

Residential Home Energy Consumption Survey

May 3, 2023

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Did you know that buildings are responsible for 40% of global energy use?



Figure 1: Opposite House, designed by Atelier RZLBD, Toronto, Canada

In an effort to combat climate change, this survey attempts to collect data for academic research on building energy consumption in Canada and the United States. Data will be used to understand building performance, develop prediction and design models, and lead innovation to reduce building energy consumption. By participation in this survey, your privacy will be protected. To protect individual's data, information will be collected as anonymous and only reported in aggregate form, i.e. by combining large sets of data. This study is organized by Amir A. Aliabadi from Environmental Engineering at the University of Guelph. Please complete this form and email it to aliabadi@uoguelph.ca. To access the form visit:

www.aaa-scientists.com/ResidentialHomeEnergyConsumptionSurvey.pdf



**Atmospheric
Innovations
Research**



1 Basic Information About Your Residential Home

Q1. Your postal code (Example: N1G 1X9 or 02119):

Q2. Type of your residential home:

Other :

Q3. Number of people living in your home:

Q4. What is the approximate footprint area of your residential home? For multi-storey buildings, the footprint area is only associated with one storey of the building; please exclude garages, yards, and other spaces that are not heated or cooled:

Other:

Q5. How many storeys in your residential home are heated and/or cooled?

Other:

Q6. Type of space heating system:

Other:

Q7. Type of space cooling system:

Other:

Q8. Type of water heating system:

Other:

Q9. Type of stove/oven system:

Other:

Q10. Which one of the uncommon devices below depend on substantial amount of energy in your home (choose as many as may apply)?

- 1 Electric car charged by electricity
- 2 Fire place powered by natural gas
- 3 Swimming pool, sauna, etc.
- 4 No uncommon devices

Other:

Q11. Approximately when was your residential home built?

Q12. When was your residential home retrofitted for energy efficiency?

Q13. If your home has been retrofitted for energy efficiency, click on all the features that apply to your home. Describe any specifics of the system components (e.g. the size of your photovoltaic panels, etc.)?

1 My home was air-leak tested and now it is leak-proof

Specifics:

2 I replaced my windows with energy efficient windows (e.g. double or tripple-layer)

Specifics:

3 I installed a high efficiency furnace

Specifics:

4 I increased the thermal insulation of my building envelop (e.g. increase R-value, foam spray under roof, etc.)

Specifics:

5 I installed a photovoltaic system

Specifics:

6 I installed a heat pump for home heating

Specifics:

7 I installed a solar thermal collector

Specifics:

8 I installed a thermal energy storage system

Specifics:

9 I have installed a green roof

Specifics:

10 I have installed other systems not described above

Specifics:

2 Natural Gas or Other Fuel Consumption Data

Q14. Would you share your natural gas or other fuel consumption data?

- Yes, I will fill the table below to indicate my natural gas (or other fuel) consumption. Note: the entries below can be populated by referring to your natural gas (or other fuel) bills (e.g. Figure 2 below). Please fill up to 12 entries. It is recommended to consider bills for at least 1 full year of natural gas (of other fuel) consumption. Your bills should come from the utility company in your region, such as Enbridge. If you have consumption data for less than 1 full year, that is still fine.

