project is to provide a study on the housing market in North and South Carolina for Canadian exporters.

CMHC Project Officer : Terry Robinson

CIDN : 39070900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

POTENTIAL FOR CANADA'S WOOD-FRAME HOUSING SYSTEM IN DISASTER RECONSTRUCTION

The aim of this project is to assess Canada's capacity to supply low-cost prefabricated wood-frame shelters for international disaster reconstruction.

CMHC Project Officer : Brian Eames

CIDN : 39080900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

RESEARCH ON EMERGING MARKETS FOR CANADIAN PRODUCTS & SERVICES

The purpose of this project is to report on which countries/areas in the Gulf Cooperation Council, Middle East offer potential export opportunities for Canadian product manufacturers and service providers.

CMHC Project Officer : Brian Eames

CIDN : 39950900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

STUDIES TO ADVANCE ACCEPTANCE OF WOOD-FRAME IN MULTI-UNIT DWELLINGS IN FRANCE

The purpose of this project is to position Canadian technology as one of the most technically efficient concerning technical regulations and energy efficiency in comparison to the traditional building techniques and particularly in multi-family building where Canadians face less local competition. The objective is to increase the market share of current Canadian clients established in France, and to address technical concerns and myths about wood-frame multi-family buildings.

CMHC Project Officer : Terry Robinson

CIDN : 42170900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

HOUSING EXPORT OPPORTUNITIES

SUPER E PROGRAM IN FOREIGN MARKETS

The project will contribute to the activities of the Energy Efficient Exporters' Alliance (EEEA) in assisting Canadian housing system suppliers to construct energy efficient, healthy homes with high Canadian content in foreign markets. CMHC's contribution is directed towards seminars, training for members, annual Super E member forums, support for project development, quality assurance, testing and trouble shooting.

CMHC Project Officer : *Brian Eames*

CIDN : 40070900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUPER E PROGRAM/NET ZERO IN FOREIGN MARKETS

The project will contribute to the activities of the Energy Efficient Exporters' Alliance (EEEA) and its member companies in assisting Canadian housing system suppliers to construct energy efficient, healthy homes with high Canadian content in foreign markets. CMHC's contribution is directed towards seminars, training for members, and support for project development.

CMHC Project Officer : *Brian Eames*

CIDN : 42090900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

WOOD FRAME CONSTRUCTION IN RURAL AREAS OF CHINA

The purpose of this project is to investigate the potential for Canadian wood frame construction and technology in rural areas of China.

CMHC Project Officer : *Terry Robinson*

CIDN : 38590900

Division : CMHC International

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

HOUSING FINANCE

SURVEY OF ISSUES AND CHALLENGES TO PROVIDING MARKET HOUSING FINANCE IN THE NORTHERN TERRITORIES

The goal of this research project is to identify and examine gaps and issues, if any, related to mortgage financing and other issues impeding the financing of market housing in the North. The research will focus on housing financing in the North by examining the issues faced by:

- a) lenders in providing mortgage financing for homeowners and private rental housing; and
- b) individual home-buyers and rental developers in obtaining mortgage loans.

The research will also consider the effects of non-market housing activities (e.g. social housing, territorial government staff housing, and industry-provided worker housing) on housing finance and the growth of market-based housing as it relates to the above-mentioned research focus.

CMHC Project Officer : *Michel Blondin*

CIDN : 39590200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING FINANCE

UPDATING CMHC'S ON-LINE CONDOMINIUM BUYERS' GUIDE

This project will update CMHC existing Condominium Buyers Guide, and extend it by adding provincial and territorial fact sheets (analogous to those in Your Guide to Renting a Home) since condominium legislation and regulations are made at the provincial /territorial level of government, and by providing the substantive input necessary to convert the resulting guide to a true on-line guide with links to other on-line sources of information (e.g. from provincial /territorial governments and non-governmental organizations).

CMHC Project Officer : Jim Zamprelli

CIDN : 40380200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING INDICATORS AND DATA

CANADIAN HOUSING OBSERVER 2010

CMHC's flagship publication, the Canadian Housing Observer 2010, presents a review of housing trends in Canada and the key factors behind them, combining national coverage with provincial/territorial and metropolitan detail. The Observer's feature article this year is Housing and the Economy. Also new is a chapter on "An Exploration of Alternative Measures of Housing Need". This year's Observer also contains chapters examining housing finance, current market developments, housing demand, housing affordability, and the EQUilibrium™ Initiatives.

Ottawa: Canada Mortgage and Housing Corporation, 2010. 135 pages (6.62 MB)

STATUS : New Completed Report (Order number 67065)

AVAILABILITY : Canadian Housing Information Centre and
<http://www.cmhc.ca/od/?pid=67065>

CANADIAN HOUSING OBSERVER 2011

The Canadian Housing Observer is a flagship CMHC publication which provides comprehensive and authoritative reporting on the state of Canada's housing. The Observer is published annually, and is available in print and electronic formats. The analysis presented in the Observer, coupled with the extensive on-line data resources, provides Canada's housing sector with an indispensable tool for identifying, monitoring and addressing housing trends and issues.

CMHC Project Officer : Sandra Baynes

CIDN : 41510200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

LOCATION AND GASOLINE PRICE AS COFACTORS IN HOME PRICES

This External Research Program project will assess the possible impacts of changes in gasoline price on home prices in parts of the Toronto and Vancouver regions and discuss the assessment. The hypothesis to be tested is that high or rising gasoline prices enhance the price of centrally located homes in these urban regions in comparison with homes that are less centrally located (and vice versa: low or falling gasoline prices have the opposite effect).

CMHC Project Officer : Susan Fisher

CIDN : 40140214

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING RESEARCH

MEASURING THE SOCIAL, ECONOMIC, AND ENVIRONMENTAL OUTCOMES OF GOOD HOUSING: FINAL REPORT

This report has attempted to achieve two goals:

- "...review national and international literature in order to understand the conceptual framework linking good housing and non-shelter outcomes (NSOs), and to examine the methodologies and indicators, which have been developed/used to measure these relationships."
- "...propose a statistically robust methodology for measuring CMHC identified non-shelter outcomes of good housing."

With respect to the first goal, an extensive literature review identifies a viable theoretical framework for defining good housing based on four dimensions—the house, the home, the neighbourhood, and the community. It examines the NSOs that, in previous work, have been linked to good housing and discusses these outcomes in detail, proposing applicable and conceptually sound measures. Finally, this paper identifies the relationships between housing and NSOs that have been substantiated in the literature.

In support of the second goal—the development of robust methods for measuring non-shelter outcomes of good housing—the study examines data sources that could support the analysis of the causal relationship between good housing and NSOs.

Prepared by Prairie Research Associates. Ottawa: Canada Mortgage and Housing Corporation, 2011. 110 pages (1.43 MB)

STATUS : New Completed Report

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingu_al/Ca1%20MH%2011M27_w.pdf

INFRASTRUCTURE

CASE STUDIES OF GREEN INFRASTRUCTURE PERFORMANCE AND COSTS

This project will produce a series of case studies documenting various green infrastructure implementations in residential developments and in particular their performance, costs and cost trade-offs compared to conventional approaches.

CMHC Project Officer : Cynthia Rattle

CIDN : 41840200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

ECONOMIC QUANTIFICATION OF THE "SOFT" BENEFITS OF GREEN INFRASTRUCTURE

This External Research Program project is focused on the following question: How can we value the "soft" (difficult to quantify) benefits associated with various types of green infrastructure? The objectives of the study are as follows:-- determine the full range of soft benefits associated with green infrastructure;-- identify the key benefits that are the most feasible to quantify;-- explore evaluation methodologies for each of the key benefits; and -- provide tangible development scenarios showing how the evaluation methodologies could be applied "on the ground".

CMHC Project Officer : Mark Holzman

CIDN : 38840216

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

COMPENDIUM OF CANADIAN ACCESSIBLE HOUSING CODES AND STANDARDS

This External Research Program project evaluated Canadian and international housing codes and standards to assess their inclusion of technical specifications that relate to accessibility and usability by people with disabilities and older persons.

One of the latest international trends in housing is the concept of visitability, constructing housing that has level access, allows use of a toilet and circulation throughout the main level of a home for people with mobility impairments.

The project involved a comparison of the technical specifications in the National Building Code, all provincial codes, the CSA Standard B651 and selected housing codes from Japan, The Netherlands, Ireland, Australia and the United Kingdom.

The final report summarizes the findings, highlights isolated technical specifications found in the Canadian codes, and features best practices where the concept of visitability has been mandated in all housing in England and Denmark. Additionally some municipalities in Canada have passed bylaws requiring visitability in new housing.

Prepared by BDEL. CMHC Project Officer: Hoda Shawki. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 110 pages (1.00 MB)

STATUS: New Completed Report

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingu_al/Compendium%20Ca1%20MH%2010C53_w.pdf

PATTERNS OF USE OF DIFFERENT TOILET GRAB BAR CONFIGURATIONS

A previous study looking at different toilet grab bar configurations showed that ambulatory and non-ambulatory seniors highly prefer the presence of a grab bar on both sides of the toilet seat contrary to American and Canadian recommended guidelines. This External Research Program study will focus on the "patterns of use" of six (6) different toilet grab bar configurations having grab bars on both side of the toilet seat.

CMHC Project Officer : Jim Zamprelli

CIDN : 34380216

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

PROFILE HOUSING CONDITIONS OF PERSONS WITH DISABILITIES

The project analyzed data from Statistics Canada's 2001 post censal Participation Activity Limitation Survey (PALS) linked to CMHC's custom core housing need data and a range of socio-economic and demographic characteristics from the Census, and produced a series of research highlights profiling the housing conditions of persons with disabilities - the first based on the 2001 Census data, and subsequent highlights focussing on specific disability areas such as agility and mobility, hearing, seeing, speaking/communication, psychiatric or mental health issues, developmental/intellectual, learning disabilities, as well as the specific needs of children and seniors.

STATUS : Completed

AVAILABILITY : Product is available on the web

PERSONS WITH DISABILITIES

UPDATING AND ENHANCING CMHC PUBLICATIONS REGARDING CONSTRUCTION AND RENOVATION OF HOMES FOR PEOPLE WITH DISABILITIES

This project produced a number of publications in the CMHC About Your House (AYH) Accessible by Design series for use by persons with disabilities, architects, occupational therapists, renovators, builders and the general public. The titles include inter alia House Plans and Design, Fire Safety, Interior and Exterior Ramps, Kitchens, Bathrooms and Living Spaces.

STATUS : Completed

AVAILABILITY : Product is available on the web

WELCOMING HOME: SOCIAL SUPPORT AS A BENEFIT OF CONGREGATE LIVING FOR PERSONS WITH MENTAL ILLNESS

This study examined the benefits of congregate living for individuals who have a mental illness. Congregate living in this study is defined as residing in a home in which a person has a private bedroom but shares common spaces such as bathrooms, a kitchen, and sitting/recreational rooms.

The objectives of this study were:

- To identify the perceived benefits of residing in self-contained units;
- To explore whether perceived benefits of residing in self-contained units can be achieved by residing in congregate settings; and
- To explore whether additional gains are provided through congregate living (e.g. greater social support) in addition to the perceived benefits of residing in self-contained units.

Prepared by Joan Nandlal and William Woolrich. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 33 pages (1.05 MB)

Note: No. 11-004 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 67272)

STATUS: New Completed Report and Research Highlight

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010V23_w.pdf

RENOVATION AND INSPECTION

ESTIMATING THE COSTS AND BENEFITS OF HOME RENOVATIONS TO ACCOMMODATE AGING AND DISABILITY

This project will apply the new CMHC cost-benefit framework, or model, to estimate the costs and benefits of home renovations to accommodate aging and disability relative to long-term care institutionalization. The project will include a national survey, involving personal interviews with at least 250 RRAP-D and HASI program beneficiaries and 200 telephone surveys to generate statistically reliable estimates of the costs and benefits. At least 50 caregivers of program beneficiaries will also participate. Following the conduct of the surveys, the resulting cost and benefits of the renovations will be compared with available data on the cost and benefits of long-term care institutionalization. This project will produce estimates of the costs and benefits, and cost-benefit ratios, of home renovations to accommodate aging and disability. Such estimates would be useful to policy at the Federal/Provincial/Territorial/Municipal levels related to funding such housing renovations and to the health services sector, regarding related support services programs for seniors and persons with disabilities. The societal impact on care giving and the health care sector will be examined.

RENOVATION AND INSPECTION

CMHC Project Officer : Ian Melzer
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 35440200
STATUS : Ongoing

See also: Technical Research on Renovation and Inspection, p. 25-26

RENTAL HOUSING

REGULATIONS IN THE RESIDENTIAL CONSTRUCTION INDUSTRY IN QUEBEC AND THEIR EFFECTS ON THE COST OF RENTAL HOUSING

This research assesses the impact of the variety of regulations affecting residential construction in Quebec on the cost of rental housing. The research includes a literature search of residential building regulations and interviews with experts in the housing industry, building officials in the Ville de Québec, representatives of the Commission de la construction du Québec (CCQ), l'Association de la construction du Québec (ACQ), the Corporation des entrepreneurs généraux du Québec (CEGQ), and several residential builders. The research includes estimates of the costs of residential construction attributed to these regulations, and their effects on housing rents.

CMHC Project Officer : Barry Craig
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 28920202
STATUS : Ongoing

UPDATING “YOUR GUIDE TO RENTING A HOME” AND “GUIDE TO CO-OP HOUSING”

This project will provide for updating of the substantive content of CMHC's online rental guide (“Your Guide to Renting a Home”) annually, and of CMHC's online “Guide to Co-operative Housing” every second year; of the live links contained in these guides every four months, and of the non-link information contained in these guides annually. It will also provide for the handling of enquiries as received and the potential addition of new sections to the guides.

CMHC Project Officer : Jim Zamprelli
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39660200
STATUS : Ongoing

RESIDENTIAL DEVELOPMENT

CITIZEN'S GUIDE TO DENSITY: UNDERSTANDING RESIDENTIAL DENSITIES IN THE GREATER GOLDEN HORSESHOE

Density targets, a discrete measure of density designed to curb sprawl and encourage compact, sustainable development, are useful benchmarks for planners, architects and developers, but are often unintelligible to the average citizen. Driven by provincial growth directives, municipalities in the Greater Golden Horseshoe are struggling with how to translate density targets into tangible and meaningful examples. This External Research Program research seeks to demonstrate how this can be done through the development of a handbook that will illustrate and simply communicate residential densities that contribute positively to the public realm.

CMHC Project Officer : Cynthia Rattle
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 40140218
STATUS : Ongoing

EXAMINATION INTO GOVERNMENT IMPOSED CHARGES ON NEW HOUSING CONSTRUCTION: FINAL REPORT

This study examined government imposed charges (GICs) on new housing in 21 centres across Canada in 2009. GICs are comprised of a range of levies, fees, charges and taxes that are imposed by municipal, provincial and federal levels of government.

This study is the 4th in a series; the other studies examined GICs in 1996, 2002 and 2006. This 2009 report presents estimates of the various GICs associated with new dwelling units – both ‘median’ (50th percentile) and ‘modest’ (20th-25th percentile) priced single-detached, semi-detached, row and apartment units in 21 centres. Further, this report examines trends in GICs over the 2006 to 2009 timeframe based on the findings of the current study relative to the 2006 study focusing on ‘median’ priced single detached units.

In addition to the GICs examined in the 2002 and 2006 reports, the 2009 study also examines incentives for new housing development, offered at the municipal, provincial and federal levels. Further, the subject study includes two additional infrastructure charges at the municipal level: public transport and/or environmental related fees/contributions.

The report is comprised of 4 sections. Section 1 provides an introduction and background including an overview of the report structure. Section 2 details the study scope and methodology used to gather and analyze data. Section 3 includes a description of the various GICs at the municipal, provincial and federal levels. The estimates of the 2009 GICs for new housing in 2009 are detailed for the modest and median single detached dwelling units. Section 4 details the absolute and relative GIC trends for median priced single detached dwelling units over the 2006 to 2009 timeframe.

Prepared by IBI Group. Ottawa: Canada Mortgage and Housing Corporation, 2010. iii, 47 pages + appendices (199 pages)

STATUS: New Completed Report

AVAILABILITY: Canadian Housing Information Centre and Final Report (605.34 KB):
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu_al/CaI_MH_10G53_w.pdf

Appendices (7.32 MB):

ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu_al/CaI_MH_10G53_Apendix_w.pdf

IN PURSUIT OF SUSTAINABLE NEIGHBOURHOOD DEVELOPMENT PATTERNS: THE NEXT STEP - A ROAD SAFETY EVALUATION OF ROAD NETWORK PATTERNS, INCLUDING CMHC'S FUSED GRID ROAD NETWORK PATTERN

The objectives of this External Research Program project are: (1) to develop models for use by Ottawa planners and engineers to do empirical road safety planning; (2) to apply these models in a case study using actual data, to evaluate the level of safety of CMHC's Fused Grid pattern; and (3) to compare the road safety of the Fused Grid road network with four other road network patterns.

CMHC Project Officer : Mark Holzman

CIDN : 38840212

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

CERTIFICATION OF SENIORS' RESIDENCES IN QUEBEC: FACILITATING AND CONSTRAINING FACTORS

In February 2007, the Government of Quebec introduced a mandatory process for the compliance certification of all seniors' residences. The development and application of such a process pose major challenges for the different stakeholders in this process in order to meet organizational changes and the standardization of a series of practices that are now imposed in this sector. This External Research Program study aims to highlight the positive factors and constraints perceived by three of the stakeholders in this process, namely, the operators, the agencies and the "Conseil québécois d'agrément" (Quebec certification council).

CMHC Project Officer : *Jim Zamprelli*

CIDN : 40140212

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

EFFETS PROBABLES DU VIEILLISSEMENT DE LA POPULATION SUR LE MARCHÉ DE L'HABITATION : ÉTUDE PROSPECTIVE : RAPPORT FINAL

Over the coming decades, industrial countries will be confronted with the significant aging of their populations. Baby boomers, now entering their sixties, are strongly questioning their lifestyles and living arrangements. Given their demographic and economic weight, they will continue, as they have since the postwar years, to make their mark on the real estate market. Based on an age cohort analysis, this study attempts to determine, in a prospective manner for the coming decades, the major residential real estate market trends in Quebec and its two largest metropolitan areas and, in so doing, identify any breaking points that could weaken the overall housing market.

Prepared by Daniel Gill; assisted by: Tom Flies, Simon Desrochers. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2009. (External Research Program Report) 162 pages (1.11 MB)

STATUS: New Completed Report

AVAILABILITY: Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/fr_unilingue/Can%20MH%2009E26_W.pdf

ENVIRONMENT SCAN ON CANADIAN SENIORS' TRANSITIONS TO SPECIAL CARE FACILITIES

The objective of this research is to review the literature and produce an annotated bibliography, and compile and analyze available data on housing transitions to special care facilities by Canadian seniors (aged 65+).

