

**COMPENDIUM
OF
RESEARCH 2005 & 2006**

Issued also in French under the title: ***Compendium de recherche 2005 et 2006***

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INTRODUCTION

Canada Mortgage and Housing Corporation, the federal Government's housing agency, is responsible for administering the *National Housing Act*.

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research. CMHC therefore has a statutory responsibility to make widely available, information which may be useful in the improvement of housing and living conditions.

This Compendium of Research has been compiled to publicize and increase access to the research reports produced under research programs sponsored by the Corporation during 2005 and 2006. A few reports not included in the earlier compendiums have also been added.

ARRANGEMENT

The abstracts of completed research reports and publications are arranged by broad subject areas. A title index can be found at the end of the Compendium.

AVAILABILITY OF REPORTS

Most research reports are available from the Canadian Housing Information Centre.

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ABORIGINAL HOUSING

ACCEPTANCE OF MANUFACTURED HOUSING IN FIRST NATIONS COMMUNITIES OF THE ATLANTIC REGION

First Nations are growing population groups that experience a disproportionate share of housing-related challenges and can benefit from an increased number of affordable and quality housing options. The aim of this project was to identify barriers to, and opportunities for, economic and social development that can be derived from the broader adoption of manufactured housing on First Nations reserves in Atlantic Canada.

The study explores provision of manufactured housing as one of the approaches to address housing needs on First Nations reserves in Atlantic Canada by identifying:

- challenges to greater acceptance of manufactured housing;
- potential strategies to overcome these challenges; and
- economic and social development benefits that may be derived from manufactured housing.

Conducted by Dr. Ausra Burns, Research Associate, Rural and Small Town Programme, Mount Allison University. Ottawa: Canada Mortgage and Housing Corporation, 2004. 38 pages (804 KB)

Note: No. 05-017 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/ChicR_housing_1rst_nation_web.pdf

ARCHITECTURE FOR ELDER HEALTH IN REMOTE BRITISH COLUMBIA: A NISGA'A-LED RESEARCH

Influences of housing on health and well-being of First Nations Elders in remote British Columbian communities are explored in this research, which has been completed under the CMHC External Research Program. The research is community-led and facilitated by architect Dr. Nancy Mackin, following principles of participatory research and protocols specified by the Tri-Council and Wilp Wilxo'oskwhl Nisga'a, the Nisga' University College under the direction of President and CEO Deanna Nyce.

The study investigated interrelationships between architecture and health over time. The goal is to understand the changing context of Elder housing so that landscape, architectural and planning decisions affecting Elders' lives can be based upon an understanding of processes that influence community health.

Prepared by Nancy Mackin and Deanna Nyce. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 123 pages (5908 KB)

Note: No. 05-030 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64861)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/architectureelderhealth.pdf

ABORIGINAL HOUSING

BASIC HOME MAINTENANCE: FIRST NATIONS HOME OCCUPANTS' GUIDE

This home occupants' guide contains practical "how to" help for maintenance and repair work to keep a home in top condition. Performing minor repairs as soon as a problem appears will often prevent further damage and more costly repair at a later date. Benefits to home maintenance include saving money, making homes healthier, and making living environments more enjoyable for home occupants and the community.

The guide therefore helps First Nations' home occupants save money with a wide range of tips. The manual provides an introduction to basic home maintenance along with a home maintenance assessment checklist, and outlines advice on repairing siding, roofing, walls and ceilings, faucets and toilets, etc. The manual covers the maintenance of septic systems, healthy housing and indoor air quality, and provides advice on painting, cleaning, water heaters, controlling humidity and mold, heating and ventilation, appliance preventive maintenance and home safety issues.

Easy-to-understand instructions come complete with detailed illustrations and a glossary of housing terms.

Funded by Canada Mortgage and Housing Corporation, B.C. and Yukon Region, Aboriginal Capacity Development. Ottawa: CMHC, c2004. 117 pages

Nota: Aussi disponible en français sous le titre : Introduction à l'entretien des maisons : guide pour les occupants des Premières nations (OPIMS 63588)

AVAILABILITY : CMHC Information Products (Order number 63587)

ECONOMIC IMPACT OF RESIDENTIAL CONSTRUCTION IN FIRST NATION COMMUNITIES: FINAL REPORT

The primary purpose of this study is to estimate the local economic impact of new residential construction, renovations and related infrastructure development projects in First Nation communities across Canada.

The secondary purpose is to analyze the relationship between the impact of residential construction and the level of economic development in the communities. In particular, the authors examine how the relative development of a First Nation affects the overall impact of new housing construction and renovation on that community. Progress in economic development, strategies and barriers are also examined.

The report is structured in a linear fashion and proceeds from a description of the First Nation territories to the estimates of economic impacts. The impact estimation methodology, sample selection, the survey instrument and response patterns, and findings are addressed successively.

Prepared by Informetrica Limited. Ottawa: Canada Mortgage and Housing Corporation, 2006. 88 pages (1286 KB)

Note: No. 06-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65048)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Economic%20Impact\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Economic%20Impact(w).pdf)

ABORIGINAL HOUSING

EXAMINATION OF FIRST NATIONS HOUSING MANAGEMENT TRAINING PROGRAMS

First Nations housing managers face many challenges in effectively performing their duties: remoteness, limited training funds, cultural and language issues, etc. The primary goal of this research project was to identify what skills a housing manager in a First Nations community needs to be effective and what training opportunities are available or required. This study found that current training that meets the unique needs of First Nations housing managers is very limited, and made numerous recommendations on how to fill the gaps.

Prepared by Neegan Burnside Engineering and Environmental Ltd. CMHC Project Officer: Marcelle Marie Gareau. Ottawa: Canada Mortgage and Housing Corporation, c2004. 78 pages (5591 KB)

Note: No. 03-024 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/RR_web_feb10.pdf

EXPLORATION OF HOUSING OPTIONS FOR ABORIGINAL PEOPLE IN EDMONTON, ALBERTA AND WINNIPEG, MANITOBA: FINAL REPORT

This study examined the housing situation and issues of Aboriginal people in Edmonton, Alberta and Winnipeg, Manitoba, and homeownership programs that target Aboriginal participants. The research summarized relevant literature and examined available statistical data. Twenty key informant interviews were conducted with representatives of organizations that provide housing and other related services to Aboriginal people in Edmonton and Winnipeg. Those who participated in the interviews were individuals who had experience working directly with, and providing a variety of services to, Aboriginal people in one of the cities of interest, and/or were professionals with in-depth knowledge and expertise on urban Aboriginal housing issues. Twelve interviews were conducted in Edmonton, while the remaining eight were conducted in Winnipeg.

Following completion of the interviews, a household survey was conducted with 60 Aboriginal households in Edmonton and 62 in Winnipeg. All survey respondents were over 18 years of age, of self-reported Aboriginal ancestry and resided in the city at the time of the survey.

The review of the literature and key informant interviews were utilized to identify “Initiatives” that could be potential case studies. The research encountered difficulty in identifying Homeownership Initiatives that were oriented specifically towards Aboriginal households in Edmonton and Winnipeg, so the selection criteria was broadened to include homeownership initiatives for all low-to moderate-income households in Edmonton and Winnipeg. The list of potential case studies included a mixture of education programs, rent-to-own home ownership programs, and subsidized housing agencies for Aboriginal renters.

Final selection of case studies was based on the willingness of the agency to participate and the relevance of the initiative to the research. Seven case studies were completed: three in Edmonton and four in Winnipeg. In Edmonton these included: the HOME Program, the Central Edmonton Community Land Trust and the Aboriginal Homeownership Workshops. In Winnipeg these included: the Spence Neighbourhood Association, the North End Housing Project, the Winnipeg Housing Rehabilitation Corporation and Payuk Inter-Tribal Housing Cooperative.

Prepared by R.A. Malatest & Associates Ltd. CMHC Project Officer: Marcelle Gareau. Ottawa: Canada Mortgage and Housing Corporation, 2005. 329 pages (26364 KB)

ABORIGINAL HOUSING

Note: No. 05-034 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64900)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_An%20Exploration\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_An%20Exploration(w).pdf)

FIRST NATION ECONOMIES: A COMPARATIVE PERSPECTIVE. A SOCIO-ECONOMIC BASELINE STUDY BETWEEN FIRST NATION COMMUNITIES AND NON-FIRST NATION COMMUNITIES

This report discusses regional and First Nation economic development, on-reserve housing programs and the connection between housing and economic development. Five factors are used to develop a framework for analysis of local economic development: connection to cities, economic base, local capacity, housing and recent growth. Conclusions focus on the different economic development experiences of First Nation and non- First Nation communities.

Prepared by Informetrica Limited. Authors: Bert Waslander and Tyler Minty. CMHC Project Officer: Tan M. Crombie. Ottawa: Canada Mortgage and Housing Corporation, 2004. 57 pages (396 KB)

No. 04-043 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/First_Nation_Economics%20\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/First_Nation_Economics%20(w).pdf)

HOUSING DISCRIMINATION AND ABORIGINAL PEOPLE IN WINNIPEG AND THOMPSON, MANITOBA

The objectives of this project were:

- 1) to obtain baseline data on the nature and extent of discrimination in housing that Aboriginal people experience - case studies focus on Winnipeg and Thompson, Manitoba;
- 2) to quantitatively and qualitatively examine the key variables associated with housing discrimination for Aboriginal people, including such factors as residential migration/mobility and social cohesion.

Prepared by Corrado Research and Evaluation Associates Inc. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2005, c2003. 77 pages (716 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Housing_Discrimination\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Housing_Discrimination(w).pdf)

ABORIGINAL HOUSING

ROLE OF HOUSING IN ABORIGINAL STUDENT SUCCESS - POST SECONDARY INSTITUTIONS IN VANCOUVER

The research asked the question: What role does housing play in the recruitment and retention of post-secondary Aboriginal students? The research was conducted from July 2003 to March 2004 at six post-secondary institutions in the area of Vancouver, British Columbia.

A methodology, based on Indigenous values, incorporated both quantitative and qualitative methods and was conducted according to principles of respect, responsibility, relevance, and reciprocity. A survey with a mix of closed and open-ended questions was administered to students. Qualitative data was gathered through student sharing circles/discussion groups, and individual interviews with staff members from student services and Native housing organizations. The scope of the research questions and the analytic framework were based on a “wholistic” theoretical approach. The term “wholistic” was used to portray relationships among oneself, family, community, nation and environment; as they interact with the four human development realms of the spiritual, emotional, physical and intellectual.

Four factors of access, family matters, cultural relationships, and community relationships were found to be critical to Aboriginal student recruitment and retention. Regarding recruitment, students were not deterred from attending their post-secondary institution even if they had not confirmed housing prior to starting their studies. However, 60% of students indicated that they had problems accessing adequate housing. Affordability, location, condition and safety were the four most important characteristics of what students considered “adequate.” Hindering factors were lack of finances, racist landlords, lack of preparedness and knowledge in knowing where and how to look for housing, and lack of family housing for students.

Regarding retention, housing was the second most important factor for influencing the completion of students’ studies. Unlike the majority of non-Aboriginal Canadian students, just over one-half of the Aboriginal student respondents had a family. The students’ extended family also impacted upon students’ housing situations. Native Housing and on-campus family housing were very important helping factors for student retention. Post-secondary institutions and Native housing that provided culturally friendly and relevant physical/social space – where students could practice ceremony and develop a sense of cultural community contributed significantly to retention.

Prepared by Dr. Jo-ann Archibald ... et al. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2004. 128 pages (2542 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Role%20of%20Housing\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Role%20of%20Housing(w).pdf)

ABORIGINAL HOUSING

TEMPORARY SUPPORTIVE HOUSING FOR ABORIGINAL PEOPLE AND THEIR FAMILIES

This study examined temporary supportive accommodations related to accessing medical care, education and other vital services for Aboriginal people in four northwestern Ontario centres: Fort Frances, Kenora, Sioux Lookout and Thunder Bay. The research also examined related needs, preferences and the challenges of providing temporary housing for Aboriginal people.

A primary objective of the research was determining the types of temporary accommodations Aboriginal people use and their experiences in using temporary housing. The research sought to answer the questions of why they need temporary housing, what challenges they face, whether they feel their needs are met and what they believe could be improved.

Prepared by Chignecto Consulting Group Inc. CMHC Project Officer: Marcelle Marie Gareau. Ottawa: Canada Mortgage and Housing Corporation, 2004. 39 pages (1928 KB)

Note: No. 05-026 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Temporary%20supportive%20housing%20for%20aboriginal%20people\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Temporary%20supportive%20housing%20for%20aboriginal%20people(w).pdf)

ACOUSTICS

FLANKING TRANSMISSION IN MULTI-FAMILY DWELLINGS: PHASE IV

This report contains the results and analysis from four research projects spanning more than seven years. These research projects examined flanking transmission in wood framed constructions that might be used in multi-family dwellings.

The primary concern of the projects is the effect of using continuous structural elements that pass under a partition wall between two horizontally separated dwellings. Continuous structural elements such as subfloor sheathing, and/or joists, are often used in buildings that must withstand increased dynamic loading due to high winds or seismic velocities. However, these details often occur in single family dwellings so many of the results and recommendations in this report are applicable to situations where improved sound insulation is desired between rooms in the same dwelling. Also included are results of an initial investigation of flanking involving gypsum board that is directly attached to the joists of the ceiling, or the studs of a wall.

The method of small perturbations, or changes, to a common construction involving a continuous structural element was used to assess the effect of various construction details on the airborne and impact sound insulation.

Prepared by T.R.T. Nightingale, J.D. Quirt, Frances King. CMHC Project Officer: Barry Craig. Report no. B3425.1. Ottawa: National Research Council Canada, 2006. 1 loose-leaf volume + CD-ROM

AVAILABILITY : National Research Council Canada; and on loan from the Canadian Housing Information Centre

ACOUSTICS

GUIDE FOR SOUND INSULATION IN WOOD FRAME CONSTRUCTION

This Guide addresses “flanking transmission” of sound through wood framed construction. Continuous structural elements and connections at the junctions of partition walls and floors provide transmission paths that by-pass the separating partition between two noise-sensitive spaces.

“Flanking transmission” is sound transmission between two rooms by paths other than directly through the nominally separating wall or floor assembly. Flanking exists in all buildings and its importance in determining the apparent sound insulation (that perceived by the occupants) depends on the construction details of the walls, the floors and their junctions.

This Guide is the derivative of four industry-sponsored research projects conducted at the Institute for Research in Construction, National Research Council Canada. The focus and construction details were decided by a Steering Committee of technical representatives from each of the supporting partners. Partners included Canada Mortgage and Housing Corporation, Forintek Canada Corporation, Marriott International, National Research Council Canada, Owens Corning, Trus Joist, and USG.

This Guide supersedes the version published in 2005. This version includes estimates of the flanking due to directly attached gypsum board on ceilings, corridor walls, and exterior walls.

Prepared by J.D. Quirt, T.R.T. Nightingale, F. King. CMHC Project Officer: Barry Craig. Report no. B3425.2. Ottawa: National Research Council Canada, 2006. 103 pages + CD-ROM

AVAILABILITY : National Research Council Canada; and on loan from the Canadian Housing Information Centre

BASEMENTS, FOUNDATIONS & CRAWLSPACES

ANALYSE DES DOMMAGES STRUCTURAUX DE BÂTIMENTS RÉSIDENTIELS ASSOCIÉS AUX PROBLÈMES DE REMBLAIS PYRITEUX

In recent years, many cases of structural and aesthetic damage caused to buildings have been associated with the heaving of concrete slabs. Studies conducted on these infrastructures have shown that the swelling of the granular foundations composed of pyritic clay shales was the main cause of the problem.

This study is aimed at making an inventory of different cases of single-family residences affected by problems possibly related to the swelling of the pyritic foundation backfills on the South Shore of Montréal. The mandate given in this regard to the Université de Sherbrooke and the École Polytechnique de Montréal and organizations involved under the auspices of the Comité technique québécois (CTQ), by Canada Mortgage and Housing Corporation (CMHC), was to inspect at least 200 cases inventoried in three municipalities on the South Shore of Montréal. In the end, nearly 800 cases were considered and at least 200 were subject to a particular examination on site. In cases where the swelling was at its initial stage or in full expansion,

BASEMENTS, FOUNDATIONS & CRAWLSPACES

appropriate instrumentation was put in place to track the progress of the different movements. This course of action could explain certain complex cases where several mechanisms could be involved, including sulphate action or shrinkage mechanisms, as well as geotechnical problems, not to mention the swelling process.

It emerged from this study that the garages were mainly affected by swelling problems, while the basements seemed impacted in almost equal proportions by swelling and sulphation/swelling problems. The swelling accompanying the sulphation may have come from either the swelling of the backfill under the concrete slab or the swelling of the concrete slab (delamination).

A study of the main symptoms revealed that the heaving occurrences, in the 197 garages that were visited, measured between 1 mm and 30 mm in 70% of the cases, while the heaving occurrences, in the 224 basements that were visited, measured between 1 mm and 15 mm in 32% of the cases, with no heaving in 58% of the cases. Again concerning the symptoms, the cracks most often encountered were mainly star-shaped or longitudinal in the garages and only star-shaped in the basements. The presence of whitish powder around the cracks and at the slab-wall joints was rarely observed either in the garages or the basements. However, this powder may have been removed by the owners before the visits for reasons of hygiene or cleanliness.

In the garages, more than 85% of the cases involving cracks in the foundation walls appeared to be linked to the presence of pyritic shales swelling in the backfills. In the basements, there were often no cracks or minor cracks, which could frequently be attributed to a phenomenon other than the backfills. The residences that were subject to more in-depth investigations revealed that the swelling process is attributable to the presence of pyritic backfills. The expansion that has been generated does not seem to be showing any signs of slowing down and will continue as long as sulphides are available in the aggregates and the temperature and humidity conditions remain similar in the backfills. For these residences, to limit the damage, it would be reasonable to replace the backfill with another aggregate certified as non-swelling in accordance with the CTQ M-100 procedure.

Pyritic shales or schists are totally excluded from any eventual use. In existing cases, their replacement with other non-swelling aggregates should be planned. For backfills that are not compacted, and which therefore have a certain porosity (voids index), the injection of sealants, such as sulphate-resistant cement, can be considered to stop the swelling. However, this procedure is recommended for basements that usually have clean stone with a less thick layer of backfill than in the case of garages.

Prepared by Gérard Ballivy, Achour Bellaloui, and Patrice Rivard, Laboratoire de mécanique des roches et de géologie appliquée, Département de génie civil, Université de Sherbrooke. CMHC Project Officer: Jacqueline Meunier-Bureau. Ottawa: Canada Mortgage and Housing Corporation, 2004. 62 pages (5106 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/fr_unilingue/CHIC%20Analyse\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/fr_unilingue/CHIC%20Analyse(w).pdf)

BASEMENTS, FOUNDATIONS & CRAWLSPACES

LONG TERM PERFORMANCE OF SLAB-ON-GRADE FOUNDATIONS IN REGINA SASKATCHEWAN: FINAL REPORT

This study is an investigation of the long-term performance of slab-on-grade foundations for low-cost houses built in Regina Saskatchewan from 1955 to 1960. These shallow foundations and other innovations made it possible to construct 90 m² (969 feet²) houses on 15 m by 37 m (50 foot by 100 foot) lots which sold for under \$10,000. Unfortunately, for many of these houses, the swelling and shrinking behaviour of the deep Regina clay subsoil soon began to affect their shallow foundations. Corrective procedures were not a permanent fix and movements of treated and untreated slabs continued both seasonally and over the longer term. This investigation in 2003 re-examines these houses after approximately 45 years of service. A finding is that without major changes in design and construction to cope with or eliminate these large and on-going ground movements it is not recommended that slab-on-grade foundations be chosen in future for houses in Regina or other locations having similar geology and climate.

Prepared by J.J. Hamilton. CMHC Project Officer: Ken Ruest. Ottawa: Canada Mortgage and Housing Corporation, 2004 (External Research Program Research Report) 40 pages (25086 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/slab%20on%20grade%20report\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/slab%20on%20grade%20report(w).pdf)

BUILDING MATERIALS

INITIAL MATERIAL CHARACTERIZATION OF STRAW LIGHT CLAY

Straw light clay (SLC) is a contemporary variant of earth building techniques, which have been a part of advanced civilizations for thousands of years. Africa, the Middle East, Asia, Europe and the Americas all have rich traditions in these techniques. Indeed, all of these regions have structures, which were built 500-1000 years ago with earth, often mixed with straw, frequently in combination with timber structural elements that are standing today. This serves as a testament to the endurance of the materials, as well as traditional knowledge.

Straw light clay (SLC) is prepared by coating a straw aggregate with a clay binder. This creates a versatile non-structural and insulative infill material with a very low embodied energy. Applications include exterior walls as well as interior partition walls.

This research investigates the thermal resistance and moisture related performance characteristics of straw light clay (SLC) in order to assess the viability of this material for Canadian climates, and the need for future research. In addition; fire resistance, shrinkage and swelling, compression and bending, and density were investigated to support the above mentioned objectives.