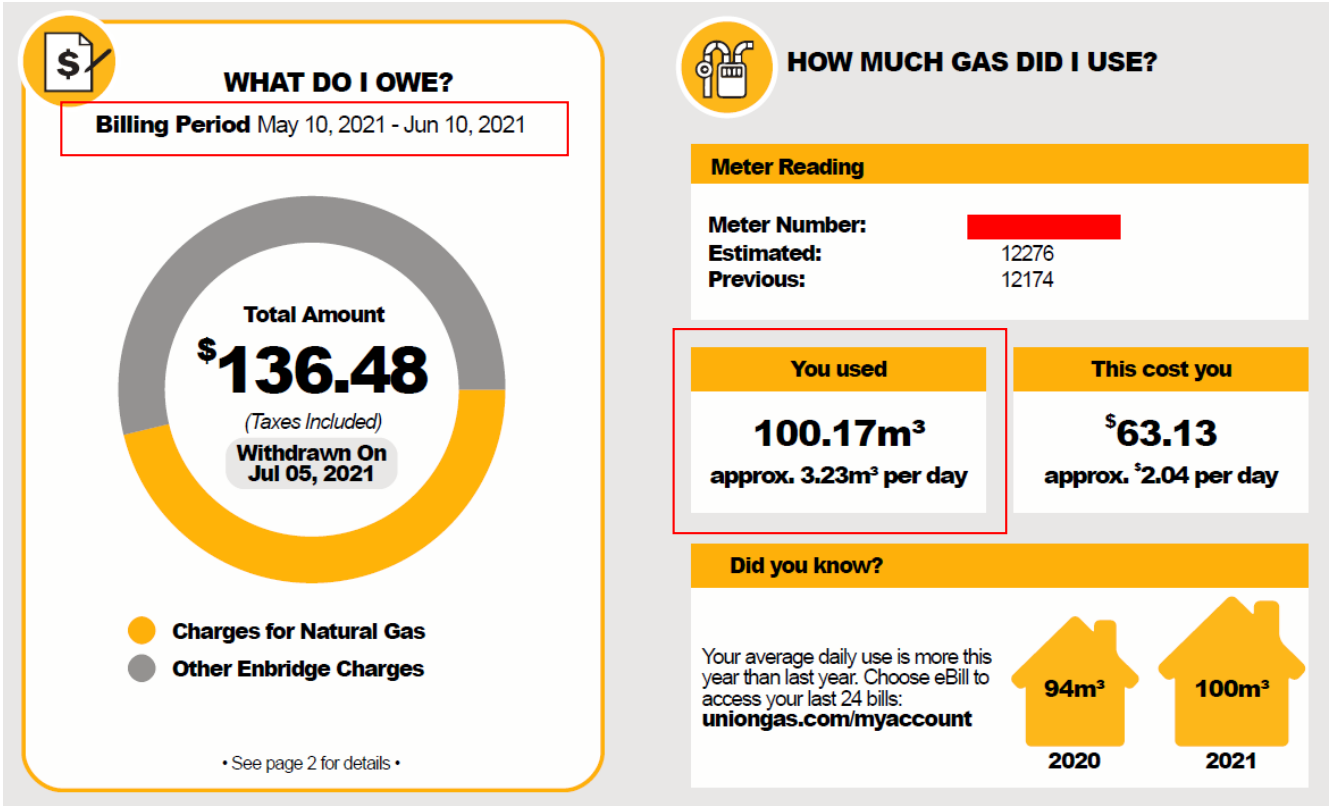


Figure 2: Sample natural gas bill with billing period (May 10, 2021 - Jun 10, 2021) and consumption (100.17 m³) boxed in red

Q15. Provide Information on up to 12 bills: consumption in cubic meters (m³)

| | | | | | | |
|---------------------|----|----|----------|----|----|-------------|
| Bill 01: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 02: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 03: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 04: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 05: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 06: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 07: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 08: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 09: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 10: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 11: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 12: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |

3 Electricity Consumption Data

Q16. Would you share your electricity consumption data?

- Yes, I will fill the table below to indicate my electricity consumption. Note: the entries below can be populated by referring to your electricity bills (e.g. Figure 3 below). Please fill up to 12 entries. It is recommended to consider bills for at least 1 full year of electricity consumption. Your bills should come from the utility company in your region, such as Toronto Hydro. If you have consumption data for less than 1 full year, that is still fine.

| Metering Information | | | | | | | | | | |
|----------------------|----------------|---------|------|---------|------------|-------|-----------------|------------------|---------------------|----------------------|
| Service | Billing Period | | Days | Meter # | Multiplier | Units | Current Reading | Previous Reading | Metered Consumption | Adjusted Consumption |
| Electric | 8/23/21 | 9/21/21 | 29 | | 1.0000 | KWH | 65094.18 | 64841.77 | .00 | 1.0260 |
| Electric | 8/23/21 | 9/21/21 | 29 | | 1.0000 | 10N | .00 | .00 | 52.61 | 1.0260 |
| Electric | 8/23/21 | 9/21/21 | 29 | | 1.0000 | 2MID | .00 | .00 | 54.65 | 1.0260 |
| Electric | 8/23/21 | 9/21/21 | 29 | | 1.0000 | 3OFF | .00 | .00 | 145.14 | 1.0260 |
| Water | 8/24/21 | 9/23/21 | 30 | | 1.0000 | M3 | 2019.00 | 2006.00 | 13.00 | 1.0000 |

Figure 3: Sample electricity bill with billing period (8/23/21 to 9/21/21) and consumption ($53.97 + 56.07 + 148.91 = 258.95$ kW – hr) boxed in red; in this example electricity price varies according to time of year and day in three brackets; we consider adding all the consumptions together

Q17. Provide Information on up to 12 bills: consumption in kilo Watt hours (kW-hr); please note that in some regions the electricity price varies according to time of year and day. In such cases, simply report the total electricity used in the billing cycle by adding all the consumptions together.

| | | | | | | |
|---------------------|----|----|----------|----|----|-------------|
| Bill 01: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 02: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 03: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 04: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 05: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 06: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 07: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 08: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 09: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 10: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 11: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |
| Bill 12: Start YYYY | MM | DD | End YYYY | MM | DD | Consumption |