March 2023 v1.0

# LUMEN

# Aged care and retirement living

Emissions measurement tool instructions

# EECA
DECARBONISATION PATHWAY

AGED CARE AND
RETIREMENT LIVING

# Introduction

The objective of the emissions measurement tool is to help businesses within the aged care industry gain an understanding of how their facilities are performing in terms of energy usage and carbon emissions. The tool can normalise each facility's results by overall capacity and monthly occupancy levels, which allows for comparison across the sector.

The tool requires users to have access to the following data to calculate the site's energy consumption and carbon emissions:

- » Monthly electricity usage (in kWh)
- » Where applicable:
    - » Monthly natural gas usage (in GJ or kWh)
    - » Monthly LPG usage (in GJ, litres, kg, or kWh)
    - » Monthly diesel usage (in litres)
    - » Biomass type used (wood pellets or wood chip)
    - » Monthly biomass usage (in tonnes)
    - » Coal type used (bituminous, sub-bituminous, lignite, or peat)
    - » Monthly coal usage (in tonnes)

The user can then also input the following occupancy data to generate further energy and carbon metrics:

- » Total number of aged care beds
- » Total number of serviced units
- » Total number of independent living units
- » Monthly occupancy levels of aged care beds
- » Monthly occupancy levels of serviced units
- » Monthly occupancy levels of independent living units

The following steps show how to complete the tool with the relevant above information. After completing all steps, the user is presented with a monthly breakdown of energy usage and carbon emissions as well as insight into which energy sources are contributing most to the facility's carbon footprint.

*NOTE: the following is based on fictional data and should not be seen as indicative results.*

## Step 1:

Enter in the site name, the relevant year for which data has been collected, and select the appropriate region from the drop-down list for the facility.

| Enter site details | | |
|---|---|---|
| Site name | Year | Region |
| Village ABC | 2022 | Canterbury |

*NOTE: data should only be entered into green cells or where otherwise specified in these instructions.*

## Step 2:

Enter in the facility's monthly consumption of electricity, natural gas, LPG, diesel, biomass, and coal.

For natural gas and LPG, select the appropriate unit for your data by clicking on the on the drop-down lists circled in **GREEN**.

For biomass and coal, select the specific type used on site for each fuel by clicking on the drop-down lists circled in **RED**.

Once the data has been entered, the total energy consumption per month (in kWh) can be seen in the grey cells to the right (circled in **BLUE**).

**Enter energy usage**

Enter monthly energy usage details below for the year specified under site details:

| | Electricity (kWh) | Natural Gas | LPG | Diesel (L) | Biomass (T) | Coal (T) | Total (kWh) |
|---|---|---|---|---|---|---|---|
| | | ↓ Select unit if used | | | ↓ Select type if used | | |
| | | (GJ) | (kg) | | Pellets | Bituminous | |
| Jan-22 | 100,000 | 1,000 | | 10,000 | | | 480,278 |
| Feb-22 | 100,000 | | 1,000 | | 100 | | 585,822 |
| Mar-22 | 100,000 | | | 10,000 | 100 | | 674,722 |
| Apr-22 | 100,000 | | | 10,000 | 100 | 10 | 757,694 |
| May-22 | 100,000 | | | | 100 | 10 | 655,194 |
| Jun-22 | 100,000 | | | | 100 | 10 | 655,194 |
| Jul-22 | 100,000 | 1,000 | 10,000 | | 100 | | 986,000 |
| Aug-22 | 100,000 | | 10,000 | | 100 | | 708,222 |
| Sep-22 | 100,000 | 1,000 | | 10,000 | 100 | | 952,500 |
| Oct-22 | 100,000 | | 10,000 | | 100 | | 708,222 |
| Nov-22 | 100,000 | 1,000 | | | 100 | 10 | 932,972 |
| Dec-22 | 100,000 | | 10,000 | | 100 | | 708,222 |
| **Total** | 1,200,000 | 4,000 | 41,000 | 40,000 | 1,100 | 40 | 8,805,044 |

*NOTE: drop-down lists can be accessed once you have clicked into the cell containing them.*

## Step 3:

To the right of the energy data is the monthly energy-related emissions. This highlights months where high-carbon energy sources have been used excessively:

| | Total emissions T CO2-e |
|---|---|
| Jan-22 | 97 |
| Feb-22 | 23 |
| Mar-22 | 46 |
| Apr-22 | 73 |
| May-22 | 46 |
| Jun-22 | 46 |
| Jul-22 | 108 |
| Aug-22 | 50 |
| Sep-22 | 104 |
| Oct-22 | 50 |
| Nov-22 | 104 |
| Dec-22 | 50 |
| **Total** | 798 |