CMHC Project Officer : *Ian Melzer*

CIDN : 41110200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

FEASIBILITY OF SMART HOME TECHNOLOGY IN AFFORDABLE SENIORS' HOMES : FINAL REPORT

In this 9-month pilot study, 11 prototype smart voice fridge sensors that provide voice prompts and report activity status were installed in affordable seniors' housing units to confirm user acceptance and system performance. Activity trends of the occupants were also identified. A total of 11 apartment dwellers (mean age of 75, 2 male) were recruited to test the smart voice fridge sensors over a six-week period. A questionnaire was administered at the start and end of the trial to obtain feedback on the technology.

The results of the study confirmed that the smart voice fridge sensor is a non-invasive technology that was deemed acceptable by the older adults who participated. Despite the fact that the majority of participants did not feel the technology was required at present, most of these individuals indicated that they would prefer a fridge equipped with a smart voice sensor to one without.

In addition, the study resulted in the identification of predominant patterns of fridge usage amongst participants that may be of value in monitoring older adults' health status.

Finally, a full test report on the technology was completed demonstrating the robust performance of the units throughout the trial.

Prepared by Frank Knoefel and Rafik Goubran. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2011. (External Research Program Report) 43 pages (1.52 MB)

STATUS: New Completed Report

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingu/Cal%20MH%2011F27_w.pdf

INCIDENCES DU VIEILLISSEMENT DE LA POPULATION SUR LE PRIX RÉEL DES LOGEMENTS AU CANADA

Population aging is a trend that will accelerate in Canada in the next two decades with the aging of the baby boom generation. The goal of this research was to study the effects of population aging on real housing prices in Canada. The project includes a review of the Canadian and the international literature on the effects of demographic changes on real housing prices and the development of an econometric model of these effects for Canada. The model is used to project real housing price changes in Canada and in each province for the next 20 years under different scenarios.

Prepared by Mario Fortin. CMHC Project Officer: Hoda Shawki. Ottawa: Canada Mortgage and Housing Corporation, 2011. 106 pages (3.24 MB)

STATUS: New Completed Report

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/fr_unilingue/Cal%20MH%2011I58%20VV.pdf

SENIORS

SMART GRAB BARS: A POTENTIAL INITIATIVE TO ENCOURAGE BATH GRAB BAR USE IN COMMUNITY DWELLING OLDER ADULTS

This study sought to determine the ability of the smart grab bar to increase grab bar use among community-dwelling seniors. More specifically, it assessed the effects of an auditory cue, a visual cue and the combination of both cues on the frequency of use of a grab bar in older adults; recorded the reactions of community-dwelling seniors to these cues; identified any areas for improvement of the prototype; and further explored the potential use of the smart grab bar.

Investigators: Paulette Guitard, Heidi Sveistrup, Atef Fahim, Carol Leonard. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2010. (External Research Program Report) 60 pages (1.27 MB)

Note: No. 11-003 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order number 67275)

STATUS: New Completed Report and Research Highlight

AVAILABILITY: Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Ca1%20MH%2010S53_w.pdf

UPDATING THE PUBLICATION "HOUSING FOR OLDER CANADIANS: THE DEFINITIVE GUIDE TO THE OVER 55 MARKET"

This project will focus on updating the publication "Housing for Older Canadians: The Definitive Guide to the Over-55 Market", published by CMHC in 1999. The updated product will comprise a series of shorter publications that are based on updated content and that focus on a narrower range of topics. The new product will be available in both print and web formats and will make the information more accessible to the industry at a time when the market for seniors' housing is growing.

CMHC Project Officer : Hoda Shawki

CIDN : 39690200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SOCIAL HOUSING

DO SOCIAL HOUSING ALLOCATION METHODS HAVE AN EFFECT ON THE WELL-BEING AND HEALTH OF FAMILIES? A COMPARISON OF LOW-RENT HOUSING PROGRAMS AND RENT SUPPLEMENT PROGRAMS IN MONTRÉAL

This External Research Program project will compare the levels of well-being and health of families under two social housing programs in Montréal.

CMHC Project Officer : Jim Zamprelli

CIDN : 41330204

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SOCIAL HOUSING

REGENT PARK LONGITUDINAL HEALTH STUDY

This study will investigate the effects of the Regent Park Social Housing Revitalization Project - Phase I Redevelopment on the health and well-being of residents, and how interventions in the built environment may reduce health inequalities and improve the lives of low-income, urban populations, using a quasi-experimental research design. The redevelopment plan seeks to: a) create social mix; b) promote positive social interaction (using innovative architectural and urban designs); and c) create affordable home ownership for a subset of residents.

CMHC Project Officer : Mark Salerno

CIDN : 34470200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SOCIAL AND AFFORDABLE HOUSING REDEVELOPMENT AND REGENERATION PROJECTS

The purpose of this project is to examine, through case study research, the redevelopment and regeneration of social and affordable housing. The research will document efforts to address obsolescence in social and affordable housing, that is, buildings that are nearing the end of their lifecycle or where building functionality is incompatible with current tenant and/or community needs. The research will also examine efforts to pursue redevelopment opportunities (e.g. increasing the number of affordable housing units, improving access and movement on site, selling vacant land and/or buildings, etc.). The research project is intended to act as a source of information for public and private property owners.

CMHC Project Officer : Janet Neves

CIDN : 37550200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUPPORTIVE/SUPPORTED HOUSING WITHIN SOCIAL HOUSING

This project will examine the role of social housing in providing the housing component of supported/supportive housing, to include: a description of supported or supportive housing models within social housing and an estimate of its prevalence; an analysis of the experiences with supported/supportive housing within social housing, from the point of view of housing providers, service providers, residents and government agencies; a review of successful partnerships, lessons learned and best practices in the provision of supported/supportive housing.

CMHC Project Officer : Jim Zamprelli

CIDN : 38220200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

See also: DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO, p. 12

COMMUNITY ENVIRONMENTAL (CARBON FOOTPRINT) REDUCTION PROJECT

This External Research Program project will test the effectiveness of a community based approach to reducing the environmental carbon footprint of individual households in existing neighbourhoods. It will investigate the differences in footprint between neighbourhood and housing types, the environmental measures most likely to be implemented by residents, and the results of these actions.

CMHC Project Officer : Meg Ogden

CIDN : 40140217

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

ESTIMATING THE GREEN HOUSE GAS IMPLICATIONS OF LAND-USE PATTERNS: A METHODOLOGY FOR LOCAL GOVERNMENTS

This External Research Program project will develop a dedicated tool to empower communities to define parameters and subsequently assess the energy and greenhouse gas (GHG) emission implications of planning decisions. It will build upon and extend research completed for Salt Spring Island, BC, which examined the long-term greenhouse gas implications of different build-out scenarios and found that significant current GHG emissions savings were achievable. This project will result in a model that can be deployed by small and medium sized communities to measure the greenhouse gas implications of planning scenarios.

CMHC Project Officer : Meg Ogden

CIDN : 40140215

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

FAMILIES LIVING DOWNTOWN: CHALLENGES AND BENEFITS

This External Research Program study will examine the housing-related experiences of families who are choosing to live in or near downtown areas. It will examine the reasons for their choice, how they are managing their urban life with their children, and the challenges and benefits they experience once they have lived there for some time. These experiences will be related to key objective measures of their own residence and their downtown neighbourhood. This research will complement previous views on how to plan central areas for families by studying the experiences of downtown family residents, those who actually "live their life" there.

CMHC Project Officer : Mark Holzman

CIDN : 34380210

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

INDEX FOR LANDSCAPE GUIDE FOR CANADIAN HOMES

This project will add the following new and updated features in "Landscape Guide for Canadian Homes": an index, photos of each plant in the plant list, plus updates to the "resources and further reading" section.

CMHC Project Officer : Susan Fisher

CIDN : 36710200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

POTENTIAL OF REPLOTTING TO IMPROVE THE SUSTAINABILITY OF CITIES IN WESTERN CANADA

This External Research project is based on the hypothesis that replotting can be employed as a useful tool for developers and housing/planning authorities to assist in certain land assembly situations. The research will investigate whether the replot legislation extant in western Canada could be used to overcome a weakness often seen in the land development process in urban intensification locales, and thereby show how governments and developers can bring about better developments that will contribute to improving the sustainability of cities.

CMHC Project Officer : *Cynthia Rattle*

CIDN : 40140216

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABILITY INDICATORS FOR COMPUTER-BASED TOOLS IN COMMUNITY DESIGN

This External Research Project will evaluate sustainability indicators for potential integration with widely used geographic information system based modelling and visualization tools. It will refine the content and method of the indicators most suitable for such integration, propose new indicators where necessary, test refined and proposed indicators in a case study project and evaluate the results for broad application.

CMHC Project Officer : *Mark Holzman*

CIDN : 34380211

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

UNDERSTANDING THE SMART GROWTH GAP

This project will investigate the reasons for the gap between stated municipal policy objectives, which align with the goals of Smart Growth, and the results on the ground. It will aim to answer the following questions:

- What prevents the accomplishment of set goals?
- Are the goals inherently unachievable?
- What are the expected impacts of Smart Growth practices under a normal positive scenario?
- What time lines can be speculated or calculated for prescribed outcomes?
- What strategies are deemed most effective with respect to the level of impact?

The intent of this research is to enable local governments and industry to lay out a strategy that will produce sustained positive outcomes with predictable beneficial effects for the environment and for the well-being of community residents.

CMHC Project Officer : *Mark Holzman*

CIDN : 35230200

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

UPDATE NEIGHBOURHOOD COMPARISON WEB TOOL

This project will update an existing CMHC Web-based tool (<http://cmhc.ca/en/co/buho/sune/index.cfm>) that compares 6 neighbourhood types for key quality of life, environment and affordability variables in Canada's 5 largest metropolitan areas. The new project will update the census derived data with 2006 census results, since currently much of the data is based on the 2001 census. Two new variables will be added to the comparison: walkability and access to key commercial destinations.

CMHC Project Officer : Susan Fisher
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 39560200
STATUS : Ongoing
NEW

UPDATE OF SUSTAINABLE PLANNING AND DEVELOPMENT WORKSHOP FOR SMALL COMMUNITIES

This activity will update the content of the CMHC Sustainable Planning and Development Workshop for Small Communities which provides elected officials with knowledge and understanding of sustainable planning and development best practice information from the perspective of small communities thus promoting sustainable residential development.

CMHC Project Officer : Cynthia Rattle
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 41240200
STATUS : Ongoing
NEW

See also: Technical Research on Sustainable Development & Healthy Housing, p. 26-30

WOMEN AND HOUSING

ALL OUR SISTERS NATIONAL FORUM 2011

The All Our Sisters National Forum is the first Canadian forum specifically addressing security of housing, homelessness and safe communities for women. It will focus on safe, sustainable, and affordable housing while considering three themes: recognizing barriers, best practices to create safe housing and safe communities, and moving forward by creating change. The conference aims to increase the understanding of Canadian women's unique challenges in the housing continuum. CMHC sponsorship and participation will enhance CMHC's position as Canada's national housing agency.

CMHC Project Officer : Sandra Baynes
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 43020202
STATUS : Ongoing
NEW

WOMEN AND HOUSING

HOUSING DIFFICULTIES AND HOUSING PROGRAMS IN THE LIVES OF ABUSED WOMEN

This External Research Program project is examining the housing difficulties and experiences of women who have experienced different kinds of interpersonal violence (i.e., spousal, family, and landlord), and to explore how their experiences vary as a function of the kind of violence.

CMHC Project Officer : *Sandra Baynes*

CIDN : 38840203

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

CMHC RESEARCH REPORT LISTINGS

To provide quick and comprehensive access to CMHC research published on a given topic, the Canadian Housing Information Centre compiles comprehensive listings of housing research produced over a number of years on certain topics. Topics chosen are those for which there is ongoing client interest and/or for which CMHC has published considerable research. To obtain an electronic, faxed or mailed copy of any of the lists below, contact the Canadian Housing Information Centre at: 1-800-668-2642 or e-mail us at: chic@cmhc.gc.ca

Listings available at this time include:

◆ Aboriginal Housing	◆ Acoustics
◆ Affordable Housing	◆ Airtightness
◆ Basements, Foundations and Crawl Spaces	◆ Concrete
◆ Condominiums	◆ Cooperative Housing
◆ Environmental Site Assessment and Contaminated Lands	◆ Healthy Housing
◆ Heating and Ventilation	◆ Homelessness
◆ Housing and Women	◆ Housing Export Opportunities
◆ Housing for Older Canadians	◆ Housing for Persons with Disabilities
◆ Indoor Air Pollution	◆ Infrastructure
◆ Lead	◆ Log Home Construction
◆ Manufactured Housing	◆ Moisture Problems
◆ Mortgages and Housing Finance	◆ Newcomers, Immigration & Settlement
◆ Northern Housing	◆ Rental Housing
◆ Residential Construction Waste	◆ Residential Renovation
◆ Self Help Housing	◆ Social Housing
◆ Straw Bale Housing	◆ Sustainable Development
◆ Water Conservation, Reuse and Management	

ABOUT YOUR HOUSE SERIES

Fact sheets on common housing questions, issues and problems.

These documents are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at:

