

# CANADA

## 1. GOALS FOR EFFICIENCY IMPROVEMENT

### 1.1. Overall Energy Efficiency Improvement Goals

In Canada, the federal government cooperates and collaborates with the 13 provincial and territorial governments, local governments, and public and private utilities to develop and deliver an integrated network of energy efficiency policies and programs.

Under the Energy Efficiency Act, the federal government adopts and enforces minimum energy performance requirements, codes, standards, and labels for energy-using products that are traded across Canada or imported/exported to and from Canada. Energy efficiency regulations and standards are closely aligned with the United States through the work of the Canada-U.S. Regulatory Co-Operation Council. The federal government supports economy wide model codes, labeling, and rating initiatives (e.g., EnerGuide and Energy Star). It also promotes the use of alternative transport fuels and administers a number of federal programs together with the provinces and nongovernmental organizations.

Since the provinces own and have jurisdiction over their natural resources, they may collect royalties on and regulate the energy sector, including oil, gas, and power production. They also have wide powers over buildings, transport systems, and municipal governments. By virtue of these powers, the provinces have jurisdiction over efficiency standards for building designs and building components and equipment, at least within their borders.

Energy efficiency policies across Canada's federal, provincial, and territorial authorities are coordinated at the ministerial level through the Energy and Mines Ministers' Conference (EMMC) and its Steering Committee on Energy Efficiency (SCEE). Based on the 2011 Collaborative Approach to Energy and its associated action plan, the EMMC put forward a coordinated, complementary agenda for energy efficiency in the built environment and the equipment, industrial, and transport sectors in 2012. Work themes related to economic prosperity and responsible energy supply, efficient energy use, and knowledge and innovation, will all contribute to advancing common goals. Specific areas of interest include a more stringent model energy code for buildings, a next-generation energy-rating system for homes, project financing tools, transport, product regulation, industrial energy management standards, and integrated community energy solutions. For more details, please see the following link: <http://www.nrcan.gc.ca/publications/11102>.

### 1.2. Sectoral Energy Efficiency Improvement Goals

Not available.

### 1.3. Action Plans for Promoting Energy Efficiency

#### a) Name

ecoENERGY Efficiency and ecoENERGY Retrofit-Homes

#### b) Objectives

The ecoENERGY Efficiency initiative, operated through Natural Resources Canada's Office of Energy Efficiency, provides a broad framework of programs through which energy conservation and energy efficiency are promoted in every sector of the Canadian economy.

The components target market barriers to energy efficiency uptake, and they are constructed around three pillars of action operating in the residential, commercial, institutional, industrial, and transport sectors:

- Making the stock of housing, buildings, and energy-using products, as well as products that affect energy use, more efficient through regulation, codes, and standards.

- Making energy performance more visible in all sectors through labeling, benchmarking, training, and information sharing in order to affect behavior change.
- Making industrial, building, and vehicle operations more energy efficient.

A fourth pillar, addressed by the ecoENERGY Retrofit ó Homes program (2007ó2012), included making energy efficiency more affordable for Canadians.

In addition to coordinating these programs, the Office of Energy Efficiency is mandated to strengthen and expand Canada's commitment to energy efficiency in order to further support the Government of Canada's policy objectives and programs.

### **c) Applicable sectors**

Industrial, transport, residential, commercial, appliances, and equipment.

### **d) Outline**

In January 2012, the Government of Canada announced the funding of \$195 million over five years (2011ó2016) to support the ecoENERGY Efficiency initiative. This funding is aimed at maintaining the Government's momentum to improve energy use in Canada, thus contributing to a cleaner environment by reducing greenhouse gas emissions and saving Canadians money.

There are five elements under the ecoENERGY Efficiency initiative:

- ecoENERGY Efficiency for Vehicles: Reduces energy use and emissions from transport in Canada through the following: providing fuel-efficient driver training; offering energy information to vehicle consumers such as the Fuel Consumption Guide; and introducing the SMARTWAY Transport Partnership in Canada, which encourages freight companies to make their operations as energy efficient as possible.
- ecoENERGY Efficiency for Housing: Encourages the construction and retrofit of low-rise residential housing and makes the new/existing stock more energy-efficient. For example, funding provides support for the refinement of the EnerGuide Rating System as a standard measure and labeling system for the energy performance of new/existing homes.
- ecoENERGY Efficiency for Buildings: Provides information and benchmarking tools to improve the energy performance of new/existing buildings. For example, actions have led to the National Energy Code of Canada for Buildings establishing an overall 25% improvement in energy efficiency over the previous code and indicating minimum requirements for energy efficiency in new buildings. An online energy benchmarking system for existing buildings has also been developed by adapting the United States Environmental Protection Agency's Energy Star Portfolio Manager benchmarking tool to the Canadian context.
- ecoENERGY Efficiency for Equipment Standards and Labeling: Introduces or raises energy efficiency standards for a wide range of products, and promotes energy-efficient products through the Energy Star program. The program enhances labeling and promotion programs that have historically led to the introduction of new and more stringent standards that are closely aligned with U.S. developments.
- ecoENERGY Efficiency for Industry: Aids the adoption of a energy management standard, accelerates energy-saving investments in factories, and supports the exchange of best-practices information within Canada's industrial sector. For example, it supports the early implementation of the new ISO 50001 Energy Management System standard as well as the Canadian Industry Program for Energy Conservation, which offers networking opportunities for the industry to share information, identify common needs and best practices, and improve energy efficiency in more than 25 industrial sectors.