## Step 4 - optional:

Enter in the total number of aged care beds, serviced units, and independent living units present at the facility.

| Total capacity of site (number of beds/units) | | | |
|---|---|---|---|
| Aged Care Beds | Serviced Units (where energy is paid for by site operator) | Independent Living Units (where energy is paid for by resident) | Total |
| Quantity 30 | 35 | 35 | 100 |

## Step 5 - optional:

Enter in the number of aged care beds, serviced units, and independent living units occupied during each month of the relevant year.

| | Quantity of beds/units occupied | | | |
|---|---|---|---|---|
| | Aged Care Beds | Serviced Units | Independent Living Units | Total |
| Jan-22 | 30 | 35 | 35 | 100 |
| Feb-22 | 30 | 35 | 35 | 100 |
| Mar-22 | 30 | 35 | 35 | 100 |
| Apr-22 | 30 | 35 | 35 | 100 |
| May-22 | 30 | 35 | 35 | 100 |
| Jun-22 | 30 | 35 | 35 | 100 |
| Jul-22 | 30 | 35 | 35 | 100 |
| Aug-22 | 30 | 35 | 35 | 100 |
| Sep-22 | 30 | 35 | 35 | 100 |
| Oct-22 | 30 | 35 | 35 | 100 |
| Nov-22 | 30 | 35 | 35 | 100 |
| Dec-22 | 30 | 35 | 35 | 100 |
| **Average** | 30 | 35 | 35 | 100 |

## Step 6 - optional:

If the user has filled in the site's occupancy data, the energy and carbon metrics to the right-hand side will be populated.

These energy and carbon metrics are split into two groups – group 1 excludes independent living units in the calculations. This results in a direct comparison between energy and carbon and the number of beds/units that the operator pays the energy bill for.

Whereas group 2 includes independent living units – this helps to understand the impact these units have on energy usage of common areas (e.g., pool, café, gym).

Monthly energy consumption and carbon emissions are divided by either overall capacity of the facility (x /capacity) or by the monthly occupation levels (x/occupied units).

| | Energy intensity per bed/unit (excluding ILUs) | |
|---|---|---|
| | kWh/capacity | kWh/occupied units |
| Jan-22 | 7,389 | 7,389 |
| Feb-22 | 9,013 | 9,013 |
| Mar-22 | 10,380 | 10,380 |
| Apr-22 | 11,657 | 11,657 |
| May-22 | 10,080 | 10,080 |
| Jun-22 | 10,080 | 10,080 |
| Jul-22 | 15,169 | 15,169 |
| Aug-22 | 10,896 | 10,896 |
| Sep-22 | 14,654 | 14,654 |
| Oct-22 | 10,896 | 10,896 |
| Nov-22 | 14,353 | 14,353 |
| Dec-22 | 10,896 | 10,896 |
| **Average** | **11,289** | **11,289** |

| | Emissions intensity per bed/unit (excluding ILUs) | |
|---|---|---|
| | T CO2-e/capacity | T CO2-e/ occupied units |
| Jan-22 | 1.50 | 1.50 |
| Feb-22 | 0.35 | 0.35 |
| Mar-22 | 0.72 | 0.72 |
| Apr-22 | 1.12 | 1.12 |
| May-22 | 0.71 | 0.71 |
| Jun-22 | 0.71 | 0.71 |
| Jul-22 | 1.66 | 1.66 |
| Aug-22 | 0.77 | 0.77 |
| Sep-22 | 1.60 | 1.60 |
| Oct-22 | 0.77 | 0.77 |
| Nov-22 | 1.60 | 1.60 |
| Dec-22 | 0.77 | 0.77 |
| **Average** | **1.02** | **1.02** |

| | Energy intensity per bed/unit (including ILUs) | |
|---|---|---|
| | kWh/capacity | kWh/occupied units |
| Jan-22 | 4,803 | 4,803 |
| Feb-22 | 5,858 | 5,858 |
| Mar-22 | 6,747 | 6,747 |
| Apr-22 | 7,577 | 7,577 |
| May-22 | 6,552 | 6,552 |
| Jun-22 | 6,552 | 6,552 |
| Jul-22 | 9,860 | 9,860 |
| Aug-22 | 7,082 | 7,082 |
| Sep-22 | 9,525 | 9,525 |
| Oct-22 | 7,082 | 7,082 |
| Nov-22 | 9,330 | 9,330 |
| Dec-22 | 7,082 | 7,082 |
| **Average** | **7,338** | **7,338** |

| | Emissions intensity per bed/unit (including ILUs) | |
|---|---|---|
| | T CO2-e/capacity | T CO2-e/ occupied units |
| Jan-22 | 0.97 | 0.97 |
| Feb-22 | 0.23 | 0.23 |
| Mar-22 | 0.46 | 0.46 |
| Apr-22 | 0.73 | 0.73 |
| May-22 | 0.46 | 0.46 |
| Jun-22 | 0.46 | 0.46 |
| Jul-22 | 1.08 | 1.08 |
| Aug-22 | 0.50 | 0.50 |
| Sep-22 | 1.04 | 1.04 |
| Oct-22 | 0.50 | 0.50 |
| Nov-22 | 1.04 | 1.04 |
| Dec-22 | 0.50 | 0.50 |
| **Average** | **0.67** | **0.67** |

## Step 7:

Now the "Summary Graphs" sheet has also been populated, visually representing the data that has been entered.

