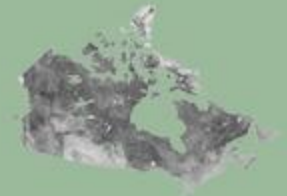


ecoENERGY
an ecoACTION initiative



International Models and Progress: Lessons Learned from Canada's Residential Sector

Presented at the ACEEE Finance Forum, Chicago, May 15, 2013
Claude Lefrançois, Senior Chief
Office of Energy Efficiency, Housing Division
May 15, 2013



Natural Resources
Canada

Ressources naturelles
Canada

Canada 

Outline

- Perspective from Natural Resources Canada's Office of Energy Efficiency
- EnerGuide Rating System
- Innovative Financing Mechanisms:
 - Overview for Canada
 - Selected examples
 - Learning to date
- What next?



NRCan Housing Programming: An Ongoing Success Story

- Over \$1B in funding from 2007-2012 – up to \$10B economic spin-off
- **1.1 million homes have received an EnerGuide Rating**
- 20% annual average energy savings & \$3B savings by 2016
- Over 2,000 energy advisors trained and certified
- Delivery of companion programs with partners across Canada
- 2012-16 funding commitment for housing code, EnerGuide Rating System (ERS), ENERGY STAR for New Homes, and R-2000
- **Innovative Financing Mechanisms (IFM)** are emerging as key tools to maintain retrofit momentum in Canada.
- **NRCan and IFM:** use of ERS, expertise, info sharing and some funds

ERS the First Step in Smart Renovation




ERS – Canada’s National Rating System

DRAFT: This document is for discussion purposes only and not for distribution 2011-10-17
Home Address: 1258 Cook Avenue, Scarborough, ON M1B 2B5 File Number: 619002738

HOMEOWNER INFORMATION SHEET

This report is accessible on-line at myenergiguide.gc.ca. We ensure access using your password. It provides a detailed record of the building assemblies and equipment in your home on the day it was rated which were used in the calculation of your home's energy rating.



myENERGUIDE RATING

MyEnerGuide Rating: 62 GJ/year

Heated Floor Area: 258m² (2777 ft²)
 Energy Intensity: 0.24 GJ/m²/year
 Evaluated by: Ontario Energy Consulting (905) 743-8633
 File Number: 619002738
 Rated on: December 9, 2010
 Year Built: 2009

myenergiguide.gc.ca

HOW ENERGY IS USED IN YOUR HOME

Your MyEnerGuide Rating is calculated as follows:

- I. Annual Energy Consumption: 72 GJ/year
- II. Annual On-Site Renewable Energy: -10 GJ/year
- III. equals MyEnerGuide Rating: = 62 GJ/year

I. Your Annual Energy Consumption is the estimated total amount of energy your house uses in a year. Amongst many things, the calculation of this amount takes into consideration the heat from the sun that enters through your windows. Your house receives 21 GJ of passive solar gain which reduces the amount of energy you need to purchase to heat your house to a comfortable temperature.

II. On-site sources of renewable heat generation (e.g. solar water heaters) offset the amount of off-site energy you need to purchase to heat your house or hot water. On-site renewable power generation systems (e.g. solar photovoltaics or wind) provide you with an additional source of electricity that offsets your electricity bill.

Total Estimated On-Site Renewable Generation:	10 GJ
Solar Heat:	10 GJ
Solar Electricity:	0 GJ

III. Your MyEnerGuide Rating is the estimated amount of energy this house requires from off-site sources as listed in the table below, identified by your house's available sources. Your utility bills may be higher or lower than the estimated energy consumption. This is because these amounts are based on standardized occupant and use assumptions as detailed in the glossary on page 3.

Total Estimated Off-Site Energy*	62 GJ	Equivalent Units	5195 kWh
Electricity†	62 GJ	12726 kWh	7 tonnes/year‡

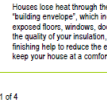
*Standard standardized occupant and use assumptions that electricity purchased consumption minus on-site generated

The charts below show the reduction, and identify where energy costs with proper maintenance and heating, cooling replacement.

