

Energy Labelling for New Homes

FAQs and Model Bylaw Amendments



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Executive summary

This report presents model building bylaw amendment for the energy labelling of new low-rise residential houses. The bylaw amendments were developed for the City of Dawson Creek, B.C., and could be easily adapted for use by other local governments. The labelling requirement was designed as part of a broader process including research and workshops with local real estate stakeholders and local government staff in Dawson Creek, Campbell River, and Fort St. John.¹

The amendments would require the builder of a new single-family house, duplex, townhouse or row house to get an EnerGuide label for the home to obtain permits. Before the house is built, the builder would get an EnerGuide energy pre-assessment, based on building plans, to obtain a construction permit. Once the building is constructed, a final energy assessment with on-site inspection and blower door test would be required to obtain the occupancy permit (Figure 1). The EnerGuide label would be affixed to the electrical panel or water heater in the building.

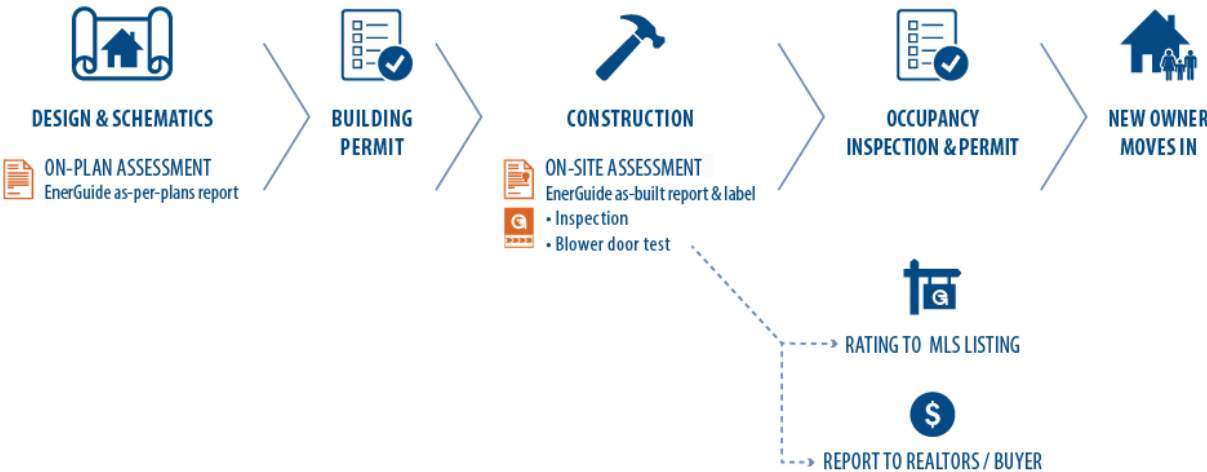


Figure 1. Home energy labelling requirement process for new homes

The objective of the bylaw is to enable homebuyers to assess and compare the energy performance of houses they are considering for purchase. To facilitate access to this information, the amendment explicitly state that the energy reports should be shared with realtors so that they, in turn, can make it available to prospective buyers. In the case of custom-built homes, the detailed report based on plans should be made available to the party commissioning the home before the beginning of construction, so that possible energy efficiency upgrades can be considered.

¹ See Pembina Institute, *Home Energy Labelling Requirement at Point of Sale: Pilot Program Design* (2012). <http://www.pembina.org/pub/2400>

In B.C., local governments currently have the jurisdiction to implement the new home labelling requirement. Implementation, monitoring and enforcement are straightforward as they are tied to existing permitting processes.

Two local issues, while not show stoppers, should be considered before implementation:

Availability of certified energy advisor: Local governments interested in adopting a labelling policy should ensure that energy advisors servicing their area have the capacity to meet the additional demand for the assessment of *new* homes.² Local government may consider having their own inspectors certified as energy advisors, or supporting partnerships between local organizations and external energy advisors to carry out the necessary energy modelling and audits.

Presence of an EnerGuide rating field in MLS: Of the six real estate boards in B.C., only the Victoria Real Estate Board has added a field for the EnerGuide rating to their Multiple Listing Service (MLS) property listing system. While having a dedicated field on MLS is not a necessary condition for the implementation of a labelling bylaw, it is an important tool to help achieve its objective of consumer education and market transformation. We therefore recommend that communities interested in advancing a labelling bylaw work with their local Real Estate Board to add an EnerGuide rating field to the real estate listing page. Inclusion in the MLS listing is, however, not a necessary condition for a labelling bylaw and can follow its adoption.

As the intent of the labelling program is to have energy information available to homebuyers, home energy labelling of *existing* homes may also be considered (see Appendix F), particularly following successful implementation of the new home labelling program. Once a labelling program for new houses is established and financing tools (such as Pay-As-You-Save-BC) are in place to help homeowners finance energy upgrades, local governments or the province could consider extending the labelling requirement to existing buildings.³

² Under the current EnerGuide rating system, not all energy advisors are certified to assess new home; new home assessments requires a specific certification process. This distinction will likely be abolished with the next generation system, under which all advisors should be certified to assess both new and existing homes.

³ see *Home Energy Labelling Requirement at Point of Sale*.

1. Introduction

Through better building envelopes and heating systems, we have the technology to build homes that require very little energy to operate; nevertheless, at this time, buildings still account for 35% of community greenhouse gas emissions in B.C. In order to meet our community and provincial climate targets (33% below 2007 by 2020 and 80% by 2050), we need to change expectations about home energy efficiency, and radically improve the performance of new and existing buildings in the next decade.

The upcoming amendment to the 2012 building code, introducing Section 9.36 on Energy Efficiency, offers modest improvements on the performance of new residential homes,⁴ but not on the scale required to meet commonly adopted community targets, such as those that match the provincial target of a 33% reduction in carbon pollution by the year 2020.⁵ More stringent efficiency standards and/or market demand for better-than-code buildings will be required.

Broad adoption of home energy labelling is a necessary step to integrate energy efficiency considerations more fully in the housing market and provide a structure for better regulations. While not sufficient in and of itself to drive these changes, home energy labelling provides the foundational information and shared language to enable a shift in expectation for housing. It provides customers and real estate stakeholders with validated and comparable information to make informed decisions regarding home energy efficiency, giving customers the options to protect themselves against energy price rises. The EnerGuide rating of a home provides a simple point of reference to compare buildings to each other, while the associated report allows homebuyers to factor energy costs and greenhouse gas emissions into their decisions when evaluating different properties. By providing tailored suggestions about cost-effective energy upgrades, an energy assessment can increase the likelihood that a developer or buyer will invest in such upgrades. The energy assessment also provides key information about the state of the building stock, enabling local sustainability planners to better assess the need for specific programs.

1.1 Objectives of the home energy labelling amendments

The proposed bylaw amendments aim to advance four objectives:

- **Provide validated consumer information:** provide standardized information to homebuyers, allowing them to easily compare the energy efficiency of different homes when making purchase decisions. This could help to ensure that energy efficiency measures are properly valued and incented by the housing market.

⁴ Gary Proskiw, *Cost and Benefit Analysis of Proposed Changes for Energy Efficiency in Housing and Small Building in the National Building Code*, prepared for National Research Council of Canada (2011). [http://www.housing.gov.bc.ca/building/green/energy/Cost and Benefit Analysis of Proposed Changes for Energy Efficiency.pdf](http://www.housing.gov.bc.ca/building/green/energy/Cost%20and%20Benefit%20Analysis%20of%20Proposed%20Changes%20for%20Energy%20Efficiency.pdf)

⁵ Relative to 2007 levels.

- **Improve public energy literacy:** increase awareness about home energy efficiency by making it part of the discussion in the process of buying and selling a home.
- **Improve quality of building stock and uptake of energy efficient technologies:** provide builders/developers/clients with timely information about possible energy upgrades before construction begins.
- **Provide home energy data for planning purposes:** the energy assessment results provide unique information on the building stock in the community; this data could help local planners in designing policies and programs to improve the energy performance of the building stock, supporting community goals on climate change, air quality and energy poverty/housing affordability.

The proposed amendments serve these four objectives by meeting the following requirements:

1. ensuring that new construction has a preliminary assessment based on construction plans
2. requiring builders to share the results with the intended homeowner, if the intended homeowner is known at the time of construction (i.e. for custom-built homes)
3. ensuring that a final energy assessment is conducted once the house is built and a rating assigned and displayed within the house
4. encouraging the energy rating to be made available to realtors or other parties engaged to sell the house
5. requiring builders to provide the EnerGuide report data to the city as part of the permitting process

Table 2 in Appendix B outlines how these requirements are achieved through the proposed building bylaw amendments.

1.2 Purpose and structure of this report

The purpose of this report is to make available to other local governments a model bylaw amendment developed in partnership with the City of Dawson Creek for the labelling of new residential construction. Through work with their planning and building code enforcement departments, we have established that the simplest way to require labelling of new homes would be through an amendment to their building bylaw.

This report contains:

- Chapter 1: purpose of labelling, objectives of the amendments, and structure of the report
- Chapter 2: summary of the amendments and program elements
- Chapter 3: frequently asked questions regarding labelling
- Chapter 4: local issues to consider before implementing a labelling requirement
- Chapter 5: conclusion

Some additional materials are presented in appendices:

- Appendix A: text of the proposed amendments to the Dawson Creek building bylaw
- Appendix B: details on the rationale for each added clause, and linkages to other provisions in the existing building bylaw

- Appendix C: bylaw excerpts from other local governments in Canada that have labelling requirements
- Appendix D: legal analysis regarding whether local government in B.C. have jurisdiction to require labelling
- Appendix E: key features of the EnerGuide rating system for houses.
- Appendix F: options for labelling programs for existing homes

2. Program design

Requirements for new home energy labelling can be added to existing building bylaws and implemented through existing permitting and inspection processes, facilitating implementation and enforcement. Local governments in B.C. currently have the jurisdiction to implement the new home labelling requirement (Appendix D).

The program design for new home labelling would require two energy assessments tied to permitting and inspections for single-family and duplex homes, townhouses and row houses (Figure 2).

First, the builder of a new single-family house, duplex, townhouse or row house would get an EnerGuide energy pre-assessment based on building plans in order to obtain a building permit.