http://www.cmhc.ca/en/co/co_001.cfm

Print copies can be obtained by calling 1-800-668-2642

Order no.	Series no.	Title
62027	CE 1	<p>Measuring Humidity in Your Home</p> <p>Is there condensation on the windows? Are there wet stains on the walls or ceilings? Is there static or sparks whenever you touch something? Diagnose humidity problems in your home.</p> <p>Aussi disponible en français sous le titre : Mesurer l'humidité dans votre maison</p>
62028	CE 2	<p>Combustion Gases in Your Home</p> <p>Do you have a gas or oil fired furnace, boiler or water heater? What about a woodstove or fireplace? Take the necessary steps to keep combustion gases out of your home.</p> <p>Aussi disponible en français sous le titre : Les gaz de combustion dans votre maison</p>
62029	CE 3	<p>Asbestos</p> <p>What is asbestos? Why is it so useful? What problems can asbestos cause and what options does the homeowner have in dealing with them?</p> <p>Aussi disponible en français sous le titre : Amiante</p>
62030	CE 4	<p>Hydronic Radiant Floor Heating</p> <p>Heating option for homes. Tubes are placed in concrete floor with water running through. Popular in bathrooms and kitchen, and can be done for entire house - new or existing.</p> <p>Aussi disponible en français sous le titre : Système de chauffage à eau chaude par rayonnement à partir du sol</p>
62031	CE 5A	<p>Understanding Window Terminology</p> <p>This factsheet offers helpful guidance on buying the right type of window for your home. Terminology commonly used in the window industry is also presented.</p> <p>Aussi disponible en français sous le titre : Comprendre la terminologie des fenêtres</p>
62032	CE 6	<p>Urea-Formaldehyde Foam Insulation (UFFI)</p> <p>What is UFFI? Why was it banned? Should you be concerned about UFFI? How do you know if your home has UFFI?</p> <p>Aussi disponible en français sous le titre : Mousse isolante d'urée-formaldéhyde (MIUF)</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
60515	CE 7	<p>After the Flood</p> <p>Protect your health and prevent further damage to your home by following this step-by-step guide to restoring your home after a flood.</p> <p>Aussi disponible en français sous le titre : Après une inondation</p>
60516	CE 8	<p>Fighting Mold: The Homeowner's Guide</p> <p>Mold can cause allergies or respiratory disease. Learn how to identify and eliminate mold from your home.</p> <p>Aussi disponible en français sous le titre : Combattre la moisissure -- Guide pour les propriétaires-occupants</p>
62043	CE 9	<p>Maintaining Your HRV</p> <p>For a clean and healthy living environment, review the seven steps to maintaining the Heat Recovery Ventilator (HRV).</p> <p>Aussi disponible en français sous le titre : L'entretien du VRC</p>
60339	CE 10	<p>Wood Heat Safety in an Emergency</p> <p>Whether you often use a wood stove or a fireplace, or are coping with an emergency loss of electricity, learn how to safely use wood to heat your home.</p> <p>Aussi disponible en français sous le titre : Le chauffage au bois en toute sécurité lors d'une situation d'urgence</p>
60356	CE 11	<p>When You Must Leave Your House Due to Prolonged Winter Power Outage</p> <p>A series of practical tips to protect your home in case you are required to evacuate for more than 24 hours because of power failure.</p> <p>Aussi disponible en français sous le titre : Si vous devez quitter votre maison à cause d'une longue interruption de courant en hiver</p>
60360	CE 12	<p>Helping Your Trees Survive Storm Damage</p> <p>Practical pruning advice to restore the health and shape of trees damaged by ice or wind storms.</p> <p>Aussi disponible en français sous le titre : Soins à donner aux arbres endommagés par une tempête</p>
62034	CE 13	<p>Attic Venting, Attic Moisture, and Ice Dams</p> <p>How do you deal with a leak in the ceiling? How should an attic be properly vented? How do you eliminate ice dams? This fact sheet will answer these and other attic related questions.</p> <p>Aussi disponible en français sous le titre : Ventilation du vide sous toit, humidité dans le vide sous toit et formation de barrières de glace</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62035	CE 14	<p>Soot Staining on Carpets</p> <p>Does your carpet have permanent dark stains near baseboards, air registers or under doorways? Find out what causes carpet streaking and what you can do about it.</p> <p>Aussi disponible en français sous le titre : Taches en traînée sur les moquettes</p>
62036	CE 15	<p>Removing Ice on Roofs</p> <p>Whether you have a sloped or flat roof, learn techniques that will help you deal with extensive roof icing or ice dam problems.</p> <p>Aussi disponible en français sous le titre : L'enlèvement de la glace sur les toitures</p>
62037	CE 17	<p>The Importance of Bathroom and Kitchen Fans</p> <p>Choosing the proper kitchen and bathroom fans is important for improving indoor air quality and maintaining ideal humidity levels.</p> <p>Aussi disponible en français sous le titre : Importance des ventilateurs de cuisine et de salle de bains</p>
62038	CE 18	<p>How to Read a Material Safety Data Sheet (MSDS)</p> <p>Reading and understanding the Material Safety Data Sheet (MSDS) provides product information about product hazards and the necessary safety precautions to follow when using it.</p> <p>Aussi disponible en français sous le titre : Comment déchiffrer une fiche technique sur la sécurité des substances (FTSS)</p>
62039	CE 19	<p>Insulating Your House</p> <p>Choose the right insulation to reduce the amount of energy you use and to make your home more comfortable.</p> <p>Aussi disponible en français sous le titre : L'isolation de votre maison</p>
62040	CE 21	<p>Log Homes: Frequently Asked Questions</p> <p>A list of questions and answers concerning the unique design and building considerations for log homes.</p> <p>Aussi disponible en français sous le titre : Foire aux questions - maisons en rondins</p>
62041	CE 22	<p>Your Furnace Filter</p> <p>To reduce exposure to airborne particles, choose the furnace filter that best suits your needs.</p> <p>Aussi disponible en français sous le titre : Le filtre de votre générateur d'air chaud</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62042	CE 23	<p>Water-Saving Tips for Your Lawn and Garden</p> <p>Often water is applied inefficiently, resulting in significant waste due to over watering, evaporation or run-off. Here are some general watering tips to avoid such waste.</p> <p>Aussi disponible en français sous le titre : Comment entretenir vos pelouses et jardins en économisant l'eau</p>
60417	CE 24	<p>Backup Power for Your Home</p> <p>The top ten tips in choosing the appropriate backup system to provide electricity to your home in the event of a prolonged power failure.</p> <p>Aussi disponible en français sous le titre : Alimentation de secours pour votre maison</p>
62046	CE 25	<p>Carbon Monoxyde</p> <p>A list of questions and answers dealing with keeping Carbon Monoxide out of your home and to help you choose the right CO detector.</p> <p>Aussi disponible en français sous le titre : Le monoxyde de carbone</p>
62277	CE 26a	<p>Hiring a Contractor</p> <p>How do you find the "right" contractor for you? What should go in a contract? What are liens, holdbacks and completion certificates? Make sure you get what you want and pay for when hiring a contractor.</p> <p>Aussi disponible en français sous le titre : Le Choix d'un entrepreneur</p>
62351	CE 26b	<p>Sample Renovation Contract</p> <p>A detailed written contract between you and the contractor you hire is essential to any renovation or home repair project, no matter its size.</p> <p>Aussi disponible en français sous le titre : Modèle de contrat de rénovation</p>
62045	CE 27	<p>Choosing a Dehumidifier</p> <p>Air that is too damp can cause condensation on windows, water damage to materials, mold and even wood rot. Choose the right dehumidifier to regulate the humidity in your home.</p> <p>Aussi disponible en français sous le titre : Le Choix d'un déshumidificateur</p>
	CE 28	<p>The Renovation Project (12 parts)</p> <p>This series will assist you in making informed decisions before you renovate. Each easy-to-read fact sheet helps you ask the key questions, reviews the available options and discusses the consequences if certain aspects of the renovation are overlooked.</p> <p>Advance planning is the key to successful renovations. These fact sheets help you plan, assess, and avoid surprises. Achieve the results you want by doing your renovation right the first time.</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62246	CE 28a	<p>Assessing the Renovation Project</p> <p>Before renovating, it's important to assess your home's current condition to determine if there are significant problems that you must deal with before or during the renovation project.</p> <p>Aussi disponible en français sous le titre : Évaluation des travaux de rénovation</p>
62248	CE 28b	<p>Renovating your Basement - Structural Issues and Soil Conditions</p> <p>Renovating a basement can add value and extra living space to a home. Fixing foundation problems before renovating is essential to preserve the durability and structure of the house.</p> <p>Aussi disponible en français sous le titre : Rénovation du sous-sol - Aspects structureaux et conditions du sol</p>
62250	CE 28c	<p>Renovating Your Basement - Moisture Problems</p> <p>Is there condensation on the basement windows? Are there white chalky stains on the foundation? Do the carpets smell musty? Creating a clean, dry and healthy living space is a critical first step.</p> <p>Aussi disponible en français sous le titre : Avant de rénover votre sous-sol - Problèmes d'humidité</p>
62252	CE 28d	<p>Renovating Your Kitchen</p> <p>The kitchen is often the most used room in the house and kitchen renovations typically have the highest financial payback. Conduct a pre-renovation inspection and prioritize the most desirable features for your new kitchen.</p> <p>Aussi disponible en français sous le titre : Avant de rénover votre cuisine</p>
62254	CE 28e	<p>Renovating Your Bathroom</p> <p>Bathroom renovations offer the second highest financial payback rate and are one of the most common home improvement projects. Use this fact sheet to check for problems before you renovate.</p> <p>Aussi disponible en français sous le titre : Rénovation de la salle de bains</p>
62256	CE 28f	<p>Window and Door Renovations</p> <p>Do you want more natural light in your living area? Are you concerned about security? Before repairing or replacing windows and doors, consider all of the factors outlined in this fact sheet.</p> <p>Aussi disponible en français sous le titre : Nouvelles portes et fenêtres</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62258	CE 28g	<p>Repairing or Replacing Roof Finishes</p> <p>Regular maintenance and periodic roof inspections will identify problems before they cause costly damage to your home. Learn about the key factors that will determine whether you should repair or replace your roof.</p> <p>Aussi disponible en français sous le titre : Avant de réparer ou remplacer le revêtement du toit</p>
62260	CE 28h	<p>Repairing and Replacing Materials - Exterior Walls</p> <p>Exterior finish materials must prevent rain and snow from penetrating the building and causing moisture damage. Repairing or replacing exterior wall finishes will protect and preserve the durability and structure of the home.</p> <p>Aussi disponible en français sous le titre : Avant de réparer ou remplacer des matériaux - les murs extérieurs</p>
62262	CE 28i	<p>Energy Efficient Retrofit - Mechanical Systems</p> <p>Upgrading the heating, cooling and ventilation (HVAC) equipment is the best way to create a healthy, comfortable and less expensive home to operate. Before altering these, it is important to understand how the overall performance of the house will be affected.</p> <p>Aussi disponible en français sous le titre : Avant d'améliorer l'efficacité énergétique de votre maison - installations mécaniques</p>
62264	CE 28j	<p>Energy Efficient Retrofit - The Building Envelope</p> <p>The envelope, or outer layer, of your house separates living space from the outdoor elements. Improving it can result in a better insulated, more airtight home that is easier to heat.</p> <p>Aussi disponible en français sous le titre : Améliorer l'efficacité énergétique - L'enveloppe du bâtiment</p>
62266	CE 28k	<p>Assessing the Comfort and Safety of Mechanical Systems</p> <p>The heating, ventilating and air conditioning (HVAC) systems are a vital part of your home. Ensure that your mechanical systems are operating safely and efficiently.</p> <p>Aussi disponible en français sous le titre : Évaluation de vos installations mécaniques - confort et sécurité</p>
62268	CE 28L	<p>A New Addition</p> <p>Before building an addition, clearly identify the features you need and inspect the current structure and mechanical systems to be sure they can support the new addition.</p> <p>Aussi disponible en français sous le titre : Avant de construire une annexe</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62044	CE 29	<p>Should you get your Heating Ducts Cleaned?</p> <p>Should you get your heating ducts cleaned? Will clean ducts result in improved air quality? When is duct cleaning most appropriate? This fact sheet separates fact from fiction.</p> <p>Aussi disponible en français sous le titre : Doit-on faire nettoyer les conduits de chauffage?</p>
63322	CE 30	<p>Water Damage, Mold and House Insurance</p> <p>You've had water damage in your house due to a burst pipe, a roof leak, or a heavy summer storm. You hope that your insurance will cover the damage. What to do?</p> <p>Aussi disponible en français sous le titre : Moisissure, dommages causés par l'eau et assurance habitation</p>
62226	CE 31	<p>Understanding and Dealing with Interactions Between Trees, Sensitive Clay Soils and Foundations</p> <p>Is the size, type or siting of a tree affecting your foundation? Understanding the interactions between trees, soils and the foundation can help you avoid foundation shifting, cracks and other damage.</p> <p>Aussi disponible en français sous le titre : Comprendre l'interaction des arbres, du sol d'argile sensible et des fondations et agir en conséquence</p>
65329	CE 32	<p>Setback Thermostats</p> <p>There are many claims about the energy savings due to setback thermostats. This document quantifies the savings but also describes houses or conditions where setback thermostats are not recommended.</p> <p>Aussi disponible en français sous le titre : Les thermostats programmables</p>
62288	CE 33	<p>CMHC Garbage Bag Airflow Test</p> <p>This simple test uses an ordinary garbage bag to help you estimate airflow from your furnace registers, bathroom exhaust fan or clothes dryer exhaust.</p> <p>Aussi disponible en français sous le titre : Essai de mesure du débit d'air à l'aide d'un sac à ordures</p>
62795	CE 34	<p>Your Septic System</p> <p>A primer on the components, operation and proper maintenance of an in-ground septic tank and system.</p> <p>Aussi disponible en français sous le titre : Votre installation d'assainissement</p>
62839	CE 35	<p>Hiring a Home Inspector</p> <p>One of the best ways to understand about a home's condition, habitability and safety is to hire a professional home inspector.</p> <p>Aussi disponible en français sous le titre : Le Choix d'un inspecteur en bâtiment</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62341	CE 36	<p>The Condominium Owners' Guide to Mold</p> <p>Special advice for identifying and removing mold in a condo, and solving the problems that cause it.</p> <p>Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des copropriétaires</p>
63902	CE 37	<p>The Tenant's Guide to Mold</p> <p>This guide provides tenants of apartment buildings or rental houses with information to understand why mold grows and what they can do if they find mold growing in their unit.</p> <p>Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires</p>
64066	CE 38	<p>How to Reduce Chemical Contaminants in Your Home</p> <p>This guide focuses on reducing exposure to chemical contaminants in the home, and will help you identify and avoid household products and materials which are sources of chemical contaminants.</p> <p>Aussi disponible en français sous le titre : Réduire les contaminants chimiques dans votre maison</p>
62935	CE 39	<p>Buying a Toilet</p> <p>Advice and tips on what to look for when buying a toilet.</p> <p>Aussi disponible en français sous le titre : L'achat de toilettes</p>
63319	CE 40	<p>Buying a House with a Well and Septic System</p> <p>Information on what to inspect and test if a property has a well and/or septic system. Includes checklists for potential buyers.</p> <p>Aussi disponible en français sous le titre : L'achat d'une maison avec un puits et une installation septique</p>
62953	CE 41A	<p>UV Water Treatment</p> <p>Describes the ultra-violet light water treatment process, and the pros and cons of using such a system.</p> <p>Aussi disponible en français sous le titre : Traitement de l'eau aux rayons ultraviolets (UV)</p>
62898	CE 41B	<p>Water Distillers</p> <p>Everything you ever wanted to know about water distillers from how they work to how to install and maintain them.</p> <p>Aussi disponible en français sous le titre : La distillation de l'eau</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62896	CE41C	<p>Water Filters</p> <p>Consumer series of household water treatment options. Water filters are an inexpensive method of additional water treatment. Some filters can remove certain contaminants such as lead.</p> <p>Aussi disponible en français sous le titre : Filtres à eau</p>
62946	CE 41D	<p>Water Softeners</p> <p>Find out how a water softener works and obtain information on whether you should consider installing one.</p> <p>Aussi disponible en français sous le titre : Les adoucisseurs d'eau</p>
62962	CE 41E	<p>Reverse Osmosis Water Treatment</p> <p>Describes the reverse osmosis water treatment process, and provides the pros and cons of using such a system.</p> <p>Aussi disponible en français sous le titre : Filtration de l'eau par osmose inverse</p>
62966	CE 42	<p>Canada's Construction System</p> <p>The purpose of this document is to foster understanding of the elements of the system of construction and operation of buildings and houses in Canada.</p> <p>Aussi disponible en français sous le titre : Système de construction canadien</p>
63890	CE 43	<p>Photovoltaics (PVs)</p> <p>Consumer information piece presenting information on solar electric (photovoltaic) systems for housing</p> <p>Aussi disponible en français sous le titre : Les systèmes photovoltaïques</p>
63134	CE 44	<p>Painting: Walls, Ceilings and Floors</p> <p>This fact sheet provides general information on: selecting paints, e.g. latex (water based) or alkyd (oil based); types of paint and paint finishes, e.g. low or high sheen, sealer, primer, melamine; estimating quantity of paint required; preparing for painting; and painting tips.</p> <p>Aussi disponible en français sous le titre : La peinture : murs, plafonds et planchers.</p>
63144	CE 45	<p>Flooring Choices</p> <p>A quick summary of the advantages, considerations, installation, maintenance, and costs to think about when choosing resilient, laminate, and wood flooring, as well as carpet and ceramic tile.</p> <p>Aussi disponible en français sous le titre : Les revêtements de sol</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
63349	CE 46	<p>Fighting Asthma in Your House</p> <p>Practical tips to help people with asthma improve the indoor air quality of their home.</p> <p>Aussi disponible en français sous le titre : Combattre l'asthme à la maison</p>
63218	CE47	<p>Home Maintenance Schedule</p> <p>This fact sheet provides a listing of the regular home maintenance tasks which should be done at various times throughout the year to protect the condition of your house.</p> <p>Aussi disponible en français sous le titre : Calendrier d'entretien de votre maison</p>
63227	CE48	<p>Replacing Your Furnace</p> <p>This fact sheet provides information for consumers who are replacing their existing furnace with a new one. It deals with fuel choice, furnace selection, and furnace sizing.</p> <p>Aussi disponible en français sous le titre : Le remplacement d'un générateur de chaleur</p>
63235	CE 49	<p>Getting Your House Ready to Sell</p> <p>Tips for homeowners who wish to get their house ready to sell.</p> <p>Aussi disponible en français sous le titre : Ce qu'il faut faire avant de mettre votre maison en vente</p>
63436	CE50	<p>Avoiding Basement Flooding</p> <p>Basement flooding leads to damage of the finishing material and possible growth of mold. This document reviews why basements flood and how to prevent floods from occurring.</p> <p>Aussi disponible en français sous le titre : Comment prévenir les inondations de sous-sol</p>
63486	CE51	<p>Get to Know Your Soil</p> <p>This fact sheet provides practical tips on how to analyse soil so that you can select the plants that are suited to the soil you have on your property. Once you have determined the soil conditions, it provides tips on how to amend it, if needed.</p> <p>Aussi disponible en français sous le titre : Apprenez à connaître votre sol</p>
63488	CE52	<p>Low-Maintenance Lawns</p> <p>Low-maintenance lawns help to reduce the time, costs, water, pesticides, fertilizer and energy used to maintain lawns. This fact sheet describes the benefits and provides practical tips on how to install and maintain low maintenance lawns, including species selection.</p> <p>Aussi disponible en français sous le titre : Les pelouses à faible entretien</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
63490	CE53	<p>Rain Gardens: Improve Stormwater Management in Your Yard</p> <p>Rain gardens are landscaped areas designed to receive stormwater and allow it to infiltrate into the soil. This fact sheet describes the benefits and provides practical tips on how to install and maintain gardens.</p> <p>Aussi disponible en français sous le titre : Un jardin pluvial pour mieux gérer les eaux de ruissellement dans votre cour</p>
63492	CE54	<p>Understanding Your New Home Sales Contract</p> <p>This fact sheet provides information on some of the terms and provisions that you may find in a new home sales agreement to illustrate what a contract can cover and an explanation why.</p> <p>Aussi disponible en français sous le titre : Comprendre le contrat de vente de votre maison neuve</p>
63495	CE55	<p>Selecting A New Home Builder</p> <p>This fact sheet provides information on how to find and what to look for and consider when searching for the right builder to build your new home.</p> <p>Aussi disponible en français sous le titre : Le choix d'un constructeur d'habitations</p>
63637	CE56	<p>Preventing Falls on Stairs</p> <p>This fact sheet tells you about some of the ways you can reduce the risk of falling on or from residential stairs.</p> <p>Aussi disponible en français sous le titre : Comment prévenir les chutes dans les escaliers</p>
63730	CE57	<p>Efficient, Convenient Wood Heating</p> <p>This is a short guide to the proper use of woodburning appliances in homes: what appliances to choose, how to operate them efficiently, what wood to burn, how to cut and store it, etc.</p> <p>Aussi disponible en français sous le titre : Le chauffage au bois pratique et efficace</p>
63683	CE58	<p>The ABC's of Windows</p> <p>This document will help consumers understand and select window performance levels with respect to airtightness, rain penetration and wind resistance appropriate for their climatic (and geographical) location and exposure conditions.</p> <p>Aussi disponible en français sous le titre : L'ABC des fenêtres</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
63911	CE59	<p>Should You Test the Air in Your Home for Mold?</p> <p>Testing the air in their home or apartment for mold is usually the first thing many people ask for when they suspect the presence of mold or have discovered mold growth. This fact sheet explains why air testing is not recommended, why an investigation by a trained professional is more useful and what to do if testing is deemed necessary.</p> <p>Aussi disponible en français sous le titre : Faut-il faire analyser l'air de la maison pour déceler la présence de moisissures?</p>
63822	CE60	<p>What to Do After a Fire</p> <p>Protect your health and prevent further damage to your home by following this detailed guide on the steps to restore your home after a fire.</p> <p>Aussi disponible en français sous le titre : Que faire après un incendie</p>
64092	CE61	<p>Renovating Your Basement for Livability</p> <p>This About Your House describes how renovating a full-height basement can be a relatively easy and cost-effective way to add new living space to your house.</p> <p>Aussi disponible en français sous le titre : Rénovation du sous-sol - objectif d'habitabilité</p>
64064	CE62	<p>Lead in Older Homes</p> <p>This About Your House describes where lead is found in older homes and who is at risk to lead exposure. It also describes procedures for testing lead in soil, water, paint, and dust.</p> <p>Aussi disponible en français sous le titre : Le plomb dans les vieilles maisons</p>
65023	CE63a	<p>Accessible Housing by Design - Ramps (Large Print)</p> <p>For anyone who needs to make their house accessible to someone who uses a wheelchair or other mobility device, this About Your House sheds light on the design and construction of ramps for the home. After reading this publication, you will understand how a ramp should be built, the materials that should be used and things to take into consideration before building a ramp for your home.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Les rampes d'accès (à gros caractères)</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
65080	CE63b	<p>Accessible Housing by Design - Appliances (Large Print)</p> <p>The design of an appliance can make it very easy or very difficult to use. If you have a disability, limitations in an appliance's design can make it almost impossible to use. Using the principles of Universal Design, this About Your House will help you select an appliance by outlining important design considerations, making helpful suggestions and explaining the safety features of appliances.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception — les appareils (à gros caractères)</p>
65542	CE63c	<p>Accessible Housing by Design - Lifts & Residential Elevators</p> <p>Residential lifts and elevators can benefit many people— particularly seniors who want to remain in their homes despite a loss of mobility, strength or agility. This About Your House tells you about the types of residential lifts and elevators that are commonly available in Canada. It also tells you about some of the things you should consider when you choose and install an elevator or lift in your home.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - élévateurs et ascenseurs résidentiels</p>
65544	CE63d	<p>Accessible Housing by Design - Residential Hoists and Ceiling Lifts</p> <p>A residential hoist or ceiling lift can help people who have difficulty safely moving themselves or others in or out of bed, or in or out of a bathtub. This About Your House tells you about the types of residential hoists and ceiling lifts that are commonly available in Canada. It also tells you about some of the issues you should consider when you choose and install a hoist or ceiling lift in a house, condominium or apartment.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les lève-personnes résidentiels</p>
65588	CE63e	<p>Accessible Housing by Design - Kitchens</p> <p>A home designed and constructed to reflect the principles of Universal Design is safer and more accommodating to the diverse range of ages and abilities of people who live in and visit this home. This About Your House discusses the Universal Design kitchen, which considers efficient design, efficiency of effort, adaptability, ease of cleaning, audibility and safety in order to provide a comfortable and safe space for all family members.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les cuisines</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
65686	CE63f	<p>Accessible Housing by Design: Bathrooms</p> <p>A bathroom designed and constructed according to the principles of universal design should be comfortable and safe for all family members, regardless of age or ability. This About Your House outlines the design considerations and elements of a universally designed bathroom, from manoeuvring space and ease of cleaning to grab bars and walk-in bathtubs and showers.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - salle de bains</p>
65889	CE63g	<p>Accessible Housing by Design: Home Automation</p> <p>The use of technology and automation in the home can help create living spaces that are convenient and energy efficient, that minimize the potential for accidents, and result in a house that is able to adapt to life's changes. Home automation provides many benefits to people with physical, sensory and mental disabilities, allowing them to live more independently. This AYH describes systems and devices that can control elements of your home environment . lighting, appliances, telephones, home security and mechanical, entry and safety systems . resulting in an environment that is more accommodating to everyone who lives there or visits, regardless of age or physical ability.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - Domotique</p>
66091	CE63h	<p>Accessible Housing by Design: Fire Safety for You and Your Home</p> <p>People with disabilities and seniors are more likely to be injured in a fire than the general population as they are often unable to evacuate independently and quickly, and are not prepared with a fire safety plan. This About Your House provides many quick and easy steps that you can take to prevent fires in your home and plan for fire and emergency situations and minimize accidents ensuring that your home occupants, especially people with disabilities and seniors family are safe.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - la sécurité-incendie pour assurer votre protection et celle de votre habitation</p>
66093	CE63i	<p>Accessible Housing by Design: House Designs and Floor Plans</p> <p>This fact sheet provides design guidelines for the most common types of accessible house designs including: visitable housing, adaptable and accessible housing and housing built using the concepts of universal design.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - types d'habitations et plans d'étages</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
66095	CE63j	<p>Accessible Housing by Design: Living Spaces</p> <p>This fact sheet provides an overview of planning and design guidelines to consider when creating, renovating or redecorating the living spaces in your home.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception - les espaces habitables</p>
66348	CE64	<p>How to Get the Ventilation That You Need in Your House</p> <p>This document provides a guide to using the ventilation systems in your house to provide adequate fresh air to residents.</p> <p>Aussi disponible en français sous le titre : Comment bien ventiler votre maison</p>
65009	CE65	<p>Garden Suites</p> <p>With municipal approval, a garden suite is a self-contained unit, set on relative's property with an existing single family house. This publication provides introductory information on garden suites for seniors or persons with disabilities.</p> <p>Aussi disponible en français sous le titre : Les pavillons-jardins</p>
65527	CE66A	<p>How to Lock Out Crime - Home Security 101</p> <p>This fact sheet walks you through an assesment of your home's current security; includes a checklist that can help you assess what needs to be improved.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile 101</p>
65529	CE66B	<p>How to Lock Out Crime - Home Security - Exterior</p> <p>This fact sheet gives you suggestions on how to improve security from the exterior of your home through lighting strategies and home visibility.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - L'extérieur</p>
65531	CE66C	<p>How to Lock Out Crime - Home Security—Alarms</p> <p>This fact sheet gives you information to help you decide whether an installed burglar alarm is the right choice for you. Two types of systems are discussed, the perimeter alarm system and the area alarm system.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les avertisseurs</p>
65533	CE66D	<p>How to Lock Out Crime - Home Security - Doors</p> <p>This fact sheet suggests ways you can improve your door security.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
65535	CE66E	<p>How to Lock Out Crime - Home Security - Windows</p> <p>This fact sheet suggests ways to improve the security performance of your windows.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les fenêtres</p>
65537	CE66F	<p>How to Lock Out Crime - Home Security - Patio Doors</p> <p>This fact sheet suggests ways to improve the security of one of the favourite targets of burglars: patio doors.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Les portes-fenêtres</p>
65539	CE66G	<p>How to Lock Out Crime: Home Security -- Common Sense</p> <p>Even if all the required bolts, hinges, latches and alarms have been installed, good home security cannot be achieved without first adopting the common-sense precautions outlined in this fact sheet.</p> <p>Aussi disponible en français sous le titre : Gare au crime - La sécurité à domicile - Une affaire de bon sens</p>
66343	CE67	<p>Attached Garages and Indoor Air Quality</p> <p>Attached garages, while convenient, can move vehicle-based pollutants into houses. The document shows how to avoid this source of pollution.</p> <p>Aussi disponible en français sous le titre : Les garages attenants et la qualité de l'air intérieur</p>
66497	CE68	<p>Secondary Suites</p> <p>Secondary suites can provide affordable living space and intensify urban development without adding new buildings. This article explains what the homeowner should consider before building or renovating a secondary suite.</p> <p>Aussi disponible en français sous le titre : Appartements accessoires</p>
65548	CE70	<p>EQilibrium: Healthy Housing for a Healthy Environment</p> <p>CMHC's EQilibrium housing initiative is a powerful new movement in sustainable housing. It can help homeowners reduce their energy bills, protect their families' health, reduce greenhouse gas emissions, and keep the environment clean for generations to come.</p> <p>Aussi disponible en français sous le titre : Equilibrium : maison saine pour un environnement sain</p>

