Guidelines for Virtual Energy Assessments & Virtual Home Labelling

Draft for public review

July 2025

DRAFT Guidelines for Virtual Energy Assessments – for public review (Summer 2025)
Contact homelabelling-etiquetageresidentiel@nrcan-rncan.gc.ca for information

Draft for public review

Natural Resources Canada (NRCan) has prepared these draft Guidelines solely for the purposes of public consultations. The draft Guidelines are non-binding and are intended to gather input and feedback on proposed voluntary practices for virtual energy assessments and virtual home labelling. Theya re not intended to constitute a standard, regulation, or enforceable requirement. Pending the results of this consultation, the recommendations contained within these draft Guidelines may be revised, expanded or withdrawn.

NRCan invites readers to submit comments during the public review period by sending an email to homelabelling-etiquetageresidentiel@nrcan-rncan.gc.ca, with the subject *VHL Guideline: Comments.*

Parties submitting comments will be identified by name, region and affiliation (if provided). All submissions are recorded to support home labelling initiatives. NRCan staff may share this information with partners and stakeholders to support further development of the Guidelines.

The public review will close at **11:59 pm PST on October 3rd, 2025, after which comments will no longer be accepted.**

Revision history and summary of changes

Version	Description	Date
0	Draft for public review	2025-05-27

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Preface

Disclaimer: These Guidelines are voluntary and informational in nature. They do not constitute certification, endorsement or approval by the Government of Canada or Natural Resources Canada (NRCan). Users assume full responsibility for ensuring that any practices based on these Guidelines comply with applicable laws, regulations, and standards. NRCan does not warrant the accuracy, suitability or fitness for purposes of any implementation of this guidance.

Natural Resources Canada's (NRCan) Guidelines for Virtual Home Energy Assessments and Virtual Labelling suggest definitions, assumptions, calculation procedures and formatting specifications for vendors and services that provide virtual home energy assessments and labels.

NRCan developed these Guidelines to assist provincial, territorial and municipal governments as they deploy virtual home labelling programming, and to aid vendors as they develop virtual home labelling technologies and services. They are not intended to replace, duplicate or conflict with existing provincial or territorial frameworks. The Guidelines are intended to improve the consistency of virtual home labelling across Canada by proposing a common approach. Adoption of these Guidelines is entirely at the discretion of governments and service providers.

During the development of these Guidelines, NRCan consulted with two advisory teams, which were comprised of eleven provincial and municipal governments, and nine virtual energy assessment services. While the content of the Guidelines reflect input from advisory team members on the feasibility, relevance and effectiveness of VHL services, NRCan does not endorse, certify or verify any tool or service based on alignment with this document.

Even so, these Guidelines are voluntary. Governments and vendors are not obliged to observe these Guidelines when developing labelling initiatives; nor will NRCan certify or endorse initiatives that align with these recommendations.

Objectives of the Guidelines

NRCan intends these Guidelines to:

1. Align virtual energy assessments within Canada's broader approach to home labelling.
2. Encourage consistent outcomes between different virtual energy assessment approaches and providers.
3. Inform organizations that are seeking to procure virtual energy assessments.
4. Discourage ineffective tools and approaches from the home labelling marketplace.

Use or alignment with these Guidelines is voluntary. NRCan has published these recommendations to support vendors and governments in virtual home labelling activities. However, NRCan does not validate, certify, endorse, approve or guarantee the performance or outputs of any vendor or jurisdiction that applies these recommendations, in whole or part.

Scope of the recommendations

The Guidelines offer recommendations for four aspects of virtual home energy assessments and labelling:

1. A set of assumptions, including climate data, household occupancy and operating conditions for asset-based assessments that increase consistency and comparability between labels.
2. A set of inputs that should be used when conducting assessments, and outputs that should be reported alongside that label.
3. A consistent method for computing energy consumption, utility cost and emissions estimates.
4. A common format for providing information on home energy efficiency, operating costs and emissions, as part of virtual home labels.

Types of assessments considered in the Guidelines

The Guidelines provide recommendations for conducting virtual energy assessments, and for issuing virtual home labels. The scope of the Guidelines is limited to residential energy assessments conducted without the direct participation of an energy advisor. Recommendations for assessments delivered by energy advisors, whether on-site or via remote assessment technology, are beyond the scope of the Guidelines.

The Guidelines are not intended to discourage collaboration between energy advisors and vendors. Energy advisors may support non-delivery activities associated with virtual home labelling, including design and development of virtual home labelling systems, quality assurance, or delivering post-virtual assessment services to homeowners.

Vendors of virtual energy assessments commonly use two types of energy modelling:

- **Asset-based modelling** that assesses a dwelling's energy efficiency characteristics separately from the activities and behaviours of occupants, and
- **Occupied modelling** that considers the energy efficiency of a dwelling alongside the activities and the behaviours of the occupants.

While both asset-based and occupied modelling are relevant to virtual energy assessments, the scope of these Guidelines is limited to asset-based modelling.

Homeowner participation in virtual home labelling

In the absence of on-site inspection, virtual energy assessments could allow homeowners to review, update and verify information about their homes. In many cases, homeowners can provide details that are not accurately captured in housing databases and other information sources, or that may have changed since those data were last collected.

The Guidelines define virtual home labels as the result of virtual assessments where:

- the homeowner has been afforded an opportunity to review, correct and update the information about the subject dwelling, and
- the homeowner has provided a declaration indicating that the information contained in the assessment is accurate to the best of their knowledge.

The Guidelines recommend that any label issued by a virtual energy assessment not meeting these criteria be defined as a preliminary virtual home label.

Alignment with the EnerGuide Rating System

These Guidelines refer to energy modelling and rating methodology that may be broadly similar in concept to NRCan's EnerGuide Rating System. However, there are differences between virtual energy assessment methods and EnerGuide's on-site assessment procedures. For these reasons, NRCan does not authorize use of the official EnerGuide name, mark, or brand in association with virtual energy assessments or virtual home labels.

However, NRCan encourages virtual home labelling services to inform homeowners about the EnerGuide Rating System, but must not suggest that their virtual assessments are endorsed, validated or equivalent to EnerGuide Rating System outputs. Virtual home labelling services may suggest that homeowners contact a registered energy advisor as a possible next step after receiving a virtual home energy label.

Composition of the Guidelines

The Guidelines include seven sections with guidance for virtual home labelling, and one informational appendix. The guidance is presented in the following sections:

1. Scope and application
2. Reference publications
3. Terms and definitions
4. Modelling for virtual energy assessments
5. Computed performance metrics
6. Virtual home label
7. Label terminology

The Guidelines also include an appendix with informational notes. These notes are offered to aid in the interpretation and application of the Guidelines, and to provide insight into the rationale associated with its recommendations.

Omissions from the Guidelines

While recommendations in the Guidelines are intended to ensure consistency and comparability between virtual home labels, they are not intended to limit or impede vendors' ability to incorporate new information sources or to develop new products for homeowners. For this reason, the Guidelines are silent on some aspects of virtual home label delivery. These omissions serve to enhance flexibility for vendors, and to encourage innovation:

- **Data sources:** While the Guidelines recommend a minimum set of model inputs, they do not indicate where this data should be sourced from. Vendors could obtain this information from third party databases, from the homeowners, or through other methods. Vendors could also incorporate any additional inputs, parameters or other factors into their labelling algorithms.
- **Energy modelling:** The Guidelines do not recommend specific methods or algorithms that vendors apply to estimate energy consumption and emissions. When following these Guidelines, vendors should demonstrate that the algorithm can produce the outputs, and that it achieves an acceptable level of consistency when exercised over a standardized test suite.

- **Label format:** While the Guidelines encourage consistent energy profile information that should be included in each virtual home label, they offer flexibility on how the balance of the label could be composed or presented.

Table of contents

DRAFT Guidelines for Virtual Energy Assessments – for public review (Summer 2025)
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1 Scope and application

1.1 Scope

The Guidelines include recommendations for:

- Common definitions and terminology for virtual home labelling
- Inputs, outputs and boundary conditions for virtual energy assessments
- Calculation methods for key performance metrics
- Recommendations for label contents, presentation and formatting

1.1.1 Virtual energy assessments

The Guidelines are intended for virtual energy assessments and virtual home labelling activities that do not involve direct participation of an energy advisor or other service professional. These activities should be referred to as virtual assessments. Assessments that include the participation of an energy advisor (whether on-site or remotely) are beyond the scope of these Guidelines.

1.1.2 Assessed performance

The Guidelines recommend calculations for estimating and reporting three performance metrics:

1. annual energy consumption
2. energy utility costs
3. carbon emissions

Other dwelling performance metrics are beyond the scope of the Guidelines.

1.1.3 Reporting and labelling

The Guidelines recommend the content, format and presentation of a virtual home label – comprised of a digital file that can be transmitted electronically, can be stored on a homeowner's computer, and can be printed at the homeowner's convenience. Virtual home labels may also be delivered to homeowners in paper format. Recommendations for such labels are provided in Section 6.

In addition to virtual home labels, vendors may provide access to home energy ratings and performance information via a digital dashboard or another electronic user interface. Although the Guidelines do not provide recommendations for the design or implementation of these interfaces, NRCan encourages vendors to design dashboards that present home performance information in a manner consistent with virtual home labels. NRCan also recommends that dashboards include links for users to download their virtual home label.

1.1.4 Data collection and privacy

These Guidelines do not include recommendations regarding data privacy and collection of information. Vendors and users are solely responsible for ensuring compliance with all applicable legislation and industry best practices regarding the collection, use, storage and disposal of personal or identifiable information. NRCan does not assume responsibility for any privacy compliance obligations arising from the use or implementation of these Guidelines.

1.2 Application

1.2.1 Eligible housing types

The Guidelines are applicable to single dwelling units of residential occupancy that meet the following criteria:

- Not more than three storeys fully above the highest point of finished ground, with not more than a combination of four storeys fully or partially above the lowest point of finished ground
- Not greater than 600m² in building area
- Constructed on permanent foundations, including piles or screw jacks

Assessments for buildings that incorporate both residential and non-residential occupancy should exclude energy use and floor area associated with non-residential occupancy.

1.2.2 Prerequisites for virtual energy assessments and virtual home labels

Virtual energy assessments should be limited to homes that are suitable for residential occupancy. Vendors should ensure that dwellings receiving assessments and labels are:

- in buildings that are zoned for residential use,
- not undergoing renovations to the building envelope (foundations, exterior walls, windows, doors, exterior ceilings, exposed floors),
- equipped with working mechanical systems for heating and water heating

In many cases, vendors will be unable to validate this information using property information databases or other means. NRCan recommends that vendors:

1. afford homeowners an opportunity to review, correct and update information about the subject dwelling (including eligibility), and
2. collect a declaration from the homeowner indicating that the home meets the prerequisites for virtual energy assessments, and that information contained within the assessment is accurate to the best of their knowledge.

