

Multi-Residential Incentive Summary

How Enbridge Can Help

2008

Enbridge Gas Distribution Inc. (“Enbridge”) offers free technical advice and financial rebates for implementing energy efficiency improvements. We can also introduce you to independent businesses that can help you with your specific energy needs. The following chart summarizes financial rebates you may be eligible to receive:

Energy Efficiency - For Existing Buildings

Retrofit Incentives

- One time incentives are calculated on projected first year’s natural gas savings using the following rates:
 - \$0.05/m³* saved up to a \$100,000 limit¹ (regardless of the number of measures) OR
 - \$0.10/m³ saved up to a \$30,000 limit¹ (3 measures or more)
- Incentives remitted upon project completion

Water Conservation

- Showerheads: Free low-flow showerheads will be available to qualified multi-family buildings in the Enbridge franchise area
- Commercial Clothes Washers: \$75 incentive per eligible front load washer replacement available to qualified buildings (public and private institutions with common area laundries)

Condensing Boilers

- \$0.10/m³ of estimated natural gas savings for condensing boiler technology
- Incentives are a one-time payment based on the estimated first year natural gas savings, up to a maximum of \$30,000 per building, for projects with a simple payback of greater than 1.5 years
- Enbridge pre-approval required

Audit Incentives

- Customer incentives are calculated based on lowest of:
 - A) \$0.01/m³ of most recent full calendar year of natural gas consumption of the building(s) or
 - B) 1/2 the cost of the audit² up to \$5,000 or
 - C) 1/3 the cost of the audit² up to \$5,000 if customer receives audit incentives from other sources
- Audit incentive payments are “capped” at \$15,000 per customer. However, if substantial work is implemented from audits funded by Enbridge, Enbridge may in its sole discretion provide additional audit incentives
- Audit incentive application and audit scope must be pre-approved by Enbridge and must materially meet the requirements of Enbridge’s HVAC Building Energy Audit Report Outline.

Program Conditions Retrofit Incentive Guidelines

The following Incentive Guidelines apply to all Commercial projects:

- All projects must have a Simple Payback of 1-1/2 years³ or greater and must have a positive Total Resource Cost (TRC) to qualify for an incentive, unless otherwise approved. Projects with simple paybacks of up to 5 years typically have positive TRC. However Enbridge will calculate project eligibility on a case by case basis.
- Projects involving Operational Improvements, Steam Traps, Showerheads, Controls and **Novitherm Panels with less than 1-1/2 years simple payback are exceptions and may qualify for an incentive.**
- Any incentive paid must not exceed 50% of the project capital cost³
- Simple Payback is calculated as follows:

**Total Project Cost (Material + Installation + Engineering + Tax)
Cost of Annual EEP Volume Saved (m³ saved x Cost per m³)**

Condensing Boilers:

- The boiler must be an upgrade – for example, replacing a conventional atmospheric efficiency boiler with a condensing efficiency boiler
- Only specific boilers (and in some cases, hybrid systems) are covered by this program
- Boilers must be 90% Combustion Efficiency⁴ or greater

Showerheads:

Existing showerheads must be more than 2.5 GPM and new low-flow showerheads must be equal to or less than 2.0 GPM

Audit Incentives

- Incentive formula also applies to Steam Saver Surveys and Operational Energy Assessment Audits (M&T) provided by approved third parties
- For multi-residential a minimum of 25% of natural gas savings identified must be implemented to receive the audit incentive
- Minimum natural gas consumption of 150,000 m³ per year for each facility is required to qualify for an audit incentive

- * m³ refers to cubic metre of natural gas.
- 1. Per facility, building or project.
- 2. Before taxes. The “cost of the audit” is the lesser of the estimated cost of the audit set out in the application form or the actual cost on the audit invoice.
- 3. Operational improvement projects exempted.
- 4. Based upon applicable manufacturer’s combustion rating.

To be eligible for Enbridge Gas Distribution Inc.’s Energy Efficiency Incentive Programs you must be an Enbridge Gas Distribution Inc. customer and approved measures must be implemented in Enbridge Gas Distribution Inc.’s franchise area between January 1, 2008 and December 31, 2008. This advertisement is a summary only and certain terms, conditions and restrictions apply. Programs are subject to cancellation without notice at any time. Please ask your Enbridge Gas Distribution Inc. representative and read our program literature for additional details. Enbridge Gas Distribution Inc. makes no representation, warranty or guarantee regarding the projected savings of any energy efficiency measure undertaken by any customer.