ABOUT YOUR APARTMENT SERIES

Order no.	Series no.	Title
63419	AE1	<p>Solving Odour Transfer Problems in Your Apartment</p> <p>One of the most common problems experienced by the occupants of apartment buildings is the transfer of objectionable odours from one apartment to another. Tobacco smoke and cooking odours top the list of complaints. This fact sheet explains how odours are transferred, and offers a number of potential solutions. Some are very easy to implement and others should be done with the agreement of the building management. Some are trial and error. Solving the problem can take perseverance.</p> <p>Aussi disponible en français sous le titre : Enrayez la transmission d'odeurs dans votre appartement</p>
63904	AE2	<p>Reducing Noise in Your Apartment</p> <p>This article provides basic information about the behaviour of sound and noise and suggests ways to improve the peace and tranquility in your apartment or condominium.</p> <p>Aussi disponible en français sous le titre : Atténuation du bruit dans votre appartement</p>
65013	AE3	<p>Dealing with Power Outages</p> <p>Lengthy power outages rarely occur in Canada, but when they do, they can affect your comfort and safety. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you plan ahead for, and deal with, power outages in your apartment building. Topics include, amongst others, contents of an emergency kit, use of alternate power, and summer and winter power failures.</p> <p>Aussi disponible en français sous le titre : Les pannes de courant</p>
65050	AE4	<p>Fire Safety</p> <p>Each year, many Canadians are injured or die in house or apartment fires. This fact sheet, intended specifically for occupants of multi-unit residential buildings, offers practical fire prevention tips and important information regarding smoke alarms. It will also help you create an escape plan for you and your family, and instruct you on what to do should a fire occur in your apartment.</p> <p>Aussi disponible en français sous le titre : La sécurité-incendie</p>
65041	AE5	<p>Improving Your Security and Safety</p> <p>This About Your Apartment fact sheet, intended specifically for occupants of multi-unit residential buildings, provides practical advice on how to protect yourself, your family, and your belongings. It highlights the types of security and safety features you may have in your building and how to use them effectively. Topics include, amongst others, proper locks for windows and doors, neighbourhood security, preventing falls from windows and balconies, combustion safety, and carbon monoxide.</p> <p>Aussi disponible en français sous le titre : Pour une meilleure sécurité chez soi</p>

ABOUT YOUR APARTMENT SERIES

Order no.	Series no.	Title
65297	AE6	<p>Dealing with Pests</p> <p>Most people can relate to the surprise, shock and revulsion of coming across pests in their homes. This fact sheet, intended specifically for occupants of multi-unit residential buildings, will help you prevent and reduce infestations in your apartment by describing how insects enter homes and what they need to survive. Topics include pest proofing your apartment, Integrated Pest Management (IPM), and health concerns associated with pests and pesticides.</p> <p>Aussi disponible en français sous le titre : La lutte contre les parasites</p>
66002	AE7	<p>The Tenant's Guide to Mold</p> <p>This fact sheet is intended for people living in rented apartments and offers practical information on mold problems beginning with an overview of mold and its causes, why it is a concern, and how to identify a mold problem and estimate its severity.</p> <p>Aussi disponible en français sous le titre : Guide sur la moisissure à l'intention des locataires</p>
65975	AE8	<p>Energy and Water Saving Tips for Your Apartment</p> <p>This fact sheet has energy- and water-saving tips that can save you money and make your apartment more comfortable. It lists things you can do yourself and things you can do in co-operation with your building's management</p> <p>Aussi disponible en français sous le titre : Conseils pour économiser l'énergie et l'eau dans votre appartement</p>

ABOUT YOUR HOUSE SERIES

ABOUT YOUR HOUSE - NORTH SERIES

VOTRE MAISON - DOSSIER DU NORD

The North About Your House series is a series specifically designed around day to day northern solutions as well as innovative northern models of building practices which work under cold climate conditions. In this series you will find examples of how to use structural panels in the high arctic, means to cleanse wastewater in the North as well as demonstrated ways of constructing a roof which can withstand northern conditions and how to choose a foundation system which will work in any of the northern communities.

Order no.	Series no.	Title
62303	North Series 1	Building with Structural Panels -- Repulse Bay
62304	Dossier du Nord	Maison à panneaux isolants de construction à Repulse Bay
62295	North Series 2	On-site Wastewater Reclamation Systems for the North
62297	Dossier du Nord 2	Installations de recyclage sur place des eaux usées dans le nord
62329	North Series 3	Snowshoe Inn, Fort Providence Co-generation Model
62330	Dossier du Nord 3	Modèle de cogénération du Snowshoe Inn, Fort Providence
62298	North Series 4	Residential Foundation Systems for Permafrost Regions
62299	Dossier du Nord 4	Fondations pour les bâtiments résidentiels construits sur le pergélisol
62154	North Series 5	Eagle Lake Healthy House
62155	Dossier du Nord 5	La maison saine d'Eagle Lake
62313	North Series 6	Arctic Hot Roof Design
62314	Dossier du Nord 6	Conception de toits chauds pour climat arctique
63050	North Series 8	How to Prevent Plumbing and Heating Vent Stack Freeze-up
63051	Dossier du Nord 8	Prévenir le gel des colonnes de ventilation de plomberie et des conduits d'évacuation de l'appareil de chauffage
63394	North Series 9	Fancoil Integrated Combination Heat and Domestic Hot Water Systems
63395	Séries du Nord 9	Installation de chauffage des locaux et de l'eau intégrée à un ventilo-convecteur

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Brief descriptions of CMHC research papers you may wish to obtain. These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at:

<http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html>

Print copies can be obtained by calling **1-800-668-2642**

Order no.	Series no.	TITLE
67314	11-100	The Impact of Gas Fireplace Operation on Winter Energy Consumption and House Temperatures
67085	10-102	Increasing Nunavut Housing Ventilation Rates with HRVs
67087	10-101	Don River Watershed Site Evaluation — Predicting Effectiveness of Stormwater Source Controls in Urban Watershed Revitalization
67067	10-100	Cold Climate Radon Mitigation
66702	09-112	Sloping Sand Filters for On-Site Wastewater Treatment
66608	09-111	Effectiveness of HEPA Vacuuming on Mold in Houses
66602	09-110	Evaluating the Feasibility and Developing Design Requirements and Tools for Large-scale Rainwater Harvesting in Ontario
66590	09-109	Ecologically Engineered Stormwater Management — Five Case Studies
66598	09-108	Assessment of Ecologically Engineered Stormwater Management
66569	09-107	Monitoring Results for the Factor 9 Home
66555	09-106	Effectiveness of Dehumidifiers in Controlling Moisture in Houses
66564	09-105	Understanding Vapour Permeance and Condensation in Wall Assemblies
66541	09-104	The Northern Sustainable House: An Innovative Design Process
66474	09-103	Canada at the 2007 Solar Decathlon Competition
66476	09-102	Code Requirements and Costs of Incorporating Accessory Apartments in Houses
66373	09-101	Seabird Island Monitoring
66333	09-100	Long Term Performance of Slab-on-Grade House Foundations in Regina, Saskatchewan
66135	08-107	Effect of Mesh and Bale Orientation on the Strength of Straw Bale Walls
66097	08-106	Analysis of Renewable Energy Potential in the Residential Sector through High-Resolution Building-Energy Simulation
66063	08-105	Fixing Houses with High Radon -A Canadian Demonstration

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
66060	08-104	Approaching Net-Zero Energy in Existing Housing
65961	08-103	Laboratory Depressurization Test for Residential Gas Appliances - Part 2
65916	08-102	Development and Assessment of Crawl Space Remediation Strategies
65830	08-101	Benchmarking Home Energy Savings from Energy-Efficient Lighting
65903	08-100	Assessment of Natural Ventilation for Canadian Residential Buildings
65861	07-124	Residential Solar Mass Wall Analysis for Canada
65843	07-123	Understanding Vapour Permeance and Condensation in Wall Assemblies
65828	07-122	Straw Bale Construction in Atlantic Canada
65834	07-120	The Effects of Programmable Fan Controllers on Ventilation, Air Distribution and Energy Use
65863	07-119	Monitored Thermal Performance of ICF Walls in MURBs
65891	07-118	Preserved Wood as a Potential Source of Arsenic and Fungi in the Foundation Walls of Homes
65684	07-117	Investigation of the Performance of Residential Electronic Filters in Actual Use
65680	07-116	Drainwater Heat Recovery Performance Testing at CCHT
65649	07-115	Whistle Bend Planning and Design Charrette
65546	07-114	Wind-Rain Relationships in Southwestern British Columbia
65322	07-113	Sustainable Northern Development Charrette in Yellowknife
65302	07-112	Research on Green Rooftops and Walls in Québec City
65417	07-111	Field Testing of Valved Soffit Vent Performance in Protecting Roof and Attic in Strong Winds
65378	07-110	Action Plan for Sustainable Practices - Implementation Strategies for the Residential and Business Sections in the Greater Toronto Area
65365	07-109	Testing Oil-fired Appliance Depressurization Spillage
65352	07-108	Boiler Piping Study
65350	07-107	Southeast False Creek Integrated Design Process Workshops
65375	07-106	Evaluation of Water-Efficient Toilet Technologies to Carry Waste in Drainlines
65033	07-105	Performance Evaluation of Retrofitted Solid Masonry Exterior Walls

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
65421	07-104	High-Performance Stucco for Housing
65346	07-103	Economic Assessment of Residential Basement System Insulation Options
65295	07-102	The Effects of Reflective Interior Shades on Cooling Energy Consumption at the CCHT Research Facility
65336	07-101	A Discussion Paper: Indoor Air Quality Investigations of Houses used for Marijuana Grow Operations
65344	07-100	Relationship Between Moisture Content and Mechanical Properties of Gypsum Sheathing
65104	06-114	Old North End, Saint John, New Brunswick Community Planning and Housing Charrette
65187	06-113	Green Roofs: A Resource Manual for Municipal Policy Makers
65100	06-112	Arviat Community and Housing Design Charrette
65259	06-111	Validation of an Onsite Wastewater Risk Assessment Model
65257	06-110	Impact of Water Softeners on Septic Tanks - Field Evaluation Study
65092	06-109	Occupancy-based Classification System for Design and Construction of Residential Basements
65243	06-108	Field Assessment of a NuAir AIMS eKOCOMFORT™ Unit
65245	06-107	The eKOCOMFORT Field Assessment Program
65274	06-106	West Coast Green Roof Performance at BCIT's Green Roof Research Facility
65035	06-104	Household Environmental Monitoring - A Strategy to Help Homeowners Reduce Their Environmental Impact
64994	06-103	Identifying and Removing Pollutants from Heat Recovery Ventilators
65002	06-102	Evaluation of Air Leakage Control Measures to Compartmentalize Newly Constructed Suites in a High- Rise Residential Building
64934	06-101	Green Phoenix Integrated Design Charrette for Sustainable Affordable Housing
64958	06-100	Performance Evaluation of the Almon Street Multi-Unit Residential Building
64942	05-120	Investigating Moisture in Seasonal Housing
64940	05-119	Energy and Water Consumption Load Profiles in Multi-Unit Residential Buildings

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
64911	05-117	Predicting Time to Fogging of Insulated Glass Units
64913	05-116	Nunavut Research 2003-2005
64908	05-115	Study of Poured-in Place Concrete Wall Assemblies in Coastal British Columbia
64855	05-114	Reduction of Airborne Particles in Houses with Occupants Having Respiratory Ailments
64904	05-113	Duct Leakage Tests in Small Diameter Ducting System
64853	05-112	Assessment of Suite Compartmentalization and Depressurization in New High-rise Residential Buildings
64806	05-111	Laboratory Depressurization Test for Residential Gas Appliances
64843	05-110	Remote Monitoring and Control of On-site Wastewater Treatment, Recycling, and Reuse Systems
63928	05-109	Initial Material Characterization of Straw Light Clay
63945	05-107	Fire Experience, Smoke Alarms and Sprinklers in Canadian Homes: CMHC Research to 2005
63669	05-106	"The Land We Live on is our Home" The 'Gameti Ko' Project Second Community-led Workshop
63876	05-105	Testing the Adhesion of Air- Barrier Membranes in Wall Assemblies
63848	05-104	Ice Damming Field Research
63836	05-103	Assessment of the Energy Performance of Two Gas Combo-Heating Systems
63838	05-102	Development of Micro-CHP Technology Assessment Capability at CCHT
63818	05-101	Effects of ECPM Furnace Motors on Electricity and Gas Use
63816	05-100	Effects of Thermostat Setting on Energy Consumption
63745	04-131	Water Reuse Standards and Verification Protocol
63741	04-130	Dry and Comfortable Floors in Existing Basements
63733	04-128	Dynamic Buffer Zone (DBZ) System Performance
63728	04-127	Comparison of Under-Floor Insulation Systems
63726	04-126	Update of Roof Truss Designs with Nailing Schedules
63641	04-125	Residential Sources of Lead
63677	04-124	Summary of Research on Water Resistive Barriers