In July 2011, the Government of Canada announced a one-year extension of \$400 million to the ecoENERGY Retrofit ó Homes program in order to help homeowners make their homes more energy-efficient and reduce the burden of high energy costs. The ecoENERGY Retrofit ó Homes program was successful in meeting its economic and environmental goals. The program ran from 2007 to 2012, during which 640,000 Canadian homeowners benefited from more than \$934 million in program spending.

For more information on all of the ecoENERGY Efficiency initiatives, see <http://www.ecoaction.gc.ca>.

#### **e) Financial regulations and budget allocation**

From fiscal year 2011/2012 to fiscal year 2015/2016, total allocations to the ecoENERGY Efficiency initiative and the ecoENERGY Retrofit ó Homes program will be CDN 595 million (approximately USD 540 million<sup>1</sup>).

#### **f) Monitoring**

Program departments are responsible for monitoring and reporting on their individual programs. The efforts of Natural Resources Canada are compiled into the Report to Parliament under the Energy Efficiency Act, which is tabled annually in Parliament by the Government of Canada. For more information, see:

<http://oee.nrcan.gc.ca/publications/statistics/parliament10-11/index.cfm>.

The Office of Energy Efficiency also produces a publicly available report on Energy Efficiency Trends in Canada (and its companion document, the Energy Use Data Handbook). For more information, see:

[http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data\\_e/publications.cfm?attr=0](http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/publications.cfm?attr=0).

#### **g) Expected results**

The Energy Efficiency Sub-Program goals for energy savings in 2015-16 is 36-44 PJ with associated reductions in greenhouse gas emissions of 3.6-4.4 Mts. For more information, see:

<http://www.nrcan.gc.ca/evaluation/reports/2015/17155>.

### **1.4. Institutional Structure**

#### **1.4.1. Office of Energy Efficiency, Natural Resources Canada**

##### **a) Status of organization**

Government organization (policymaker and regulator).

##### **b) Roles and responsibilities**

The Office of Energy Efficiency (OEE), Canada's center of excellence for energy conservation, energy efficiency, and alternative fuels information, plays a dynamic leadership role in helping Canadians save millions of dollars in energy costs, while contributing to a healthier environment. One of the key tasks of the OEE is managing the Government of Canada's ecoENERGY Efficiency initiative in order to reduce energy use in buildings and houses, industry, personal vehicles and fleets, appliances, and equipment.

The OEE provides practical energy conservation information and advice to consumers, businesses, and institutions. Examples include the following:

- Promotion of the International Energy Star symbol in Canada. This includes information about checking whether products that display the Energy Star symbol meet or exceed high energy-efficiency levels without compromising performance. For

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<sup>1</sup> Based on the 2014 World Bank official exchange rates.

houses, an Energy Star certified new home is, on average, 20% more energy-efficient than a home built to code.

- Mandatory and/or voluntary EnerGuide labeling for products including appliances, heating and cooling equipment, houses, and vehicles. EnerGuide is a Government of Canada initiative that rates the energy consumption of these products.
- Publication of a Fuel Consumption Guide, which provides estimated fuel-consumption ratings for passenger cars and light-duty pickup trucks, vans, and special-purpose vehicles sold in Canada.

Informing key decision-makers in the government, industry, and non-profit sectors about Canada's energy conservation and energy efficiency efforts is a major focus of the OEE.

The OEE also plays a regulatory role under the Energy Efficiency Act (see Section 2.1.1 below). The act gives the Government of Canada the authority to develop and implement minimum energy performance standards for energy-using products or products that affect energy use, which are either imported to Canada or manufactured in Canada and shipped across provincial or territorial borders. The first regulations, which came into effect in 1995, now cover 47 products.

#### **c) Covered sectors**

Industrial, transport, residential, commercial, appliances, and equipment.

#### **d) Established date**

April 1998.

#### **e) Number of staff members**

Approximately 280.

### **1.4.2. Regional and local institutions**

Canada is a federation comprising a federal government and 13 sub-federal entities. These sub-federal entities are active in the field of energy efficiency, and they have organizational structures of their own. Many energy utilities are also active in provincial/territorial policy and programming. Information regarding provincial/territorial incentives is provided by the OEE Directory of Energy Efficiency and Alternative Energy Programs in Canada, which is available at [http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/policy\\_e/programs.cfm?attr=0](http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/policy_e/programs.cfm?attr=0).