Second, a final energy assessment with on-site inspection and blower door test would be required to obtain the occupancy permit. The EnerGuide label would be affixed to the electrical panel or water heater in the building.

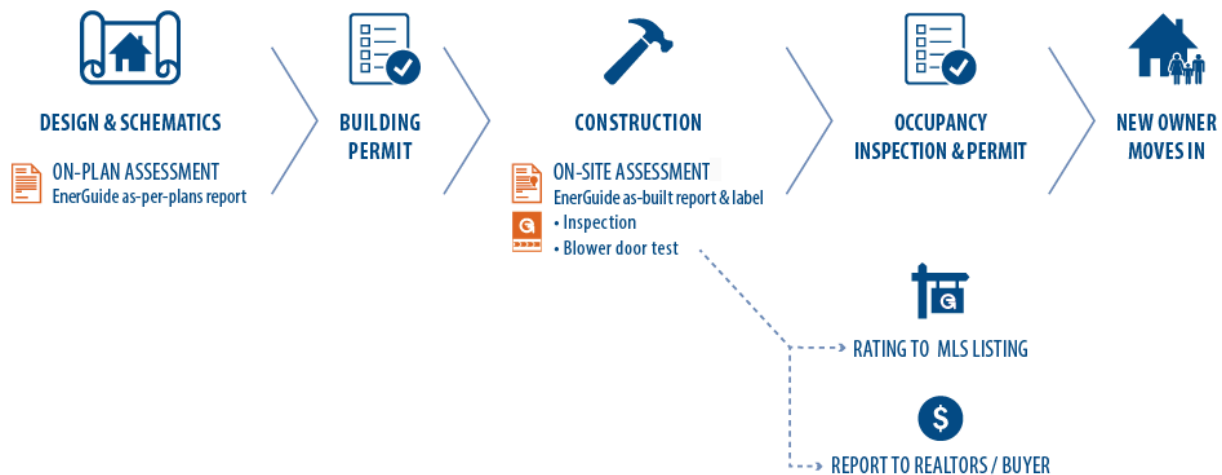


Figure 2. Home energy labelling requirement process for *new* homes

For custom-built houses, the energy assessment reports based on plans should be made available to the buyer so that they can consider potential upgrades before the house is built. If the house is to be put for sale on the market, the final report should be made available to the realtor so that the information can be passed on to prospective buyers.

2.1 Scope of bylaw amendments

This section provides an overview of the necessary building bylaw text amendments to require new home energy labelling for single-family, duplex, townhouse and row houses. Amendment text is shown in *italics*. Appendix A uses Dawson Creek’s Building Bylaw to demonstrate how to integrate the text amendments within an existing building bylaw, including the checklist of requirements builders must provide to obtain a building permit.

2.1.1 Definitions

Two EnerGuide reports are generated for new home assessments: one at the building plan stage, and the second after a site visit and blower door test following home construction. They are defined in the bylaw amendment as follows:

“EnerGuideTM as-per-plans report” means the EnerGuideTM rating and builder upgrade plan prepared by a certified EnerGuideTM for New Houses energy advisor from plans for the new house, pursuant to Natural Resource Canada’s EnerGuideTM Rating Service;

“EnerGuideTM as-built report” means the EnerGuideTM for New Houses Energy Efficiency Evaluation Report, along with rating and label, prepared by a certified EnerGuideTM for New Houses energy advisor, pursuant to Natural Resource Canada’s EnerGuideTM Rating Service;

New homes may be built on speculation or custom built. Custom-built homes offer an opportunity to allow homeowners to request upgrades to envelopes and systems for energy efficiency, and are therefore treated separately in the amendments on disclosure. They are defined as:

“Custom-built” means a new single-family dwelling, duplex, townhouse, or row house residential building where the final homeowner is either: contracting the builder; or has significant input into the design of the home prior to taking ownership;

2.1.2 Permit and inspection requirements

Under the amendments, building permit applications will:

Include an EnerGuideTM as-per-plans report, if the building permit application is for a new single-family dwelling, duplex, townhouse, or row house.

Prior to the occupancy inspection, the building must have an as-built energy audit, and the resulting EnerGuide rating must be disclosed in the house. The two additional items thus required for an occupancy permit are:

- 1. Provide a copy of an EnerGuideTM as-built report for the building.*
- 2. Affix an EnerGuideTM as-built report label to the electrical panel or water heater of the building.*

2.1.3 Disclosure

Disclosure of the energy rating is ensured by affixing the EnerGuide label within the house, as required above for the occupancy permit.

Additional disclosure of the rating and the energy report to buyers and realtors is required in the bylaw, with distinctions between custom-built and other homes; however, there is no municipal enforcement mechanism. These requirements therefore act as encouragement towards market transformation.

Additional disclosure requirements include:

The builder of a new single-family dwelling, duplex, townhouse, or row house shall, in the case of a custom-built home, provide a copy of the EnerGuide™ as-per-plans report to the future homeowner before applying for the building permit; and provide a copy of the EnerGuide™ as-built report to the final buyer before transferring final possession to the final buyer; or,

if a final buyer for the home is not secured until after construction has commenced, provide the rating from the EnerGuide™ as-built report to the real estate agent engaged to sell the property so that it can be included in the MLS® listing as soon as the EnerGuide™ as-built report is ready; and provide a copy of the EnerGuide™ as-built report to any person making an offer to purchase the property or, if the as-built report is not ready, provide the EnerGuide™ as-per-plans report.

2.1.4 Enforcement

Compliance with the assessment requirements is monitored and enforced through the permitting process. The assessment reports are part of the documents to be submitted with the permit application. Not submitting the assessment reports with the permit application can lead to the permit being refused. Penalties for building without a permit are defined in the building bylaw enforcement section, and generally include fines and work cessation orders.

Permanent disclosure of the EnerGuide rating is based on the requirement that the label be affixed on the electrical panel or water heater. This is verified during the final building inspection.

The requirement to providing the as-per-plans report to future homeowners in the case of custom-built homes is assessed through a question on the building permit application (see Schedule A in Appendix A).

There are no direct enforcement mechanisms to ensure the disclosure of the energy reports to realtors and potential buyers (for houses built to be put on the market). Instead, we rely on the professionalism of realtors; once informed that assessments are systematically available for new homes, we expect realtors will collect this information and share it with homebuyers as part of their general data gathering for the house. The disclosure forms for most regions of B.C. already include a question on whether the house has an EnerGuide rating (and if so, what the rating was). This mechanism could be further strengthened by adding the same question on the mandatory information form for putting a house on MLS; this is not current practice, but could be changed

by working in partnership with regional Real Estate Associations (see Section 4.2). As new home energy labelling becomes accepted practice, disclosure of the EnerGuide rating the energy reports should become standard practice.

3. Frequently asked questions

3.1 Why label the energy efficiency of houses?

New houses come in different sizes, locations and interior designs — visible characteristics affecting their value. They also come with a range of insulation, air tightness, and heating system performance. These energy performance characteristics are not easily visible, and homebuyers generally have no way to reliably compare the total energy efficiency of different homes and evaluate how a particular building's energy performance may impact occupant energy bills, comfort, and indoor air quality.

NRCan's EnerGuide rating system for homes provides homebuyers with standardized, validated information about the energy efficiency of houses, allowing homebuyers to compare different homes for energy efficiency and, in the case of custom-built homes, allow future homeowner to make decisions on potential energy upgrade before construction begins.

3.2 Why should new home labelling be required?

The labelling of homes using the EnerGuide system is currently voluntary, and as a result, few houses are labeled. Energy assessments in existing homes are mainly done to access provincial or federal grants to conduct energy upgrades. For new homes, assessments are sometimes conducted to access performance incentives from some municipalities and utilities.⁶ Despite these incentives, only about 16% of homes in B.C. have an EnerGuide rating.⁷ Even when the house has been audited, the audit and report may not be disclosed to realtors and potential homebuyers.

By ensuring that all new houses get a rating, a labelling bylaw ensures homebuyers have access to comparative information. While energy performance will remain only one factor amongst many in pricing and purchase decisions, having access to this information would support a more generalized inclusion of energy efficiency factors in real estate markets — particularly if the EnerGuide data is included in MLS listing.

Providing feedback on energy efficiency early in the design process could also improve the quality of the end product. For new construction, a modelled rating is generated based on plans, before construction. The report includes recommendations on cost-effective ways to improve home energy efficiency. This information could help developers and homebuyers assess the value of investing in better energy efficiency measures, improving the performance of the resulting home. Including energy efficiency upgrades at the time of construction is more cost effective than obtaining the same savings later through energy retrofits.

⁶ Township of Langley: <http://www.civicinfo.bc.ca/302n.asp?newsid=5474&r=5475&r=5474&r=5473> BCH PowerSmart program for new homes:

http://www.bchydro.com/powersmart/builders_developers/new_home_program.html

⁷ BCREA, 2009 *Public Opinion and Outreach Strategy Project*, 2009

3.3 What is the process to get an EnerGuide label and how much does it cost?

For new homes, a first assessment is done based on architectural plans, followed by a site visit once construction is completed; the costs range from \$450 to \$700 per unit.⁸ Local, provincial or federal incentive programs might cover some or more than all of this cost.⁹

The as-per-plan assessment can be done remotely, and can generally be generated within one to two days after the plans have been submitted. The site visit must be conducted locally, and takes about 45 minutes, including 20 minutes of work interruption where all windows and doors must be shut for the blower door test.¹⁰ There is a wide range of timelines, but in areas like Vancouver where pre-assessments are required for occupancy permit most CEAs are able to get the reports turned around in less than a week of doing the onsite blower door test¹¹.

For existing homes (not subject to the bylaw under discussion here), the assessment requires a two-hour site visit and costs \$325 plus taxes and travel (in most areas).¹²

3.4 Who should cover the cost of the assessment?

As with other permitting requirements, the builder is responsible for securing the assessment in a timely manner, including covering the assessment cost upfront (\$450–\$700). The cost does not threaten competitiveness among homebuilders because all new single-family, duplex, townhouse and row house homes would require the same audits and disclosure.

