FINGAL COUNTY COUNCIL

ENERGY REVIEW SUMMARY 2021

codema
Dublin's Energy Agency

Comhairle Contae Fhine Gall
Fingal County Council

01. INTRODUCTION

This Energy Review summary aims to highlight the total amount of energy that Fingal County Council (FCC) consumed in 2021, 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%

IMPROVEMENT IN ENERGY EFFICIENCY
(BASED ON THE AVERAGE CONSUMPTION OF A 2006-2008 BASELINE)

51%

REDUCTION IN GREENHOUSE GAS (GHG) EMISSIONS
(BASED ON EMISSIONS FROM TRANSPORT AND THERMAL FUELS AND USING A 2016-2018 AVERAGE BASELINE)

50%

OF THERMAL SPACE HEAT DEMAND TO BE MET BY RENEWABLE SOURCES

Cover photo courtesy of Fingal County Council

Current Status

In 2021, FCC consumed 28.7 gigawatt hours (GWh) of energy (based on Total Final Consumption). This equates to 8,859 tonnes of CO_2, with an estimated energy cost of €3.83 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 almost 41.8%, compared to the baseline year. However, this is not a reliable figure as much of this improvement is due to the Covid-19 pandemic and the closure of many Council offices and facilities during this time. Therefore, energy consumption is expected to rise in 2022 as operations return to normal.

FCC has achieved a 3.8% reduction in thermal and transport GHG emissions since the baseline. This leaves a gap-to-target of 1,294 tonnes of CO_2 equivalent between now and 2030.

FCC Energy Overview 2021

CONSUMED 28.7 GWH OF ENERGY

8,859 TONNES OF CO_2 EMITTED

€3.8 MILLION ASSOCIATED ENERGY COST

Public Sector Obligations

50% IMPROVEMENT IN ENERGY EFFICIENCY BY 2030

51% REDUCTION IN DIRECT GHG EMISSIONS BY 2030

50% OF THERMAL SPACE HEAT DEMAND TO BE MET BY RENEWABLE SOURCES BY 2030

FCC Progress

IMPROVED ENERGY EFFICIENCY BY 41.8%

3.8% REDUCTION IN DIRECT GHG EMISSIONS

47.2% REDUCTION IN DIRECT GHG EMISSIONS NEEDED TO REACH 2030 GHG TARGET

01. INTRODUCTION
(CONTINUED)

Gap-to-Target

The graph shown below highlights FCC's gap-to-target analysis for emission reductions towards 2030. The targets shown are based on a 51% reduction in non-electricity emissions and a reduction in 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 through the Pathfinder programme between now and 2030.