This research project consists of three major components:

1. Literature review;
2. Development and reporting of economical, reliable test methods, which are easily reproduced;

BUILDING MATERIALS

3. Publishing of data based on these tests, which reveal initial performance characteristics of one formulation of SCL.

The test program included:

1. Preparing a loam/clay mixture and producing samples from which test specimens were derived (80 in total).
2. Preparing specimens from three density classes (45 specimens in total) to be used in the tests.

This test program also investigated several material properties: thermal conductivity; vapour permeability; moisture storage; capillary absorption; compression and bending; fire resistance; and density.

The testing methodologies were developed with assistance of Dr. John Straube of the University of Waterloo. Section one provides an introduction and some technical background. In section two, the reader will find an extensive literature review. Section three details the material composition, and preparation of the samples. Sections 4-11 contain the test procedures and results. The discussion section of each of these chapters is dedicated to looking at the test from a practical, applied perspective. This discussion thread is summarized in the appendix section titled: Application to Enclosure Wall Design.

Prepared by J. Thornton. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2004. (External Research Program Research Report) 139 pages (14163 KB)

Note: No. 05-109 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Initial\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Initial(w).pdf)

TESTING THE ADHESION OF AIR BARRIER MEMBRANES IN WALL ASSEMBLIES

This project designed and conducted a testing program to ascertain the adhesion performance and risk of air barrier materials and assemblies using recent construction materials in actual assemblies. Specifically, the purpose of the research project was to determine the effect that exposure to sustained environmental conditions, wetting of the substrate, and material compatibility has upon the adhesion strength between air barrier materials and substrates.

Prepared by Retro-Specs Consultants Ltd. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2004. 124 pages (3679 KB)

Note: No. 05-105 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/RR_Adhesion_Barrier\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/RR_Adhesion_Barrier(w).pdf)

OLD NORTH END SAINT JOHN, NEW BRUNSWICK COMMUNITY PLANNING CHARRETTE

The community of Old North End in Saint John, New Brunswick has a desperate need for housing. The area has experienced a steady decline and a growth in empty lots. Canada Mortgage and Housing Corporation (CMHC) along with the ONE Change Committee, felt the North End would benefit from a community planning charrette and contacted the Cities & Environment Unit to help facilitate it.

The charrette was intended to be as open as possible, and the organizing committee put great effort into inviting as many stakeholders as possible. The process used was based on the First Nation Community Planning Model (2nd edition) which was published by the Cities & Environment Unit in 2003. The model has seven stages that guide communities through the planning process. It was acknowledged that this five day charrette would not result in a fully developed community plan; instead, it would form the basis for future community action based on a shared vision for the Old North End of Saint John. The products and ideas that came out of the charrette are described in this report.

Produced and published by Cities & Environment Unit, Faculty of Architecture & Planning, Dalhousie University; funded by Canada Mortgage and Housing Corporation; CMHC Project Officer: Sandra Marshall. Halifax, N.S.: Cities & Environment Unit, 2005. 65 pages

Note: No. 06-114 in the Research Highlights Technical Series (Order number 65104 summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : On a loan basis from Canadian Housing Information Centre

REQUALIFICATION DE LA BANLIEUE ET SES CADRES RÉGLEMENTAIRES : SITUATION ACTUELLE ET MESURES D'ASSOUPLISSEMENT : RAPPORT FINAL

This report presents the results of an analysis of the regulations that could influence the regeneration of immediate suburbs. This research, which is based on the case of Québec City, is aimed at better understanding how federal, provincial and municipal normative frameworks can hinder urban requalification. More particularly, this analysis inventories the regulatory frameworks applicable to the different levels of government and scales of intervention, measures and illustrates the impact of certain regulations in relation to urban renovation criteria, identifies different obstacles to suburban requalification and, lastly, proposes possible flexibilities and recommendations.

Prepared by Geneviève Vachon and Carole Després in collaboration with Sergio Avellen H., David Paradis and Nidia Pérez, Groupe interdisciplinaire de recherches sur les banlieues, École d'architecture, Université Laval, Québec. Ottawa: Canada Mortgage and Housing Corporation, 2004. (External Research Program Report) 52 pages (2889 KB)

Note: No. 06-020 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65231)

AVAILABILITY : Canadian Housing Information Centre and http://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/fr_unilingue/Chic_R_RequalificationWeb.pdf

CITY PLANNING AND HUMAN SETTLEMENTS

RUTLAND TRANSIT CENTRE DESIGN CHARRETTE, KELOWNA, BC

Upon completion of the “Central Okanagan Smart Transit Plan”, the City of Kelowna approached Canada Mortgage and Housing Corporation to conduct a design charrette regarding the Rutland Transit Centre site. IBI Group was hired, in turn, by the City of Kelowna to provide design expertise regarding ‘best practices’ for transit exchange design and transit-oriented development (TOD), and to record and catalogue the proceedings of the charrette experience.

TOD is defined as “compact, mixed-use and pedestrian-friendly neighborhoods containing a range of housing types, workplaces, shops, entertainment, schools, parks and civic facilities essential to the daily lives of residents -- all within an easy five minute walk from a transit station.”

The Rutland Transit Centre Design Charrette was held in Kelowna’s Rutland community from the evening of Tuesday, 21 June through to the afternoon of Thursday, 23 June, 2005.

This report outlines the events of those three days, plus subsequent actions in support of the goal of laying the foundation for TOD within the City of Kelowna.

Prepared by IBI Group. Vancouver, BC: IBI Group for City of Kelowna. Financial support provided by CMHC, 2005. 1 volume in various pagings

Note: [No. 06-002 in the Research Highlights Socio-economic Series](#) summarizes the results of this research and is available on the CMHC web site (Order no. 64981)

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

CONCRETE

STUDY OF POURED-IN-PLACE CONCRETE WALL PERFORMANCE IN BRITISH COLUMBIA

This study analyzes and documents performance issues associated with Poured-In-Place Concrete Wall Assemblies in the wet coastal climate region of British Columbia. Guidelines are also developed for appropriate design and construction practices. The study investigates the effects of building form, rain penetration control, air leakage control, vapour diffusion control, thermal performance, and concrete construction practices on the performance of Poured-In-Place Concrete Wall Systems.

The document in the CD was produced by RDH Building Engineering Limited. Principal investigator of the project was David Ricketts. The project team also included participants from Levelton Consultants Limited who authored and provided input on sections of the report related to concrete mix design and concrete construction practices. In addition, Dr. Don Onysko reviewed and provided comments on the hygrothermal analysis section of the study. Financial support for this project was provided by Canada Mortgage and Housing Corporation and Homeowner Protection Office. CMHC Project Officer: Sylvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2005. 1 CD-ROM

Note: No. 05-115 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64908)

AVAILABILITY : Canadian Housing Information Centre

CONTAMINATED LANDS

BROWNFIELD REDEVELOPMENT FOR HOUSING IN CANADA - LITERATURE REVIEW AND CASE STUDIES

This project researched and documented issues and best practices for the redevelopment of brownfield sites for housing across Canada. A literature review was undertaken to update information on issues and barriers to redevelopment of brownfield sites for housing. Key informants, such as developers, municipal planners, other government agencies, financial institutions and legal experts were interviewed. The report ([Brownfield Redevelopment for Housing: Literature Review and Analysis](#)) was completed in December, 2004 and includes a summary and analysis of the major findings, including the current key issues as they relate to brownfield redevelopment for housing. Eleven best practice case studies of successful built residential projects and brownfield initiatives in Canada have been completed. Each case study documents land use planning and regulatory approvals, project financing, design and construction, environmental remediation and other special circumstances. The case studies are available for viewing and downloading from the CMHC website at http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/sucopl_004.cfm

Report prepared by RCI Consulting and Regional Analytics Inc. CMHC Project Officer: Cynthia Rattle. Ottawa: Canada Mortgage and Housing Corporation, 2004. 113 pages (1087 KB)

Note: Nos. 05-013 and 06-015 in the Research Highlights Socio-economic Series summarize the results of this research and are available on the CMHC web site (Order numbers 63948 and 65218).

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Brownfield_EN\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Brownfield_EN(w).pdf)

COOPERATIVE AND NON-PROFIT HOUSING

GUIDE TO CO-OPERATIVE HOUSING

This research resulted in on-line information for co-operative housing agencies and members in each province and territory on their rights and responsibilities in regard to: admitting new members, obligations to the co-operative of members, obligations of the co-operative to members, eviction or expulsion of members, and collection of money owed.

Research by Biz-Sone Internet Group Inc. Ottawa: Canada Mortgage and Housing Corporation, 2005. 101 pages. (External Research Program Report)

Nota : Aussi disponible en français sous le titre : Guide de l'habitation coopérative

AVAILABILITY : CMHC web site: <http://www.cmhc-schl.gc.ca/en/co/buho/gucoho/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=27549>

ENERGY CONSERVATION

ENERGY AND WATER CONSUMPTION LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS

This research project was undertaken to review detailed energy and water consumption monitoring data which has been collected for 34 multi-unit residential buildings. The project used the data to determine annual energy and water consumption as well as hourly, weekly and monthly energy and water use patterns. Concurrent natural gas and electricity consumption is also detailed. An analysis was undertaken to determine if there was any correlation between the characteristics of the buildings and energy or water use patterns observed. The research revealed that significant variations exist in the normalized energy and water use from building to building and that patterns in the variations were difficult to predict based on building characteristics and occupancy type.

Prepared by Ozz Energy Solutions, Inc. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2005. 33 pages (1739 KB)

Note: No. 05-119 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64940)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/EnergyandWater%20w.pdf

THE HOUSEHOLD ENVIRONMENTAL MONITORING PROJECT

This CMHC External Research Program (ERP) project examined the effectiveness of a community-based approach to encourage homeowners to save energy and greenhouse gases. The work took place in 20 houses in a central Ottawa neighbourhood. The NRCan Energuide for Houses program was used for house testing and to produce recommendations for house modifications. The community group encouraged participation in the process; followed the progress of changes to the houses and their heating systems; monitored the effectiveness of measures undertaken; and reviewed with homeowners their expectations and realizations about the process. Results were mixed. On the whole, the houses reduced their greenhouse gas production by 2 tonnes per family, but a large part of that average gain was the exceptional performance of a few select houses. The research dealt with homeowners' motivations as well as their attempts to cut energy use. Participants appreciated the guidance of the consultant but stated that they would respond better to regulation or financial incentives, rather than the largely voluntary programs now in place.

Prepared by Jane Thompson, Magda Goemans, Peter C. Goemans & Andrzej Wisniowski, Jane Thompson Architect. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2006. 2 volumes

Note: No. 06-104 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65035)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume1\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume1(w).pdf) (Volume 1 - 458 KB)
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume2\(w\)_June6.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/HouseholdEnvVolume2(w)_June6.pdf) (volume 2 - 1315 KB)

ENERGY CONSERVATION

NEW HOME ENERGY DESIGN AND COST-BENEFIT OPTIMIZATION SOFTWARE TOOL

The objective of this project was to research and assess the feasibility and need for the development of new-home energy design and cost-benefit optimization software for the Canadian residential construction industry, through industry consultations and assessment of existing software.

Prepared by SAIT Polytechnic, Construction Department, Environmental Solutions Team. CMHC Project Officer: Anand Mishra. Ottawa: SAIT Polytechnic, 2005.

AVAILABILITY : Available on a loan basis only from Canadian Housing Information Centre

PERFORMANCE EVALUATION OF THE ALMON STREET MULTI-UNIT RESIDENTIAL BUILDING

This report documents the performance of a multi-unit residential building, located in Halifax, Nova Scotia, that was designed and constructed to meet the requirements of Natural Resources Canada's (NRCan) Commercial Building Incentive Program (CBIP). One of the primary objectives of CBIP is to reduce the energy consumption of buildings to a level that is 25 % below what the buildings would consume if constructed to the model National Energy Code for Buildings. Canada Mortgage and Housing Corporation commissioned a study to evaluate the extent to which the building met the CBIP energy requirements and to characterize the building's water consumption, indoor air quality and ventilation system performance. The results of the study are to be used to provide the building's owner with feedback on the performance of his building and where opportunities exist for improvements.

Prepared by David C. Stewart & Associates Inc. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2005. 39 pages (4372 KB)

Note: No. 06-100 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64958)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Almon%20FinalReport_web_feb13.pdf

SHORT CONSUMER PIECES ON ENERGY SAVINGS IN SPECIFIC HOUSING STYLES

This research produced a series of short consumer information pieces describing options for improving the energy savings in older houses, targeted at specific house design types. CMHC has three longer publications available or pending that are specific to a single house type. This CMHC PERD (Program for Energy Research and Development) initiative provided the same design-based advice to renovators and homeowners, but in a shorter format, with the most effective energy retrofits prioritized for each housing style. The final reports are available on CMHC's web site in the series "Renovating for Energy Savings" at:
<http://www.cmhc-schl.gc.ca/en/co/renoho/reensa/index.cfm>

ENERGY CONSERVATION

- Issue 1: Pre-World War II Houses (2004 -- 6 pages) (Order number 63643)
- Issue 2: Post-War I 1/2 Storey Homes. (2004 -- 6 pages) (Order number 63704)
- Issue 3 : Post-60s Two-Storey Homes. (2004 -- 6 pages) (Order number 63681)
- Issue 4: 1960s or 70s One-Storey Homes (2004 -- 6 pages) (Order number 63706)
- Issue 5: Split-Level Homes (2004 -- 6 pages) (Order number 63708)
- Issue 6: Split Entry Homes (2004 -- 6 pages) (Order number 63710)
- Issue 7: Mobile Homes (2004 -- 6 pages) (Order number 63712)
- Issue 8: Duplexes and Triplexes (2004 -- 6 pages) (Order number 63714)
- Issue 9: Row Houses (2004 -- 6 pages) (Order number 63720)
- Issue 10: Homes with Walkout Basements (2004 -- 6 pages) (Order number 63716)
- Issue 11: Common Additions (2004 -- 6 pages) (Order number 63718)

AVAILABILITY : CMHC Information Products and the CMHC Web site

UNDERSTANDING MULTI-RESIDENTIAL ENERGY AND WATER END-USE LOAD PROFILES

Energy used in residential buildings is a major energy use in Canada (21% of all energy) and presumably in most areas in the Northern hemisphere. A substantial fraction of this energy (24%) is used in multi-residential buildings. However, very little attention has been given to examining the patterns of energy and water consumption, let alone how they can be improved. This report suggests that significant savings and improvements in the efficiency of multi-residential systems are achievable, and this could go a long way toward reducing energy usage and fulfilling Canadian Kyoto obligations.

Watershed Technologies Inc. and OZZ Energy Solutions Inc. have been monitoring energy and water usage in multi-residential buildings in the Toronto area since 1996. The present analysis looks at detailed (hourly) gas and electricity loads in 34 buildings and water consumption in 21 buildings over a two-year period from May 2001 to April 2003. Earlier work by OZZ documented the different physical features of these buildings and presented an overall summary and a preliminary analysis of gas, electricity and water consumption data along with daily and seasonal summaries. A more detailed analysis is offered in the present report.

A new model is developed which describes the building's energy consumption for cooling and heating more effectively than the traditional degree-day model. The new model quantifies not only the changes in energy load per unit change in temperature but also its effective thermal capacity, the heating system overhead and system response to other weather factors, namely wind, relative humidity and solar access.

More than two fold differences in the energy per unit area or water used per apartment unit among the buildings are observed. A study of seasonal and daily variability suggests that at least a part of these differences in the building energy efficiency can be attributed to poor or complete lack of energy management in many of the buildings.

The data also suggests that in-suite electric heating is 2.5 times more efficient than central gas heating systems in multi-residential buildings. The same appears true of in-suite air conditioning, when compared to centralized cooling systems.

ENERGY CONSERVATION

Prepared by J.E. Paloheimo and Douglas Hart, Watershed Technologies Inc. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2004. (External Research Program Research Report) ca. 68 pages (1145 KB)

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccdhr/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Energy\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdhr/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Energy(w).pdf)

FIRES & FIRE PREVENTION

WHAT TO DO AFTER A FIRE. ABOUT YOUR HOUSE; CE 60

"What to do After a Fire" is a CMHC About Your House consumer publication to help homeowners deal with fire damage in their homes. This publication explains the steps to be taken after the fire, and the various issues to be considered to restore the home and to ensure a safe, healthy environment for the occupants. It is intended to be a brief publication targeted to the consumer, but it will also be useful to fire departments, restoration contractors, and insurance companies.

Ottawa: Canada Mortgage and Housing Corporation, 2005. 6 pages

Aussi disponible en français sous le titre: Que faire après un incendie

AVAILABILITY : CMHC Information Products and on the [CMHC website](#)

GREEN ROOFS

BCIT GREEN ROOF RESEARCH PROGRAM, PHASE I SUMMARY OF DATA ANALYSIS: OBSERVATION PERIOD - JAN. 1, 2005 TO DEC. 31, 2005

To address a lack of climate-specific performance data and demonstrated feasibility of green roof systems within its region, the British Columbia Institute of Technology (BCIT) constructed and commissioned a dedicated field test site, the Green Roof Research Facility (GRRF), in 2003. The main research objective was to investigate the performance and practical application of extensive green roof systems in Canada's west coast climate.

The GRRF features three roof sections separated by parapets – two green roof sections and one non-green section for reference (REF). Both green roof systems include a root barrier, non-reservoir drainage board and independent filter cloth, and the same growing medium composition. Green Roof 1 (GR-1) contained 75 mm of growing medium planted with sedum species while Green Roof 2 (GR-2) contained 150 mm of growing medium planted with a mix of fescues and grasses. The roof sections were fully instrumented to measure stormwater runoff characteristics and energy efficiency. The roof was monitored and performance data were collected for one full year (January 1 to December 31, 2005). The plants were fully established during this period.

GREEN ROOFS

Jointly funded by the British Columbia Institute of Technology (BCIT), the National Research Council, the Greater Vancouver Regional District, and CMHC's External Research Program, this research report evaluates the performance of the green roofs in the testing facility built at BCIT. It gathered and analyzed data with respect to delaying storm water run-off and reducing run-off volume, as well as the cooling and insulating abilities of the roof system.

The first year of observation showed that, within the temperate climate of Vancouver, a green roof system with appropriate plant species in 75 mm of growing medium can provide a similar level of stormwater mitigation and thermal benefits as a green roof system with 150 mm of growing medium. The preliminary findings suggested that buildings in Vancouver could benefit from lighter weight extensive green roof systems.

Prepared by Maureen Connelly, Research Program Head, Centre for the Advancement of Green Roof Technology, British Columbia Institute of Technology. Contributors: Maureen Connelly, Karen Liu, and John Schaub. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 59 pages (1863 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/bcit\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/bcit(w).pdf)

HEATING AND VENTILATION

ASSESSMENT OF SUITE COMPARTMENTALIZATION AND DEPRESSURIZATION IN NEW HIGH RISE RESIDENTIAL BUILDINGS

Air leakage testing and pressure measurements were measured in 8 suites in 3 newly constructed apartment buildings in Toronto. The objectives of the study were to characterize the extent to which suites are sealed from one another, common areas and the exterior, the performance of in-suite exhaust fans, resultant in-suite air pressure and the performance of corridor air ventilation systems. The testing found that the suites tested were relatively airtight although undesirable leakage areas persist between adjacent suites and common areas. The research also found that in-suite bathroom fans, range hoods and clothes dryers did not exhaust as much air as intended by design due to installation problems as well as in-suite depressurization due to the operation of other competing exhaust fans. Indoor-outdoor temperature conditions (stack effect) and wind conditions also impact on the ventilation capacity of in-suite exhaust systems. The corridor air ventilation system tested was unable to positively pressurize the corridor on lower floors against the forces of mid-winter stack and wind effects. The testing indicates that the airtightness of suites and the combined capacity of installed exhaust fans are sufficient to cause suites to become significantly depressurized relative to outdoors. This should be considered when exhaust appliances are being specified and consideration is given to the venting of in-suite combustion appliances.

Prepared for Canada Mortgage and Housing Corporation and Tridel Group of Companies. Prepared by Air Solutions Inc. Ottawa: CMHC, 2005. 64 pages (4121 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Assesment\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdhd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Assesment(W).pdf)

DEVELOPMENT OF MICRO COMBINED HEAT AND POWER TECHNOLOGY ASSESSMENT CAPABILITY AT THE CANADIAN CENTRE FOR HOUSING TECHNOLOGY

Recent events such as rolling brownouts in California and the blackout in eastern North America in August 2003 have raised homeowner interest in small, alternative power generation. Evolving combined heat and power (CHP) systems, such as Stirling engines and fuel cells, range from 1 kW to 10 kW. They offer opportunities for heat recovery from waste heat to provide hot water and space heating. These systems may be one way of providing backup power to grid-connected houses or primary power to remote communities where connecting to the grid is not cost efficient.