Although the small cost of the assessment may be passed onto the customer, current incentive programs cover \$150 of the cost directly to the assessment providers, with incentives of \$2000 available from BC Hydro for homes that achieve an EnerGuide rating of 80 or more.¹³ The

⁸ Typical ranges: single-family dwellings \$450-\$700; row houses \$350-\$600 (per unit); duplexes \$325-\$450 (per unit). Mike Young, City Green Solutions, personal communication, October 11, 2012.

⁹ Currently, the LiveSmart BC Incentive Program covers \$150 of the cost directly to the assessment providers. The LiveSmart program has funding until March 31, 2014; its future beyond that is unknown at this point. LiveSmart BC, “FAQ: the Energy Assessment.”

New homes with an EnerGuide rating of 80 or are also eligible for a \$2000 incentive from BC Hydro, and a 10% refund on their mortgage loan insurance premium from the Canada Mortgage and Housing Corporation (CMHC). BC Hydro, “PowerSmart New Homes Program,” July 2012.

http://www.bchydro.com/powersmart/builders_developers/new_home_program.html

B.C. residents with electrical heating in the Fortis BC service areas are also eligible for up to \$500 in incentives for energy assessments. Fortis BC, “Power Sense Rebates.”

<http://www.fortisbc.com/Electricity/PowerSense/IncentivesPrograms/Pages/EnerGuide-ratings-for-homes.aspx>

¹⁰ Mike Young, CityGreen, personal communication November 6, 2013.

¹¹ Mike Young, CityGreen, personal communication January 31, 2014.

¹² LiveSmart BC, “FAQ: the Energy Assessment.” http://www.livesmartbc.ca/incentives/efficiency-home/faq.html#The_energy_assessment. Note that these costs may vary by region.

¹³ The current version of the Power Smart New Home Program is planned to run until December 2014, when the new energy efficiency provisions in the residential building code will come into force. BC Hydro has expressed interest in continuing a similar program after that, though the amount of the incentive and performance targets to be met are yet to be defined. Jim Nelson, BC Hydro, personal communications, January 30, 2014.

assessment can more than pay for itself as the as-per-plan energy assessment can help builders to improve the energy rating of homes — particularly those near-80 homes, thereby getting over the hurdle and obtaining the incentive.

Local governments interested in adopting similar bylaw amendments could work with utility, provincial and national partners to further sponsor the cost of the assessment for the first year of the program. The availability of a refund for the assessment cost could be made contingent on the appropriate posting of the rating to MLS and compliance with other disclosure requirements.

3.5 What information does an energy assessment provide?

- A standardized rating, allowing to quickly gauge a home's overall efficiency
- A rating label
- A detailed description and evaluation of the home's energy systems
- Suggestions for energy efficiency upgrades, including an estimate of how they would reduce energy use and improve the overall energy rating

See Appendix E for more details.

3.6 Is there a consumer demand for home energy information?

Despite the lack of information generally available, homebuyers are interested in energy efficiency. According to a survey of over 1,600 Ontario homebuyers:¹⁴

- Nine out of ten homeowners consider energy efficiency important when purchasing a home.
- Almost 70% of homebuyers are willing to pay at least \$5,000 more for an energy efficient home.
- Nine out of ten homebuyers say they will seek out an energy efficient home in the future.
- The number one reason homebuyers did not choose energy efficient options is that they were not offered by the builder.

Furthermore, a national survey conducted in 2013 on energy efficiency¹⁵ established that nearly nine out of ten Canadians support a requirement that all new homes to be rated for energy efficiency.

¹⁴ “4th annual EnerQuality survey shows importance of energy efficiency among home buyers, despite recession,” *CNW Telbec*, October 19, 2009. <http://www.newswire.ca/fr/story/430055/4th-annual-enerquality-survey-shows-importance-of-energy-efficiency-among-home-buyers-despite-recession>

¹⁵ Online survey conducted from February 13 to 26, 2013, with a nationally representative sample of 1584 adult Canadians, proportionate to region, age, gender and language (English and French); margin of error of +/- 2.5%, 19 times out of 20. The Gandalf Group, *National Opinion Research for CEEA*, April 12, 2013. <http://energyefficiency.org/wp-content/uploads/2013/04/CEEA-Survey-Gandal-2013-4-12.pptx>

3.7 Have local governments already implemented labelling bylaws?

Various local and national governments in Canada and elsewhere have requirements for energy assessments and labelling, although no labelling bylaw has yet been adopted in B.C.

The City of Whitehorse (YT) adopted a mandatory labelling requirement for new construction similar to the one proposed here¹⁶ in the fall of 2012; the requirement takes effect in April 2014.

Since 2009, Vancouver, B.C. has been requiring new low-rise residential construction to have completed an EnerGuide assessment as part of the building permitting process.¹⁷ Vancouver's bylaw provision does not, however, require the homebuilder to disclose the EnerGuide rating or share the information with anyone but the city. For that reason, it is not strictly speaking a "labelling" program; however, the precedent does build confidence on the acceptability of requiring an EnerGuide assessment.

The American cities of Austin (TX),¹⁸ Washington (DC)¹⁹ and Berkeley (CA)²⁰ each have local provisions requiring some energy labelling before a house is sold. In the case of Austin, the requirement provision is run through the local energy utility.

The Australian Capital Territory has been requiring labelling at time of sale for new and existing houses since 1999.²¹ Several other Australian states require labelling of new houses and set minimum performance standards in their building code based on this rating.

The 2002 European Union directive, updated in 2010, on the performance of buildings has required member states to develop energy labelling systems and legislate mandatory labelling of residential and non-residential buildings at point of sale, renovation, or rental.²² Similar policies have been in place in the U.K. and in Denmark since the 1990s.²³

¹⁶ City of Whitehorse, *Building and Plumbing Bylaw 99-50* (2013).

<http://www.whitehorse.ca/modules/showdocument.aspx?documentid=106>

¹⁷ City of Vancouver, "Green building and renovating." <https://vancouver.ca/home-property-development/green-building-and-renovating.aspx>

¹⁸ Austin Energy, "Council approves amendments to energy audit/rating ordinance," media release, April 22, 2011. <http://www.austinenergy.com/about%20us/environmental%20initiatives/ordinance/index.htm>

¹⁹ Partner Energy, "Washington, D.C. Energy Disclosure Law." <http://energydisclosure.com/index.php/mandatory-energy-disclosure-washington-d-c/>

²⁰ Berkeley's program, the Residential Energy Conservation Ordinance (RECO), goes further than a labelling program in that it requires homes to be compliant with specific energy and water efficiency measures prior to sale or at the time of major renovation. City of Berkeley, "Residential Energy Conservation Ordinance." <http://www.ci.berkeley.ca.us/reco/>

²¹ http://www.actpla.act.gov.au/_data/assets/pdf_file/0003/13494/Energy_rating_of_residential_buildings_2.pdf see also Stephen Berry, Tony Marker, and Tom Chevalier, *Modelling the Relationship Between Energy Efficiency Attributes and House Price: The Case of Detached Houses Sold in the Australian Capital Territory in 2005 and 2006 Process of Disclosure* (2008)

²² As of January 2009, 17 member states had successfully implemented the requirements of the Energy Performance of Buildings Directive (EPBD). Seven states (Bulgaria, France, Latvia, Lithuania, Malta, Poland and Slovenia) are yet to meet all the requirements but have made significant progress in implementation. Three states (Hungary, Cyprus and Greece) have not yet implemented any elements of the directive (J. Arbon and E. Hotchkiss, *Study on*

3.8 Does energy labelling affect the price of houses?

One of the main objectives of energy labelling is to increase the consideration of energy efficiency in real estate transactions. Customer valuation of energy efficiency could be shown through reputational advantages, faster sales of high-quality homes, better retention of renters, reputational advantages, and, ultimately, higher rental rates (if applicable) and home sales prices.

A key indicator of the valuation of energy efficiency is whether buyers or renters are willing to pay a premium for buildings with better performance. Answering this question demands first that energy performance be established in a standardized way, such as by an EnerGuide rating or other labelling system.

Looking at jurisdictions that have implemented labelling requirements at point of sale demonstrate that, in general, there is a positive relationship between better energy performance and higher sales prices.

Australia: The Australian Capital Territory label provides basic energy consumption estimates and a zero-to-six star rating system. A statistical analysis of the more than 5,000 sales in 2005 and 2006 shows that a one star improvement led to a sales price premium of approximately 3%; for a median house value of \$350,000, the premium is thus more than \$10,000.²⁴

European Union: An analysis of listing data for buildings for sale or rent in areas of Austria, Belgium, France and the United Kingdom has shown that, in general, a higher energy rating on the energy performance certificate (EPC) led to a higher sales and rental price (Figure 3). The sales premium for a one-letter improvement in energy efficiency ranged from a high of 11% in Austria to a low of 2.8% in Ireland.²⁵ Premiums on rental prices range from 1.4% in Ireland to 4.4% in Vienna. Oxford, U.K., was the only area in the study where a positive correlation between energy efficiency and sales prices was not found, although this could be due to a small sample size.²⁶ A more recent U.K. study suggests that there is indeed a positive premium for energy efficiency in the U.K. housing market, of roughly 5% for a C-rated property compared to an F-rated one.²⁷

Energy Performance of Buildings (Policy Department Economic and Scientific Policy, European Parliament, 2008). The EPBD was recast in 2010 (2010/31/EU) to deal with implementations challenges of the 2002 directive and further clarify the requirements for member states. See Shailendra Mudgal, Lorcan Lyons and François Cohen, *Energy Performance Certificates in Buildings and Their Impact on Transaction Prices and Rents in Selected EU Countries*, Annex A (2013).

²³ Pembina Institute, *Home Energy Labelling Requirement at Point of Sale: Pilot Program Design* (2012), p.9 <http://www.pembina.org/pub/2400>

²⁴ *Modelling the Relationship Between Energy Efficiency Attributes and House Price*.

²⁵ *Energy Performance Certificates in Buildings and Their Impact on Transaction Prices and Rents in Selected EU Countries*, 115.

²⁶ *Ibid.*, 111.

²⁷ Fuerst et al., cited in *Energy Performance Certificates in Buildings and Their Impact on Transaction Prices and Rents in Selected EU Countries*.

