ONTARIO TRANSFER PAYMENT AGREEMENT – AMENDING AGREEMENT No. 1

THE AMENDING AGREEMENT NO. 1, effective as of the 31 day of October, 2016_ (the **"Effective Date"**)

B E T W E E N:

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO
as represented by the Minister of Energy

(the **"Province"**)

- and -

Union Gas Limited.

(the **"Recipient"**)

AMENDING AGREEMENT NO. 1

BACKGROUND

1. **WHERAS** the Province and the Recipient agree that enabling fuel switching by Program Participants is a meaningful and positive feature of the Program.

2. **AND WHEREAS** the Province and the Recipient wish to clarify those portions of Schedule C to the Transfer Payment Agreement entered into by each of them on 31st day of March, 2016 (the "**Agreement**") which deal with and relate to fuel switching;

3. **NOW THEREFORE** the Agreement is hereby amended as set forth as follows on and from the effective date ("**Amending Agreement No. 1**").

IN CONSIDERATION of the mutual covenants and agreements contained in the Agreement and in this Amending Agreement No. 1 and for other good and valuable consideration, the receipt and sufficiency of which are expressly acknowledged, the Province and the Recipient (the **"Parties"**) agree as follows:

1. **Amendments:** The parties hereto agree that Schedule C to the Agreement, entitled "Program Description and Timelines" is hereby replaced with the attached Schedule C (Amended) having the same title

2. **Timing:** The parties hereto agree to be bound by the above-noted amended Schedule C on and after the effective date and the Recipient agrees to conduct the Program in accordance with the Agreement as amended by the above-noted amended Schedule C in the manner contemplated by the Agreement as amended by this Amending Agreement No. 1;

3. **Existing Terms and Conditions, etc**, **Maintained:** In all other respects, all of the provisions, terms and conditions (including the Schedules) contained in the Agreement continue to apply to the parties in the manner contemplated in the Agreement.

4. **Entire Agreement**: This Amending Agreement No. 1 is to form part of the Agreement and is to be taken together with the Agreement and the Schedules referred to in the Agreement to constitute the entire agreement between the Parties with respect to the subject matter contained in the Agreement.

5. **Counterparts:** The Agreement may be executed in any number of counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

6. **Acknowledgement:** The Recipient:

   a. acknowledges that it has read and understands the provisions contained in the entire Agreement; and
   b. agrees to be bound by the terms and conditions contained in the entire Agreement including but not limited to this Amending Agreement No. 1.

IN WITNESS WHEREOF, the Parties have executed the Agreement on the dates set out below.

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO
as represented by the Minister of Energy

by: _____

Date

Name: Serge Imbrogno

Title: Deputy Minister

Ministry of Energy

Authorized Signing Officer

Union Gas Limited

by: _____

Feb 1/17
Date

Name:

Title: MARK ISHERWOOD
VICE PRESIDENT
INFRANCHISE SALES AND MARKETING & CUSTOMER CARE

I have authority to bind the Recipient.

SCHEDULE "C" (AMENDED)

Attached to and forming part of the Amending Agreement No. 1 entered into between the Ministry and the Recipient dated the ____day of ____20__.

PROGRAM DESCRIPTION AND TIMELINES

1. Background

On November 26, 2015, the Government of Ontario announced a commitment to establish a Green Investment Fund (the "GIF") that will be targeted at reducing greenhouse gas ("GHG") emissions while strengthening the economy.

On February 4, 2016, the Government of Ontario announced a $100M GIF allocation, in partnership with the Recipient and Enbridge Gas Distribution ("Enbridge"), to help approximately 37,000 homeowners conduct audits to identify energy-saving opportunities and then complete retrofits. This new $100 million funding is expected to save an equivalent of 1.6 million tonnes of GHG emissions. Eligible homeowners will be able to qualify for rebates towards energy audits and home energy efficiency retrofits.

2. Scope of Program, Program Details and Deliverables

a) Program Description:

The Funds from the GIF will be allocated to the Recipient to expand its existing Home Reno Rebate offering (the "existing HRR offering") that operates within the Ontario Energy Board's (the "OEB's") 2015-2020 Demand Side Management ("DSM") Framework, and is currently being delivered to eligible residential customers. The Funds are expected to generate increased homeowner participation and avoided GHG emissions, beyond what would have been realized through DSM funding[1]. The offering enhancements via the GIF, and Recipient's existing HRR offering, will operate as a single enhanced Home Reno Rebate offering (the "enhanced HRR offering").

The existing HRR offering helps single-family homeowners find energy-saving opportunities throughout their home and provides financial incentives to offset the costs of upgrades (the maximum rebate payment is $5,000 per home). The existing HRR offering includes a rebate for home energy assessments of up to $500 (intended to cover the full cost of an initial and follow-up home energy assessment), as well as rebates for:

- Basement insulation
- Exterior wall insulation
- Attic insulation
- Air sealing
- High-efficiency natural gas furnace or boiler
- High-efficiency natural gas water heater
- ENERGY STAR-qualified windows.

Participants of the existing HRR offering work with an auditor from a Service Organization to complete an initial energy assessment (known as the "D Assessment") to establish the home's current energy use and identify energy saving opportunities in the home (see Appendix A for the current list of Recipient's partnered Service Organizations). A critical component of the D Assessment is a blower door test that

[1] DSM funding – is the funding provided to the Union to perform its existing HRR offering.

measures the home's air tightness. The assessment includes an energy efficiency report delivered to the homeowner that outlines all energy saving opportunities identified by NRCan's HOT2000 software, the home's EnerGuide rating, and energy saving tips and information (see Appendix B for a sample energy efficiency report).

Rebates are available for completing energy assessments as well as implementing opportunities identified in the D Assessment. After upgrades to the home are made, participants complete a second energy assessment (known as the "E Assessment") to determine the energy savings.

The Recipient will leverage the existing HRR offering, including relationships with Service Organizations, marketing tactics, and tracking/reporting systems, to increase participation – using additional funding from the GIF. The Recipient has and will continue to seek opportunities to collaborate and coordinate with the Independent Electricity System Operator (the "IESO") and local distribution companies ("LDCs") to the extent possible.

The Funds from the GIF will also be used by the Recipient to launch a Behavioural offering. The Behavioural offering will seek to achieve GHG emissions reductions by encouraging customers to change their energy use decisions and actions. The Behavioural offering provides participants a comparison of their own natural gas usage against that of their peers, as well as their own performance from previous months. To assist participants in taking action, the Behavioural offering will provide customized energy savings tips and other mechanisms to motivate behavioural changes.

