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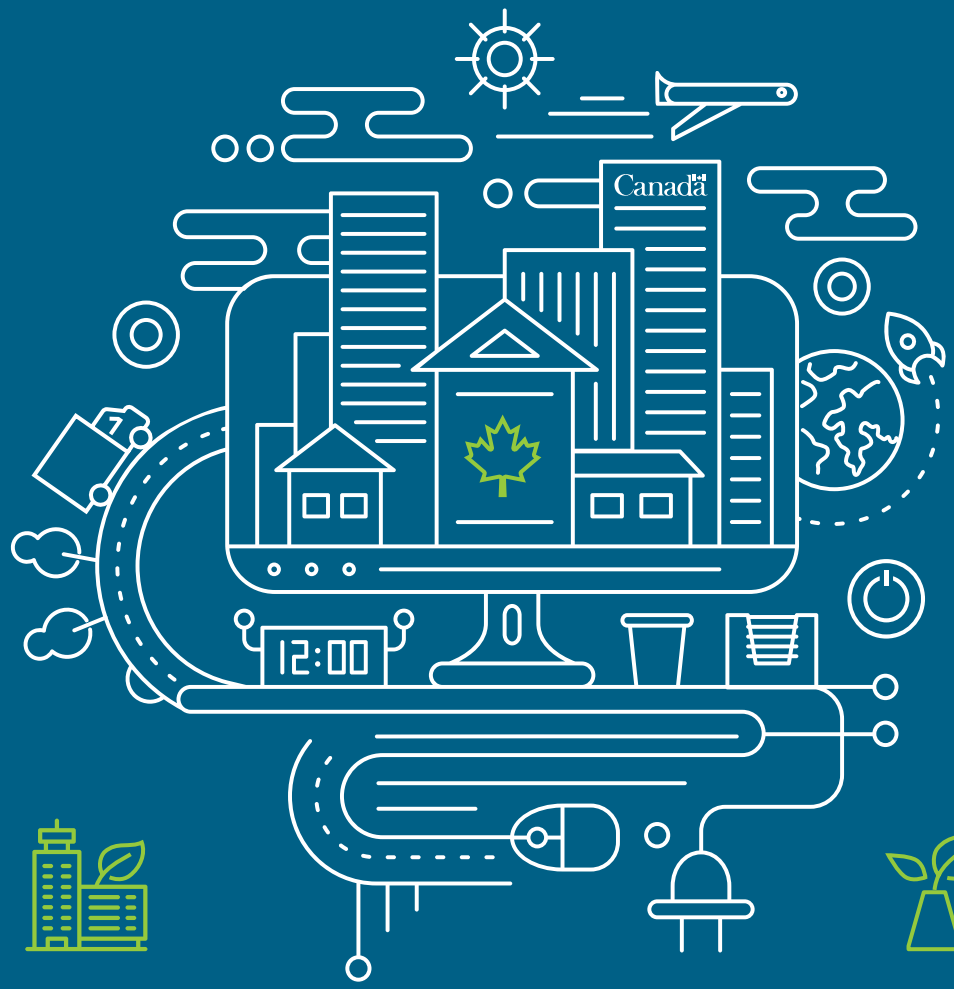
ENERGY EFFICIENCY IN CANADA

REPORT TO PARLIAMENT UNDER THE *ENERGY EFFICIENCY ACT*

2016



2017

Canada

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2016–2017

Canada

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Contents

This 23rd Report to Parliament Under the Energy Efficiency Act outlines the actions taken by the Government of Canada on energy efficiency and transportation and alternative fuels from April 1, 2016, to March 31, 2017. It provides an overview of our work relating to:

- **new and existing buildings**
- **industrial energy efficiency**
- **appliances and equipment**
- **greening government operations**
- **lower-carbon transportation**

The *Energy Efficiency Act* empowers the Minister of Natural Resources to promote the efficient use of energy and alternative fuel sources. It also gives the Government of Canada the authority to make and enforce regulations concerning minimum energy performance levels, labelling requirements and the collection of data on energy use for products that use energy or affect energy use.

Natural Resources Canada's (NRCan) Office of Energy Efficiency (OEE) administers the *Energy Efficiency Act* and *Energy Efficiency Regulations* and provides other programs and information that promote energy efficiency in the major energy-using sectors of the economy. The sectors include residential; commercial and institutional buildings; industry; appliances and equipment; and transportation and alternative fuels. Energy efficiency is an area of shared jurisdiction and shared responsibility, which is why we work closely with all levels of government and stakeholders.

Our activities help address market barriers that prevent investments in cost-saving energy-efficiency opportunities and technologies. We help Canadian consumers and businesses save money, embrace innovation and reduce greenhouse gas (GHG) emissions.

WHERE CAN I FIND MORE INFORMATION?

- For our most current information, see the **OEE website**.
- For detailed data tables and statistics, see the **National Energy Use Database (NEUD)**.
- For more detailed program information, see NRCan's ***Departmental Results Report***.
- For more detailed regulatory information, see Canada's ***Energy Efficiency Regulations***.
- For more information on Canada's Buildings Strategy, see **Build Smart: Canada's Buildings Strategy**.

Using less energy to do the same things seems like a small thing. Yet it's remarkable how making small changes in our behaviour to conserve energy, such as turning down the heat at night or buying products that have been designed to save energy, such as ENERGY STAR® appliances, can have such a lasting impact.

Certainly, these changes can lower our household bills. But given that the majority of GHG emissions are produced as a result of burning fossil fuels to generate energy, energy efficiency is a critical step for taking action on climate change.

NRCan takes this fact to heart. In 2017 alone, we released the updated *Energy Efficiency Regulations*, which will increase energy performance for 20 categories of appliances and equipment in Canada and save Canadians about $1.8 billion in energy costs by 2030, while decreasing GHG emissions by about 700,000 tonnes (t).

Also, our initiatives for existing homes helped avoid emissions of 138,000 t of GHGs.

These are just a few of the successes that you will read about in this 23rd edition of the Report to Parliament Under the Energy Efficiency Act.

And they all matter a great deal when you consider that, according to the International Energy Agency, improved energy efficiency in buildings, industrial processes and transportation could reduce the world's energy needs in 2050 by one third. That would significantly reduce our carbon footprint and help to combat climate change.

That's no small thing.

The Honourable Amarjeet Sohi, P.C., M.P.
Minister of Natural Resources

HIGHLIGHTS FROM 2016–2017

- More than **11,000 new homes** were issued **EnerGuide, ENERGY STAR® or R-2000*** labels.
- Through the R-2000 Net-Zero Energy pilot program, **23 net-zero energy homes** were built by six builders in three provinces by fall of 2016.
- NRCan launched the revised version of the **EnerGuide Rating System** to provide homeowners with more detailed information on how their homes use energy, including recommendations to help save energy and increase comfort.
- NRCan initiatives for existing homes resulted in a **savings of 1.72 PJ of energy and avoided emission of 138,000 t of GHGs**.
- The **ENERGY STAR® Portfolio Manager** benchmarked over **17,400 buildings**, representing almost **200 million m² (23%) of commercial floor space** in Canada that fall within energy efficiency standards. Benchmarking provides hard data to help manage buildings' energy use.
- NRCan is working with provinces, territories and industry on **energy code development, data sharing, research and development, and market transformation strategies** for the building sector.
- There are now **36 organizations in Canada certified to the ISO 50001** standard. These companies have achieved an average cumulative energy intensity improvement of nearly 10% within the first two years, resulting in up to **$2 million in annual energy cost savings** for large Canadian companies.
- NRCan's **Federal Buildings Initiative** supported the development of nine large-scale energy retrofit projects in federal buildings.
- In 2016, there were more than **1,500 registered ENERGY STAR public and private sector partner**s for products and homes, including utilities and energy efficiency programs in every Canadian province and territory.

- More than **70 types of products were eligible** for ENERGY STAR® certification in Canada in 2016.
- Six **new products were added to the ENERGY STAR program** in 2016, five products were updated, and 13 product categories are now eligible for the ENERGY STAR Most Efficient designation.
- **ENERGY STAR saved 5.06 PJ of energy,** which is enough to power about 320,400 electric cars, and **avoided emission of 520,000 t of GHGs**.
- NRCan released the **updated *Energy Efficiency Regulations***, which will increase energy performance for 20 categories of appliances and equipment in Canada. **This will save Canadians about $1.8 billion in energy costs by 2030, while decreasing GHG emissions by about 0.7 Mt**.
- The **SmartWay Program** in Canada **saved more than $90 million in annual fuels costs for 40,500 Canadian trucks** in 2016.
- To support the deployment of EV charging and alternative fuel refuelling stations, **NRCan selected 31 projects across 7 jurisdictions** that, if all successful, will support **more than 100 EV, 7 natural gas and 3 hydrogen refuelling stations**.
- The **on-line *Fuel Consumption Guide*** is NRCan's second-most accessed web page and provides information on vehicle fuel efficiency, which informs consumers' vehicle purchasing decisions.

*R-2000 is an official mark of Natural Resources Canada.

Why energy efficiency matters

Energy efficiency means being smart about how we use energy. It results in using less energy while maintaining the same or better level of service, comfort or performance that Canadians expect from appliances, homes, buildings, vehicles and industry.