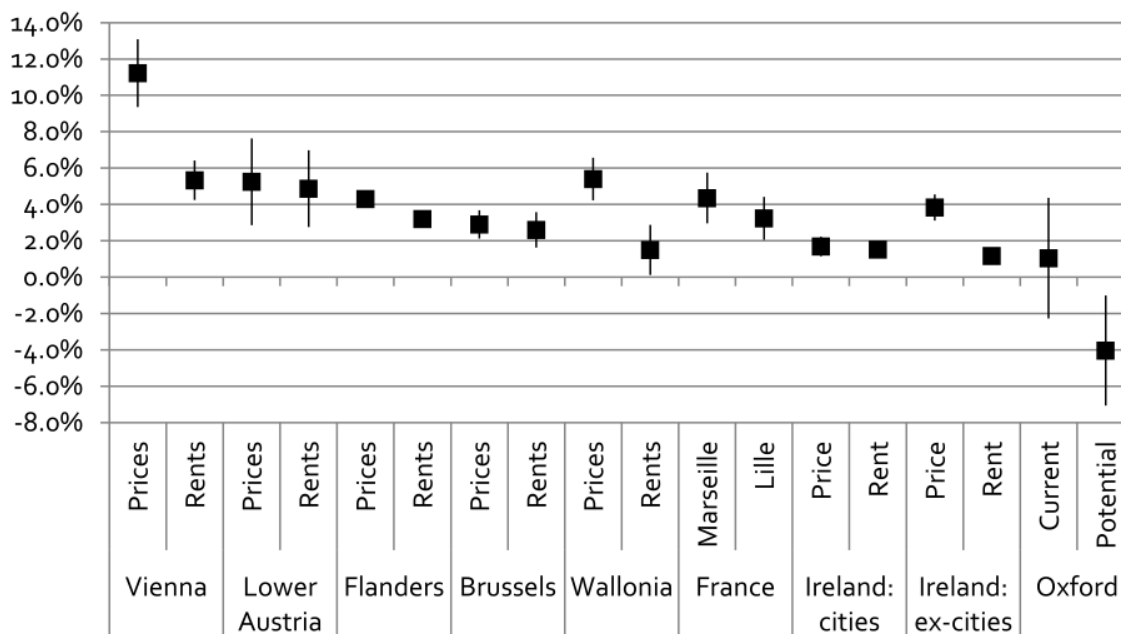


Figure 3. Effect of energy efficiency on European home sale prices and rental markets

Data shows impacts of a one-letter or equivalent improvement in the Energy Performance Certificate rating across European sales and rental markets. Bars indicate the 95% confidence interval.

Source: Mudgal et al²⁸

Global: Mudgal, Lyons, and Cohen reviewed 25 studies analyzing the impacts on property values of various energy labelling schemes. The studies were conducted between 2007 and 2012 and covered voluntary or mandatory labelling programs in the EU (EPC), Japan (Tokyo Green Building Programme), United States (Energy Star, Green Point and/or LEED), Singapore (Green Mark), Switzerland (Minergie) and Australia (ACT House Energy Rating Scheme). Most of the papers studied the impact of labelling on sales prices; a few also covered rental rates. Of the 22 studies considered, 19 showed higher energy performance ratings to have a positive impact on either rental or sales values, or both.²⁹

3.9 How would the labelling requirement be monitored and enforced?

Enforcement of the labelling requirement uses building bylaw permitting mechanisms. More specifically, the builder has to provide the EnerGuide as-per-plans report to obtain a building permit, and then to provide the final ‘as-built’ report to obtain the occupancy permit. The municipal building inspector can also check that the physical EnerGuide label is appropriately affixed to the electrical box or water heater during the occupancy inspection. Thus, the City’s existing permitting procedures function as check points to ensure that the energy assessment and physical labelling requirements are met. These permitting processes come with enforcement

²⁸ *Energy Performance Certificates in Buildings and Their Impact on Transaction Prices and Rents in Selected EU Countries*, 117.

²⁹ *Ibid.*, 37.

measures in the existing bylaw: without proper permits, construction or occupancy activities are prohibited. The bylaw's penalties of \$10,000 and a building inspector cessation order are available for violations.

The requirements of disclosure to third parties, on the other hand, are largely declaratory, with the exception of the provision of the provision of the as-per-plans report to the owner of a custom-built home. Thus, while the bylaw requires disclosure to realtors and prospective buyers, these measures are to encourage and educate, rather than enforce and penalize. This is in part due to the simple fact that, once the requirement for the assessment is known, we expect realtors to request the resulting information as a matter of professional due diligence to ensure full disclosure. General compliance under the bylaw could be monitored over time to determine if enforcement measures should be employed or if better realtor education is necessary to incent compliance.

3.10 Do B.C. local governments have jurisdiction to implement this policy?

To the best of our understanding, yes. Municipalities have broad authority to define the terms and conditions that must be met for granting their permits and can refuse and even suspend or cancel permits for failure to comply with the applicable bylaw. Moreover, making use of NRCan's EnerGuide program by reference in the bylaw is allowed by the City's authority to adopt a standard published by a national body. Requiring disclosure of the energy assessment involves a few more legal complexities, as it involves disclosure responsibilities to third parties such as real estate agents and homebuyers, but since the extent of disclosure proposed here is very much aligned with the legal requirement for full disclosure of available information at time of sale, we do not expect this to be legally challenged.

The City of Victoria has recently requested a legal opinion related to the possible implementation of a bylaw requiring home energy assessments at point of renovation. The legal opinion concluded that the City is permitted to require both energy audits and disclosures of a building energy performance for both existing buildings and new construction.³⁰

See Appendix D for more on local government jurisdiction to implement a labelling bylaw.

3.11 Could the bylaw be extended to include low-rise multi-unit residential buildings and mixed used buildings?

Yes, although certain restrictions apply. The amendments proposed in this report cover only single-family detached, duplex, townhouse, and row house residential dwellings. Under the current EnerGuide rating system for new homes, however, certain types of low-rise multi-unit residential building (MURBs) as well as multi-use buildings (MUBs) can be assessed — these buildings could therefore be added to the scope of the bylaw.

³⁰ City of Victoria, Request for Proposal 13-056: Point of renovation energy audit and/or disclosure policy & program design (2013), 2.

MURBs and MUBs are eligible for the EnerGuide program if they have³¹:

- A maximum of 4 stories above grade
- a footprint less than 600 square metres
- between 4 and 32 residential units (although a MURB building with more than 32 units can be split into two buildings if there is a complete fire wall)
- at least 50% of the floor space, including the basement, used for residential purposes
- no heavy-duty specialized commercial equipment or usage of chemicals (e.g., as found in restaurants, auto body shops, dry cleaners, medical offices, etc.) as determined by an NRCan licensed energy advisor.

The assessment evaluates the efficiency of the building as a whole, not that of individual units.

Energy advisors require a special MURB/MUB certification to do the energy modelling for these building types, which is distinct from the certification for new or existing houses (which covers single-family houses, duplexes, row houses, and townhouses). Most of the energy advisors with MURB/MUB certification are in the Lower Mainland³²; however, it is possible for them to do the modelling remotely. Thus, in rural areas, energy advisors certified to assess new houses can do the final air leakage testing, while the modelling is outsourced to a MURB/MUB-certified energy advisor in another area.³³ The cost for the energy modelling of MURB and MUB is in the range of \$400 plus \$75 per unit, plus the cost of the blower door test.³⁴

Local governments interested in implementing a labelling bylaw could consider extending the scope of the bylaw to include MURBs and MUBs if these are an important part of the new building stock. They should first ensure that the energy advisors operating in their area are certified to assess MURB/MUBs, or can outsource the modelling to other certified advisors that can do the analysis.

³¹ Natural Resources Canada, Office of Energy Efficiency, “Frequently-Asked Questions (FAQ) about ecoENERGY Retrofit – Homes.” <http://oee.nrcan.gc.ca/residential/personal/retrofit/1750#ehp2>, with updates from Mike Young, CityGreen, personal communications, 30 January 2014.

See also Natural Resources Canada, *Energy Advisor Procedures Manual* (March 2010), 7.

³² Mike Young, CityGreen, personal communications, 30 January 2014.

³³ Ibid.

³⁴ Ibid.

4. Local issues to consider

There are two additional issues local government should consider before implementing a labelling requirement; the first is the capacity of local energy advisors, a necessary condition for a successful program, and the second the availability of an EnerGuide for Houses entry field in the regional MLS, a useful tool to maximize benefits from the program.

4.1 Are there enough energy advisors locally to meet the needs of the program?

Availability of energy advisors varies across the province. Under the current EnerGuide rating system, not all energy advisors have gone through the specific certification process required to let them assess new homes. This will likely change with the next generation EnerGuide system, under which all advisors will be required to be able to assess both new and existing homes. Local governments interested in implementing labelling bylaws for new homes in the meantime should ensure that there are sufficient energy advisors trained to assess new construction in their area to meet the demand of the program.

If capacity is an issue, there are a few options. First, it should be noted that the as-per-plan pre-assessment can be conducted remotely, so the work can be done by any service provider in the province. Only the final assessments require a building advisor to physically go to the house. A partnership between an outside and local advisor could thus split the work, reducing the workload for local advisors. If there is still capacity shortage, or if no advisors are available locally to do the site visit, new advisors can be trained and certified. This could be taken on by municipal building inspectors, who could conduct the site visit at the time of the occupancy inspection. Local contractors or community organizations may also be interested in an opportunity to build connections with builders and homeowners and access a predictable source of revenue. For example, the Northern Environmental Action Team (NEAT) has expressed interest in playing that role in the Peace Region.³⁵ The Arctic Energy Alliance had taken on the on-site role in Yellowknife and is now conducting full energy assessments.

Energy advisor certification is provided by service organizations like City Green or the Canadian Home Builder Association.³⁶

³⁵ Dzenko Mzengeza, Executive Director, NEAT, workshop feedback, July 5, 2012.

³⁶ At time of press, the CHBA was not offering any training; City Green does have a trainer on staff, and has done distance training for advisors in remote areas through webinars (Mike Young, City Green Solutions, personal communication Nov 20, 2013). The certification requires two blower door tests to be observed, requiring the trainees or trainers to travel once.

