WICKLOW COUNTY COUNCIL

ENERGY REVIEW SUMMARY 2022

Codema
Dublin's Energy Agency

Cover photo courtesy of Wicklow County Council

01. INTRODUCTION

This Energy Review summary aims to highlight the total amount of energy that Wicklow County Council (WCC) consumed in 2022, along with the total cost and carbon emissions associated with this energy use.

This Energy Review also aims to clearly demonstrate where energy is used in the Council and where the greatest potential is to meet 2030 energy and emission targets.

TARGETS FOR 2030

Through the Climate Action Plan 2023, the Government requires the public sector to achieve various energy and emission targets by 2030. These are:

50%

A **50% IMPROVEMENT IN ENERGY EFFICIENCY** (BASED ON 2009 BASELINE)

51%

CO_2

A 51% ABSOLUTE REDUCTION IN ENERGY-RELATED GREENHOUSE GAS (GHG) EMISSIONS (BASED ON A 2016-2018 AVERAGE BASELINE)

51%

CO_2

A **51% REDUCTION IN NON-ELECTRICITY (HEATING AND TRANSPORT) RELATED GREENHOUSE GAS EMISSIONS** (BASED ON A 2016-2018 AVERAGE BASELINE)

Current Status

In 2022, WCC consumed 23.3 gigawatt hours (GWh) of energy (based on Total Final Consumption). This equates to 6,296 tonnes of CO_2, with an estimated energy cost of €3.85 million.

According to the Sustainable Energy Authority of Ireland (SEAI)'s Monitoring and Reporting (M&R) System, the Council has improved its energy efficiency by 19.1%, compared to the baseline year.

The unforeseen impact of Covid-19 restrictions has affected this metric as many facilities were shut to the public or operating at reduced capacity for significant portions of 2020 and 2021. Consequently, a bounce-back effect is observed in 2022 as facilities return to normal activity levels.

WCC has achieved a 16.6% reduction in its energy-related greenhouse gas emissions, equivalent to 1,219 tonnes of CO_2. Looking at the non-electricity emissions, there has been a 4% reduction in thermal and transport GHG emissions since the baseline. This leaves a gap-to-target of 1,289 tonnes of CO_2 equivalent of non-electricity emissions between now and 2030.

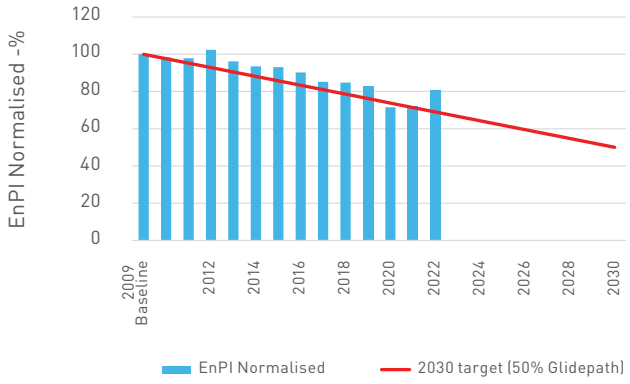

Figure 1. Annual Energy Performance Compared to 50% Glidepath

WCC Energy Overview 2022

CONSUMED 23.3 GWH OF ENERGY

6,296 TONNES OF CO_2 EMITTED

€3.85 MILLION ASSOCIATED ENERGY COST

Public Sector Obligations

50% IMPROVEMENT IN ENERGY EFFICIENCY BY 2030

51% ABSOLUTE REDUCTION IN ENERGY-RELATED GHGS BY 2030

51% REDUCTION IN NON-ELECTRICITY RELATED GHGS BY 2030

WCC Progress

IMPROVED ENERGY EFFICIENCY BY 19.1%

4% REDUCTION IN DIRECT GHG EMISSIONS

47% REDUCTION IN DIRECT GHG EMISSIONS NEEDED TO REACH 2030 GHG TARGET

01. INTRODUCTION
(CONTINUED)

Gap-to-Target

The graph shown below highlights WCC's gap-to-target analysis for emission reductions towards 2030. The targets shown are based on a 51% reduction in total emissions and non-electricity emissions, in line with anticipated supply-side gains from electricity system decarbonisation by 2030, which is equivalent to a 77.4% reduction in electricity emissions. All reductions are expressed from a 2016-2018 baseline. The modelled forecast takes account of anticipated future projects that will occur between now and 2030.