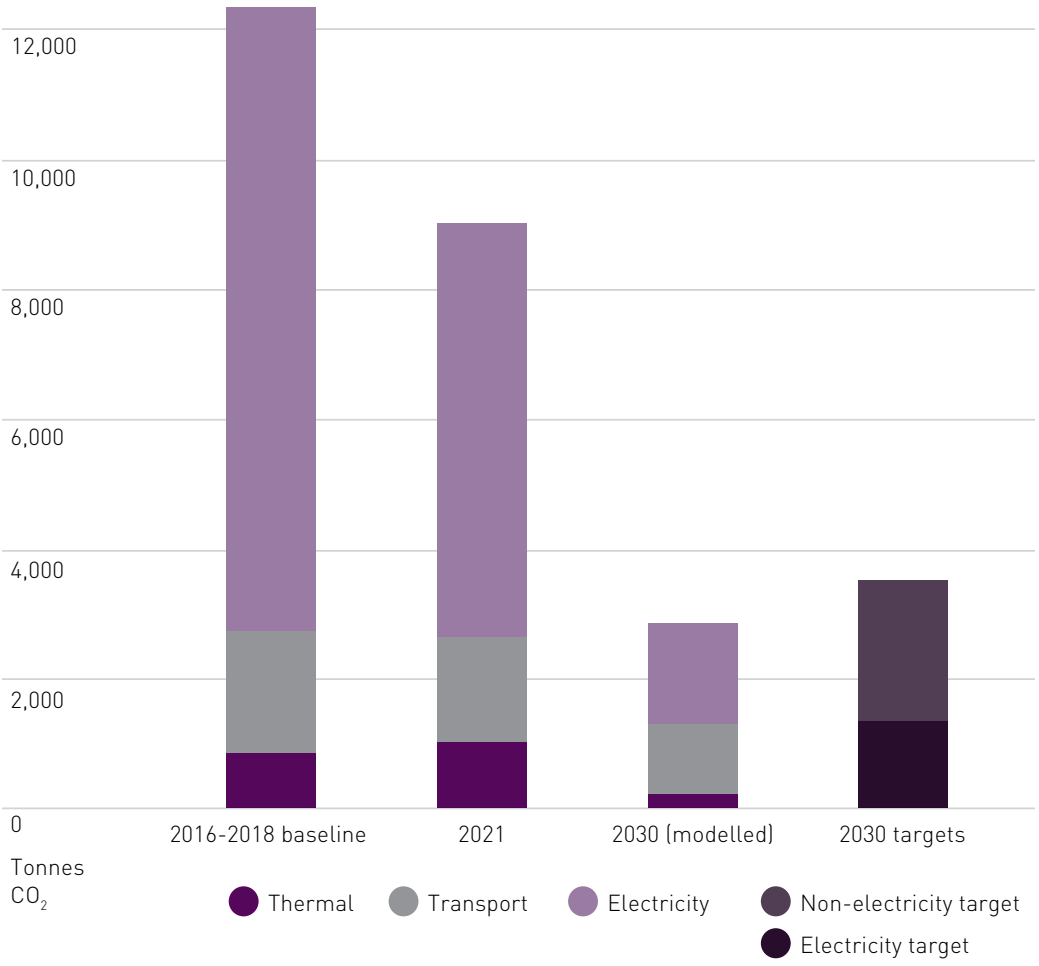

Figure 1: SEAI Gap-to-Target Analysis for FCC's GHG Emissions

02. SIGNIFICANT ENERGY USERS

Codema has identified five Significant Energy Users (SEUs) within Fingal 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 FCC, these are:

- Public Lighting
- Transport
- Large Offices
- Libraries
- Operations

In total, these five SEUs accounted for 90% of total energy use in 2021. 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 five SEU areas is critical for FCC 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.