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
63675	04-123	Assessing the Impact of Thickness on the Performance of Stucco Cladding
63673	04-122	Comparison and Analysis of Provincial Builder and Renovator Industry Programs
63635	04-121	Field Testing of "Spillage- Resistant" Appliances
63465	04-119	Diagnosing Attic Performance by Snow- and Frost-Melt Patterns
63620	04-118	Performance of Sprayed Polyurethane Foam on Indoor Foundation Walls
63615	04-117	Analysis of Ventilation System Performance in New Ontario Houses
63612	04-116	Energy Needs and Availability in Housing
63571	04-115	Building Canada: Phase One
63555	04-114	Investigating Claims Against Home and Property Inspectors
63557	04-113	Installation Guide for Residential Wood I-Joist Floor Systems
63547	04-112	Canadian Home Inspectors and Building Officials National Initiative Phase II: Development of National Certification and Accreditation Models
63528	04-111	Characterizing the Condominium Population of the Greater Ottawa Area, 1969-2002
63540	04-110	Strategies for Reducing Building Energy Use Via Innovative Building Envelope Technologies
63511	04-109	Maximum Performance Testing of Popular Water-Efficient Toilet Models
63542	04-108	Garage Performance Testing
63503	04-107	Survey of In-Suite Space and Domestic Hot Water Heating Systems In Multi-Residential Buildings
63400	04-105	Field Testing of an Integrated Ventilation Space Conditioning System for Apartments
63413	04-104	Practical Measures for the Prevention of Basement Flooding Due to Municipal Sewer Surcharge
63407	04-103	House Dust: A Useful Tool To Assess Microbial Contamination In Homes
63390	04-102	Calgary Integrated Design and Sustainable, Affordable Housing Charrette
63365	04-101	Residential Combustion Spillage Monitoring

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
63376	04-100	Improved Make-up Air Supply Techniques
63382	03-134	Safe Housing for Lightly Contaminated Lands
63370	03-133	Residential Combustion Venting Failure - A Systems Approach
63374	03-131	The Canadian Residential Duct and Chimney Survey
63326	03-129	Monitoring the Performance of a Retrofitted Preserved Wood Foundation
63333	03-128	Review of Hygrothermal Models for Building Envelope Retrofit Analysis
63328	03-127	Static and Dynamic Earthquake Testing of Rainscreen Stucco Systems for B.C. Residential Wood-Frame Construction
63339	03-125	Water Penetration Resistance of Windows - Study of Codes, Standards, Testing and Certification
63367	03-124	Water Penetration Resistance of Windows: Study of Manufacturing, Building Design, Installation and Maintenance Factors
63315	03-123	Integrated Community Solutions: Regina's Affordable, Sustainable Housing Design Charrette
63294	03-122	The Impact of Requiring HVAC System Design Submittal on System Performance
63280	03-121	Ventilation Systems for Multi-Unit Residential Buildings: Performance Requirements and Alternative Approaches
63243	03-119	Reduction of Air Intake Contamination in High-Rise Residential Buildings
63257	03-118	Investigation of a Ground-Source Heat Pump Retrofit to an Electrically Heated Multi-Family Building
63237	03-117	Influence of an Electronic Air Cleaner on Indoor Ozone
63225	03-116	Qualification of the Degree of Acoustic Comfort Provided by Multi-Family Buildings - Phase II
63233	03-115	Case Studies of Major Energy Retrofits
63208	03-114	Technology Roadmap for Intelligent Buildings
63223	03-113	Dawson City Demonstration Monitoring Northern Ventilation
63206	03-112	Guidelines for On-Site Measurement of Moisture in Wood Building Materials
63204	03-111	Comparison of Modeled and Monitored Performance of a Wall Insulation Retrofit in a Solid Masonry Building

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
63214	03-110	Integrated Design Charrette for a Sustainable UniverCity Community
63200	03-109	Proper Retrofit Furnace Sizing
63188	03-108	Re-Sale of Leaky Condos: Did the Buyer Know?
63194	03-107	Design of Durable Joints Between Windows and Walls
63192	03-106	Cooling Rates of Houses During Extended Power Failures
63190	03-105	Penetration of Outdoor Particles Into a Residence
63186	03-104	Indoor Particulate and Floor Cleaning
63182	03-103	Incompatible Building Materials
63175	03-102	Seville Theatre Redevelopment Project: Integrated Design Process
63172	03-101	Mandatory Home Inspections on Resale Homes in Ontario
63132	03-100	Rain Water Harvesting and Grey Water Reuse
63102	02-137	Multi-Residential High Efficiency Clothes Washer Pilot Project
63065	02-135	Monitored Performance of an Innovative Multi-Unit Residential Building
62637	02-133	Positive Pressure Ventilation for High-Rise Buildings
63035	02-132	Alternative Wall Systems for Low-Rise Housing
63053	02-130	Evaluation of Vapour Diffusion Ports on Drying of Wood-Frame Walls Under Controlled Conditions
63044	02-129	Investigation Protocol for Evaluation of Post-Tensioned Buildings
63019	02-128	“Northern Landscaping: A Guide to Restoring Plants and Soil in Northern Communities”
63015	02-127	LeBreton Flats District Heating System Performance Assessment
63017	02-125	Healthy Indoors: Achieving Healthy Indoor Environments in Canada
62995	02-124	Dual-Flush Toilet Testing
62997	02-123	Green Roof Infrastructure Workshop
63022	02-120	Study of High-Rise Envelope Performance in the Coastal Climate of British Columbia
62976	02-118	Compliance of Ventilation Systems Installed to Meet Proposed Changes to the 1995 NBCC
63104	02-117	Research Project on the Noise Produced by DWV Pipes Made of Cast Iron, PVC and ABS

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
62894	02-116	Wood Usage in Straw Bale House Construction
62892	02-115	Energy Use in Straw Bale Houses
62890	02-114	Defining the Convective Driving Force for Soil Gas Intrusion into Houses
63116	02-112	Community Energy Management – Foundation Paper
62881	02-109	Composite Masonry Wall Ties
62888	02-108	Noise Isolation Provided by Gypsum Board Partitions
62955	02-105	Achieving Healthy Indoor Environments: A Review of Canadian Options
62944	02-104	Technology Dissemination: Triggering Innovation Adoption in Canada's Home Construction Industry
62950	02-103	Moldy Houses: Why They Are and Why We Care & Additional Analysis of Wallaceburg Data: the Wallaceburg Health and Housing Studies
62968	02-102	Transforming Your Practice: Integrated Design Charrettes for Sustainable Buildings
62876	02-101	Healthy High-Rise: A Guide to Innovation in the Design and Construction of High-rise Residential Buildings
62960	02-100	Final Assessment of Conservation Co-op's Greywater System
62799	01-143	Independent 6 L Toilet Testing Program
62747	01-142	Analysis of the Annual Energy and Water Consumption of Apartment Buildings in the CMHC HiSTAR database
62745	01-141	The Sustainable Home Water System
62743	01-140	2001 Building Failures Study
62741	01-139	The Envelope Drying Rates Analysis Study
62739	01-138	Innovative On-Site Wastewater Treatment
62737	01-137	Evaluation of Urban Drainage for Basement Flood Proofing
62735	01-136	Protection of Basements Against Flooding Trends and Impacts of Drainage Regulations
62731	01-134	Technical Impediments to Use of the Existing On-Site Sewage System of Host House to Service Garden Suite on Same Property
62729	01-133	Lower Cost Alternative for Municipal Sewer Inspection and Maintenance

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
62727	01-132	Assessment of the Takla Landing Contour Trench Wastewater Disposal System
62723	01-130	The Ontario Wall Drying Project Phase 2
62721	01-129	The Ontario Wall Drying Project (1991)
62715	01-126	Monitoring of Cavity Humidity Levels at Canada Life Building
62713	01-125	A Commissionable Air Barrier System for the Building Envelope
62709	01-123	Air Leakage Characteristics, Test Methods and Specifications for Large Buildings
62707	01-122	Air Infiltration from Attached Garages in Canadian Houses
62705	01-121	Canadian Municipal Water Conservation Initiatives
62701	01-119	The BREEAM Green Leaf Environmental Assessment Protocol for Multi-Residential Buildings
62699	01-118	Quality Assurance Protocol Test Drive by CMHC and Polygon Construction Management Ltd
62697	01-117	Stormwater Management Alternatives
62693	01-115	Commissioning Guide for the Toronto Healthy Houses Water Systems
62691	01-114	Peak-Day Irrigation Demand Reduction Monitoring
62689	01-113	Evaluating the Performance of On-Site Sewage Disposal Systems
62687	01-112	Advancing the "Light Grey Option": Making Residential Greywater Use Happen
62685	01-111	Estimation of the Contribution of Phosphorus From On-Site Sewage Disposal Systems to Lakes
62679	01-108	Domestic Cold Water Booster Pump Control Monitoring Pilot Program
62677	01-107	Impact of Added Insulation on Air Leakage Patterns
62675	01-106	Thermostat Settings in Houses with In-floor Heating
62673	01-105	Case Study on Basement Renovations
62671	01-104	Monitoring the Performance of an EIFS Retrofit on a 15-Storey Apartment Building
62669	01-103	Energy Use Patterns in Off-Grid Houses
62667	01-102	"Plex" Housing: A Renewed Tradition

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
62665	01-101	Greenbacks from Green Roofs: Forging a New Industry in Canada
62663	01-100	WATERSAVE: Water Reclamation System Design Tool
62661	00-147	Investigation of Black Soot Staining in Houses
62659	00-146	Ten Steps to a Cooler Planet
62655	00-144	Retrofitting Ventilation Into Low-Rise Housing
62653	00-143	Low Temperature Heating
62651	00-142	Elastomeric Membrane Installations in Parking Garages (1992)
62647	00-140	Compendium of Research on the Conservation Co-op Building
62643	00-138	Performance of a Brick Veneer/Steel Stud Wall System
62635	00-134	The Renovation of an Apartment Building with Solid Masonry Walls
62633	00-133	Renovating Distinctive Homes: 1½ Storey Post-War Homes
62631	00-132	Moisture Properties of Plaster and Stucco for Straw Bale Buildings
62629	00-131	Canadian Home Inspectors & Building Officials National Initiative
62627	00-130	Airtightness of Concrete Basement Slabs
62625	00-129	Extent of Carbonation in Buildings in Toronto
62623	00-128	Parking Structure Deterioration: A Survey and Analysis of its Extent and Influencing Factors
62617	00-125	Deterioration of Parking Structures: Extent, Causes and Repair Considerations
62615	00-124	Cost-Effective Concrete Repair: Research, Investigation, Analysis, and Implementation
62613	00-123	Optimization of Impact Sound Insulation in Steel Frame Floors in Residential Buildings
62611	00-122	Study of the Noise Generated by Heat Pumps in Residential Areas
62607	00-120	Exterior Insulation and Finish Systems (EIFS): Problems, Causes and Solutions
62605	00-119	Measured Pressure Equalized Performance of an Exterior Insulation Finish System (EIFS) Specimen
62603	00-118	Performance Evaluation of Water Repellents for Above-Grade Masonry
62601	00-117	Mechanical and Electrical Systems in Apartments and Multi-Suite Buildings: A Practitioner's Handbook

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
62599	00-116	Voices for Safe Neighbourhoods: Awareness and Assessment Mean Action
62597	00-115	Building Envelope Rehabilitation Consultant Guide and Owner/Property Manager Guide
62595	00-114	Service Life of Multi-Unit Residential Building Elements and Equipment
62593	00-113	Determination of Water Vapour Diffusion Across Brick Masonry Treated With Water-Repellent Sealers
62591	00-112	Wall Moisture Problems in Alberta Dwellings
62589	00-111	Rigid Air Barrier Assemblies
62587	00-110	Review of OHC Building Energy and Water Audits
62585	00-109	Summary Report for Consortium on Fire Resistance and Sound Insulation of Floors: Sound Transmission Class and Impact Insulation Class Results
62579	00-106	Field Tests of Ventilation Systems Installed to Meet the 1993 OBC and 1995 NBC
62577	00-105	Sound Transmission Loss Measurements Through 190 mm and 140 mm Blocks With Added Drywall and Through Cavity Block Walls (1990)
62575	00-104	Corridor Air Ventilation System Energy Use in Multi-Unit Residential Buildings
62573	00-103	Straw Bale House Moisture Research
62571	00-102	Measured Pressure Equalized Performance of an Exterior Insulation Finish System (EIFS) Specimen
62569	00-101	Measured Pressure-Equalized Performance of a Brick Veneer/Steel Stud Assembly
62567	00-100	Measured Pressure-Equalized Performance of Two Precast Concrete Panels
N/A	99-124	Research Project on the Noise Insulation Provided by Exterior Walls in Wood Construction
N/A	99-123	Envelope Moisture Performance Through Infiltration, Exfiltration and Diffusion - EMPTIED
N/A	99-122	Fire Resistance Tests On Small-Scale Floor Assemblies
N/A	99-120	Residential Building Energy Estimation Method based on the Application of Artificial Intelligence

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	99-119	Practical Guidelines for Designers, Contractors, and Developers on the Installation of Air Leakage Control
N/A	99-118	Field Testing to Characterize Suite Ventilation in Recently Constructed Mid- and High-Rise Residential Buildings
N/A	99-117	Drying of Walls with Ventilated Stucco Cladding Parametric Analysis
N/A	99-116	Case Studies of Potential Applications of Innovative Residential Water and Wastewater Technologies
N/A	99-115	Water Quality Guideline and Water Monitoring Tools for Residential water reuse systems
N/A	99-114	On-Site Exterior Wall Monitoring Methods for Air Leakage, Condensation and Rain Penetration Control Problems
N/A	99-113	Development of Generic Engineered Details for the Construction of Residential Tall Walls
N/A	99-112	Qualification of the Degree of Acoustic Comfort in Multi-Family Buildings
N/A	99-111	Comparative Analysis of Residential Construction in Seattle, WA. and Vancouver BC
N/A	99-110	Research Project on the Reduction of Noise Produced by Garage Doors in Multiple Housing Projects
N/A	99-109	Basement Walls That Dry Quickly
N/A	99-108	The Effects of Improved Residential Filtration on Particle Exposure
N/A	99-107	Drying of Stucco-Clad Walls
N/A	99-106	Wind-Driven Rain Study for the Governor's Road Project
N/A	99-104	High-rise Apartment Repair Needs Assessment
N/A	99-103	Quality by Design: A Quality Assurance Protocol for Wood-Frame Building Envelopes in British Columbia
N/A	99-102	Costs and Benefits to Municipalities of Mandatory Residential Fire Sprinklers
N/A	99-101	A Study of Recurring Mold Problems on the Roseau River Reserve, Manitoba
N/A	99-100	The Effect of Improving the Home Environment on Asthma: A Pilot Study
N/A	98-134	The Potential Application of Compartmenting Strategies in High-Rise Residential Buildings
N/A	98-132	Multiple Housing for Community Sustainability

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	98-130	Sound and Fire Performance of Fire Stops in Multi-Family Dwellings
N/A	98-127	Innovative Residential Water and Wastewater Management
N/A	98-126	Effectiveness of an Acoustic Continuous Monitoring System for Post-Tensioned Buildings - An Evaluation Report
N/A	98-125	Effectiveness of an Electromagnetic Wave Propagation Technique for the Condition Assessment of Unbonded Post-Tensioned Tendons: An Evaluation Report
N/A	98-123	Establishing the Protocol for Measuring Air Leakage and Air Flow Patterns in High-Rise Apartment Buildings
N/A	98-122	Field Investigation Survey of Airtightness, Air Movement and Indoor Air Quality in High-Rise Apartment Buildings-Prairie Region
N/A	98-121	Airtightness Tests on Components used to join different or similar materials of the building envelope
N/A	98-120	Noise Isolation Provided by Windows in Residential Projects
N/A	98-119	Protecting Gypsum Sheathing in Insulated Steel-Stud Walls
N/A	98-118	Exterior Insulated Finish Systems (EIFS) Field Performance Evaluation
N/A	98-117	The Influence of Unsteady Pressure Gradients on Compartmentalization Requirements for Pressure Equalized Rainscreens
N/A	98-116	Report on the CSA Questionnaire on Building Commissioning
N/A	98-115	Indoor Air Quality Test Protocol for Highrise Residential Buildings
N/A	98-114	Investigation of the Performance of Gypsum Sheathing
N/A	98-113	Ease Demonstration Project (APCHQ's Advanced House)
N/A	98-112	The Tire Impact Machine as a Standard Device for Rating the Impact Sound Transmission of Floors
N/A	98-111	Strength and Stiffness Characteristics of Steel Stud Backup Walls Designed to Support Brick Veneer
N/A	98-110	Testing of Air Barrier Systems for Wood Frame Walls
N/A	98-109	Air Permeance of Building Materials
N/A	98-108	Results of Fire Resistance Tests on Full-Scale Insulated and Non-Insulated Gypsum Board Protected Wall Assemblies
N/A	98-107	Development of Design Procedures and Guidelines for Reducing Electric Demand by Air Leakage Control in High-Rise Residential Buildings

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	98-104	Vents, Ventilation Drying, and Pressure Moderation
N/A	98-103	An Application Guide for Water Reuse Systems
N/A	98-102	Survey of Building Envelope Failures in the Coastal Climate of British Columbia
N/A	98-101	Regulatory Barriers to On-Site Water Reuse
N/A	98-100	Field Investigation of Indoor Environment and Energy Usage of Mid-Rise Residential Buildings
N/A	97-121	Full Scale Tests of Brick Veneer Steel Stud Walls-Strength and Rain Penetration
N/A	97-119	Evaluation of Pollutant Source Strengths and Control Strategies in Innovative Residential High-Rise
N/A	97-117	Testing for Leaks in Furnace Heat Exchangers
N/A	97-116	Unvented Gas Fireplaces
N/A	97-113	Evaluation of Site-specific Risk Assessment for Contaminated Lands
N/A	97-112	The Potential for Water Efficiency Improvements in Multi-Family Residential Buildings in Canada
N/A	97-111	Residential Water Conservation: A Review of Products Processes and Practices
N/A	97-110	Energy Performance Contracting in Multi-Unit Residential Buildings
N/A	97-109	Energy Performance Contracting and the Residential Sector Technical Report
N/A	97-108	Evaluation of Physical Adaptations and Home Automation Features in Four Housing Units Located in Ville Saint-Laurent, Québec
N/A	97-107	Water Flow by Means of Capillary Action
N/A	97-106	Field Investigation into Airtightness, Air Movement and Quality of Inside Air in Medium-Sized Residential Buildings
N/A	97-105	Optimum Vent Locations for Partially Pressurized Rainscreens
N/A	97-104	Anti-carbonation Coatings for Use on Canadian Buildings
N/A	97-103	Controlling Stack Pressure in High-Rise Buildings by Compartmenting the Building
N/A	97-102	Assessment Repair Strategy for Existing Buildings Constructed with Masonry Veneer Steel Stud Walls
N/A	97-101	High-Rise Apartment Repair Needs Assessment