Behavioural offering participants will receive a combination of personalized direct mail and/or emails to deliver climate change messaging and energy performance enhancement opportunities through behavioural-based changes. The Recipient will also provide Behavioural offering participants with information on the benefits of participating in the enhanced HRR offering.

The Recipient will utilize their existing procurement process to select a service provider with extensive experience delivering similar programs that will achieve behavioural-based savings. The Steering Committee, discussed below in section 4 of Schedule "C", will be engaged in this process to ensure that the Behavioural offering goals are achieved.

b) Target Market and Eligibility

The Recipient's existing HRR offering targets the Recipient's residential customers who have a natural gas furnace. Participants must complete at least two eligible energy efficiency upgrades to qualify for the existing HRR offering (see Table 1 in (c) Incentive Structure for the list of eligible measures in the Recipient's existing HRR offering). Participants must complete both the initial D Assessment and the follow-up E Assessment to receive rebates.

With additional funding through the GIF, the Recipient will expand its existing HRR offering to target homes that use oil, propane, or wood as their primary heating fuel (in addition to homes that use natural gas). The enhanced HRR offering will target all homes within the province of Ontario in cooperation with Enbridge. The province will be shared between the Recipient and Enbridge so that all areas of the province are covered by the utilities, including areas outside of the utilities' franchise areas. Schedule "H" provides details on how Ontario will be served by the Recipient and Enbridge for the purpose of delivering the enhanced HRR offering.

The Behavioural offering will target the Recipient's natural gas customers based on consumption patterns, allowing for tailored messaging such as energy efficiency tips that will benefit the customers and drive GHG emission reductions.

c) Incentive Structure

Measure rebates for the Recipient's existing HRR offering are shown in Table 1 below.

Table 1: Measure Rebates for the Recipient's Existing HRR Offering

Measure	Rebate	Description
Basement Insulation	$1,000	For adding at least R23 to 100% of basement
	$500	For adding at least R12 to 100% of basement
	$800	For adding at least R23 to 100% of crawl space wall
	$400	For adding at least R10 to 100% of crawl space wall
	$450	For adding at least R24 to 100% of floor above crawl space
Exterior Wall Insulation	$1,500	Add at least R9 for 100% of building to achieve a minimum of R12
	$1,000	Add at least R3.8 for 100% of building to achieve a minimum of R12
Attic Insulation	$500	For increasing attic insulation from R12 or less to at least R50 from R12 or less
	$250	For increasing attic insulation from R13 to R25 to at least R50
	$500	For increasing cathedral/flat roof insulation by at least R14
Air Sealing	$150	Achieve 10% or more above base target
	$100	Achieve base target
Furnace/Boiler	$500	For replacing low or mid-efficiency heating system with 95% AFUE or higher condensing natural gas furnace or 90% AFUE or higher ENERGY STAR® condensing gas boiler
Water Heater	$200	For replacing water heater with ENERGY STAR natural gas water heater with EF of 0.82 or higher
Window/Door/Skylight	$40	For each window, door or skylight replaced with ENERGY STAR-qualified model

The existing HRR offering also includes a rebate of up to $500 for the initial D Assessment and the follow-up E Assessment (intended to cover the full cost of the assessments). A $250 bonus rebate will also be available for each measure installed beyond the first two. The maximum rebate payment is $5,000 per home (this amount includes rebates for the home energy assessments, measure upgrades, and bonuses.)

With additional funding through the GIF, measure rebates will be enhanced to drive increased participation levels (see Table 2 below for the measure rebates for the enhanced HRR offering, with funding from the GIF). Rebates for high-efficiency oil and propane furnaces/boilers, air-source heat pumps, and wood burning systems have also been added, as well as a rebate for smart thermostats.

Table 2: Measure Rebates for the Enhanced HRR Offering

Measure	Rebate	Description
Basement Insulation	$1,250	For adding at least R23 to 100% of basement

Measure	Rebate	Description
	$750	For adding at least R12 to 100% of basement
	$1,000	For adding at least R23 to 100% of crawl space wall
	$500	For adding at least R10 to 100% of crawl space wall
	$500	For adding at least R24 to 100% of floor above crawl space
Exterior Wall Insulation	$1,750	Add at least R9 for 100% of building to achieve a minimum of R12
	$1,250	Add at least R3.8 for 100% of building to achieve a minimum of R12
Attic Insulation	$500	For increasing attic insulation from R12 or less to at least R50 from R12 or less
	$250	For increasing attic insulation from R13 to R25 to at least R50
	$500	For increasing cathedral/flat roof insulation by at least R14
Air Sealing	$150	Achieve 10% or more above base target
	$100	Achieve base target
Furnace/Boiler	$1,000	For replacing a • 94% or less AFUE natural gas, propane, or oil furnace, or; • 89% or less AFUE natural gas, propane, or oil boiler, or; With a • 95% or higher AFUE condensing natural gas, propane, or oil furnace • 90% or higher AFUE condensing natural gas, propane, or oil boiler
Wood-burning System	$375	For replacing a wood-burning system or appliance with one of the following: • An indoor wood-burning appliance certified to either CAN/CSA-B415.1-M92 or the United States Environmental Protection Agency (EPA) 40 CFR Part 60 wood-burning appliance standard. Appliances exempt from EPA testing are not eligible unless they are B415.1-M92 certified. • An indoor pellet-burning appliance (includes stoves, furnaces and boilers that burn wood, corn, grain or cherry pits). • An indoor masonry heater. Or For replacing a solid fuel-fired outdoor boiler with an outdoor wood-burning appliance certified to either CAN/CSA-B415.1 or United States Environmental Protection Agency (EPA) Outdoor Wood-fired Hydronic Heater (OWHH Method 28) Program (Phase 1 and 2). The capacity of the new equipment must be equal to or smaller than the capacity of the boiler being replaced.
Air-source Heat Pump	$500	For installing one of the following ENERGY STAR qualified air-source heat pumps (ASHP) that provide space heating and optional cooling. The ASHP must have an Air-Conditioning, Heating and Refrigeration Institute (AHRI) number meeting the requirements in Table A2: • A central split-system ASHP that is a complete new system or replacement including the matched indoor coil and outdoor unit, as well as a furnace if required to meet ENERGY STAR. • A single package ASHP. • A ductless mini-split ASHP with at least one indoor heat per floor (excluding the basement) that is a complete new system or replacement including indoor head and outdoor unit.
Water Heater	$500	For replacing water heater with ENERGY STAR natural gas water heater with EF of 0.82 or higher
Window/Door/Skylight	$80	For each window, door or skylight replaced with ENERGY STAR-qualified model

Measure	Rebate	Description
Smart Thermostat	$100	For purchase and installation of a wi-fi enabled thermostat with learning capabilities utilizing sensor technology

The $500 rebate for the D and E Assessments, the bonus rebate of $250 for each measure installed beyond the first two, and the maximum rebate payment of $5,000 per home will not change. Smart thermostats will not be considered one of the eligible energy efficiency upgrades to qualify for the enhanced HRR offering, and will not contribute towards eligibility for the bonus rebate offer.