4.2 Is there a place to post the resulting EnerGuide rating on MLS?

The Victoria Real Estate Board has added an EnerGuide rating entry field to their MLS online listing service.

For other regions, the EnerGuide rating could be listed in the ‘additional notes’ section. While this allows any realtor to add the information, some realtors have commented that many are unlikely to publish the information unless it has its own field.

Therefore, a simpler, more effective option would be for local governments to encourage their regional Real Estate Board to add an EnerGuide rating entry field on the MLS. Based on the Victoria Real Estate Board’s experience this is a reasonably simple process.³⁷

To maximize use of the entry field, a mandatory question could be added to the data entry sheet similar to what is currently on disclosure sheets, i.e.:

*Is there a current 'EnerGuide for Houses' rating number available for these premises?
if yes, what is the rating number?
When was the assessment report prepared?*

Adding these questions to the data entry sheet would ensure realtors to fill the EnerGuide for Houses entry field if the data is available, without complicating the process for all the homes that do not have such ratings.

³⁷ Jim Bennett, VREB Government Relations Coordinator, personal communication October 6, 2013

5. Conclusion

Home energy labelling is a simple first step to promote energy literacy, increase the market for energy efficient technologies, and support a more systematic consideration of home energy efficiency in real estate transactions. Like nutritional labels on packaged foods, the home energy label provides the interested consumer with validated information to guide their decision-making. And as with the food label, there is a larger social benefit to providing this information, in the form of improved air quality from reduced heating combustion and the reduction of household energy costs and environmental impacts.

A national survey has shown that nearly 90% of Canadians support a home energy labelling requirement.³⁸ Local governments can lead the way by amending their building bylaw to require energy labelling for new construction — and point of renovation if they wish to expand the program.

This report presents a series of simple energy labelling amendments to include in building bylaws, demonstrated through integration into the Dawson Creek building bylaw. The language could easily be adopted for other local governments' building bylaws.

By asking for an as-per-plan assessment for the building permit, and the final report for the occupancy permit, the labelling provisions ensure that the information generated by the energy assessment is considered before construction and available to the prospective homebuyer. Additional paperwork for the local government is minimal, and costs to the builder are on par with that of other permitting requirements.

The City of Whitehorse has already adopted a similar requirement. We encourage other local governments both nationally and in B.C. to consider a home energy labelling program in their community.

³⁸ The Gandalf Group, *National Opinion Research for CEEA* April 12, 2013.

Appendix A. Suggested bylaw amendments

Dawson Creek’s building bylaw was used as a model to determine the amendments necessary to deploy a new home energy labelling program using existing building regulations. Fitting the amendments into the existing bylaw efficiently makes use of existing administrative functions and enforcement activities. Analogous amendments should be possible in the counterpart building bylaws of other local governments.

The provisions in **green**, below, are suggested additions to the bylaw. For context, the Dawson Creek Building Regulation Bylaw No. 3282 that is proposed for amendment is available at: www.dawsoncreek.ca/cityhall/bylaws/

THE CORPORATION OF THE CITY OF DAWSON CREEK

BUILDING REGULATION AMENDMENT BYLAW NO. XXXX, 201X

A Bylaw of the Corporation of the City of Dawson Creek
(hereinafter called “the City”) to amend The City of Dawson
Creek Building Regulation Bylaw No. 3282, 1997 as
amended by Bylaws 3462, 3536, 3838, 3913, 3959 and 4097.

WHEREAS, the Community Charter authorizes the City, for the conservation of energy and for the reduction of greenhouse gas emissions, to regulate, prohibit, and impose requirements in relation to buildings and other structures;

NOW THEREFORE, the Council of the Corporation of the City of Dawson Creek enacts as follows

SECTION 1 – ADMINISTRATIVE PROVISIONS

- 1.1 This bylaw may be cited as the “CITY OF DAWSON CREEK BUILDING REGULATION AMENDMENT BYLAW NO. _____, 201_” and takes effect as of _____, 2014.

- 1.2 If any section, subsection, sentence, clause or phrase in this bylaw is for any reason held to be invalid by a decision of any Court of competent jurisdiction, the decision shall not affect the validity of the remaining portion of this bylaw.

SECTION 2 – TEXT AMENDMENTS

Section 3, THE APPLICATION

Section 3.3 shall be amended by the addition of the following definitions:

“Custom-built” means a new single-family dwelling, duplex, townhouse, or row house where the final homeowner is either: contracting the builder; or has significant input into the design of the home prior to taking ownership;

“**EnerGuide™ as-per-plans report**” means the EnerGuide™ rating and builder upgrade plan prepared by a certified EnerGuide™ for New Houses energy advisor from plans for the new house, pursuant to Natural Resource Canada’s EnerGuide™ Rating Service;

“**EnerGuide™ as-built report**” means the EnerGuide™ for New Houses Energy Efficiency Evaluation Report, along with rating and label, prepared by a certified EnerGuide™ for New Houses energy advisor, pursuant to Natural Resource Canada’s EnerGuide™ Rating Service;

Section 7, APPLICATIONS

Section 7.2 shall be amended by the addition of the following:

- 7.2.5 include an EnerGuide™ as-per-plans report, if the building permit application is for a new single-family dwelling, duplex, townhouse, or row house .

Section 12, RESPONSIBILITIES OF THE OWNER

Section 12 shall be amended by the following additions:

12. RESPONSIBILITIES OF THE OWNER & BUILDER

- 12.5 **Regarding disclosure of energy performance data:** the builder of a new single-family dwelling, duplex, townhouse, or row house shall:

- 12.5.1 in the case of a custom-built home,

- 12.5.1.1 provide a copy of the EnerGuide™ as-per-plans report required by section 7.2.5 to the future homeowner before applying for the building permit; and
 - 12.5.1.2 provide a copy of the EnerGuide™ as-built report required by section 14.5.1 to the final buyer before transferring final possession to the final buyer; or
- 12.5.2 if a final buyer for the home is not secured until after construction has commenced,
- 12.5.2.1 provide the rating from the EnerGuide™ as-built report to the real estate agent engaged to sell the property so that it can be included in the MLS® listing as soon as the EnerGuide™ as-built report is ready; and
 - 12.5.2.2 provide a copy of the EnerGuide™ as-built report to any person making an offer to purchase the property or, if the as-built report is not ready, provide the EnerGuide™ as-per-plans report.

Section 14, OCCUPANCY INSPECTIONS AND OCCUPANCY PERMITS

Section 14 shall be amended by the addition of the following:

- 14.5 Every applicant for an occupancy inspection for a new single-family dwelling, duplex, townhouse, or row house , required pursuant to Section 14.1.1 of this bylaw, shall, prior to occupancy inspection:
- 14.5.1 provide a copy of an EnerGuide™ as-built report for the building; and
 - 14.5.2 affix an EnerGuide™ as-built report label to the electrical panel or water heater of the building.

SECTION 3 – SCHEDULE AMENDMENTS

- 3.1 Schedule “A” Application for Building Permit attached to and forming part of City of Dawson Creek Building Regulation Bylaw No. 3282, 1997, shall be replaced with the attached Schedule “A” Application for Building Permit.

Schedule A shall be amended by the following substitutions and additions:

I have attached the following plans:

1. Site plan incorporating all of the information required by Section 7.2.4 of the Building Bylaw;
2. Plot plan showing exact location of this and all other buildings on site as well as location of hydro and gas services;
3. Foundation plan;
4. Floor plan;
5. All elevations including window sizes & exterior finish detail;
6. Detail roof;
7. EnerGuide™ as-per-plans report, as required by section 7.2.5 of the Building Bylaw (for new single-family, duplex, townhouse, and row houses only).

For a custom-built single-family dwelling, duplex, townhouse, or row house residential building, I have provided a copy of the EnerGuide™ as-per-plans report to the future homeowner, as required by section 12.5.1 of the Building Bylaw. yes[] no []

Appendix B. Rationale for suggested bylaw amendments

To facilitate adaptation of the amendments to other building bylaws, we present each clause here, explain its rationale, and identify the other bylaw provision it depends on for effectiveness.

Table 1. Rationale for recommended amendments

Section	Amendments	Dependent on other bylaw provisions	Enforcement/Penalties	Intended outcomes
7: Applications (building permit)	<i>7.2.5: include an EnerGuide™ as-per-plans report, if the building permit application is for a new single-family dwelling, duplex, townhouse, or row house .</i>	Not for this intended outcome	N/A	Municipal labelling bylaw adopts specific NRCan requirements, process and certifications, making use of existing labelling system and automatically incorporating future upgrades to NRCan program
		Ss. 5.1 & 7.1 (prohibiting construction without building permit)	Construction cannot commence or continue without submission of as-per-plans energy report, against penalty of Building Bylaw's enforcement measures (s. 23).	Ensure that builders obtain as-per-plans report prior to commencing construction by requiring the report for building permit application. Labelling process is initiated early, and pre-assessment report can influence design prior to construction.
		S. 5.8 (prohibition on construction where "work is at variance with ... City bylaw")		
12: Responsibilities of the owner &	<i>Regarding disclosure of energy performance data: the builder of a new single-family dwelling, duplex,</i>	S. 12.1 (responsibility of Owner of Agent to carry out construction in accordance	Builder asked whether information as disclosed to client in building permit	Provide homeowner with opportunity to choose energy efficiency upgrades prior to