NRCan advises that any label issued to homes without an accompanying homeowner declaration should be regarded as a preliminary virtual home label and should be clearly identified as such.

(See note)

1.2.3 Data collection

Virtual energy assessments should derive home energy characteristics using one or more of the following sources:

- Measurements collected without visiting the dwelling (such as street, aerial or satellite imagery)
- Third-party dwelling characteristics databases
- Homeowner submitted data describing their dwelling's characteristics

(See note A-1.2.3: Data collection)

2 Reference publications

Recommendations in these guidelines reference other datasets, information sources and standards. These references can be located at the following URLs.

Canadian Weather Energy and Engineering Datasets (CWEEDs): Dataset containing two decades of historical meteorological data for 644 locations in Canada. Available at this URL: https://open.canada.ca/data/en/dataset/005494f2-1848-48d5-abe4-a76a7846f035

Canadian Weather Year for Energy Calculations (CWEC): Dataset of typical meteorological years for 644 locations in Canada. Available at this URL: https://open.canada.ca/data/en/dataset/55438acb-aa67-407a-9fdb-1cb21eb24e28

EnerGuide Rating System Standard — Version 15: A national system for labelling homes using on-site energy assessments by energy advisors. More information about the EnerGuide Rating System is provided at this URL: https://natural-resources.canada.ca/energy-efficiency/product-energy-ratings/energuide/energuide-energy-efficiency-home-evaluations

HOT2000 Climate Map: A geographic database of local climate zones and associated climate data used by NRCan's HOT2000 Software. Available at this URL: https://open.canada.ca/data/en/dataset/4672733b-bbb6-4299-a57f-f19ab475ac11

National Building Code of Canada 2020: Model code for minimum construction requirements across Canada. Available at this URL: https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-building-code-canada-2020

National inventory report: Greenhouse gas sources and sinks in Canada: Annual accounting of all greenhouse gas emissions in Canada. Available at this URL: https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html

Statistics Canada Table 18-10-0001 - Monthly Average retail prices for gasoline and fuel oil: Monthly report of customer prices for petroleum fuels across Canada. Available at this URL: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810000101

3 Terms and definitions

These Guidelines use the following terms and definitions to describe home labelling concepts.

Algorithm: Modelling or estimation procedures used by virtual home labelling services and vendors to characterize home performance, including energy use and emissions. Algorithms may refer to artificial intelligence and machine learning techniques, as well as traditional statistical and engineering modelling methods.

Applicable residential energy end uses: List of residential activities that comprise the scope of energy consumption estimates for the purposes of modeling.

Asset-based modelling: An application of virtual energy assessment that estimates the energy performance of a physical dwelling, irrespective of occupant activity or behaviour. This type of modelling focuses on the characteristics of the dwelling, allowing labels from different homes to be compared even when the occupants of those homes have different lifestyles.

Building area: The greatest horizontal area of a building, measured above grade and within the outside surface of the exterior walls, and within the center line of all party walls.

Common space: A heated space in a building that is not part of a residential or non-residential unit, and which may be used by all occupants of the building (or for which access may be limited, such as solely by the building owner/operator). Examples include hallways, staircases, common laundry rooms or mechanical rooms. Spaces containing cooking, eating, living, sleeping and sanitary facilities are part of dwelling units, and shall not be considered common spaces.

Date of assessment: The date on which a vendor compiles the inputs necessary to complete an assessment.

Dwelling characteristic database: Database containing property records that are used in virtual assessments, typically published by third parties. Examples include property assessments, building footprint databases, and the EnerGuide for Houses database.

Dwelling unit: A building or part of a building, used or intended to be used by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

Energy advisor: An individual registered with NRCan to deliver the EnerGuide Rating System Basic Service and additional services.

Energy modelling interval: The interval over which a dwelling's energy performance is evaluated for the purposes of estimating energy use, emissions and utility costs.

First storey: The lowermost storey having its floor level above grade.

Heated floor area: The sum of the usable floor area that forms part of a dwelling unit's conditioned space. The heated floor area includes all above-grade heated areas regardless of ceiling height, and all below-grade heated areas, such as basements, with a ceiling height of more than 1.2 metres.

Heating degree day: A measure of the difference between the mean temperature in each day and a reference temperature of 18°C. Heating degree days are typically summed for each day in a year to produce an annual summary statistic of climate severity in the heating season.

Homeowner submitted dwelling characteristics: Housing characteristic information provided by homeowners. May be used to update or correct information obtained from dwelling characteristic databases.

Metered utility data: Information obtained from utilities on measured electrical or natural gas consumption associated with a dwelling.

Occupied modelling: An application of virtual energy assessments that estimates the energy use characteristics of a household, reflecting both the energy efficiency characteristics of the dwelling and the activity and behaviour of its occupants. Occupied modelling provides customized estimates for energy consumption and savings potential that reflect the experiences of home occupants.

On-site energy assessment: A home energy assessment performed by an energy advisor who visits the home for the purposes of taking measurements and verifying house characteristics and calibrating an energy model.

Preliminary virtual home label: A home label resulting from a virtual assessment without direct participation of the homeowner. Preliminary virtual home labels are distinguished from virtual home labels, as the homeowner has not reviewed and updated the information used to produce these labels.

Reduced-operating conditions for Net Zero Homes: An alternative set of operating condition assumptions available for evaluations conducted in accordance with the EnerGuide Rating System.

Remote audit: A home energy assessment performed by an energy advisor without visiting the home. In this type of assessment, the energy advisor verifies information about the house using information submitted by the homeowner (including photos and/or videos).

Residential occupancy: The occupancy or use of a building or part of a building, by persons for whom sleeping accommodations are provided. In the context of the Guidelines, a dwelling unit is considered to have residential occupancy.

Secondary suite: A self-contained dwelling unit located in a house where both dwelling units constitute a single real estate property. In the case of houses with secondary suites, the units may be located side-by-side, fully or partially stacked or joined by a common area.

Standard energy profile: A summary of a dwelling's energy use and emissions characteristics, reflecting the design and construction of the dwelling, and the provision of energy conservation measures. Standard energy profiles are developed assuming typical occupant lifestyles and are not affected by the number of people who live in a dwelling, or their actual lifestyles.

Storey: The portion of a building that is situated between the top of any floor and the floor next above. If there is no floor above, that portion between the top of such floor and the ceiling above.

Subject dwelling: The dwelling undergoing a virtual energy assessment.

Total estimated energy cost: Estimated cost required to supply dwelling with energy (including electricity, natural gas, heating oil, propane and wood) over the energy modelling interval.

Vendor: Agency providing virtual energy assessment and virtual home labelling services.

Virtual energy assessment: A home energy assessment performed without the support of an energy advisor. In this type of assessment, a home's energy characteristics are estimated using information from third party databases, and optionally, information provided by the homeowner.

Virtual home label: A home label resulting from a virtual energy assessment, with direct participation of the homeowner. Virtual home labels may be issued when the homeowner has been afforded the opportunity to review and update the information used in the virtual energy assessment, and has completed a declaration that all information is correct. See also preliminary virtual home label.

4 Modelling for virtual energy assessments

NRCan recommends that virtual home labelling assessments use asset-based modelling methods, similar to those used by the EnerGuide Rating System. This approach ensures that home energy ratings and labels reflect a dwelling's energy efficiency characteristics and are not affected by the behaviour of the occupants.

(See note A-4: Energy modelling for virtual energy assessments)

4.1 Date of assessment

Vendors should record the date of assessment as the date on which the vendor compiles the inputs required to complete the assessment. If inputs are compiled over multiple days, the date of assessment should reflect the most recent date on which the data was compiled.

4.2 Energy modelling interval

Virtual energy assessments should model a dwelling's energy consumption over a one-year (365 day) period, ranging from January 1 to December 31. If the energy modelling interval falls within a leap year, the assessment should correspond to a 365-day period, and February 29 should be omitted from the assessment.

(See note A-4.2: Energy modelling interval)

4.3 Climate data for energy modelling

NRCan recommends that virtual energy assessments use typical meteorological weather conditions for the purposes of energy modelling.

Climate data should correspond to either:

- the weather station nearest to the dwelling's location, or
- the weather station known to best represent the weather conditions at the dwelling's location, as measured using heating degree days.

Vendors should incorporate weather data into virtual assessment modelling using one of the following formats:

- native hourly format as provided by NRCan,
- aggregated monthly bin format, or
- aggregated annual heating degree day format.

Vendors using hourly or monthly bin climate data are advised to reference the most recent Canadian Weather Year for Energy Calculations (CWEC) data set for the weather station that best represents the location of the subject dwelling. Vendors using aggregated heating degree day data may reference the HOT2000 climate map.

(See note A-4.3: Climate data for energy modelling)

4.4 Modelling inputs

Energy models should incorporate the following inputs for dwelling characteristics:

- Location
- Year of construction
- Heated floor area (m^2)
- Type of dwelling
- Number of storeys
- Foundation type
- Space heating fuel type
- Water heating fuel type
- Primary heating system type
- Primary heating system age
- Heat pump source
- Cooling system
- Photovoltaic system

(See note A-4.4: Modelling inputs)

4.4.1 Location

The location of the subject dwelling should be described in sufficient detail to identify appropriate weather data. Recommended location formats include:

- A dwelling's civic address
- A dwelling's property assessment identifier
- A dwelling's postal code
- A dwelling's geographic coordinates (latitude and longitude)

4.4.2 Year of construction

The subject dwelling's date of construction should be described using:

- the year of construction or the decade of construction, for homes constructed prior to 1960, and
- the year of construction, for all other homes.

4.4.3 Heated floor area

The size of the subject dwelling should be quantified using the heated floor area. This area should include the sum of the interior horizontal areas of all floors and stair systems corresponding to heated spaces in which the ceiling height is 1.2 metres or greater.

The heated floor area should include above grade and below grade areas inside the building envelope that are conditioned throughout the heating season. Garages, porches and other seasonal spaces should not be included in the heated floor area, even if they are served with heating equipment.

The heated floor area should be reported in square metres (m^2).

4.4.4 Type of dwelling

The type of dwelling refers to the subject dwelling's configuration and attachment to adjacent dwellings. The value of this input should correspond to one of the following values:

- **Detached:** Dwellings that share no common walls, ceilings or floors with adjacent dwellings.
- **Attached:** Dwellings that share common walls, ceilings or floors with adjacent dwellings, in duplex, tripled or row house configurations.
- **Mobile homes:** Dwellings that are on temporary foundations and supplied by permanent electrical service.

(See note A-4.4.4: Type of dwelling)

4.4.5 Number of storeys

This parameter denotes the number of storeys contained between the roof and the floor of the first storey. The value of this input should be reported as a whole number.

