TOWN OF CALEDON

4/22/2024

Caledon Green Development Standards (CGDS) Reporting Guideline

For Part 9 Low-Rise Residential Buildings

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1.0 CGDS 2024 Prescriptive Compliance Path

The CGDS 2024 Prescriptive Compliance Path offers an approach to achieve compliance without the need for energy modelling. This path presents three distinct methods for compliance, each tailored to meet varying project requirements and objectives.

1.1 ENERGY STAR v17.1 Rev2 Prescriptive Compliance

Meeting the ENERGY STAR v17.1 Rev2 Prescriptive requirements entails ensuring that the Building Option Packages (BOP) points exceed 1.8 points for Ontario Climate Zone 1 and 1.5 points for Ontario Climate Zone 2. This involves implementing energy-efficient measures throughout the construction process to meet or exceed the ENERGY STAR minimum requirements.

Required Documents for Submission

- Energy Efficient Design Summary (EEDS)
- ENERGY STAR Energy Matrix.

In addition, projects must demonstrate 20% reduction in greenhouse gas emissions. For the prescriptive path, this can be demonstrated by installing low carbon equipment, which could include any one of the following:

- Electric Domestic Hot Water Heater
- Heat Pump Hot Water Heater
- Hybrid Air Source Heat Pump (paired with gas furnace)
- Combination Hybrid Heating System (combination boiler for space/water heating, paired with 3-season Hybrid Air Source Heat Pump)
- Cold Climate Air Source Heat Pump
- Ground Source Heat Pump

1.2 Third Party Labelling Program

Compliance can also be achieved through a third-party labelling program, by setting energy goals for the constructed house that provide a structured framework for energy conservation and efficiency to meet the CGDS targets. This process requires documentation at both the Design/Permit Stage and the Pre-Occupancy Stage.

Required Documents for Submission

- At Design/Permit Stage - Letter of intent from third party evaluator summarizing energy targets of constructed house and demonstrating equivalency with CGDS targets

- At Pre-Occupancy Stage - Confirmation of CGDS via third party labelling report/certification.

Examples of third-party labelling programs could include ENERGY STAR, Better than Code (using HERS rating system), etc.

1.3 Alternative Pathway: Installing a 3 Season Air Source Heat Pump

Another method for compliance involves installing a 3 Season Air Source Heat Pump in the constructed house (or equivalent technology).

Required Documents for Submission

- Letter of Commitment to install an Air Source Heat Pump
- Air Source Heat Pump specification sheet
- Terms of Installation (ie. will it be rented?)

Note that electric baseboard heating will not be considered eligible equipment.

2.0 CGDS 2024 Performance Compliance Path

The CGDS 2024 Performance Compliance Path offers an approach to achieve compliance energy modelling. Please follow the step-by-step instructions outlined in this section for the submission process.

2.1 Metric Requirements

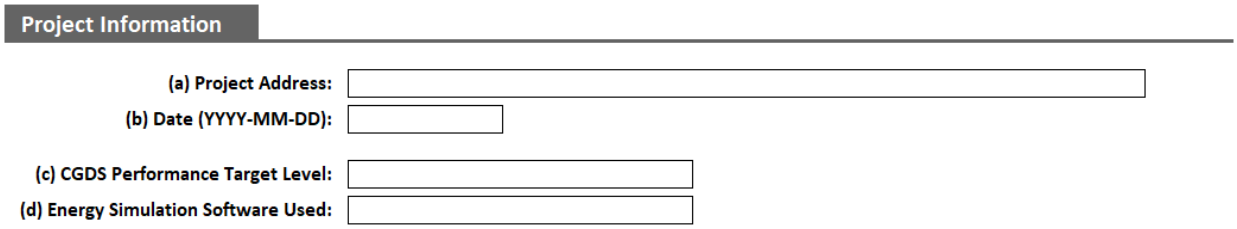
The following table outlines the requirements for the Caledon Green Development Standards (CGDS) for Part 9 Residential Building. To be compliant, please ensure your project meets these requirements. Note that targets for 2027 and 2030 are meant to demonstrate a potential pathway towards net zero; however updated CGDS targets will be subject to stakeholder consultation.