Rationale for suggested bylaw amendments

<p>builder</p>	<p><i>townhouse, or row house shall:</i> <i>12.5.1 in the case of a custom-built home,</i> <i>12.5.1.1 provide a copy of the EnerGuide as-per-plans report required by section 7.2.5 to the future homeowner before applying for the building permit; and</i> <i>12.5.1.2 provide a copy of the EnerGuide as-built report to the final buyer before transferring final possession to the final buyer; or</i></p>	<p>with bylaw); see also amendments proposed to the building permit checklist in Schedule A (below)</p>	<p>application form; permit could be withheld if requirement is not met.</p>	<p>home construction, at the time when such upgrades are the most cost effective.</p>
	<p><i>12.5.2 if a final buyer for the home is not secured until after construction has commenced,</i> <i>12.5.2.1 provide the rating from the EnerGuide as-built report to the real estate agent engaged to sell the property so that it can be included in the MLS® listing as soon as the EnerGuide as-built report is ready; and</i></p>	<p>S. 12.1 (responsibility of Owner or Agent to carry out construction in accordance with bylaw) Common law liability for inadequate disclosure in home sale transaction</p>	<p>No formal enforcement mechanism. Once informed of the availability of the information for all new houses, we count on the professionalism of realtors to collect the information and make it available to prospective buyers.</p>	<p>Listing rating on MLS allows potential homebuyers can compare energy performance of new homes they are considering for purchase. Note that the seller does NOT have to wait for the final assessment to be completed to put the house on the market; the 'as-per-plan' report can be used in the interim.</p>
	<p><i>12.5.2.2 provide a copy of the EnerGuide as-built report to any person making an offer to purchase the property or, if the as-built report is not ready, provide the EnerGuide as-per-plans report.</i></p>	<p>S. 12.1 (responsibility of Owner or Agent to carry out construction in accordance with bylaw) Real estate industry disclosure requirements and common law liability for inadequate disclosure in home sale transaction</p>	<p>No formal enforcement mechanism; implementation will depend on builder and realtor professionalism.</p>	<p>Ensure that final as-built report is provided to homeowner for their records.</p>
<p>14 Occupancy inspections and</p>	<p><i>14.5 Every applicant for an occupancy inspection for a new</i></p>	<p>S. 14.2 (prohibiting occupancy of a building until after</p>	<p>Occupancy cannot occur until as-built report is obtained and</p>	<p>Ensure that assessment is finalized before home can be</p>

Rationale for suggested bylaw amendments

<p>occupancy permits</p>	<p><i>single-family dwelling, duplex, townhouse, or row house, required pursuant to Section 14.1.1 of this bylaw, shall, prior to occupancy inspection:</i></p> <p><i>14.5.1 provide a copy of an EnerGuide™ as-built report for the building; and</i></p> <p><i>14.5.2 affix an EnerGuide™ as-built report label to the electrical panel or water heater of the building.</i></p>	<p>occupancy inspection completed and permit issued)</p>	<p>provided to City and label posted in house, against penalty of Building Bylaw's enforcement measures (s. 23).</p>	<p>occupied and energy label is permanently displayed in the house</p>
<p>Schedule A (declaration listing documents provided with building permit application)</p>	<p>I have attached the following plans: (...)</p> <p>EnerGuide™ as-per-plans report, as required by section 7.2.5 of the Building Bylaw (for new single-family dwellings dwelling, duplex, townhouse, or row house residential buildings only).</p> <p>For a custom-built single-family dwelling, duplex, townhouse, or row house , I have provided a copy of the EnerGuide™ as-per-plans report to the future homeowner, as required by section 12.5.1 of the Building Bylaw. yes[] no []</p>	<p>S. 5.10 (outlawing submission of false or misleading information to building inspector in permit application)</p>	<p>Construction cannot commence or continue without submission of building permit form against penalty of Building Bylaw's enforcement measures (s. 23).</p>	<p>For custom-built homes, require signed declaration in the permit application that a copy has been provided to buyers.</p>

Appendix C. Labelling bylaw provisions from other Canadian municipalities

Below are some relevant provisions regarding energy assessments included in the Whitehorse and Vancouver building bylaws. Table 2 compares these two policies to this report's proposed bylaw amendments based on whether they meet the five design aspects discussed in Section 1.1.

C.1 Vancouver

Vancouver has required new construction to have an EnerGuide rating to obtain an occupancy permit since 2009:

“Before issuance of an occupancy permit, the Chief Building Official shall be provided with an EnerGuide Ratings System Audit, as defined by the EnerGuide Rating Service of Natural Resources Canada.”³⁹

Vancouver's 2014 Building Bylaw, Energy Water Efficiency Provisions clarified slightly this provision to ensure building inspectors would have the report to support the final inspection:

10.2.2.12. EnerGuide Rating System Audit

1) At the time of final inspection, the owner shall provide the Chief Building Official with an EnerGuide Rating System Audit, as defined by the EnerGuideTM Rating Service of Natural Resources Canada.⁴⁰

The VBBL 2014 bylaw, when it comes into effect in Spring 2014, will also require builders to submit as-per-plan assessment reports to obtain a building permit.⁴¹

C.2 Whitehorse

In August 2013, Whitehorse amended its Building and Plumbing Bylaw to include the following provision as section 89, which comes into force in April 2014:

³⁹ City of Vancouver, *The Green Homes Program — Building By-law Amendments for New One Family Dwellings, One Family Dwellings with Secondary Suites, and Two Family Dwellings*, June 9, 2008
<https://vancouver.ca/files/cov/green-homes-council-report.pdf>

⁴⁰ City of Vancouver, *New Edition of the Building By-law*, September 11, 2013.
<http://former.vancouver.ca/ctyclerk/cclerk/20130924/documents/rr1.pdf>

⁴¹ Mark Hartmann, Personal communication, 20 January 2014

“All new residential construction shall have an EnerGuide Rating System label which must be affixed somewhere visible in the home at the time of final inspection by the City.”⁴²

C.3 Comparison with provisions in proposed bylaw amendments

Table 2 summarizes how the Whitehorse and Vancouver labelling provisions compare to the provisions in the proposed bylaw amendments, with regards to specific requirements of the bylaw.

Table 2. Comparison of the Whitehorse, Vancouver, and proposed provisions

Requirement	Covered under Whitehorse provisions?	Covered under Vancouver VBBL2014 provisions?	Covered under the proposed provisions?
New construction must have a preliminary assessment based on plan	No	Yes	Yes
Builders required to share the results with the future homeowner, if known at time of construction (for custom-built homes)	No	No	Yes
Final energy assessment is conducted once the house is built and a rating assigned	Yes	Yes	Yes
Rating to be made available to realtors or other parties charged to sell the house	Yes, the rating is affixed somewhere visible in the home	No specific requirements	Yes, the rating is affixed in the house and the energy report is made available to realtors and homebuyers
Data collected by the city for planning purposes	no	Yes	Yes

⁴² City of Whitehorse, Building and Plumbing Bylaw 99-50 (2013).
<http://www.whitehorse.ca/modules/showdocument.aspx?documentid=106>

Appendix D. Jurisdictional analysis

Municipalities in B.C. have a broad grant of power under s. 8(3)(l) of the Community Charter to “regulate, prohibit and impose requirements in relation to ... (l) buildings and other structures...”, for the “conservation of energy” and for the “reduction of greenhouse gas emissions”.⁴³ While municipalities must seek concurrent authority from the province for bylaws that establish standards that are or could be dealt with by the “provincial building regulations”,⁴⁴ the Ministry of Energy and Mines’ regulatory authority is limited to the processes of “building”,⁴⁵ such as is found in the building code, and so is not so expansive as to include the municipal authority to make bylaws in relation to buildings themselves.⁴⁶

Based on this reading, requiring energy assessments for new houses is within the municipality’s authority even absent an express grant of concurrent authority, and is a valid application of the energy conservation and GHG reduction purposes that the province added to municipalities’ buildings bylaw authority. For certainty, a municipality can request an express interpretation from the province and/or apply for concurrent authority for this purpose. But this is likely unnecessary for the limited program being proposed.

Deploying the new homes energy labelling requirement within the building and occupancy permitting process also stands on good footing. Municipalities have broad authority to define the terms and conditions that must be met for granting its permits and can refuse and even suspend or cancel permits for failure to comply with the applicable bylaw. Moreover, making use of NRCan’s EnerGuide program by reference in the bylaw is allowed by the City’s authority to adopt a standard published by a national body.

Requiring disclosure of the energy assessment involves a few more complexities, as it involves disclosure responsibilities to third parties such as real estate agents and homebuyers. Requiring submission of the energy report to the City is a reasonable extension of the City’s authority to set requirements for its permitting process, as noted above. However, it is not explicitly clear that, as

⁴³ *Community Charter*, s. 8(3)(l) (emphasis added).

⁴⁴ *Community Charter*, s. 9(1)(d).

⁴⁵ Government of British Columbia, *Local Government Act*, R.S.B.C. 1996, c. 323. Section 692 of the Local Government Act, falling under “Part 21 – Building Regulations” authorizes the Ministry of Energy and Mines (MEM) to “make regulations” “(a) establishing a Provincial building code for British Columbia governing standards for the construction, alteration, repair or demolition of buildings” and “(d) regulating building generally for matters not included in the building code”. *Local Government Act*, ss. 692(1)(a), (d). The other subsections of s. 692 grant only ancillary regulatory authority to the core Building Code authority.

⁴⁶ Indeed, in its *Buildings and Other Structures Bylaws Regulation*, the MEM has provided for some concurrent authority for bylaws that “establish[] standards for the construction, alteration, repair or demolition of buildings or structures”. It is silent on bylaws with other regulatory impacts on buildings. Yet municipal bylaws regulate buildings in many ways outside of this grant of concurrent authority, suggesting that these non-building-process regulatory powers do not require concurrent authority.

part of its buildings bylaw authority and permitting authorities, the City can require that builders provide the energy efficiency reports to homebuyers and real estate agents, as recommended.

However, the proposed bylaw amendments do not establish strict enforcement provisions backing up the requirements. Rather, the amendments mainly stipulate the responsibility of the builders to provide the reports to the relevant market players. Because these requirements are not, for the most part, part of the permitting processes, there is no formalized process for ensuring and enforcing compliance. Rather, the bylaw amendments lean more heavily on the fact that an energy assessment is required and real estate disclosure requirements will require disclosure of an assessment that exists.

These provisions that stipulate the responsibilities of builders, therefore, just make it explicitly clear for builders to understand what is expected from them, with the rhetorical authority of express inclusion in a codified bylaw. With ongoing implementation of the labelling requirement program, market players will quickly come to understand the requirements of the program and homebuyers and their agents will learn that energy assessments for new homes must exist and will demand disclosure. In this way, enforcement is not stipulated in hard law by the bylaw amendments, mitigating questions about the City's authority to require disclosure.