Energy efficiency is hard to see, but we feel the benefits in our homes, neighbourhoods, economy and wallets. It is the quickest and least costly way of addressing energy-related security, environmental and economic challenges.[1] Canada has a long history of working to improve energy efficiency. We can and should go further.

ENERGY EFFICIENCY . . .

Generates savings

Better-insulated homes cost less to heat and cool. More efficient equipment, such as your fridge or air conditioner, lowers electricity costs. Fuel-efficient vehicles save you money at the pump. In 2015, the total economy savings were $38.2 billion. Of this, $21.5 billion were consumer savings and $16.7 billion were business savings. Energy efficiency makes energy affordable now and in the future.

Supports competitiveness and innovation

Companies with lower energy needs have a leg up on the competition. In addition to lowering energy costs, investing in energy efficiency can enhance production and product quality, reduce resource use and pollution, and improve the working environment. It also reduces the cost of operation, maintenance, and environmental compliance – all of which contribute to improved productivity and value creation.[2]

Premium standards such as ENERGY STAR® can drive development of innovations that can be marketed in the US$231 billion international energy efficiency marketplace.[3] A study of the global energy efficiency market by the International Energy Agency found that in 2016, global investment in energy efficiency increased by 9%, maintaining an upward trend.

Creates jobs

Energy efficiency exists across the entire economy and can create jobs in many sectors, both directly and indirectly. Money saved on energy can also mean more spending on other goods and services.

A study by ECO Canada estimated that over 100,000 Canadians work in energy efficiency-related jobs.[4] Various studies suggest that every $1 million invested in energy efficiency creates 11 to 20 job-years, depending on the investment. However, the Acadia Centre, in the *Energy Efficiency: Engine of Economic Growth in Canada* report, estimated that over the life of energy efficiency investment and savings, the multiplier would be higher, in the range of 22 to 33 jobs per million dollars invested.[5]

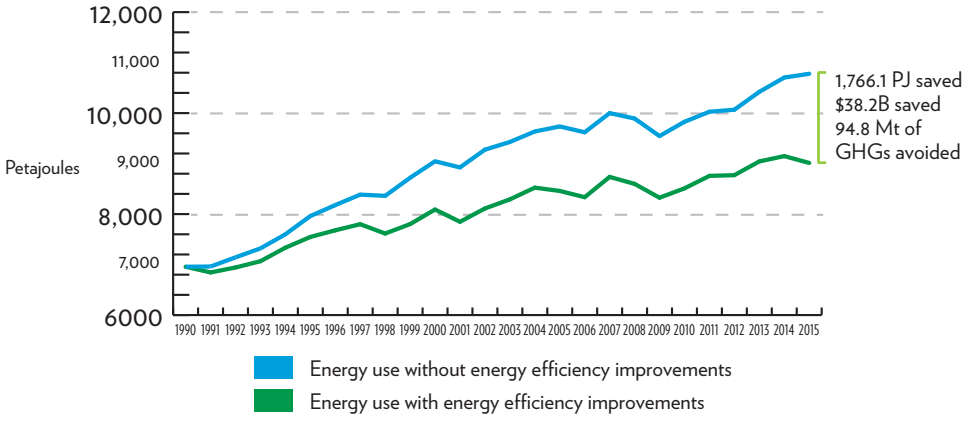
What is a job-year?

A job-year is one job for one year. For example, if you employ one person for two years, you have created two job-years.

Reduces emissions

When energy efficiency reduces our need to burn fuels such as coal, gas and oil, it enables us to avoid emitting GHGs and other air pollutants. Efficiency measures currently account for about a third of the GHG emission reductions planned under the Pan-Canadian Framework on Clean Growth and Climate Change. Avoiding emitting other air pollutants also has benefits for our health.

Figure 1. Secondary energy use with and without energy efficiency improvements (1990–2015)



Source: ***Energy Efficiency Trends in Canada 1990 to 2015***[6]

What is secondary energy use?

Secondary energy use is the energy used by final consumers in various sectors of the economy. This includes, for example:

- the energy used by vehicles in the transportation sector
- the energy required to heat and cool homes or businesses in the residential and commercial/institutional sectors
- the energy required to run machinery in the industrial and agricultural sectors

Canadian energy efficiency milestones

1992 The ***Energy Efficiency Act*** comes into force.

1995 The ***Energy Efficiency Regulations*** are introduced to stimulate innovation, eliminate the least efficient products and reduce GHG emissions. The regulations prescribe minimum energy performance standards for certain consumer and commercial products and require labelling to allow consumers to compare the energy use of different products in a category.

Amendments over subsequent years increase the stringency and coverage of the regulations.

1997 The ***Model National Energy Code for Buildings*** provides–for the first time–a national standard for building energy performance in Canada.

1998 The **EnerGuide for Houses program** and **EnerGuide label for vehicles** are launched.

2001 Canada becomes an **international ENERGY STAR® partner** with the U.S. Environmental Protection Agency and launches the ENERGY STAR products program.

The **Industrial Energy Audit Incentive program** is launched.

The **Federal House in Order** initiative is launched, through which the Government of Canada would show leadership in reducing emissions from its operations.

2005 The **ENERGY STAR for New Homes program** is launched.

2008 The **ecoENERGY for Biofuels program** is launched, increasing availability of lower-carbon fuels in the market.

2011 The ***National Energy Code of Canada for Buildings*** (NECB 2011) is released.

Canada is the **first country in the world to adopt ISO 50001** as its energy management systems standard.

The **ecoENERGY Efficiency for Industry program** is launched.

2012 The **SmartWay Partnerships Program** is delivered in Canada by NRCan.

2013 The **ENERGY STAR® Portfolio Manager benchmarking tool for buildings** is launched.

2014 Canada and the United States (U.S.) sign the **Regulatory Cooperation Council, Joint Forward Plan**, which among many initiatives, formalizes Canada-U.S. alignment on energy efficiency standards as well as codes and standards for alternative fuel use in transportation,

2015 The **2015 update of the *National Energy Code of Canada for Buildings*** is released. It contains more than 90 changes that will help to ensure a high level of energy efficiency in new Canadian commercial buildings.

Canada is one of 195 countries that together reach the Paris Agreement, which aims to limit global average temperature increase to less than 2°C.

2016 Canadian First Ministers release the **Pan-Canadian Framework on Clean Growth and Climate Change**.

Major updates are made to the *Energy Efficiency Regulations*.

North American Energy Ministers signed a **Memorandum of Understanding on Climate Change and Energy Collaboration**.

The first phase of the **EV and Alternative Fuels Infrastructure Deployment Initiative** is launched, increasing the access and availability of lower-carbon fuel options to Canadian consumers and fleets.

2017 Federal, provincial and territorial governments release **Build Smart** – a strategy to work toward helping Canadians realize the many benefits of making homes and buildings more energy-efficient.

Canada, the U.S. and Mexico sign a memorandum of understanding, expanding the **SmartWay Partnership program** into Mexico.

NRCan's Office of Energy Efficiency

Established in 1998, the OEE has a mandate to strengthen Canada's commitment to energy efficiency and alternative fuels. We work to advance Government of Canada priorities, delivering energy cost savings, contributing to Canada's climate change targets, and supporting clean innovation and green infrastructure objectives. The core of our work includes the following.

COLLABORATION AND ENGAGEMENT

- Working closely with partners such as provinces and territories, utilities and industry, academia, other countries and international bodies, to understand and address emerging issues and opportunities related to energy efficiency
- Engaging stakeholders and consulting Canadians
- Providing information, data and tools to enable action and support academic research and policy and program development

REGULATIONS, CODES AND STANDARDS

- Administering Canada's *Energy Efficiency Act*
- Regulating to eliminate the least efficient products from the Canadian market
- Promoting higher energy efficiency requirements within Canada's model energy code for buildings
- Harmonizing alternative fuel codes and standards with the U.S.