The Recipient understands that this program is not about fuel switching and will not use GIF funding resources to provide information related to fuel switching. Further, rebates will not be designed to promote the switching of fuel types. Rebates have been designed only to incent the installation of a high-efficiency system, regardless of the fuel type.

However, where requested by the customer, the Recipient will provide information about switching to other fuels. In the case of switching to natural gas, the Recipient will provide information and explain the process that they should follow. In the case of switching to a fuel other than natural gas, the Recipient will direct the customer to the appropriate fuel association partner.

In addition, where applicable such customers may be able to participate in regulated DSM activities in the future. In any event, the Recipient will provide all the information necessary for customers to evaluate their alternatives.

The Recipient understands that the goal of this Program is to reduce GHG emissions in the residential sector. In the event that a customer meets all Program eligibility criteria and decides to switch fuel types as part of their participation in the Program, the customer will be eligible to participate in the Program only for retrofit measures that result in a reduction in GHG emissions.

In situations where a homeowner has decided to change fuel types during their home renovations, the savings attributed to the program will be calculated as the difference between the high-efficiency system that was installed and the standard-efficiency system of the same fuel source, regardless of what the actual existing fuel type was.

At any point during the term of the enhanced HRR offering, the Recipient may find it necessary to adjust rebate levels in response to market changes or lessons learned.

The Behavioural offering does not provide direct financial incentives to customers. Actions are driven by intrinsic motivators (such as social norms/neighbour comparisons, commitments, and aversion to loss) as opposed to financial incentives.

d) Attribution of Program Results and Costs

The Recipient is guided by the attribution rules defined in EB-2014-0134, the Ontario Energy Board's Filing Guidelines to the Demand Side Management Framework for Natural Gas Distributors (2015-2020) ("The Guidelines"). Section 7.2.3 of the Guidelines state that:

> *Attribution of savings between rate-regulated natural gas utilities and other parties (e.g., governments, non-rate-regulated private sector, etc.) should be based primarily on the shares established in a partnership agreement reached prior to the program's launch.*

While funding from the GIF will drive incremental participation, the Recipient's existing HRR offering continues to be the foundation of the offering. For this reason, attribution of the enhanced HRR offering's results will not be determined simply based on the source of funding. Instead, attribution between the Recipient and GIF will occur based on the following rules:

1. 100% of the results from homes outside of the Recipient's franchise area will be attributed to the GIF (via the Province).
2. 100% of the results from homes within the Recipient's franchise that use a primary heating fuel other than natural gas will be attributed to the GIF (via the Province).
3. 100% of the results directly related to the smart thermostat will be attributed to the GIF (via the Province).
4. For all other results, there will be a two-phased approach to attribution each year. During Phase 1, 80% of the results will be attributed to the Recipient and 20% will be attributed to the GIF (via the Province). If at any point in a given year the Recipient exhausts its DSM funding available, or elects to stop using DSM funds for the enhanced HRR offering, Phase 2 of attribution will begin. During Phase 2, 100% of the offering's results will be attributed to the GIF (via the Province). Phase 1 will reset on January 1st of each year.

Attribution levels for Phase 1 were established based on the estimate that the GIF incentive enhancements will account for approximately twenty percent (20%) of the total per-home average incentive amount.

Attributable results include the number of homes participating in the enhanced HRR offering, the amount of energy saved by the enhanced HRR offering, and the amount of GHG emissions avoided by the enhanced HRR offering. Savings will be determined based on HOT2000, except for smart thermostats, which will use prescriptive savings assumptions from the Union/Enbridge Technical Reference Manual.

For the Behavioural offering, 100% of the results will be attributed to the GIF (via the Province).

Costs will be classified as: (a) customer incentive and education costs, (b) program costs, (c) marketing costs, or (d) administration costs. Table 3 below provides details on how customer incentive and educations costs will be attributed to Union (DSM) or the GIF (Province) for the enhanced HRR offering.

Table 3: Attribution of Customer Incentive and Education Costs for the Enhanced HRR Offering

Cost	Qualifier	Funded by DSM (the Recipient)	Funded by the GIF (Province)
Rebates for Smart Thermostats	All homes	0%	100%
Rebates for all other Measure Upgrades	Homes outside the Recipient's franchise area	0%	100%
	Homes within the Recipient's franchise area that use a primary heating fuel other than natural gas	0%	100%
	Homes within the Recipient's franchise area that use natural	Existing Incentive Levels (Table 1)	Enhanced Portion of Incentives (Difference between

Cost	Qualifier	Funded by DSM (the Recipient)	Funded by the GIF (Province)
	gas as the primary heating fuel, attributed to Recipient in Phase 1		Table 1 and Table 2)
	Homes within the Recipient's franchise area that use natural gas as the primary heating fuel, attributed to the GIF in Phase 1 and/or Phase 2	0%	100%

Rebates for energy assessments, as well as bonus rebates, will be funded by the Recipient (DSM) for homes attributed to the Recipient, and by the GIF (Province) for homes attributed to the GIF.

All program costs, as outlined in Schedule "D" Budget, will be funded by the GIF.

Marketing costs that can be directly attributed to homes that are not the Recipient's customers will be funded by the GIF. All other marketing costs will be allocated based on the share of participants attributed to the Recipient or to the GIF. For example, if in 2016 the enhanced HRR offering results in 8,000 total participants, with 5,000 (or 62.5%) attributed to the Recipient and 3,000 (or 37.5%) attributed to the GIF, then 62.5% of the marketing costs will be funded by the Recipient (DSM) and 37.5% will be funded by the GIF (Province).

All of the costs associated with the Behavioural offering will be funded by the GIF.

In addition to these attribution rules, the total amount of marketing costs attributed to GIF will not exceed 2% of the Maximum Funds. For example, should the Recipient spend $42 million of the GIF, the total amount of marketing costs funded by the GIF will not exceed $0.840 million.