Nevertheless, we recommend that local governments interested in adopting these bylaw amendments ask their solicitor to review the proposed amendments for potential risks or concerns. If the disclosure requirements are considered concerning aspects of the bylaw amendments, enforcement of these provisions, opportunities for which are already limited, can be delayed until the province provides confirmation of authority.

Appendix E. EnerGuide for Houses

This appendix provides additional information on the current EnerGuide rating system for new and existing houses, and on the upcoming “new generation” EnerGuide.

What does the EnerGuide rating mean?

Using the current EnerGuide system, a home’s energy efficiency level is rated on a scale of 0 to 100. A rating of 0 represents a home with major air leakage, no insulation and extremely high-energy consumption. A rating of 100 represents a house that is airtight, well insulated and sufficiently ventilated and requires no purchased energy (sometimes referred to as a passive house, or a net zero house).

Table 3. Range of EnerGuide for Houses ratings

House characteristics	Typical rating
Older house not upgraded	0 to 50
Upgraded older house	51 to 65
Energy-efficient upgraded older house or typical new house	66 to 74
Energy-efficient new house	75 to 79
Energy-efficient new house based on 2014 update to B.C. building code	~80
Highly-efficient house	85-90
House requiring little or no purchased energy	91 to 100

Source: NRCan⁴⁷, with modifications by Pembina

What types of buildings are eligible for an EnerGuide energy assessment?

Because it relies on the EnerGuide program to establish the home rating, the scope of the home energy labelling requirement is limited by the scope of the EnerGuide program. To be eligible for an EnerGuide energy assessment, a house must be covered under Part 9 (low-rise, detached, semi-detached and row houses) or under Part 2 (for mobile homes on a permanent foundation

⁴⁷ Natural Resources Canada, “EnerGuide Rating System (Existing Homes).” <http://oe.nrcan.gc.ca/residential/personal/16352>

only) of the National Building Code of Canada. More specifically, it must be one of the following:⁴⁸

- detached and side-by-side attached homes (e.g. single-family homes and row housing)
- mobile homes on a permanent foundation⁴⁹
- permanently-moored floating homes
- small multi-unit residential buildings (MURBs) and mixed-used buildings (MUBs) that have:
 - two to three stories excluding the basement,
 - a footprint less than 600 square metres,
 - a maximum of 20 residential units,
 - at least 50% of the floor space, including the basement, used for residential purposes, and
 - no heavy-duty specialized commercial equipment or usage of chemicals (e.g., as found in restaurants, auto body shops, dry cleaners, medical offices, etc.) as determined by an NRCan licensed energy advisor.

The proposed bylaw amendments cover the above residences, excluding small MURBs and mixed-use buildings.

How is the house energy efficiency evaluated?

During the site visit, the energy advisor collects data on home energy systems (heating and cooling systems), house construction materials and the building envelope (the walls and roof of the home) to model the building's energy consumption. The advisor also performs a blower door test, creating a negative pressure inside the house. This allows the homeowner to see where the main air leaks in the home are, and allows the energy advisor to calculate the air tightness of the home (measured in air changes per hour, i.e., how many times the volume of air contained in the house seeps out of the house).

The advisor then uses an energy analysis software called HOT2000 to compare the home with a reference house of a similar size in a similar climatic region. This is the basis for the rating. In order to compare one house to another, the energy rating is based on standard operating conditions (SOC) rather than the actual operating conditions of a house. The rating is based on:⁵⁰

- Four occupants (two adults and two children) who are present 50% of the time
- A temperature set-point of 21°C for the main and upper floors and 19°C for the basement

⁴⁸ Natural Resources Canada, Office of Energy Efficiency, “Frequently-Asked Questions (FAQ) about ecoENERGY Retrofit – Homes.” <http://oee.nrcan.gc.ca/residential/personal/retrofit/1750#ehp2>

See also Natural Resources Canada, *Energy Advisor Procedures Manual* (March 2010), 7.

⁴⁹ “A mobile home can be considered permanently fixed if it sits on a foundation of concrete, wood or steel (e.g., a mobile home on wood cribbing with a plywood or vinyl apron would qualify though regional requirements may negate use of aprons); it is structurally complete with entire plumbing, heating and electrical services installed and permanently connected to the appropriate electrical utility service, fuel service, sewer or septic service and water delivery system/service; and its towing apparatus and axle has been removed as per regional requirements.” “Frequently-Asked Questions (FAQ) about ecoENERGY Retrofit – Homes.”

⁵⁰ *Energy Advisor Procedures Manual*, 6.

- A consumption of 225 litres of domestic hot water per day
- An electricity consumption for lighting and appliances of 24 kilowatt hours (kWh) per day
- A total minimum monthly average ventilation rate of 0.30 air change per hour during the heating season, including natural air infiltration and mechanical ventilation

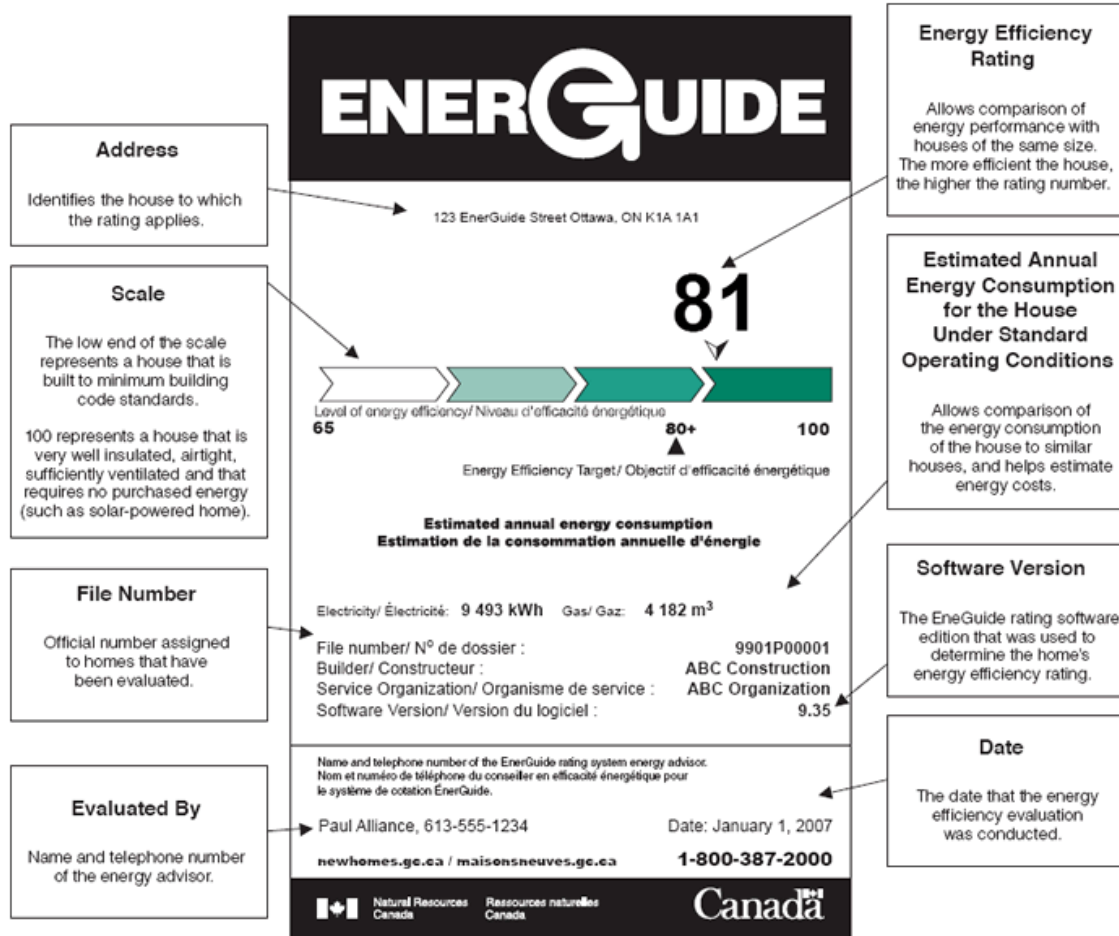


Figure 4. Key to an EnerGuide label for home

Source: NRCan⁵¹

What if actual operating conditions differ from these standard operating conditions?

As explained above, the energy use is modeled using standard operating conditions (SOCs), rather than actual operating conditions. That is to say, even if only two people live in the house, and they keep their thermostat at 19°C, the energy advisor will run the HOT2000 model assuming that four people inhabit the house and the thermostat is set at 22°C. This ensures the EnerGuide rating and estimated energy use can be compared apple-to-apple with those of other houses, independently of the behavioural habits of its inhabitants. These SOC's directly impact the estimated annual energy consumption, and therefore also the energy savings estimates associated with suggested energy upgrades.

⁵¹ NRCan, "EnerGuide Rating Label." <http://oe.nrcan.gc.ca/residential/personal/new-homes/15197>

For houses where operations conditions are generally more energy efficient than the SOC (for example, houses with fewer than four occupants, or with lower temperature set points during the day and/or the night, or with lower hot water use, etc.), the energy saving associated with energy upgrades will be overestimated. Conversely, for houses with more energy-intensive operating conditions (high occupancy, high temperature settings, high water use, etc.), the energy savings will be underestimated.

Compared to the average practice of homeowners in B.C., the current SOC used by energy advisors tend to overestimate energy use. Table 4 below presents the current SOC compared to average conditions, as estimated by various utility company surveys. Analysis using HOT2000 shows that revising the SOC to match these survey results for average operation conditions could lead to a decrease of estimated energy use (and energy savings) of up to 30%.⁵² Recommendations to reduce the gap between SOC and average practice was made to a national working group revising EnerGuide SOC's; revised SOC's are expected with the next generation EnerGuide.

Table 4. Standard Operating Conditions (SOC) used in HOT2000 simulations for EnerGuide labels compared to average operating conditions

	HOT2000 SOC	Average
Occupancy		
Single Family	4	2.5–2.8 ^a
Row	4	2.2–2.6 ^a
Temperature		
Main floor	21°C	18.4°C–18.8°C ^b
Basement	19°C	17.4°C–17.8°C ^b
Base electric load		
Single family	8,760 kWhr/yr	9,738 kWhr/yr ^c
Row home	8,760 kWhr/yr	8,251 kWhr/yr ^c
Domestic hot water		
Single family	250 L/day	160 L/day ^d
Row home	250 L/day	140 L/day ^d

Source: Hood.⁵³ Original data sources as indicated.