Year	**2024**	**2024**	**2027**	**2030**
Compliance Standard	Energy Star v17.1 Rev 2	NBC 2020 Tier 3	NBC 2020 Tier 4	
Reference House	Ontario Reference House	ERS Reference House		
	Proposed Design % Lower Than Reference House			
Energy Consumption	≥ 15.0%	≥ 20.0%	≥ 40.0%	
Gross Space Heat Loss	N/A	≥ 10.0%	≥ 20.0%	

Greenhouse Gas Emission	≥ 20.0%	≥ 20.0%	≥ 50.0%	
Peak Cooling Load	N/A	Lower Than Reference House		
Additional Requirement #2: Installed Water and Space Heating System	N/A		Hybrid/Dual-Fuel	Full Electric

2.2 Caledon GDS Reporting Tool

The tool is designed to facilitate the assessment of project compliance with the Caledon Green Development Standards (CGDS) for Part 9 Residential Building. By inputting data from the energy simulation report into the specified fields, users can determine whether the project meets the compliance requirements.



(a) Project Address: Input the address of your project.

(b) Date: Enter the date for data entry.

(c) CGDS Performance Target Level: Choose the desired level from the dropdown.

- 2024 - NBC 2020 Tier 3 (Mandatory)
- 2024 - Energy Star v17.1 Rev 2 (Mandatory)
- 2027 - NBC 2020 Tier 4, Dual Fuel (Optional)
- 2030 - NBC 2020 Tier 4, Full Electric (Optional)

(d) Energy Simulation Software Used: Select the software used for generating the report from the dropdown. If other than HOT2000, please specify.

Enter the data from the Energy Simulation Report into the designated fields marked with yellow highlights. (For guidance on which data in the report to use, please refer to sections 3 and 4)

Energy Modelling Data Input

	Unit	Reference House	Proposed House		
Annual Energy Consumption	MJ	-	-		
(e) Gross Space Heat Loss	MJ				
(f) Peak Cooling Load	W				
(h) Annual Fuel Consumption				Emission Factor	
Natural Gas	m^3			1.921	$kgCO_2/m^3$
Propane	L			1.515	$kgCO_2/L$
Electricity	kWh			0.030	$kgCO_2/kWh$
Annual Greenhouse Gas Emission	tCO_2eq	-	-		

After inputting all the required data, the tool will provide feedback on whether your project complies with the standards or not.

Caledon Green Development Standard (CGDS) Compliance

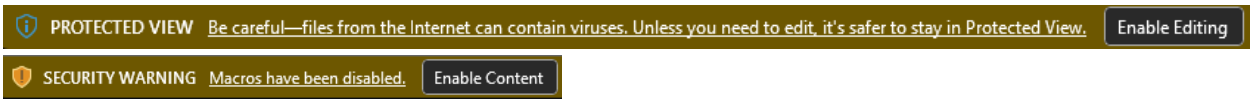
Metric For CGDS 2024 - NBC 2020 Tier 3	Current	Requirement	Pass or Fail
Energy Consumption % Lower Than ERS Reference House	-	≥ 20.0%	-
Gross Space Heat Loss % Lower Than ERS Reference House	-	≥ 10.0%	-
Peak Cooling Load	-	-	-
Fuel Source Type	-	Dual Fuel	-
Greenhouse Gas Emission % Lower Than ERS Reference House	-	≥ 20.0%	-
		Meet Compliance:	-

Two Helpful Functions in the Caledon GDS Report Tool

1. Clear Function
    - To reset all input fields, simply click the Clear Button.
    - Please note that this action is irreversible.
    - A confirmation message will pop up: Click 'Yes' to proceed, ‘No’ to cancel.
2. Export PDF Function:
    - Choose the CGDS Performance Target Level to generate a corresponding report tab that incorporates charts for visualization.
    - Click the Export PDF Button to initiate the export process.
    - Follow the prompt to select a save location and specify a unique file name for the exported PDF document.

Troubleshooting the Caledon GDS Reporting Tool

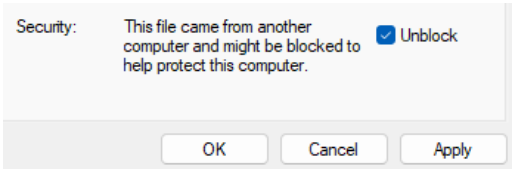
To utilize the functions, ensure that you **Enable Editing** and **Enable Content**.