Administrative costs required to deliver the enhanced HRR offering and the Behavioural offering will be funded by the GIF on a fully allocated basis in alignment with Ontario Energy Board protocols.

e) Co-Branding

The Recipient will include statements within the enhanced HRR offering's marketing material communicating that the offering is jointly funded. The Recipient will work with the Province to ensure the messaging is appropriate and sufficient.

f) French Language Translation

The Recipient will ensure that information communicated to the public regarding the enhanced HRR offering and the Behavioural offering will be available in French.

3. Reporting Deliverables

Reporting deliverables expected from the Recipient include:

- Monthly Update Reports – Requirements are outlined in Schedule "F".

- Quarterly Update Reports – Requirements are outlined in Schedule "F".
- Annual Reports - Requirements are outlined in Schedule "F".
- Final Program Report (replaces annual report in final program year) – Requirements are outlined in Schedule "F".
- Audit Report (performed by an independent third party) – Requirements are outlined in Schedule "F".

4. Structure and Governance

The Recipient's existing HRR offering, and the enhancements funded by the GIF, will operate as a single offering – both in the Recipient's delivery of the enhanced HRR offering and from the perspective of participants. The existing HRR offering and the enhanced HRR offering will not be explicitly differentiated.

As with DSM programming, the Recipient will be accountable for all program design elements, including but not limited to:

- Incentive structure design
- Design and execution of marketing tactics
- Relationships and communication with program partners (such as Service Organizations)
- Program eligibility requirements

The Recipient will also be accountable for all tracking requirements and reporting deliverables to the Province, as outlined in Schedule "F".

The Recipient will form a Steering Committee (the "Committee"), to be established and governed as follows:

(a) **Establishment**. A Committee shall be established by the Recipient, the composition of which shall include at least one representative of the Ontario government, one representative of the Recipient, and such other persons as the Recipient in its sole discretion determines appropriate.

(b) **Composition**. The composition of the Committee shall be structured by the Recipient so that the representatives of the Ontario government do not constitute the majority of the members of the Committee. It is expressly agreed and understood that no one representative on the Committee will have sole control or veto power over the Committee.

(c) **Meetings**. The Committee comprising the majority of its members shall meet on such occasions as may be required to address emerging issues with the Programs. During Program design and roll-out the anticipated frequency is monthly, transitioning to quarterly as determined by the Committee. The Committee will provide guidance for the Program as required.

(d) **Audit**. The enhanced HRR offering will be included within the scope of the Recipient's annual DSM audit, and any findings or recommendations from the audit will be shared with the Province. Since the enhanced HRR offering's design includes on-site assessments both before and after upgrades to the home are made, and uses NRCan HOT2000 software facilitated by independent energy advisors, additional evaluation activities are not anticipated at this time. The Committee will determine whether additional evaluation or auditing is required in the future. If deemed appropriate, additional auditing will be funded by the GIF as part of the program costs.

5. Term/Timelines

Enhancements to the Recipient's existing HRR offering, via funding from the GIF, will begin within 30 days of the Recipient receiving a fully executed final agreement from the Province. Enhancements will end when funding has been exhausted, or by May 31, 2019, whichever occurs first. Should funds remain unspent by May 31, 2019, the Recipient and the Province will determine how to proceed at that time.

Activity	Timeline
Program Launch	Q3 2016
2016 Year-end Report	January 30, 2017
2017 Year-end Report	January 30, 2018
2018 Year-end Report / Final Report	January 30, 2019

The Behavioural offering is expected to launch in 2017, and will end when funding has been exhausted, or by May 31, 2019, whichever occurs first. Should funds remain unspent by May 31, 2019, the Recipient and the Province will determine how to proceed at that time.

6. Projected Results

Enhancements to the Recipient's existing HRR offering, via funding from the GIF, is expected to drive an estimated 12,000 incremental participating homes, in addition to what would have been realized through DSM funding only. Table 4 below provides an annual breakdown of the projected annual incremental participants due to GIF enhancements, the estimated fuel savings (modelled off existing natural gas program data), and the associated CO2 emissions reduction. Annual projections are estimates; actual results may vary year-by-year.

Table 4: Projected Annual Incremental Participation due to GIF Enhancements

Year End	Homes	Natural Gas Savings (m3)	CO2 Emissions Reduction (metric tonnes)
2016	1,500	37.5 million	75,000
2017	4,000	100.0 million	200,000
2018	6,500	162.5 million	325,000
TOTAL	**12,000**	**300 million**	**600,000**

For incremental participants, it is expected that the distribution of participants by primary heating fuel type will be similar to the provincial distribution of homes by primary heating fuel type (with the exception of homes that use electricity as the primary heating fuel). Table 5 below shows the Ontario distribution of residential homes by primary heating fuel type based on the Statistics Canada 2011 Survey of Household Energy Use, the distribution not including homes that use electricity as the primary heating fuel, and the corresponding forecasted participants by fuel type.

Table 5: Primary Heating Fuel Used (2011 Survey of Household Energy Use, Statistics Canada)

Fuel Type	Residential homes in Ontario	Residential homes in Ontario (not including Electricity)	Forecasted Participants
Natural Gas	76%	88%	10,560
Electricity	14%	--	--
Oil	5%	6%	720
Wood	3%	4%	480
Propane	2%	2%	240
TOTAL	**100%**	**100%**	**12,000**

The Recipient expects that approximately 84% of the incremental 12,000 participants will be the Recipient's customers, and approximately 16% will not be the Recipient's customers. The forecast is based on the expected market opportunity within the Recipient's program area, outlined in Table 6 below. These figures are estimates.

Table 6: Market Opportunity within Recipient's Program Area

Market Opportunity		Forecasted Participants	
Union Gas Limited Customers	1.3 million homes	**Recipient customers**	84% (10,080 homes)
Kitchener Utilities customers **Utilities Kingston customers** **Natural Resource Gas Limited customers** **Six Nations Natural Gas customers**	0.080 million[2] homes	**Non-Recipient customers**	16% (1,920 homes)
Homes that use oil, propane, or wood as the primary heating fuel	0.161 million[3] homes		
TOTAL	1.541 million homes	**TOTAL**	100% (12,000 homes)

Projected results for the Behavioural offering are not available at this time, and will be determined by the Steering Committee outlined in section 4 of Schedule "C".

[2] Source: The Recipient.
[3] 50% of the 321,822 homes in Ontario that use oil, propane, and wood as the primary heating fuel, with the remainder to be served by Enbridge. Source: Statistics Canada 2011 Survey of Household Energy Use.

APPENDIX A – Current Service Organisations

Current participating Service Organizations are listed below. Service Organizations may be added or removed from this list by the Recipient at any time. The Recipient will ensure that homeowners in all parts of the Recipient's program area will have access to a participating Service Organization.