(See note A-4.4.5: Number of storeys)

4.4.6 Foundation type

This parameter denotes the configuration of the predominate foundation type associated with the dwelling. The foundation type should correspond to one of the following values:

- Basement
- Slab on grade
- Enclosed and conditioned crawlspace
- Walk-out
- Vented crawl space or exposed floor above piles or screw jacks
- No foundation

Where the dwelling is configured with multiple foundation types (e.g. basement & slab on grade), the predominate foundation type should be the type with the largest aggregate horizontal area. Other foundations attached to the dwelling may be ignored.

(See note A-4.4.6: Foundation type)

4.4.7 Space heating fuel type

This parameter denotes the type of fuel used by the primary space heating system, or in the case of homes equipped with heat pumps, the type of fuel used by the back-up heating system. The space heating fuel type should correspond to one of the following values:

- Electricity
- Natural gas
- Heating oil
- Propane
- Wood

4.4.8 Water heating fuel type

This parameter denotes the type of fuel used by the primary water heating system. The water heating fuel type should correspond to one of the following values:

- Electricity
- Natural gas
- Heating oil
- Propane
- Wood
- Solar

4.4.9 Primary heating system type

This parameter denotes the type of the primary heating system, or in the case of homes equipped with heat pumps, the type of the back-up heating system. This parameter should correspond to one of the following values:

- Furnace
- Boiler
- Electric baseboards or other resistance heating
- Stove/unitary heater

Heat pumps that do not have a designated back-up heating system should be assumed to have an electric resistance back-up heating system.

4.4.10 Primary heating system age

This parameter denotes the age of the primary heating system, or in the case of homes equipped with heat pumps, the age of the heat pump. Vendors may choose to describe the age of the primary heating system using one of the following methods:

- Single-year resolution (“the heating system is 8 years old”)
- Five-year spans (“the heating system is between 5 and 10 years old”)
- Recent replacement (“the heating system was replaced within the last 10 years”)

(See note A-4.4.10: Age of primary heating system)

4.4.11 Heat pump source

This parameter denotes the ambient energy source for a dwelling’s heat pump, if equipped. The heat pump source should correspond to one of the following values:

- Air-source
- Ground-source
- Water-source
- None (no heat pump)

4.4.12 Cooling system type

This parameter denotes the presence and configuration of cooling systems, if equipped. The cooling system type should correspond to one of the following values:

- Permanently installed cooling systems (central or split)
- Window or portable air conditioning
- No air conditioning

Homes equipped with heat pumps may be assumed to have permanently installed cooling systems.

4.4.13 Solar photovoltaic system size

This parameter denotes the presence and size of solar photovoltaic (PV) panels, if equipped. The solar photovoltaic system should correspond to one of the following values:

- Small scale system (12 panels or less, ~0-4kW DC)
- Medium scale system (13 to 25 panels, ~4-8kW DC)
- Large scale system (26-39 panels, ~8-12 kW DC)
- Very large scale system (40 panels or more, ~12+ kW DC)
- No PV (0 panels)

(See note A-4.4.13: Solar photovoltaic system terminology)

4.5 Data submitted by homeowners

Vendors should allow homeowners to review, update and correct input data used for the assessment. Data submitted by the homeowner may consist of the inputs prescribed in Section 4.4, or a subset of those inputs. Where homeowners do not provide all the inputs prescribed in Section 4.4, vendors may infer unknown inputs from other data sources.

Consistent with the asset-based assessment methodologies, vendors are advised not to incorporate information describing building occupancy or occupant activity into virtual home labels. This data may introduce uncertainty into home ratings by allowing occupant behavior to influence evaluation results.

4.6 Inputs sourced from utility metered data

Provided vendors have permission to access metered energy data, vendors may use this information to infer inputs for the purposes of modelling. These inferred inputs should be limited to energy use characteristics of the dwelling (such as primary heating system type).

Vendors are advised against deriving occupancy or occupant activity information from utility metered data. Such use of metered data is inconsistent with asset-based modelling methods.

(See note A-4.6: Inputs sourced from metered utility data)

4.7 Operating conditions

Vendors should evaluate the subject dwelling's heated floor area for the purposes of determining the occupancy of the dwelling. The Guidelines recommend different assumptions for occupancy, electric loads and hot water use for homes depending on a dwelling's heated floor area.

(See note A-4.7: Standard operating conditions)

4.7.1 Occupancy

The number of occupants modelled should be in accordance with Table 4.7.1. Occupants should be assumed to be home 50% of the time.

Table 4.7.1: Occupancy for dwelling assessments

Occupant type	Dwellings smaller than 115m²	Other dwellings
Number of Adults	2	2
Number of Children	0	1

4.7.2 Electric loads

Electric loads associated with the subject dwelling should be computed in accordance with Table 4.7.2.

Table 4.7.2: Per dwelling electric loads for use in assessments

Electric load	Dwellings smaller than 115m² (kWh/day)	Other dwellings (kWh/day)
Interior lighting	1.7	2.6
Interior Appliances	5.2	6.3
Other interior loads	4.4	9.7
Exterior loads	0.4	0.9
Total	**11.7**	**19.5**

4.7.3 Hot water loads

Hot water loads associated with the subject dwelling should be computed in accordance with Table 4.7.3. Energy models should assume these volumes are supplied at 55°C and do not include mixed cold-water draws.

Table 4.7.3: Per dwelling hot water loads for use in dwelling assessments

Hot water load	Dwellings smaller than 115m² (l/day)	Other dwellings (l/day)
Showers	60	90
Clothes washing	30	45
Dishwashing	7	10
Faucets and other usage	25	45
Total	**122**	**190**

4.8 Modelling outputs

4.8.1 Energy end-uses

Vendors should compute quantities of applicable residential energy end-uses over the energy modelling interval, as described in the following definitions:

1. **Space heating energy use (GJ)**: The sum of all energy required to heat a dwelling's occupied space, including fuel and electricity used by combustion equipment, resistance elements, draft fans, circulation pumps and blowers, compressors, refrigeration pumps and evaporative fans, and controls. Space heating energy use also includes the energy required to condition ventilation and infiltration air to indoor temperatures during the heating season.
2. **Water heating energy use (GJ)**: The sum of all energy required to supply hot water for domestic purposes, including baths and showers, dishwashing, laundry and other use at the tap. Water heating end uses exclude energy required to heat swimming pools, hot tubs and steam rooms. When water heating systems include solar thermal components, the water heating energy use should reflect non-renewable energy used by water heating systems, and exclude solar energy input.
3. **Ventilation energy use (GJ):** The sum of all energy required to supply fresh air into the dwelling, and to remove exhaust air from the dwelling. Ventilation energy should reflect the energy use of fans and associated controls. Ventilation energy should not include energy required to condition or temper incoming outdoor air.
4. **Cooling energy use (GJ):** The sum of all energy required to cool a dwelling's occupied space, including circulation pumps and blowers, compressors, refrigeration pumps and evaporative fans, and controls. Space cooling energy use includes the energy required to condition ventilation and infiltration air to indoor temperatures during the cooling season.
5. **Appliances, lighting and equipment (GJ):** The sum of all energy consumed by residential electrical equipment, including lighting, appliances and miscellaneous plug loads.

4.8.2 Total energy use

Energy models should compute the following energy consumption value describing the energy and environmental performance of the dwelling over the energy modelling interval:

1. **Total energy use (GJ):** The sum of all energy used by applicable residential energy end uses

4.8.3 Energy consumption by source

Energy models should compute the amount of energy consumed by all applicable residential energy end uses, aggregated by the energy source. The following energy consumption amounts should be computed over the energy modelling interval:

1. Electricity consumption (kWh)
2. Natural gas consumption (m^3)
3. Heating oil consumption (l)
4. Propane consumption (l)
5. Wood consumption (kg)

The Guidelines recommend that the scope of dwelling energy consumption be limited to the property line or boundary associated with the dwelling; upstream energy use associated with the production and transport of energy for use in the dwelling are outside of the recommended scope.

Computed energy consumption should be aggregated into a single total over the energy modelling interval for the purposes of computing dwelling energy use, emissions, and energy costs. Vendors may also compute energy consumption over shorter periods (for example, monthly, thirty-day or hourly intervals) for the purposes of applying utility rate schedules.

(See note A-4.8.3: Energy consumption over shorter intervals)

4.8.4 Renewable energy generation

Virtual energy assessments should compute the energy generated by eligible renewable energy systems for the energy modelling interval, as described in the following definition:

6. **Total renewable generation (GJ):** total output from renewable generation systems

For consistency with on-site assessment practices, NRCan recommends that the scope of renewable energy generation be limited to the electrical output of building mounted solar photovoltaic systems.

5 Computed performance metrics

Virtual energy assessments should compute a common set of energy performance metrics that are comparable from one label to another. The Guidelines provide three common metrics for inclusion on virtual home labels:

- Net energy use
- GHG emissions
- Energy costs

Each metric should be computed in accordance with recommendations put forth in this section.

5.1 Net energy use metric

Virtual energy assessments should compute the *net energy use* of the dwelling using the following equation:

$$Net\ energy\ use\ (GJ) = Total\ energy\ use\ (GJ) - Total\ renewable\ energy\ generation\ (GJ) \quad (5\text{-}1)$$

Where *Total energy use* is computed in accordance with Section 4.8.2, and *Total renewable energy generation* is computed in accordance with Section 4.8.4.

5.2 GHG emission metric

Virtual energy assessments should compute greenhouse gas emissions associated with electricity and combustion fuels consumed in the subject dwelling. Assessments should use emission factors to convert from quantities of fuel use to GHG emissions.

5.2.1 Emission factors for electricity

GHG emission factors for electricity should be obtained from either:

1. the provincial or territorial government having jurisdiction over the subject dwelling,
2. the regulated utility supplying electricity in the region, or
3. the provincial or territorial consumption intensity emission factors published in the most recent National Inventory Report (Tables A13-2 to A13-14).

Vendors relying on data from the National Inventory Report should use the most recent emission factors reported in Tables A13-2 — A13-14 of that report.

(See note A-5.2.1: GHG emission factors for electricity)

5.2.2 Emission factors for natural gas

GHG emission factors for natural gas should be obtained from either:

1. the provincial or territorial government having jurisdiction over the subject dwelling,
2. the regulated utility supplying natural gas in the region,
3. or the Canadian national average, provided in the most recent National Inventory Report ,and following the recommended calculations described in Section 5.2.4 of these Guidelines.

5.2.3 Emission factors for heating oil, propane and wood

GHG emission factors for heating oil, propane and wood should be obtained from the most recent National Inventory Report and follow the calculations described in Section 5.2.4 of these Guidelines.

5.2.4 Calculating emission factors for combustion fuels

In accordance with the conventions established in the National Inventory Report, the natural gas, heating oil, propane and wood GHG emission factors should be calculated by multiplying constituent CO_2 ,CH_4 and N_2O emission factors by their respective global warming potential:

$$\textit{Fuel GHG emission factor} = (CO_2\ \textit{emission factor}) + (CH_4\ \textit{emission factor} \times 28) + (NO_2\ \textit{emission factor} \times 265) \quad (5\text{-}2)$$

Where the CO_2 ,CH_4 and N_2O emission factors are the most recent values published in the National Inventory Report in accordance with the references provided in Table 5.2.4.