### **1.4.3. Coordination**

In Canada, the separation of powers means that all levels of government exercise some jurisdiction in the area of energy use. As such, coordination is a key aspect of the federal energy efficiency policy. Coordination among the federal and provincial/territorial governments is ensured through annual meetings of the Energy and Mines Ministers Conference and regular meetings of the Steering Committee on Energy Efficiency, which includes representatives from all of Canada's provinces and territories. These efforts seek to generate a complementary agenda for energy efficiency in which the ministers continue to develop real and sustainable energy solutions in their own jurisdictions as well as collaborate on cross-cutting initiatives that require a more integrated approach.

## **1.5. Information Dissemination, Awareness Raising, and Capacity Building**

### **a) Information collection and dissemination**

Information dissemination is the responsibility of individual program departments, which cooperate with stakeholders in the government, industry, and civil society. Comprehensive information on OEE programs and related energy efficiency issues is available on the OEE website at <http://www.nrcan.gc.ca/energy/efficiency>.

## b) Awareness Raising

Specific awareness-raising elements are incorporated in the ecoENERGY Efficiency initiative, including the following:

- ecoENERGY Efficiency for Equipment Standards and Labeling: Supports the energy labeling of a wide range of products:
  - EnerGuide labels the rate and summarizes the energy efficiency of major household appliances as well as heating, ventilating, and air-conditioning (HVAC) equipment. The EnerGuide label shows how much energy major appliances use so that consumers can easily compare models of the same size and class.
  - The Energy Star symbol identifies the most energy-efficient products in their class. Products that carry the Energy Star symbol meet premium levels of energy efficiency. In fact, the majority are 10%-50% more efficient than the minimum regulated standard.
- ecoENERGY Efficiency for Vehicles: Provides Canadian motorists with helpful tips on purchasing, driving, and maintaining their vehicles in order to reduce fuel consumption and greenhouse gas emissions. Freight companies are also encouraged to make their operations as energy-efficient as possible through the introduction of the SMARTWAY Transport Partnership in Canada.
- ecoENERGY Efficiency for Buildings: Provides technical information and benchmarking tools to improve the energy performance of new/existing buildings. For example, a monthly electronic newsletter titled, "Heads Up: Building Energy Efficiency," is sent to more than 16,000 subscribers.
- ecoENERGY Efficiency for Industry: Supports the implementation of the Canadian Industry Program for Energy Conservation, which offers opportunities for the industry to share information, and identify common needs and best practices.
- ecoENERGY Efficiency for Housing: Includes the Energy Star for New Homes initiative, which promotes energy efficiency guidelines that enable new homes to be more energy-efficient than those built to minimum provincial building codes.

Beyond the ecoENERGY programs, improving the energy information available to Canadians was identified as a key priority for Canada's Energy Ministers at their July 2011 Conference. Regarding this issue, federal, provincial, and territorial governments will collaborate to find the gaps in the current energy information available across Canada, and provide recommendations on how information systems can be improved and how fact-based information can be communicated more effectively to Canadians.

## c) Capacity Building

The ecoENERGY Efficiency for Housing program provides for the management of a network of service organizations, energy advisors who deliver Energy Star for New Homes, R-2000, and the EnerGuide rating system to homeowners and builders. Through its ecoENERGY Efficiency for Industry and ecoENERGY Efficiency for Buildings programs, the OEE offers a wide range of energy efficiency workshops to representatives from industrial, commercial, and institutional organizations cross Canada. The "Dollars to Sense" workshops are designed to educate participants on how to lower operation and production costs, improve competitiveness, reduce greenhouse gas emissions, increase operational efficiency, and create a better work environment.

The ecoENERGY Efficiency for Vehicles program offers fuel-efficient driver training through a series of initiatives. AutoSmart targets novice light-duty vehicle drivers and driving educators to promote fuel-efficient and safe-driving practices. A number of driving schools throughout Canada are registered to deliver the AutoSmart driver education program. FleetSmart introduces energy-efficient practices that can help reduce fuel consumption and

emissions. In addition, it offers free practical advice on how energy-efficient vehicles and business practices can reduce fleet operating costs, improve productivity, and increase competitiveness. A major component of FleetSmart is the SmartDriver training program, which is targeted at drivers in the commercial and institutional fleet sector.

## **1.6. Research and Development in Energy Efficiency and Conservation**

### **1.6.1. Policy: CanmetENERGY**

#### **a) Level**

Economy-wide (federal).

#### **b) Responsible department**

CanmetENERGY, Natural Resources Canada.

#### **c) Applicable sectors**

Buildings and communities, industrial, and transport.