CERTIFICATION AND LABELLING PROGRAMS

- ENERGY STAR® program (for products and new homes)
- EnerGuide (for products, homes and vehicles)
- R-2000 for new homes
- ISO 50001
- SmartWay Transportation Partnership

DEPLOYMENT

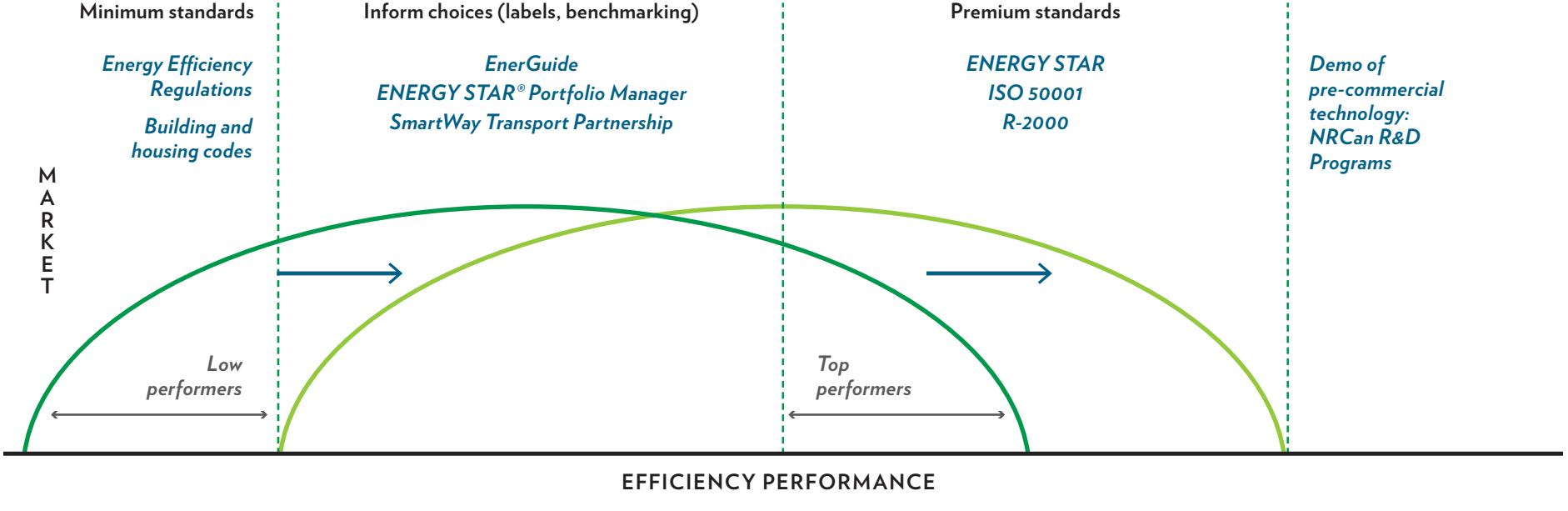
- Facilitating the uptake of new and proven technologies and infrastructure

MARKET TRANSFORMATION

- Driving product innovation, transforming the market toward higher performing products, homes and buildings and industrial facilities that use less energy, generate fewer GHG emissions and cost less to operate
- Providing consumers with the information required to make informed purchasing choices, affect behavioural change and drive market transformation

As we look back on our work from the 2016–2017 fiscal year, we see the transformative potential of collaboration. The federal, provincial and territorial governments worked together to release the Pan-Canadian Framework on Clean Growth and Climate Change and advance energy efficiency in Canada. We worked with our American partners to align and strengthen our energy efficiency regulations and to launch and enhance our voluntary labelling programs. We worked with other federal government departments to support the retrofit of federal buildings. We worked with our industry partners to support adoption of energy management standards and cleaner ways to transport goods across North America. Working with partners is a thread that runs through everything we do.

In the sections that follow, you can read more about our work on new and existing buildings, industrial energy efficiency, appliances and equipment, greening federal buildings, and lower-carbon transportation.



Making our buildings more energy-efficient

When we invest in energy efficiency improvements to our homes and buildings – including hospitals, schools, and our places of work – we are investing in our environment, economy, and even our personal health and overall comfort. NRCan's initiatives help move the market toward more energy-efficient buildings and homes and help Canadians make informed decisions.

HIGHLIGHTS FROM 2016–2017

- More than 60,000 existing homes were labelled with the EnerGuide Rating System (ERS), while another 11,000 new homes were issued ERS, premium ENERGY STAR® or R-2000* labels.
- NRCan launched a revised version of the ERS, with an easy-to-read label with a rating scale based on the home's estimated energy consumption (gigajoules per year).
- Through the R-2000 Net-Zero Energy pilot program, 23 net-zero energy homes were built by six builders in three provinces by fall of 2016.
- NRCan initiatives for existing homes resulted in a savings of 1.72 PJ of energy and avoided emission of 138,000 t of GHGs.
- NRCan awarded $2.4 million in funding, over two years, to eight projects that use multi-sectoral partnerships and innovation to drive demand for home energy retrofits, increase the supply of energy-efficient new homes, and reduce home energy use through behavioural changes.
- The ENERGY STAR® Portfolio Manager benchmarked over 17,400 buildings, representing almost 200 million square metres (m^2) (23%) of commercial floor space in Canada.
- The *National Energy Code of Canada for Buildings 2017* was published, an important step toward Canada's goal for new buildings - achieving Net-Zero Energy Ready buildings by 2030.

Paving the way for net-zero energy ready buildings

SETTING HIGH PERFORMANCE STANDARDS FOR NEW HOMES

ENERGY STAR® and R-2000 are voluntary energy performance standards for new homes that are 20% and 50% more efficient, respectively, than typical new homes.

Every premium home must meet mandatory requirements for energy savings, insulation and airtightness, which makes these homes more energy-efficient and more comfortable to live in.

PILOTING NET-ZERO ENERGY HOMES

The R-2000 Net-Zero Energy pilot was launched in Canada in 2013. Its goal is to recognize the builders and homes achieving net-zero energy performance, to pilot the next generation of NRCan's R-2000 standard and EnerGuide Rating System in net-zero energy applications, and to share research on net-zero energy homes. As of fall 2016, 23 net-zero energy homes under this pilot were built by six builders in three provinces.

Working with partners: BOMA Canada's high-performance building challenge

NRCan is supporting a new National High-Performance Building Challenge initiative to help bring the Canadian commercial building sector closer to a net-zero energy performance ideal. The Challenge is under development by BOMA Canada. This new challenge will recognize the designers, builders, owners and managers who demonstrate significant progress toward net-zero energy performance.

MAKING NEW BUILDINGS MORE ENERGY-EFFICIENT

- by the numbers -

AVERAGE LIFESPAN OF A BUILDING IS **50–70** YEARS

50–70
YEAR LIFESPAN

ENERGY STAR® AND R-2000 ARE VOLUNTARY ENERGY PERFORMANCE STANDARDS FOR NEW HOMES THAT ARE **20%** AND **50% MORE EFFICIENT**, RESPECTIVELY, THAN TYPICAL NEW HOMES

11,000+ NEW HOMES WERE ISSUED ENERGUIDE, ENERGY STAR® OR R-2000 LABELS IN 2016–2017

11,000+
NEW HOMES ISSUED

ENERGUIDE ENERGY STAR HAUTE EFFICACITÉ HIGH EFFICIENCY R-2000

80,000+ EFFICIENT NEW HOMES WERE BUILT SINCE THE INCEPTION OF CANADA'S ENERGY STAR® FOR NEW HOMES AND R-2000 INITIATIVES

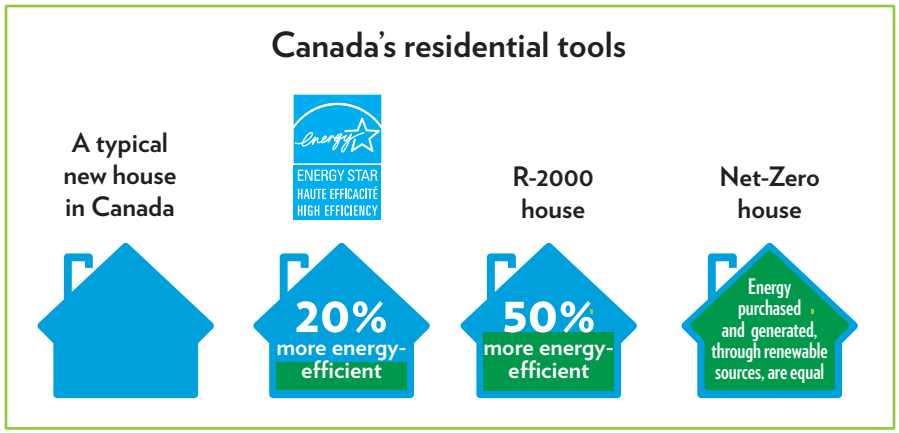
80,000+
EFFICIENT NEW HOMES

NRCAN INITIATIVES FOR EXISTING HOMES RESULTED IN A **SAVINGS OF 1.72 PJ OF ENERGY AND AVOIDED 138,000 t OF GHG EMISSIONS**

THE *NATIONAL ENERGY CODE FOR BUILDINGS 2017* WAS PUBLISHED, WHICH COULD RESULT IN POTENTIAL **ENERGY EFFICIENCY IMPROVEMENTS OF UP TO 14.4%** OVER THE NECB 2011 FOR NEW COMMERCIAL BUILDINGS

LOOKING FORWARD: INCREASINGLY STRINGENT ENERGY CODES FOR HOMES AND BUILDINGS – MOVING TO NET-ZERO ENERGY READY CODES FOR HOMES AND BUILDINGS

The design and construction phase is the most cost-effective point in the life of a building to incorporate energy efficiency measures. These measures not only help to save energy and money throughout the life of your building, they are much more expensive to retrofit later during the operations and maintenance phase. We have made great technological strides in efficient building design, but there's still work to be done to make routine achievement of net-zero energy performance accessible to the entire industry.



Imagine if every new house in Canada was so efficient that it could actually power and heat itself. This is not a sci-fi fantasy – it is an attainable reality. Federal, provincial and territorial governments have committed, under the Pan Canadian Framework, to collaborate, develop and adopt increasingly stringent model building codes, starting in 2020. Their goal is to have provinces and territories adopt optimal model building codes that are net-zero energy ready by 2030. Achieving this goal will ensure that our future building stock has a much lower carbon footprint. Early work is underway to support provinces and territories and to advance the code development process, which is led by the National Research Council.