Table 5.2.4: National Inventory Report references for emission factors

Emission factor	National Inventory Report references	Emission Scope
Natural Gas GHG emission factor	Table A6.1-1: CO_2 Emission factors for marketable natural gas Table A6.1-3: CH_4 and N_2O Emission Factors for Natural Gas	CO_2 ,CH_4 and N_2O
Heating oil GHG emission factor	Table A6.1–6 Emission Factors for Refined Petroleum Product (Light fuel oil, residential)	CO_2 ,CH_4 and N_2O
Propane GHG emission factor	Table A6-1.5 CH_4 and N_2O Emission Factors for Natural Gas	CO_2 ,CH_4 and N_2O
Wood emission factors	Table A6.6–1 Emission Factors for Biomass (Residential combustion, Conventional Stoves)	CH_4 and N_2O

(See note A-5.2.4: Calculating emission factors for combustion fuels)

5.2.5 On-site GHG emissions metric

Once combustion fuel emission factors are determined, the total on-site GHG emissions can be computed for the assessment period by multiplying the *energy consumption by source* by the appropriate *GHG emission factor*:

$$\begin{aligned}\textit{On-site GHG emissions (g)} = {} & \textit{Natural gas cons.}\ (m^3) \times \textit{Natural gas GHG emission factor}\ (g/m^3) \\ & + \textit{Heating oil cons.}\ (l) \times \textit{Heating oil GHG emission factor}\ (g/l) \\ & + \textit{Propane cons.}\ (l) \times \textit{Propane GHG emission factor}\ (g/l) \\ & + \textit{Wood cons.}(kg) \times \textit{Wood GHG emission factor}\ (g/kg)\end{aligned} \quad (5\text{-}3)$$

Where *Natural gas cons (m³)*, *heating oil cons (l)*, *propane cons (l)* and *wood cons. (kg)* are the energy consumption by source values computed in accordance with Section 4.8.3.

The on-site GHG emissions metric should be converted into tonnes of CO_2 equivalent by dividing by 1×10^6:

$$On\text{-}site\ GHG\ emissions\ (T) = \frac{On\text{-}site\ GHG\ emissions\ (g)}{1 \times 10^6} \quad (5\text{-}4)$$

5.2.6 Off-site GHG emissions metric

Virtual energy assessments should compute the off-site operational GHG emissions (T) from the dwelling for the energy modelling interval by multiplying the electricity consumption by the appropriate *GHG* emission factor for electricity.

$$Off\text{-}site\ GHG\ emissions\ (g) = Electricity\ Cons.\ (kWh) \times Electricity\ GHG\ emission\ factor\ (g/kWh) \quad (5\text{-}5)$$

Where *Electricity Cons (kWh)* is the electricity consumption by source values computed in accordance with Section 4.8.3.

The off-site GHG emissions metric can then be converted into Tonnes of CO_2 equivalent by dividing by 1×10^6.

$$Off\text{-}site\ GHG\ emissions\ (T) = \frac{Off\text{-}site\ GHG\ emissions\ (g)}{1 \times 10^6} \quad (5\text{-}6)$$

5.2.7 Total GHG emissions metric

The total GHG emissions metric is the sum of the on-site and off-site GHG emissions.

$$Total\ GHG\ emissions\ (T) = On\text{-}site\ GHG\ emissions\ (T) + Off\text{-}site\ GHG\ emissions\ (T) \quad (5\text{-}7)$$

5.3 Energy costs

Virtual energy assessments should compute the estimated cost of energy over the energy modelling interval. The scope of the energy cost estimate should include the following energy sources:

- Electricity
- Natural gas
- Heating oil
- Propane
- Wood

Vendors are encouraged to use recent, regional energy prices when computing energy costs.

5.3.1 Estimated electricity costs

Virtual energy assessments should compute the total cost of the electricity service over the energy modelling interval. The computed costs of electric services should reflect consumption charges

associated with electricity used by the dwelling, including electricity supply, transmission and distribution charges, and other fees assessed on a per kilowatt hour basis.

Consumption charges should be assessed using either:

- A recent schedule of rates and fees posted on the electric utility's website, or
- A schedule of rates and fees provided by the electric utility for the purposes of conducting virtual energy assessments.

Virtual energy assessments may compute electricity consumption charges using either:

- A fixed rate that remains constant over the assessment period,
- A tiered rate that is adjusted as consumption increases over periodic intervals,
- A time-of-use rate that varies at different times in the day, or
- A variable rate that reflects observed changes to the utility rates over the energy modelling interval.

In regions where electric utilities use tiered, time-of-use, or variable rates, vendors may compute an average fixed rate representing the average price of electricity over the energy modelling interval. When a variable rate is used in calculations, assessments should also compute the effective price of electricity (excluding base costs and taxes) for reporting purposes:

$$\textit{Effective price of electricity } (\$/\text{kWh}) = \frac{\textit{Electricity supply and delivery charges } (\$)}{\textit{Electricity consumpton } (\text{kWh})} \qquad (5\text{-}8)$$

(See note A-5.3: Effective prices of electricity and natural gas)

5.3.2 Estimated natural gas costs

When a virtual energy assessment determines that the natural gas consumption of the dwelling (as computed in accordance with Section 4.8.3) is greater than zero, the assessment should also compute the total cost of the natural gas service over the energy modelling interval. The costs of natural gas services should reflect consumption charges associated with natural gas used by the dwelling, including gas supply, compression, transmission and distribution charges, and other fees assessed on a per cubic meter or per GJ basis.

Consumption charges may be assessed using either:

- A recent schedule of rates and fees posted on the natural gas utility's website, or
- A schedule of rates and fees provided by the natural gas utility for the purposes of conducting virtual energy assessments.

Virtual energy assessments should compute gas consumption charges using either:

- A fixed rate that remains constant over the assessment period,
- A tiered rate that is adjusted as consumption increases over periodic intervals,

- A variable rate that reflects observed changes to the utility rates over the energy modelling interval.

In regions where gas utilities use tiered or variable rates, vendors may compute an effective fixed rate representing the average price of natural gas over the energy modelling interval.

For reporting purposes, virtual energy assessments may also compute the *effective price of natural gas* (excluding connection and administration charges, and taxes) as follows:

$$\textit{Effective price of natural gas } (\$/m^3) = \frac{\textit{Natural gas supply and delivery charges } (\$)}{\textit{Natural gas consumption } (m^3)} \quad (5\text{-}9)$$

In regions where natural gas is sold on an energy unit basis (for instance, by GJ), assessments may compute natural gas consumption on a unit energy basis, instead of a volume basis.

(See note A-5.3: Effective prices of electricity and natural gas)

5.3.3 Estimated heating oil costs

When a virtual energy assessment determines that the heating oil consumption of the dwelling (as computed in accordance with Section 4.8.3) is greater than zero, the assessment should also compute the total cost of heating oil used in the dwelling over the energy modelling interval. The computed costs of heating oil should reflect supply and delivery charges associated with providing heating oil to the dwelling.

Heating oil supply and delivery charges may be assessed using:

- Regional retail prices for household heating oil ($/l), as reported by **Statistics Canada Table 18-10-0001,** and averaged over the energy modelling interval.

For reporting purposes, virtual energy assessments should also compute the *effective price of heating oil* (excluding tax) over the energy modelling interval as follows:

$$\textit{Effective price of heating oil } (\$/l) = \frac{\textit{Heating oil supply and delivery charges } (\$)}{\textit{Heating oil consumption } (l)} \quad (5\text{-}10)$$

(See note A-5.3.3: Effective prices for heating oil)

5.3.4 Estimated propane heating costs

Virtual energy assessments may compute the total cost of propane used in the dwelling over the energy modelling interval. The computed costs of these energy services should reflect supply and delivery charges associated with providing propane to the dwelling. The supply and delivery charges should be assessed using a regional retail price for propane ($/l), as determined by the vendor.

5.3.5 Estimated wood heating costs

Virtual energy assessments should compute the total cost of wood used to heat the dwelling over the energy modelling interval. The computed costs of these energy services should reflect supply and

delivery charges associated with providing wood to the dwelling. The supply and delivery charges should be assessed using an effective price for wood ($/kg), as determined by the vendor.

5.4 Total estimated energy costs

Virtual energy assessments should compute the total estimated energy costs over the energy modelling interval, as the sum of the following:

$$\begin{aligned} \textit{Total utility costs (\$)} = & \\ & \textit{Electricity supply and delivery charges (\$)} \\ & + \textit{Natural gas supply and delivery charges(\$)} \\ & + \textit{Heating oil supply and delivery charges (\$)} \\ & + \textit{Propane supply and delivery charges (\$)} \\ & + \textit{Wood supply and delivery charges (\$)} \end{aligned} \quad (5\text{-}11)$$

5.5 Uncertainty calculations

Virtual energy assessments may include uncertainty calculations for the purposes of estimating the expected range of energy consumption, GHG emissions and utility costs. This information may help some home label users understand the fact that home labelling calculations represent estimates, and that real world results may vary.

(See note A-5.5: Uncertainty Calculations)

6 Virtual home label

Virtual energy assessments should include a virtual home label that follows the guidance of this section. This includes guidance on:

- The definition and scope of a virtual home label
- The content and presentation of an energy profile
- Information and education materials for homeowners and label users

Any additional materials included on the label should also follow the recommendations for energy and emission terminology provided in Section 7.

6.1 Definition and scope

A virtual home label is a standardized report of the energy and emissions performance of an individual dwelling. The label presents standardized energy metrics for efficiency, consumption, carbon emissions, and energy costs in a clear and consistent manner. The label also provides information about the housing characteristics that form the basis of the energy assessment.

Every virtual home label should include the following elements:

1. Energy profile information, following the recommendations in Section 6.2
2. Disclosure of the housing characteristics used in the assessment
3. Energy rating and scale
4. Use of terms and definitions in accordance with specific criteria (Section 7)

Virtual home labels could also incorporate additional energy efficiency, affordability or emissions indicators, as well as educational materials. When included on a virtual home label, these indicators should meet the following criteria:

- Additional indicators that resemble the modelling outputs defined in Section 4.8 or the computed performance metrics defined in Section 5 should follow the definitions and the calculation procedures prescribed in those sections.
- Additional indicators should not be presented or otherwise incorporated with the energy profile information.

Virtual home labels should not include:

- Energy estimations or predictions that are derived from occupied modelling
- Information describing homeowner operating conditions or behaviours
- Homeowner information derived from metered utility data

(See note A-4.6: Inputs sourced from metered utility data for the rationale behind these recommendations)

6.2 Energy profile information

Virtual home labels should include specific information that describes the subject dwelling, and specific details about the dwelling's performance. The information should include the following:

6.2.1 Title and description

The virtual home label should include a title that includes the subject dwelling's address.