To get started on an energy efficiency project for your building or for more information, contact Enbridge Gas Distribution at: 1-866-844-9994

Fax: 416-495-8350
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www.enbridge.com/business

Novitherm Heat Reflector Panels



If your building was built prior to 1980 and is heated by hot water or steam radiators/convectors, then you are losing heat through the uninsulated exterior wall, especially behind the perimeter heating units where the heat loss is the highest.

Solution

A heat reflector panel designed for installation within most perimeter heating systems, including baseboard convectors and behind hot water and steam heated radiators. This panel significantly blocks the heat lost to, and through, the exterior wall behind the heating units.

How it Works

The heat reflector panels are affixed to the room side of the exterior wall behind the radiator or within the convector heating unit. The metallized surface of the panel reflects 90% of the heat (both long and short infra-red) which strikes its surface from the heating unit. The air space created by the molded shape, prevents the normal conductive heat loss to the cold exterior wall. The result is that the heating system uses less energy. Typically, a 10 degree F reduction in supply water temperature is achieved with no decrease in room temperature, hence an improvement in room comfort.

Installation

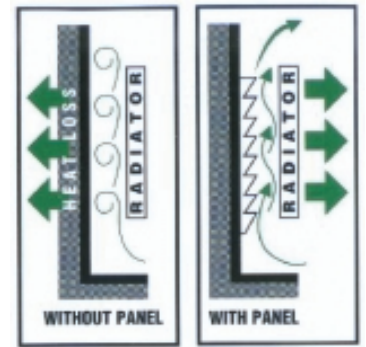
The heat reflector panels are easily installed without removing the radiators. There needs to be only 1/4" (10 mm) of space between the radiator and the exterior wall or between the convector fin and the back of the unit, for the panels to be inserted. For convector/baseboard radiators, the covers are removed and the panel affixed to the flat surface at the back of the heating unit. While the cover is removed, it is recommended that the fins be vacuumed/swept to remove accumulated dust and debris. Specialty tape is provided.

No special tools are required for installation. Panels are cut with regular scissors. The cut edges readily overlap horizontally and vertically to size the panel to fit all heating units. Novitherm Canada offers free training for 'in house' staff or trained crews are available for installation.

Physical Properties

The Novitherm Heat Reflector Panel is made of clear PVC with an aluminized heat reflecting surface. The panel is molded into a 'saw tooth' shape to create a still air space when affixed to a flat surface. Installation of these panels is a low cost measure that is geared to reducing the heat loss through the exterior walls directly behind the perimeter heating units, where the amount of heat lost is the greatest.

- ✓ Unique product
- ✓ Improves occupant comfort
- ✓ Cost efficient . . .
payback based on 10% savings:
approx. 1 to 2 years on product only
approx. 2 to 3 years on product installed
- ✓ Easy installation



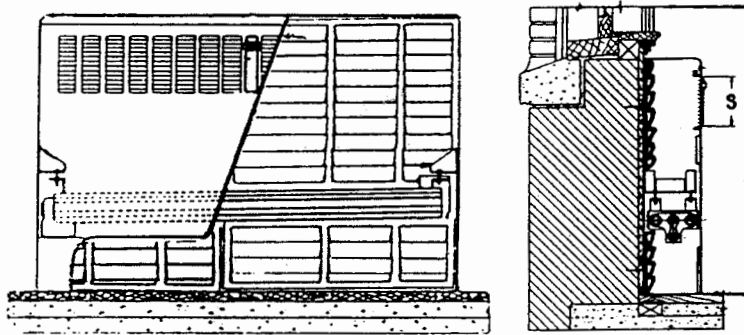
Easy installation of Novitherm Heat Reflector Panels

Physical Properties (continued)

- Size** Heat reflector panels are 34" wide and come in three manufactured heights of 7.75", 12.0" or 20.1".
- Durability** Except where subjected to long-term direct exposure to ultraviolet light, the panels have an indefinite life span. The metallized coating should not be exposed to water.
- Fire/smoke ratings** The panels have been tested by ULC and classified to Standards: CAN/ULC-S102M (Flame @ 30; smoke @ 60 to 85), and ASTM E84 (Flame @ 15 to 40; smoke @ 105 to 135).
- Toxicity** When tested in accordance with draft EEC Document EN71, the panels were found to be safe to use where they would be accessible to children.
- Emissivity** Heat reflectors are opaque to thermal radiation with a thermal reflectance of 90% to 92%.
- Tape** A specialty product – a double sided, pressure sensitive, acrylic adhesive system.



On-site installation



Schematic drawing of panel installation

Control Adjustments

Are recommended to maximize the benefits of the Heat Reflector Panels. Please discuss your system specifics with your Novitherm representative.