Several Canadian companies are leaders in developing fuel cells for residential CHP systems. As these promising new CHP systems advance through laboratory tests, it is important to test them in controlled, real-world situations. Anticipating this, the Canadian Centre for Housing Technology (CCHT) decided to make its twin-house research facility "ready." By doing so, CCHT hopes to provide a test facility unmatched in the world for Canadian manufacturers of residential fuel cells and other residential CHP systems and give them significant competitive advantage in the global marketplace. CCHT also hopes to provide gas and electric utilities with a facility where they can evaluate residential CHP performance to assess possible impact on energy budgets and utility distribution systems.

The project's objectives included:

- to develop and demonstrate a test facility at CCHT that can assess residential CHP systems and their integration into houses in real-world conditions.
- to quantify the performance of one early residential CHP system and examine building integration issues.
- to collect information and develop experience in installing, commissioning, monitoring and analysing the performance of residential co-generation systems.

*Prepared by M. Bell; M. Swinton; E. Entchev; J. Gusdorf; W. Kalbfleisch; R. Marchand; and F. Szadkowski.
CMHC Project Officer: Ken Ruest. Ottawa: Canada Mortgage and Housing Corporation, 2003 (i.e. 2005) 67 pages*

Note: No. 05-102 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

AVAILABILITY : On the Canadian Centre for Housing Technology web site (1754 KB) at: <http://irc.nrc-cnrc.gc.ca/fulltext/b6010/b6010.pdf>

HEATING AND VENTILATION

THE ēKOCOMFORT™ FIELD ASSESSMENT PROGRAM: FINAL REPORT

This report presents the results of a field assessment project that was carried out over the last two years to evaluate the performance of early production samples of a new type of integrated HVAC system that is being developed by Canadian manufacturers to better serve the needs of Canadians.

CMHC, in partnership with NRCan, carried out a project to evaluate the performance of early prototypes of a new type of residential HVAC system that combines space heating, domestic hot water and ventilation into one integrated unit. These products, which will be produced under the ēKOCOMFORT™ label, were developed by several independent Canadian manufacturers in partnership with NRCan.

The objectives of this project were to provide timely and effective reporting to specific manufacturers, the ēKOCOMFORT™ consortium, CMHC and NRCan that:

- Characterizes the performance of ēKOCOMFORT™ products in terms of energy consumption, space conditioning, domestic hot water and ventilation performance;
- Assesses the degree to which the products meet the needs of the homeowner in terms of capacity, indoor environment, user friendliness, operational issues, comfort, use and maintenance;
- Assesses product reliability with respect to signs of potential failures;
- Estimates the extent to which laboratory test results of the products are reflected in actual field performance

The various activities that were carried out in support of these objectives are described in this report.

Prepared by Peter Edwards Co. CMHC Project Officer: Bill Semple. Ottawa: Canada Mortgage and Housing Corporation, 2005. 104 pages

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilin_gual/EkocomfortFieldAssessmentProgram_\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilin_gual/EkocomfortFieldAssessmentProgram_(w).pdf)

EVALUATION OF AIR LEAKAGE CONTROL MEASURES TO COMPARTMENTALIZE NEWLY CONSTRUCTED SUITES IN A HIGH-RISE RESIDENTIAL BUILDING: FINAL REPORT

Field testing was undertaken to determine the extent to which apartments in a newly constructed residential high-rise building could be compartmented from one another and adjacent common areas. Compartmenting is a relatively new concept that provides well-sealed interior partitions that prevent uncontrolled air movement between apartments as well as into, through and out of buildings. Design details were reviewed and changes implemented in two test apartments during construction to make the internal partitions as airtight as possible. Testing was conducted to determine the level of airtightness achieved and this was compared to the test results of other similar apartments in the building. The research concluded that while apartments could be made more airtight, the implementation of air leakage control still represents a challenge to designers and contractors.

HEATING AND VENTILATION

Prepared by Buchan, Lawton, Parent Ltd. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2006. 61 pages (1866 KB)

Note: No. 06-102 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order number 65002)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Evaluationofairleakage.pdf

FINAL REPORT ON THE EFFECTS OF ECM FURNACE MOTORS ON ELECTRICITY AND GAS USE: RESULTS FROM THE CCHT RESEARCH FACILITY PROJECTIONS

Electronically Commutated Permanent Magnet (ECPM) motors are brushless, permanent-magnet DC motors with integrated controls. ECPMs are significantly more efficient than the Permanent Split Capacity (PSC) motors used in most residential furnaces today.

Modern airtight houses require continuous circulation to distribute fresh air throughout the house, which is when the benefits of ECPM motor technology are most apparent. During continuous circulation, PSC motors are usually set to half speed, which is often much higher than required for proper ventilation. For PSC motors, half speed is not the same as half energy, as the motor becomes less efficient at reduced speeds.

Because the ECPM motor is more efficient, less electricity is required to do the same work, and thus less heat is released from the fan motor into the airstream and to the house. To compensate, it is presumed that during the heating season there may be a slight increase in gas consumption, and during the cooling season there may be a decrease in air conditioning electrical consumption over and above the direct electrical savings in fan motor consumption.

The purpose of this project was not only to evaluate the performance of ECPM motor technology in forced-air heating and cooling applications, but also to quantify any increase in natural gas consumption during the heating season and any decrease in air conditioning during the cooling season.

Prepared for Canada Mortgage and Housing Corporation, the Office of Energy Efficiency, NRCan, Manitoba Hydro and Enbridge Gas Distribution. Prepared by: J. Gusdorf, S. Hayden, E. Enchev, M.

Swinton, C. Simpson, and B. Castellan. CMHC Project Officer: Ken Ruest. Ottawa: Canada Mortgage and Housing Corporation, 2003 (i.e. 2005) 131 pages

Note: No. 05-101 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

AVAILABILITY : On the Canadian Centre for Housing Technology web site (11, 700 KB) at: <http://irc.nrc-cnrc.gc.ca/fulltext/nrcc38500/nrcc38500.pdf>

HEATING AND VENTILATION

RETROFITTING BOILER PLANTS USING FAN-ASSISTED RADIAL COPPER-TUBE BOILERS

The purpose of this study is to examine the factors to be considered when replacing boilers in existing boiler plants with new fan-assisted radial-fired copper-tube (FARC) boilers.

FARC boilers are popular for retrofit work. They are more efficient than atmospheric boilers, and are smaller, and lighter than other boilers of similar efficiency, making them ideal as replacement boilers where access or weight is an issue. The low mass nature of these boilers, however, has an impact on their application. The proper flow, and consequently the water temperature rise (DT), through these boilers is critical and must be maintained within narrow limits. Too little flow could overheat the heat exchanger and shorten its life. Too high a flow can scrub the heat exchanger tubes, cause pitting and early failure. The head or water pressure drop through the boiler is also much higher than other boiler types, requiring special attention to the pumping.

This study examines 4 boiler plants with different piping configurations to determine the changes, if any, required to the piping and pumping to accommodate the installation of fan-assisted copper-tube (FARC) boilers.

Prepared by Weinstein Taylor & Associates. CMHC Project Officer: William Semple. Ottawa: Canada Mortgage and Housing Corporation, 2005 (External Research Program Research Report) 45 pages (2058 KB)

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Retrofit_Boiler\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_Retrofit_Boiler(w).pdf)

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

GLASS AND METAL CURTAIN WALLS: BEST PRACTICE GUIDE BUILDING TECHNOLOGY

This manual is an advisory document - a best practice guide to glass and metal curtain wall systems in housing applications. The curtain-wall is a well developed system in commercial applications but it requires special treatment when used in housing. The guide is directed to designers, architects, engineers and manufacturers.

The Guide is organized into the nine chapters. Following the introductory chapter, the guide covers: descriptions of curtain wall systems and their components; basic performance aspects of

curtain walls; test methods used to evaluate wall performance; CAD details to illustrate special features of curtain walls and explanatory notes to outline the proper use of the details; a discussion of quality assurance along with quality control checklists; an annotated master specification; information related to the maintenance and renewal of curtain wall systems; and a reference section listing useful publications and web sites along with a glossary of curtain wall terminology.

Ottawa: Canada Mortgage and Housing Corporation; Public Works and Government Services Canada, c2004. CMHC Project Officer: Luis de Miguel. 1 loose-leaf binder + 1 CD-ROM

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

Order number 63702 **Price: \$89.000 + GST and handling charges

Nota: Aussi disponible en français sous le titre : Murs-rideaux en verre et métal : guide des règles de l'art technologie du bâtiment

AVAILABILITY : CMHC Information Products

PERFORMANCE EVALUATION OF RETROFITTED SOLID MASONRY EXTERIOR WALLS

Many existing buildings in Canada constructed with solid masonry exterior walls are being renovated and converted from their original commercial or industrial use into residential use. In order to increase energy efficiency and occupant comfort, the addition of thermal insulation is desirable. However, adding thermal insulation along the inside face of the wall is also thought to increase the risk of condensation and frost formation within the wall system during the heating season, as well as prolong the drying time of the wall. This combination can adversely affect the integrity and durability of the building envelope.

Consequently, unresolved questions remain regarding how to best improve the insulative properties of existing solid masonry walls without compromising their durability. There currently exists no means or guidelines available to accurately predict the performance of walls retrofitted using different retrofit approaches. However, performing a series of condition assessments on existing retrofitted wall systems offers a unique opportunity in helping to create a knowledge base and develop basic design guidelines for future solid masonry wall retrofit projects.

This paper presents the results of the performance evaluations based upon visual reviews and computer aided modelling of a number of buildings with retrofitted solid masonry walls and is intended as an initial step towards helping practitioners elaborate on different retrofit strategies by providing shared knowledge on the historical performance of previously retrofitted solid masonry walls.

Prepared by David Khudaverdian. CMHC Project Officer: William Semple. Ottawa: Canada Mortgage and Housing Corporation, 2005 (External Research Program Research Report). 79 pages (4372 KB)

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_web_may6.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC_web_may6.pdf)

PREDICTING TIME TO FOGGING OF INSULATING GLASS UNITS

Predicting the inevitable repair or replacement of insulating glass (IG) units is a big challenge for building managers. It requires an understanding of potential service life span and the regular collection of field observations of actual performance. IG unit performance and the financial planning necessary for eventual replacement are of prime importance to condominium corporations.

Gerald R. Genge Building Consultants Inc. through CMHC's External Research Program conducted a research project to investigate methods for predicting the time to failure of

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insulating glass units and to suggest ways of improving the prediction of failure of insulated glass units.

The intent of this research was to document common modes of failure of insulating glass units and suggest methods to help building managers predict these failures and develop replacement plans. The work elements included the following:

- Undertake a literature search to document performance and failure modes of IG units;
- Assess existing IG unit failure prediction methods;
- Suggest and test new prediction tools; and
- Recommend next steps.

Prepared by George R. Torok, Gerald R. Genge Building Consultants Inc. and Allan L. Major, ALM Consulting. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 93 pages (3120 KB)

Note: No. 05-117 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64911)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Predictingtmetofogging\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Predictingtmetofogging(w).pdf)

SUSTAINABILITY CONSIDERATIONS GUIDE FOR BEST PRACTICE BRICK VENEER STEEL STUD WALLS: FINAL REPORT

CMHC's Best Practice Guides both inform the construction industry (architects, engineers, designers, product manufacturers and builders) and encourage higher quality and more durable long term approaches. They have not specifically focused on the challenge of "their" environmental impact. This guide cannot accomplish this in one thrust, but it is the beginning of an ecological sensitization process.

Durability is a cornerstone of sustainable design and as such, assemblies must perform satisfactorily for the intended life of the building with appropriate maintenance. The most sustainable approach to ameliorating BVSS envelope design assemblies is to improve overall energy efficiency and durability while ensuring a healthy environment during all phases of its life cycle.

This report provides guidance relating to building science, structural and buildability issues with a view to maintaining and sometimes improving the performance of BVSS walls while keeping a strong focus on durability, sustainability and the environment.

Sustainability can be considered from both the macro (societal impact) and the micro (project impact) perspective.

- Societal consequences include direct or indirect harm to the regional ecosystem, such as water pollution, air pollution, resource depletion, as well as to the global ecosystem, such as green house gas emissions and depletion of the ozone layer.

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- Numerous sources outline their definition of *green building materials*, and this guide does not attempt to redo this work. Direct project consequences related to green building material selection include: envelope durability, indoor air quality, energy loss, water pollution, and embodied energy (including re-use and recycling within their life-cycle).
- Defining green building materials is challenging, but prioritizing their performance with respect to which criteria is *more* important is even more difficult. Often the interests of the direct material application (ie: indoor air quality) takes precedent over larger societal contamination issues (such as the dumping of materials at the end of their life in landfills where their toxic loading in the environment can be way more dramatic).
- In some instances there are products that can be used which, by definition, may not be environmentally sound, but the manner in which they are used may help reduce the overall environmental impact of the building.
- Although this guide does not cover the following dimensions of a building's life cycle, they may impact exterior envelope design decisions: occupancy type (both current and potential future changes), retrofit and deconstruction.

Fourteen large scale details illustrate the practical application of the principles and recommendations of the text. Hygrothermal simulations were performed to validate the soundness of the details.

Prepared by Daniel Pearl and Bernard Olivier with the collaboration of Dominique Derome and Jan Vrana. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2006. 64 pages (2520 KB)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Sustainability\(w\)_august8.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Sustainability(w)_august8.pdf)

HOME OWNERSHIP

ESTIMATES OF THE PRIVATE AND SOCIETAL COSTS AND BENEFITS OF HOMEOWNERSHIP IN SELECTED CANADIAN CITIES

This project evaluates the various private and societal costs and benefits of homeownership in six major Canadian cities using information gathered through a review of existing literature and the analysis of a variety of Statistics Canada data sets. Private costs and benefits refer to those accrued to individuals as a consequence of owning a home, while societal costs and benefits of homeownership refer to those borne by society as a whole.

Prepared by Marion Steele and Rakhil Sarker. CMHC Project Officer: Jessica Yen. Ottawa: Canada Mortgage and Housing Corporation, 2005. 189 pages

Note: No. 06-005 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64990)

AVAILABILITY : Report available on a loan basis from Canadian Housing Information Centre; Research highlight available on the CMHC web site

HOMELESSNESS

COST EFFECTIVENESS OF EVICTION PREVENTION PROGRAMS

Eviction disrupts the lives of tenants, and imposes costs on both tenants and landlords. In some cases, eviction can result in absolute homelessness, including reliance on emergency shelters and other social services. Successful eviction prevention initiatives can prevent these costly outcomes.

The objectives of this research study included documenting the costs to landlords, tenants and social services agencies resulting from eviction, as well as defining the costs and factors of success and failure in relation to programs and services that help prevent evictions.

The primary question addressed by the study is as follows: How do the different approaches to eviction prevention in Canada compare to each other in terms of costs and effectiveness, and how do the costs of these different approaches compare to the costs of eviction?

This overall research question is comprised of a series of sub-questions addressed by the study:

- What are the direct, quantifiable costs and non-quantifiable costs of eviction facing tenants, landlords, and social services agencies?
- What are the costs associated with preventing evictions?
- What are the factors of success and failure associated with effective or ineffective eviction prevention initiatives?
- Are the various eviction prevention initiatives accomplishing what they set out to do?
- Can eviction prevention initiatives be compared to each other?

In order to investigate these questions, researchers undertook a review of Canadian and international literature; telephone interviews with key informants; questionnaire-based interviews with 26 eviction prevention agencies and private and social housing landlords; interviews and focus group surveys of 32 individuals with a history of eviction; compilation of an inventory of 32 Canadian eviction prevention initiatives; an in-depth review of four eviction prevention agencies in the cities of Ottawa and Toronto; and a detailed comparison of six eviction prevention initiatives offered by the four agencies that were reviewed in-depth.

Prepared by Acacia Consulting & Research. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. 208 pages (3364 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC-Cost%20EN\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC-Cost%20EN(w).pdf)

HOMELESSNESS

HOMELESS APPLICANTS' ACCESS TO SOCIAL HOUSING: FINAL REPORT

The purpose of this research was two-fold:

- Investigate how social housing providers presently accommodate homeless applicants, and
- Assess how access to housing could be improved for homeless people.

This study of waiting list and application processes for social housing and the issues facing homeless applicants took place between April 2004 and February 2005. The research included a literature review, interviews with key informants, and data collection using survey tools and focus groups. A total of 20 housing providers from four provinces (Alberta, British Columbia, New Brunswick and Ontario) were interviewed by phone or in person. The providers were chosen to include representation from both large and small housing providers, public housing providers, non-profit providers, co-ops, supportive and alternative housing providers, and those housing special needs groups. The sample included both providers with independent units and with shared housing. The providers had a variety of target populations, including singles, families, seniors, homeless and 'hard to house,' Aboriginal households, and special needs tenants including those living with mental illness, brain injuries, addictions, and physical disabilities.

Staff from ten agencies in the four provinces were also interviewed for the study, to provide perspectives from front-line organizations working with homeless or at-risk clientele. The sample of agencies was purposely diverse to seek input from a range of organizations, including shelters and transitional housing, multi-service agencies, health and mental health organizations, and housing help and access centres for social housing.

Two focus groups, involving a total of 14 participants, were held to obtain input from individuals and families who were homeless or had experienced homelessness. One focus group was held with residents of Ecuhome Corporation, a non-profit provider in Toronto housing homeless and 'hard to house' individuals. The second focus group was held with residents staying at the Peel Family Shelter in Mississauga, Ontario.

The results of the literature review, interviews and focus groups highlighted a wide range of barriers facing homeless people in accessing social housing. These barriers fall into three categories: systemic barriers, obstacles at the community or organizational level, and personal issues or limitations.

Prepared by Oriole Research and Design Inc. in partnership with Connelly Consulting Services. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. 199 pages (2704 KB)

Note: No. 05-018 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/chic_may4_web_revised.pdf

HOMELESSNESS

HOMELESSNESS, HOUSING, AND HARM REDUCTION: STABLE HOUSING FOR HOMELESS PEOPLE WITH SUBSTANCE USE ISSUES

The purpose of this study was to investigate the effectiveness of innovative housing programs for persons who are homeless or at risk of homelessness and who use substances (e.g. drugs, alcohol or other substances). The research specifically examined which housing interventions and factors that incorporate a harm reduction approach best help this population access and maintain stable housing.

Three research questions were addressed: 1. How effective are innovative or alternative residential housing programs for homeless people with substance use issues, especially those that incorporate high-tolerance or harm reduction into a supported living environment? 2. To what degree is secure and stable housing crucial to successful substance use treatment models? 3. Do harm reduction strategies, as part of supportive housing, enhance the stability and longevity of housing tenure for homeless people with substance use issues?

Prepared by Deborah Kraus, Luba Serge and Michael Goldberg. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006 (Distinct Housing Needs Series) 298 pages (1233 KB)

Note: No. 05-027 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64031)

Disponible aussi en français sous le titre : Itinérance, logement et réduction des méfaits : logements stables pour les sans-abri toxicomanes

AVAILABILITY : CMHC Information Products (Order number 65088) and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_bilingual/RR_english\(w\)_aug09.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_bilingual/RR_english(w)_aug09.pdf)

TRANSFERABILITY OF THE "SAFE IN THE CITY" APPROACH TO YOUTH HOMELESSNESS PREVENTION IN CANADA: FINAL REPORT

The objective of the study was to examine the transferability of Safe in the City, a youth homelessness prevention program based in London, England, to the Canadian context. The goals of Safe in the City were to help young people stay safely at home, find alternative options for those who could not remain safely at home, and develop the life-skills and employability of young people to enable them to make a smooth transition to independent lifestyles. The transferability of this model of service delivery to the Canadian context is discussed, as are existing Canadian initiatives addressing youth homelessness and its prevention. The Safe in the City model is one that could be adapted to the Canadian context. Challenges to implementation of such a program include the difficulty of demonstrating that prevention works, the stigma of a "homelessness" label, and some youths' negative past experiences with services.

Prepared by Luba Serge. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 52 pages (867 KB)

Note: No. 06-007 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65017)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Transferability\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Transferability(w).pdf)

HOUSE CONSTRUCTION

CANADIAN WOOD-FRAME HOUSE CONSTRUCTION. REVISED EDITION

This trusted guide has been a national bestseller among Canada's housing professionals for years. The updated version for the latest National Building Code contains new illustrations, sizing tables, planning notes and tips on healthy housing to improve indoor air quality and reduce environmental impact. An indispensable tool for builders, renovators and do-it-yourselfers, covering everything from site excavation to completion. Topics include: concrete work, footings and foundations; framing all parts of the house; roof sheathings; exterior finishes, trims and millwork; plumbing, heating and wiring; vapour and air barriers; insulation, fire and sound control; ventilation; interior wall and ceiling finishes, floor coverings; stairs, eaves, chimneys, and much more.