⁵² Innes Hood, Sheltair Group, presentation to Residential Energy Modeling Forum, April 24, 2012.

⁵³ Innes Hood, Sheltair Group, presentation to Residential Energy Modeling Forum, April 24, 2012.

^a Range of values based on 2006 Canadian census, 2007 BC Hydro residential end-use survey, and 2008 Terasen gas end-use survey

How is the reliability of energy assessments ensured?

Quality control of energy assessments happens at two levels. First, the energy service provider (i.e. the company sending the energy advisor) is responsible for monitoring the quality of the work of its staff and to report on this internal quality control to NRCan every three months. This includes a requirement for the quality control on the work of new and established energy advisors (review of the first seven evaluations, 20% of the first 20, and 5% thereafter), a summary of client satisfaction surveys, and a review of data collected and file management.⁵⁴ Second, NRCan conducts its own review, by contracting independent quality assurance auditors to assess all service organizations and their energy advisors. These auditors evaluate both client satisfaction and the accuracy of files generated by energy advisors by ensuring the forms are properly filled and conducting on-site evaluation. Discrepancy in the results could require a repeat of the assessment and/or remedial actions to ensure appropriate procedures are followed in the future, and could lead to the de-certification of the energy advisor.⁵⁵

What changes are expected in the new generation EnerGuide?

A revised EnerGuide system for home is currently under development. No roll-out dates have been announced officially; informal target date is spring 2014.⁵⁶ Some of the key expected changes include⁵⁷:

- Consumption-based scale: instead of the 0 to 100 relative scale, the new system will feature an absolute scale giving the house's estimated annual energy consumption, in GJ per year. The scale will begin at zero, for a net-zero house, and have no upper ceiling. This is aligned with EnerGuide labels for appliances, where a lower number indicates a more efficient appliance. This will also allow easy translation of the increase or decrease in EnerGuide rating to energy savings (a 10% decrease in the rating implying a 10% saving in energy).
- Greenhouse gas reporting: the label will incorporate estimate of greenhouse gas emissions from energy use.
- Including air conditioning/electric base loads: the scope of the rating system will be broadened to account for additional energy uses, like AC and plug-loads.
- Code compatibility: the system will be compare the energy efficiency of the house to the current building code, thus allowing a standard-based comparison.
- Accounting for renewables: the scope of the rating system will be broaden to account for on-site renewable energy production.

^b BC Hydro Behaviour Survey; the lower number corresponds average value for house with electrical heating, higher number corresponds to value for houses with natural gas heating

^c Customer billing extracts from 2007 BC Hydro Conservation Potential Review

^d 2008 Terasen Gas residential end-use survey

⁵⁴ NRCan, "EnerGuide for New Houses: Administrative and Technical Procedures," January 2005, revised March 2011. <http://oee.nrcan.gc.ca/residential/builders-renovators-trades/6638#protocol>

⁵⁵ Ibid.

⁵⁶ Martin Gaudet, Office of Energy Efficiency, personal communication.

⁵⁷ Natural Resources Canada, *Overview of the Development of the Next Generation EnerGuide Rating System for Houses* (2012).

- Increasing energy literacy: the label will provide more information to help educate homeowners and industry to lead them to action. A guide to the label will also be provided.
- Efficient living assessment report: in addition to the label, detailed report, and suggested energy upgrades, the homeowner can request an additional report focused on how their behavior and use of the house affects their energy consumption. This report would include a revised energy model based on as-operated conditions, information on how to operate and maintain the home more efficiently, recommendations on lifestyle changes and potential savings associated with atypical loads.
- Different products to meet customer needs: the new system will offer a scale of products, with different pricing: a basic EnerGuide rating and labelling, the retrofit recommendation report, the efficient living assessment report, etc. Thus, a home seller could meet a mandatory labelling requirement more cheaply by only getting the basic EnerGuide rating. The homebuyer might be interested in recommendations for energy upgrades, and could order this additional product for an additional cost (without having to go through another energy assessment).
- Updated standard operating conditions: as discussed above, the SOC currently used tend to overestimate energy use based on average operating conditions. These SOC are under review, and updated ones are expected with the new EnerGuide.
- Online access: energy assessment information will be stored online and made accessible to homeowners for future reference via a web portal.

These are important changes that will significantly improve the EnerGuide system — yet the current system remains a very useful tool to improve the building stock and increase energy literacy. We do not advise waiting for the new EnerGuide before implementing an home energy labelling requirement. Significant gains can be achieved with the system as it stands, and time is of the essence. While the transition between the two systems will need to be managed carefully, NRCan has committed to working with partners using the current EnerGuide system as part of their programs to ensure a smooth transition. In addition, “NRCan is committed to maintaining the current [EnerGuide Rating System (ERS)] calculation and providing the current rating in a report for as long as is required to transition the program over to the new ERS.”⁵⁸

Will homes that have been labelled using the old EnerGuide require another energy assessment when the new EnerGuide rating comes in?

No. While converting the current rating into the new rating will require more than just a simple equation, it can be done using a new simulation algorithm with the old house data. NRCan maintains a database of all house files ever submitted under the current system, and their systems can be set up to re-run existing files with the next generation rules. Notably, NRCan is also planning to allow homeowner to access their energy assessment data via a web portal. As this online tool evolves, it could be made possible to allow homeowners with an old label to check their ‘unofficial’ rating under the new system as well. In addition, was it to be of interest, it should be possible to provide homeowners under the new rating system with an old rating as well for comparison purposes.⁵⁹

⁵⁸ Ibid., 8.

⁵⁹ Ibid.,7-8.

5.1.1 Should mixed-use and low-rise multi-unit residential buildings be included in the program?

The energy assessment of mixed-used buildings (MUBs) or multi-unit residential buildings (MURBs) can be more complex than those of single-family homes. Particularly, in the case of condominiums, the sale of one unit does not generally involve the other units; yet, assigning an EnerGuide rating for a multi-unit building requires the energy advisor to have access to all units in the building. The extra step of getting strata councils or condominium boards to agree on energy assessment could be a significant burden on a condominium seller. Similar complications can happen with mixed-use building with commercial tenants. For this reason, it might be better to initially exempt MURBs and MUBs from the home energy labelling requirement, even though some jurisdictions, such as Austin, Texas, include them.

On the other hand, the program will be more effective at meeting its objectives if the scope is as wide as it can be. Furthermore, changing the scope at a later date will require further education and announcements; thus, it could be simpler to implement the program fully all at once.

After discussing these two arguments, workshop participants were generally in agreement that exempting MURBs and MUBs in the initial phases of the program would be advisable.

Appendix F. Labelling program for existing homes

While the bylaw proposed in this report focuses on labelling for NEW construction, it is worth it to point to the possibility of a more comprehensive labelling requirement that include existing homes. A labelling requirement for existing homes would expand the number of homes with EnerGuide ratings, supporting broader and more rapid market transformation.

Existing homes may be assessed at point of sale, and/or point of renovation and/or at time of rental. For example, the European Union Energy Performance Certificate program, discussed in Section 3.7, requires the labelling of new and existing residential dwelling when they are sold, rented, or undergo major renovation.

The City of Victoria has recently obtained a legal opinion that point of renovation audits, required as part of permitting, are within the City’s jurisdiction.⁶⁰

Figure 5 below outlines the steps that would be required by homeowners and realtors for a point of sale auditing process. For more information on existing homes, see Pembina report "Home Energy Labelling Requirement at Point of Sale: Pilot Program Design."⁶¹

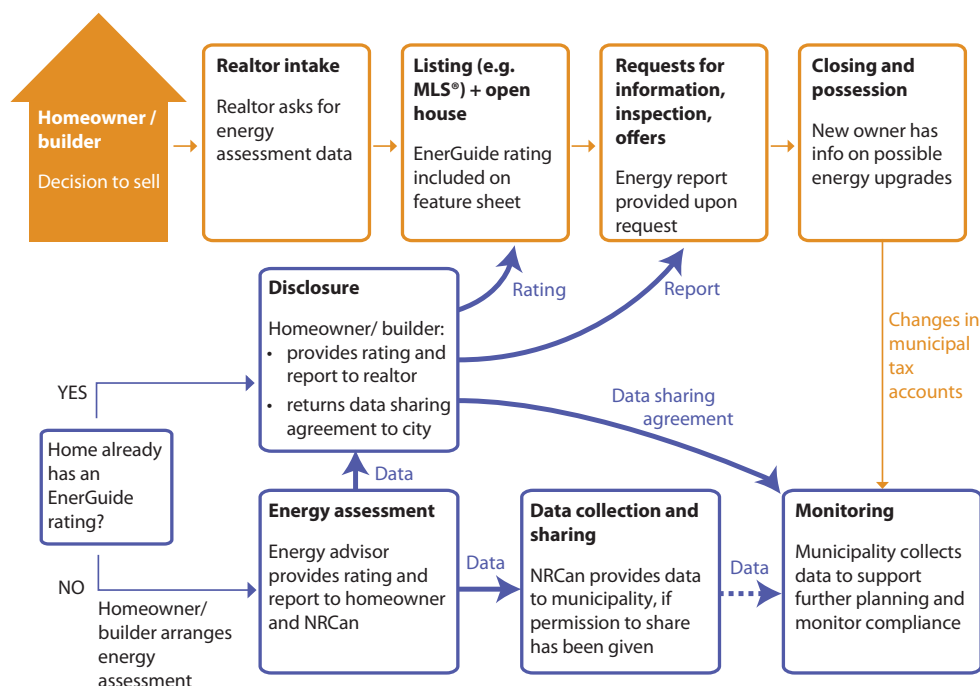


Figure 5. Home energy labelling requirement process for existing homes

⁶⁰ City of Victoria, Request for Proposal 13-056 - Point of renovation energy audit and/or disclosure policy & program design (2013), 2.

⁶¹ <http://www.pembina.org/pub/2400>