#### **d) Outline**

Natural Resources Canada's energy efficiency technology activities are guided by CanmetENERGY. CanmetENERGY manages science and technology programs and services, supports the development of energy policies, codes, and regulations, acts as a window to federal financing, and works with partners to develop more energy-efficient and cleaner technologies in areas such as buildings and communities, clean fossil fuels, bioenergy, renewables, industrial processes, oil sands, and transport. Its goal is to ensure that Canada is at the leading edge of clean-energy technologies in order to reduce air and greenhouse gas emissions, and provide a sustainable energy future. For more information, see the CanmetENERGY website at <http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/index.html>.)

The efforts of CanmetENERGY include research, development, and demonstration of energy-efficient technologies in the buildings and communities, industrial, and transport sectors:

- 1) Buildings and Communities ó Net-zero houses, buildings, and communities; modeling and simulation software tools; and advanced heating, ventilation, air-conditioning, and refrigeration technologies. For more information, see [http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/buildings\\_communities.html](http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/buildings_communities.html).
- 2) Industrial - Includes knowledge and new technological tools for industrial energy systems and industrial systems optimization. For more information, see [http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/industrial\\_processes.html](http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/industrial_processes.html).
- 3) Transport - Includes advanced fuels, hybrid and electric vehicles, and hydrogen and fuel cells. For more information, see <http://canmetenergy-canmetenergie.nrcan-rncan.gc.ca/eng/transportation.html>.

#### **e) Financial resources and budget allocation**

Energy efficiency science and technology (S&T) expenditures were CDN 85.7 million (approximately USD 77 million) for fiscal year 2010/2011. For more information on S&T expenditures, see the annual Report to Parliament under the Energy Efficiency Act.

### **1.6.2. Program: ecoENERGY Innovation Initiative**

#### **a) Level**

Economy-wide (federal).

**b) Responsible department**

Natural Resources Canada's Office of Energy Research and Development (OERD) is the Government of Canada's coordinator of energy research and development activities. The OERD is responsible for the ecoENERGY Innovation Initiative, which supports energy technology innovation.

**c) Objectives and period**

The ecoENERGY Innovation Initiative is a CDN 97 million (approximately USD 87 million) investment over two years by the Government of Canada to support energy technology innovation, and produce/use energy in a more clean and efficient manner. Activities funded under the initiative will be in five strategic priority areas:

- Energy Efficiency
- Clean Electricity and Renewables
- Bioenergy
- Electrification of Transport
- Unconventional Oil and Gas

**d) Applicable sectors**

Industrial, transport, residential, and commercial.

**e) Financial resources and budget allocation**

CDN 97 million (approximately USD 87 million).

**f) Expected results**

The ecoENERGY Innovation Initiative will help in the search for long-term solutions that can reduce or eliminate air pollutants from energy production and use.

**1.6.3. Program: Clean Energy Fund****a) Level**

Economy-wide (federal).

**b) Responsible department**

Natural Resources Canada's Office of Energy Research and Development (OERD) is the Government of Canada's coordinator of energy research and development activities. The OERD is also responsible for the Clean Energy Fund.

**c) Objectives and period**

The Clean Energy Fund is providing nearly CDN 795 million (approximately USD 720 million) over five years under Canada's Economic Action Plan to advance Canadian leadership in clean energy technologies. In fall 2009, three carbon capture and storage projects in Alberta were announced, totaling CDN 466 million (approximately USD 420 million) from the fund. Up to CDN 146 million (roughly USD 130 million) will also be invested over five years to support renewable, clean energy, and smart grid demonstrations in all regions. Energy efficiency projects relate to integrated community energy systems. The program has allocated all of its funding to existing projects and no further calls for proposals are planned at this time. For a complete list of projects see <http://www.nrcan.gc.ca/eneene/science/renren-eng.php>.

**d) Applicable sectors**

Industrial, residential, and commercial.

**d) Financial resources and budget allocation**

CDN 795 million (approximately USD 720 million).

**e) Expected results**

Projects for renewable and clean energy systems will demonstrate numerous technologies, including marine energy, smart grid, wind, energy storage, bioenergy, geothermal energy in the north, and community energy systems (the principal energy efficiency element).

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## 2. MEASURES FOR ENERGY EFFICIENCY IMPROVEMENTS

### 2.1. Government Laws, Decrees, and Acts

#### 2.1.1. Energy Efficiency Act

**a) Level**

Economy-wide (federal).

**b) Purpose**

The goal of the Energy Efficiency Act is to improve the efficiency of energy-using products and promote the use of alternative energy sources. This act allows for the making of regulations on performance and labeling requirements for energy-using products and the collection of data on energy use.

**c) Applicable sectors**

All sectors of the economy.

**d) Outline**

Canada's Energy Efficiency Act came into force in 1992, giving the Government of Canada the authority to develop and implement minimum energy performance standards for energy-using products and products that affect energy use, which are either imported to Canada or manufactured in Canada and shipped across provincial or territorial borders. The act also gives the federal government the authority to set labeling requirements for these products so consumers can compare the energy efficiency of various models of the same product.