6.2.2 Energy consumption estimate

Virtual home labels should report the energy consumption estimate, in units of GJ/yr. This rating should be calculated using the *Net energy use* metric, computed using Equation (5-1). The energy consumption estimate should be rounded to the nearest 5 GJ.

6.2.3 Utility bill estimate

Virtual home labels should report the utility bill estimate, in units of $/yr. The estimate should be computed using Equation (5-11) in Section 5.4.

6.2.4 Carbon emissions estimate

Virtual home labels should report the carbon emissions estimate, in units of T/yr. This rating should be calculated using the *Total GHG emissions* metric, computed using Equation (5-7) in Section 5.2.7. The estimate should be rounded to the nearest 0.2 tonnes.

6.2.5 House characteristics used in the assessment

Virtual home labels should include an information table that describes the house characteristics forming the basis of the energy assessment. The information should include all items listed in Section 4.4. The characteristics should be listed in the same order as they are presented in Section 4.4.

Preliminary virtual home labels and virtual home labels should also include a caption at the top of the information table, following the guidance in Table 6.2.5.

Table 6.2.5: Captions for house characteristic table

Type of Label	Caption for housing characteristic table
Preliminary virtual home labels	"This preliminary virtual home label was generated using the following information. This information has not been reviewed by the Homeowner for accuracy."
Virtual home labels	"This virtual home label was generated using the following information. The Homeowner has declared this information to be accurate to the best of their knowledge."

6.2.6 Label presentation

The energy profile information should be displayed in a specific format:

- The background should be white. If another colour is used, it should contrast well with the text colour
- All text should be black. If another colour is used, it should contrast well with the background colour
- The energy profile should include all information as outlined in Section 6.2
- The energy profile should also include the date of the assessment

- The information in the energy profile should be presented together, to provide the homeowner with a summary of their home's energy use

(See note A-6.2.6: Label presentation)

6.3 Rating and scale

NRCan recommends that virtual home labels, if developed, include an energy consumption estimate (such as, in gigajoules).

Although this metric is analogous to the EnerGuide Rating System's gigajoule rating, ratings from Virtual Energy Assessments are not equivalent to EnerGuide ratings. As such, outputs generated through virtual assessments are not EnerGuide Ratings and must not be presented or interpreted as such. NRCan does not authorize use of the EnerGuide brand in association with virtual home labelling.

7 Label terminology

Vendors should use consistent terminology on virtual home labels. Below are recommendations for terminology that is commonly used on virtual home labels.

7.1 Reference comparisons

Virtual home labels may include references that offer comparison to other homes to help homeowners understand if their home is more or less efficient than similar dwellings. NRCan encourages vendors to use comparisons that reflect the effect of regional climates and construction practices on home energy use. Useful references could include:

- Comparisons to similar homes in the neighbourhood or city
- Comparisons to similar homes in the same province and climate zone.

Vendors may choose to identify samples of homes for reference comparisons using criteria such as location, climate zone, housing form and vintage.

(See A-7.1: Reference comparisons)

7.2 Home performance

Virtual home labels should incorporate standardized terminology to describe home performance, and specific metric thresholds or other application criteria that should be met to use the terms on a virtual home label. NRCan is currently conducting research on what these terms and metric thresholds should be, and may add home performance terminology and application recommendations at a later date.

7.3 Terms reserved for on-site assessments

The following terms are recommended for use only when these characteristics have been verified using an on-site assessment, or to describe characteristics of dwellings in general. These terms should not be ascribed as characteristics of the subject dwelling on a virtual home label:

- Well insulated
- Poorly insulated
- Air-tight
- High performance windows, efficient windows
- Comfortable home, increased comfort
- EnerGuide assessment
- Home energy assessment

(See note A-7.3: Terms reserved for on-site assessments)

7.4 Terms reserved for use in other types of energy assessments

The Guidelines recommend that vendors not attribute any of the terms appearing in Table 7.4 to virtual assessments or labels.

Table 7.4 Terms reserved for other types of energy assessments

Defined terms	Description
On-site Energy Assessment	Reserved term for energy assessments involving an on-site inspection and verification by a qualified professional
Remote Energy Assessment	Reserved term for energy assessments involving inspection and verification by a qualified professional using remote collaboration technology

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Contact homelabelling-etiquetageresidentiel@nrcan-rncan.gc.ca for information

Appendix A: Informational notes

The following statements and notes are provided to aid users with the application and interpretation of these Guidelines, and to provide information about the intention and rationale of its recommendations.

A-1.2.2: Prerequisites for virtual home energy assessments

By definition, virtual home energy assessments exclude on-site inspection. This may prevent vendors from determining the state of the subject dwelling at the date of assessment. Recommendations in the Guidelines address this by distinguishing between preliminary assessments (made without input from the homeowner), and virtual home labels in which the homeowner reviews the assessment inputs, updates incorrect data, and declares the information to be correct. Delivery of a virtual home label implies that homeowners have reviewed their dwelling's eligibility and declared the information to be accurate.

A-1.2.3: Data collection

Virtual energy assessments are performed using digital information about a dwelling's energy use characteristics. This data is typically sourced from third-party databases, such as civic address databases, property assessment records and satellite footprints.

The picture provided by this data may be incomplete. Homes may have been renovated or changed since the data was collected. Many energy use characteristics will not be adequately described in these data sources, and vendors will be required to make assumptions about dwelling efficiency (including heating systems and fuels, age of equipment). For these reasons, the Guidelines recommend that vendors allow homeowners to correct errors or omissions in these records. While vendors may be unable to verify this information, they may collect declarations from the homeowners attesting to the accuracy of this information.

While the Guidelines acknowledge the use of multiple types of data, it recommends limits on the use of that data. As presented in Table A-1.2.3, virtual assessments performing asset-based modelling should be limited to data describing dwelling characteristics (whether sourced from third-party databases or from homeowners).

Another type of virtual modelling uses metered utility data and homeowner supplied information on occupancy to improve the accuracy of energy estimates. NRCan currently provides no recommendations for this type of modelling and cautions vendors from using this type of modelling to deliver virtual home labels.

Table A-1.2.3: Data sources for use with asset-based modelling

Data source	Asset-based modelling
Dwelling characteristics described in third-party databases	✓
Dwelling characteristics provided by homeowners	✓
Occupant activity information provided by homeowner surveys	X
Metered utility data	X

A-4: Energy modelling for virtual energy assessments

Vendors commonly offer two types of virtual energy assessments: 1) Asset-based energy assessments, which consider the energy use characteristics of a dwelling, and 2) Occupied energy assessments, which consider the energy use characteristics of the dwelling and its occupants. The major distinction between these types of assessments is that asset-based assessments are not affected by the number of people living in a dwelling or their behavioural patterns. Occupied assessments specifically consider occupant behaviour.

Asset-based assessments

Asset-based assessments are intended to provide a consistent modelling methodology that supports house-to-house comparisons. To this end, asset-based assessments are based on the dwelling's characteristics, such as insulation, window performance and mechanical system efficiency. Asset-based assessments evaluate a dwelling's energy efficiency during typical use, using prescribed assumptions about weather conditions and occupancy. These assumptions will often differ from actual dwelling conditions.

Occupied assessments

Occupied assessments rely on a customized modelling methodology that delivers personalized estimates of energy consumption and savings potential. Occupied assessments may incorporate information provided by homeowners about the number of people living in a dwelling and their activity, as well as metered energy consumption data. Occupied assessments may provide more accurate energy consumption and savings estimates, because they consider how individual occupants use their homes and may reflect actual utility data. These estimates are personal to the occupants of a home, and may prevent meaningful comparisons between homes.

Assessments recognized in these Guidelines

The current version of the Guidelines provides recommendations for asset-based assessments. A future version may consider recommendations for occupied assessments as well.

A-4.2: Energy modelling interval

The energy modelling interval describes the interval of time over which energy consumption and emissions should be computed. The energy modelling interval can be used to constrain time-variant modelling assumptions, such as utility prices.

A-4.3: Climate data for energy modelling

Space heating is the largest energy end-use in Canadian housing. Space heating energy use is also sensitive to local climate conditions. Homes in regions with colder winters generally use more energy for heating. For this reason, NRCan recommends that virtual energy assessment models account for regional climate conditions.

NRCan publishes a dataset of typical meteorological conditions to support energy calculations. This data is referred to as the Canadian Weather Year for Energy Calculations (CWEC). Files and can be downloaded here: https://climate.weather.gc.ca/prods_servs/engineering_e.html

Vendors can use this data in its native format, or in an aggregated format such as monthly-bin, or annual degree days.

A-4.4: Modelling inputs

NRCan recommends this minimum set of modelling inputs to ensure that assessments provide enough granularity to capture a home's energy efficiency characteristics. Vendors may also include additional inputs to support their modelling methods.

A-4.4.4: Type of dwelling

NRCan recommends that virtual home labelling services classify homes as one of three common types: detached, attached, or mobile homes. Attached homes with shared entrances or common spaces, or constructed in a stacked configuration are commonly referred to as multi-family residential buildings (MURBS). The Guidelines do not recommend classifying dwellings as MURBs for the purposes of virtual home labelling because those distinguishing features are often assessed inconsistently during on-site evaluations, and are difficult to infer remotely from property databases. Such dwellings may be classified as attached dwellings instead.

A-4.4.5: Number of storeys

The number of storeys describes the number of above-ground floors arranged on top of each other. The Guidelines adopt the definition of storey used in Canada's National Building Code: *The portion of a building that is situated between the top of any floor and the floor next above it; if there is no floor above it, that portion between the top of such floor and the ceiling above it.*

In buildings with split-storeys, the first storey includes all floors not situated above another above-grade storey. In buildings will half storeys, each partial storey with less area than the floor below is still counted as a separate storey. This is illustrated in Figure A-5.2.1.5 (a).