Service Organization	Phone
Amerispec of Canada	1-800-263-5928
Barrier Sciences Group	1-866-333-3920
BuyWise Consulting	1-866-296-9473
Canada Energy Audit	1-888-298-9458
Eco Advantage Energy Advisors	1-855-449-2387
EnerCare Home Services	1-866-627-6483
The Energuy	1-888-442-9577
Enerquality	1-844-447-0077
EnerTest Corporation	1-877-327-1504
Envirocentre	1-877-580-2582
Green Communities Canada	1-866 865-7337
Ridge Energy Consultants Inc	1-888-236-5116

APPENDIX B – Sample Energy Efficiency Report

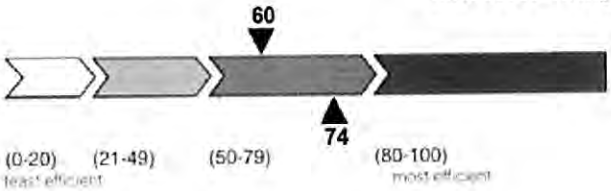
ecoENERGY
an ecoACTION initiative

Energy Efficiency Evaluation Report
File number: [redacted]

Property Owner:

[redacted]

EnerGuide Rating



House type: Single detached

No. of storeys: One

No. of RO windows: 10
RO = rough opening

Air conditioner: Yes

Heating system: Natural gas Furnace

Domestic hot water: Natural gas

Air leakage rate @ 50 Pa: 12.07 ACH
ACH = number of air changes per hour

Equivalent Leakage Area: 1783 cm^2

The results of your pre-retrofit energy evaluation show that your house rates 60 points on the EnerGuide scale. If you implement all of the recommendations in this report, you could reduce your energy consumption by up to 33% and increase your home's energy efficiency rating to 74 points. The average energy efficiency rating for a house of this age in Ontario is 57, whereas the highest rating achieved by the most energy-efficient houses in this category is 83.

The sooner you start your renovations, the sooner you will benefit from the energy savings. And let's not forget how reduced energy consumption helps protect the environment.

Did you know that when you reduce the amount of energy used in your home, you also reduce the production of greenhouse gases (GHG) such as carbon dioxide? By improving your home's energy efficiency rating to 74 points, you will reduce its GHG emissions by 2.8 tonnes per year!

The ecoENERGY Retrofit - Homes program stopped accepting bookings for pre-retrofit evaluations as of March 31, 2010. If there is a complimentary grant program offered by a province, territory, municipality, utility or other organization, your file will be transferred to them in accordance with your consent.

Note: If you notice any discrepancies with the above description of your home, contact your service organization immediately.

Service Organization:

Page 1

[redacted]
Telephone: [redacted]

Certified Energy Advisor: [redacted]

Date of evaluation: [redacted]

Date of report: [redacted]

Certified Energy Advisor Signature

HOT2000v10.51

1. YOUR HOME ENERGY ACTION CHECKLIST

This is your checklist of recommended retrofits to improve the energy efficiency of your home. Included is information on the potential for energy savings and EnerGuide rating improvement. **For more information on implementing the recommended retrofits, read carefully the 'Recommended Energy-Saving Measures' section of this report. Any reference in this report regarding the eligibility for, or availability of, grants under the ecoENERGY Retrofit - Homes program should be disregarded.**

Before undertaking upgrades or renovations, find out about the appropriate products and installation techniques, and ensure that all renovations meet local building codes and by-laws. NRCan does not endorse the services of any contractor, nor any specific product, and accepts no liability in the selection of materials, products, contractors or performance of workmanship.

Note: Some provinces, territories, municipalities and utilities offer complimentary grants and other incentives for reducing energy use. For information on other energy-saving programs, visit ecoaction.gc.ca and follow the links to ecoENERGY Retrofit's "Grants and Rebates" Web page for consumers or call 1 800 O-Canada (1-800-622-6232).

Retrofits	Potential for Energy Savings *	Potential Rating Improvement
* One (1) star = lowest savings / five (5) stars = highest savings		
WALL INSULATION Increase your exterior wall insulation by an amount greater than RSI 1.59 (R-9).	☆☆☆☆☆	5.2 points
BASEMENT/CRAWL SPACE INSULATION Increase the insulation value of the basement walls by a minimum of RSI 1.8 (R-10) to a maximum of RSI 4.1 (R-23).	☆☆☆☆☆	6.7 points
AIR SEALING Improve the air tightness of your house by 22 percent to achieve an air change rate per hour of 9.35 at a pressure of 50 Pa.	☆☆☆	2.2 points

When replacing ANY of the equipment listed in this report, the new equipment should have an efficiency rating higher than that of the original equipment.

2. THE ENERGUIDE RATING SYSTEM

The EnerGuide rating system is a standardized method of evaluation that lets homeowners compare their house's energy efficiency rating to similar sized houses in similar regions. The EnerGuide rating considers the house's estimated annual energy consumption based on an in-depth evaluation of the house's characteristics such as location, size, equipment and systems, insulation levels, air tightness, etc. In addition, standardized conditions are used when calculating the rating in order to compare the efficiency of one house to another. These conditions include: a complete air change approximately every three hours; four occupants; a fixed thermostat setting of 21°C on main floors and 19°C in the basement; average hot water consumption of 225 litres per day; average national electricity consumption of 24 kWh per day; and regional weather data that is averaged over the last 30 years.

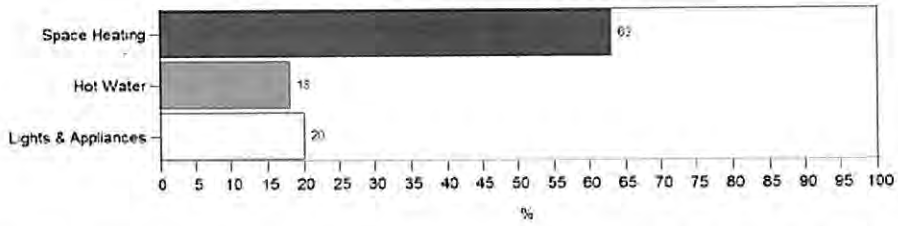
Figures 1 through 3 show the results of your energy evaluation based on the standardized conditions. The results may not entirely reflect your household since your actual energy consumption and future savings are influenced by the number of occupants, their day-to-day habits and lifestyles.

3. ENERGY CONSUMPTION

Houses lose heat to the outdoors during the heating season primarily through air leakage and conduction, such as the transfer of heat through the basement and exterior walls, upper floor ceilings, windows and doors (the 'building envelope'). Canada's demanding climate and modifications made to the house, such as drilling holes in walls for new wiring, pipes and lights, all play a part in reducing the efficiency of the building envelope over time. Houses need to be regularly maintained and upgraded to ensure greater energy efficiency, comfort and savings.