For further information, please visit:
www.novitherm.com

To order, please contact:

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Telephone: **1 800 871 0079**

905 815 0977 (from Toronto)

Fax 1 905 338 5390

E-mail: info@novitherm.com

Novitherm Canada provides Heat Reflector Panels to significantly improve the comfort of your occupants while slashing your energy costs. Moreover, by implementing this type of energy efficiency measure through MultiCHOICE, you may be eligible for incentives (up to \$30,000 per building) offered by Enbridge Gas Distribution.

Enbridge Gas Distribution remains committed to providing our customers with expert assistance in fuel conversion, natural gas heating, ventilation and air conditioning (HVAC) technologies, and the latest in energy efficiency options.

For more information, contact Enbridge Gas Distribution at:

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Fax: 416-495-8350

Website: www.enbridge.com/multichoice

Choose Natural Gas Solutions for Comfort, Convenience and Savings



Central Space and Hot Water Boilers



Central for your building's hot water and space heating needs.

If you are replacing an aging central boiler, upgrading for improved efficiency or designing a new boiler-based central heating/hot water system, natural gas offers a range of options. New “modular” systems of smaller capacity boilers are far more efficient and cost effective than the large, conventional central boilers of the past.

Features

- Energy efficiencies range from conventional (80-82%), to mid (83-85%) and high efficiency (condensing 86-90% plus)
- Variety of firing controls – On/Off, high-low-off, multistage, or modulating
- Variety of venting arrangements adapted to boiler type and location
- Optional controls, including water temperature reset, night set-back and set-point reduction

Benefits

Natural gas central heating and hot water boilers offer:

- Low operating costs
- Easy installation
- Improved comfort and indoor air quality
- Better heat control for fewer tenant complaints
- Reliability

Modular Boiler Systems Enhance Flexibility

Modular boilers allow you to use several smaller heating capacity boilers to meet a building's heating load and domestic hot water needs. Instead of one oversized boiler sized to meet peak demand, your building's demand for hot water and/or space heating can be engineered to use several staged modular boilers that can be brought on-line as demand requires. With this added flexibility, you can better control heat and water temperature, as well as fuel consumption. The modular systems come in a variety of options and configurations to suit your specific requirements.

- ✓ **Modular boilers increase system efficiency and flexibility compared to large, oversized boiler plants**
- ✓ **Higher efficiency boilers increase energy savings and it may be possible to use a smaller heat input boiler to achieve the same output as a conventional boiler**
- ✓ **Retaining an existing conventional boiler and adding high efficiency boilers into a hybrid system can be more cost effective to operate in certain circumstances**
- ✓ **Look at overall system efficiency when optimizing boilers, including primary-secondary systems, controls and down stream equipment such as radiators and water using devices**



Central Space and Hot Water Boilers

Count Up the Savings with High Efficiency Boilers

New boilers also offer the opportunity to move to higher efficiency for energy savings. Most manufacturers report combustion efficiency. But building operators need to know how the equipment will perform under steady operating conditions – seasonal efficiency. Enbridge Gas Distribution has developed a special boiler efficiency computerized toolkit to assist in determining more accurately the economics of replacing existing boilers with higher efficiency alternatives. Our Energy Solutions Consultants can also advise you on proper system configuration, firing controls and venting.



Viessman high efficiency boilers installed as part of retrofit program

Design options for space heating boilers

2-pipe fan coil system:

- Often the most cost-effective system of choice for multi-unit buildings
- Heating is provided from a central boiler to each suite; cooling from a central chiller, cooling tower and associated chilled water and condenser water pumps
- Requires a system changeover from heat to cooling mode in spring and vice versa in the fall

4-pipe fan coil system:

- Provides better control than the 2-pipe system, especially in the spring and fall as heating and cooling can run simultaneously in the building
- More costly than 2-pipe system
- Requires boiler, chiller, cooling tower, associated chilled water and condenser water pumps and additional piping

Venting

High efficiency boilers are mostly sealed combustion units and draw air for combustion directly from the outdoors into an enclosed combustion chamber. Also, because products of combustion are vented directly to the outdoors, there is greater flexibility in locating boilers.

Hybrid Installations

In some situations a hybrid boiler system of high efficiency and conventional boilers may be more cost effective to operate. In this arrangement, the higher efficiency boiler(s) would be used as the “lead” boiler(s) covering most of the heating load, except in really cold weather when the conventional boilers would be required.

Primary-Secondary Systems

Many of the older central boiler systems use a reverse-return piping arrangement with continuous pumping – this wastes energy. With primary-secondary systems, a circulating pump is provided between the boiler and the system loop so that when the boiler is ‘off’ there is virtually no flow through the boiler and subsequently little loss of heat from the boiler. Even when replacing modular boilers having a continuous pumping system, it is recommended that the system piping be converted to a primary-secondary system to improve system efficiency.