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	97-100	Energy Audits of High-Rise Residential Buildings
N/A	96-239	Renovation Strategies for Brick Veneer Steel Stud Construction
N/A	96-238	The Rainscreen Wall: A Commissioning Protocol
N/A	96-237	Testing Rainscreen Wall and Window Systems: The Cavity Excitation Method
N/A	96-236	Laboratory Investigation and Field Monitoring of Pressure-Equalized Rainscreen Walls
N/A	96-235	Commissioning and Monitoring the Building Envelope for Air Leakage
N/A	96-234	Expert System Feasibility Study
N/A	96-233	Review of Non-Destructive Test Methods for Assessing Strength, Serviceability and Deterioration in Buildings
N/A	96-232	Impact of Mandatory Sprinklering of Multi-Unit Residential Buildings
N/A	96-231	Air Barrier Details - I & II
N/A	96-230	Exterior Insulation Finish Systems - Laboratory Evaluation of Material and Joints
N/A	96-229	Degradation of Wood Stud Wall Sound Insulation by Electrical Outlets
N/A	96-228	Flanking Sound Transmission in Wood Framed Construction
N/A	96-226	Research Project on Plumbing Noise in Multi-Dwelling Buildings
N/A	96-225	Household Appliance Noise Reduction Through a Hambro Concrete Floor
N/A	96-224	Sound Transmission Through Floors
N/A	96-223	Household Appliance Noise in Multi-Unit Buildings
N/A	96-221	The Design of Mechanical and Electrical Systems in Multi-Unit Residential Buildings - An Advisory Document
N/A	96-220	Airtightness, Air Movement, and Indoor Air Quality in High Rise Buildings
N/A	96-219	Implications of Adopting the National Energy Code for Housing in Ontario
N/A	96-218	Optimizing Residential Forced-Air HVAC Systems
N/A	96-217	Analysis of the Hygrothermal Behaviour of Residential High-Rise Building Components
N/A	96-216	Income and Expense Data for Residential Properties

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	96-215	Field Survey of Heat Recovery Ventilation Systems
N/A	96-214	A Study of the Rainscreen Concept Applied to Cladding Systems on Wood Frame Walls
N/A	96-213	Simulation of Wind-Driven Rain and Wetting Patterns on Buildings
N/A	96-212	Results of Fire Resistance Tests on Small-Scale Insulated and Non-Insulated Gypsum Board Protected Wall Assemblies
N/A	96-211	Performance of Brick Veneer/Steel Stud Wall Systems Subject to Temperature, Air Pressure and Vapour Pressure Differentials
N/A	96-209	The Zero-Cavity and DPV Wall Project
N/A	96-208	An Exploratory Study of the Climatic Relationships Between Rain and Wind
N/A	96-207	A Study of Mean Pressure Gradients, Mean Cavity Pressures, and Resulting Residual Mean Pressures Across a Rainscreen for a Representative Building
N/A	96-206	Straw Bale Moisture Sensor Study
N/A	96-205	Energy Efficient Windows, Lighting & Human Health
N/A	96-203	Molds in Finished Basements
N/A	96-202	A Survey of Problem Homes of the Environmentally Hypersensitive
N/A	96-201	Housing Needs of the Environmentally Hypersensitive Socio-economic / Health Factors
N/A	96-200	Ventilation Systems for New and Existing Houses with Electric Baseboard Heating
N/A	95-211	Performance of Simplified Ventilation Systems
N/A	95-210	Energy Efficiency Technology Impacts - Appliances
N/A	95-207	Development of an Interior Dampproofing Strategy to Prevent Basement Wall Condensation During Curing
N/A	95-205	Duct Cleaning
N/A	95-204	Environmental Site Assessment Interpretation Guidelines
N/A	95-203	Field Tests of Remedial Measures for Houses Affected by Hazardous Lands
N/A	95-202	The Effects of Glass Doors on Masonry Fireplace Spillage and Surface Temperatures
N/A	95-201	Ventilation and Air Quality Testing in Electrically Heated Housing

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	95-200	Evaluation of the Cleanup of Lead Paint Dust in Houses
N/A	94-200	ISO 9000 and the Residential Construction Industry
N/A	93-220	Linear Infrastructure Renewal
N/A	93-218	Concrete Carbonation in Canadian Buildings
N/A	93-216	Cogeneration Systems in Multi-Unit Residential Structures
N/A	93-214	Moisture in Canadian Wood-Frame House Construction Problems, Research and Practise from 1975-1991
N/A	93-211	Access Doors as Sound Barriers in Multiple-Unit Buildings
N/A	93-210	Renovation Strategies for Brick Veneer/Steel Stud Construction Part I: Brick Ties
N/A	93-208	Stormwater Control to Prevent Basement Flooding
N/A	93-207	Carbonation in Canadian Buildings
N/A	93-206	Testing of Fresh Air Mixing Devices
N/A	93-205	Efficient and Effective Air Handling Devices
N/A	93-204	Energy and Power Needs and Availability in Housing
N/A	93-203	The Clean Air Guide: How to Identify and Correct Indoor Air Problems in Your Home
N/A	93-202	Soil Gases and Housing: A Guide for Municipalities
N/A	93-201	Attic Ventilation and Moisture
N/A	93-200	Testing of Canadian Sources for Lead Analysis
N/A	92-207	Energy Conservation Impact of the Residential Rehabilitation Assistance Program
N/A	92-206	Lead Precautionary Measures
N/A	92-205	Evaluation Protocol for Site Toxicity
N/A	92-204	Evaluation Protocol for Site Toxicity
N/A	92-203	Effectiveness of Clean-up Techniques for Leaded Paint Dust
N/A	92-202	Advice on The Use of Chemical Strippers for Removing Leaded Paint
N/A	92-201	Study of Houses Affected By Hazardous Lands
N/A	92-200	Investigating, Diagnosing and Treating Your Damp Basement
N/A	91-206	Effectiveness of a Hard-Connected Duct as a Source of Ventilation and Make-Up Air

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	91-205	Air Tightness, Air Movement and Indoor Air Quality in Quebec High-Rise Apartment Buildings
N/A	91-204	Consumers' Need for a Renovation Advisory Service
N/A	91-203	Air Tightness, Air Movement and Indoor Air Quality in Atlantic Region High-Rise Apartment Buildings
N/A	91-202	Airtightness Testing of Air Barrier Connection Techniques
N/A	91-201	Structural Requirements for Air Barriers
N/A	90-248	Cathodic Protection in the Rehabilitation of Reinforced Concrete Parking Structures
N/A	90-247	Soundproofing Floors Phase 2: The Surface of the Floor
N/A	90-246	Soundproofing Floors Phase 1: The Underside of the Floor
N/A	90-243	Exploring Low-Pollution Design
N/A	90-242	The Development of Test Procedures for Masonry Wall Air Barriers
N/A	90-240	Wet-Sprayed Cellulose Insulation in Wood-Frame Construction
N/A	90-238	Costs and Benefits of Installing Fire Sprinklers in Houses
N/A	90-237	Costs and Benefits of Smoke Alarms
N/A	90-232	Air Tightness, Air Movement and Indoor Air Quality in British Columbia High-Rise Apartment Buildings
N/A	90-231	Investigation of Crawl Space Ventilation and Moisture Control Strategies for B.C. Houses
N/A	90-230	Construction Problems in Multi-Family Residential Buildings
N/A	90-229	Handbook of Prefabricated Construction Systems
N/A	90-227	Design and Construction of Monocoque House
N/A	90-226	Domestic Hot Water Tanks as a Space Heating Appliance
N/A	90-225	Atlantic Canada Wood Framing Moisture Survey
N/A	90-223	Thermal Testing of Wall Sections in the Northwest Territories
N/A	90-221	That Nice Woodsy Smell
N/A	90-219	Technology Transfer and Innovation in the Canadian Residential Construction Industry
N/A	90-218	Reclaiming the Attic

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
N/A	90-217	Advances in Basement Technology
N/A	90-215	The Effectiveness of Low Cost Mechanical Ventilation Systems
N/A	90-213	Attic Moisture Survey
N/A	90-210	Survey of the Medical Impact on Environmentally Hypersensitive People of a Change in Habitat
N/A	90-209	Certified Exhaust Fans: Laboratory and Field Testing
N/A	90-208	Housing for the Environmentally Hypersensitive: A Survey and Examples of Clean-air Housing in Canada
N/A	90-205	Mechanical Systems in High-Rise Residential Buildings
N/A	90-112	Field Study of the Indoor Environment in Mobile Homes

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

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These research highlights are available in HTML and Adobe Acrobat format (pdf) on the CMHC web site at: <http://www.cmhc-schl.gc.ca/publications/en/rh-pr/index.html>

Print copies can be obtained by calling 1-800-668-2642

Order no.	Series no.	TITLE
67506	11-011	Smart Technologies in Affordable Seniors Housing
67512	11-008	Long-term Household Projections — 2011 Update
67316	11-005	2006 Census Housing Series: Issue 12 — Housing Conditions of Households in Canada's Mid-sized Urban Centres (Census Agglomerations)
67272	11-004	Welcoming Home: Social Support as a Benefit of Congregate Living for Persons with Mental Illness
67275	11-003	Smart Grab Bars: A Potential Initiative to Encourage Bath Grab Bar Use in Community-Dwelling Older Adults
67239	11-002	How-to Information Gaps and Priorities for Developers and Builders for Sustainable Residential Developments
67232	11-001	2006 Census Housing Series: Issue 11 — Off-reserve Non-Status Indian Households: Housing Conditions and Core Housing Need
67163	10-022	Government-imposed Charges on New Housing in Canada (2009)
67201	10-021	2006 Census Housing Series: Issue 10 — The Housing Conditions of Canada's Seniors
67181	10-020	2001 Participation and Activity Limitation Survey: Issue 10 — Summary of the Housing Conditions of Canadians with Disabilities Aged 15 Years and Older who are Living in a Household in Core Housing Need
67186	10-019	2006 Census Housing Series: Issue 9 — Inuit Households in Canada
67122	10-018	Changes in Household Net Worth in Canada: 1990-2009
67118	10-017	2006 Census Housing Series: Issue 8 — Households in Core Housing Need and Spending at Least 50% of Their Income on Shelter
67112	10-016	2006 Census Housing Series Issue: 7 — The Housing Conditions of Immigrant Households
67089	10-015	2001 Participation and Activity Limitation Survey: Issue 9 — Profile of the Housing Conditions of Canadian Children with Disabilities
67051	10-014	2001 Participation and Activity Limitation Survey: Issue 8 — Profile of the Housing Conditions of Seniors with Disabilities

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
67045	10-013	2001 Participation Activity Limitation Survey: Issue 7 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Developmental Disability
67043	10-012	2001 Participation Activity Limitation Survey: Issue 6 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Speaking/Communicating Disability
67041	10-011	2001 Participation Activity Limitation Survey: Issue 5 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Learning Disability
67039	10-010	2001 Participation and Activity Limitation Survey: Issue 4 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with an Emotional/Psychological Disability
66998	10-009	Building Community: The Story of Supportive Housing for Young Mothers (SHYM)
67031	10-008	Effect of Snow and Ice on Exterior Ramp Navigation by Wheelchair Users
67033	10-007	Affordable Housing for Families: Assessing the Outcomes
67037	10-006	2001 Participation and Activity Limitation Survey: Issue 3 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Hearing Disability
67035	10-005	2001 Participation and Activity Limitation Survey: Issue 2 — Profile of the Housing Conditions of Canadians aged 15 Years and Older with a Seeing Disability
66954	10-003	Comparing Canadian New Urbanist and Conventional Suburban Neighbourhoods
66808	10-002	Longitudinal Study of Housing for Mental Health Consumer-Survivors
66751	10-001	Overview of the Current State of Knowledge on Societal Outcomes of Housing
66748	09-024	2006 Census Housing Series: Issue 6 — Off-reserve Status Indian Households: Housing Conditions and Core Housing Need
66640	09-023	Inventory and Assessment of Sustainable Community Best Practice Guides for the Canadian Housing Sector
66634	09-022	2006 Census Housing Series: Issue 5 — Canada's Census Metropolitan Areas (CMAs)
66611	09-021	Recycling Catholic Convents and Religious Institutional Buildings into Affordable and Alternative Housing: Three Case Studies
66642	09-020	Livable Lanes: A Study of Laneway Infill Housing in Vancouver and Other Growing B.C. Communities

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
66606	09-019	Extended Characterization of Individuals Experiencing Occasional and Persistent Core Housing Need (2002-2004)
66627	09-018	Transit-Oriented Development (TOD): Canadian Case Studies
66560	09-016	2006 Census Housing Series: Issue 4 — Growth in Household Incomes and Shelter Costs, 1991-2006
66539	09-015	PerthWorks — A Small Town Sustainable Neighbourhood Project
66553	09-014	2001 Participation and Activity Limitation Survey: Issue 1 — Profile of the Housing Conditions of Canadians Aged 15 Years and Older with a Mobility and/or an Agility Disability
66472	09-013	Impact of Economic Cycles on the Incidence of Core Housing Need in Canada
66464	09-012	Housing Persons With an Intellectual Disability in Intentional Communities: Identifying Relevant Physical and Governance Structures
66422	09-011	Preconditions Leading to Market Housing on Reserve
66418	09-010	Rivergreen Ecovillage Design Charrette, Saskatoon
66401	09-009	Government-imposed Charges On New Housing In Canada
66389	09-008	Affordability Challenges and Rental Market Dynamics in Small Nova Scotia Communities with Community College Campuses
66303	09-007	2001 Census Housing Series: Issue 14 Household Mobility and Core Housing Need
66383	09-006	2006 Census Housing Series Issue 3 — The Adequacy, Suitability, and Affordability of Canadian Housing, 1991 - 2006
66360	09-005	2006 Census Housing Series Issue 2: the Geography of Core Housing Need, 2001 - 2006
66381	09-003	Affordability Trends 1981–2001: An Analysis of Selected Metropolitan Regions in Canada
66387	09-002	Settling In: Newcomers in the Canadian Housing Market, 2001–2005
66391	09-001	Low-Income Urban Households Not in Core Housing Need
66337	08-020	Breaking Ground: A Fused Grid Neighbourhood in Calgary
66279	08-018	2001 Census Housing Series Issue 13: Housing Conditions of Women and Girls
66206	08-017	Adapting Your Home to Living with Dementia

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
66141	08-016	2001 Census Housing Series: Issue 12 – Housing Conditions of Visible Minority Households in Canada
66139	08-015	City of Dryden-Sustainable Waterfront Development Plan
66099	08-014	Community Indicators for an Aging Population
66086	08-013	Giving Pedestrians an Edge—Using Street Layout to Influence Transportation Choice
66071	08-012	Taming the Flow — Better Traffic and Safer Neighbourhoods
65959	08-011	Understanding the Status of Visitability in Canada
65674	08-010	Neighbourhood Effects and Concentration Levels of Aboriginal People in Large Canadian Cities
66004	08-009	Adapting Homes to Extend Independence - Case Study of 13 Frail Seniors in Quebec City Suburbs
65935	08-008	The Role of Housing in Aboriginal Student Success - Post-Secondary Institutions in Vancouver
65590	08-006	Feasibility of Risk Management as a Subject for Capacity Building in First Nations Communities
65845	08-004	2006 Census Housing Series Issue 1: Demographics and Housing Construction
65913	08-003	Impacts of the Aging of the Canadian Population on Housing and Communities
65901	08-002	The Dynamics of Housing Affordability
65933	08-001	Life Cycle Costing Tool for Community Infrastructure Planning
65836	07-022	2001 Census Housing Series Issue 11: Profile of the Housing Conditions of Persons with Disabilities
65682	07-018	Housing Situation and Needs of Recent Immigrants in Montreal, Toronto, and Vancouver
65672	07-017	Supportive Housing for Homeless and Hard-to-House Seniors: An In-Depth Case Study
65670	07-016	How Effective Are Bathtub Grab Bars for Stopping a Fall When You Lose Your Balance?
65660	07-015	The Old Grace Hospital Site Charrette
65658	07-013	A Plan for Rainy Days: Water Runoff and Site Planning
65560	07-011	Growth Management and Affordable Housing in Greater Toronto

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
65553	07-010	Housing Issues Facing Seasonal Workers
65550	07-009	Fire Prevention in Aboriginal Communities Manual and DVD
65644	07-008	Urban Acupuncture - A Methodology for the Sustainable Rehabilitation of "Society Buildings" in Vancouver's Chinatown into Contemporary Housing
65429	07-007	Urban Form and Social Inclusion
65427	07-006	An Examination of Life Lease Housing Issues
65431	07-005	Case Study: A Geographic Information System (GIS) as a Tool for First Nations Housing Management, Planning and Safety
65424	07-004	West Hills Subdivision Sustainable Development Charrette
65361	07-003	Wood Buffalo Affordable Housing Project Charrette
65348	07-002	Establishing the National Council on Self-Help Housing
65340	07-001	Housing Options Upon Discharge from Correctional Facilities
64804	06-024	Urban Aboriginal Households: A Profile of Demographic, Housing and Economic Conditions in Canada's Prairie and Territories Region
65308	06-023	Senior's Housing for seniors: A Feasibility Study
65293	06-022	Impact of the 2010 Winter Olympic Games on the Vancouver and Sea-to-Sky Housing Markets
65253	06-021	Structural Analysis of Montreal's Real Estate Market
65231	06-020	Requalification of Suburbs and Regulatory Frameworks: Current Situation and Easing Measures
65235	06-019	Profile of Rooming House Residents
65233	06-018	Establishing On-reserve Housing Authorities
65220	06-017	Profile and Prospects of the Factory-built Housing Industry in Housing
65185	06-016	Gaining Community Acceptance of Affordable Housing Projects and Homeless Shelters
65218	06-015	Brownfield Redevelopment for Housing: Case Studies
65216	06-014	Impacts of Ethnic Changes on the Housing Market in the Rivière-des-Prairies District of Montréal
65183	06-013	Saline Creek Plateau Sustainable Community Design Charrette
65291	06-012	Renovation and Repair Referral and Advisory Service for Seniors and Others Who Are Homeowners