*Prepared by John Burrows, J.F. Burrows Consulting Inc. Second combined Imperial/Metric edition. Ottawa: Canada Mortgage and Housing Corporation, 2005. 429 pages **Price \$25.95 + GST + shipping charges*

Nota : Aussi disponible en français sous le titre : Construction de maison à ossature de bois -- Canada

AVAILABILITY : CMHC Information Products (Order number 61010)

CASE STUDY ON THE CARMA CENTRE FOR EXCELLENCE IN HOME BUILDING & LAND DEVELOPMENT

The Case Study on the Carma Centre For Excellence In Home Building and Land Development (Carma Centre) was initiated by the Canada Mortgage and Housing Corporation (CMHC), as a review of the objectives and outcomes of an innovative approach being taken towards solving a growing labour shortage in residential housing. The Carma Centre's goal is to promote specialized training and define the basic opportunities and occupations in the residential construction and land development industry. The vision of the Carma Centre is to "be the acknowledged Centre for learning and training for the residential construction and land development industry by developing the knowledge and skills base for people and organizations to meet the changing technology, systems and management requirements of the marketplace."

The scope of this case study was an analysis of the Calgary-based Carma Centre and included a literature review, in-depth interviews with individuals directly and indirectly connected with the Carma Centre, on-site interviews with various building trades and suppliers, and focus groups which included school and career counselors.

This case study provides an in-depth review of the Carma Centre, their training and awareness initiatives, and their involvement in the Calgary Board of Education's Career Pathways in Professional Home Building. CMHC interest in the Carma Centre included its potential as a model that could be replicated in other locations across Canada, and the Carma Centre's new approach to certification of trades and professional development within the housing industry. As the Carma Centre uses an industry-driven partnership approach to address skills and labour shortages in Calgary's residential construction industry, this case study is of value to policy makers interested in developing a similar partnership approach.

*Prepared by International Results Group. Ottawa: Canada Mortgage and Housing Corporation, 2004
2 volumes (Volume 1: Main Report Volume 2: Literature Review)*

HOUSE CONSTRUCTION

Note: No. 05-024 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and for
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/carmaweb.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/carmaweb.pdf) (Volume 1 2032 KB)
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/carma.pdf (Volume 2 1830 KB)

HOUSE CONSTRUCTION INDUSTRY

CLIENT PERFORMANCE PROGRAM: ACT PROJECT

This report, produced under the Affordability and Choice Today (ACT) Program, describes a Client Performance Management Program developed by the Markham Building Standards Department. The purpose of the Program is to record and weigh deficiencies in building permit applications, builder administrative compliance and construction. When a Markham building official encounters a deficiency in an application or a violation in the field, that deficiency is recorded and attributed to the responsible member of the client team. Ranking of builder performance is derived from the composite information and published. This information is helpful to prospective purchasers and its publication induces the ambition among lower performing builders to improve their standing. In this way, higher levels of compliance are achieved without adding resources to the enforcement program. Higher levels of compliance lead to higher builder profit promoting more competitive housing costs.

The project team to produce the Client Performance Management Program consisted of Building Department managers representing plan review and inspection. High performing client builders were consulted and their input helped identify meaningful measures. Data management dictated the involvement of corporate and private sector IT consultants. The project involved the following main steps:

- Identification of standard deficiencies associated with several activities;
- Testing and procurement of mobile computers to enable field data collection;
- Software modifications designed and implemented; and
- Data analysis and data publication.

Prepared by Markham Building Standards Department. Markham, Ont.: The Department, 2005. 43 pages

AVAILABILITY : *On a loan basis from Canadian Housing Information Centre*

GUIDE TO INSURANCE FOR NEW HOME BUILDERS AND RENOVATORS

This guide has been prepared to provide new home builders and renovators with information about insurance and to assist them in making effective and knowledgeable decisions about purchasing insurance coverage. The guide is based on a report, "Variability in Construction Insurance and Alternative Solutions", prepared in 2004 by Marsh Canada Limited. It offers a comprehensive look at the risks in the construction industry and traditional and non-traditional means of insurance protection.

HOUSE CONSTRUCTION INDUSTRY

Ottawa: Canada Mortgage and Housing Corporation, c2006. 51 pages

Order number: 64987 **Price: \$9.95 + GST and shipping charges

Note: Disponible aussi en français sous le titre : Guide des assurances à l'intention des constructeurs d'habitations et des rénovateurs

AVAILABILITY : CMHC Information Products

REPORT ON SKILLED CONSTRUCTION LABOUR SEGMENTATION AND MOBILITY: FINAL REPORT

This report presents the findings of a study of labour mobility in the construction industry in Canada. From the Terms of Reference for this project, the objectives of this report were to:

- Document the similarities and differences in labour requirements between housing construction and non-housing construction;
- Determine the extent to which labour moves back and forth between housing construction and non-housing construction; and
- Identify the elements in the formulation of a human resource development strategy that are common to both housing construction and non-housing construction as well as the elements in the formulation of a human resource development strategy that are distinct between housing construction and non-housing construction.

This project documents the significant labour requirement similarities and differences amongst residential construction, commercial construction (e.g. retail establishments), institutional construction (e.g. hospitals, schools), industrial construction (e.g. factories) and public works (e.g. roads, bridges). Residential construction is further divided into single-family, multi-family low rise and high-rise. This research was carried out using, for example, information from the National Occupational Classification data base.

The industry is composed of two fairly distinct sectors – residential and non-residential – with different skill requirements, regulations, wages, working conditions and training opportunities. Although there is some labour mobility across these two sectors, no comprehensive or definitive measurement has yet been compiled. The findings of this study suggests that a significant number of construction trades people work exclusively in one of the two sectors.

Prepared by Praxis Research & Consulting Inc. CMHC Project Officer: Bruno Duhamel Ottawa: Canada Mortgage and Housing Corporation, 2005. 137 pages (4761 KB)

Note: No. 05-009 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Erp_skilled_cons_w1.pdf

HOUSE CONSTRUCTION INDUSTRY

VARIABILITY IN CONSTRUCTION INSURANCE AND ALTERNATIVE INSURANCE SOLUTIONS

This comprehensive report provides an overview of construction risks and traditional construction insurance products, as well as non-traditional insurance options and their implementation. Intended for builders and renovators, this research report includes a wealth of practical information on construction risks and traditional construction insurance, together with alternative construction insurance options such as captives and group insurance, and the implementation of non-traditional insurance programs.

This project documents the variability in residential construction insurance and analyses alternative residential construction insurance. The project findings include the recognition that the insurance market in Canada is still "hard" for residential construction insurance. Although somewhat improved, builders still face higher premiums, extensive use of warranties and a reduced number of insurance providers. The project details the various insurance options available and the potential variability builders face within these options, case studies of where such insurance is effective and who requires what insurance. The findings also highlight the use of alternative insurance provision in several cases in Canada and the United States by the residential construction industry. The report provides the details of such alternative insurance options and considerations for their implementation.

Prepared by Marsh Canada Limited. CMHC Project Officer: Eric Tsang. Ottawa: Canada Mortgage and Housing Corporation; Public Works and Government Services Canada, c2004. (Housing Affordability and Finance Series) 228 pages (6417 KB)

Note: No. 05-007 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

Nota: Aussi disponible en français sous le titre : Variabilité de l'assurance dans le secteur de la construction et solutions d'assurance non traditionnelle

AVAILABILITY : CMHC Information Products (Order number 63852) and <https://www.cmhc-schl.gc.ca:50104/b2c/b2c/mimes/pdf/63852.pdf>

HOUSING

ALBERTA, AT HOME: COMMEMORATING ALBERTA'S 100TH ANNIVERSARY = ALBERTA CHEZ NOUS : UNE CÉLÉBRATION DU 100E ANNIVERSAIRE DE L'ALBERTA

Alberta at Home, is a bilingual picture book that highlights examples in the quality of life and housing over the past 10 years in Alberta. CMHC recently launched this book to commemorate the 100th anniversary of the founding of the province. The book is aimed at senior CMHC clients and stakeholders in the private and public sectors and is intended to foster a feeling of achievement and to reinforce the strong relationships that CMHC has built over the years.

HOUSING

The book is illustrated by photographs of a variety of people in rural and urban settings happily interacting in their home life. Young families are prominently featured and the home as a stabilizing factor in the lives of Albertans is underlined. The accompanying text also emphasizes Albertans' pride of home ownership, sense of community and desire for sustainable communities.

Conceived and directed by Rod Neander. Images created by Ric Kokotovich, with graphic design by Nelson Vigneault, image scanning by CleanPix Corp. and text by Trevor McConnell. Ottawa: Canada Mortgage and Housing Corporation, Prairies, Nunavut and Northwest Territories, 2004. 49 pages

AVAILABILITY : Canada Mortgage and Housing Corporation, Prairies, Nunavut and Northwest Territories

EFFICACY OF THE FILTERING PROCESS IN THE SUPPLY OF HOUSING TO LOWER-INCOME CANADIAN HOUSEHOLDS

There are at least three ways in which transitions and changes in the housing stock can affect the well-being of lower income Canadians:

- 1) The aging of the housing stock may reduce the relative rents and prices of the older dwellings as the previous higher income occupants leave for newer buildings and let the older units filter down to lower income groups.
- 2) The reverse may happen as inner-city neighbourhoods attract higher-income households that displace the lower-income people living in the older buildings and “gentrify” the neighbourhood. The older dwellings may be up-graded in the process through rehabilitation and renovation.
- 3) Housing stock improvements may also be made that do not involve filtering or gentrification with the help of government rehabilitation subsidies that are offered on condition that tenants not be displaced. Stock improvements may be made without either the filtering or gentrification process being invoked.

This study focuses on the first two processes to show the extent to which housing markets may or may not meet the needs of the Canadians who cannot pay the economic rents or prices that would justify the construction of new dwellings.

Prepared by Andrejs Skaburskis and John Meligrana. CMHC Project Officer: Jessica Yen. Ottawa: Canada Mortgage and Housing Corporation, 2004. 261 pages (8667 KB)

Note: No. 04-040 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/DC20093458\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/DC20093458(W).pdf)

HOUSING AFFORDABILITY

DISTRICT OF HOPE, BC NEW HOUSING STRATEGIES: CREATING POLICY AND STREAMLINING BYLAW, BUILDING BLOCKS FOR HOPE'S SUSTAINABLE COMMUNITY: ACT PROJECT FINAL REPORT

This report, produced under the Affordability and Choice Today (ACT) Program, outlines the results of a project to develop planning and design alternatives for affordable market and alternative housing in the District of Hope. The report details the project goals and objectives, factors shaping the housing market, case studies of innovative housing choices, and describes the process taken to develop a housing strategy.

The process and the results of this study are intended to set the seeds for a new Hope housing strategy that combines affordability strategies with housing design and policy innovations. This vision integrates a supportive and proactive housing development environment created by the District of Hope with the initiative of the private sector and other community partners. Additional provincial and federal partners will play a role as support programs become available.

Prepared by District of Hope, MVH Urban Planning and Design, Inc. Hope, B.C.: District of Hope, 2005. 56 pages

AVAILABILITY : On a loan basis only from the Canadian Housing Information Centre

GAINING COMMUNITY ACCEPTANCE: CASE STUDIES IN AFFORDABLE HOUSING

This project developed case studies from across Canada, but excluding Ontario, where “not-in-my-backyard” (NIMBY) issues have resulted in significant opposition to affordable housing projects.

For this study, NIMBY is defined as “the protectionist attitudes and exclusionary/oppositional tactics adopted by community groups facing an unwelcome development in their neighbourhood.” (Wolch, J. and M. Dear (1993). *Malign Neglect: Homelessness In An American City*. (Jossey-Bass Publishers: San Francisco)

The consulting team reviewed long-term housing facilities, transition houses, apartment-style housing, fixed rent and independent living facility projects. The review covered a broad demographic spectrum, including people with disabilities, seniors, women, youth, people with mental health issues and people with addiction issues. This report will provide municipalities, housing providers, social service agencies and related affordable housing service providers with best practices to gain community acceptance of their projects and overcome the Not In My Back Yard (NIMBY) syndrome. The case studies provide examples of how community acceptance related to affordable housing was, and can be, obtained.

Prepared by CS/RESORS Consulting Ltd. CMHC Project officer: Denis Losier. Ottawa: Canada Mortgage and Housing Corporation, 2006. 59 pages (1825 KB)

Note: No. 06-016 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65185)

AVAILABILITY : Canadian Housing Information Centre and

[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_bilingual/Gaining_June15_06\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_bilingual/Gaining_June15_06(w).pdf)

HOUSING AFFORDABILITY

GREEN PHOENIX INTEGRATED DESIGN CHARRETTE REPORT. PARKDALE UNITED CHURCH FOUNDATION; PARKDALE LIBERTY ECONOMIC DEVELOPMENT CORPORATION

On January 27-29, 2005, Parkdale Liberty Economic Development Corporation (PLEDC) organized and held a 2½ day Design Charrette for a sustainable, affordable housing project. Canada Mortgage and Housing Corporation (CMHC), the City of Toronto's Energy Efficiency Office, Natural Resources Canada and Sustainable Buildings Canada (SBC) provided organizational assistance for the charrette. CMHC, the City of Toronto, Enbridge Gas Distribution and Natural Resources Canada provided financial assistance. Human Resources and Skills Development Canada supported the wages of PLEDC staff who managed logistics for the charrette.

The goal of the charrette was to produce designs to add 20-21 new, green, affordable rental units to a site that already supports two existing buildings, at the corner of King Street and Dunn Avenue in the west end of Toronto. The largest building on the site is the 11-storey Phoenix Place, which provides bachelor apartments for low-income people. The building also houses the sanctuary for the Parkdale United Church, as well as church offices and facilities. Shalom House, next door to Phoenix Place, is a century-old house that was purchased by the church in the 1970's, serves as office and meeting space for community and faith-based organizations and houses a food bank.

The Charrette attracted more than 40 participants, including architects, engineers, planners, housing workers, building operators, community and church representatives and a variety of green technology specialists. This Design Charrette was organized as the first stage of an "integrated design process" (IDP) to create more environmentally friendly and energy efficient designs for the new apartments.

This report outlines the goals of the Green Phoenix Project, describes the buildings and the organizations involved, provides information on how the charrette was organized and planned, and details the goals of the charrette, the design team discussions and their results.

Prepared by Tom Ponessa, Jennifer Penney, Brian Fountain. Ottawa: Canada Mortgage and Housing Corporation, 2005.

Note: No. 06-101 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64934)

AVAILABILITY : Report on a loan basis from the Canadian Housing Information Centre; Highlight on the CMHC web site

HOUSING AFFORDABILITY

HOUSING ALLOWANCE OPTIONS FOR CANADA: FINAL REPORT

Housing assistance in Canada generally consists of subsidies designed to encourage the construction of new, affordable housing. There is interest however, in complementing supply-side subsidies with assistance in the form of a housing allowance for certain households. This research report describes various options for a Canadian housing allowance program, and discusses how to best design, implement and operate such a program. The report is designed as a potential aid for policy makers considering the use of housing allowances.

Prepared by Meryl Finkel, Carissa Climaco, Jill Khadduri, Marion Steele, Abt Associates Inc. CMHC Project Officer: Steven Ehrlich. Ottawa: Canada Mortgage and Housing Corporation, 2006. (Housing Affordability and Finance Series) 150 pages (723 KB)

Note: No. 06-011 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65086)

Nota: Disponible en français sous le titre : [Options en matière d'allocation-logement au Canada](#)

AVAILABILITY : CMHC Information Products (Order number 65098)
and <http://www.cmhc-schl.gc.ca/odpub/pdf/65098.pdf>

PROFILE OF ROOMING HOUSE RESIDENTS

Rooming houses, one of the most inexpensive types of housing in most cities, play an important role in addressing the housing needs of very low-income single people. This study had three main objectives:

1. To create a profile of rooming house residents in three cities (Vancouver, Ottawa and Montreal);
2. To assess residents' views about the affordability and quality of rooming houses; and
3. To determine whether residents consider rooming houses as temporary or permanent housing.

Prepared by Christine Davis (Social Data Research Ltd.); L. Bonnie Dinning; Nick Istvanffy and Margaret Condon (Social Planning and Research Council of B.C.); Luba Serge; Laura C. Johnson (Laura C. Johnson Associates Inc.) CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2006. 190 pages (1597 KB)

Note: No. 06-019 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65235)

Nota: Disponible aussi en français sous le titre : Profil des résidents de maisons de chambres

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/profile_of_rooming_sept15.pdf

HOUSING AFFORDABILITY

ZONING AND AFFORDABLE HOUSING: A CRITICAL REVIEW OF GLAESER AND GYOURKO'S PAPER

One of the most pressing policy issues regarding housing markets is the concern that the high price of housing, especially in markets such as Vancouver and Toronto, shuts many households out of the financial benefits associated with homeownership. "The Impact of Zoning on Housing Affordability" by Professors Edward Glaeser and Joseph Gyourko examines the role of land use regulation in worsening housing affordability. This report is a critical review of Glaeser and Gyourko's paper, which shows how their paper fits in with the existing academic research on land use regulation, analyzes the general usefulness of their theoretical model in explaining the relationship between all facets of affordability and government regulations on new housing construction, tests the validity of their findings with different and more precise data, and finally draws lessons from their findings for Canadian housing and land use policy. The basic finding of the analysis presented here is that despite a large number of simplifications and oversights that weaken the specific findings of their paper, Glaeser and Gyourko's fundamental qualitative results stand: government land use regulations distort housing market outcomes. These distortions raise the price of housing above what it might otherwise be. An important caveat in understanding the implications of their paper is that their analysis ignores many of benefits that proponents assign to land use regulation.

Prepared by Tsur Somerville. CMHC Project Officer: Steven Ehrlich. Ottawa: Canada Mortgage and Housing Corporation, 2004. 88 pages (725 KB)

Note: No. 05-012 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Zoning%20and%20affordable%20housing%20-%20\(WEB\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Zoning%20and%20affordable%20housing%20-%20(WEB).pdf)

HOUSING And immigration

ADDRESSING DISTINCT HOUSING NEEDS: AN EVALUATION OF SENIORS' HOUSING IN THE SOUTH ASIAN COMMUNITY: FINAL REPORT

Ethnic minority older adults, many of whom are foreign-born, bring with them a unique set of residential experiences shaped in large part by the intersection of ethnicity, immigrant status, age and gender. This research is an exploratory study examining the residential experiences of older adults of the second largest ethnic minority group in Canada -- the South Asians. This study explores the suitability and efficacy of South Asian older adults' current housing and support service options via a socio-spatial post-occupancy evaluation of a recently developed seniors' housing project in Surrey, British Columbia. Data are then compared with the residential and support service experiences of 30 community-dwelling South Asian older adults in the Greater Vancouver area. Research questions guiding this study include: (i) What are the current and future housing, related support services and transportation needs of South Asian older adults in the GVRD that would foster independent living and *aging in place* for this distinct population? and

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(ii) What are the distinct socio-cultural aspects of South Asian lifestyles and social networks that have implications for housing and community planning and design?

The study's findings highlight a strong reliance on family and neighbourhoods for social support in the seniors' housing community, the importance of easy access to public transportation and ethno-specific services, and a notable preference for ethno-specific assisted living and residential care facilities. The findings provide insights into the housing needs and barriers, current living arrangements and support networks of South Asian Canadian older adults, allowing for the development of culturally-relevant seniors' housing policy for this large visible minority population.

Prepared by Habib Chaudhury, Atiya Mahmood, Maria Valente & Karen Kobayashi, Simon Fraser University. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 274 pages (3257 kb)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/AddressingDistinctHousingNeeds\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/AddressingDistinctHousingNeeds(w).pdf)

THE HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE TORONTO CMA

This research report examines in detail the housing situation and needs of immigrants in the Toronto Census Metropolitan Area (CMA) in 2001. The authors examine the history of immigration in the Toronto area and recent trends in the Toronto housing market to understand the social and housing circumstances that immigrants encountered in Toronto upon arrival. The housing conditions of immigrants living in the CMA in 2001 are reviewed before the incomes and social characteristics of Toronto residents who are experiencing affordability problems are examined. The final section explores how very recently-arrived immigrants find housing and the extent to which their initial housing situations are affordable, adequate, and suitable.

Prepared by Valerie Preston, Robert Murdie, Ann Murnaghan, Department of Geography, York University. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 98 pages (1121 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC_Housing.pdf

THE HOUSING SITUATION AND NEEDS OF RECENT IMMIGRANTS IN THE VANCOUVER CMA

This report provides a detailed analysis of the housing situation of immigrants in the Vancouver metropolitan area and complements similar reports on Montréal and Toronto. Drawing on a wealth of new information about the housing situation of immigrants, the authors examine four themes: the history of immigration in the Vancouver metropolitan area and recent trends in the Vancouver housing market; the housing conditions of immigrants currently living in the metropolitan area, focusing on the intersections between immigration, income, and

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ethno-cultural origin in the housing market; a detailed analysis of Vancouver residents who are experiencing affordability problems; and the housing circumstances of newcomers six months after landing in Canada, based on the Longitudinal Survey of Immigrants to Canada (LSIC). In the last of these themes the authors make direct links between immigrant admissions policy and outcomes in the housing market, since LSIC, in contrast to the census, includes information about the class of entry of immigrants.