Your 72 GJ Annual Energy Consumption is used in the following ways:



Your home loses heat through:



Houses lose heat through the "building envelope", which includes exposed floors, windows and the quality of your insulation. Finishing helps to reduce the heat loss from your house at a comfort level.

799 Main St. Halifax
Nova Scotia B3H 8K8


myENERGUIDE RATING

Home evaluated by: Nova Scotia Energy Consulting
 File Number: 903D004586
 Rated on: Aug. 17, 2010

For your detailed Homeowner Information Sheet, visit myenergiguide.gc.ca

186 GJ/year

This House

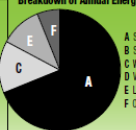


▲0 Uses least off-site energy
0 GJ = 100 on the old ERS scale

▲94 House built to the 2010 NS building code
Uses most off-site energy

Energy Intensity: 0.82 GJ/m²/year

ANNUAL ENERGY CONSUMPTION	186 GJ
On-site renewable energy production	- 0 GJ
Energy from off-site sources	186 GJ
• Electricity	34
• Gas	152



Breakdown of Annual Energy Consumption

- A Space heating 69%
- B Space cooling 0%
- C Water heating 14%
- D Ventilation 0%
- E Lights & appliances 11%
- F Other electrical 6%

MyEnerGuide RATING: 186 GJ

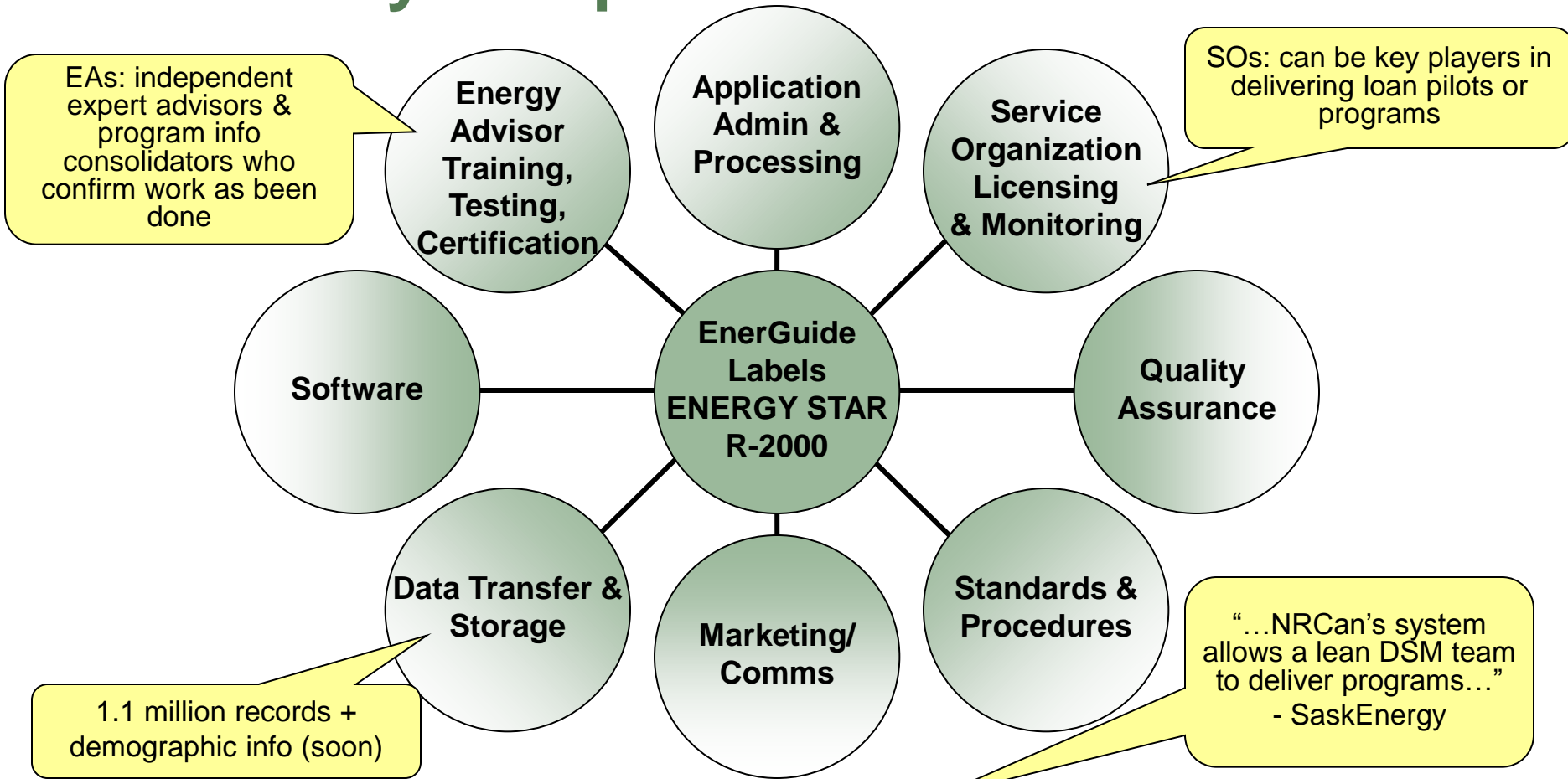
Annual Greenhouse Gas Emissions: 13 tonnes