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
65086	06-011	Housing Allowance Options for Canada
65096	06-010	Housing Discrimination Against Victims of Domestic Violence
65048	06-009	The Economic Impact of Residential Construction on Reserves
65011	06-008	Housing for Adults with Intellectual Disabilities
65017	06-007	The Transferability of the "Safe in the City" Approach to Youth Homelessness Prevention in Canada
65025	06-006	Accessory Apartment Regulations in Census Metropolitan Areas in Canada
64990	06-005	Estimates of the Private and Societal Costs and Benefits of Homeownership in Selected Canadian Cities
64984	06-004	Issues, Impediments and Opportunities to Using Designated Land On-reserve for Affordable Housing
65006	06-003	Household Income, Net Worth and Housing Affordability in Canada
64981	06-002	The Rutland Transit Centre Design Workshop - Kelowna, British Columbia
64992	06-001	2001 Census Housing Series Issue 10: Aging, Residential Mobility and Housing Choices
64944	05-038	A Framework for Cost-Benefit Analysis of HASI and RRAP-D
64936	05-037	Student Housing in Canada: Developing a Methodology to Collect Data and Information
64931	05-036	Smart Growth in Canada: A Report Card
64906	05-035	Cost Effectiveness of Eviction Prevention Programs
64900	05-034	An Exploration of Housing Options for Aboriginal People in Edmonton, Alberta and Winnipeg, Manitoba
64903	05-033	Life Lease Supportive Housing: Combining the Best Aspects of Housing and Complex Care
64897	05-032	Sustaining the Non-Profit Housing Sector in British Columbia
64863	05-031	Searchable Database of Supportive Housing for Seniors in Canada
64861	05-030	Architecture for Elder Health in Remote British Columbia: A Nisga'a-led Research
64851	05-029	Issues and Strategies for Shared Accommodation
64031	05-027	Homelessness, Housing and Harm Reduction: Stable Housing for Homeless People with Substance Use Issues

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
64845	05-026	Temporary Supportive Housing for Aboriginal People and Their Families
63931	05-024	Case Study on the Carma Centre for Excellence in Home Building and Land Development
64126	05-023	Costing Mechanism to Facilitate Sustainable Community Planning - Background Research and Costing Framework
64062	05-022	Sustainability, Planning Practice, Housing Form and Environmental Protection in the Toronto Region's Oak Ridges Moraine
63653	05-021	Uses of Development Cost Charges
63975	05-020	A Legal Framework for Supportive Housing for Seniors: Options for Canadian Policy Makers
64121	05-019	Social Housing in the Context of Rural Depopulation
63950	05-018	Homeless Applicants' Access to Social Housing
63972	05-017	Acceptance of Manufactured Housing in First Nations Communities in Atlantic Canada
63970	05-016	City of Yorkton Downtown Redevelopment Planning Charrette
63981	05-014	Variations in Housing Prices in Canada
63948	05-013	Brownfield Redevelopment for Housing: Literature Review and Analysis
63918	05-012	The Impact of Zoning and Building Restrictions on Housing Affordability
63916	05-011	Measuring the Effort Needed to Climb Access Ramps in a Manual Wheelchair
63913	05-010	Critical Success Factors for Community Land Trusts in Canada
63922	05-009	Housing and Non-housing Construction Labour
63906	05-008	Evaluating Arterial Road Configuration Options for a New Community
63844	05-007	Variability in Construction Insurance and Alternative Insurance Solutions
63820	05-006	2001 Census Housing Series Issue 9 Revised: The Housing Conditions of Canada's Seniors
63814	05-005	Maintenance and Renovation: Opportunities to Improve Accessibility to Existing Residential Buildings
63840	05-004	2001 Census Housing Series Issue 8 Revised: Households Spending at least 50% of their Income on Shelter

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
63802	05-003	Housing Stability Validity Study
63812	05-002	Women Offenders: Characteristics, Needs and Impacts of Transitional Housing
63834	05-001	Aboriginal Housing: Local Materials and Design Preferences
63882	04-043	First Nation Economies: A Comparative Perspective. A Socio-Economic Baseline Study Between First Nation Communities and Non-First Nation Communities
63810	04-042	2001 Census Housing Series Issue 7 Revised: Immigrant Households
63797	04-041	Initial Demographic Analysis of the Home-Building Industry and Succession Planning
63795	04-040	Filtering in Housing
63758	04-039	Evolving Housing Conditions in Canada's Census Metropolitan Areas, 1991-2001
63760	04-038	Applying Fused Grid Planning in Stratford, Ont.
63692	04-037	Ideas that Work: Best Practices in Affordable Housing Management
63695	04-036	2001 Census Housing Series Issue 6 Revised: Aboriginal Households
63685	04-035	Developing a Methodology for Tracking Homeless People over the Long Term
63618	04-033	A Review of Training and Delivery Options Concerning Aboriginal Housing
63592	04-032	An International Comparison of Housing Need Indicators in Australia, Canada, England and the United States
63600	04-031	An Examination of the use of Domestic Space by Inuit Families Living in Arviat, Nunavut
63639	04-030	The National Summit on Affordable Homeownership
63596	04-029	Comprehensive Community Planning: Experiences in Aboriginal Communities
63573	04-028	Intergenerational Homesharing and Secondary Suites in Quebec City Suburbs
63580	04-027	2001 Census Housing Series: Issue 5 - Growth in Household Incomes and Shelter Costs, 1991-2001
63575	04-026	Strategies to Preserve the Existing Rental Housing Stock in Greater Vancouver

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
63561	04-025	Refugee Housing Information Needs: Research Conducted in the Region of Niagara
63551	04-024	Assessment of the Outcomes for Habitat for Humanity Homebuyers
63526	04-022	UniverCity: Assessing Consumer Demand for Sustainable Development
63501	04-021	Residential Integration of Youth Migrants in Quebec
63518	04-020	The Impact of the 1988 Basel Capital Accord and Prognosis for the Future
63509	04-019	Housing, Long Term Care Facilities, and Services for Homeless and Low-income Urban Aboriginal People Living with HIV/AIDS
63507	04-018	Lessons Learned from the Use of Performance Assessment Measures to Implement Sustainable Communities
63445	04-017	Transitional Housing: Objectives, Indicators of Success and Outcomes
63463	04-016	Housing and Population and Health - Research Framework
63440	04-014	Residential Intensification Case studies: Built Projects
63372	04-013	Insurance In Residential Construction: An Environmental Scan
63428	04-012	Consumer Support and Protection in Mortgage and Home Equity Based Borrowing: The U.S. Experience and Canadian Comparisons
63434	04-011	Town of Milton Eco-tech Village Pilot Project Urban Design Charrette: Making Choices Towards Sustainability
63438	04-010	Housing Education Program: Eastmain Pilot Project
63415	04-009	Quantifying Universal Design: A Program for Implementation
63584	04-008	2001 Census Housing Series: Issue 4 Revised - Canada's Metropolitan Areas
63403	04-007	2001 Census Housing Series: Issue 3 Revised- The Adequacy, Suitability and Affordability of Canadian Housing
63405	04-006	House Prices, Borrowing Against Home Equity, and Consumer Expenditures
63380	04-005	Quality of Location and Quality-of-Life in Central Montréal Neighbourhoods
63378	04-004	Canadian Housing Fire Statistics
63417	04-003	Tools for Planning Long-Term Urban Sustainability: The Cities ^{PLUS} Design Charrettes

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
63337	04-002	Residential Intensification Case Studies: Municipal Initiatives
63306	04-001	2001 Census Housing Series: Issue 2 Revised - The Geography of Household Growth and Core Housing Need, 1996-2001
63363	03-024	An Examination of First Nations Housing Management Training Programs
63352	03-023	Housing Needs of Low Income People Living in Rural Areas: Literature Review
63330	03-021	Housing Quality and Children's Socioemotional Health
63296	03-019	Housing Options for Elderly or Chronically Ill Shelter Users
63206	03-018	Residential Integration of Youth with Immigrant Backgrounds in Montréal
63285	03-017	2001 Census Housing Series: Issue 1 - Housing Affordability Improves
63292	03-016	Comparison of Provincial and Territorial Rental Practices
63287	03-015	Applicability of a Continuum of Care Model to Address Homelessness
63283	03-014	Governance in Organizations Addressing Homelessness
63255	03-013	Life Lease Housing in Canada: A Preliminary Exploration of Some Consumer Protection Issues
63253	03-012	Housing Needs of Low-Income People Living in Rural Areas: The Implications for Seniors
63278	03-011	Literature Review of Socio-economic Trends Affecting Consumers and Housing Markets
63245	03-010	Evaluation of Optimal Bath Grab Bar Placement for Seniors
63239	03-009	Impact of the Home Buyers' Plan on Housing Demand
63229	03-008	Examining the Housing Choices of Individuals with Disabilities
63231	03-007	Recycle: Lifecycle - How to Renovate for Change
63221	03-006	Family Homelessness: Causes and Solutions
63177	03-005	A Study of Tenant Exits from Housing for Homeless People
63210	03-004	The Housing Construction Industry: Challenges and Opportunities for the 21st Century
63138	03-003	Crisis Situations in Cooperatives: Better Interventions Hinge on a Better Understanding

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
63142	03-002	Ethical and Social Fund Investments in Lower-to-Moderate Income Affordable Rental Housing in Canada: An Assessment
63140	03-001	Home\$ave: Building Investments in Housing Assets
63119	116	Housing Needs of Low-Income People Living in Rural Areas
63078	115	Levies, Fees, Charges and Taxes on New Housing (2002)
63071	114	Effects of Urban Aboriginal Residential Mobility
63055	112	Housing Options for Women Living Alone in Rural Areas
63046	111	Sustainable Community Design Demonstration in Okotoks, Alberta: Testing Consumer Receptivity
62793	110	The Evolving Impact of E-commerce on Canadian Home Ownership Finance Access and Affordability
62791	109	The Cost of FlexHousing
62789	108	Innovative Housing for Homeless Youth
62787	107	Understanding the Relative Underdevelopment of REITs in Canada
62785	106	An Evaluation of Housing Taxation Measures
62783	105	Retrofitting a City: A Guide for Municipalities to Implement a Building Retrofit Program
62781	104	State of Knowledge on Housing Discrimination
62779	103	Sustainable Community Planning and Development: Design Charrette Planning Guide
62777	102	Initiatives to Maintain Rooming House/Single Room Occupancy Stock and Stabilize Tenancies
62775	101	Pro-Home: A Progressive, Planned Approach to Affordable Home Ownership
62773	100	Evaluating Housing Stability for People with Serious Mental Illness at Risk of Homelessness
62771	99	Land Use Issues Impeding Affordable Housing with Mobile Homes
62769	98	Involving Homeless and Formerly Homeless Clients in Projects and Programs to Address Homelessness
62767	97	Sustainable Community Planning and Development: Participation Tools and Practices

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
62765	96	Housing Transition in Single Industry 'Instant Towns'
62757	95	Affordable Housing Mandates: Regulatory Measures Used by States, Provinces and Metropolitan Areas to Support Affordable Housing
62755	94	Levies, Fees, Charges, Taxes and Transaction Costs on New Housing
62753	93	Residualization of Rental Tenure: Attitudes of Private Landlords Toward Low-Income Households
62751	92	The Changing Nature of Work and Future Housing Aspirations of Canadians
62749	91	The Impact of Municipal User Fees on Secondary Suites
62512	90	Disinvestment and the Decline of Urban Neighbourhoods
62510	89	A Guide to Developing a Municipal Affordable Housing Strategy
62508	88	Urban Aboriginal People: Homes, Homelessness and Residential Mobility
62506	87	Survey of Canadian Municipalities: Regulatory Measures for Housing Affordability and Choice
62504	86	Environmental Scan on Youth Homelessness
62502	85	Assessing the Full Costs of Water, Liquid Waste, Energy and Solid Waste Infrastructure in the Fraser Valley Regional District (FVRD)
62500	84	Affordable Housing Solutions: Fifteen Successful Projects
62498	83	User Satisfaction Study of Housing Options for Older Canadians
62496	82	ecoPerth: A Small Rural Community Takes Action on Climate Change
62494	81	Southeast False Creek Design Charrette: Exploring High Density, Sustainable Urban Development
62492	80	Children and Youth in Homeless Families: Shelter Spaces and Services
62490	79	An Analysis of Pension and RRSP Investments in Canadian Rental Housing
62488	78	The Headwaters Project — East Clayton Neighbourhood Concept Plan
62761	77	Housing the Boom, Bust and Echo Generations
62759	76	Skills Shortages in the Residential Construction Industry
62486	75	Residential Street Pattern Design

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
62484	74	Implementing Sustainable Community Development: Charting a Federal Role for the 21st Century
62482	73	FlexHousing™: Building Adaptable Housing
62478	71	Challenges and Prospects for the Building Materials Industry in Canada
62476	70	The Impact of Inheritances on the Housing and Mortgage Markets in Canada Over the Next 10 Years
62472	68	Homeownership Education and Counselling: An Examination of U.S. Experience and its Relevance for Canada
62470	67	Philanthropic Support for Affordable Housing
62468	66	Private Rental Policies and Programs: Review of the International Experience
62466	65	Alternate Tenure Arrangements
62462	63	Municipal Planning for Affordable Housing
62460	62	Demographic Changes and Real Housing Prices in Canada
62458	61	International Experiences with Performance-Based Planning
62456	60	Comprehensive Analysis of Self-Build Housing Experiences
62454	59	Two Reports—Housing Trust Funds: Their Nature, Applicability and Potential in Canada and Guide to Creating Housing Trust Funds in Canada
62452	58	The Housing Conditions of Persons with Health and Activity Limitations in Canada, 1991: A Retrospective
62450	57	City of Toronto Rent Bank Pilot Project Evaluation
62448	56	Supportive Housing for Seniors
63057	55-10	Special Studies on 1996 Census Data: Housing Conditions of North American Indian, Métis and Inuit Households in Canada
63007	55-9	Special Studies on 1996 Census Data: Housing Conditions of Women and Girls, and Female-led Households
62841	55-8	Special Studies on 1996 Census Data: Seniors' Housing Conditions
62446	55-7	Special Studies on 1996 Census Data: Canadian Households in Core Housing Need and Spending at Least Half Their Income on Shelter
62444	55-6	Special Studies on 1996 Census Data: Housing Conditions of Native Households

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
62442	55-5	Special Studies on 1996 Census Data: Changes in Canadian Housing Conditions, 1991-96
62440	55-4	Special Studies on 1996 Census Data: Housing Canada's Children
62438	55-3	Special Studies on 1996 Census Data: Housing Conditions of Immigrants
62436	55-2	Special Studies on 1996 Census Data: Housing Conditions in Metropolitan Areas
62434	55-1	Special Studies on 1996 Census Data: Canadian Housing Conditions
62432	54	Women on the Rough Edge: A Decade of Change for Long-Term Homeless Women
62430	53	Three Studies on Municipal Infrastructure: Alternative Financing Methods, Demand Management and Public-Private Partnerships
62428	52	Regional Road Corridor Design Guidelines
62426	51	Long-Term Outlook on the Demand for Mortgages in Canada
62424	50	Greenhouse Gas Emissions from Urban Travel: Tool for Evaluating Neighbourhood Sustainability
62422	49	Impact of Urban Form and Travel Accessibility on Private Vehicle Use
62420	48	Regulatory Factors in the Retention and Expansion of Rooming House Stock
n/a	47	The Role of Public-Private Partnerships in Producing Affordable Housing: Assessment of the U.S. Experience and Lessons for Canada
62416	46	Municipal Regulatory Initiatives: Providing for Affordable Housing
62414	45	Meeting Seniors' Housing Needs: A Guide for Community Groups
62412	44	The Future of the Internet and the Housing Sector
62410	43	Rental Repair and Renovation in Canada
62408	42	Understanding Private Rental Housing Investment in Canada
62406	41	Documentation of Best Practices Addressing Homelessness
62404	40	Housing Canada's Youth
N/A	39	Changing Working Conditions and Renter Core Housing Need in 1996
N/A	38	Housing Need among North American Indians without Indian Status in Canada, 1991

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
N/A	37	Housing Need among Off-Reserve Status Indian Households in Canada, 1991
N/A	36	Housing Need among the Métis in Canada, 1991
N/A	35	Housing Need among the Inuit in Canada, 1991
N/A	34	Housing Need among Off-reserve Aboriginal Lone Parents in Canada
N/A	33	The Housing and Socio-Economic Conditions of Immigrant Families: 1991 Census Profile
N/A	32	The Housing and Socio-Economic Conditions of Young-Couple Families: 1991 Census Profile
N/A	31	The Housing and Socio-Economic Conditions of Lone-Parent Families: 1991 Census Profile
N/A	30	The Integrated Community: A Study of Alternative Land Development Standards
N/A	29	Energy Performance Contracting and the Residential Sector
N/A	28	The Long-Term Housing Outlook: Household Growth, 1991-2016
N/A	27	The Housing Conditions of Aboriginal People in Canada
N/A	26	Infrastructure costs Associated with Conventional and Alternative Development Patterns
N/A	25	Changing Values, Changing Communities: A Guide to the Development of Healthy, Sustainable Communities
N/A	24	Migration and Mobility of Canada's Aboriginal Population
N/A	23	Housing the New Family: Reinventing Housing For Families
N/A	22	Telework and Home-Based Employment in Canadian Communities
N/A	21	Housing Need in Metropolitan Areas, 1991: Canada's Aboriginal Peoples
N/A	20	Resettling Cities: Canadian Residential Intensification Initiatives
N/A	19	Housing Need in Canada's Metropolitan Areas, 1991 - Part 2
N/A	18	Housing Need in Canada's Metropolitan Areas, 1991 - Part 1
N/A	17	The Long-Term Housing Outlook: Preliminary Projections, 1991-2016
N/A	16	Low Income, Labour Force Participation and Women in Housing Need, 1991

RESEARCH HIGHLIGHTS: SOCIO-ECONOMIC SERIES

Order no.	Series no.	TITLE
N/A	15	Sustainable Residential Developments: Planning, Design and Construction Principles (Greening the "Grow Home")
N/A	14	Changing Canadian Households, 1971-91
N/A	13	The Housing Choices of Immigrants, 1986
N/A	12	Families, Children, and Housing Need in Canada
N/A	11	Canadian Housing Need, 1991
N/A	10	Developing Quality of Life Indicators for Canadian Municipalities
N/A	9	A Socio-Demographic Profile of Canadians Experiencing Health or Activity Limitations
N/A	8	Concentration of Wealth Through Ownership
N/A	7	A Comparison of Housing Needs Measures Used in Canada, The United States and England
N/A	6	Potential Housing Demand Projections
N/A	5	Canadians and Their Housing: Income, Tenure and Expenditure Shifts
N/A	4	The Value of Canada's Homeownership Housing Stock
N/A	3	Accessory Apartments: Characteristics, Issues and Opportunities
N/A	2	The Condition of Canada's Housing Stock
N/A	1	Mobility Characteristics of Canadian Households