Initiatives such as ENERGY STAR®, R-2000, the R-2000 Net-Zero Energy pilot and the National High-Performance Building Challenge will help prepare the building sector for these more stringent codes. The initiatives encourage the use of new technologies and practices before they are required under new model codes. NRCan is also investing in projects that research, develop, validate, and demonstrate emerging technologies and construction practices. This will encourage their uptake by the construction industry, provinces and territories while lowering the costs to build or renovate to higher energy efficiency levels.

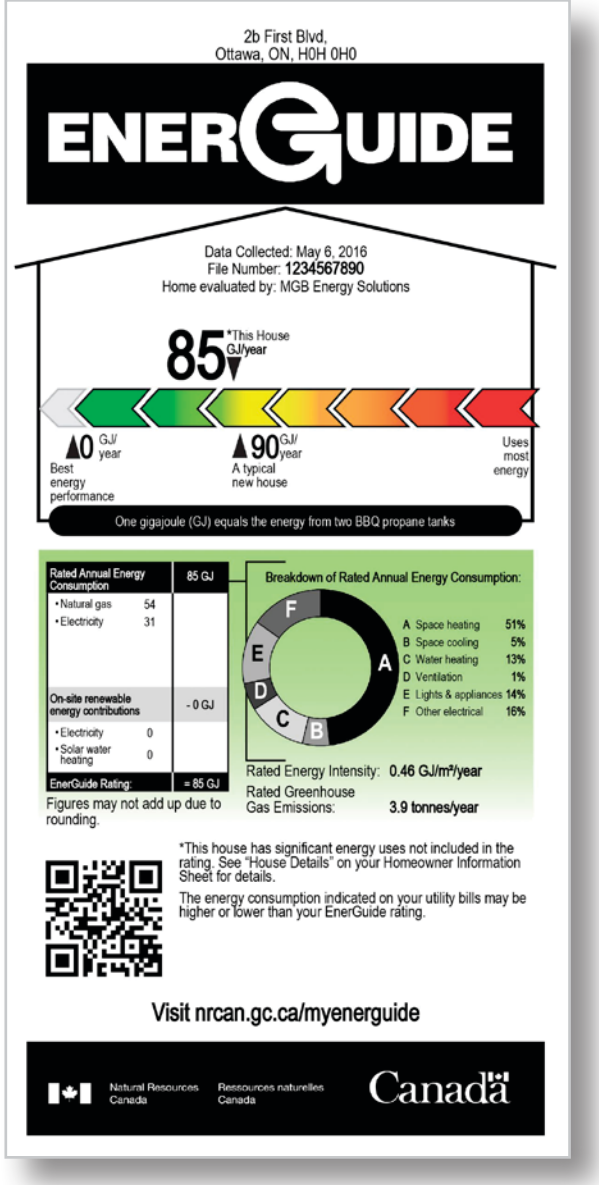
Making existing buildings more energy-efficient

ENERGUIDE HOME ENERGY RATING

The EnerGuide Rating System is a national rating tool that assesses the energy performance of homes. An EnerGuide home evaluation and rating provides useful information about a home's energy performance that can support informed decision making when operating, renovating or purchasing a home. Builders can also work with energy advisors to estimate the annual energy use of new homes and select potential energy efficiency upgrades.

In 2016–2017, NRCan launched the revised version of the EnerGuide Rating System to provide homeowners with more detailed information on how their homes use energy, including recommendations to help save energy and increase comfort. This information can also help with decision making when buying or selling a home. Ten provinces and territories have begun using this new version to deliver energy-efficient residential building practices.

Figure 4. EnerGuide program



EXPANDING ENERGY STAR® PORTFOLIO MANAGER

Right now buildings across Canada are already tracking and sharing their energy performance using the ENERGY STAR® Portfolio Manager benchmarking tool. This tool has benchmarked over 17,400 buildings, representing almost 200 million m^2 (23%) of commercial and institutional floor space in Canada that fall within energy efficiency standards.

The ENERGY STAR Portfolio Manager benchmarking tool provides an apples-to-apples comparison of buildings' energy performance while at the same time adjusting for regional differences such as weather, providing GHG emission metrics, and helping track trends. It is also used to support a range of building energy efficiency and sustainability programs.

In 2017, ENERGY STAR Portfolio Manager was expanded to include the ENERGY STAR score feature to more building types. The ENERGY STAR Certification program will launch in 2018 to recognize participating buildings that perform better than at least 75% of similar buildings in the country.

25% Canada boosted its **energy efficiency** between 1990 and 2014

800,000+ **efficiency retrofits** resulting from **EnerGuide home evaluations**

$38.5 BILLION **Canadians saved on energy bills** in 2014 as a result of **effiency improvements** since 1990

1,170,000 **homes rated** to date using the ENERGUIDE rating system

198 MILLION m^2 of **floor space** in Canada are **registered** in **ENERGY STAR Portfolio Manager**

90% of Canadians recognize **ENERGY STAR**

Sharing data and information

We have all heard the saying "what gets measured gets managed." Sharing energy use data is critical because it provides decision makers with transparent, reliable information. Tools such as EnerGuide and the ENERGY STAR® Portfolio Manager benchmarking tool provide home and building owners with information about how these structures use energy and can help owners make decisions about what improvements would be most cost-effective.

The Pan-Canadian Framework on Clean Growth and Climate Change calls on provinces and territories to adopt national tools and labelling schemes. In 2016–2017, the provinces and territories were working in partnership with NRCan to develop these to help Canadians access more information about the energy consumption of buildings across the country.

What is a petajoule?

A joule is a measure of energy. One joule is equivalent to the work required to produce one watt of power continuously for one second. One petajoule (PJ) is 1×10^{15} joules – a million billion joules. This is equivalent to the energy required by more than 9,000 households (excluding transportation requirements) over one year.

RETROFITTING EXISTING BUILDINGS

- by the numbers -

AS OF MARCH 2017, THE **ENERGUIDE RATING SYSTEM** INFRASTRUCTURE SUPPORTED MORE THAN 60 PROVINCIAL, TERRITORIAL, MUNICIPAL, UTILITY AND INDUSTRY HOME LABELLING PROGRAMS AND REGULATIONS ACROSS CANADA

ENERGUIDE

BETWEEN 2011 AND 2016, THE NRCAN OEE INITIATIVES FOR EXISTING HOMES SAVED

388,000 t OF GHGS AND 3.991 PJ OF ENERGY

— That is enough energy to provide electricity to more than 95,000 homes for one year

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2016–2017 RESULTED IN SAVINGS OF

138,000 t OF GHGS AND 1.72 PJ OF ENERGY

75% OF THE HOMES AND BUILDINGS

WE WILL LIVE IN 2030 HAVE ALREADY BEEN BUILT

AS OF MARCH 2017, **23%** OF COMMERCIAL AND INSTITUTIONAL FLOOR SPACE IS REGISTERED IN ENERGY STAR® PORTFOLIOMANAGER. THAT'S OVER **17,400 BUILDINGS BENCHMARKED**, REPRESENTING ALMOST 200 MILLION m^2 THAT FALL WITHIN ENERGY EFFICIENCY STANDARDS

A GOOD RETROFIT CAN HELP PEOPLE SAVE SUBSTANTIALLY ON THEIR ELECTRICITY AND WATER BILLS. FOR SOME, THAT COULD MEAN **SAVING MORE THAN $800 PER YEAR**

LOOKING FORWARD: INTRODUCING MODERN ENERGY CODES FOR EXISTING BUILDINGS

One of the most effective means to become more energy-efficient is to fix our homes and buildings that are already in place. Integrating energy efficiency in significant renovation plans for homes and buildings makes sense. It will create healthier and more comfortable homes and work places, while improving environmental outcomes and building performance, as well as saving on energy bills over time. Everybody wins. We can bring old buildings with us into the future through retrofits and requirements that meet smart and modern model energy standards. Right now, there is no national model energy code that applies to existing buildings.

Under the Pan-Canadian Framework, federal, provincial, and territorial governments will work to develop a model code for existing buildings. This is expected to be published by 2022, with the goal that provinces and territories adopt it. Development of the codes is a collaborative and consensus-based process that is informed by consultation with other orders of government, stakeholders, and Canadians. The process takes into account the cost-effectiveness and affordability of energy efficiency measures that could be included in the codes. The Government is also investing in projects that research, develop, validate, and demonstrate emerging technologies and renovation practices. The goal is to encourage their uptake by industry, provinces and territories while lowering the costs to build or renovate to higher energy efficiency levels.

Our next steps include:

- launching a recommissioning framework to optimize existing building operations
- funding research, development and demonstration projects to lower deep energy retrofit costs
- supporting efforts to ensure that model energy codes are implemented properly when they are adopted

Improving industrial energy efficiency

Canada's industrial sector is the most energy-intensive of our economy. In 2015, the industrial sector accounted for 39% of final energy use and emitted 36% of the GHG emissions related to final energy use. While investments in energy efficiency were once viewed as an added expense, Canadian companies are increasingly recognizing that energy efficiency can generate significant value through increased competitiveness, profitability, production and product quality. NRCan supports Canada's industrial sector to realize these opportunities through the adoption of energy management standards, energy-saving investments and the exchange of best-practices information.