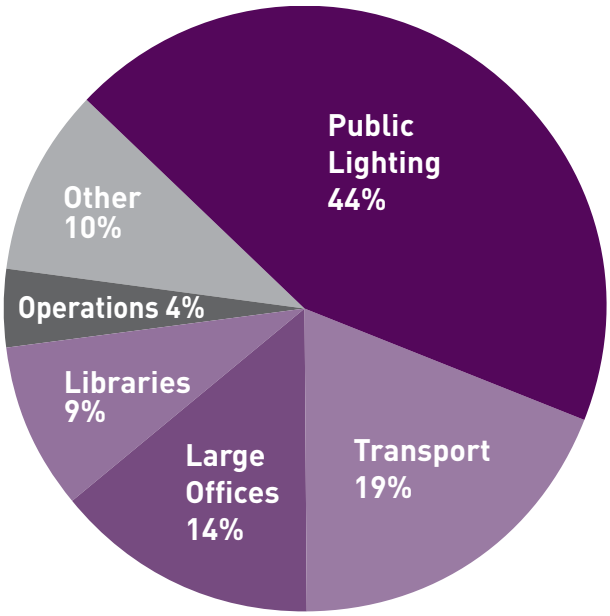

Figure 2: FCC SEU Breakdown

KEY SEUs

PUBLIC LIGHTING

TRANSPORT

LARGE OFFICES

LIBRARIES

OPERATIONS

02. SIGNIFICANT ENERGY USERS
(CONTINUED)

PUBLIC LIGHTING

FCC Public Lighting 2021

CONSUMED 12.7 GWH OF ENERGY

4,511 TONNES OF CO_2 EMITTED

€1.77M ASSOCIATED ENERGY COST

44% OF FCC'S TOTAL ENERGY CONSUMPTION

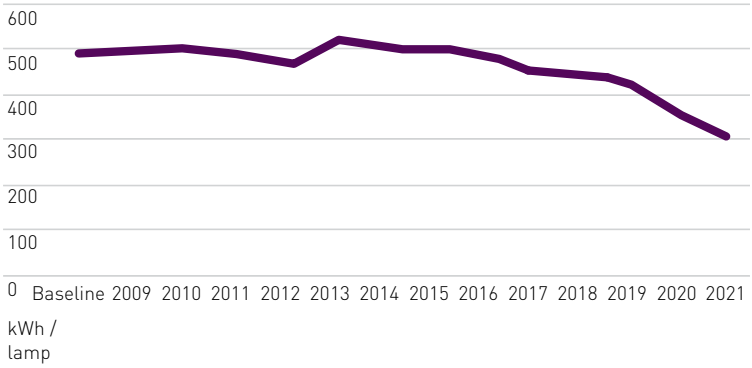

Figure 3: Public Lighting Annual Energy Performance

Current Situation

Public Lighting is the largest SEU within FCC. In 2021, Public Lighting accounted for 44% of FCC's total consumption, which amounted to 12.7 GWh, 4,511 tonnes of CO_2 and an estimated €1.77 million in energy costs. Public Lighting consists of around 34,677 street lamps, the vast majority of which (26,478) have been upgraded to LEDs as part of the Council's retrofit programme.

As can be seen in Figure 3 on this page, there has been a steady improvement in energy performance in Public Lighting since 2016 and even further reductions since then, due to the LED replacement programme.

Future Recommendations

Within FCC's stock of public lighting, there are currently 2,240 inefficient (i.e. SOX and SON) lamps. As mentioned earlier, the Council is currently rolling out a programme that replaces the lamps that fail across the County with their LED equivalent. Once completed, this retrofit programme could achieve savings of 2.8 GWh of TFC and 961 tonnes of CO_2 per year.

The introduction of central management systems are also being piloted with the aim of achieving further energy savings at times of low vehicular and pedestrian movements by allowing lights to be dimmed during periods of low demand. This pilot, if rolled out countywide, will help Fingal County Council's energy efficiency targets heading to 2030.

The use of Public Lighting columns to facilitate new EV charging infrastructure is currently being discussed. If the Public Lighting columns are to be used, this will have a negative effect on the energy performance of public lighting and also the local authority.

TRANSPORT

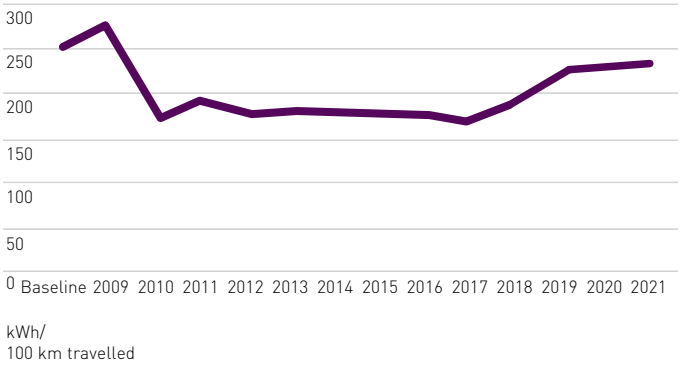

Figure 4: Transport Annual Energy Performance

FCC Transport 2021

CONSUMED 5.3 GWH OF ENERGY

1,333 TONNES OF CO_2 EMITTED

€530,600 ASSOCIATED ENERGY COST

19% OF FCC'S TOTAL ENERGY CONSUMPTION

Current Situation

Transport is the second largest SEU within FCC and accounted for 19% of the Council's total consumption in 2021. This amounted to 5.3 GWh, 1,333 tonnes of CO_2, or approximately €530,600 in energy costs. Transport consists of 220 vehicles, of which 58 are fully-electric (as of October 2022). Road Diesel (DERV) accounts for 57% and Marked Diesel accounts for 40% of the fuel used within Transport (not including the electric vehicles), as petrol is only used to fuel small equipment.

The database shows that in 2021, the energy performance of Transport has slightly decreased by 4.3% since pre-Covid levels in 2019. This is due to an extra 40 vehicles on hire to comply with distancing measures; the intention is to replace these vehicles with owned vehicles, as these vehicles account for fuel consumption and an approximate number of kilometres travelled.

Future Recommendations

Fingal County Council is making significant efforts to electrify its fleet, and has a replacement programme in place towards a more efficient fleet for 2030.

Eight electric Light Commercial Vans (LCVs) were received in 2022 and an order for 15 electric LCVs has been placed for 2023. Looking to 2030, it is intended to replace a total of 20 Heavy Goods Vehicles (HGVs), once suitable vehicles become available on the market. If these 20 HGVs and the remaining diesel vans were electrified, this could result in energy savings of approximately 1.26 GWh or 236 tonnes of CO_2 per year.