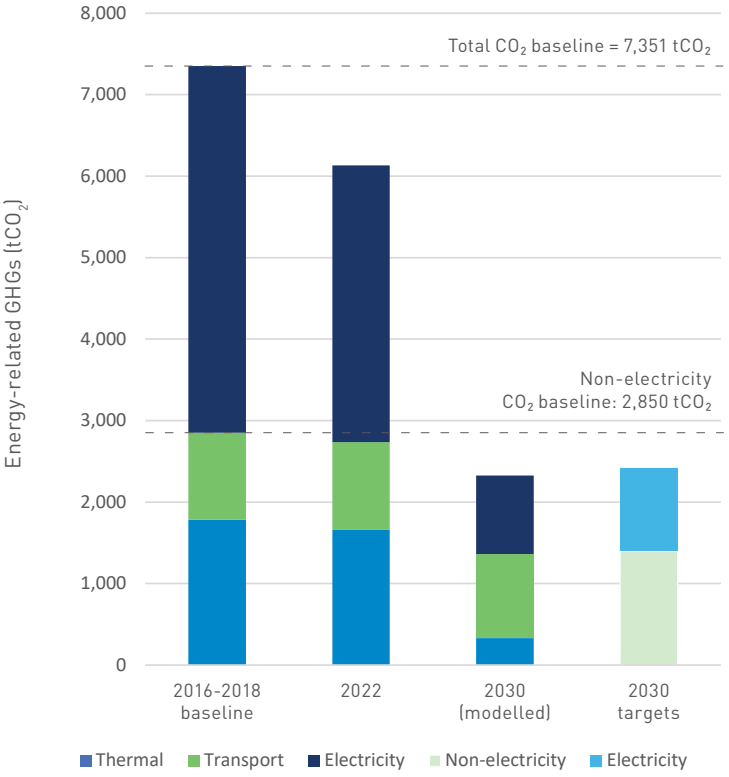

Figure 2. Gap-to-target 2030 Modelled Emissions

02. SIGNIFICANT ENERGY USERS

Codema has identified four Significant Energy Users (SEUs) within Wicklow County Council. SEUs are the areas that consume significant levels of energy within the Council and/or have the greatest potential for energy and emission savings.

Within WCC, these are:

- Leisure Centres
- Public Lighting
- Fleet
- Corporate

In total, these four SEUs accounted for 87.8% of total energy use in 2022. A percentage breakdown showing how much each SEU contributes to this total is shown in the pie chart below.

The management of energy in these four SEU areas is critical for WCC to achieve its energy and emission reduction targets. Small percentage energy reductions in these areas have a much greater impact than seemingly large reductions in non-SEU areas.