HIGHLIGHTS FROM 2016–2017

- There are now 36 organizations in Canada certified to ISO 50001, a rigorous international standard for energy management systems.
- Four facilities in Canada participated in a North American energy management pilot project in 2016–2017 to implement ISO 50001.
- Canadian companies that have implemented ISO 50001 have achieved an average cumulative energy intensity improvement of nearly 10% within the first two years, resulting in up to $2 million in annual energy cost savings for large Canadian companies.
- ENERGY SUMMIT 2016 brought together over 300 business leaders and partners to drive adoption of energy managements systems and award high-performing facilities.

The OEE works to accelerate and maximize the uptake of energy management systems in Canada's industrial sector, through four main activities:

- Developing, launching and administering new and existing industry benchmarking, energy management and certification programs (e.g. ISO 50001)
- Providing cost-shared assistance to implement energy management system pilots
- Developing and maintaining a collaborative industry network (CIPEC, the Canadian Industry Partnership for Energy Conservation) and national and international partnerships
- Modernizing information products and delivery mechanisms, promoting energy efficiency best practices, building capacity and recognizing achievements

Industrial energy management

The Industrial Energy Management Program improves industrial energy efficiency by:

- Informing companies in Canada's industrial sector about the benefits of systematically managing their energy use
- Advancing the implementation of innovative energy management systems and practices in industrial facilities
- Elevating the importance of industrial energy efficiency in Canada

Working with partners: stakeholder networks

Stakeholder networks play an important role in advancing industrial energy efficiency by providing platforms to share information, access to financing, technical resources and support for implementation and monitoring. The Industrial Energy Management Program includes a number of partners, including:

- Canadian Industry Partnership for Energy Conservation (CIPEC)
- International networks and partnerships including ISO 50001, Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC) networks
- Federal, provincial and territorial governments, agencies and departments
- Government-wide initiatives encouraging horizontal collaboration
- Industry associations

IMPROVING INDUSTRIAL ENERGY EFFICIENCY

- by the numbers -

UP TO 45%
OF THE OPERATING COSTS IN THE INDUSTRIAL SECTOR
ARE ENERGY-RELATED

MORE THAN 70%
OF ECONOMIC INDUSTRIAL ENERGY SAVINGS
REMAIN UNTAPPED FROM EXISTING TECHNOLOGIES,
ACCORDING TO THE INTERNATIONAL ENERGY AGENCY

38% OF BUSINESSES HAVE USED
GOVERNMENT AND UTILITY PROGRAMS

75% OF EXECUTIVES BELIEVE
ENERGY EFFICIENCY COULD GO FURTHER

IN 2015, **CANADIAN INDUSTRY SAVED**
$3.2 BILLION IN ENERGY COSTS
THROUGH ENERGY EFFICIENCY INVESTMENTS
THAT LOWERED ENERGY USE BY 298 PJ FROM 1990–2015

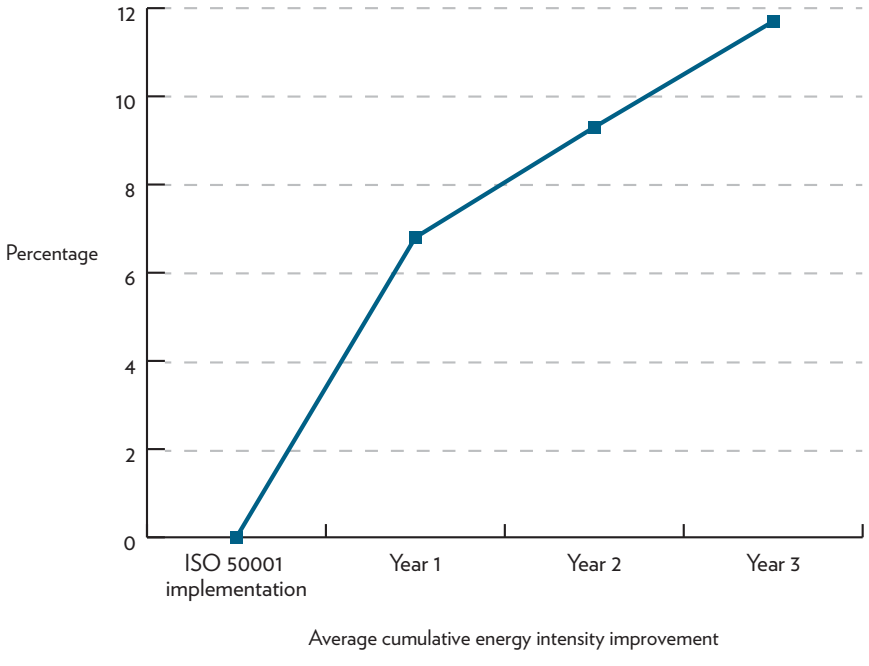
Energy management systems

Accelerating the uptake of energy management systems is a priority because they can help us achieve regional and national climate and energy goals. The Pan-Canadian Framework on Clean Growth and Climate Change highlighted ENERGY STAR® for Industry, ISO 50001 and Superior Energy Performance® as key programs and tools to help businesses track, analyze and improve their energy efficiency. In fact, if just 5% of Canada's total industrial energy use came from ISO 50001-certified facilities by 2030–2031, it would save 80 to 110 PJ annually. These energy savings translate into:

- $1 billion to $1.4 billion in cost savings for Canadian industry
- 6 megatonnes (Mt) of annual reductions in GHG emissions
- taking 1.6 million to 2.4 million cars off Canadian roads annually

Energy management systems increase competitiveness. They are inexpensive, can be implemented quickly, produce results immediately, generally have payback periods of less than two years, and continually generate savings. Energy management systems can ultimately save up to 30% of the total energy use in industry and up to 40% in commercial buildings.

Figure 5. Impact of ISO 50001 certification in Canadian industry



LOOKING FORWARD: INDUSTRIAL ENERGY MANAGEMENT

In 2017, NRCan's OEE will be representing Canada as we begin our term as Country Lead of the Energy Management Working Group, an international initiative of 19 member countries of the Clean Energy Ministerial (CEM) that aims to accelerate global adoption of energy management systems.

In 2017–2018, we will launch the ENERGY STAR® for Industry Certification program and the ENERGY STAR® Challenge for Industry program. In 2018–2019, we will expand the suite of tools offered by the Industrial Energy Management Program by launching the Superior Energy Performance® (SEP) certification and the 50001 Ready program.

Also in 2018–2019, we will co-host the ENERGY SUMMIT 2018 conference with the Excellence in Manufacturing Consortium, as well as supporting the Commission for Environmental Cooperation's (CEC) launch of a pilot implementation of ISO 50001 in manufacturing supply chains.

In support of the voluntary Industrial Energy Management Program, we will continue to undertake the following activities on an ongoing basis:

- Develop sector-specific Energy Performance Indicators to support the ENERGY STAR® for Industry Certification program
- Provide cost-shared assistance for pilot projects to accelerate industry uptake of energy management systems
- Produce technical publications and tools to build energy management capacity within industry
- Publish case studies and newsletter articles to share best practices and lessons learned on energy management system implementation

Improving energy efficiency of appliances and equipment

Canadian consumers, businesses and public institutions buy energy-efficient products to save energy, lower their utility bills and reduce their environmental impact. These products range from small electronics to appliances to motors used in industrial production processes. NRCan helps transform the market for high performance, energy-efficient appliances and equipment through initiatives supporting manufacturers, retailers and consumers.

HIGHLIGHTS FROM 2016–2017

- The appliances and equipment program resulted in savings of 5.06 PJ of energy – that's enough to power about 320,400 electric cars – and avoided emission of 0.52 Mt of GHGs.
- Energy performance will increase for 20 categories of appliances and equipment in Canada through the release of the *Energy Efficiency Regulations, 2016*. Cost-benefit analyses indicate that Canadian residents will save about $1.8 billion in energy costs by 2030, while reducing GHG emissions by about 0.7 Mt.
- More than 70 types of products were eligible for ENERGY STAR® certification in Canada in 2016.

SHOW AND TELL: LABELS AND REGULATIONS

Disclosing energy consumption with EnerGuide

The EnerGuide label helps consumers make better purchasing decisions by providing verified data about a product's energy performance and making it easy to compare the energy performance of different models of a product. The label can be found on home appliances and room air conditioners, furnaces, water heaters, gas fireplaces, central air conditioners and heat pumps.

Recognizing top performers with ENERGY STAR®

The ENERGY STAR label identifies the top 15% to 30% of energy-efficient products of their class. It tells consumers that the model they are buying will use less energy without compromising performance. The ENERGY STAR Most Efficient designation is offered each year to a selection of products in the top 5% of energy-efficient products of their class.

In 2016, the ENERGY STAR program launched its Facebook and Twitter social media presence, in addition to celebrating the first ever ENERGY STAR Day in Canada.

Innovation with Carrot Rewards

Early in 2017, the OEE partnered with the Public Health Agency of Canada to pilot its Carrot Rewards application to share energy efficiency information with Canadians and generate interest in ENERGY STAR social media platforms. This resulted in a dramatic increase in followers, positioning ENERGY STAR Canada as leader in Canada's energy efficiency movement.