Your utility bills may be higher or lower than the energy consumption on this label. This is because standard assumptions have been made regarding how many people live in your house and how the home is operated. Any changes to the house could affect the rating.

Canada

- Over 15 years of experience in whole home energy labeling and incentives
- Use of Standard Operating Conditions allows comparison between homes
- 2014: Next generation ERS roll out
- Over 300 stakeholders and experts engaged in development process
- Enhanced labels, new factsheets and expanded reports – paper & online
- A new interactive MyEnerGuide Website for homeowners
- Addition of an Efficient Living Assessment to allow as-operated assessments and data gathering

NRCan's National System: A turn-key comprehensive solution



Collaboration with other partners from coast to coast

A comprehensive system at NO COST

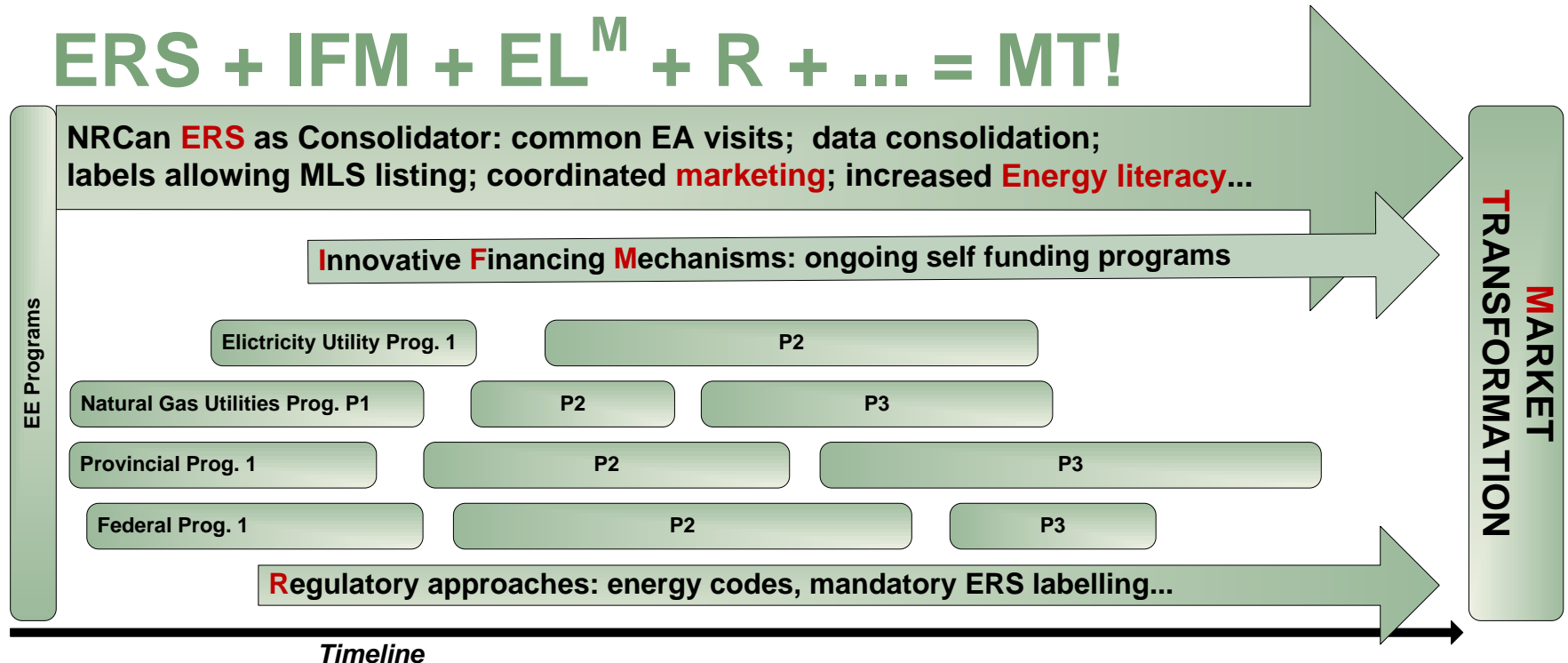
About 100 OEE staff, plus CANMET researchers