Figure 1 breaks down your house's estimated annual energy consumption for space heating, hot water and lights and appliances.

Figure 1 Estimated Breakdown of Energy Consumption



4. SPACE HEATING ANALYSIS

Figure 2 shows the estimated percentage of energy used for the space heating of your home.

- The right side of the top bar shows the percentage of energy you could save if you were to implement all of the upgrades recommended in this report, excluding changes to the space heating equipment. You could save up to 53 percent by performing all of the recommended non-space heating system upgrades.
- The right side of the bottom bar shows the percentage of energy you could save if you were to implement all of the upgrades recommended in this report, including any space heating system upgrades. You could save up to 53 percent by performing all of the recommended upgrades.

Figure 2. Estimated Percentage of Potential Energy Savings

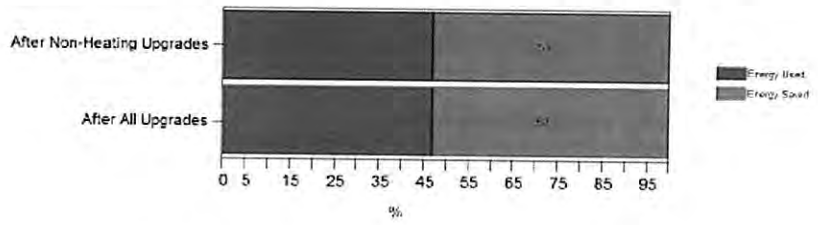
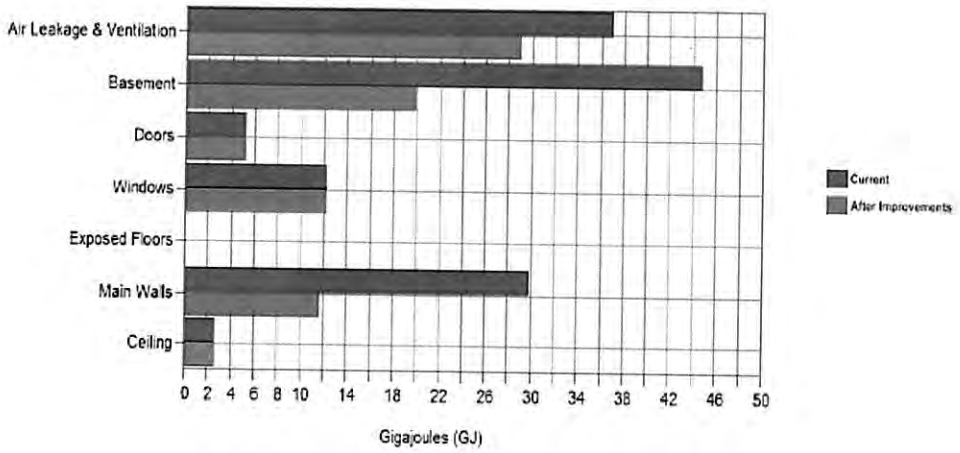


Figure 3 shows where the energy used for space heating is lost from your home. This energy is measured in gigajoules (GJ), where 1 GJ is equivalent to 278 kilowatt-hours (kWh) or 948,000 Btu.

The red bars show the areas where you are losing energy now. The longer the bar, the more energy you are losing. The green bars show the estimated energy loss after you complete your renovations. The larger the difference between the red and the green bars, the greater the potential for energy savings and comfort improvements.

Figure 3. Breakdown of Heat Loss through Building Envelope



Your Home's Estimated Design Heating and Cooling Loads

If you were to implement ALL of the building envelope retrofits recommended in the section of this report entitled 'Your Home Energy Action Checklist', it is estimated that your home's design heat loss would be 29332 Btu/hour (8596 Watts) and its design cooling load would be 16573 Btu/hour (1.4 tons). If you are considering replacing your space heating and/or cooling system, it is recommended that you provide this information to your heating/cooling contractor to help ensure a properly-sized system. However, this is only an estimate based on the data that was collected on your home at the time of the pre-retrofit evaluation. The design heat loss and cooling load can vary depending on different factors, such as the retrofits that you implement and other changes you may make to your home. Prior to having a new heating/cooling system installed, it is recommended that your heating/cooling contractor

perform a heat loss/heat gain calculation on your home to determine the capacity and distribution flows for the new equipment. The contractor should hold current certification for Heat Loss/Heat Gain Calculations from the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI). For a list of certified contractors, visit www.hrai.ca and click on "Homeowners and Building Owners" and "Skill*Tech* Academy Canadian Certification Listing", or call 1-800-267-2231.

Important Information Concerning Vermiculite Insulation
Older vermiculite insulation installed in homes may contain amphibole asbestos, which can cause health risks if disturbed and inhaled. If the insulation is contained in the walls or attic spaces and is not disturbed or exposed to the home or interior environment, it poses very little risk. Vermiculite insulation was not detected during the energy evaluation of your home. However, if you find vermiculite insulation during renovations, avoid disturbing it in any way. If you suspect it might be in your home and you plan to undertake renovations (including insulation or air sealing work) that may cause the vermiculite insulation to be disturbed, contact professionals who are qualified to handle asbestos before you proceed with the renovations. For a listing of qualified professionals, look in the Yellow PagesTM under 'Asbestos Abatement & Removal'. For information on vermiculite insulation that contains amphibole asbestos, refer to the Health Canada fact sheet It's Your Health - Vermiculite Insulation Containing Amphibole Asbestos. Visit http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/insulation-isolant-eng.php or call Health Canada at 1-800-443-0395 to order a copy.

5. RECOMMENDED ENERGY-SAVING MEASURES

Air Sealing
Reducing air leakage is usually the most cost-effective, energy-saving measure a homeowner can undertake; the leakier the home, the greater the savings! It is not unusual for air leakage to account for up to 35 percent of the heat loss in a home. In addition to reducing heat loss, air sealing improves comfort, protects the building structure and other materials from moisture damage, and reduces the amount of dust and noise that enters from the outdoors. Air sealing can also reduce air conditioning loads and energy costs.

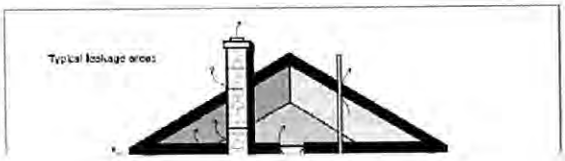
A blower door test was performed on your home to measure the amount of air leakage, and to identify the main air leakage locations. The blower door test results are shown on the first page of this report and are explained below.