ENERGY STAR®: Continuous improvement

The ENERGY STAR equipment program in Canada has grown to support more than 70 product categories since its beginning in 2001. Each year new product categories are added and existing ones are reviewed and updated to ensure they continue to offer consumers the features and savings they have come to expect from the program.

Over 83% of consumers, including home owners, businesses, and public sector organizations know that they can find products and equipment that use less energy and offer the same or better performance and features simply by looking for the little blue certification symbol on products in these categories:

- appliances
- heating, ventilation and cooling
- windows and doors
- office and data centre equipment
- home electronics
- lighting
- commercial cooking products
- laboratory equipment

ENERGY STAR® DRIVES INNOVATION: THE CLOTHES DRYER SUCCESS STORY

For decades, clothes dryer technology remained the same.

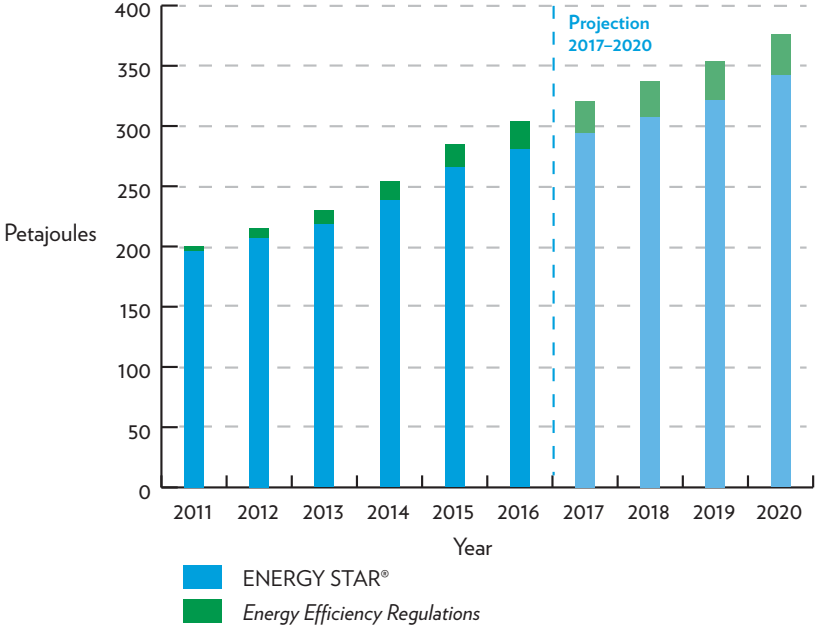
Dryer technology has been static since the 70s—with virtually no changes in efficiency for almost 30 years. In 2013, the ENERGY STAR program issued an "emerging technology" award to any manufacturer that could commercialize and issue for sale a clothes dryer that was at least 50% more efficient than a model that simply meets minimum energy performance standards.

Two manufacturers received the award—demonstrating that significant savings could be achieved with technological innovation. The ENERGY STAR program subsequently issued a new ENERGY STAR product specification for dryers. Available since 2015, ENERGY STAR clothes dryers are 30% to 40% more efficient than conventional ones, and their market share has steadily increased. Today, consumers can find on the market two new types of dryers – heat pump dryers, and condensing dryers – as well as regular vented dryers with added features, such as heat sensors and automatic controls.

THE FUTURE OF ENERGY STAR®: NETWORKED AND AUTOMATED

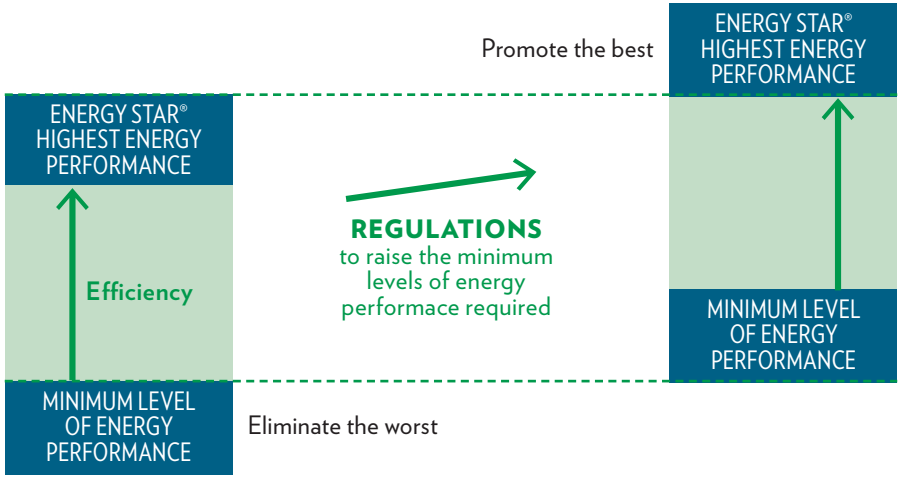
Energy efficiency in the future is all about making savings an automatic feature of rapidly evolving, sophisticated new technologies. This potential for automation is furthered by the growing numbers and capabilities of networked products.

Figure 6. Cumulative savings in petajoules



Regulations

Energy efficiency regulations are recognized as one of the most cost-effective tools for reducing GHG emissions and are used in almost 50 countries as a cornerstone of national climate change policies. The OEE drives energy efficiency and innovation with regulations to eliminate products with the lowest level of efficiency and promote those with the highest.



Canada's *Energy Efficiency Regulations* (the Regulations), administered by NRCan under authority of the *Energy Efficiency Act*, set minimum energy performance standards for products. Products must be certified to enter Canada for sale or lease or to be traded across provincial borders. From time to time, NRCan amends the Regulations to add new products or to update efficiency standards.

The March 2016 *U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership* saw a renewed binational commitment to align energy efficiency standards by 2020 and expand cooperation on the ENERGY STAR® program. This was quickly followed by the *Leaders' Statement on a North American Climate, Clean Energy, and Environment Partnership*, committing to better alignment and improvement of appliance and equipment efficiency standards. The goal is to create 6 energy efficiency standards or test procedures for equipment by the end of 2017 and a total of 10 standards or test procedures by the end of 2019.

Domestically during this time, Canada's *Energy Efficiency Regulations* were being discussed as a part of a federal-provincial-territorial framework on market transformation at the Energy and Mines Ministers' Conference (EMMC) August 2016 meeting. The EMMC framework and its associated action plan laid the groundwork for ambitious market transformation initiatives for space and water heating and residential windows. This was complemented by the Pan-Canadian Framework on Clean Growth and Climate Change announcement in December 2016. In this announcement, the federal government committed to setting new standards for heating equipment and other key technologies to the highest level of efficiency economically and technically achievable.

Working with partners: the Regulatory Cooperation Council

We work with the U.S. to align energy efficiency standards among our two countries. Under the Regulatory Cooperation Council, NRCan and the U.S. Department of Energy established the goal of working toward aligning new and updated energy efficiency product standards, test methods for energy-using equipment, and codes and standards for the use of alternative fuels in transportation, where it is practical to do so. Coordinating our regulatory efforts will help reduce costs for businesses and consumers in both our countries.

These frameworks set the stage for NRCan's ambitious regulatory agenda:

- The new *Energy Efficiency Regulations, 2016* (also called Amendment 13) were published on December 28, 2016, in the *Canada Gazette*, Part II, and came into force on June 28, 2017. This amendment was significant in two aspects. First, it updated existing energy efficiency standards for 20 product categories to align with requirements in the U.S. Secondly, it was completely rewritten to remove references to obsolete and out-of-date standards and make it easier for stakeholders to find and understand the requirements that apply to them.
- On April 30, 2016, NRCan published a Notice of Intent in *Canada Gazette*, Part I to develop Amendment 14 to the Regulations, commencing pre-consultation with industry through technical bulletins and webinars on NRCan's website.
- Other products that would eventually become parts of amendments 15 and 16 were included as part of NRCan's published **Forward Regulatory Plan** on-line. They include the mention of several heating products with leading energy efficiency standards being proposed for North America.

LOOKING FORWARD: APPLIANCES AND EQUIPMENT

Stay tuned for new ENERGY STAR® products and updates to existing ones with features such as connected controls, smart features that allow products to offer users performance feedback, and interoperability with other devices and home control centres.

NRCan will continue to work closely with provincial and territorial governments to improve the energy efficiency of equipment through a combination of market transformation activities and regulations. This work will focus on reducing energy use from space and water heating – the largest end uses in the built environment.

VERIFICATION

The Regulations outline the responsibilities of dealers of prescribed products that are imported into Canada or shipped from one Canadian province to another for the purpose of sale or lease. NRCan relies on several monitoring strategies:

- dealer self-monitoring
- energy efficiency and import reporting
- product testing
- collaboration
- tips and complaints

To monitor compliance with the Regulations, NRCan collects data from energy efficiency reports submitted by dealers before a product enters the market and from import documents provided to the Canada Border Services Agency at the time of importation. When a regulated product enters Canada, the import data is compared with the energy efficiency report data to confirm that the product meets the required energy performance levels. Information on the data requirements of the energy efficiency and import reports can be found on NRCan's **Guide to Canada's *Energy Efficiency Regulations*** website.