The first chart illustrates the relationship between the facility's monthly energy consumption and average outside air temperature. A strong inverse correlation would indicate that a significant part of the facility's load comes from heating (i.e., greater energy consumption during the colder months).

**Total Energy Consumption per Month**
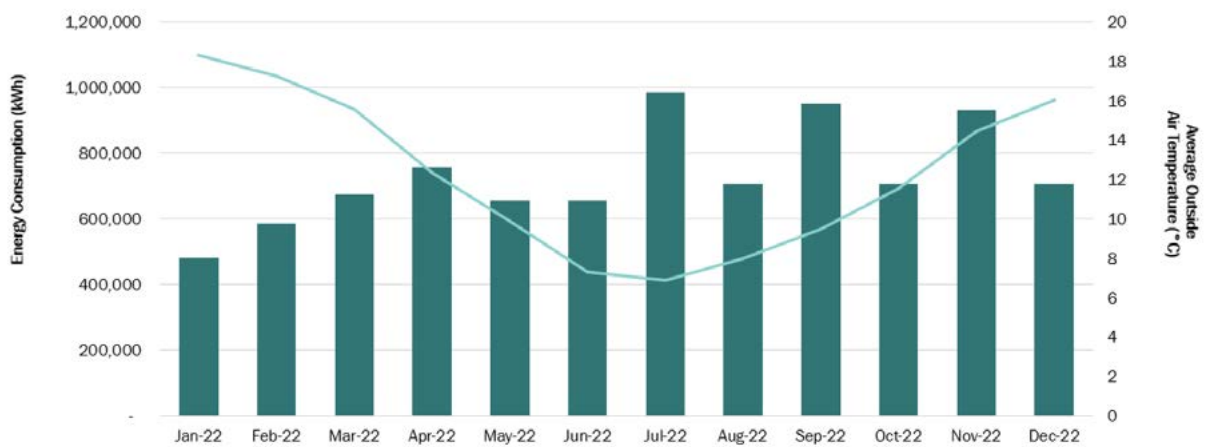


The second chart shows the site's total monthly emissions from all energy sources. This can be used to see when high- vs low-carbon fuels have been consumed.

**Total Carbon Emissions per Month**
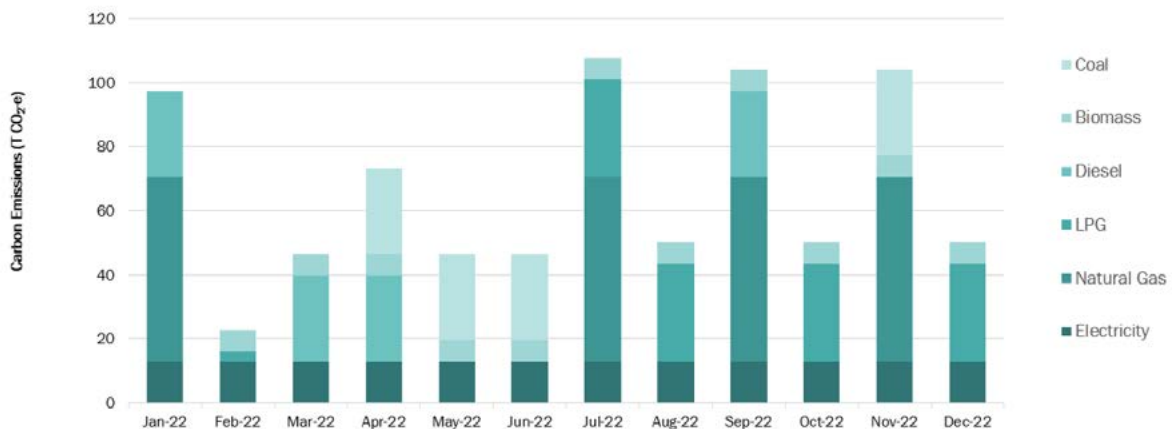
The final chart is a breakdown of the site's energy-related emissions for that year by energy source. This gives insight into what to target in terms of decarbonisation.

Emission Breakdown by GHG Contributor