02. SIGNIFICANT ENERGY USERS
(CONTINUED)

LARGE OFFICES

FCC Large Offices 2021

CONSUMED 3.9 GWH OF ENERGY

1,043 TONNES OF CO_2 EMITTED

€355,000 ASSOCIATED ENERGY COST

14% OF FCC'S TOTAL ENERGY CONSUMPTION

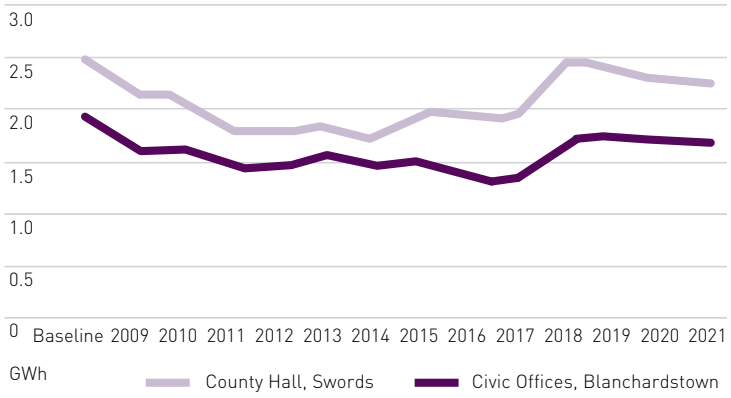

Figure 5: Large Offices' Annual Energy Consumption

Current Situation

The Large Offices SEU consists of County Hall in Swords and the Civic Offices in Blanchardstown. In 2021, these facilities accounted for 14% of FCC's total consumption. This equates to 3.9 GWh, 1,043 tonnes of CO_2 and an estimated €355,000 in energy spend.

In 2021, Large Offices reduced its energy consumption by 4.6% compared to pre-Covid levels in 2019. Since 2018, the energy consumption of both buildings has been decreasing. This has been partly due to the ongoing rectification of the Building Management System (BMS) controls by facilities management.

Future Recommendations

FCC's Facilities Management, with the assistance of Codema, signed the contract for an Energy Performance Contract project on County Hall in Swords and the Civic Offices in Blanchardstown. The EPC project aims to save 1.3 GWh of energy, corresponding to 352 tonnes of CO_2 per year; this EPC will be commissioned before the end of 2023.

The focus of these upgrades will be on decarbonisation and will likely include the installation of heat pumps and solar PV with some building fabric work also taking place.

LIBRARIES

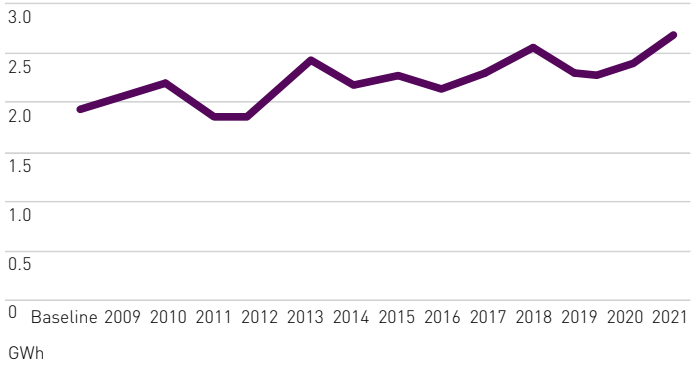

Figure 6: Libraries' Annual Energy Consumption

FCC Libraries 2021

CONSUMED 2.7 GWH OF ENERGY

651 TONNES OF CO_2 EMITTED

€218,000 ASSOCIATED ENERGY COST

9% OF FCC'S TOTAL ENERGY CONSUMPTION

Current Situation

Libraries are the fourth largest energy consumer within FCC. The Council currently operates 10 libraries in the region, as well as a mobile library depot, which together accounted for 9% of the Council's total consumption in 2021. This is a total of 2.7 GWh, 651 tonnes of CO_2 and approximately €218,000 in energy spend.

In 2020, there was a small decrease in energy consumption due to the facilities being closed to the public because of the pandemic. However, energy consumption has bounced back to previous levels and in 2021, the Libraries' energy consumption increased by 17.8% compared to pre-Covid levels in 2019.

The Blanchardstown Library and Draíocht building is by far the largest energy consumer, accounting for 60% of the total SEU energy consumption. The next largest consumers are Rush, Balbriggan and Malahide with 13%, 9.3% and 9.1% respectively. Smaller libraries like Baldoyle, Skerries, Howth, among others, together account for the remaining 9.3% of energy consumption.