Potential Issue: Receiving this message after Enabling Editing:

Solution:

1. Close the Workbook.
2. Right Click the File and Open the **Properties**.
3. Go to the **Security** section in General tab.
4. Check **Unblock** and then Click **Apply**
5. Reopen the Workbook



Extracting Data from HOT2000 Reports

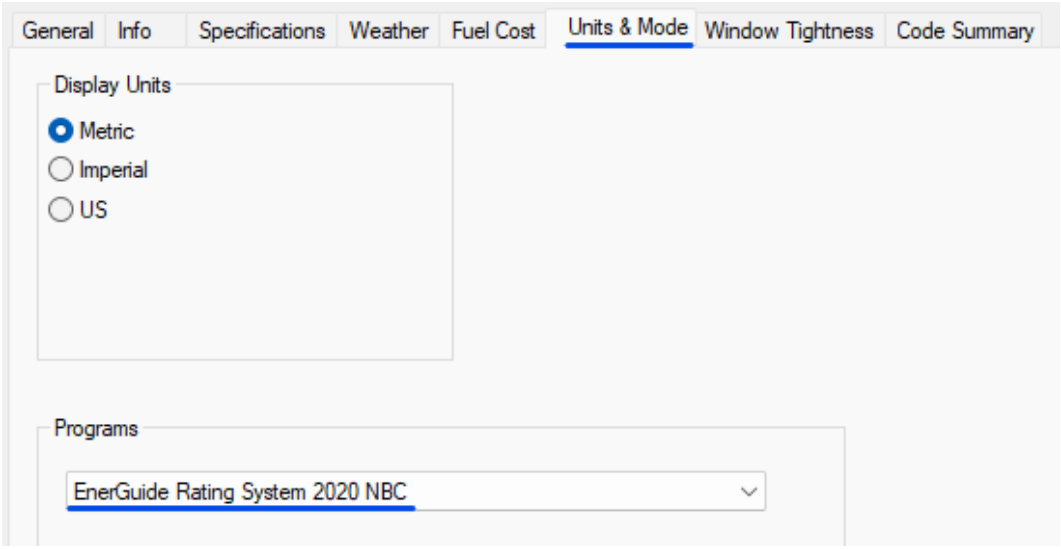
For projects utilizing HOT2000 as the Energy Simulation Software, follow these steps to extract the relevant data:

First Method: Built-in Program (EnerGuide Rating Systems/Ontario Reference House) Mode

1. Model the HOT2000 File with your proposed design

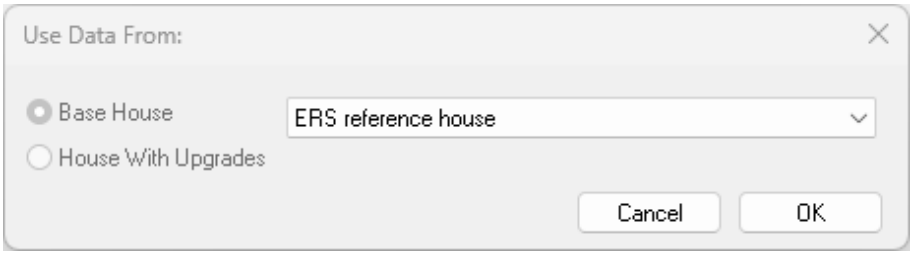
NBC 2020 Tier Compliance

2a. Go to **Units & Mode** → Set the **Programs** to **EnerGuide Rating System 2020 NBC**

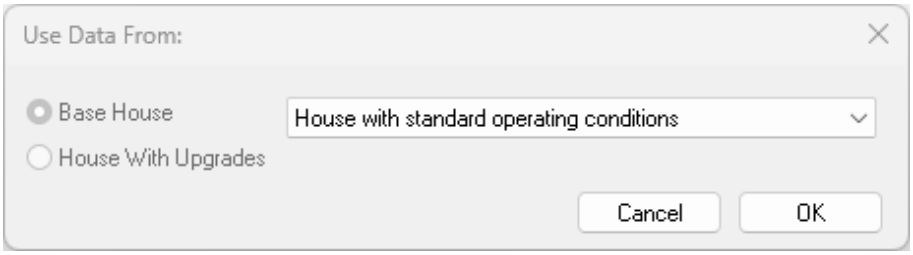


3a. Access the **Reports** menu and select **Full House Reports** (or use the shortcut **Ctrl+R**).