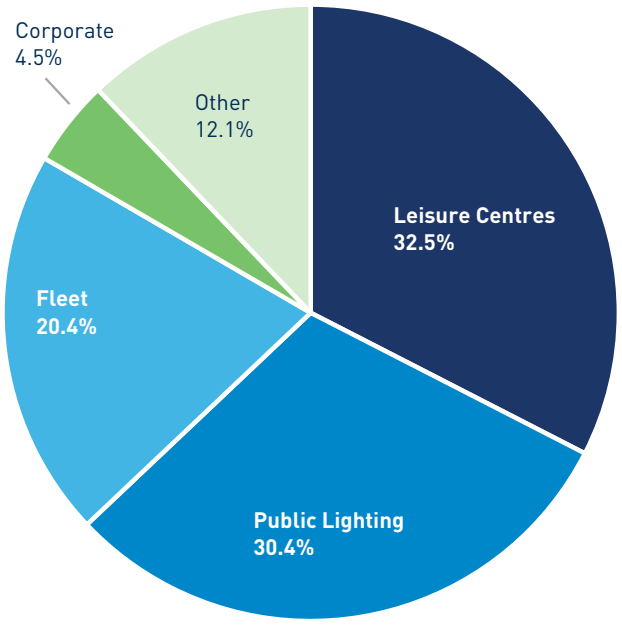

Figure 3. WCC SEU Breakdown

KEY SEUs

LEISURE CENTRES

PUBLIC LIGHTING

FLEET

CORPORATE

02. SIGNIFICANT ENERGY USERS
(CONTINUED)

LEISURE CENTRES

WCC Leisure Centres 2022

CONSUMED 7.58 GWH OF ENERGY

1,719 TONNES OF CO_2 EMITTED

€846,500 ASSOCIATED ENERGY COST

32.5% OF WCC'S TOTAL ENERGY CONSUMPTION

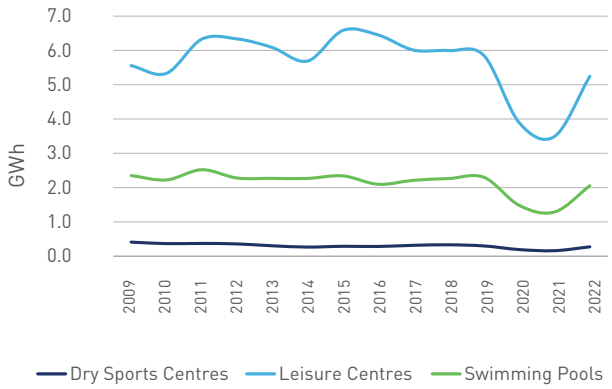

Figure 4: Leisure Centres' Annual Energy Consumption

Current Situation

Leisure Centres is the largest SEU within WCC. This SEU comprises two leisure centres, two swimming pools and two dry sports centres. In 2022, these facilities accounted for 32.5% of WCC's energy use, amounting to a consumption of 7.58 GWh of energy, 1,719 tonnes of CO_2 and an estimated €846,500 in energy spend.

The annual energy consumption of these facilities dating back to 2009 is depicted in Figure 4 on this page. Among the Leisure Centres, Shoreline Greystones showed a downward trend in energy consumption, while Shoreline Bray's energy consumption rose. By the end of 2022, 120 kWp and 70 kWp PV solar arrays were installed in Shoreline Greystones and Bray, respectively. Enhancements like insulation, pump upgrades, and solar installations contributed to reduction trends in the Coral Wicklow Town and Coral Arklow Swimming Pools. Looking at the dry sports centres, Coral Sports Centre Arklow showed a modest 3% reduction between 2009 and 2022; it should be noted that an 18.72 kW PV solar array was installed in this facility in 2016.

The Covid-19 pandemic caused a one-third reduction in energy consumption across all facilities in 2020 and 2021, with a rebound observed in 2022, though consumption remained below 2019 levels.

Future Plans

Codema has identified the two Shoreline Leisure Centres and the two Coral Swimming Pools as being suitable for a range of energy efficiency and renewable measures, as part of an initial project pipeline created in partnership with WCC. These upgrades will vary depending on the needs of the individual buildings. The focus of these upgrades will include lighting upgrades, the installation of heat pumps and solar PV, AHU upgrades, controls, heat recovery, along with some building fabric work taking place where feasible. These projects aim to achieve significant savings of 4 GWh of energy, corresponding to 972 tonnes of CO_2 per annum.

PUBLIC LIGHTING

WCC Public Lighting 2022

CONSUMED 7.08 GWH OF ENERGY

2,321 TONNES OF CO_2 EMITTED

€1.69M ASSOCIATED ENERGY COST

30.4% OF WCC'S TOTAL ENERGY CONSUMPTION

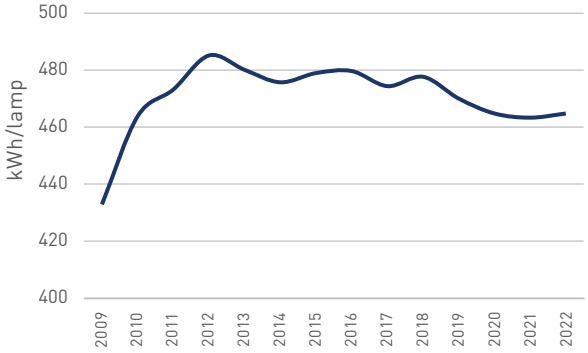

Figure 5. Public Lighting Annual Energy Performance

Current Situation

Public Lighting is the second largest SEU within WCC. In 2022, Public Lighting accounted for 30.4% of WCC's Total Final Consumption, which amounted to 7.08 GWh of energy, 2,321 tonnes of CO_2 and an estimated €1.69 million in energy costs. Public Lighting consists of around 15,212 street lamps, of which 8,174 have been upgraded to LEDs.