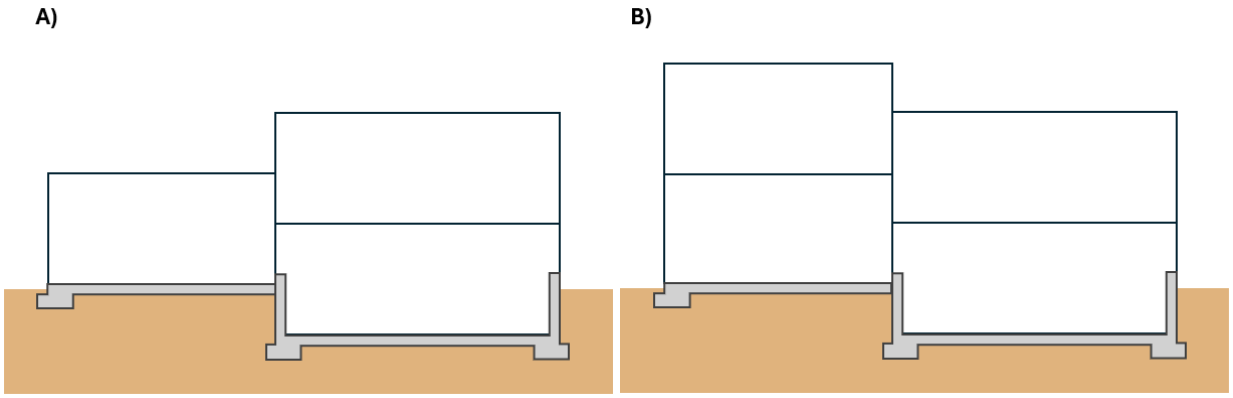

Figure A-5.2.1.5 (a): One storey split (A) and two storey split (B) configurations

In buildings featuring partial storeys, each storey counts as a full storey, irrespective of the amount of floor area associated in that storey. Figure A-5.2.1.5 (b) illustrates three potential arrangements of full and partial second storeys on a two-storey building.

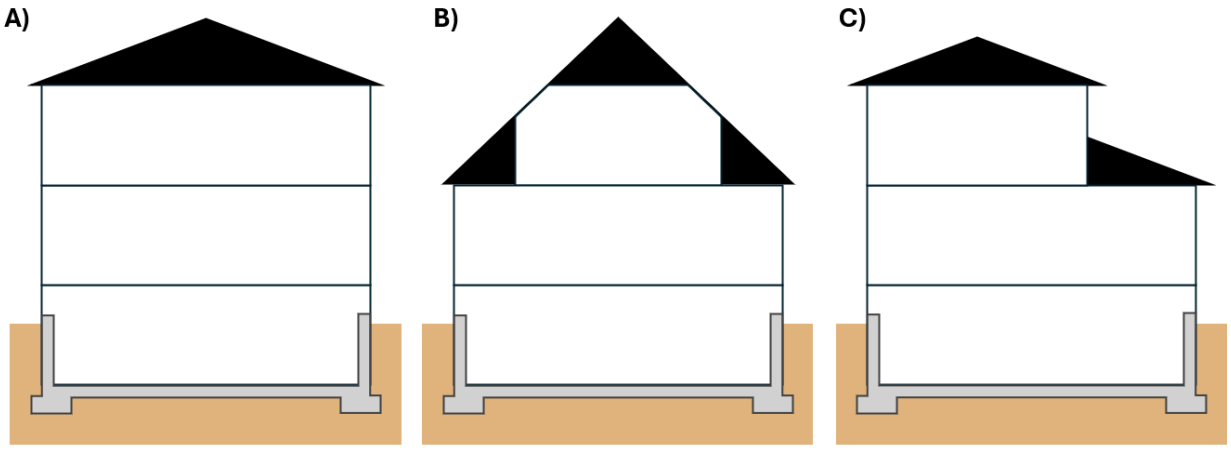

Figure A-5.2.1.5 (b): Different configurations of two storey dwellings with full second storeys (A) and partial second storeys (B and C)

A-4.4.6: Foundation type

The foundation type input describes the predominant foundation type present in the dwelling. A single dwelling will often feature multiple foundation types – for instance a two-storey home with a full basement may have a one storey extension built on a slab, or over a crawlspace. In these circumstances, the foundation type input should describe the type of foundation associated with the largest horizontal area. Secondary foundations with less horizontal area can be omitted from the model inputs.

A-4.4.10: Age of primary heating system

The Guidelines recommend using the age of the primary heating system as an approximate indicator of energy efficiency. While virtual energy assessment algorithms will require furnace, boiler or heat pump efficiency to convert space heating loads into energy consumption, most homeowners will not be familiar with these terms. The age of primary heating system input provides an approximate indicator of system efficiency — reflecting the fact that newer heating equipment is generally more efficient.

Table A-4.4.10 presents median and minimum efficiency characteristics of different heating systems, according to the year in which it was installed. Median efficiency characteristics were sourced from EnerGuide audit data, while minimum efficiency levels reflect the minimum equipment performance standards forming Canada's *Energy Efficiency Regulations*.

Table A-4.4.10: Median and minimum efficiency characteristics of heating systems by type and age

Heating source	Year of installation	Median efficiency	Minimum efficiency
Gas or propane	2021-present	96% AFUE	95% AFUE
	2015-2021	96% AFUE	90% AFUE
	2011-2015	95% AFUE	90% AFUE
	Pre-2011	90% AFUE	78% AFUE
Oil	2020–present	84% AFUE	83% AFUE
	2017-2019	84% AFUE	83% AFUE
	Pre 2017	84% AFUE	78% AFUE
Air source heat pump	2024-present	10.38 HSPF (region V)	6.0 HSPF 2 (region V)
	Pre 2024	10.38 HSPF (region V)	7.1 HSPF (region V)
Electric Resistance	All dates	100% Efficient	—

A-4.4.13: Solar photovoltaic system terminology

While many members of the building renovation and renewable energy industries will have experience with solar photovoltaic technology, this term will be unfamiliar to many homeowners. Vendors may choose to use alternate terminology such as “solar panels” on dashboards and labels for non-expert audiences. When simpler terms are used, NRCan recommends that vendors also include explanatory notes to prevent confusion with other types of solar energy systems, such as solar water heaters.

A-4.6: Inputs sourced from metered utility data

Occupied modelling is a variant of virtual energy assessment technology that can calibrate assessments using information about occupancy, and/or metered energy consumption. This type of assessment may provide homeowners with more accurate estimates of energy consumption and savings potential.

These recommendations do not limit a vendor from using metered utility data to infer the characteristics of the dwelling for the purposes of asset-based modelling. For instance, a vendor working with a local utility may use metered consumption data to identify homes that are equipped with natural gas furnaces or natural gas water heaters, and that information could form part of the modelling inputs.

However, metered utility data or other occupancy characteristics should not be used to compute energy consumption estimates appearing on a virtual home label. This separation ensures that virtual home labels are consistent and comparable.

A-4.7: Standard operating conditions

Occupancy and occupant activity affect household energy use. Asset-based modelling methods use standard operating conditions to ensure that energy labels are comparable, and that results are not affected by occupant lifestyles.

The EnerGuide rating system provides operating conditions for two types of homes — multi-unit residential buildings (including houses with secondary suites) and other, non-MURB dwellings. This

distinction acknowledges that MURBS are typically smaller than other housing forms, that MURBs generally have fewer occupants and that MURBs generally have lower occupant-driven electricity use.

However, virtual assessments may not have sufficient information to identify MURBs from property databases. EnerGuide technical procedures require energy advisors to classify dwellings as MURBs if they are stacked, if they have common spaces (such as shared corridors), and if occupants can pass from one unit to the other without travelling outside (secondary suites). These characteristics are most readily determined by on-site assessments.

In the absence of on-site inspection, these Guidelines use an alternate method for classifying large and small dwellings. Any dwelling smaller than 115m² could be eligible for reduced baseloads similar to those that EnerGuide prescribes for MURBs; all other dwellings should be modeled using the EnerGuide standard operating conditions.

A-4.8.3: Energy consumption over shorter intervals

Energy consumption estimates may be tabulated at shorter intervals for the purposes of applying monthly or hourly utility rate schedules, or for other reporting and education purposes. When shorter intervals are used for this purpose, vendors should still compute the energy consumption over the entire modelling interval for the purposes of annual reporting.

A-5.2.1: GHG emission factors for electricity

Electricity emission factors vary according to the energy sources that utilities use for generation and the amount of electricity they import from other jurisdictions. The National Inventory Report includes separate estimates of the GHG intensity factors associated with electricity generation and consumption for each Canadian province and territory.

These emission factors exhibit considerable variability in some regions. Figure A-5.2.1 depicts historical changes in electrical emission factors by province, between 2005 and 2022. In regions that rely extensively on hydro generation (British Columbia, Manitoba, Quebec, Newfoundland & Labrador), emission intensities remain relatively constant. In other parts of the country, emission intensities exhibit greater variability. In particular, Alberta, Nova Scotia, Saskatchewan, New Brunswick and Ontario exhibit significant reductions in emissions. These downward trends reflect utility efforts to reduce reliance on coal power plants and other fossil-fueled infrastructure, and to introduce non-emitting generation.

During this period of transition, emission factors for electrical consumption will vary from one year to another. Where possible, emission factors should be obtained from provincial or territorial officials, or from regulated electric utilities. These representatives are most familiar with current and future planning for the electric system. They are best positioned to provide electrical emission factors. If emission factors cannot be obtained from government or utility representatives, the Guidelines recommend using numbers from Canada's National Inventory report instead. Vendors should use either the most recent regional emission factor, or an average of the emission factors from the current year and the preceding four years.

Table A-5.2.1 presents the 2022 and 2018-2022 average emission factors for electricity consumed, by province and territory. These are the most recent emission factors forming part of Canada's National Inventory Report at time of publication. They are included in the appendix to assist with their

application, but vendors should source updated values from Environment and Climate Change Canada whenever an updated National Inventory Report is available.

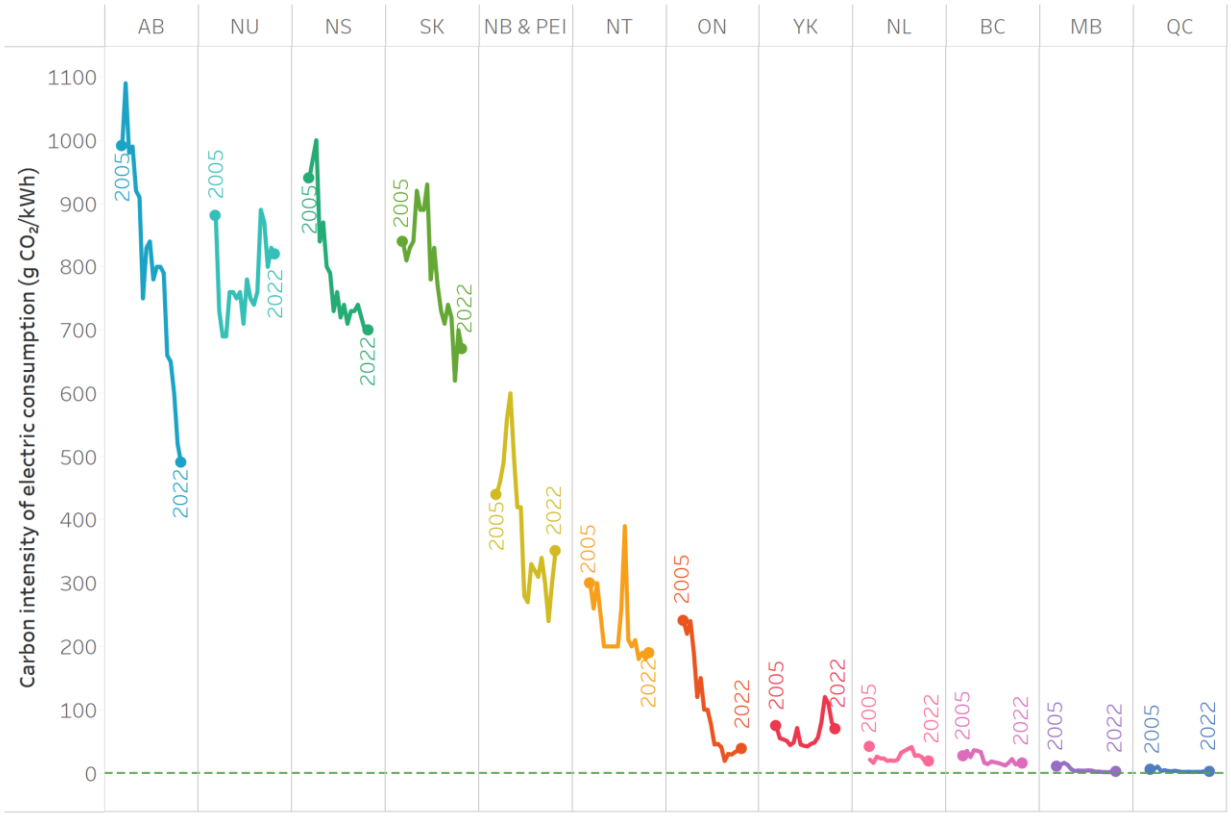

Figure A-5.2.1: Historical emission factors associated with electrical consumption by province, 2005–2022 (Source: Canada's National Inventory Report)