#### 2.1.2. Canadian Environmental Protection Act

**a) Level**

Economy-wide (federal).

**b) Purpose**

Pollution prevention.

**c) Applicable sectors**

All sectors of the economy.

**d) Outline**

The Canadian Environmental Protection Act (CEPA) came into force in 2000. The CEPA is an important part of Canada's federal environmental legislation that makes pollution prevention the cornerstone of efforts to reduce toxic substances in the environment. The Government of Canada has developed new regulations under the CEPA to reduce greenhouse gas emissions from light- and heavy-duty vehicles. These regulations are in force and aligned with those of the United States.

### 2.2. Regulatory Measures

#### 2.2.1. Energy Efficiency Regulations

**a) Level**

Economy-wide (federal)

**b) Purpose**

To improve the energy efficiency of energy-using products.

**c) Applicable sectors**

All sectors of the economy.

**d) Outline**

The Energy Efficiency Regulations, under the Energy Efficiency Act, removes the least-efficient product model from the market by setting minimum energy performance levels for 47 energy-using products such as appliances, lighting, heating, and air conditioning. They also require eight products to bear the EnerGuide label. The regulations also cover 75% of energy use in the residential sector, 30% of energy use in the commercial sector, and 8% of energy use in the industrial sector. For more information, see <http://oee.nrcan.gc.ca/regulations/11239>.

Canada works with U.S. and Canadian stakeholders to implement performance and labeling requirements, and the associated compliance activities. In August 2014, under the Canada-U.S. Regulatory Cooperation Council, Natural Resources Canada and the U.S. Department of Energy established the goal of aligning new and updated energy efficiency standards and test methods to the extent practicable and permitted by law.

**e) Financial resources and budget allocation**

Funding for this initiative is provided through the ecoENERGY Efficiency for Equipment Standards and Labeling element of the ecoENERGY Efficiency initiative.

**f) Expected results**

Improvements in the performance of energy-using products in Canada.

### 2.2.2. National Energy Codes for Houses and Buildings

**a) Level**

Economy-wide (federal).

**b) Purpose**

The National Building Code of Canada (NBC), a model for provincial/territorial building codes, provides a minimum baseline for new building design. Growing concerns over energy use in the housing/building sector have recently led to the development of additional requirements specifically aimed at promoting energy-efficient design and construction.

**c) Applicable sectors**

Commercial/institutional, industrial, and residential.

**d) Outline**

In Canada, building regulations are provincial and territorial responsibilities. However, the provinces and territories have recognized that an economy-wide model building code adapted to particular provincial or territorial circumstances is a better approach than a series of unrelated codes. The NBC was originally established in 1941 to serve as a basis for provincial/territorial building codes, and to provide a baseline for new building design. It should be noted that the NBC distinguishes between two distinct sub-sectors: 1) larger buildings of all types; and 2) houses and small buildings. In addition, distinct requirements are provided for each of these sectors.

Growing concerns over energy use through the 1990s led to the addition of energy requirements, with distinct paths followed for each of the above sectors. The larger building sector was first addressed in 1997 with the publication of the Model National Energy Code

for Buildings (MNECB). The MNECB complemented the existing NBC with a set of cost-effective minimum energy efficiency criteria for new building design. The MNECB was then updated in 2011 and is now referred to as the National Energy Code of Canada for Buildings (NECB 2011). For more information, see <http://www.nationalcodes.ca/eng/necb/index.shtml>.

Code requirements for the housing and small buildings sector have been addressed through the inclusion of minimum energy requirements in the relevant part of the NBC, which was released at the end of 2012.

In all cases, the development of model national energy code requirements is the responsibility of the Canadian Commission on Building and Fire Codes, which collaborates with the National Research Council, Natural Resources Canada, provincial, territorial, and municipal governments, the construction industry, and the general public.

#### **e) Financial resources and budget allocation**

Funding for this initiative is provided through the ecoENERGY Efficiency for Buildings and the ecoENERGY for Housing elements of the ecoENERGY Efficiency initiative.

#### **f) Expected results**

A significant increase in the energy efficiency of new houses and buildings. For example, larger buildings designed and built in compliance with NECB 2011 should, on average, be 25% more energy-efficient than those designed in accordance with the previous (1997) MNECB.

### **2.2.3. Building Energy Benchmarking**

#### **a) Level**

Economy-wide (federal).

#### **b) Purpose**

To develop and promote participation in an economy wide system for the benchmarking of building energy consumption.

#### **c) Applicable sector**

Commercial.

#### **d) Outline**

Natural Resources Canada and the U.S. Environmental Protection Agency (EPA) have agreed to collaborate on the adaptation of the EPA's Portfolio Manager benchmarking tool in Canada. This common platform for measuring and assessing the energy performance of commercial and institutional buildings allows the comparison of a building to other similar facilities. It is also a management tool that allows the sharing and reporting of energy and greenhouse gas emissions data.