Boiler types

Firetube or Scotch Marine Boiler

- The Scotch Marine boiler has been a popular boiler for providing space heating for commercial buildings for over 40 years
- Hot water is created by hot flue gas from combustion which is passed through tubes surrounded by water
- Boilers range in size from 15 to 1500 boiler horsepower

Water Tube Boilers

- Hot water is created by passing water, contained in tubes within the boiler structure, through hot flue gas
- This boiler type is noted for faster hot water generating capabilities and fast responses
- Tend to be higher pressure than firetube boilers

Pulse Combustion Boilers

- Efficiency ratings of over 90%
- Initially, a spark plug ignites the gas/air mixture and heat is released within the heat exchanger and then transferred to the water surrounding the heat exchanger. After the initial spark, combustion is self-sustaining
- The two boilers currently available using pulse combustion also recover latent heat from the flue gas

Condensing Boilers

- Extract both sensible and latent heat
- Efficiency ratings of over 90%
- Due to higher efficiencies, it may be possible to use a smaller heat input boiler to achieve the same output as a conventional boiler
- Condensing boilers produce a slightly acidic and corrosive condensate which must be piped to drain

Cast Iron Boilers

- For low pressure applications only
- Individual cast-iron sections are mechanically joined together to form water-tight and pressure-tight assemblies

Note: Actual selection depends on load, pressure and temperature. Consult your mechanical contractor or energy management firm for your best options.

Control Strategies

Adding controls to your boiler system can lead to further savings and improved comfort. Enbridge Gas Distribution can help you find the optimum control device for your equipment.

Water Temperature Reset

- Water Temperature Reset uses an indoor-outdoor controller to track the outdoor temperature and resets the boiler supply temperature in relation to the outdoor temperature
- Provides a more even, comfortable heat in the occupied space, and reduces boiler and piping losses
- For example, at a design outdoor temperature of 0°F the supply water temperature would be in the order of 180°F. As the outdoor temperature rises to 50°F, the supply water temperature will drop to 100°F

Night Setback

- Automatic reduction of temperature during periods of lower occupancy
- Stand-alone feature or part of the indoor-outdoor controller

Reduce Boiler Temperature

- Reduce water temperature to 160°F (down from past settings of 180°F to 190°F)
- Preserves heating equipment
- Reduces fuel consumption – typically every 3°F decrease in water temperature leads to a 1% reduction in fuel use

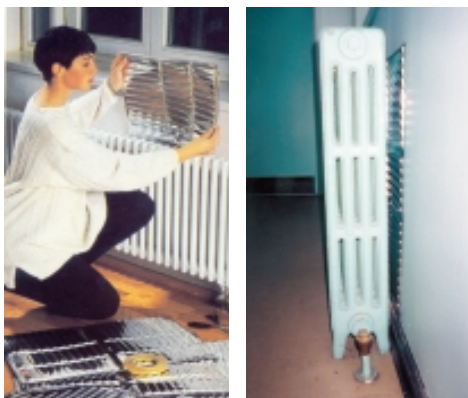
Boiler Cut-out Control

The installation of a boiler cut-out controller ensures that boilers cannot run above a predetermined outdoor temperature setting. This prevents “rogue” zones from demanding heat, regardless of outdoor temperature, which can penalize the entire system in milder weather.

Other Energy Saving Measures

Reflective Panels

If the walls behind in-suite radiators are exterior walls and you have an older building with little insulation, the heat loss can be substantial. Adding reflective panels, such as Novitherm panels, can help recover the heat lost from the back of radiator or convector radiator systems, which would otherwise be lost through the wall. The panels reflect the heat back into the radiator, raising the temperature of the water. This has two effects. First, it reduces the amount of fuel required to re-heat the water as the water is maintained at a higher temperature when returned to the boiler system, requiring the boiler to fire less often. Second, the panels also redirect heat back into the room, raising the temperature of the suite.



The panels are made of PVC plastic with a specialized metallic surface, and are durable, flexible and easy to install. While the physical condition of the building, including air leaks and insulation, affects the amount of energy savings possible, testing shows energy savings of 10-20%.

Also, see the Technology Insert on Domestic Hot Water Systems to find out more on how to reduce water and energy consumption by installing low flow measures.

Enbridge Gas Distribution remains committed to providing our customers with expert assistance in fuel conversion, natural gas heating, ventilation and air conditioning (HVAC) technologies, and the latest in energy efficiency options.

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