Table A-5.2.1: GHG Emission factors associated with electricity consumption
(Data extracted from tables A13-2 —A13-14 of Canada's 2024 National Inventory Report)

Region	2022 intensity (g CO_2/kWh)	2018-2022 average (g CO_2/kWh)
Alberta	490	565
British Columbia	14	16
Manitoba	1.4	1.6
New Brunswick	350	297
Newfoundland and Labrador	18	22
Northwest Territories	190	185
Nova Scotia	700	715
Nunavut	820	830
Ontario	38	34
Prince Edward Island‡	350	297
Quebec	1.7	1.8
Saskatchewan	670	677
Yukon	70	95

Notes:

‡ Consistent with conventions in the National Inventory Report, emission factors for electricity consumption in New Brunswick are applied to Prince Edward Island. Prince Edward Island imports most of the electricity consumed on the island from New Brunswick.

A-5.2.4: Calculating emission factors for combustion fuels

Environment and Climate Change Canada provides greenhouse gas emission factors for converting energy consumption estimates into equivalent carbon emissions. These factors are calculated annually and reported two years in arrears as part of Canada's National Inventory Report (NIR).

The Guidelines recommend the same emission calculation approach and emission factors used in the National Inventory Report. The emission intensities of petroleum heating fuels (natural gas, heating oil, propane) should reflect the GHG emissions associated with their on-site combustion from:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)

Quantities of these gasses are converted into equivalent carbon dioxide emissions using scaling factors that reflect their global warming potential (1 for carbon dioxide, 28 for methane, and 265 for nitrous oxide).

Consistent with the NIR's methodology, the release of biogenic carbon from wood-based heating fuel is not counted for in residential emission calculations, as this amount is largely reabsorbed in the growth of Canada's sustainably managed forests. For wood-based heating fuels, only emissions from methane and nitrous oxide are included in the GHG calculation.

Effective emission factors for combustion-based fuels are presented in Table A-5.4.2. These factors were derived from data in Canada's 2024 National inventory report, and represent data collected in 2022. This data is the most recent at time of publication.

Table A-5.4.2: Effective GHG emission factors for combustion fuels, derived from Canada's 2024 National inventory report (Data for 2022).

Heating fuel	Effective emission factor
Natural gas	1944 g CO_2/m^3
Heating oil	2755 g CO_2/L
Propane	1544 g CO_2/L
Pellet stoves	131 g CO_2/kg
Other wood burning appliances	393 g CO_2/kg

A-5.3: Effective prices of electricity and natural gas

Canadian utilities use varying rate schedules to set prices for electricity and natural gas. Some utilities provide a single overall price for purchased energy ($/kWh of electricity or $/m³ of natural gas). Other utilities may provide a breakdown of energy supply, transmission and distribution charges, as well as other riders affecting the customer's final utility bill. Utilities also offer different price structures. Fixed, tiered, time-of-use and variable rates are common. In some regions, utilities allow customers to choose between different types of rates.

The intent of the Guidelines is to provide a representative estimate of energy costs for the homeowner, accounting for the rate schedule provided by utilities. Vendors should use the most accurate energy prices available in the region of the subject dwelling unit, but some rate structures will need to be simplified for inclusion in a virtual home label model. These simplifications may include using an average provincial rate to represent:

- varying energy prices across regions served with multiple utilities
- varying rate schedules offered to residential customers by the same utility
- variable, tiered or time-of-use rate schedules where prices vary by season or time of day, or by the amount of energy consumed.

In regions where utilities provide a single aggregated rate, vendors could use that rate as the effective price of energy. When utilities publish disaggregated rate schedules with separate prices for energy supply, transportation, delivery and other variable charges, vendors should compute an effective price aggregating all rates and riders that affect customer bills.

Government tariffs, taxes and rebates are beyond the scope of the Guidelines. These charges should be excluded from the utility cost calculation.

Table A-5.3 (a) and Table A-5.3 (b) present recent effective electricity and natural gas prices from Canadian utilities.

Table A-5.3 (a): Effective electricity prices for Canadian provinces, March 2025

Province/Territory	Fixed Charges ($/Month)	Effective Price ($/kWh)
British Columbia	15.55	0.120
Alberta	17.35	0.179
Saskatchewan	29.99	0.149
Manitoba	9.46	0.096
Ontario	34.93	0.117
Quebec	13.63	0.067
New Brunswick	26.95	0.135
Prince Edward Island	24.57	0.172
Nova Scotia	19.17	0.186
Newfoundland and Labrador	15.79	0.142
Yukon	14.65	0.121
Northwest Territories	18.00	0.361
Nunavut[1]	18.00	0.060

Notes:
[1] Prices for customers in government-managed public housing

Table A-5.3 (b): Effective natural gas prices for Canadian provinces, March 2025

Province/Territory	Fixed Charges ($/Month)	Effective Price ($/m³)
British Columbia	12.82	0.44
Alberta	17.84	0.19
Saskatchewan	26.50	0.24
Manitoba	14.75	0.20
Ontario	26.74	0.24
Quebec	20.67	0.22
New Brunswick	22.50	0.73
Prince Edward Island	Not available	
Nova Scotia	27.50	0.90
Newfoundland and Labrador	Not available	
Yukon	Not available	
Northwest Territories	Not available	
Nunavut	Not available	

A-5.3.3: Effective prices for heating oil

Heating oil markets are unregulated in Canada. Prices vary according to rates of production and consumption, and may be affected by changes in supply and demand, both domestically and internationally. Given this variability in price, estimating the cost of heating oil consumption implies a greater degree of uncertainty than electricity or natural gas cost calculations.

The Guidelines reference the Statistics Canada survey of monthly average retail prices for gasoline and fuel oil, by geography (Table 18-10-0001-01[1]). That table provides estimates of monthly average heating oil prices by Canadian census metropolitan area. Vendors should reference Table 18-10-0001-01, or averages derived from the Table when estimating heating oil costs.

Values in Table 18-10-0001-01 should be averaged over a 12-month period. Vendors could reference values by metropolitan area, or averaged by province or territory. When estimating heating oil costs in jurisdictions for which the table provides no price data, vendors could use values from adjacent regions.

Table A-5.3.3 summarizes the contents of effective prices from Table 18-10-0001-01 for the period of March 2024 to February 2025.

[1] Statistics Canada publishes Table 18-10-0001-01 on line at this link:
https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810000101
(DOI: https://doi.org/10.25318/1810000101-eng)

Table A-5.3.3: Average retail prices for heating oil, by region (March 2024 — February 2025)

Province/Territory	Effective Price ($/L)
British Columbia	1.85
Alberta	Not available
Saskatchewan	1.42
Manitoba	1.33
Ontario	1.65
Quebec	1.73
New Brunswick	1.50
Prince Edward Island	1.29
Nova Scotia	1.49
Newfoundland and Labrador	1.36
Yukon	1.67
Northwest Territories	1.61
Nunavut	Not available

A-5.5: Uncertainty Calculations

All energy modelling implies uncertainty. Real world energy use will inevitably vary from model predictions. These differences arise from a variety of causes, including:

- Differences between assessment assumptions and the actual characteristics of the building
- Differences between model algorithms and real-world physics of building operation
- Differences between model boundary conditions (such as local weather and occupant activity), and the actual conditions during the period of assessment.

For these reasons, building simulation analysts often use uncertainty analysis to evaluate a model's sensitivity to specific inputs which may have unknown or ambiguous values. This approach often involves varying inputs over a range of plausible values and measuring the resulting changes in model outputs.

Applying uncertainty analysis to virtual home labelling provides clarity on the expected range of results. Reporting these ranges may reassure label users who find that their actual energy use and utility bills differ from label estimates.

Uncertainty analysis can be applied using a variety of methods.[2] Vendors may choose to conduct multiple parallel assessments, with varied assumptions for inputs that are not well known. These

[2] A comprehensive discussion of uncertainty analysis methods and application to building modelling is available in the thesis "Quantifying the effects of Uncertainty in Building Simulation" by Iain A. Macdonald: https://www.researchgate.net/publication/260079825_Quantifying_the_Effects_of_Uncertainty_in_Building_Simulation

Guidelines also suggest a simpler approach, which assumes that the energy estimates reported by virtual assessments will typically vary from observed values.

The Guideline's suggested approach computes a semi-interval based on a 20% uncertainty range, and then propagates those uncertainty assumptions through the emission and utility cost calculations. The result of this approach enables vendors to speak to approximate ranges that energy use and utility costs may fall into.

Total energy consumption: semi-interval and expected range

The semi-interval describing uncertainty in total energy consumption is computed as follows:

$$\textit{Total energy use semi-interval (GJ)} = \textit{Total energy use (GJ)} \times 0.10 \quad (7\text{-}1)$$

Where *Total energy use* is computed in accordance with Section 4.8.2. If the energy use semi-interval is calculated to be less than 7.5 GJ, the Guideline recommends that a value of 7.5 GJ be used instead.

The expected range of total energy use, comprising both upper and lower limits, is then to be computed as follows:

$$\textit{Total energy use lower limit (GJ)} = \textit{Total energy use (GJ)} - \textit{Total energy use semi-interval (GJ)} \quad (7\text{-}2)$$

$$\textit{Total energy use upper limit (GJ)} = \textit{Total energy use (GJ)} + \textit{Total energy use semi-interval (GJ)}$$

To ensure that expected ranges do not imply greater resolution than virtual modelling can provide, both the lower and upper limits of the total energy use can be rounded to the nearest 5 GJ. If the lower limit is calculated to be less than 0 GJ, a value of 0 GJ should be used instead.