As depicted in Figure 5, there was a rapid increase in energy consumption per lamp from 2009 to 2012 . Since 2019, an ongoing maintenance programme has contributed to improving the energy performance of the lighting, which included the replacement of a number of lanterns.

Future Plans

Wicklow County Council has signed up for the Public Lighting Energy Efficiency Project for the Eastern Region (PLEEP-ER). The retrofitting work will involve an inventory of all lighting fixtures followed by the design and installation phases.

It is planned that for 2024, a total of 1,000 street lamps will be upgraded to LED, with the remaining lamps (approximately 6,038) to be upgraded in subsequent years.

Once completed, the LED upgrading programme could achieve savings of up to 1.78 GWh of electricity and reduce 174 tonnes of CO_2 per annum.

02. SIGNIFICANT ENERGY USERS
(CONTINUED)

FLEET

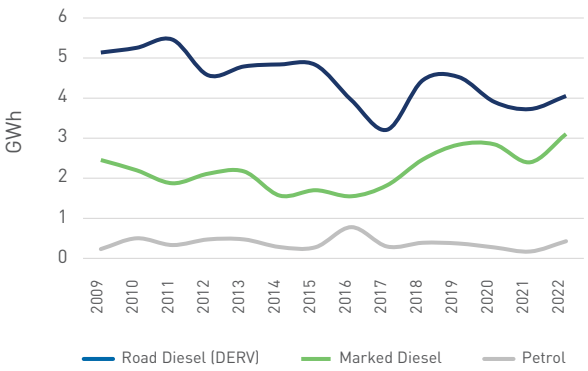

Figure 6. Fleet Annual Energy Consumption

WCC Fleet 2022

CONSUMED 4.76 GWH OF ENERGY

1,255 TONNES OF CO_2 EMITTED

€620,000 ASSOCIATED ENERGY COST

20.4% OF WCC'S TOTAL ENERGY CONSUMPTION

Current Situation

Fleet is the third largest SEU within WCC and accounted for 20.4% of WCC's energy use in 2022. This amounted to 4.76 GWh of energy, 1,255 tonnes of CO_2 and approximately €620,000 in energy costs.

Fleet consists of 153 vehicles; within this, three of these are electric vehicles and 25 vehicles are on short-term hire. Road Diesel (DERV) and Marked Diesel account for 85% and 13% of the fuel used within Fleet, respectively, as the remaining 2% of petrol is only used to fuel small equipment.

Road Diesel (DERV) saw a slight drop in 2012, followed by its lowest point at 3.2 GWh in 2017. A rebound is observed in 2019 with a minor reduction in 2020 due to the pandemic. Since then, consumption has been gradually increasing but hasn't yet reached 2019 levels. Marked Diesel showed a declining trend until 2017, followed by a consistent upward trajectory, reaching its highest point in 2019, possibly due to increased equipment use for maintaining public amenities. Petrol had few deviations, except for a slight increase in 2016. The three fuels all show an upward trend in 2022.

Future Plans

A Fleet Management Policy has been developed, which addresses the introduction of electric vehicles (EVs) when available in the market, along with the adoption of Hydrotreated Vegetable Oil (HVO) fuel for the fleet. By the end of 2024, five EVs will be introduced into the fleet.

Additionally, in line with the Gap-To-Target tool, the fleet upgrades figure has been calculated assuming 10% of the existing fleet is upgraded to EVs. This is equivalent to a reduction of 258 MWh or 71 tonnes of CO_2 per year.