The agreement harmonizes the approach of the two economies by enhancing the EPA's existing Energy Star Portfolio Manager tool to track and rate the energy performance of commercial buildings both in Canada and in the United States. It also involves the integration of Canadian site and source energy factors, Canadian greenhouse gas emission factors, enhanced Canadian weather data, metric units, French language, postal codes, web services, and the Canadian 1-100 Energy Star scores for certain building types.

The Canadian adaptation helps to ensure relevance to Canadian policy requirements, and provides a tool for organizations and provincial-territorial governments wishing to set energy standards. This tool also supports labeling/certification programs offered by trade associations. These trade associations, including the Canada Green Building Council (CaGBC), the Building Owners and Managers Association (BOMA), the Real Property Association of Canada (REALpac), and the Greater Toronto CivicAction Alliance are currently utilizing the tool to support their programs.

**e) Financial resources and budget allocation**

Funding for this initiative is provided through the ecoENERGY Efficiency for Buildings element of the ecoENERGY Efficiency initiative.

**f) Expected results**

Greater awareness and understanding of energy use will promote further implementation of energy-efficient technologies and practices in buildings.

**2.2.4. Greenhouse Gas Emission Regulations****a) Level**

Economy-wide (federal).

**b) Purpose**

To reduce greenhouse gas emissions (GHG) and fuel consumption of motor vehicles.

**c) Applicable sectors**

Transport.

**d) Outline**

In September 2014, the Government of Canada finalized GHG regulations to further reduce these emissions from new cars and light trucks. The new regulations build on the existing standards covering model years 2011 to 2016, and establish progressively more stringent GHG emission standards for new cars and light trucks for model years 2017 and beyond.

The Government of Canada's regulations for cars and light trucks will lead to significant reductions in GHG emissions. As a result of this regulation, 2025 model-year cars and light trucks will consume up to 50% less fuel and half as many GHGs than 2008 vehicles, thus leading to significant savings at the pump.

Over the lifetime operation of 2017 to 2025 model-year vehicles, the new regulations are projected to deliver total GHG reductions of 174 Mt, which is roughly equivalent to one year of GHG emissions from Canada's entire transport sector.

The Government of Canada has also announced its intent to further regulate GHG emissions for post-2018 model-year heavy-duty vehicles and engines, building on the final regulations already in place for model years 2014 to 2018.

As a result of the existing regulations covering model years 2014 to 2018, GHG emissions from 2018 model-year heavy-duty vehicles will be reduced by up to 23%. New regulations would build on these reductions for post-2018 model-year heavy-duty vehicles.

**e) Financial resources and budget allocation**

Initial funding for these initiatives was provided through the Canada's Clean Air Agenda (Budget 2011 funding for the Clean Air Agenda was almost CDN 870 million (approximately USD 780 million) over two years).

**f) Expected results**

Reduced greenhouse gas emissions and fuel consumption from on-road motor vehicles.

**2.3. Voluntary Measures****2.3.1. Canadian Industry Program for Energy Conservation (CIPEC)****a) Level**

Economy-wide (federal).

**b) Purpose**

The Canadian Industry Program for Energy Conservation (CIPEC) is a collaboration between the government and private industry to improve Canada's industrial energy efficiency.

**c) Applicable sectors**

Industrial.

**d) Outline**

The CIPEC is a voluntary partnership between the Government of Canada and the industry that brings together industrial associations and companies. Since 1975, the CIPEC has been helping companies cut costs and increase profits by providing information, training, financial support, and tools to improve energy efficiency. Current activities include the following:

- Financial contributions for CAN/CSA-ISO 50001-Energy Management Systems standard implementation pilot studies and industrial energy assessments.
- Dollars to \$ense energy management workshops and technical webinars.
- Bi-annual national Energy Conference on industrial energy efficiency, complete with awards for industrial energy efficiency projects.
- Information on financing sources and accelerated capital cost allowances for energy-efficient and alternative energy systems and upgrades.
- On-line publications such as energy benchmarking and case studies, technical guides, and the CIPEC Annual Report.
- Twice-monthly electronic newsletter titled, "Heads Up CIPEC," which is distributed to 10,000 subscribers.
- On-line tools such as the Boiler Efficiency Calculator and the Energy Management Information Systems toolkit.

Thousands of registered CIPEC leader companies have voluntarily met and exceeded annual targets to reduce their energy intensity; that is, energy use per unit of output. Year-over-year trends in energy intensities per industrial sector are disseminated in the CIPEC Annual Report. For more information, see [www.cipec.ca](http://www.cipec.ca).

**e) Financial resources and budget allocation**

Funding for this initiative is provided through the ecoENERGY Efficiency for Industry element of the ecoENERGY Efficiency initiative.