Prepared by Daniel Hiebert, Pablo Mendez, Elvin Wyly, Department of Geography, University of British Columbia. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 101 pages (1309 KB)

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/Housing%20situationv5.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/Housing%20situationv5.pdf)

IMMIGRANTS AND HOUSING: A REVIEW OF CANADIAN LITERATURE FROM 1990 TO 2005

Despite the importance of immigrant access to acceptable housing and increased interest in this research area during the past decade there are few bibliographies of related Canadian literature. Two notable exceptions include an annotated bibliography from the Institute of Urban Studies, University of Winnipeg (Beavis, 1995) and the Housing New Canadians Research Working Group bibliography (2000) (www.hnc.utoronto.ca). While useful, neither of these is complete, and the Beavis bibliography is out of print. Therefore, there is need for an updated literature review and annotated bibliography in this important and rapidly emerging field of study.

This literature review was constructed in several stages. The search for sources concentrated on items that appeared between 1990 and 2005 and on literature about Canadian housing markets. Material concerning housing demand, housing careers, homeownership, and barriers in the housing market were sought.

Appendix A of this literature review, which lists 106 items, is derived from the search for a variety of relevant sources. Abstracts are provided where available. Web addresses are also given for material that is publicly available on the Internet. About one-third of the sources originates from government reports, of which half were initiated by CMHC. Twenty-five percent were found in journal articles, seventeen percent in student theses, and twelve percent in reports from NGOs. The remainder were from research institutes, book chapters and conference papers. Often material from a government report or student thesis is subsequently revised and published in a refereed journal. In several instances, both documents are included in the bibliography.

After compiling the bibliography, 56 items were selected for further consideration and more detailed summary. These are included in Appendix B. The primary criteria were relevance to the overall theme of immigration and housing, recency of material, and availability.

Prepared by Robert Murdie, Valerie Preston, Sutama Ghosh, Magali Chevalier, Department of Geography, York University. CMHC Project Officer: Jim Zamprelli. Ottawa: Canada Mortgage and Housing Corporation, 2006. 189 pages (933 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Immigrants\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Immigrants(w).pdf)

HOUSING EXPORT OPPORTUNITIES

BUYING PATTERNS OF MEXICO'S DEVELOPERS IN MEXICO'S MAIN CITIES

Canada Mortgage and Housing Corporation (CMHC) commissioned Softec to conduct a survey to identify equipment buying patterns of Mexican developers in Mexico's three main cities: Mexico City, Guadalajara and Monterrey, with the goal of introducing Canadian building products.

Using Softec's database containing building projects in 30 cities of the Mexican Republic, a project list was extracted for Mexico City, Guadalajara and Monterrey for the residential sector, such as houses and apartments valued at over \$150,000 dollars. Using this directory, data was obtained on the projects and the companies and directors for the purpose of this survey. A total of 450 building project records were obtained. Using the list of 450 residential projects as a base, 100 senior level contacts including General Managers, Project Managers, Purchasing Managers and Marketing Managers were surveyed.

Prepared by Gene Towle, Softec, Real Estate Project Consulting Firm. CMHC Project Officer: Paulina Barnes. Ottawa: CMHC International, 2005. 21 pages

Nota: Aussi disponible en français sous le titre : *Étude des habitudes d'achat des promoteurs mexicains dans les principales villes de Mexique* et en espagnol sous le titre : *Estudio sobre hábitos de compra de los desarrolladores mexicanos en sus principales ciudades*

AVAILABILITY : Product is available on the web at
<http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcic/suexin/inma/upload/Buying-patterns-of-Mexico-s-three-main-cities.pdf>

CANADIAN DESIGN: CELEBRATING CANADA'S EXPERTISE IN ARCHITECTURE, LANDSCAPE DESIGN, INTERIOR DESIGN, AND COMMUNITY PLANNING = LA CONCEPTION AU CANADA : CÉLÉBRONS LE SAVOIR-FAIRE CANADIEN DANS LES SECTEURS DE L'ARCHITECTURE, DE L'AMÉNAGEMENT PAYSAGER, DU DESIGN D'INTÉRIEUR ET DE L'URBANISME

This directory includes projects designed by some of the most exciting and inventive Canadian planners, architects, landscape architects and interior designers working in China today.

Ottawa: Canada Mortgage and Housing Corporation; International Trade Canada, Trade Commissioner Service, 2004. 66 pages

Note: Text in English and in French

AVAILABILITY : CMHC Information Products (Order number 63887) and
<http://www.cmhc-schl.gc.ca/en/homadoin/excaprex/suexin/upload/CCDIC-ENGFNL.pdf>

HOUSING EXPORT OPPORTUNITIES

CANADIAN SUSTAINABLE COMMUNITY MASTER PLAN -- NAN HUI DISTRICT OF PUDONG, CHINA

This report presents the results of a project commissioned by Canada Mortgage and Housing Corporation (CMHC) in January 2004, in joint venture with a large Chinese developer, China Enterprise (CE), to provide a Canadian designed Master Plan for a sustainable community to be developed by CE in the Nan Hui District of Pudong, an extensive area south of the Huang Pu River across from the main built-up metropolis of Shanghai.

CE was interested in developing a “ Sustainable Community” to market a form of community development which could be promoted as providing the latest Canadian standards of liveability, sustainability, green technology, energy efficiency, and Healthy Housing. CMHC was interested in demonstrating how Canadian design expertise and building systems can contribute to the creation of sustainable communities and Healthy Housing in China. The design intent was to translate the latest and best Canadian community design practices into an appropriate local Chinese context. This community was to be a model for similar developments in China, particularly in the Pudong area, by demonstrating a desirable lifestyle focussed on sustainability, comfort, health, and relaxation in a natural setting. The community is designed to provide an excellent quality of life while respecting existing natural systems.

The Nan Hui Master Plan illustrates a distinctly Canadian sustainable design approach adapted to local Chinese conditions. The Master Plan creates a template for sustainable living, resource efficiency, a healthy lifestyle connected to nature, and low impact on the natural environment. The community includes a wide range of housing types, neighbourhood commercial space and amenity facilities. The landscape design has a dual function: it creates a convenient, attractive, and generously landscaped open space framework combined with an expanded canal system to provide welcoming spaces for relaxation, recreation, as well as a network of routes for walking and cycling, while also acting as a green infrastructure system.

Consultant Team: Ramsay Worden Architects, Prime Consultant; Bob Worden, Partner in Charge of Project; Peter Reese, Project Manager; Philips Farervaag Smallemberg Associated Firm – Landscape Architecture; PMC Associates Consultant; Archemy Consulting Ltd. Consultant; Consultant Architect - Shanghai Context: Dr. Chen Yi. CMHC Project Officer: Nellie Cheng. Ottawa: CMHC International, 2006. 98 pages

Disponible en français sous le titre : [Plan directeur de la collectivité durable de type canadien - district de Nan Hui, à Pudong, Chine](#)

AVAILABILITY : [CMHC International and
http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/suexin/inma/upload/SustainableCommunities_English%20\(WEB\).pdf](http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/suexin/inma/upload/SustainableCommunities_English%20(WEB).pdf)

HOUSING EXPORT OPPORTUNITIES

DISTRIBUTION CHANNEL ANALYSIS FOR SELECTED U.S. MARKETS AND PRODUCTS

The purpose of this report is to provide exporters of Canadian building products with an understanding of how to market to the distribution channels supplying the following building products in the following U.S. regions and markets:

- Product categories: doors, windows, roofing, siding, cabinets, counter tops, architectural millwork, and flooring;
- Regions and markets: New England (Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Connecticut, and New York state excluding New York City), the suburbs of New York City (excluding the boroughs), the Baltimore-Washington, D.C. MSA, Colorado (Front Range corridor).

The study includes a comparative analysis of the focus markets listed above versus the U.S. as a whole, covering the following topics: trends and factors influencing single-family new home construction; trends and factors influencing remodelling activity; structure of the distribution channels serving home builders and remodelers; home builders' and remodelers' supply needs and purchasing patterns; and the nature of potential opportunities for Canadian exporters.

Prepared for CMHC International by The Building Supply Channel, Inc. CMHC Project Officer: Marie-Hélène Pastor. Ottawa: Canada Mortgage and Housing Corporation, 2006. 86 pages

Disponible en français sous le titre : [Analyse des canaux de distribution de marchés et produits ciblés aux États-Unis](#)

AVAILABILITY : CMHC International and
http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/US_Market_E_July5.pdf

HOUSING EXPORT MARKET: OPPORTUNITIES AND CONTACTS IN FRANCE

This comprehensive market study of the housing industry in France illustrates how Canadian wood-frame construction can carve out an important place for itself in the French market. Business opportunities for Canadian exporters of housing products and services are also outlined.

Prepared by Geomar International. Québec: Société d'habitation du Québec; Ottawa: Canada Mortgage and Housing Corporation, c2004. 160 pages

Nota: Aussi disponible en français sous le titre : Marché d'exportation dans le secteur de l'habitation : occasions et contacts en France

AVAILABILITY : CMHC International and HYPERLINK
<http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Housing-Export-Market-Opportunities-and-Contacts-in-France.pdf>

HOUSING EXPORT OPPORTUNITIES

IRISH MARKET FOR PREFABRICATED HOUSING SYSTEMS AND COMPONENTS

The objective of this market study is to provide Canadian exporters of housing systems and product components with intelligence on the Irish market for prefabricated housing systems and components which will assist them in developing their market entry strategies and maximize their chances of achieving positive results in the market as soon as possible.

Chapters in the report cover the following topics:

- The market demand for timber frame housing;
- Product requirements;
- The purchasing process;
- The regulatory environment;
- Competition and market entry; and potential customers.

The appendices include:

- Code of practice for the design, manufacture and installation of timber frame housing;
- Statistics related to overseas suppliers; and
- Builders merchants and distributors interviewed.

Prepared by Carol Cousins and Kevin Kidney. Ottawa: CMHC International, 2005. 45 pages

Nota: Aussi disponible en français sous le titre : [Le marché irlandais des systèmes et composants d'habitation préfabriqués](#)

AVAILABILITY : CMHC International and

<http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcinc/suexin/inma/upload/The-Irish-Market-for-Prefabricated-Housing-Systems-and-Components.pdf>

MARKET ACCESS GUIDE FOR CANADIAN EXPORTERS OF BUILDING PRODUCTS TO CHINA

China, the fourth largest market in the world for building and construction products, offers a number of opportunities for Canadian exporters. The market for building products in China is the fastest growing market among the 10 largest markets.

The market for building products in China—a challenging, complex, and rapidly changing market—offers excellent prospects for Canadian exporters who have developed well-prepared market strategies. Accessing this market remains a challenge for most exporters of building products, particularly for medium and small sized companies. This Guide addresses the challenges that Canadian exporters of building products face in China. It provides practical information that

addresses issues such as how to conduct due diligence on importers, the essential components of a contract, import duties, import licenses, customs documentation, labeling and packaging requirements, intellectual property protection, the product certification process, China's standards and codes, the distribution system in China, and the challenges of being paid.

HOUSING EXPORT OPPORTUNITIES

Along with providing summaries of these issues, the Guide directs companies to the relevant government ministries, organizations, institutions, and agencies for further information. The market for building products is evolving rapidly because the demand for these products is increasing and because China is introducing institutional changes to meet its commitments for WTO membership. Recognizing that the regulatory environment is altering rapidly in China, the Guide provides exporters with websites and electronic information sources so that they can monitor the changes in policies and regulations. The Guide, by providing useful information to Canadian exporters of building products, will contribute towards the development of successful market strategies in China.

Prepared by John Ciaccia & Associates and Sinotek Business Consulting (Shanghai) Ltd. Ottawa: CMHC International, 2005. 152 pages

Nota: Aussi disponible en français sous le titre : Guide d'accès au marché de la Chine à l'intention des exportateurs canadiens de produits de construction

AVAILABILITY : CMHC International and
<http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhcin/suexin/inma/upload/Market-Access-Guide-For-Canadian-Exporters-of-Building-Products-to-China.pdf>

PORTLAND/SOUTHERN MAINE MARKET FOR BUILDING MATERIALS

This analysis of the Portland, Maine area market for building materials draws upon a variety of data sources and market impressions. Much data was obtained from the United States Census Bureau. Other data sources included the National Association of Home Builders (NAHB), market studies previously compiled by the Canadian government, numerous private market research resources (e.g., Fredonia Group) and the Maine Real Estate Information System. Still other sources of information include nationally and locally published articles and interviews with industry professionals, supplemented with live interviews with New England and Maine reps, distributors and builders. The result is an overview of the relevant regional and local markets, trends within those markets and on-the-ground observations made by those in the business.

The report provides helpful and accurate insights into the market for key building materials in the southern Maine area, both for 2005 and for the near term thereafter.

Prepared by Atlantica Group LLC. Ottawa: CMHC International, 2005. 44 pages

Nota: Aussi disponible en français sous le titre : [Le marché des matériaux de construction de Portland et du sud du Maine](#)

AVAILABILITY : CMHC International and
http://www.cmhc-schl.gc.ca/en/homadoin/excaprex/suexin/upload/IReport_en.pdf

HOUSING EXPORT OPPORTUNITIES

SENIORS HOUSING RESEARCH PROJECT IN TOKAI REGION

It is estimated that within 50 years Japan will become a super-aged society where the elderly account for approximately one third of the population. This report centres on the housing issues faced by the Tokai region which accounts for about one-tenth of the total Japanese population. The purpose of the study is to identify how Canada's expertise on housing the elderly can be applied to Japan in the best way possible.

Prepared by Research Institute for Regional Planning and Developments. Ottawa: CMHC International, c2003. 65 pages

Nota: Aussi disponible en français sous le titre : [Étude sur le logement des aînés dans la région de Tokai](#)

AVAILABILITY : CMHC International and
<http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Seniors-Housing-Research-in-Tokai-Region.pdf>

U.S. FEDERAL TAX CREDITS FOR NEW AND EXISTING HOMES: AN ASSESSMENT OF OPPORTUNITIES FOR CANADIAN EXPORTERS

The U.S. Congress passed legislation in 2005 allowing for home builders to take a \$2,000 tax credit for each house they produce that meets or exceeds a threshold of 50 per cent more energy efficient than the 2004 International Energy Conservation Code and its supplements for the tax years of 2006 and 2007. The 50 per cent compliance threshold applies only to heating and cooling costs. In addition, homeowners may take up to \$500 in tax credits for purchases of certain energy-efficiency improvements to their homes in these years. CMHC International commissioned a study of the potential market opportunity for Canadian product manufacturers in the U.S. The findings indicate that, while the improvements are not common practice in most parts of the U.S., qualifying for the tax credits may not represent a significant change for many builders. Using compliance software that is certified by the Residential Energy Services Network will enable builders to determine what they need to qualify for these tax credits. Initially, the U.S. Treasury estimated that only 14,000 or about one per cent of new, single-family houses would achieve compliance each year. Analysis by the proponents of the two leading compliance software tools suggests that builders can achieve compliance in every climate zone leading to the conclusion that the Treasury Department estimate may be significantly understated. Therefore, the market opportunity for Canadian producers could be quite large.

Prepared for CMHC International by MarketEdge Consulting, Inc. Ottawa: Canada Mortgage and Housing Corporation, 2006. 41 pages

Disponible en français sous le titre : [Crédits d'impôts fédéraux des États-Unis pour maisons neuves et existantes : Évaluation des possibilités pour les exportateurs canadiens](#)

AVAILABILITY : CMHC International and
[http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Federal EN June15_06.pdf](http://www.cmhc-schl.gc.ca/en/hoficlincl/cmhc/in/suexin/inma/upload/Federal_EN_June15_06.pdf)

HOUSING FINANCE

CRITICAL SUCCESS FACTORS FOR COMMUNITY LAND TRUSTS IN CANADA: FINAL REPORT

A Community Land Trust (CLT) is an innovative approach to providing perpetually affordable housing to low- and moderate-income households. CLTs exist all over the world, taking on a variety of different forms. They have a long-standing tradition in Europe, and in the United States, they have been promoted since the 1960s. Today there are over 115 active CLTs in the U.S.

spanning 31 States. In Canada, the tradition is less established, with only a handful of CLTs operating across the country.

Community Land Trusts in both countries have met with varying degrees of success. Some have continued to flourish over two decades while others have dissolved within a few years of incorporating. This study examines those key factors that are instrumental in the success of a CLT. The study includes profiles of twelve CLTs across Canada and the United States, demonstrates the range of models available for providing perpetually affordable housing through a CLT, identifies the key challenges and successes CLTs are likely to experience in their efforts to provide perpetually affordable housing; and shares those key learnings (best practices) that each of the profiled CLTs has gained over time.

Prepared by Housing Strategies Inc. CMHC Project Manager: Kamal Gupta. Ottawa: Canada Mortgage and Housing Corporation, 2005 (External Research Program Research Report) 155 pages (472 KB)

Note: No. 05-010 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Critical%20Success%20Factors%20-%20w%20\(JUNE17_2005\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Critical%20Success%20Factors%20-%20w%20(JUNE17_2005).pdf)

GREEN MORTGAGE OVERVIEW: TOWARDS AN IMPLEMENTATION PLAN: FINAL REPORT

The objective of this project was to justify to the Alberta mortgage industry, through a stakeholder committee, the creation of Green Mortgage products. This was supported by presenting data that demonstrates market need and developing a tool to facilitate the validation and recognition of energy efficiency improvements and the corresponding reduction in monthly utility costs.

Prepared for Calgary Region Home Builders Association, Canada Mortgage and Housing Corporation, Climate Change Central. Proposal and report submitted by: SAIT Polytechnic, Construction Department, Environmental Solutions Team. CMHC Project Officer: Anand Mishra. Ottawa: SAIT Polytechnic, 2005. 28 pages

AVAILABILITY : On a loan basis only from Canadian Housing Information Centre

UNDERSTANDING THE RELATIVE UNDERDEVELOPMENT OF REITS IN CANADA

A Real Estate Investment Trust (REIT) is a security consisting of a managed pool of capital, units of which are traded on stock exchanges. Investors, also called “unit holders”, have an undivided beneficial interest in the properties owned by the REIT. Investors purchase “units” and receive a right to a proportional income stream resulting from the properties owned by the REIT. At regular intervals, usually monthly, investors receive “distributions”. These distributions are the rents collected by the REIT, passed along to the investor. At the time when the investor sells his or her units, if the value of the units has increased in the market, the investor also receives a capital gain equal to the value between the sale price and the original purchase price of the units. REITs should not be confused with debt instruments.

The benefit of these vehicles to Canadian investors is that any income earned on the properties that is distributed to unit holders is deducted from the REIT-level tax bill. Instead of receiving its tax revenue on the rental income from the REIT directly, the government receives tax on the distribution from the unit holder who is taxed on the taxable portion of the distributions at his or her personal marginal rate. In addition, the unit holder is able to shield portions of the distribution from tax because the capital cost allowance claimed at the REIT level reduces taxable income, but not cash flow for the unit holder.

This report assesses apartment and non-apartment REITs in the Canadian and in the American context. The main objective of this examination is to identify barriers and opportunities impacting apartment REIT growth in Canada.

This report develops a framework for understanding the relative underdevelopment of REITs in Canada when compared to the American REIT industry. The framework identifies the factors in the Canadian environment that have contributed to the Canadian industry currently being less developed than its U.S. counterpart. Further, a summary of the drivers of success for both apartment and non-apartment REITs in both Canada and the U.S. is presented, based on the study of the participants in both environments. The overall intent of these examinations is to suggest a list of suggestions that could enable the Canadian REIT industry in general, and the Canadian apartment REIT industry specifically, to eventually mirror the success seen in the U.S.

Prepared by David W. Conklin, Darroch A. Robertson, and Darcy J.L. Jones. Ottawa: Canada Mortgage and Housing Corporation, 2002. 74 pages (1366 KB)

Note: No. 107 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/undersrtanding_web_feb23.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/undersrtanding_web_feb23.pdf)

CHAÎNES COGNITIVES ET LE RÔLE DES VALEURS DANS LE MARKETING DES PRODUITS D'HABITATION

The means-end chains theory stipulates that a consumer chooses a product on the basis of the attributes it presents, and that these attributes provide the desired consequences. According to this theory, these consequences in turn satisfy the individual's values. The means-end chains theory makes it possible to identify personal values that direct consumer choices. This theory permits, among other things, the development of customized marketing campaigns. In some cases, it also enables products to be developed or existing products to be modified in relation to consumer personality.

In this context, this methodology was applied to homebuyers. On the one hand, the purpose was to verify whether the model was applicable to housing. If so, it was then necessary to validate the model's relevance for supporting marketing efforts by the Canadian factory-built housing industry.

The objectives of this project were to:

- 1) Verify the applicability of the means-end chains model in the Canadian housing sector;
- 2) Improve knowledge of the deep-seated reasons guiding homebuyers' decisions; and
- 3) Suggest courses of action for developing marketing strategies adapted to the homebuyer market.