Between April 1, 2016, and March 31, 2017, NRCan processed almost 3.6 million records relating to the importation of regulated energy-using products to Canada. More than 10.1 million new or revised model numbers were submitted to NRCan for entry into the department's equipment database from dealers' energy efficiency reports.

Federal Buildings Initiative

The federal government is doing its part to contribute to Canada's action on climate change. It owns and operates many buildings and vehicles. This large footprint means we have a responsibility and opportunity to reduce our emissions and energy use.

HIGHLIGHTS FROM 2016–2017

- The Federal Buildings Initiative program supported the development of two new energy retrofit projects, for a total of 15 projects from 2011–2017.

Working with partners toward our shared targets

In October 2016, the **Federal Sustainable Development Strategy** issued new leadership emissions reduction targets for government operations. The targets were increased to 40% GHG reduction by 2030, ideally by 2025, based on 2005 levels. Also, the Treasury Board Secretariat set up the Centre for Greening Government, responsible for setting up policy, tracking progress, and coordinating the government's effort. Budget 2017 recognized NRCan's support role to departments by providing funding from 2017–2028 to expand the services offered. Since April 2017, NRCan's services have been provided under the new name "Greening Government Services."

REDUCING OUR FOOTPRINT

In 1991, the Government of Canada launched the Federal Buildings Initiative (FBI), operated by NRCan's OEE.

The FBI's tools and services have been used to upgrade thousands of square metres of federal buildings, leading to improved work environments, reduced GHG emissions and millions of dollars in energy and operational cost savings.

Federal organizations can receive technical advice and services for their facilities to help them meet their emissions reduction targets. Support includes:

- Providing information and awareness through networking (Community of Practice sessions)
- Providing technical tools and support to quantify energy and GHG reduction potential, plan, and implement projects
- Offering technical support to develop projects and establish project financing through energy performance contracts, contracting and monitoring and verification
- Celebrating leaders through case studies and awards

FEDERAL BUILDINGS INITIATIVE

- by the numbers -

SINCE 1991, THE **FEDERAL BUILDINGS INITIATIVE** HAS HELPED THE GOVERNMENT OF CANADA TO LEAD BY EXAMPLE, **FACILITATING RETROFITS IN OVER 9 MILLION m² OR ONE THIRD OF CROWN-OWNED FLOOR** AREA AND ATTRACTING OVER **$345 MILLION IN PRIVATE SECTOR INVESTMENTS**

THESE PROJECTS HAVE RESULTED IN AN IMPRESSIVE **15% TO 20% ENERGY SAVINGS ON AVERAGE**. THEY HAVE REDUCED THE IMPACT OF GOVERNMENT OPERATIONS ON THE ENVIRONMENT AND HAVE **SAVED $45 MILLION ANNUALLY** THAT WE'VE REINVESTED INTO PROGRAMS FOR CANADIANS

IN 2016–2017, NRCAN'S FEDERAL BUILDINGS INITIATIVE **SUPPORTED TWO NEW ENERGY RETROFIT PROJECTS**, FOR A TOTAL OF 15 SINCE 2011. THE FBI ALSO HELD **SEVEN COMMUNITY OF PRACTICE SESSIONS**

LOOKING FORWARD: GREENING GOVERNMENT SERVICES

Budget 2017 provided funding until 2028 to broaden NRCan's services to federal organizations and help them meet their target for reducing GHG emissions. NRCan is developing services beyond those previously noted to include facilities (new and existing) and fleets and the following additional services:

- Supporting the establishment of decision-making structures, starting from the highest levels
- Providing information and awareness through networking (up to 12 Community of Practice sessions)
- Funding technical training (web and classroom)
- Enhance the technical support for project development, including emerging technologies, implementation and monitoring and verification
- Encouraging federal organizations to procure energy-efficient equipment
- Tracking energy use and fuel consumption for federal fleet vehicles, to inform recommendations on lower emitting options based on real world data (e.g. fuel switching, fleet right-sizing, and driver training).

Driving the transition to lower-carbon transportation

NRCan works to reduce energy use and GHG emissions from the transportation sector by informing Canadians, businesses and governments about fuel-efficient, lower-carbon vehicles and driving behaviours. We provide tools, training and technical expertise to commercial users seeking to green their fleets and operations.

HIGHLIGHTS FROM 2016–2017

- NRCan administered SmartWay in Canada to save more than $90 million in annual fuels costs for 40,500 Canadian trucks in 2016. SmartWay works with freight carriers and shippers to benchmark operations, track fuel consumption and improve annual performance in the clean and efficient transport of goods.
- We launched the program, solicited proposals, and selected 31 projects for funding, to support the deployment of EV charging and alternative fuel refuelling stations. Once completed, these projects will provide over 100 new Level-3 EV fast chargers along a coast-to-coast network, 7 natural gas stations along key freight corridors, and 3 hydrogen stations in strategic urban centres, exceeding the program targets for all fuel types.
- We began developing nine Canada-U.S. binational codes and standards for electric and alternative fuel vehicles and charging and refuelling infrastructure.
- In the final year of our $1.5 billion ecoENERGY for Biofuels program, we completed the remaining 5 projects, prepared for program close-out and issued final payments.

EnerGuide label for vehicles

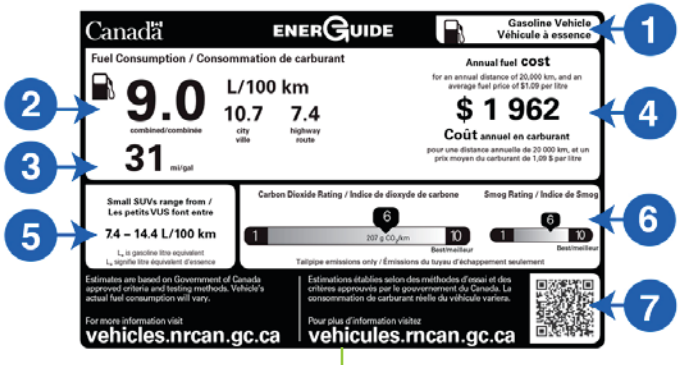
Since 1977, we have provided Canadians with new model fuel consumption ratings to help them make informed decisions about purchasing fuel-efficient vehicles. The ***Fuel Consumption Guide*** is available on the NRCan website.

In 1998, we launched the EnerGuide label for vehicles, a voluntary fuel consumption labelling initiative. The label is standard across the industry and easy for consumers to recognize. It was developed by NRCan with the Canadian Vehicle Manufacturers Association and the Association of International Automobile Manufacturers of Canada (now Global Automakers of Canada), with support from the Canadian Automobile Dealers Association.

The EnerGuide label for vehicles has appeared on new light-duty vehicles since January 1999. The original EnerGuide label showed fuel consumption ratings for city and highway driving, fuel type and an estimated annual fuel cost for that particular year and model of vehicle.

Since then, the information we provide to consumers has changed significantly. A redesigned EnerGuide label for vehicles was introduced with model year 2016 vehicles. The labels that appear on new cars and light trucks sold in Canada are now specific to vehicle fuel type and technology. The information is based on the 5-cycle fuel consumption testing procedure that better approximates typical driving conditions and styles. The new labels also provide more comprehensive fuel consumption and environmental information, such as CO_2 emissions and smog ratings. Now, about 1.2 million new cars and light trucks sold in Canada have an EnerGuide Label.

We have also focused our efforts on detailed studies and in-depth analysis to better understand the consumer new vehicle purchasing process. Key findings from these studies will help inform our strategies to more effectively engage consumers throughout the buying process, to encourage informed fuel-efficient purchasing decisions. We will also use social media and rewards programs to nudge Canadians toward more energy-efficient and lower-carbon vehicle options.



1. **Vehicle technology and fuel** - text and a related icon identifying the type of fuel used by the vehicle
2. **Fuel consumption** - a prominent combined fuel consumption rating and separate city and highway fuel consumption ratings in litres per 100 kilometres (L/100 km). The combined rating reflects 55% city and 45% highway driving.
3. **Fuel economy** - the combined rating expressed in miles per imperial gallon (mi/gal)
4. **Annual fuel cost** - an estimate based on the combined fuel consumption rating, 20,000 km driven and the fuel price indicated
5. **Vehicle class range** - the best and worst combined fuel consumption ratings of vehicles in the same class
6. **CO_2 and smog ratings** - the vehicle's tailpipe emissions of CO_2 and smog-forming pollutants rated on a scale from 1 (worst) to 10 (best). The CO_2 emissions, in grams per kilometre driven, are shown on the CO_2 bar.
7. **QR code** - a Quick Response code that links smartphone users to NRCan's **Fuel Consumption Ratings Search Tool**

Working with partners: The SmartWay Transport Partnership

The SmartWay Transport Partnership helps businesses reduce fuel costs while transporting goods in the cleanest, most efficient way possible. SmartWay works with freight carriers and shippers committed to benchmarking their operations, tracking their fuel consumption and improving their annual performance.