CORPORATE

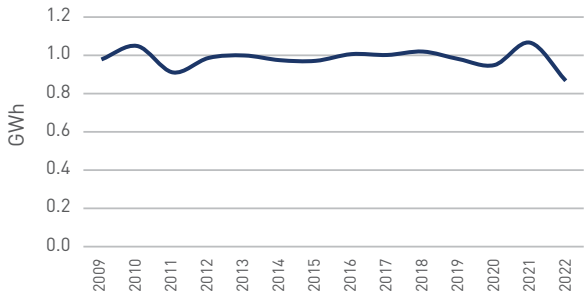

Figure 7. Corporate Annual Energy Consumption

Corporate 2022

CONSUMED 1.05 GWH OF ENERGY

233 TONNES OF CO_2 EMITTED

€155,000 ASSOCIATED ENERGY COST

4.5% OF WCC'S TOTAL ENERGY CONSUMPTION

Current Situation

Corporate is the fourth largest energy consumer within the Council. This SEU encompasses Wicklow County Council, commonly referred to as County Buildings, which accounted for 4.5% of the Council's overall energy consumption in 2022. This amounted to a total energy usage of 1.05 GWh of energy, resulting in 233 tonnes of CO_2 emissions and an estimated energy expenditure of €155,000.

This office complex incorporates the main office buildings as well as the Machinery Yard, which comprises a workshop, stores, and a laboratory. This building has shown a consistent energy consumption pattern throughout the years. While electricity consumption has shown a downward trend, gas consumption has exhibited a consistent upward trend. During the pandemic, the facility remained fully operational; therefore, no energy reduction is noticeable in 2020 and 2021. At the end of 2021, a 300 kWp PV solar carpark array was installed in this facility, resulting in a reduction of 109 MWh in electricity consumption observed in 2022 compared to 2019.

Future Plans

Codema has identified County Buildings as a suitable building for a range of energy efficiency and renewable measures, as part of an initial project pipeline created by Codema, in partnership with WCC.

This project aims to achieve significant savings of up to 281 MWh of energy, corresponding to 68 tonnes of CO_2 per annum. The focus of these upgrades will be on decarbonisation and will include the installation of a heat pump, a BMS upgrade, along with some building fabric work taking place, where feasible.

03. CONCLUSION

According to the SEAI M&R System, WCC has improved its energy efficiency by 19.1% between the baseline year (2009) and 2022, falling short by 11.8% from the projected glidepath to 2030. It is vital that high standards of energy management practices are maintained across the organisation to ensure the overall energy efficiency target is met.

The Council must also achieve a 51% reduction in energy-related and non-electricity GHG emissions by 2030. Currently, there has been a 16.6% reduction in total emissions, along with a 4% decrease in thermal and transport emissions since the baseline. This means that a further 1,289 tonnes of non-electricity CO_2 emissions must be saved in order to reach this target.

The projects listed in this Energy Review Summary will make a significant contribution to WCC's energy efficiency and emission targets for 2030 and together will achieve energy savings of 6.56 GWh or 1,371 tonnes of CO_2.

Significant resources will be required to progress these projects. Codema is working with WCC to facilitate the progress of selected initiatives. Codema is also working with the Mid-East Energy Unit to explore opportunities under SEAI's Pathfinder funding programme, which could provide significant financial assistance towards the development of these projects. Negotiations with SEAI are currently underway to finalise the terms of this arrangement.

04. ESTIMATED SAVINGS BY SEU

SEU AREA	ACTION	ESTIMATED ENERGY SAVINGS	ESTIMATED CARBON SAVINGS tCO_2/yr
LEISURE CENTRES	DECARBONISATION RETROFITS TO GREYSTONES AND BRAY SHORELINE AND WICKLOW TOWN AND ARKLOW CORAL SWIMMING POOLS	4.00 GWh	972
PUBLIC LIGHTING	LED UPGRADE PROGRAMME	1.78 GWh	174
FLEET	REPLACEMENT OF FLEET WITH ELECTRIC VEHICLES	0.26 GWh	71
CORPORATE	DECARBONISATION RETROFITS TO COUNTY BUILDINGS	0.28 GWh	68
OTHER BUILDINGS	DECARBONISATION RETROFITS TO SMALLER BUILDINGS	0.43 GWh	105
	NEW BUILDS/EXPANSION OF CURRENT BUILDINGS	-0.19 GWh	-19
	TOTAL	6.56 GWh	1,371

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