TITLE INDEX

- ABORIGINAL OFF-RESERVE HOUSING TRENDS IN A SOCIO-ECONOMIC CONTEXT, 35
- ACHIEVING 90% REDUCTION IN ENERGY CONSUMPTION IN SUSTAINABLE NORTHERN HOUSES, 26
- ACTION RESEARCH ON TRANSPORTATION AND HOUSING AFFORDABILITY, 40
- AIR LEAKAGE CONTROL IN MULTI-UNIT RESIDENTIAL BUILDINGS (MURBS) - DEVELOPMENT OF TESTING AND MEASUREMENT STRATEGIES TO QUANTIFY AIR LEAKAGE, 18
- ALL OUR SISTERS NATIONAL FORUM 2011, 57
- ALTERNATIVE WATER READY HOUSING, 30
- ANALYSIS OF PASSIVE SOLAR DESIGN FEATURES OF EQUILIBRIUM HOUSES, 26
- ASSESSMENT OF THE IMPACT OF A NATURAL GAS FIREPLACE ON HEATING ENERGY CONSUMPTION AND ROOM TEMPERATURES AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY, 17
- BASEMENT WALL INSULATION RETROFIT MONITORING, 9
- BEST PRACTICE GUIDE - WINDOWS, 10
- CANADIAN HOUSING OBSERVER 2010, 45
- CANADIAN HOUSING OBSERVER 2011, 45
- CANADIAN RADON MITIGATION CASE STUDIES, 22
- CAPACITY STUDY OF THE CANADIAN PREFABRICATED PANEL MANUFACTURING INDUSTRY, 42
- CASE STUDIES OF GREEN INFRASTRUCTURE PERFORMANCE AND COSTS, 46
- CASE STUDIES OF THE CRITICAL PRECONDITIONS FOR ACHIEVING MARKET-BASED APPROACHES TO HOUSING IN FIRST NATION COMMUNITIES, 35
- CASE STUDY FOR THE INTEGRATION OF TECHNICAL, REGULATORY AND COMMERCIAL, SUPPORT FOR HEAT RECOVERY VENTILATORS IN THE UK/IRELAND MARKETS, 42
- CERTIFICATION OF SENIORS' RESIDENCES IN QUEBEC: FACILITATING AND CONSTRAINING FACTORS, 51
- CITIZEN'S GUIDE TO DENSITY: UNDERSTANDING RESIDENTIAL DENSITIES IN THE GREATER GOLDEN HORSESHOE, 49
- CMHC/NWTHC NORTHERN SUSTAINABLE HOUSE (A-BASE), 24
- COHORT PROGRESS TOWARD HOUSEHOLD FORMATION AND HOMEOWNERSHIP: A COMPARISON OF IMMIGRANT VISIBLE MINORITY GROUPS IN LOS ANGELES AND TORONTO, 38
- COMMUNITY ENVIRONMENTAL (CARBON FOOTPRINT) REDUCTION PROJECT, 55
- COMPARING PREVIOUS TO CURRENT LOCATION: URBAN FORM, SELF-SELECTION BIAS AND TRAVEL PATTERNS, 37
- COMPENDIUM OF CANADIAN ACCESSIBLE HOUSING CODES AND STANDARDS, 47
- COMPRESSED EARTHBLOCK (CEB) - STRAWBALE HYBRID BUILDING SYSTEM, 10
- CONTRIBUTION TO THE INDUSTRIAL RESEARCH CHAIR IN ALLERGENS AND TOXINS FROM MOLDS IN THE BUILT ENVIRONMENT, 23

TITLE INDEX

- DESIGN AND SPECIFICATION OF NET ZERO ENERGY BUILDING ENVELOPE RETROFITS, 25
- DESIGN OF WIND-LOADS FOR RESIDENTIAL PHOTOVOLTAIC SYSTEMS, 19
- DESIGN SURVEY OF LOW ENVIRONMENTAL IMPACT HOUSING, 12
- DEVELOPMENT OF A POST OCCUPANCY EVALUATION PERFORMANCE ASSESSMENT FRAMEWORK FOR MURBS, 18
- DEVELOPMENT OF AN ENERGY MANAGEMENT PILOT PROGRAM FOR SOCIAL HOUSING IN ONTARIO, 12
- DEVELOPMENT OF AN OCCUPANT ENGAGEMENT STRATEGY TO SUPPORT ENERGY AND WATER EFFICIENCY IN MULTIPLE UNIT RESIDENTIAL BUILDINGS, 18
- DO SOCIAL HOUSING ALLOCATION METHODS HAVE AN EFFECT ON THE WELL-BEING AND HEALTH OF FAMILIES? A COMPARISON OF LOW-RENT HOUSING PROGRAMS AND RENT SUPPLEMENT PROGRAMS IN MONTRÉAL, 53
- EARTH TUBES - APPLICABILITY IN THE CANADIAN CLIMATE, 27
- ECONOMIC QUANTIFICATION OF THE “SOFT” BENEFITS OF GREEN INFRASTRUCTURE, 46
- EFFETS PROBABLES DU VIEILLISSEMENT DE LA POPULATION SUR LE MARCHÉ DE L'HABITATION : ÉTUDE PROSPECTIVE : RAPPORT FINAL, 51
- ENERGY AND WATER EFFICIENCY RETROFITS FOR MULTI-UNIT RESIDENTIAL BUILDINGS, 13
- ENERGY BLOCKS: TOOLS FOR AFFORDABILITY THROUGH ENERGY, CARBON AND COST REDUCTIONS, 13
- ENERGY CONSERVATION IN CANADIAN BUILDINGS USING ADVANCED THERMAL INSULATION, 13
- ENERGY INTENSITY OF WATER SYSTEMS, 31
- ENERGY PERFORMANCE OF DIFFERENT ENERGY RETROFIT STRATEGIES FOR RESIDENTIAL WOOD-FRAME WALL SYSTEMS USING VIP - FEWF EVALUATION, 14
- ENGINEERED BUILDING ENVELOPE SYSTEMS FOR OUTDOOR/INDOOR CLIMATE EXTREMES, 19
- ENVIRONMENT SCAN ON CANADIAN SENIORS' TRANSITIONS TO SPECIAL CARE FACILITIES, 51
- EQUILIBRIUM™ COMMUNITY DEMONSTRATION INITIATIVE, 27
- ESSENTIAL SERVICE WORKERS AND HOUSING AFFORDABILITY: INTERNATIONAL POLICY RESPONSES, 40
- ESTIMATING THE COSTS AND BENEFITS OF HOME RENOVATIONS TO ACCOMMODATE AGING AND DISABILITY, 48
- ESTIMATING THE GREEN HOUSE GAS IMPLICATIONS OF LAND-USE PATTERNS: A METHODOLOGY FOR LOCAL GOVERNMENTS, 55
- EVALUATING THE EFFECTIVENESS OF WALL-WINDOW INTERFACE DETAILS TO MANAGE RAINWATER, 10
- EVALUATION OF THE IMPACT OF ENERGY EFFICIENCY AND SUSTAINABLE DEVELOPMENT MEASURES ON AFFORDABLE HOUSING, 14
- EVALUATION OF WATER CONSERVATION PRACTICES, 31
- EXAMINATION INTO GOVERNMENT IMPOSED CHARGES ON NEW HOUSING CONSTRUCTION: FINAL REPORT, 50

TITLE INDEX

- EXTERIOR WINDOW SHADING DEVICES FOR THE CANADIAN CLIMATE, 11
- FAMILIES LIVING DOWNTOWN: CHALLENGES AND BENEFITS, 55
- FEASIBILITY OF SMART HOME TECHNOLOGY IN AFFORDABLE SENIORS HOME : FINAL REPORT, 52
- FLANKING SOUND TRANSMISSION IN WOOD FRAME MULTI-FAMILY DWELLINGS PHASE 5:
CONSOLIDATION FOR ELECTRONIC DESIGN GUIDE, 9
- FUNDING SUPPORT FOR THE NORTHERN SCIENTIFIC TRAINING PROGRAMME, 24
- GHANAIAN AND SOMALI IMMIGRANTS IN TORONTO'S RENTAL MARKET: A COMPARATIVE CULTURAL
OVERVIEW OF HOUSING PROBLEMS AND COPING STRATEGIES, 41
- GLOSSARY OF HOUSING TERMS - UPDATE, 20
- GOVERNANCE CHALLENGES IN NON-PROFIT HOUSING ORGANIZATIONS, 38
- GREEN RENOVATION GUIDE FOR RENOVATORS, 26
- HEATING-SEASON ENERGY SAVINGS FROM EXTENSIVE GREEN ROOFS, 17
- HOUSING DIFFICULTIES AND HOUSING PROGRAMS IN THE LIVES OF ABUSED WOMEN, 58
- HOUSING, NEIGHBOURHOODS AND CANADIAN CHILDREN'S HEALTH OUTCOMES, 36
- HOUSING PROFILE OF ABORIGINAL PEOPLE IN CANADA BASED ON THE 2001 ABORIGINAL PEOPLES
SURVEY, 35
- IMPROVED PREDICTION OF SEISMIC RESISTANCE OF PART 9 HOUSES, 20
- IN PURSUIT OF SUSTAINABLE NEIGHBOURHOOD DEVELOPMENT PATTERNS: THE NEXT STEP - A ROAD
SAFETY EVALUATION OF ROAD NETWORK PATTERNS, INCLUDING CMHC'S FUSED GRID ROAD
NETWORK PATTERN, 50
- INCIDENCES DU VIEILLISSEMENT DE LA POPULATION SUR LE PRIX RÉEL DES LOGEMENTS AU CANADA, 52
- INDEX FOR LANDSCAPE GUIDE FOR CANADIAN HOMES, 55
- INNOVATIVE BUILDINGS AND CONTINUING EDUCATION ARTICLES FOR ARCHITECTS, 19
- INTEGRATED DESIGN AND EVALUATION OF A CONSTRUCTED NORTHERN SUSTAINABLE HOUSE (E/2
PROTOTYPE), 25
- INVESTIGATION OF THE PERFORMANCE AND USE OF VACUUM INSULATED PANELS IN NEW AND EXIST-
ING WOOD FRAME CONSTRUCTION, 14
- LEAST COST ANALYSIS FOR CANADIAN NEW HOUSING, 14
- LITERATURE REVIEW ON HISTOPLASMA, BLASTOMYCES AND CRYPTOCOCCUS GATTII AND THE IMPLI-
CATIONS FOR THE DESIGN, OPERATION AND MAINTENANCE OF HOUSING, 23
- LOCATION AND GASOLINE PRICE AS COFACTORS IN HOME PRICES, 45
- MARKET INTELLIGENCE AND OPPORTUNITY STUDY ON THE NORTH AND SOUTH CAROLINA HOUSING
MARKET, 43
- MEASURING THE EMPLOYMENT EFFECTS OF RESIDENTIAL CONSTRUCTION AND RENOVATION, 40

TITLE INDEX

- MEASURING THE SOCIAL, ECONOMIC, AND ENVIRONMENTAL OUTCOMES OF GOOD HOUSING: FINAL REPORT, 46
- MOBILITY EXPERIENCES OF IMMIGRANTS AND THE CANADIAN-BORN, AND HOMEOWNERSHIP, 41
- NEXT GENERATION WATER BALANCE MODEL, 31
- NEXT STEPS: EVALUATING TRANSITIONAL HOUSING FOR THE HOMELESS, 39
- NSERC CANADIAN UNIVERSITY NETWORK ON "SOLAR ENERGY UTILIZATION IN BUILDINGS", 27
- PATTERNS OF USE OF DIFFERENT TOILET GRAB BAR CONFIGURATIONS, 47
- PAYBACK PERIOD FOR: BUILDING FEATURES IN SINGLE FAMILY DETACHED DWELLINGS, 28
- PERFORMANCE ANALYSIS OF RESIDENTIAL HOT WATER EFFICIENCY DEVICES, 15
- POTENTIAL FOR CANADA'S WOOD-FRAME HOUSING SYSTEM IN DISASTER RECONSTRUCTION, 43
- POTENTIAL OF REPLOTTING TO IMPROVE THE SUSTAINABILITY OF CITIES IN WESTERN CANADA, 56
- PRACTICAL DESIGN GUIDE FOR URBAN HEAT ISLAND MITIGATION MEASURES, 37
- PROFILE HOUSING CONDITIONS OF PERSONS WITH DISABILITIES, 47
- RACKING PERFORMANCE OF WOOD SHEAR WALLS CONSISTING OF FINGER-JOINTED STUDS, 20
- RAINWATER HARVESTING DESIGN MANUAL, 31
- REGENT PARK LONGITUDINAL HEALTH STUDY, 54
- REGIONAL PILOT DEMONSTRATION OF NET ZERO ENERGY HEALTHY HOUSING, 28
- REGULATIONS IN THE RESIDENTIAL CONSTRUCTION INDUSTRY IN QUEBEC AND THEIR EFFECTS ON THE COST OF RENTAL HOUSING, 49
- RESEARCH ON EMERGING MARKETS FOR CANADIAN PRODUCTS & SERVICES, 43
- RESEARCH PROJECTS AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY (CCHT), 15
- RETROFITTING CRAWL SPACES - FIRST NATIONS DEMONSTRATION, 9
- REVIEW OF THE RELATIONSHIP BETWEEN HOUSE VENTILATION RATES AND HEALTH, 22
- ROLE OF AFFORDABLE HOUSING IN THE WELL-BEING OF CHILDREN: AN EXPLORATORY LONGITUDINAL STUDY, 37
- ROLE OF PUBLIC HEALTH INSPECTORS IN MAINTAINING HOUSING IN NORTHERN AND RURAL COMMUNITIES, 39
- SEISMIC ISOLATION OF RESIDENTIAL WOOD FRAME AND LOW- AND MEDIUM-RISE MASONRY BUILDINGS, 21
- SELECTION OF LOW-E COATED GLASS FOR OLDER RESIDENTIAL HIGH-RISE APARTMENT BUILDINGS IN CANADA, 11
- SIMPLE DESIGN TOOLS FOR THE ASSESSMENT OF UPHOLSTERED FURNITURE BURNING IN HOME FIRES, 16
- SMALL FOOTPRINTS ON UNBROKEN LAND / HEALING BROKEN LAND, 36

TITLE INDEX

SMART GRAB BARS: A POTENTIAL INITIATIVE TO ENCOURAGE BATH GRAB BAR USE IN COMMUNITY DWELLING OLDER ADULTS, 53

SOCIAL AND AFFORDABLE HOUSING REDEVELOPMENT AND REGENERATION PROJECTS, 54

STATE OF MUNICIPAL HOUSING ACTIVITY IN METRO VANCOUVER: AFFORDABILITY AND DIVERSITY, 41

STUDIES TO ADVANCE ACCEPTANCE OF WOOD-FRAME IN MULTI-UNIT DWELLINGS IN FRANCE, 43

STUDY OF ENERGY CONSERVATION OPPORTUNITIES IN THE RETROFIT OF BUILDING ENVELOPES IN LARGE MULTI-UNIT HIGH-RISE RESIDENTIAL BUILDINGS, 15

SUPER E PROGRAM IN FOREIGN MARKETS, 44

SUPER E PROGRAM/NET ZERO IN FOREIGN MARKETS, 44

SUPPORT FOR IAQ/HOUSE CHARACTERIZATION AND DATA ANALYSIS - MCMASTER UNIVERSITY CHILD STUDY, 22

SUPPORT FOR NATIONAL ON-SITE WASTEWATER RESEARCH PROGRAM, 32

SUPPORT FOR THE CREATION OF A NATIONAL WATER REUSE PROGRAM, 32

SUPPORT FOR THE CSA STANDARD FOR RESIDENTIAL POTABLE WATER CISTERNS, 32

SUPPORT FOR THE DEVELOPMENT OF A NEW CSA STANDARD ON FANS AND MOTORS, 16

SUPPORT FOR THE DEVELOPMENT OF A TECHNOLOGY ROADMAP (TRM) FOR SUSTAINABLE HOUSING IN CANADA, 29

SUPPORT FOR THE GREENING OF THE CÔTEAU VERT PROJECT, 29

SUPPORTIVE/SUPPORTED HOUSING WITHIN SOCIAL HOUSING, 54

SURVEY OF CHARACTERISTICS IN HOMES WITH ELEVATED RADON LEVELS, 23

SURVEY OF ISSUES AND CHALLENGES TO PROVIDING MARKET HOUSING FINANCE IN THE NORTHERN TERRITORIES, 44

SURVEY OF REGULATORY BARRIERS TO SUSTAINABLE HOUSING, 29

SUSTAINABILITY INDICATORS FOR COMPUTER-BASED TOOLS IN COMMUNITY DESIGN, 56

SUSTAINABLE BUILDING ENVELOPE RETROFITS FOR EXISTING HOUSES, 30

SUSTAINABLE BUILDING SCIENCE BEST PRACTICES, 21

SUSTAINABLE HOUSING IN THE NORTH, 36

TESTING PROTOCOL FOR ALTERNATIVE RESIDENTIAL WASTEWATER TREATMENT, 33

THERMAL, ENERGY AND MOISTURE PERFORMANCE OF ALTERNATIVE (NON-WOODFRAME) HOUSING SYSTEMS, 16

THERMAL PERFORMANCE OF WINDOW ASSEMBLIES, 12

UNDERSTANDING THE SMART GROWTH GAP, 56

UPDATE AND ENHANCE CANADIAN WOOD FRAME CONSTRUCTION, 21

TITLE INDEX

UPDATE NEIGHBOURHOOD COMPARISON WEB TOOL, 57

UPDATE OF PRACTICES FOR SUSTAINABLE COMMUNITIES, 30

UPDATE OF SUSTAINABLE PLANNING AND DEVELOPMENT WORKSHOP FOR SMALL COMMUNITIES, 57

UPDATING AND ENHANCING CMHC PUBLICATIONS REGARDING CONSTRUCTION AND RENOVATION OF HOMES FOR PEOPLE WITH DISABILITIES, 48

UPDATING AND EXPANDING THE NUMBER OF MUNICIPALITIES IN THE SETTLING IN CANADA MINI WEBSITE, 42

UPDATING CMHC'S ON-LINE CONDOMINIUM BUYERS' GUIDE, 45

UPDATING THE PUBLICATION "HOUSING FOR OLDER CANADIANS: THE DEFINITIVE GUIDE TO THE OVER 55 MARKET", 53

UPDATING "YOUR GUIDE TO RENTING A HOME" AND "GUIDE TO CO-OP HOUSING", 38, 49

USING PHOTOVOICE TO EVALUATE THE IMPLEMENTATION OF SUPPORTIVE HOUSING IN OTTAWA, 39

WATER PENETRATION THROUGH THINNER VENEER WALL, 24

WELCOMING HOME: SOCIAL SUPPORT AS A BENEFIT OF CONGREGATE LIVING FOR PERSONS WITH MENTAL ILLNESS, 48

WETLAND WASTEWATER TREATMENT FOR ISOLATED DWELLINGS, 33

WOOD FRAME CONSTRUCTION IN RURAL AREAS OF CHINA, 44