ERS and Financing Are Key for Market Transformation

- ERS provides continuity across programs offered simultaneously & between successive programs... and those not yet foreseen!
- ... and Financing Mechanisms can also provide some continuity...

$$ERS + IFM + EL^M + R + \dots = MT!$$



Government of Canada / Gouvernement du Canada | Canada.gc.ca | Services | Departments | Français

MyEnerGuide

Canada

WET project - Section 2 - Section 3 - Section 4 - Section 5 - Section 6 - Section 7

Home > Lorem ipsum > MyEnerGuide

Home improvements

- New homes
- Resources for housing professionals
- Residential products and equipment
- Complimentary programs and incentives for homes
- MyEnerGuide

Welcome to MyEnerGuide

Welcome! You've arrived at the EnerGuide website, where you can access your personalized MyEnerGuide action and information package once your home has had an EnerGuide Evaluation. Already had or booked an EnerGuide Evaluation? Use the login supplied by your Certified Energy Advisor and enter your site! Still wondering what the EnerGuide Evaluation is all about and want to get started? See below and call for an Advisor today.

my ENERGUIDE RATING

Existing Customer?

User name

Password

View MyEnerGuide Details

Forgot your password?

Remember my user name

Remember my password

Are you an EnerGuide Rating System past participant?

Convert your old rating

Get an EnerGuide Evaluation. Find a MyEnerGuide Energy Advisor in my area.

Postal code Search

What is an EnerGuide Evaluation? | **Why get an EnerGuide Evaluation?** | **How do I get an EnerGuide Evaluation?**

Date modified: 2012-09-17

Terms and conditions | Transparency

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**Draft 2013/04/12
Preliminary
Design**



- Home improvements**
- New homes
- Resources for housing professionals
- Residential products and equipment
- Complimentary programs and incentives for homes
- MyEnerGuide**
- MyEnerGuide Label
- My Home Energy Details
- My Upgrade Recommendations
- My Upgrade Calculator
- My Profile
- ENERpedia
- Log Out

Welcome to MyEnerGuide

My EnerGuide Rating

My Incentives & Programs

My Previous EnerGuide Ratings

Will link to partners programs

My EnerGuide Rating and How I Compare



Draft 2013/04/12
Preliminary
Design

My Home and Property Details



123 Cook Avenue

House Type: 2 storey detached
Number of Windows: 12
Number of Doors: 3
Airtightness: 6.80 air changes per hour (ACH) @ 50 Pascal

Heated Floor Area: 227 m² (2443 ft²)
Evaluated By: Nova Scotia Energy Consulting (902) 861-7725
Evaluated On: December 9, 2010
Year Built: 1968

Main Energy Source: natural gas
Heating System: forced air furnace
Cooling System: none
Hot Water System: natural gas storage tank

Energy Intensity: 0.82 GJ/m²/year
File Number: 903D004586
Report Date: March 31, 2011