4a. Generate the Reference House Report – Select **ERS reference house** and proceed to print or save the report.



5a. Generate the Proposed House Report – Select **House with standard operating conditions** and proceed to print or save the report.



6a. Extract Data from the Report (Tip: Use the shortcut Ctrl+F to activate Find function)

(e) Gross Space Heat Loss:

Go to the **Annual Space Heating Summary** section and get the corresponding value for Gross Space Heat Loss.

ANNUAL SPACE HEATING SUMMARY

Gross Space Heat Loss:	165720 MJ

(f) Peak Cooling Load:

Go to the **Design Space Heating And Cooling Loads** section and get the corresponding value for Design Cooling Load

DESIGN SPACE HEATING AND COOLING LOADS

Design Heat Loss* at -18.5 °C (17.18 Watts / m3):	20444 Watts
Design Cooling Load* for July at (29.5 °C):	11485 Watts

(g) Annual Fuel Consumption:

Navigate to the **Estimated Annual Fuel Consumption Summary section** and get the corresponding values for **Natural Gas**, **Propane**, and/or **Electricity**.
The value to enter is the Total value subtract the Baseloads value.
*Enter 0 if not applicable.

ESTIMATED ANNUAL FUEL CONSUMPTION SUMMARY

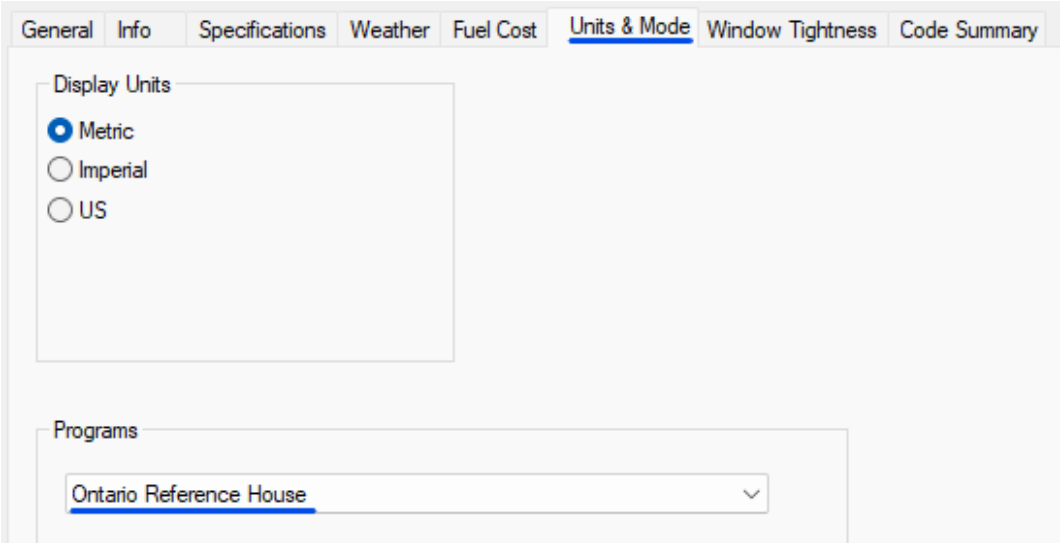
Fuel	Space Heating	Space Cooling	DHW Heating	Baseloads	Ventilation	Total
Natural Gas (m3)	1584.1	0.0	0.0	0.0	0.0	1584.1
Propane (Litres)	0.0	0.0	834.7	0.0	0.0	834.7
Electricity (kWh)	4496.8	1288.6	0.0	7117.4	204.1	13106.9

In this example, the input values are as follows:

- Natural Gas (m3) = 1584.1
- Propane (L) = 834.7
- Electricity (kWh) = 13106.9 – 7117.4 = 123951.6