About SmartWay

- Created in 2004 by the U.S. Environmental Protection Agency and the freight shipping industry
- Has been delivered in Canada by NRCan since 2012
- Over 3,400 members across North America
- Represents more than 400 Canadian partners and over 41,000 trucks

Milestones

- Tri-lateral MOU between Canada, the U.S. and Mexico was signed for collaborative delivery of the SmartWay Program to improve freight transportation throughout North America

Figure 7. Average CO_2 emissions for SmartWay carrier companies

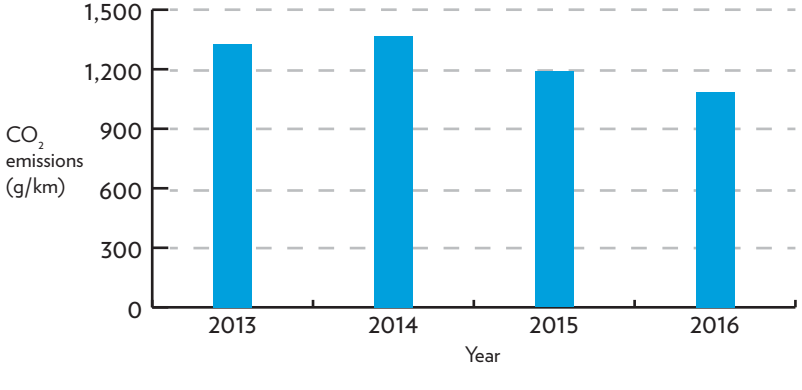


Figure 7 shows the average CO_2 emissions in grams per kilometre for all carrier companies hired by Canadian SmartWay logistics providers in all modes of transportation. Since 2013, there is a noticeable downward trend in the overall CO_2 emissions calculated for logistics providers. The 18% decrease in CO_2 emissions can be attributed to logistics companies hiring more SmartWay certified carriers. This trend is expected to continue as SmartWay logistics providers become more conscious of fuel use.

LOOKING FORWARD →

- With SmartWay deployed across North America, we are now working with Brazil, Argentina and Chile to share best practices and develop aligning programs for South America.
- In response to industry feedback, SmartWay is currently developing a Small Carrier App that will allow truck carriers with fewer than 10 trucks to fill out a simplified version of the Truck Tool on-line.
- A Heavy Duty Pathway is currently in development to determine ways to reduce GHG emissions and overall costs linked to freight transportation.
- In 2018, SmartWay will launch a new grants and contributions program to assist fleets and supply chain and logistics companies to identify and implement emission reduction measures.

Moving us toward the next generation of vehicle infrastructure

We are funding the deployment of a network of EV fast chargers along Canada's highway system, natural gas stations along key freight corridors, and hydrogen stations in metropolitan centres.

In 2016–2017, 15 projects were started as part of the first phase of the Electric Vehicle and Alternative Fuel Infrastructure program. The first seven projects supporting the construction of 25 new fast-charging stations in Ontario by AddÉnergie were announced in December 2016.

We also began developing nine binational codes and standards for electric and alternative fuel vehicles and charging and refuelling infrastructure in coordination with the U.S. Department of Energy. Alignment of codes and standards ensures that these lower-carbon vehicles can travel across jurisdictions, with the comfort of knowing that refuelling technologies and vehicle components will be the same.

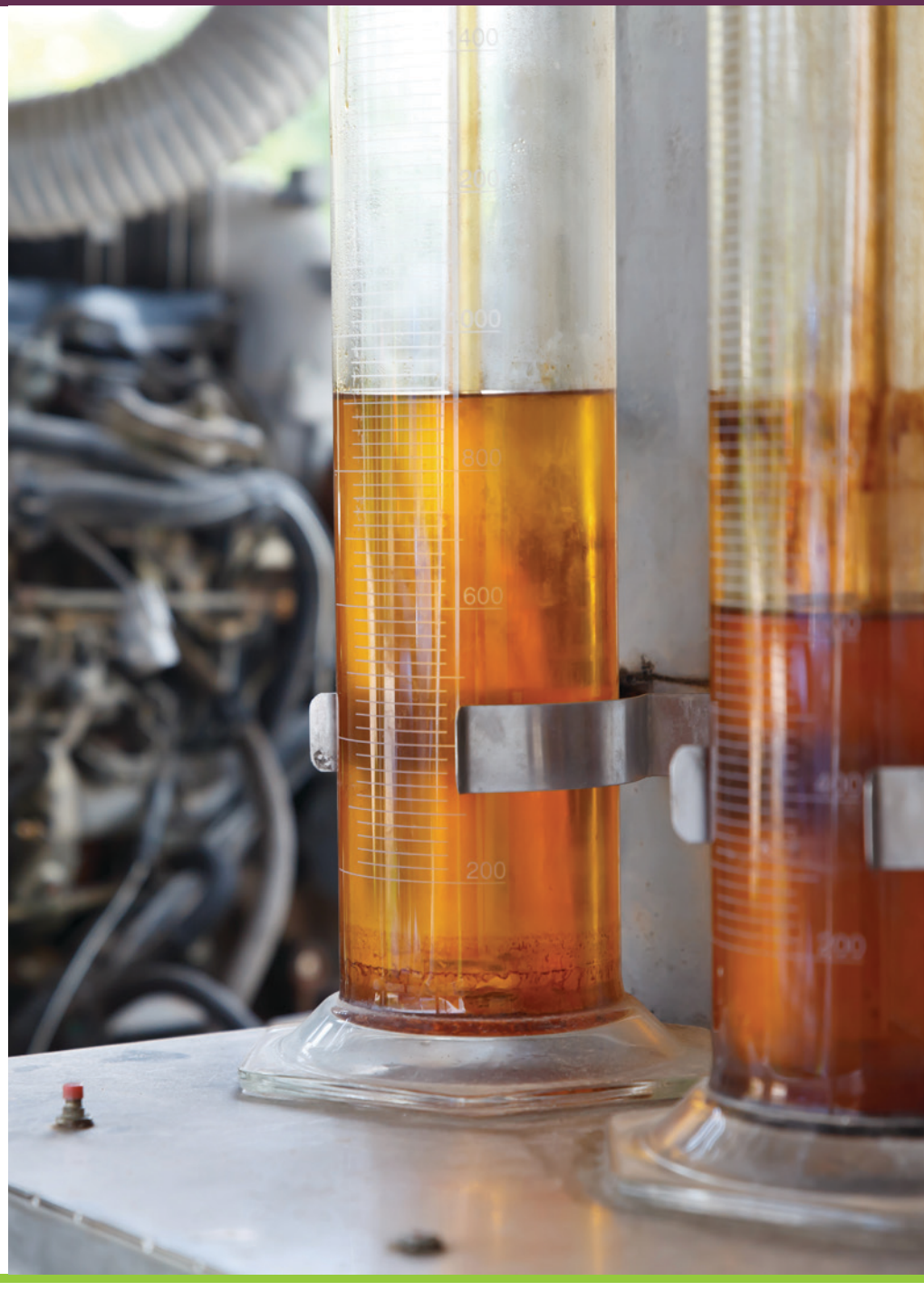
In addition, we began work to develop a Canada-U.S. map of locations of EV charging stations and alternative fuel stations, in collaboration with the U.S. Department of Energy.

Alternative fuels

This year saw the end of NRCan's nine-year ecoENERGY for Biofuels program, which was created to help establish the domestic biofuels industry. The program was designed to be time-limited with declining incentives, ending in 2017.

Thanks to both federal and provincial programming, the domestic industry grew from a production capacity of 785 million litres of ethanol and 90 million litres of biodiesel in 2008, to a production capacity of 1,800 million litres of ethanol and 675 million litres of biodiesel in 2017.

This domestic industry is well situated to support the new Clean Fuel Standard, which is currently under development and will encourage the use of cleaner fuels in many sectors of the economy, including transportation building, and industry.



How do we compare?

The *Energy Efficiency Act* requires that once every three years, "the Minister shall demonstrate the extent to which the energy efficiency standards prescribed under this Act are as stringent as comparable standards established by a province, the United Mexican States, the United States of America or a state of the United States of America." This analysis was last conducted for the 2013–2014 period and reported in the 2013–2015 *Report to Parliament under the* Energy Efficiency Act.

To address this requirement for the 2016–2017 period, an internal analysis evaluated the minimum energy performance standards (MEPS) for several jurisdictions. The standards were reviewed for Canada's federally regulated products as of March 31, 2017, and comparable standards in the U.S., Mexico, British Columbia, Ontario, Quebec, Manitoba, Nova Scotia and New Brunswick. While there have been many standards developed in the U.S. at the state level, U.S. federal standards pre-empt state standards. Consequently, the stringency comparison was made on a national basis.

Table 1. **Comparison of the stringency of Canada's standards, as of March 31, 2017**

	U.S.	Mexico	B.C.	Ont.	Que.	Man.	N.S.	N.B.
Canada's standards are equivalent.	29	3	4	35	5	1	14	18
Canada's standards are more stringent.	3	5	7	1	15	0	15	14
Canada's standards are less stringent.	7	2	1	10	0	1	2	2
Total standards available for comparison	39	10	12	46	20	2	31	34
Percentage of Canadian standards at least as stringent as comparable standards	**82%**	**80%**	**92%**	**78%**	**100%***	**50%**	**94%**	**94%**

* Note: With the announcement of Quebec's amendment on May 17, 2017, the percentage of Canadian standards at least as stringent as comparable standards in that province would be about 90%.

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