Home > Lorem ipsum > MyEnerGuide > My Upgrade Recommendations

- Home improvements**
- New homes
- Resources for housing professionals
- Residential products and equipment
- Complimentary programs and incentives for homes
- MyEnerGuide**
- MyEnerGuide Label
- My Home Energy Details
- My Upgrade Recommendations
- My Upgrade Calculator
- My Profile
- ENERpedia
- Log Out

My Upgrade Calculator



A personalized tool for exploring upgrade options

- My Simple Calculator**
- My Detailed Calculator**
- My Summaries & Comparisons**
- My Settings**

Adjust My Upgrades

Upgrade Heating System: Roadmap Recommendation

Replace your heating equipment with a new 95% efficient gas-fired condensing gas furnace.

Current	Upgrade
80% AFUE Gas Furnace	95% AFUE Gas Furnace
	- No Upgrade - 95% AFUE Gas Furnace - 96% AFUE Gas Furnace

Save and Continue

Calculate My Annual Savings!

Estimated Annual Energy Savings	Estimated Annual Cost Savings
88.3 GJs	\$906*

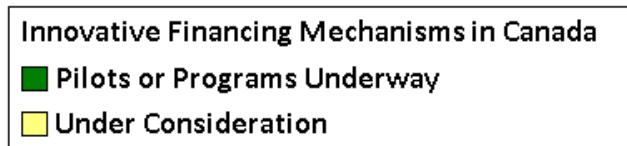


**Draft 2013/04/12
Preliminary
Design**

I want to view my results in GJs/Year



Existing and Planned IFM Pilots and Programs



Existing or planned IFM pilots and programs where NRCan is a partner and ERS is being used:

1. Colwood Home Loan Financing Pilot Program, BC
2. Kootenay Energy Diet Pilot, BC
3. Nelson EcoSave Pilot, BC
4. South Okanagan Financing Pilot, BC
5. Vancouver Home Energy Loan Program, BC
6. Toronto and Durham IFM Pilots, ON (TBC)
7. Varennes, Victoriaville, Chambly, Verchères and Plessisville IFM Pilots, QC (TBC)
8. Yellowknife IFM Pilot, NWT (early discussion - TBC)
9. St-John's, N&L (early discussions - TBC)

Other IFM Programs:

1. Manitoba Power Smart PAYS Financing Program, MB
2. Halifax Solar City, NS

Collaborative Processes:

1. Ontario (led by TAF)
2. Quebec (led by AQME)
3. NRCan-CGA Letter of Cooperation

Legislative & Regulatory Environments: Local improvement charges (LIC) or on-bill?

- IFM regulatory environment is specific to each province and territory.
- **For LIC**, three different legislative contexts:
 - Flexible LIC definition: 4 jurisdictions, including Quebec
 - Limited LIC definition with some flexibility: 3 jurisdictions
 - Explicit definition, no flexibility: 3 jurisdictions, two of which have recently adopted amendments (Ontario & Nova Scotia)
- **For on-bill** (attached to the meter/transferable):
 - Some flexibility for municipality owned utilities (e.g., Nelson Hydro, BC; unclear for other provinces)
 - Legislative or regulatory changes needed for regulated utilities – **British Columbia & Manitoba have implemented legislation & regulation**

British Columbia: IFM Pilots Underway

	City of Nelson EcoSave	Kootenay Energy Diet	PowerSmart Home Loan (Colwood + Vancouver island soon)	PowerSense EE Reno Loan (South Okanagan + Kelowna soon)
Pilot Period	04/2012 to 09/2013	05/2013 to 12/2014	11/2012 to 11/2014	11/2012 to 11/2014
Advisory Committee	✓	✓		
Utility On-Bill Financing	✓		✓	✓
3rd Party FI Loan Option	✓ ¹	✓		
Transferability Upon Sale	✓ ²	✓ ²	✓	✓
ERS Labels	✓	✓	✓	✓
Obj's vs. Results To Date				
Registrants (target/to date)	200 / 278	1000 / n/a	n/a	n/a
Retrofit Completed To Date	88	800 / n/a	n/a	n/a
Loans (target/to date)	50 / 43	n/a	n/a	n/a