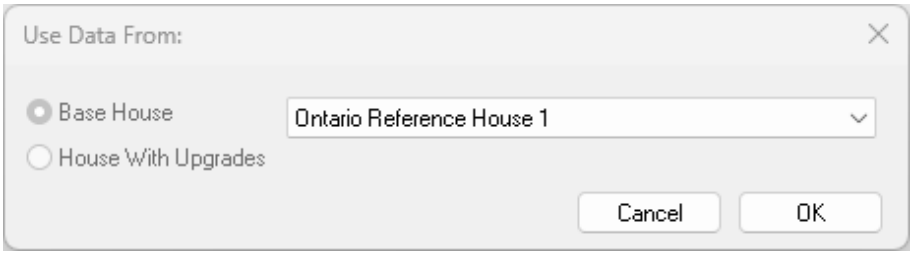
Energy Star v17.1 Rev 2 Compliance

2b. Go to **Units & Mode** → Set the **Programs** to **Ontario Reference System**

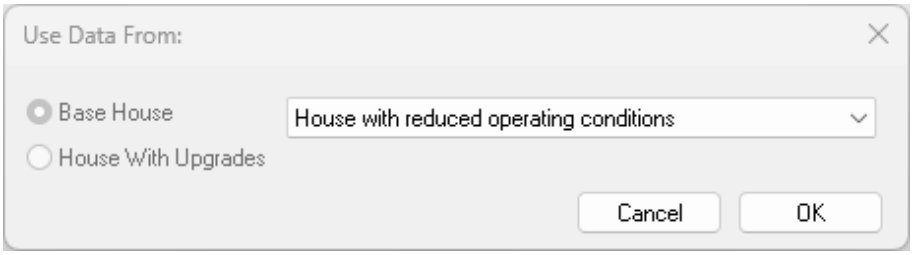


3b. Access the **Reports** menu and select **Full House Reports** (or use the shortcut **Ctrl+R**).

4b. Generate the Reference House Report – Select **Ontario Reference House 1** and proceed to print or save the report.



5b. Generate the Proposed House Report – Select **House with reduced operating conditions** and proceed to print or save the report.



6b. Extract Data from the Report (Tip: Use the shortcut Ctrl+F to activate Find function)

(g) Annual Fuel Consumption:

Navigate to the **Estimated Annual Fuel Consumption Summary section** and get the corresponding **Total** values for **Natural Gas**, **Propane**, and/or **Electricity**.

*Enter 0 if not applicable.

ESTIMATED ANNUAL FUEL CONSUMPTION SUMMARY

Fuel	Space Heating	Space Cooling	DHW Heating	Baseloads	Ventilation	Total
Natural Gas (m3)	1584.1	0.0	0.0	0.0	0.0	1584.1
Propane (Litres)	0.0	0.0	834.7	0.0	0.0	834.7
Electricity (kWh)	4496.8	1288.6	0.0	7117.4	204.1	13106.9

In this example, the input values are as follows:

- Natural Gas (m3) = 1584.1
- Propane (L) = 834.7
- Electricity (kWh) = 13106.9

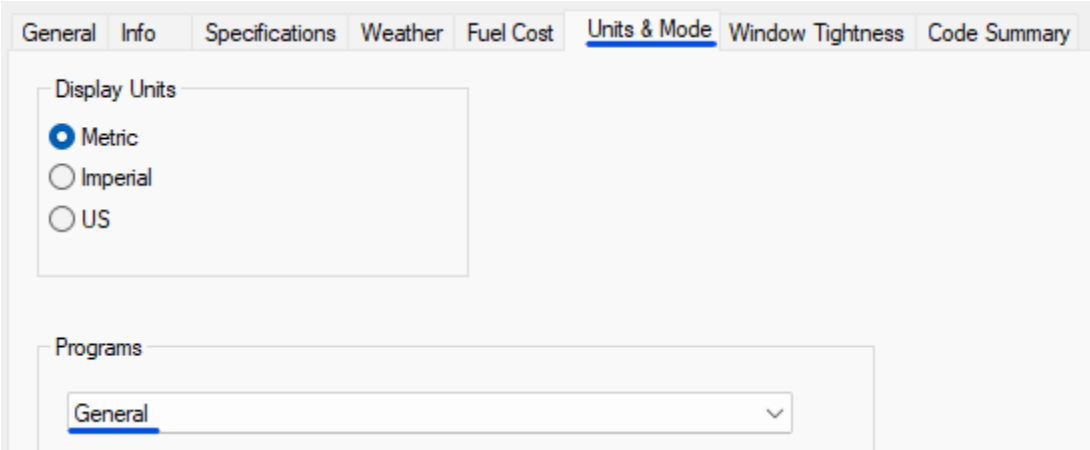
Second Method: General Mode – Two HOT2000 Files Required