Prepared by Patrick Lavoie and François Robichaud. CMHC Project Officer: Bruno Duhamel. Ottawa: Canada Mortgage and Housing Corporation, 2004 (External Research Program Research Report) 74 pages (3785 KB)

AVAILABILITY : Canadian Housing Information Centre and

[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/chainreport_web.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/fr_unilingue/chainreport_web.pdf)

EVOLVING HOUSING CONDITIONS IN CANADA'S CENSUS METROPOLITAN AREAS, 1991-2001 = ÉVOLUTION DES CONDITIONS DE LOGEMENT DANS LES RÉGIONS MÉTROPOLITAINES DE RECENSEMENT DU CANADA, 1991-2001

As part of the federal government's dialogue on the opportunities and challenges facing urban areas, Statistics Canada has been asked to undertake a project that would provide key background information on the trends and conditions in Canadian Census Metropolitan Areas (CMAs) across a number of dimensions. As part of this initiative, CMHC's authoritative CMA report examines and analyses:

- demographic and housing market trends;
- the evolution of housing conditions;
- housing need;
- households at high risk of housing need;
- the distribution of housing need on evolving housing trends; and
- conditions in census metropolitan areas.

Included in the report is an extensive roster of detailed statistical tables supporting the analysis and conclusions.

HOUSING INDICATORS AND DATA

Prepared by John Engeland, Roger Lewis, Steven Ehrlich, and Janet Che. Ottawa: Statistics Canada, 2005. (Trends and Conditions in Census Metropolitan Areas; no. 005) (190 pages) Bilingual

Note: No. 04-039 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : On the Statistics Canada web site for free as Catalogue no. 89-613 MWE. To obtain single issues, visit the web site at www.statcan.ca. and select Products and Services.

HOUSING MARKET

THE IMPACT OF THE 2010 OLYMPICS ON THE VANCOUVER AND SEA-TO-SKY HOUSING MARKETS

The 2010 Winter Olympics and Paralympics (the Games) will take place in Vancouver and Whistler, British Columbia and potential impacts will reflect on the entire Southwest Metropolitan region of the province. The purpose of this research is to estimate the impact of the 2010 Games on the region and its sub-regional housing markets.

The research entails three components: a literature review; a review of the housing market; and forecasts of population, housing and employment for the region between 2001 and 2031. The literature review recounts various host cities' experiences with mega events, such as the Olympic Games, specifically the impact on their economies and housing markets. The review relates these experiences to the potential implications of the 2010 Olympic Games on the economy and housing markets of communities in the host region. The second component, the housing market review, comprises a series of reports on housing markets in Vancouver and the Sea-to-Sky corridor (including the municipalities of Squamish, Whistler, Pemberton and Lillooet). These reports present current and historical information related to population and residential real estate. They also include a discussion of non-market housing components, and identify population groups that may be impacted by the Games.

Building on the first two components, the projections provide estimates of the potential impact of the Games on regional housing markets. This required projections of housing market conditions under two scenarios— one that included hosting the Games and one that did not. The “no Games” scenario was constructed by extending pre-2002 demographic and economic trends for the region into the future, while the “Games” scenario built on federal and provincial data on the economic impacts of hosting the Games.

Prepared by City Spaces Consulting Ltd. and Urban Futures Inc. CMHC Project Officer: Carol Frketch. Ottawa: Canada Mortgage and Housing Corporation, 2006. 301 pages (10012 KB)

Note: No. 06-022 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65293)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/impact_2010_report\(V\).pdf](http://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/impact_2010_report(V).pdf)

HOUSING MARKET

VARIATION DES PRIX DES LOGEMENTS AU CANADA : RAPPORT FINAL

This project is mainly aimed at explaining housing price variations in major Canadian cities for the period from 1972 to 2002, using both supply-side and demand-side factors. With the dynamic responses, it is possible to make certain matches between metropolitan areas. The similarities are primarily the result of geographical logic. In fact, the Calgary and Edmonton areas often exhibit similar dynamic responses, as do Montréal and Québec. Halifax and Ottawa-Gatineau have behaviours that tend to resemble the behaviours of Montréal and Québec. In certain respects, Toronto and Hamilton exhibit similar dynamics. Finally, Vancouver exhibits dynamic responses that differ the most from the behaviours of the other urban centres. Still, the different urban centres display dynamic housing price behaviours that are, in several respects, specific to them.

Prepared by Yvon Fauvel. CMHC Project Officer: Bruno Duhamel. Ottawa: Canada Mortgage and Housing Corporation, 2005. 99 pages (1086 KB)

Note: No. 05-014 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/fr_unilingue/CHIC_La_variation%28w%29.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/fr_unilingue/CHIC_La_variation%28w%29.pdf)

INDOOR ENVIRONMENT

DEVELOPMENT AND EVALUATION OF A NEW DEPRESSURIZATION SPILLAGE TEST FOR RESIDENTIAL GAS-FIRED COMBUSTION APPLIANCES: FINAL REPORT

NRCan, in partnership with CMHC, carried out a project to evaluate the performance of a small sample of residential combustion appliances using a new depressurization spillage test procedure.

The tests were done at a Canadian commercial testing laboratory. The new combustion spillage test was relatively easy to perform. Seven gas-fired appliances were tested at 50 Pa depressurization: three had no detectable spillage; three had minor, but measurable spillage; one had significant spillage.

The new depressurization spillage test can be easily performed in-house by manufacturers and certification agencies. It can help them to differentiate products in terms of spillage resistance and assist manufacturers to improve and market more spillage-resistant combustion appliances.

This report is intended to provide some of the background for this project and to discuss the test concept and assumptions. It also includes a detailed description of the test procedure that incorporates what was learned during the laboratory testing project.

Prepared for Natural Resources Canada and funded in part by Canada Mortgage and Housing Corporation. Prepared by Peter Edwards Co. as an account of work sponsored by CMHC and NRCan. NRCan Project Manager: James Glouchkow; CMHC Project Manager: Don Fugler. Ottawa: CMHC, 2005. 29 pages 1425 KB)

INDOOR ENVIRONMENT

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Depressurization\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Depressurization(W).pdf)

RÉDUCTION GÉNÉRALE DES PARTICULES DANS LES MAISONS OÙ LES OCCUPANTS SOUFFRENT DE MALADIES RESPIRATOIRES

Numerous studies have looked at indoor concentration of fine particles and the incidence of respiratory complications. Less work, however, has been performed investigating the real time behaviour of indoor airborne particles. The goal of this project was to investigate particle matter levels in various house types over several days, in order to evaluate possible corrective measures aimed at improving the environment of house occupants with respiratory illnesses.

House types with a variety of ages and heating systems were selected with at least one occupant debilitated by a chronic respiratory illness (asthma and/or COPD). Particulate airborne matter was measured with a laser particle counter calibrated to discriminate particle size in the 10, 5, 1, 0.5 and 0.3 μm range (then converted in $\mu\text{g} / \text{m}^3$) over several consecutive days (2-4 days) during non-heating and heating seasons. A sampling ring, connected to the counter, allows the simultaneous monitoring of 4 different rooms, including the basement and the bedroom (debilitated subject). A fifth sample line collected outside air about 1 m from the exterior wall. House types (age range 10-30 years) were: one city row house with electric central air heating; 1 two storey house and 1 bungalow with dual-energy central air heating; 1 two storey house heated with electric baseboards; 1 bungalow with central air heating; and one century-old, upper duplex heated with electric baseboards, in downtown Montreal.

Results: Particulate concentrations (PM1 and PM10) ratio (inside/outside air) over a 24 hr period were quite different from one day to the other and one house to the other. The occupant activity level, including cooking activities, were identified as the main source of high PM levels inside the homes. Some furniture and bedding materials also contributed to higher particle concentrations, especially when not regularly cleaned. Air filtration systems may be very efficient to reduce particulate levels, but only during periods of low activity (e.g. sleeping hours) and only if the filtered air is supplied directly to the occupied room (e.g. sleeping room). During the day following house cleaning or carpet removal, the measures show no significant impact on inside PM levels, compared to previous days. Particle peak levels, outside cooking periods, seemed however to be lower in easy-to-maintain homes (i.e. hard surfaces, no clutter) with at least weekly vacuuming and regular cleaning of carpets, pillows, and comforters. In conclusion, the temporal variations of PM 1-10 μm ratios varied widely during the day and were related mainly to the activity within the house.

Prepared by TN conseil, Conseillers en technologie de l'environnement inc. Principal researcher: Pierre Hosatte. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2005. 39 pages (1551 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/fr_unilingue/Reduction%20generale%20des%20particules%20WEB.PDF

INFRASTRUCTURE

USES OF DEVELOPMENT COST CHARGES: FINAL REPORT

IBI Group was retained by Canada Mortgage and Housing (CMHC) in June 2004 to carry out an analysis of the uses of development charges.

A key objective of the study was to ascertain the overall infrastructure costs related to new residential subdivision development and the relative role that development charges play in meeting these infrastructure needs. Ten (10) subdivisions were selected that were completed around the year 2000 as case study subdivisions. A further objective of the study was to assess the sources of financing of the infrastructure required to service new growth and the proportion of funds created through development cost charges.

Prepared by IBI Group. CMHC Project Officer: Jessica Yen. Ottawa: Canada Mortgage and Housing Corporation, 2005. 2 volumes

Volume 1: Main Report (87 pages) Volume 2: Exhibit Document (51 pages)

Note: No. 05-021 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and for Volume 1 (656 KB):
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Uses%20of%20Development%20Cost%20Charges%20Report%201\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Uses%20of%20Development%20Cost%20Charges%20Report%201(w).pdf)

Volume 2 (5897 KB):

ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Uses%20of%20Development%20Cost%20Charges%20WEB%20-Exhibit%20Document.pdf

MANUFACTURED HOUSING

PROFILE AND PROSPECTS OF THE FACTORY-BUILT HOUSING INDUSTRY IN CANADA

The focus of this study is to develop a profile of the factory-built housing sector, paying attention to evidence and possibilities for further integration between the factory-built sector and the larger Canadian homebuilding industry and with an eye on the level of innovation that factory-built housing can bring to the Canadian homebuilding industry.

The residential construction sector in Canada contributes about \$80 billion to the Canadian construction sector annually. The factory-built housing sector in Canada is still quite small – production in the sector amounts to approximately \$1.2 billion. Despite its small size, the factory-built sector is an important component of the homebuilding industry. A successful factory-built housing sector has great potential to create further opportunities for the Canadian home building industry by expanding Canadian housing exports, meeting environmental challenges, and contributing to innovation in the homebuilding sector.

MANUFACTURED HOUSING

This report combines principal data on the size and scope of the factory-built housing industry with interviews and field visits to provide a broad examination of the factory-built housing sector in Canada. As well as examining the current state of the factory-built sector, forecasts and prospects for the future are incorporated and discussed. The outlook portion of the report includes analysis of future possibilities for technology and production methods and integration between the factory-built and on-site built sectors.

Prepared by Clayton Research Associates Limited. Ottawa: Canada Mortgage and Housing Corporation, 2006. 114 pages (2757 KB)

Note: [No. 06-017 in the Research Highlights Socio-economic Series](#) summarizes the results of this research and is available on the CMHC web site (Order no. 65220)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Profileprospects\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Profileprospects(W).pdf)

MOISTURE AND MOLD

DEFINING PERFORMANCE OF WATER RESISTIVE BARRIERS (WRB'S)

Recent failures of face-sealed facades with tight exteriors, such as Portland cement plaster (stucco) in the lower mainland of British Columbia and exterior insulation finish systems (EIFS) in Wilmington, North Carolina, have reminded the building community about the importance of details in controlling rain penetration.

Sheathing membranes have a critical role in managing moisture that penetrates the primary cladding. These membranes are also counted on to assist in controlling vapour movement and air infiltration and exfiltration. As a class of materials, they have been given several descriptive names. Water (or Weather) Resistive Barrier (WRB) is used in this research product for all types of sheet membranes, including bonded coatings that serve that function.

Canada Mortgage and Housing Corporation (CMHC) formed an external consortium at Concordia University, in Montréal to study the moisture performance of WRB materials. This consortium received support from DuPont (U.S.), Fortifiber Corporation (U.S.), Hal Industries Inc., Surrey, B.C., the Homeowner Protection Office of B.C. and Concordia University.

The four main objectives to the research were:

1. To develop a material classification system.
2. To review laboratory test methods for characterizing the properties of WRB products.
3. To examine various effects on WRB performance, including:
 - the effect of various substrates on moisture transfer through selected WRB products;
 - the effect of various boundary conditions, such as water head;
 - the effect of outdoor weathering on WRB properties;
 - the influence of various extractives and surfactants; and
 - the effect of fastener penetration on moisture transmission into substrates.
4. To develop a performance-oriented test methodology to more realistically characterize WRB for product standards.

MOISTURE AND MOLD

This CD-ROM summarizes the major findings of the research investigation. The effect of surfactants, water penetration and weathering was considered, and the findings reveal important design considerations to improve performance of WRB.s. The following items are included on the CD-ROM:

- Weather Resistive Barriers in Stucco Cladding Systems by Jian Zhang
- Summary of Research on Water Resistive Barriers. Research Highlight Technical Series; 04-124
- Evaluation of Laboratory Performance of Weather Resistive Barriers by Marein Pazera
- Water Vapour Transmission Through Weather Resistive Barriers by Tania Mungo
- An Engineering Approximation of Material Characteristics for Input to Ham Model Simulations by Yu Huang
- Résumé de la recherche sur les membranes de revêtement intermédiaire. Point en recherche. Série technique ; 04-124

Ottawa: Canada Mortgage and Housing Corporation, 2004. 1 CD-ROM

Note: No. 04-124 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre

INVESTIGATING MOISTURE IN SEASONAL HOUSING: FINAL REPORT

This research examined moisture issues in unoccupied houses. There are many dwelling types that do not have occupants for long periods of time. These would include houses where the homeowners go south for a large part of the winter, second houses, houses deserted for periods due to natural disasters, rental houses without occupants for extended periods, and cottages. Unoccupied houses often suffer moisture related damages to building materials, finishes, and house contents. In many cases, there should be simple ventilation solutions that will reduce or eliminate these moisture problems. This project investigated the types of moisture problems found. The Nova Scotia contractor analyzed moisture sources and removal methods, and then recommended solutions for a variety of sample dwellings. The solutions depended on whether the unoccupied spaces have electrical power, and functioning heating or ventilation systems. The findings suggest that many of the moisture-troubled houses have familiar foundation problems that require traditional repairs.

Prepared by Abri Sustainable Design & Consulting. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2005. 128 pages (6329 KB)

Note: No. 05-120 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 64942)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Investigatingmoisture\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Investigatingmoisture(w).pdf)

NORTHERN HOUSING

GREEN ENERGY FOR REMOTE HOUSING IN THE NORTH: ASSESSMENT OF AN INTEGRATED ENERGY SYSTEM UTILIZING FUEL CELLS: FINAL REPORT

This project involved the evaluation, field-testing, development, demonstration and deployment of fuel cells to meet power and space heating requirements of homes in remote communities of the Canadian North. The main objectives of the project were to assess fuel cell technology, to analyze its feasibility for stationary applications in the Canadian North, and to conduct economic analysis for integrating renewable energy with hydrogen fuel cells.

Different types of fuel cells were assessed with respect to their applicability to northern communities. The project was conducted to determine if fuel cells are economically feasible for stationary purposes in five communities in the Inuvialuit region of Northwest Territories: Inuvik (pop. 2,894), Tuktoyaktuk (pop. 930), Sachs Harbour (pop. 114), Holman (pop. 398), and Paulatuk (pop. 286). However, major analysis, conclusions and recommendations are based on the conditions found in Holman, which the authors studied for a possible pilot project.

The basic premise of this project was to study the deployment of a 2 kW or 3 kW hydrocarbon-based fuel cell in a single home to replace the grid electricity supplied from diesel and natural gas generators presently used by the Northwest Territories Power Corporation (NTPC). The costs of deploying the fuel cells over a 10 to 20 year period were compared to the present total cost of energy for single homeowners. An additional case study was conducted to see the feasibility of a 50 to 80 kW hydrocarbon fuel cell system in an apartment complex in Inuvik. An economic feasibility study was also conducted for the integrated wind-hydrogen-fuel cell system.

Modelling and financial analysis was done using widely recognized software tools, HOMER™ and RETScreen®. The analysis was conducted using several scenarios. Results indicated that the integrated wind-hydrogen-fuel cell systems are economically viable for most of the cases covering more than 20% of the population of a small community, such as Holman.

Prepared by Aurora Research Institute. CMHC Project Officer: Thomas Green. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 90 pages (7182 KB)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/GREEN%20ENERGY\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/GREEN%20ENERGY(W).pdf)

PERSONS WITH DISABILITIES

ÉVALUATION DE L'EXIGENCE PHYSIQUE À MONTER DES RAMPES D'ACCÈS EN FAUTEUIL ROULANT MANUEL CHEZ LES ADULTES ÂGÉS DE 18 À 64 ANS

This research studied the physical effort needed for a manual wheelchair user to climb three access ramps: one with a slope of 1 in 10, that is, a ramp that rises one unit every 10 units in length; a second with a slope of 1 in 12 and a third with a slope of 1 in 20.

There were two research hypotheses:

PERSONS WITH DISABILITIES

1. physical requirements vary according to the slope of the ramp, and
2. the ability to propel a wheelchair differs with age.

The study was unique. The few previous studies about the physical effort needed to propel a manual wheelchair used men in excellent physical condition who were long-time users of wheelchairs. For this study, the researchers tested 39 men and women who do not normally use wheelchairs. Two age groups were studied: those 18 to 39 years and those 40 to 64 years old.

The results showed that a slope of 1 in 20 is significantly easier to climb in a wheelchair than slopes of 1 in 10 and 1 in 12. There was, however, little difference between the effort needed to climb a slope of 1 in 10 and a slope of 1 in 12. The results did not show any age-related differences.

The research provided a unique opportunity to reflect on currently recommended standards for the slope of wheelchair ramps. However, before reaching any conclusions, there should be further research that includes people older than 64 years of age, and people who use wheelchairs. Research should also be undertaken on the risks of tipping over when using a wheelchair on access ramps.

Prepared by Jacqueline Rousseau, Rachid Aissaoui, and Daniel Bourbonnais. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2003. (External Research Program Research Report) 56 pages (1231 KB)

Note: No. 05-011 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and

ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/fr_unilingue/CHIC_report_evaluation_web_march11.pdf

FRAMEWORK FOR COST- BENEFIT ANALYSIS OF HASI AND RRAP-D: FINAL RESEARCH REPORT

The objective of this study was to develop a framework for the cost-benefit analysis of two programs of Canada Mortgage and Housing Corporation (CMHC), the Residential Rehabilitation Assistance Program for Persons with Disabilities (RRAP-D) and Home Adaptations for Seniors Independence Program (HASI). The framework includes all the effects of these programs on applicants, their caregivers and their community.

The study team developed a logic model for the two programs, and a quantitative model of potential impacts of the renovations over time. The team listed all of the costs and benefits that might potentially be relevant and discussed how each might be measured. It made recommendations about the general approach to a major study of the two programs and about various technical aspects of the cost-benefit analysis methodology. In particular, the report describes the use of “contingent valuation” by beneficiaries and the alternative approach which is to quantify and value changes in the quality of life of program beneficiaries and their caregivers.

PERSONS WITH DISABILITIES

The study was funded by CMHC and Health Canada.

Prepared by Dr. Kenneth Watson and Dr. Anne Perkins, Rideau Strategy Consultants Ltd. CMHC Project Manager: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2005. 2 volumes

Note: No. 05-038 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64944)

AVAILABILITY : Canadian Housing Information Centre and ([volume 1: 5870 KB](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/frameworkHASIvol1.pdf))
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/frameworkHASIvol1.pdf and ([volume 2: 3155 KB](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/FrameworkHASIVol2(WEB).pdf))
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/FrameworkHASIVol2\(WEB\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/FrameworkHASIVol2(WEB).pdf)

HOUSING FOR ADULTS WITH INTELLECTUAL DISABILITIES: FINAL REPORT

This study examined the housing issues that adults with intellectual disabilities and their families are facing. Conducted between December 2004 and February 2006, it addressed:

1. the availability of housing and associated support services;
2. best practices;
3. transitions between housing situations;
4. the role of parents of adults;
5. risks that face persons with intellectual disabilities as they transition out of the family home or the juvenile system; and
6. gaps in the availability of housing, both existing and anticipated.

The research focused on three cities: Victoria, Ottawa and Halifax, with some input from stakeholders in other provinces. While not national in scope, nor exhaustive in its methods, it provides an overview of the housing and support issues facing adults with intellectual disabilities.