¹ matches On-Bill Loan conditions
² available on a case by case basis



Multi-Phase Collaborative Processes: CHEERIO (ON) and FIME¹ (QC)

- Development of pilot program models/tools to test the use of LIC financing in private homes, engaging:
 - 22 Ontario & 5 Quebec towns, cities and regions
 - Federal and provincial governments
 - Natural gas and electric utilities
 - ERS service organizations and non-profit groups

- Shared member expertise & funds pooled to support design of provincially-tailored pilot program templates:
 - Builds on national and international experiences & key learnings
 - Addresses implementation issues, including:
 - Legal opinion on implementation of LIC mechanisms
 - Monitoring and evaluation protocol
 - Primer and FAQ documents to support municipal briefings
 - Market research with homeowners

- Results of Phase 1 will be completed and available Summer 2013



¹**FIME:** Financement innovateur pour des municipalités efficaces (Innovative Financing for efficient municipalities)



Lessons learned: Collaborative Processes offer great value

- Active involvement of stakeholders/champions and experts help contribute knowledge, funding and solutions!
- Municipalities can access expertise and potential pilot partners
- These collaborations are expected to lead to:
 - Improved pilot design, lower cost and more successful pilots
 - Increased consistency across multiple municipal programs
 - Accelerated learning
 - Better regulatory changes when the collaborative starts early
- Attractive to many municipalities – those ready to pilot and those wanting to watch and learn – and will increase replication
- Collaborative processes need to continue through implementation...
- And sharing of learning is needed at all levels



Some Additional Questions & Learnings (1)

- **This is about financing, or, is it really?**
 - IFM is a tool that can increase participation but the goal is improved Energy Efficiency (EE) & market transformation!
- How much saving is really needed?
 - PAYS, as a model, is limiting, we need to sell other benefits of EE
- **Is it easy to get regulation right?**
 - Maybe, but pilots & sharing of information can help get it right faster!
- **Are all partners fully engaged?**
 - Not always and we need them to be...
- **Is this is about innovation?**
 - Yes and we need to be ready to adapt, adjust and think outside the box!

Some Additional Questions & Learnings (2)

- **Should Canadians take on additional debt?**
 - This is not for us to answer but, EE loan are a different type of debt and we need to make the case...
 - ... is it taking on debt or is it redirecting payments from utility bills to home equity, with negligible impact on debt-service ratio?
- Canadian financing institutions are involved in some pilots...
- There is currently a significant difference between Canada and the US with regards to arrears:

Analysis based on \$9M portfolio: 600 homes, \$15,000 loans at 4.5% with 15 years nominal amortization period

	Arrears Period (months)		
	6	12	18
Canada: potential costs based on CBA ¹ arrears rate (October 2010 - 0.43%)	\$1,771	\$3,543	\$5,314
USA: potential costs based on FHA ² arrears rate (November 2010 - 8.7%)	\$35,840	\$71,679	\$107,518

¹ CBA: Canadian Banking Association

² FHA: Federal Housing Agency



Lessons Learned: Getting the basics right...

- ***This can be done, but it ain't easy... The seven commandments:***
 1. Know your audience Sell Hard
 2. Keep it Simple
 3. Be Attractive, make an offer too good to refuse!
 4. Be inclusive to allow large numbers to qualify for loans
 5. Include a broad choice of EE measures
 6. Facilitate the selection of contractors
- ***to be covered in the next Panel presentation by Philippe Dunsky***

Conclusion

- The goal is energy efficiency and market transformation:
$$\text{ERS} + \text{IFM} + \text{EL}^{\text{M}} + \text{R} = \dots = \text{MT!}$$
- Next generation EnerGuide Rating System will be launched in 2014, providing improved support for energy efficiency programs including IFM
- IFM program development is mostly at the pilot design and early implementation stage but already provides useful learning
- The nature and timing of larger scale adoption/implementation still unclear in most provinces and territories
- NRCan will continue to support innovative financing pilots by:
 - Facilitating the sharing of information
 - Providing access to its ERS infrastructure
 - Providing access to its expertise on energy efficiency and IFM
 - Investing in collaborative initiatives & innovative financing pilots

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<http://oee.nrcan.gc.ca/home>