1. Model the Proposed HOT2000 File with your proposed design.

NBC 2020 Tier Compliance

2c. Model the Reference HOT2000 File using the NBC 2020 Reference House Guideline.

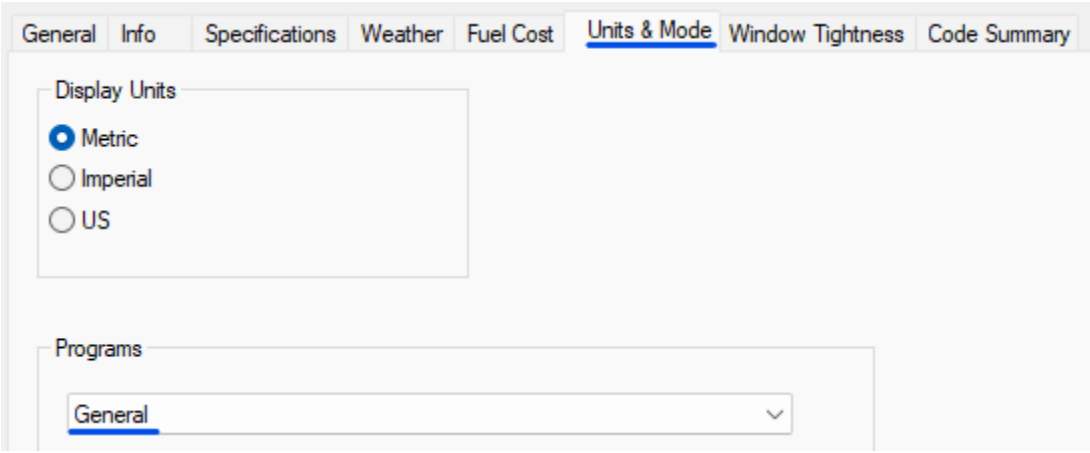
3c. Go to **Units & Mode** → Set the **Programs** to **General**



4c. Follow steps 3a and 6a in the First Approach (Disregard steps 4a and 5a)

Energy Star v17.1 Rev 2

1. Model the Reference HOT2000 File using the Energy Star v17.1 Rev 2 – Ontario Reference House Guideline.
2. Go to **Units & Mode** → Set the **Programs** to **General**



3. Follow steps 3b and 6b in the First Approach (Disregard steps 4b and 5b)

Extracting Data from Other Energy Simulation Software

For projects utilizing other Energy Simulation Software, follow these steps to extract the relevant data:

NBC 2020 Tier Compliance

1. Model the Reference Model using the NBC 2020 Reference House Guideline.
2. Model the Proposed Design Model with your proposed design.

Energy Star v17.1 Rev 2

1. Model the Reference Model using the Energy Star v17.1 Rev 2 – Ontario Reference House Guideline.
2. Model the Proposed Model with your proposed design.

Extract the following data from both the reference model and the proposed model:

(e) Gross Space Heat Loss
(f) Peak Cooling Load
(g) Annual Fuel Consumption – no baseload

2.3 Required Documents for Submission

For HOT2000 Users, please provide the following documents:

- Caledon GDS Reporting Tool.xlsx (Filled)
- HOT2000 Reference Report
- HOT2000 Proposed Design Report

For Other Energy Simulation Software, please provide the following documents:

- Caledon GDS Reporting Tool.xlsx (Filled)
- NBC 2020 Reference Model Report: showing Annual Fuel Consumption summary with fuel source separated, Annual Gross Space Heat Loss, and Design Cooling Load
- Proposed Design Model Report: showing Annual Fuel Consumption summary with fuel source separated, Annual Gross Space Heat Loss, and Design Cooling Load