Prepared by Beals, Lalonde & Associates Citizen Advocacy of Ottawa. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2006. 91 pages (1281 KB)

Note: No. 06-008 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65011)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/ENGWeb_Sept6_2006.pdf

REGULATORY REFORM

ACCESSORY APARTMENT REGULATIONS IN CENSUS METROPOLITAN AREAS IN CANADA = RÈGLEMENTS VISANT LES APPARTEMENTS ACCESSOIRES DANS LES RÉGIONS MÉTROPOLITAINES DE RECENSEMENT DU CANADA

Accessory apartments represent an affordable housing option and can be a positive component of residential intensification and sustainability. This study identified and documented zoning regulations and bylaws in municipalities within Canada's proposed and existing Census Metropolitan Areas (CMAs), and summarized their provisions for accessory apartments. Slightly more than half of all municipalities allow accessory apartments in some form, while 14 of the core cities in the 33 CMAs prohibit this type of use.

Prepared by Monika Ruffolo, Chris Down, and David Grondin under the direction of Catherine Marchand, Executive Director, Intergovernmental Committee on Urban and Regional Research. CMHC Project Manager, Brian Eames. Ottawa: Canada Mortgage and Housing Corporation, 2006. 1 volume in various pagings (1874 KB)

Note: No. 06-006 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65025)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/CHIC_Accessory_Apartment\(w\)_nov2.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_bilingual/CHIC_Accessory_Apartment(w)_nov2.pdf)

CEDAR VALLEY APPROVAL PROCESS REVIEW: FINAL REPORT

The District of Mission secured a federal funding grant through the Affordability and Choice Today (ACT) Program for a review of the approval process for land use applications in Cedar Valley. Cedar Valley was selected as a suitable area as it had undergone a comprehensive land use planning process, resulting in the Cedar Valley Comprehensive Development Plan. Ideally any process improvements could be considered, if appropriate, for incorporation in other areas in the municipality.

The objective of the review process was to identify and implement processes that could potentially reduce the amount of time, uncertainty and cost for developers to receive local government approvals. This would be achieved by engaging a consultant, utilizing the grant monies, to undertake the review. John Ellis and Associates was engaged to carry out the review. John Ellis worked with staff, external agencies, community representatives and the Development Process Advisory Committee in preparation of the report.

The report outlines the study design procedures, efficiency strategies, and Cedar Valley actions throughout the approval process review. A summary of the recommendations made and their implementation is included in the report.

Prepared by Jon Ellis & Associates, District of Mission, British Columbia. Unpublished Manuscript. 2005. 68 pages

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

REGULATORY REFORM

WHOLE VILLAGE KING RURAL COHOUSING: FINAL REPORT

This report, partially funded under the Affordability and Choice Today (ACT) Program, describes how Whole Village worked with municipal and regional officials and groups of interested citizens to develop a set of zoning regulations that would allow community-based housing development, while continuing to control unwanted development activities. The goal was the establishment of an active community that incorporates the following features:

- Cohousing (collaborative housing) development that will accommodate a variety of types of families with different financial resources;
- Biodynamic (organic) farm that will reclaim land for farming that has been out of production;
- Stewardship of a significant area of land, including natural forest and wetland.

This reports describes the successes and challenges of the Whole Village community in demonstrating new environmentally friendly housing options in rural environments.

Prepared by Jeffrey Gold, Whole Village Project Facilitator. Unpublished manuscript, March 2006. 13 pages.

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

RENTAL HOUSING

CMHC STUDENT HOUSING STUDY

Students are faced with a variety of accommodation options while attending post-secondary institutions. These alternatives range from on-campus housing (facilities owned and operated by the college or university) to off-campus choices from living at home or in a family-owned secondary residence to shared or unshared accommodation in the rental market.

The intent of the study was to assess the feasibility of developing a data collection methodology that is actionable and which would be able to generate student housing-related data that is valid, reliable and timely. The developed methodology would then be assessed to determine its ability to gather information on the state of student housing in Canada and the housing options available to students. Benchmark student-housing data and information would focus on, but not be limited, to: student housing costs; housing supply and demand; types of accommodations used by students; and characteristics and location of accommodations, including size, quality and amenities.

Prepared by Phoenix Strategic Perspectives Inc. CMHC Project Officer: Kris Leaman. Ottawa: Canada Mortgage and Housing Corporation, 2004. 2 volumes

[Volume 1 In-Depth Interviews with Stakeholders](#) (60 pages; 782 KB)

[Volume 2 Pilot Test Report – Review of Methodology](#) (137 pages; 1066 KB)

Note: No. 05-037 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64936)

RENTAL HOUSING

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/studenthousingw.pdf volume 1
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/studenthousingvol2w.pdf volume 2

HOUSING STABILITY INDICATORS AND IMPACTS: FINAL REPORT

Housing plays a central role in the economic and social well-being of Canadians and provides an important foundation from which to build healthy and sustainable communities. While there is evidence to suggest that the majority of Canadians are well-housed, there is growing concern that increasingly some households may be falling further behind in terms of their ability to access decent, stable and affordable housing. This study looked at the experiences and circumstances of more than 700 renter households across Greater Vancouver to gain a better understanding of the housing choices available to them and the level of stability associated with these choices. This study also looked at some of the compromises, trade-offs and coping strategies adopted by families and individuals finding themselves in vulnerable situations.

Prepared by Jason and Lorraine Copas, Community Focus. CMHC Project Officer: John Engeland. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Research Report) 146 pages (7674 KB)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Housing_Instability_web.pdf

INDIVIDUAL LANDLORD SURVEY

CMHC commissioned Arcturus Solutions to conduct a telephone research survey during the spring of 2005, in order to better understand the characteristics, attitudes and opinions of these “individual landlords”. The survey included questions about the characteristics of individual rental investors, their short and long term plans, their views on the pros and cons of being a rental investor, and details of their rental units.

The results of this study suggest that the business of individual residential rental investment is stable and in good health. An indication of the robustness of the individual rental unit investment business is that more than half the respondents plan to increase the number of units they own within the foreseeable future, whereas less than one-third plan to decrease their overall number. Further, retirement from the business is not top-of-mind for most individual investors interviewed, although most are pragmatic enough to agree that problems with health or an attractive buyout offer might cause them to consider retirement.

The individual investors represented in this study collectively own 8,224 self-contained residential units. Most of these individuals own a small number of units: a third own three or fewer, and one-half own fewer than five. Self-management by the individual owner is by far the most prevalent model of rental unit management and very few anticipate changing to a third-party property manager. Indeed, most respondents expect to maintain the status quo relative to a number of potential activities assessed in this study. The individual residential rental investors who participated in this study are more affirming of the benefits of this business than they are

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about the challenges. Among benefits, the secure and long-term nature of residential rental unit investment stands out, followed by help in mortgage payment.

Prepared by Arcturus Solutions. Housing Affordability and Finance Series. Ottawa: Canada Mortgage and Housing Corporation, c2006. 110 pages (1953 KB)

Note: Disponible aussi en français sous le titre : [Enquête auprès des propriétaires-bailleurs individuels](#)

Note: No. 05-025 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64938)

AVAILABILITY : CMHC Information Products (Order number: 64857) and [ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_bilingual/64857\(w\)_feb28.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_bilingual/64857(w)_feb28.pdf)

ISSUES AND STRATEGIES FOR SHARED ACCOMMODATION: FINAL REPORT

The main purpose of this study was to answer the question: “Considering that sharing accommodation is a good economic strategy for single people, what strategies could facilitate this housing arrangement?” To address the overall research question, the study had a number of specific objectives. These were to identify:

- Barriers to shared housing;
- Strategies to successfully facilitate sharing in the private rental market in order to increase housing affordability;
- Practices used outside the supportive housing sector which could be adopted by supportive housing providers; and
- Factors that are difficult to replicate in supportive housing.

The research activities focused on single adults under the age of 65, (including students), who either share voluntarily as an affordability strategy in the private rental market, or who, because of their special needs dependencies, are living in supportive housing. Emergency or transitional accommodation, homeowners with rooms or secondary suites to rent, generic rooming houses, intentional communities, or seniors’ match and share programs were considered outside the scope of the research.

Prepared by Social Data Research. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. 30 pages (2431 KB)

Note: No. 05-029 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/IssuesandStrategiesforSharedAccommodation\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdH/Research_Reports-Rapports_de_recherche/eng_unilingual/IssuesandStrategiesforSharedAccommodation(w).pdf)

RENTAL HOUSING

PARKING STANDARDS FOR AFFORDABLE RENTAL HOUSING: PHASE D - FINAL REPORT

In the fall of 2001, the Planning and Building Department of the City of Mississauga applied for a grant from the Federation of Canadian Municipalities Affordability and Choice Today program to study parking demand for public and private non-profit rental housing. The grant was awarded to the City, and subsequently, Beacon Planning Services was retained to undertake the parking study. This report summarizes the results of the consultant's work. It outlines the detailed results of the parking surveys, the analysis of the collected data and recommended parking guidelines. Guidelines for reduced parking are presented for the following categories:

- Peel Living family and senior apartments;
- Peel Living family horizontal multiple dwellings;
- Private non-profit family apartments; and
- Co-operative non-profit family apartments.

The recommendation of this report was to circulate the information to all non-profit housing providers in Mississauga and the Greater Toronto Home Builders Association for review and comment.

Prepared by Planning and Building Department, City of Mississauga. Unpublished manuscript, November 2005. 33 pages

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

RESIDENTIAL DEVELOPMENT

ALTERNATIVE DEVELOPMENT STANDARDS ON PINE RIDGE EAST SUBDIVISION: FINAL REPORT

The objective of this project, partially funded under the Affordability and Choice Today (ACT) Program, was to address three problems associated with the urban land development of a parcel of land in the Pine Ridge East Subdivision, City of Guelph, Ontario. The three problems addressed were:

1. Problems associated with narrowing lot frontages, due to escalating infrastructure costs;
2. Lack of privacy on corner lots, affecting both occupancy privacy and streetscape appeal; and
3. Disproportionate consumption of land in pie-shaped lots creating undervalue.

The land had originally been subdivided into 19 conventional single family lots. Through this project, the land was re-subdivided into 23 lots, increasing the number of fully-serviced, single detached homes on the same land area and linear infrastructure. This was achieved by the creation and integration of 4 new lot types that make better use of side yards, front yards, views and infrastructure.

RESIDENTIAL DEVELOPMENT

The report covers the alternative development standards; housing designs; cost savings; promotional activities; the consumer media and public response; and provides descriptions of the lots and their features and benefits.

Prepared by Teresa Jeannine Paul, Nexus Solar Corporation. Guelph, Ont.: Nexus Solar Corporation, 2005. 30 pages.

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

ASSISTING THE CITY OF STRATFORD TO IMPLEMENT THE FUSED GRID CONCEPT

The purpose of this project was to assist the City of Stratford in assessing the benefits of using the Fused Grid planning concept. This assessment was done in the following steps:

1. Alternative plans were drawn for the area of the newly annexed lands.
2. The plans were analyzed for the following quantitative attributes: a) Length of streets; b) Total land area allocated to streets; c) Developable land area; d) Total open space; e) Traffic impact.
3. The plans were also analyzed for qualitative attributes such as connectivity, walkability, safety, tranquility, and delight. For these qualitative attributes measurable indicators were applied to evaluate performance.
4. The plans were evaluated for their impact on municipal capital expenditures and operation and maintenance expenditures with regard to infrastructure elements that are installed and maintained by the city.

Following the presentation of the results of these analyses to the City, the planning committee and council selected the Fused Grid alternative, as adapted to the specific site constraints, as the official secondary plan for the annexed lands.

AVAILABILITY : No. 04-038 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 63760)

SENIORS

CONVERSION OF AN EXISTING INSTITUTIONAL BUILDING TO 58 AFFORDABLE/ACCESSIBLE HOUSING APARTMENTS FOR SENIORS AND DISABLED ADULTS IN THE REGIONAL MUNICIPALITY OF YORK (ONTARIO): AFFORDABILITY AND CHOICE TODAY (ACT) PROJECT: FINAL REPORT

In September 2004, the official opening of Armitage Gardens apartments was celebrated in the Town of Newmarket, marking a milestone in the successful conversion of an existing institutional building to affordable, accessible apartments for seniors and disabled adults.

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This report chronicles the Armitage Gardens project which revitalized a vacant and under utilized portion of a building into 58 affordable rental apartments in order to provide affordability, choice and quality housing in the Regional Municipality of York.

Prepared by the Regional Municipality of York, Town of Newmarket, Ontario. Unpublished manuscript, December 2005. 13 pages

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

LEGAL FRAMEWORK FOR SUPPORTIVE HOUSING FOR SENIORS: OPTIONS FOR CANADIAN POLICY MAKERS: FINAL REPORT

This report considers a range of approaches to the regulation of supportive housing for seniors. These approaches take into account the special hybrid quality of supportive housing as housing with services and the particular needs of seniors, especially at the high “assisted living” end of the supportive housing range. The methodology for the research included a review of literature and legislation in Canada, the United Kingdom, United States, and Australia; consultation with seniors and with professional stakeholders; an evaluation of potential approaches to regulation and possible options to supplement or support regulation (including a National Working Group on Supportive Housing to create best practices guidelines, a Supportive Housing Centre of Excellence, elder ombudsmen, and an information database and seniors’ hotline). The Report is intended to serve as an information resource for Canadian policy makers and others concerned with supportive housing for seniors.

Prepared by: Canadian Centre for Elder Law Studies. Principal Investigator: Margaret Isabel Hall. CMHC Project Manager: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2005 (External Research Program Research Report) 155 pages (2296 KB)

Note: No. 05-020 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC%20Legal%20Framework\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC%20Legal%20Framework(w).pdf)

LIFE LEASE SUPPORTIVE HOUSING: COMBINING THE BEST ASPECTS OF HOUSING AND COMPLEX CARE

The Laurier House model of care is an innovative approach that delivers, in a condominium-like setting, the level and type of healthcare and social services that are traditionally available only in long-term care institutions. The model offers a life lease arrangement, which provides:

- Seniors the advantage of “home ownership” and enables them to occupy a more spacious suite than long-term care institutions provide;
- The developing agency, through the sale of life leases, the ability to quickly recapture its investment in the building;
- The Alberta government a new publicly-owned facility equivalent to a long-term care institution, which was built without any government investment;

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- A new way of meeting the needs of frail elderly persons who do not want to move into an institutional setting.

This study examined the attitudes toward life lease housing of Laurier House clients, their families, and the professionals whom seniors consult when they require long-term care. The results provided insights into the concerns and values that both seniors and their families hold regarding life-lease agreements and condominium-style living. The model appealed equally well to both the client group who were married and did not wish to be separated from a spouse, and the client group seeking more space and privacy.

*Principal investigator: Dr. Doris L. Milke, Research Coordinator, The CAPITAL CARE Group. Team members: Dr. Charles H.M. Beck, Connie F. Wark, and Corinne Schalm. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2005 (External Research Program Research Report) 2 volumes
Volume 1 (85 pages) Volume 2 (188 pages)*

Note: No. 05-033 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and for Volume 1 (4060 KB):

[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Doris%20Milke%20-%20Final\(WEB\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Doris%20Milke%20-%20Final(WEB).pdf)

Volume 2 (7039 KB)

[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/\(web2\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/(web2).pdf)

RENOVATION AND REPAIR REFERRAL AND ADVISORY SERVICE FOR SENIORS AND OTHER HOMEOWNERS: FINAL REPORT

In 2001 approximately 3.9 million Canadians were seniors (i.e., 65 years of age or older). By 2026, that number is expected to grow to almost 7.7 million. The rapid growth in the number of seniors will require alternatives and choices to suit their changing housing needs. Aging-in-place is currently the alternative preferred by the overwhelming majority of seniors. This research was designed to assist them to maintain their independence while living in their homes. It focused on developing a model for renovation and repair referral and advisory services for homeowners, particularly seniors.

The model developed suggests that a Renovation and Repair Referral and Advisory Service for Seniors and Other Homeowners should consist of two major components. The first would help them find local reputable contractors for major repair and renovation requirements; the second would help them find handy persons or “jobbers” who could assist them with minor home adaptations, repairs and maintenance.

The model would bring together a number of key players, including the local Chamber of Commerce, a community seniors’ centre, building material suppliers, and the local homebuilders’ association. Each would play an important role. For example, the Chamber of Commerce would provide ongoing information about large renovation and repair contractors; the seniors centre

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would work closely with the chamber of commerce and provide information about handy person advisory services; the building material suppliers could provide referrals for large renovation and repair jobs and handy person services; and the homebuilders' association could provide referrals of its renovator members.

To develop the model, the researcher conducted an extensive literature review; interviews with housing industry and interest groups; a survey of over 20 people, including representatives of consumers, provincial and municipal governments, housing interest groups, building associations and related affiliates; and a focus group with seniors.

Research participants indicated that implementing a renovation and repair advisory service in their community would be a "win-win" situation for both contractors and homeowners/seniors. Having their homes renovated, repaired and maintained with confidence in their contractor selection and decision-making could provide them with the opportunity to continue to live in their homes (age-in-place) for as long as possible.

Prepared by T.A. Marshall, Housing Consultant. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 95 pages (699 KB)

Note: No. 06-012 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65291)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC_Reno_Oct18_06\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/R/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC_Reno_Oct18_06(w).pdf)

SENIORS' HOUSING FOR SENIORS: A FEASIBILITY STUDY: FINAL REPORT

There has been limited research on the preference and interest of seniors in converting the stock of housing which they own and occupy in order to create secondary suites of self-contained apartments, within existing single family homes.

This pilot study attempts to fill the gap by exploring the interest of senior homeowners in renovating their current homes to include secondary suites; the financial and renovation implications of doing so; and the city regulations and zoning which affect conversion.

The study was undertaken in two neighbourhoods of the City of Ottawa. It involved a telephone survey of 187 senior households, in-depth interviews with 17 households and two focus groups with specialists in the private and public sectors.

Key findings of the survey were that: 19% of senior respondents showed an openness to multiple occupancy, including the creation of secondary suites; the size of homes in both neighborhoods provided considerable scope for renovation due to size; basements were the preferred option for renovation and judged to have potential for occupancy.

Interviews with a selected group of homeowners revealed that: respondents preferred bank loans or mortgages, not reverse mortgages, to finance renovations; women living alone expressed an interest in secondary suites to have companionship in the home; both neighborhoods were judged by respondents to provide the conditions to age in place; most

respondents would hire a contractor to undertake renovations; and a majority did not have any concern about renting to independent seniors.

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Findings from the focus group discussion with builders, renovators, real estate specialists and city staff included the following: by-laws were recently changed in order to permit secondary suites throughout the city; the full-cost of renovations was not necessarily reflected in the resale value of a house: costs could be kept down by renovating basements rather than upper floors; senior homeowners should be informed of the advantages of secondary suites; and seniors would benefit from having access to one-stop shopping services in matters related to financing, building, maintaining and managing secondary suites.

Prepared by Glenn Drover and William Wade, The Council on Aging of Ottawa. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 92 pages (3212 KB)

Note: No. 06-023 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65308)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/Seniors_Feasability_Study_Web.pdf

SOCIAL HOUSING

SOCIAL HOUSING IN THE CONTEXT OF RURAL DEPOPULATION: FINAL REPORT

This study examined the issue of chronic vacancies in social housing properties in rural areas of Canada where there has been significant depopulation. The four specific objectives were:

- to describe the context of social, economic, and demographic change in rural Canada;
- to summarize what is known about the extent or size of the social housing chronic vacancy problem in rural Canada, including an assessment of the financial impact of these vacancies;
- to describe the underlying causes of and issues associated with chronic vacancies in this stock; and
- to examine strategies that have been employed or considered to address the problem.

This issue is important for several reasons. First, there has been significant capital investment in the construction and maintenance of social housing in rural Canada. Chronic vacancies reduce the revenue stream and impact on the ability to cover costs and properly manage and maintain the properties. Second, there are chronic vacancies in some rural areas while there are waiting lists for social housing in most urban centres of the country. This is a signal that social housing built in some communities may no longer be needed in those locations. Third, private non-profit housing operating agreements will be coming to an end in the coming years and the long term financial viability of some of these projects with chronic vacancies may be in question. Fourth, social housing is an important contributor to the local tax base in many small towns and rural areas. Social housing provides options that might not be available through the private sector and is a visible presence of government investment in the community. When these properties are vacant, there can be a spillover effect into the broader community.

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The report begins with a summary of the methodology employed to investigate this issue. This is followed by a very brief discussion of the key social, economic, and demographic changes in rural Canada which are directly related to changes in demand for social housing. Estimates of the size of the social housing chronic vacancy problem in rural Canada follow. This includes a discussion of differences uncovered based on client type, structural type, and program type. The next section provides a brief summary of the limited information uncovered about financial impacts of the chronic vacancy problem. The causes of and issues associated with chronic vacancies in this stock are then discussed. This section is organized around three major themes or categories: those which are macro causes and issues, largely beyond the control of individual properties and owners; those which are community or regional in nature (which are also largely beyond the control of individual properties and owners); and those which are property and project specific. Property owners have some ability to deal with these latter causes and issues. The final substantive section explores the range of solutions and strategies that have been employed or considered to address the problem. Explicit linkages are made to link these to the nature and type of causes identified in the previous section. The report finishes by offering some conclusions about the chronic vacancy issue and the potential strategies which might be employed. The appendices contain contact information of those interviewed and the interview guides that were used.