**f) Expected results**

Improvements to energy efficiency in the industrial sector.

### 2.3.2. Houses and Building Certification

**a) Level**

Economy-wide (federal).

**b) Purpose**

To promote energy-efficient technologies and building practices.

**c) Applicable sectors**

Residential and commercial.

**d) Outline**

R-2000 and Energy Star for New Homes are voluntary new home labeling initiatives that provide Canadians with reliable options for energy-efficient new homes.

R-2000 has been a best-in-class energy efficiency home label for more than 30 years, and it has been effective at encouraging innovation in new home construction. R-2000 also encourages the early adoption of innovative technologies and building practices before they

eventually filter into the greater housing construction market. The R-2000 standard certifies new residential dwellings that are, on average, 50% more energy-efficient than those built to the minimum building code requirements. However, the standard does not specify how a house must be built.

Every R-2000 home undergoes the following process:

- Constructed by trained and licensed builders.
- Evaluated, inspected, and tested by an independent third-party inspector.
- Certified by the Government of Canada.

The Energy Star for New Homes initiative is designed to provide homebuyers with access to energy-efficient new homes, and builders with the means of building these homes in a timely, simple, and cost-effective manner using common building practices. The Energy Star for New Homes standard qualifies new residential dwellings that are, on average, 20% more energy-efficient than those built to the minimum building code requirements.

R-2000 and Energy Star homes are expected to reduce energy costs and provide greater occupant comfort. For more information, see <http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/5025>).

The Canadian Mortgage Housing Corporation also offers mortgage assistance to buyers of R-2000 and other energy-efficient certified homes. For more information, see [http://www.cmhc-schl.gc.ca/en/co/moloin/moloin\\_008.cfm](http://www.cmhc-schl.gc.ca/en/co/moloin/moloin_008.cfm)).

Natural Resources Canada (NRCan) and the U.S. Environmental Protection Agency (EPA) have agreed to collaborate on the adaptation of the EPA's Portfolio Manager benchmarking tool in Canada. This common platform for measuring and assessing the energy performance of commercial and institutional buildings allows the comparison of a building to other similar facilities in its region or across Canada. NRCan has been working under the guidance of participating provinces, territories, and other key stakeholders to develop this system. NRCan is aiming to harmonize this system with existing, non-governmental building certification programs, such as LEED® of the Canada Green Buildings Council and BOMA Best of the Building Owners and Managers Association. For more information, see <http://oe.nrcan.gc.ca/commercial/regulations-standards/labelling.cfm?attr=20>.

#### **e) Financial resources and budget allocation**

Funding for these initiatives is provided through the ecoENERGY Efficiency for Houses and ecoENERGY Efficiency for Buildings elements of the ecoENERGY Efficiency initiative.

#### **f) Expected results**

Greater use of energy-efficient technologies and practices in new homes and buildings.

### **2.4. Financial Measures Taken by the Government**

#### **2.4.1. Tax Scheme**

Accelerated Capital Cost Allowance for Clean Energy Generation

##### **a) Level**

Economy-wide (federal).

##### **b) Purpose**

Encouraging investments in energy-efficient and alternative energy technologies in order to contribute to reductions in greenhouse gas emissions, improvements in air quality, and diversification of the energy supply.

##### **c) Application sectors**

Industrial.

**d) Outline**

A 50% accelerated capital cost allowance (CCA) is provided under Class 43.2 (Schedule II) of the Income Tax Regulations for specified clean energy generation equipment. Class 43.2 includes the following categories of systems or equipment:

- Cogeneration and/or Specified-Waste-Fueled Electricity Generation Systems
- Active Solar Equipment and Ground Source Heat-Pump Systems
- Small-Scale Hydroelectric Installations
- Heat Recovery Equipment
- Wind Energy Conversion Systems
- Photovoltaic Electrical Generation Equipment
- Geothermal Electrical Generation Equipment
- Landfill Gas and Digester Gas Collection Equipment
- Specified-Waste Fueled Heat Production Equipment
- Expansion Engine Systems
- Systems to Convert Biomass into Bio-Oil
- Fixed-Location Fuel Cell Equipment
- Systems to Produce Biogas by Anaerobic Digestion
- District Energy Systems/Equipment
- Wave or Tidal Energy Equipment

Specified-waste fuels include biogas, bio-oil, digester gas, landfill gas, municipal waste, pulp and paper waste, and wood waste.

Class 43.2, introduced in 2005, is currently available for assets acquired on/after February 23, 2005, and before 2020. For assets acquired before February 23, 2005, accelerated CCA is provided under Class 43.1 (30%). The eligibility criteria for these classes are generally the same, except that cogeneration systems that use fossil fuels must meet a higher efficiency standard for Class 43.2 than that for Class 43.1. The systems that only meet the lower efficiency standard of Class 43.1 continue to be eligible for Class 43.1.