The **Air Leakage Rate at 50 Pascals (ACH)** is the number of complete air changes per hour that occurs in your house when a pressure difference between the inside and outside of the home is set at 50 Pascals (Pa). A 50-Pa pressure difference simulates wind blowing at 56 kilometers per hour on your home. The higher the ACH, the leakier the house.

The **Equivalent Leakage Area (ELA)** represents the total air leakage area. It's like taking all of the air leakage areas (e.g., cracks, holes, etc.) in the home and putting them together to create one large hole in the building envelope. The larger the ELA, the leakier the house. An energy-efficient house might have an ELA as low as 258 cm^2 (40 square inches) while a leaky house may have an ELA of more than 3226 cm^2 (500 sq. in.).

Air Sealing Locations in Your Home
Listed below are the most common air leakage areas in a house. Leaks observed during the blower door test are noted. This list will help guide your air-sealing work:

- electrical outlets
- electrical ceiling fixtures
- electrical box and wire penetration
- exterior pipe penetration
- baseboard trims and mouldings
- window frames



- door frames
- fireplace
- chimney
- attic hatch
- basement header (rim joists)
- other _____

Air Sealing Options
Air sealing can be a do-it-yourself option. Another option is to hire a qualified, professional air sealer who can locate and seal leaks in your home and likely do a more thorough job. This may be an important consideration if you want to air seal your house to meet a specific air leakage goal, and be eligible for a grant. Professional whole-house air sealing costs vary, depending on the size and complexity of the work.

Air Sealing Materials
Weatherstripping reduces air leakage by sealing gaps around moveable parts of windows and doors. Correctly installed, high quality weatherstripping is a cost-effective way to reduce air leakage. Check weatherstripping annually and replace worn materials before the cold weather sets in.

Interior-grade caulking is used on the interior to seal small cracks and penetrations on the inside surface of your walls, ceilings and floors. Exterior-grade caulking is used on the exterior to keep out rain, snow, wind as well as insects and rodents. Urethane foam is very good for filling larger joints and cavities but must be protected from the elements and flame sources.

For information on air sealing your home, consult NRCan's publications entitled *Air-Leakage Control, Improving Window Energy Efficiency and Keeping the Heat In*, and Canada Mortgage and Housing Corporation's *About Your House, and Renovating for Energy Savings* fact sheets.

Grant Eligibility:
Air sealing can be eligible for an ecoENERGY Retrofit – Homes grant. You must meet or exceed the goal indicated at the beginning of this report, in the section entitled *Your Home Energy Action Checklist*. The results of the air sealing work will be measured at the time of your post-retrofit evaluation. The grant amount differs according to the percentage by which you have reduced your home's air leakage rate. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit – Homes*.

Recommendation:
Air seal your home to achieve the air leakage rate indicated at the beginning of this report in the section entitled *Your Home Energy Action Checklist*.

Foundations - General

Foundation heat loss can account for 20 to 35 percent of a home's heat loss. A well-insulated foundation can improve home comfort, air quality, structural integrity, and energy efficiency.

Before insulating, first check for moisture in your foundation walls. Tell-tale signs are: staining or mould growth; blistering, peeling paint; efflorescence, a whitish deposit on the surface; spalling or surface deterioration; condensation on walls and metal objects; and a musty smell.

Repair water leaks through the floor and walls, caused by cracks, holes and construction joints. You should also control humidity levels and there should be appropriate weeping tiles and damp-proofing or waterproofing on the foundation walls to prevent moisture from wicking through the foundation wall.

To prevent moisture problems, slope the ground away from the house exterior and direct eavestrough downspouts away from the foundation. Maintain and seal sumps and sump pumps, and install sewer backup equipment, if required.

The type and condition of your foundation will determine if you can insulate from the outside or from the inside. Exterior insulation is the preferred but more costly method. Foundations of rubble, brick, stone and concrete block are best insulated from the exterior. However, you may wish to have an engineer verify your foundation's structural integrity before undertaking any work.

Poured-concrete foundations can be insulated from either the outside or inside, providing there are no serious water or structural problems. Preserved-wood foundations, made with sheathing and studs, are generally insulated by filling in the stud space. Slab-on-grade foundations are typically insulated on the exterior edge. Occasionally, they are insulated on top of the slab and under the floor finish.

For more information about insulating foundations, as well as insulation materials, their properties and their installation methods, consult NRCan's publication entitled *Keeping the Heat In* and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Main Walls - General

Retrofitting walls can help save energy, since walls can account for 10 to 30 percent of heat loss in a house. Depending on the house and its characteristics, exterior walls can be insulated by filling the wall space (the wall cavity) with blown-in insulation, by adding insulation from the interior or exterior, or a combination of any of these methods.

Before you begin, first check the walls from the interior and exterior for evidence of moisture damage: stains, mould, rotten wood, flaking brick and peeling paint. Also, make sure that damage to the walls is not being caused by problems with the roof and that all flashings are secure. All these problems must be fixed before proceeding. Seal gaps and cracks in the exterior wall-finish, and around window and door frames to prevent water from penetrating into the walls. Do not seal, however, any drainage holes at the bottom of brick-veneer walls or window frames, as these holes are necessary to minimize the impact of water penetration on the wall assembly. Consider additional upgrades related to the walls before retrofitting them, such as electrical wiring, and the installation of air- and vapour-barriers.

For more information on insulating walls, as well as insulation materials, their properties and installation methods, consult NRCan's *Keeping the Heat In* and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Grant Eligibility:

The insulation of exterior walls is eligible for an ecoENERGY Retrofit – Homes grant. Note that you must insulate a minimum of 20 percent of the total exterior wall area and add a minimum insulation value of RSI 0.7 (R-3.8) to qualify. The grant amount differs according to the additional insulation that you install. The grant is also pro-rated based on the percentage of wall area that is insulated compared to the total wall area after the retrofits. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit – Homes*.

It is recommended to take photos of the walls while the insulation is being installed and to show them to your energy advisor, during the post-retrofit evaluation, to ensure that you will get full credit for your newly-installed insulation.