Prepared by David Bruce, Director, Rural and Small Town Programme, Mount Allison University with Tom Carter, University of Winnipeg, and Ed Starr, Social Housing Strategists, Inc. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, 2005. 104 pages (1754 KB)

Note: No. 05-019 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Social%20housing%20in%20the%20contextDC20094890\(W\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/Social%20housing%20in%20the%20contextDC20094890(W).pdf)

SUSTAINING THE NON-PROFIT HOUSING SECTOR IN BRITISH COLUMBIA

Affordable, secure and safe housing contributes to the well being of Canadian households and promotes the growth of stable communities. The non-profit housing sector in British Columbia is making a key contribution in that regard by managing a variety of significant housing portfolios across the province. The sector currently faces a range of operational issues including uncertainty about its future sustainability. In light of those conditions, the sector is aware that it must develop long-term management strategies that maximize the utility of its available resources, now and for the future, and thereby help to ensure that it is able to continue to operate over the long term.

This study describes the size and complexity of the sector and uses that overview as part of the context within which to consider:

- the current management performance of the sector;
- the problems/successes it is experiencing;
- its attitudes towards those problems/successes; and
- the options for improvement available to it.

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Areas of particular interest include:

- consolidation and rationalization of common services or functions using shared service delivery models;
- increased cooperation among societies ranging from information exchange to joint business ventures to collaborative initiatives; and
- expansion of the scope and effectiveness of volunteerism.

Prepared by Marason Management Limited in partnership with the BC Non-Profit Housing Association. CMHC Project Officer: Stephen G. Hall. Ottawa: Canada Mortgage and Housing Corporation, 2004. 64 pages (480 KB)

Note: No. 05-032 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC-Non-Profit\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilin_gual/CHIC-Non-Profit(w).pdf)

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

CENTRE IN THE PARK: INTEGRATED DESIGN CHARRETTE

An integrated design charrette was held in Sherwood Park, Alberta (Strathcona County) in September 2004 to determine specific sustainable options that will be included in the design for the residential, commercial and civic buildings on the site of Centre in the Park. The charrette goal was to integrate more sustainable design practices into the design and construction of the Centre in the Park housing, by engaging all the participants in detailed explorations of design alternatives.

Participants in this charrette included a diverse group of 25 people, including the developer and his design team, project managers from Strathcona County, Canada Mortgage and Housing Corporation, and members of the Civic Precinct design team who all formed an integrated design team during the workshop.

This report outlines the charrette's objectives, the charrette process, and presents a summary of the strategies that were considered and selected, over the two-day charrette.

Prepared by Strathcona County and Christenson Developments Ltd. CMHC Project Officer: Sandra Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2004. 24 pages

AVAILABILITY : On a loan basis only from Canadian Housing Information Centre

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

CITY OF YORKTON DOWNTOWN REDEVELOPMENT PLANNING CHARRETTE

The Downtown Redevelopment Charrette was hosted by the City of Yorkton from October 28th – 30th of 2004, to generate buildable and sustainable plans for a 12.1 hectare (30 acre) brownfield site located in the heart of the City. The aim was to discover what types of development would revitalize the Downtown Core and be supported by the community?

The multi-day, multi-disciplinary working session explored various design options related to sustainable development, urban design, land use scenarios, site planning principles and architectural details. Free from most planning constraints, teams designed the Study Area how they saw fit. Dense mixed-use developments, sustainable housing options, area amenities and community-sensitive elements were incorporated into the Study Area. With the aid of various professionals, participants created development solutions that addressed the future of Downtown Yorkton.

Sustainability was a focal point on the agenda. The Charrette helped foster community ownership and commitment towards sustainable strategies that integrated economic, social and environmental development objectives. By linking the short term goals of viable transportation planning with the long term goals of responsible development ideas, for example, energy-efficient housing, the City of Yorkton can plan for existing generations without impeding the growth of future generations.

Designs generated throughout the integrated design process will contribute to achievable plans for the future redevelopment of the Study Area, and ultimately the reinvestment for the City of Yorkton. The degree of commonality in plan designs reflected the community consensus for land use planning in Yorkton and the benefits of having a well thought-out, well-supported community vision.

Prepared by City of Yorkton. CMHC Project Officer: Cynthia Rattle. Ottawa: Canada Mortgage and Housing Corporation, 2005. 31 pages (4733 KB)

Note: No. 05-016 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccdh/Research_Reports-Rapports_de_recherche/eng_unilingual/web_report.pdf

COSTING MECHANISM TO FACILITATE SUSTAINABLE COMMUNITY PLANNING. PHASE I - BACKGROUND RESEARCH AND COSTING FRAMEWORK

There has been much debate in recent years about the costs of development, both in terms of the true costs of different development forms as well how the costs of development are shared between the various public and private sectors. There is mounting evidence that more compact, mixed use development is a more cost-efficient and environmentally sustainable form of development than low density suburban development. However, there are very few readily available tools to demonstrate the degree to which this is true, or to effectively compare different types of development.

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

As documented in this report, there is also a lack of data to develop a full picture of neighbourhood development costs and revenues, specifically costs related to green infrastructure items, which are now gaining prominence in the development industry.

The ultimate intent of this project is to develop a tool that is available to anyone wanting to explore the costs of sustainable community development. This project is being undertaken in two Phases. The purpose of Phase I, which is the subject of this report, was to conduct background research on the key costs for development, in particular those that can be influenced by sustainable community planning. The Phase I component of this project also conducted a review of available tools for sustainable community planning, and based on this research, it outlined a framework for the development of a costing tool.

Phase 2 of the project will involve the development of the costing tool itself. Phase 2 will also involve extensive testing and validation of the costing tool and underlying costing assumptions.

The purpose of this Phase I report is to provide interim findings on the project, specifically the results of the background research and recommendations for development of a costing tool.

Prepared by Dillon Consulting Limited, IBI Group, Allen Kani Associates, and Metropole Consultants. CMHC Project Officer: Doug Pollard. Ottawa: Canada Mortgage and Housing Corporation, 2005. 78 pages (2692 KB)

Note: No. 05-023 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/Costing%20Mechanism\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/Costing%20Mechanism(w).pdf)

KANATA HEALTHY HOUSING PROJECT: SUSTAINABLE FIRST NATIONS HOUSING AND COMMUNITY DEVELOPMENT IN KAHNAWAKE: FINAL REPORT

In 1988 a team comprised of community leaders from the Mohawk Council of Kahnawake and Cultural Center and local environmental consultants was created to explore the potential of an "Innovative House" construction grant from the Department of Indian Affairs. Under the encouragement of the project consultants and the CMHC, the project, dubbed Kanata 2000, quickly shifted from the scale of individual house to sustainable neighbourhood. Its mission, sanctioned by the Mohawk Band Council, was to empower the community with the tools and models to choose a sustainable shelter and lifestyle.

This report, partially funded under the Affordability and Choice Today (ACT) Program, describes the history of the Kanata Healthy Housing Project and outlines its characteristics.

Written by Julia Bourke, project architect and master planner, Fiset Miller Bourke Architects. Unpublished manuscript. 41 pages

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

O.U.R. ECOVILLAGE: THE DEVELOPMENT OF A MODEL DEMONSTRATION SUSTAINABLE VILLAGE: FINAL REPORT

The objective of this report, partially funded under the Affordability and Choice Today (ACT) Program, was to describe the development of the O.U.R. (One United Resource) Ecovillage, a sustainable land management project being developed by the registered non-profit organization entitled, O.U.R. Community Association.

The development of O.U.R. Ecovillage has focused on a number of regulatory issues related to sustainable land use and sustainable housing. The major work this project has accomplished is in the area of:

- 1) creating a new zone, the Rural Residential Comprehensive Development Zone, that permits a combination of land uses, also referred to as full-featured sustainable land management design;
- 2) the development and construction of a performance based model for researching and analyzing cob construction used in tandem with other construction techniques (i.e.: straw/clay infill, claybrick, and strawbale hybrid construction);
- 3) the design and construction of permeable road surfaces, alternative wastewater treatment systems (i.e.: raised reed-bed hybrid system), the creative models for use of greywater, rainwater harvesting and reinvesting, all for residential use; and
- 4) the development of an alternative land trust covenant for environmental protection of the land rather than attempting to covenant the property through conventional means of regional district covenants.

The report provides an overview of the project, details the methodology used, and outlines the project results. The appendices provide: the site plan & design diagrams; the O.U.R Ecovillage Protective Covenant; and the Interim Report.

*Prepared by O.U.R. Community Association, Shawnigan Lake/Cowichan Valley Regional District, BC.
Unpublished manuscript. 46 pages*

AVAILABILITY : Report is available on a loan basis from Canadian Housing Information Centre

RETROFIT OPPORTUNITIES FOR GREYFIELD REDEVELOPMENT IN SMALL AND MEDIUM SIZE ONTARIO CITIES

This research project explored the issue of the redevelopment of greyfields - failed or failing retail sites and their associated parking lots. These sites have now come full circle as their owners look for alternate uses such as housing. The project included a literature review and case studies which provide tangible examples of how this approach to planning and development can feasibly be put into practice. The ten case studies, 3 municipal initiatives and 7 built projects, are completed and have been posted to the CMHC website at http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/sucopl_005.cfm

AVAILABILITY : Product is available on the web (see above)

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

SMART GROWTH IN CANADA: IMPLEMENTATION OF A PLANNING CONCEPT

This project did a critical assessment of the smart growth movement by attempting to find answers to the following questions: Which cities in Canada have made genuine efforts to adopt the new approach and alter their development patterns in a fundamental way? What successes have these cities experienced and where have they failed? What are the reasons behind both successes and failures? And what are the lessons we can draw for the viability of the new approach in the Canadian context? To address these questions, six Canadian municipalities of varying sizes were selected from six provinces, that have a reputation of being leaders in smart growth. The project looked at what they have proclaimed as their goals and policies, and evaluated, through an in-depth case study approach (reviewing planning documents, collecting statistics, interviewing relevant officials), what they have actually done to implement the stated goals and what they have achieved "on the ground". In general, this study has shown that there is a large gap between the stated growth management policies found in the planning documents of the six study regions and accomplishments on the ground. While major progress has been made in terms of language and policy goals, performance is lagging behind considerably.

Prepared by Ray Tomalty and Don Alexander, Cooperative Research and Policy Services. CMHC Project Officer: Fanis Grammenos. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Report) 248 pages (3803 KB)

Note: No. 05-036 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 64931)

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/smart%20growth_\(w\)_jan6.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/smart%20growth_(w)_jan6.pdf)

SUPPORT FOR "SUNNY DAYS AHEAD" - A FORUM ON SOLAR ENERGY FOR GOVERNMENT OFFICIALS

CMHC provided financial support to the Forum on Solar Energy for Government Officials entitled "Sunny Days Ahead", held in Ottawa, Ontario, on March 22, 2006. This event marks an important start to engaging a broader array of Canadian government partners (federal, provincial and municipal), and increasing their awareness of the benefits of solar energy technologies - how they work, their potential, their costs and their applications. Forum sessions covered the topics of: Solar Technologies and Markets; Government Initiatives in Canada and in Other Nations; Solar Installations on Government Buildings in Canada; Programs to Use Solar in Government Applications; and Round Table Discussion on Solar Opportunities for Canada. Solar energy is the fastest growing energy source in the world. It is projected that by 2050 solar technologies will be supplying over 25% of the total energy needs of many nations. However, Canada is lagging far behind these other countries in its development and application of solar energy technologies, and needs to develop a coordinated approach involving all levels of government and industry promoting solar energy solutions to ensure a clean environment and healthy cities for generations to come. A full Forum report is available through the Canadian Housing Information Centre.

AVAILABILITY : CD-ROM is available on a loan basis from Canadian Housing Information Centre

SUSTAINABILITY, PLANNING PRACTICE, HOUSING FORM AND ENVIRONMENTAL PROTECTION IN THE TORONTO REGION'S OAK RIDGES MORAINES: PROJECT REPORT

Over the last decade the Toronto region has seen some of the most significant urban growth in North America. In particular, housing development has emerged as an enduring symbol of the urbanization of the region's landscape. But growth has not occurred without controversy. In the Oak Ridges Moraine area, along Toronto's northern edge, housing developments became catalysts for activism, changes in local government, and a rethinking of urban and housing form.

The Oak Ridges Moraine (ORM) is an environmentally important area stretching east/west about 160 km. The Moraine extends through some of the most urbanized portions of the Great Lakes region. The ORM area has experienced extensive growth pressure. Recent applications for large housing developments were subject to opposition from local governments, conservation groups and the public at large. Growth along the Moraine has emerged as a significant regional and provincial political issue – it has also subjected Ontario's planning system to new levels of scrutiny and critique. While the Province of Ontario's recently implemented Oak Ridges Moraine Conservation Plan may slow the pace of sprawl in the Moraine area, several large developments will continue, and the Plan does not address planning and growth challenges in adjacent areas.

This research provides an analysis of the Moraine's housing legacy, and examines the planning options available to support both sustainable community growth and housing development. Two broad central questions are considered. How have the prevalent housing trends in the ORM area contributed to recent planning challenges and conflicts? And within a growth context, how can sustainability objectives and healthy housing form be achieved in the ORM region, and potentially other urban settings?

The research is based on document analyses, interviews with participants in the planning and policy processes, and a geospatial analysis of change in three Moraine communities. This study emphasizes the importance of linking growth management, housing, and planning practice. The research results provide knowledge about trends and options for advancing environmentally healthy and sustainable housing.

Prepared by Kevin Hanna and Steven Webber. CMHC Project Manager: Mark Holzman. Ottawa: Canada Mortgage and Housing Corporation, 2005. (External Research Program Research Report) 137 pages (6273 KB)

Note: No. 05-022 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

AVAILABILITY : Canadian Housing Information Centre and [ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC%20Sustainability\(p\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC%20Sustainability(p).pdf)

WATER CONSERVATION, REUSE & MANAGEMENT

EVALUATION OF WATER-EFFICIENT TOILET TECHNOLOGIES TO CARRY WASTE IN DRAINLINES: FINAL REPORT

CMHC in conjunction with Manitoba Conservation, City of Calgary, City of Toronto, Ontario Ministry of Municipal Affairs and Housing, Region of Durham, the Region of Peel and the Region of Waterloo has undertaken this project to address the impact of 6-litre toilet technology on drainline carry. This work was in response to concern expressed over the ability for 6 litre flows to effectively carry waste and not contribute to drainline clogging and backup. The project addresses the impacts of: slope, pipe diameter, sags, mass loading and pipe length on removal performance. A total of 9 different flush types were tested, including: wash down, flapperless, rim jet, and vacuum assist. Results indicated that parameters affecting drain line carry are loading mass, flush type and pipe slope.

Prepared by Bill Gauley and John Koeller. CMHC Project Officer: Cate Soroczan. Ottawa: Canada Mortgage and Housing Corporation, 2005. 47 pages (1797 KB)

AVAILABILITY : Canadian Housing Information Centre and

[Ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Drainline%20Report%20-%20WEB.pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilingual/Drainline%20Report%20-%20WEB.pdf)

SUPPORT FOR THE CREATION OF A NATIONAL HOUSEHOLD RECLAIMED WATER GUIDELINE AND DUAL PLUMBING STANDARD

This project supports the development of a National Guideline for Residential Reuse Water Quality and a National Standard for Dual Plumbing Systems. The Water Quality and Health Bureau of Health Canada and Canada Mortgage and Housing Corporation (CMHC) are examining the water quality requirements that would allow sustainable reuse of water in a residential setting without imposing unnecessary risks to human health. CMHC is the secretariat to the Household Reclaimed Water Quality Working Group developing the water reuse guideline. The Working Group includes membership from Federal, Provincial and Territorial governments representing the F/P/G Committee on the Health and Environment. Additionally, CMHC is supporting the Canadian Standards Association (CSA) technical committee that will address issues of cross contamination and back flow prevention through the creation of a National Standard for Dual Plumbing Systems. Close links and co-ordination will be established between these efforts. The CSA B128 Technical Committee on Non-potable Water Systems has released a draft of the standard for public review. The CSA standard B128 is now completed and available through the CSA.

AVAILABILITY : Canadian Standards Association

VALIDATION OF AN ONSITE WASTEWATER RISK ASSESSMENT MODEL: FINAL REPORT

Failing onsite wastewater systems can pose a significant risk to public health and to the environment. An easy to use risk assessment model using readily available information would be a useful tool for regulators and can be used to prioritize onsite system re-inspection programs. Such a model has been developed and successfully applied to 19 villages within the City of Ottawa.

The model is comprised of a series of weighted risk factors applied to lot parcels in a GIS database. The factors were developed using existing data readily available to a municipality (soils, flood plain, parcel and building mapping, census data, aquifer vulnerability study, local hydro geological knowledge). The factors attempt to account for contaminant loading, contaminant pathways and operational life of onsite systems.

Data was collected from two field inspection campaigns and from replacement system records of the City of Ottawa to validate model parameters. The field inspection campaigns found no correlation between ground and surface water quality and indications of system malfunction; however, both system age and clay soils were found to be significant indicators of system failure. An analysis of onsite system replacement records indicates that system age is a determinant factor in hydraulic system failure, with the relative risk increasing by a factor of 5 for systems of 10-29 years and by a factor of 12 for systems 30 years and older. Soils also play an important role, with risk of failure generally increasing by a factor of 2 for systems installed in areas of impermeable soil.

The Risk Assessment Model was simplified and transformed to reflect our better understanding of the impact of system age and soil type on system failure rate. The revised Risk Model includes six factors: System Age, Soil, Lot Size, Depth to High Groundwater Table, Aquifer Conductivity, and Proximity to Surface Water.

Prepared by Ontario Rural Wastewater Centre, Collège Alfred - University of Guelph; authors: Chris Kinsley & Doug Joy. CMHC Project Officer: Cate Soroczan. Ottawa: Canada Mortgage and Housing Corporation, 2006 (External Research Program Report) 38 pages (2116 KB)

Note: No. 06-111 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site (Order no. 65259)

AVAILABILITY : Canadian Housing Information Centre and
ftp://ftp.cmhc-schl.gc.ca/chic-ccd/Research_Reports-Rapports_de_recherche/eng_unilin_gual/ValidOnsite-w.pdf

WOMEN AND HOUSING

HOUSING DISCRIMINATION AGAINST VICTIMS OF DOMESTIC VIOLENCE

This study, under the External Research Program (ERP) funded by Canada Mortgage and Housing Corporation (CMHC), attempted to find out if landlords discriminate against battered women.

The first goal of the research was to find out if landlords discriminate against:

- victims of domestic violence who say they have a child;
- victims of domestic violence who don't say they have a child;
- victims of domestic violence who say they have a job;
- victims of domestic violence who say they don't have a job.

There were two hypotheses for this research goal:

1. A landlord is more likely to say there is a rental unit available if a caller does not say where she is staying, than if she says she is staying in a shelter for battered women.
2. A landlord is more likely to say there is a rental unit available if the caller says she is staying with friends than if she says she is staying in a shelter for battered women.

The second goal of the research was to determine if landlords would admit discrimination to a researcher. The research also tested an unobtrusive method, leaving a message on an answering machine, to explore housing discrimination.

Prepared by Paula C. Barata and Donna E. Stewart. CMHC Project Officer: Marcelle M. Gareau. Ottawa: Canada Mortgage and Housing Corporation, 2006. (External Research Program Report) 62 pages (867 KB)

Note: No. 06-010 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site (Order no. 65096)

AVAILABILITY : Canadian Housing Information Centre and
[ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Discriminations\(w\).pdf](ftp://ftp.cmhc-schl.gc.ca/chic-ccd/h/Research_Reports-Rapports_de_recherche/eng_unilingual/CHIC-Discriminations(w).pdf)

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-schl.gc.ca/en/burema/gesein/abhose/abhose_060.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>

ABOUT YOUR HOUSE SERIES

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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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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 Monoxide</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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
62953	CE 4IA	<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 4IB	<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>
62896	CE4IC	<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 4ID	<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 4IE	<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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
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>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>
64949	CE63	<p>Accessible Housing by Design - Ramps</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</p>
64961	CE64	<p>Accessible Housing by Design - Appliances</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. This AYH can ease the selection of an appliance by making suggestions, describing safety features, and providing considerations before you purchase your appliance.</p> <p>Aussi disponible en français sous le titre : Une habitation accessible dès la conception — les appareils</p>

ABOUT YOUR HOUSE SERIES

Order no.	Series no.	Title
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>

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>

ABOUT YOUR APARTMENT SERIES

Order no.	Series no.	Title
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>
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>

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
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
65245	06-107	The eKOCOMFORT Field Assessment Program
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
64911	05-117	Predicting Time to Fogging of Insulated Glass Units

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
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

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
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
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

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
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
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

RESEARCH HIGHLIGHTS: TECHNICAL SERIES

Order no.	Series no.	TITLE
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
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