Budget 2011 expanded Class 43.2 to include equipment that is used by the taxpayer (or by a lessee of the taxpayer) in order to generate electrical energy in a process in which all (or substantially all) of the energy input is from thermal waste.

**e) Financial resources and budget allocation**

No information is available.

**f) Expected results**

Improvements to energy efficiency in the industrial sector.

**2.4.2. Low-Interest Loans****a) Level**

Sub-federal (provinces/territories).

**b) Purpose**

To support energy efficiency investment.

**c) Applicable sectors**

Industrial (including agriculture), transport, residential, commercial, power, and public sectors.

**d) Outline**

Examples include Manitoba's PowerSmart Residential Loan program. For more information, see [http://www.hydro.mb.ca/your\\_home/residential\\_loans.html](http://www.hydro.mb.ca/your_home/residential_loans.html).

**e) Expected results**

Improved energy efficiency in the residential sector.

**2.4.3. Subsidies and Budgetary Measures**

ecoENERGY Retrofit ó Homes

**a) Level**

Federal and sub-federal (provincial/territorial).

**b) Purpose**

In July 2011, the Government of Canada announced a one-year extension of CDN 400 million (approximately USD 360 million) to the ecoENERGY Retrofit ó Homes program, which provides financial support to homeowners to help them implement energy-saving retrofits that result in more comfortable living spaces and a cleaner environment. Many of Canada's provinces and territories have complementary incentive programs.

**c) Applicable sectors**

Residential.

**d) Outline**

For more information, see <http://www.ecoaction.gc.ca/ecoenergy-ecoenergie/retrofithomes-renovationmaisons-eng.cfm>.

**e) Financial resources and budget allocation**

CDN 400 million (approximately USD 360 million), in addition to provincial/territorial funds.

**f) Expected results**

Homeowners that participate in the ecoENERGY Retrofit ó Homes program reduced their energy consumption by an average of 20%. The ecoENERGY Retrofit ó Homes program was successful in meeting its economic and environmental goals. The program ran from 2007 to 2012, during which 640,000 Canadian homeowners benefited from more than CND 934 million (approximately USD 840 million) in program spending.

**2.4.4. Other Incentives**

Provinces and territories offer various incentives in their respective jurisdictions.

**a) Level**

Sub-federal level (provinces and territories).

**b) Applicable sectors**

All sectors of the economy.

**c) Outline**

A wide range of program incentives are offered by federal, provincial, and territorial governments and utilities. For more information on provincial/territorial incentives, consult the OEE Directory of Energy Efficiency and Alternative Energy Programs in Canada at [http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/policy\\_e/programs.cfm](http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/policy_e/programs.cfm).

**d) Expected results**

Increase in energy efficiency and reduction in greenhouse gas emissions.

**2.5. Energy Pricing**

Market-based.

**2.6. Other Efforts for Energy Efficiency Improvements**

### **2.6.1. Cooperation with Non-Government Organizations**

The OEE programs cooperate with numerous interested partners, including non-governmental organizations.

### **2.6.2. Cooperation through Bilateral, Regional, and Multilateral Schemes**

Canada continues to work with the United States and Mexico to promote the harmonization of energy efficiency test methods, mutual recognition of conformity assessment systems for energy efficiency standards, and cooperation on trilateral energy efficiency labeling programs. Energy efficiency collaboration is also an element of the bilateral Canada-U.S. Clean Energy Dialog as well as the multilateral Clean Energy Ministerial process.

Canada is a member of the International Energy Agency, supporting its activities and participating in its Energy Efficiency Working Party. Canada is also a member of the International Partnership for Energy Efficiency Cooperation.

### **2.6.3. Other Cooperation/Efforts for Energy Efficiency Improvements**

Public-private partnerships are commonly used to support a wide range of energy efficiency investments, especially in the public sector. The Federal Buildings Initiative (FBI), operated through Natural Resources Canada's Office of Energy Efficiency, facilitates access to tools and services to undertake energy efficiency retrofit projects in buildings owned or managed by the Government of Canada. More specifically, the FBI helps federal organizations enter into third-party performance contracts that allow major retrofits to be self-financing, thus addressing barriers such as the lack of capital and resources when undertaking such projects. Using the FBI approach removes much of the risk of implementing a retrofit project. The program also coordinates a community of practice among federal government property managers, and provides information on other related building energy matters such as efficient operations, commissioning, etc.

Section 2.2.1 (above) discusses collaboration on equipment standards. However, the Office of Energy Efficiency has also cooperated with the Canadian Standards Association on the development of whole-building standards such as Building Commissioning and the Operation and Maintenance of Health Care Facilities.

Partnerships are also extensively used during the technology development and demonstration process such as through Canadian Mortgage and Housing Corporation (CMHC) initiatives. Regular cooperation occurs through the partnerships and demonstration projects between the CMHC and financial institutions.