Heating System

If you are considering replacing your heating system, it is strongly recommended that you follow these important steps first:

- Complete all of the building envelope energy efficiency upgrades, such as air sealing and insulation, because this will likely result in the need for a smaller and less expensive heating system.
- Next, ensure that your heating contractor performs a heat loss calculation on your home to

determine the capacity and distribution flows for the new equipment. A properly sized heating system will reduce on/off cycling, energy use, wear and tear on parts, and improve comfort. It is advisable to hire a contractor that is certified in heat loss and heat gain calculations by an industry-recognized organization, such as the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), which is also recognized by your local jurisdiction. For a list of HRAI certified designers and installers, visit www.hrai.ca and under *Home & Building Owners*, click on *Find a Contractor*. Click on *3. Locate an HRAI Member Company contractor* and fill out the required information and then click on *Search The Database* or call 1-800-267-2231.

Water Conservation

Water conservation is an important part of a home energy saving plan. Whether you are on municipal water or a well, water conservation can lessen your impact on the environment by reducing the energy use associated with water treatment and delivery, including the electricity used for pumping water and sewage.

Toilet usage can account for approximately 30 percent of indoor water use. The amount of water used depends on several factors: the flush volume, how often the toilet is flushed and the toilet's condition (adding dye to the tank water can reveal a leaky flush valve if the colour shows up in the bowl without flushing). For example, if you replace a toilet that flushes with 13 litres of water with a 6-litre model, you will save more than half of the water you and your family use. Additional water economy can be achieved by installing a dual-flush toilet designed to save about 25 percent more water than a 6-litre toilet.

Grant Eligibility:

The replacement of existing toilets with low- or dual-flush toilets is eligible for an ecoENERGY Retrofit – Homes grant. New models must meet the Unified North American Requirements (UNAR) for toilets. Information on qualified makes and models is available at www.map-testing.com. Click on *MaP SEARCH* and select the *Meets UNAR/ecoEnergy requirements* check box under the section labeled *Toilet Fixture Criteria/Ratings* and click *Search*.

Important: To ensure compliance, you must keep sufficient documentation on the make and model number of the replacement model(s). Show this information to the energy advisor during your post-retrofit evaluation.

Recommendation

When replacing your toilet(s), purchase low- or dual-flush models that meet the requirements described above.

Combustion spillage

As a result of the exhaust devices depressurization test performed on your home, which consists of turning on all exhaust equipment (exhaust fans, clothes dryer, central vacuum system, etc.), it has been determined that the use of this equipment may cause combustion products to be drawn into your home from your combustion appliance(s). **We strongly recommend that you install a carbon monoxide (CO) detector in your home, as well as a smoke detector on each floor, if not already present**. To remediate this potential combustion spillage problem, talk to an expert in your area.

6. ENERGY-SAVING TIPS

Although these actions may not be eligible for an incentive, they will help you save energy and money:

- Install and use a programmable electronic thermostat (set the heating temperature to 20°C while you are at home and 17°C at night and when you are away). For each degree of setback, you

can save up to 2 percent on your heating bills.

- When replacing lighting, appliances, electronics and office equipment, look for ENERGY STAR® qualified products. ENERGY STAR qualified products use less than half as much energy in standby mode (i.e. when they are turned "off"). For more information, go to http://energystar.gc.ca. You can also look for the EnerGuide label to help you select the most energy-efficient model. For more information, visit http://energuide.gc.ca.
- Replace your light bulbs with ENERGY STAR® qualified ones, such as compact fluorescents. They last longer and reduce electricity consumption.
- Insulate the first two metres of the hot and cold water pipes with insulating foam sleeves or pipe wrap insulation. By doing so you will save on your water heating costs and will reduce your water consumption. Besides saving energy, water will arrive at the faucets warmer or colder. Insulating cold water pipes will also avoid condensation from forming on the pipes. This prevents dripping on the ceiling finish or the basement floor. For a fuel-fired water heater, maintain a 15-centimetre (6-inch) clearance between the water piping insulation and the vent pipe.
- Use a timer for your car's block heater. Set the timer so that it turns one to two hours before you start your vehicle.
- Install an ENERGY STAR® qualified kitchen or bathroom exhaust fan vented to the outside.
- Install a timer on your bathroom exhaust fan(s).
- Install low-flow showerheads (rated at less than 9.8 litres per minute [L/min]) and faucet aerators.
- Fix leaky faucets and outside hose bibs.
- Plug your home entertainment system(s) and home office equipment into power bars that can be easily turned off when equipment is not in use. Refer to the fact sheet *Standby Power - When "Off" Means "On"* at http://oee.nrcan.gc.ca/residential/business/manufacturers/standby-power-fact.cfm for information on standby losses.

7. INFORMATION RESOURCES

Home Energy Efficiency
Natural Resources Canada (NRCan) publishes a variety of publications that can help you improve the energy efficiency of your home. These publications are available online at oee.nrcan.gc.ca/publications or by calling the order desk at 1-800-387-2000.

Renovation Publications
Canada Mortgage and Housing Corporation (CMHC) publishes a large number of renovation planning fact sheets that are available at no cost. There are also some excellent in-depth publications for sale. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order your material of interest.

Hiring a Contractor
Before you have any work done, request quotations in writing from professional contractors and obtain a written contract. CMHC has a very useful fact sheet on this subject, *Hiring a Contractor*, which includes a draft contract. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order.

Mold
If you suspect mold growth in your home, it is recommended that the mold damaged area(s) be cleaned thoroughly or removed and properly disposed of. To control and reduce the potential for mold growth, maintain indoor humidity at appropriate levels, and remedy water infiltration and leakage issues. Refer to the CMHC fact sheet *About Your House: Fighting Mold - The Homeowner's Guide* for information on proper mold identification and cleaning procedures. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order.

Radon
Radon is a radioactive gas that is colourless, odourless and tasteless. Radon is formed by the breakdown of uranium, a natural radioactive material found in soil, rock and groundwater. When radon is released from the ground into the outdoor air, it gets diluted to low concentrations and is not a concern. However, in enclosed spaces, like houses, it can sometimes accumulate to high levels, which can be a risk to the health of you and your family. For more information, refer to the CMHC publication *Radon – A Guide for Canadian Homeowners* or visit the Health Canada web site at http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/index-eng.php.

Humidity Control
A relative humidity (RH) level of between 30 and 55 percent is recommended in the home. If you have a humidifier or dehumidifier, ensure that it is regularly cleaned and maintained, and that the humidistat is set at an appropriate humidity level. You can use a hygrometer to measure relative humidity and the CMHC fact sheet *Measuring Humidity in Your Home* gives good advice. In addition, dehumidifiers can help reduce moisture levels especially in basements.

GET STARTED TODAY!

Now that you have the tools to improve your home's energy efficiency, you can look forward to enjoying the added comfort of your ecoENERGY improved home. Not only will you benefit from increased comfort, you will also save on your energy bills year after year. And let's not forget your reduction of greenhouse gases!