Energy consumption uncertainty ratio

The semi-interval describing uncertainty in energy consumption is computed as follows:

$$\textit{Energy uncertainty ratio (-)} = \frac{\textit{Total Energy use semi-interval (GJ)}}{\textit{Total Energy Use (GJ)}} \quad (7\text{-}3)$$

Where *Total energy use* is defined in Section 4.8.2.

Energy consumption semi-intervals

Uncertainty intervals should be computed for each type of energy used on site, by multiplying the energy consumption quantities by the energy uncertainty ratio, as follows:

$$\textit{Electricity semi-interval (kWh)} = \textit{Electricity Cons. (kWh)} \times \textit{Energy Uncertainty Ratio (-)} \quad (7\text{-}4)$$

$$\textit{Natural gas semi-interval } (m^3) = \textit{Natural gas cons. } (m^3) \times \textit{Energy Uncertainty Ratio (-)}$$

$$\textit{Heating oil semi-interval (l)} = \textit{Heating Oil Cons. (l)} \times \textit{Energy Uncertainty Ratio (-)}$$

Propane semi-interval (l)
$$= \textit{Propane Cons. (l)} \times \textit{Energy Uncertainty Ratio (-)}$$

Wood semi-interval (kg)
$$= \textit{Wood Cons. (kg)} \times \textit{Energy Uncertainty Ratio (-)}$$

Where *Electricity Cons (kWh), Natural gas cons (m^3), Heating oil cons (l), Propane cons (l)* and *Wood cons. (kg)* are the energy consumption by source values defined in Section 4.8.3.

GHG emissions: semi-interval and expected range

The GHG emission semi-interval should be computed by multiplying each energy consumption semi-interval by its respective emission factor.

$$\begin{aligned}\textit{GHG emissions semi-interval (g)} = {} & \textit{Electricity semi-interval}\,(kWh) \times \textit{Electricity GHG emission factor}\,(g/kWh) \\ & + \textit{Natural gas semi-interval}\,(m^3) \times \textit{Natural gas GHG emission factor}\,(g/m^3) \\ & + \textit{Heating oil semi-interval}\,(l) \times \textit{Heating oil GHG emission factor}\,(g/l) \\ & + \textit{Propane semi-interval}\,(l) \times \textit{Propane GHG emission factor}\,(g/l) \\ & + \textit{Wood semi-interval}\,(kg) \times \textit{Wood GHG emission factor}\,(g/kg)\end{aligned} \quad (7\text{-}5)$$

Where the GHG emission factors are defined in Sections 5.2.1-5.2.3. The GHG emissions semi-interval should also be converted from grams to tonnes of GHG emissions:

$$\textit{GHG emissions semi-interval (T)} = \frac{\textit{GHG emissions semi-interval (g)}}{1 \times 10^6} \quad (7\text{-}6)$$

The expected range of GHG emissions, comprising both upper and lower limits, should be calculated as follows:

$$\textit{Total GHG emissions lower limit (T)} = \textit{Total GHG emissions (T)} - \textit{GHG emissions semi-interval (T)} \quad (7\text{-}7)$$

$$\textit{Total GHG emissions upper limit (T)} = \textit{Total GHG emissions (T)} + \textit{GHG emissions semi-interval (T)}$$

Both the lower and upper limits of the GHG emissions should be rounded to the nearest 0.2 T. If the lower limit is calculated to be less than 0 T, a value of 0 GJ should be used instead.

Utility cost semi-interval and expected range

The utility price semi-interval should be computed by multiplying each energy consumption semi-interval by its respective effective price:

$$\begin{aligned}\textit{Utility cost semi-interval (\$)} = {} & \textit{Electricity semi-interval (kWh)} \times \textit{Effective price of electricity}\,(\$/\text{kWh}) \\ & + \textit{Natural gas semi-interval}\,(m^3) \times \textit{Effective price of natural gas}\,(\$/m^3) \\ & + \textit{Heating oil semi-interval}\,(l) \times \textit{Effective price of heating oil}\,(\$/l) \\ & + \textit{Propane semi-interval}\,(l) \times \textit{Effective price of propane}\,(\$/l) \\ & + \textit{Wood semi-interval}\,(kg) \times \textit{Effective price of wood}\,(\$/kg)\end{aligned} \quad (7\text{-}8)$$

Where the effective price factors are computed in accordance with the procedures in Section 5.3.

The expected range of utility costs should be computed as follows

$$\textit{Utility costs lower limit (\$)} = \textit{Total utility costs (\$)} - \textit{Utility cost semi-interval (\$)} \quad (7\text{-}9)$$

$$\textit{Utility costs lower limit (\$)} = \textit{Total utility costs (\$)} + \textit{Utility cost semi-interval (\$)}$$

Both the lower and upper limits of the utility costs should be rounded to the nearest $250. If the lower limit is calculated to be less than $0, a value of $0 should be used instead.

A-6.2.6: Label presentation

Figure A-6.2.6 provides an example illustration of the energy profile section of preliminary virtual home labels and virtual home labels that meet the recommendations of the Guidelines.

Energy Profile: 123 Green Apple Way,
Winnipeg, Manitoba. R3L 2C4

← This is the title & address, described in Section 6.2.1

Estimated energy consumption: 105 gigajoules/year

Estimated energy costs: $2000 / year

Estimated carbon emissions: 3.8 Tonnes/year

← This section reports the energy use metrics defined in Section 5.

This virtual home label was generated using the following information. The Homeowner has declared this information to be accurate to the best of their knowledge.

← This is the housing characteristics statement, described in Table 6.2.5

← This is the housing characteristics table, described in Section 6.2.5

Location	Winnipeg
Year of construction	1952
Heated floor area	162 m²
Number of storeys	2
Space heating fuel	Natural gas
Water heating fuel	Natural gas
Heating system type	Furnace
Heating system Age	10-15 years
Cooling system type	Central air conditioning
Heat pump source	No heat pump
Solar system (number of panels)	No solar system

This assessment was completed on April 24, 2025

← This is the date of assessment, described in Section 4.1

Figure A-6.2.6: Sample layout for virtual home label

A-7.1: Reference comparisons

Reference comparisons help understand abstract energy estimates by making comparisons to similar homes. Table A-7.1 provides median values for reference energy use from a sample of on-site EnerGuide

assessments conducted between 2020 and 2025. Data is reported by vintage when at least 50 EnerGuide assessments exist. Vendors could use this data, or a similar data table, to describe reference house energy use by province, climate zone and vintage.

Table A-7.1: Median values for reference energy consumption values (GJ), from EnerGuide assessments.

Province	Heating Degree Days	Number of EnerGuide records	All Vintages (GJ)	Pre-1950 (GJ)	1950-1969 (GJ)	1970-1989 (GJ)	1990-2009 (GJ)	Post-2010 (GJ)
BC	2000-3000	35,092	102.1	132.4	109.6	110.9	101.4	67.2
	3000-4000	15,639	101.6	131.5	115.1	108.2	93.9	75.0
	4000-5000	1,615	115.7	*	*	121.6	*	*
	5000-6000	1,687	133.0	*	*	146.5	*	*
	6000-7000	88	164.2	*	*	*	*	*
	7000-8000	60	103.4	*	*	*	*	*
AB	4000-5000	36,451	136.7	177.5	142.9	149.8	142.8	117.8
	5000-6000	28,924	152.0	192.5	153.2	167.2	158.0	125.1
	6000-7000	1,437	146.3	*	*	*	*	*
SK	4000-5000	9	*	*	*	*	*	*
	5000-6000	6,177	144.0	186.9	153.3	140.8	146.9	*
	6000-7000	1,123	150.4	*	*	*	*	*
	7000-8000	10	*	*	*	*	*	*
MB	5000-6000	8,718	142.2	174.1	140.5	136.8	140.3	*
	6000-7000	431	127.2	*	*	*	*	*
	7000-8000	4	*	*	*	*	*	*
ON	3000-4000	193,238	131.6	164.2	137.0	136.7	135.5	123.9
	4000-5000	63,229	134.1	192.2	141.1	134.5	130.3	112.1
	5000-6000	3,903	143.7	187.4	148.1	141.1	125.6	*
	6000-7000	945	174.8	*	*	237.7	218.7	*
	7000-8000	7	*	*	*	*	*	*
QC	4000-5000	192,050	111.6	171.0	126.7	105.5	97.4	86.9
	5000-6000	28,678	130.2	173.1	141.6	122.5	109.1	97.6
	6000-7000	946	133.9	182.4	144.0	127.8	126.3	*
	7000-8000	75	170.8	*	*	*	*	*
	8000-9000	5	*	*	*	*	*	*
	9000-10000	3	*	*	*	*	*	*

Province	Heating Degree Days	Number of EnerGuide records	All Vintages (GJ)	Pre-1950 (GJ)	1950-1969 (GJ)	1970-1989 (GJ)	1990-2009 (GJ)	Post-2010 (GJ)
NB	3000-4000	62	111.3	*	*	*	*	*
	4000-5000	42,602	99.6	161.5	115.5	99.9	85.7	73.5
	5000-6000	1,843	112.5	*	126.3	119.9	97.4	*
PE	4000-5000	15,087	100.3	184.8	135.9	118.5	107.7	77.5
NS	3000-4000	16,253	107.2	152.2	126.3	99.2	93.5	65.9
	4000-5000	47,316	113.3	182.0	134.1	107.0	96.5	70.1
NF	4000-5000	8,496	114.5	*	141.0	126.0	105.9	100.4
	5000-6000	372	133.0	*	*	*	*	*
	6000-7000	40	*	*	*	*	*	*
	7000-8000	3	*	*	*	*	*	*
YT	6000-7000	1,494	121.5	*	*	147.0	121.5	*
	7000-8000	161	117.9	*	*	*	*	*
	8000-9000	56	120.6	*	*	*	*	*
	9000-10000	24	*	*	*	*	*	*
NT	7000-8000	101	151.1	*	*	*	*	*
	8000-9000	314	163.5	*	*	*	*	*
	10000-11000	55	159.9	*	*	*	*	*
NU	9000-10000	24	*	*	*	*	*	*
	11000-12000	10	*	*	*	*	*	*

Notes:
* Data not reported as there are less than 50 corresponding records

A-7.3: Terms reserved for on-site assessments

Certain terms relating to a home's characteristics cannot be verified through a virtual assessment – for example, insulation levels, or air tightness. To ensure that homeowners receive reliable and consistent information, the Guidelines discourage terms in Section 7.3 from being attributed to the subject dwelling.

However, the Guidelines do not discourage a vendor from using these terms to describe homes in general, or energy efficiency upgrades in general.