Malahide, Howth and Baldoyle Libraries are currently under an advance assessment for some mechanical and electrical works to improve the energy efficiency of the sites.

Future Recommendations

The DeliveREE Project is a standardised project delivery system for rolling out energy efficiency and renewable projects across Dublin. Under the DeliveREE project within FCC, Codema will facilitate the delivery of these projects. It is likely that upfront investment costs for these projects will be partially funded by SEAI's Pathfinder programme.

Through the DeliveREE project, the Blanchardstown Library and Draíocht building and Rush Library together will save 1.1 GWh of energy or 177 tonnes of CO_2 per year.

The focus of these upgrades will be on decarbonisation and will likely include the installation of heat pumps and solar PV.

02. SIGNIFICANT ENERGY USERS
(CONTINUED)

OPERATIONS

FCC Operations 2021

CONSUMED 1.2 GWH OF ENERGY

364 TONNES OF CO_2 EMITTED

€174,00 ASSOCIATED ENERGY COST

4% OF FCC'S TOTAL ENERGY CONSUMPTION

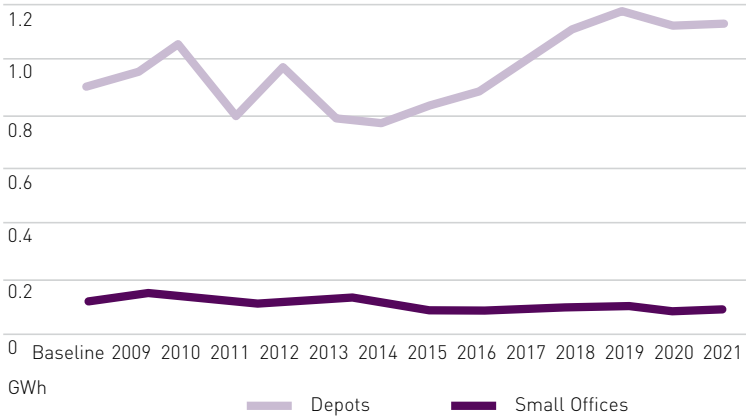

Figure 7: Operations' Annual Energy Consumption

Current Situation

Operations is the fifth and final SEU within FCC, and comprises five small offices and six depot facilities. In 2021, these facilities accounted for 4% of FCC's total energy use. This is a consumption of 1.2 GWh of TFC, 364 tonnes of CO_2 and an estimated €174,00 in energy spend.

In 2021, offices and depots within the Operations SEU had an overall reduction in energy consumption by 5% compared to pre-Covid levels in 2019. This is a reduction of 64 MWh and 13 tonnes of CO_2. Since 2015, the energy consumption of the depots has significantly increased, attributable to Malahide Castle. On the other hand, the energy consumption of the small offices has been slowly decreasing; between 2019 and 2021 there was a reduction of 18%.

Future Recommendations

The DeliveREE Project is a standardised project delivery system for rolling out energy efficiency and renewable projects across Dublin. Through the DeliveREE project, Malahide Castle will save 181 MWh of energy or 61 tonnes of CO_2 per year.

The focus of these upgrades will be on decarbonisation and will likely include the installation of heat pumps and solar PV.

03. CONCLUSION

According to the SEAI M&R System, FCC has improved its energy efficiency by 41.8% between the baseline year (average 2006-2008) and 2021. However, this figure must be treated with caution as much of the recent energy savings have been due to Covid-19 and the reduced levels of service provided and it is expected that energy consumption will rise again as normal activity resumes.

The Council must also achieve a 51% reduction in thermal and transport GHG emissions by 2030, and currently just 3.8% has been reduced since the baseline. This means that a further 1,294 tonnes of CO_2 must be saved, in order to reach this target. In addition, a new Government requirement sets out that all public sector organisations must ensure that 50% of their heating demand in buildings is met through renewable sources. Further direction from the Government is needed in this area and Codema is currently carrying out a study to determine the measures that would be required by FCC to meet this target.

The projects listed in this Energy Review will make a significant contribution to FCC's energy efficiency and emission targets for 2030 and together will achieve energy savings of 7.7 GWh or 2,147 tonnes of CO_2.

Significant resources will be required to progress these projects. Codema is working with FCC to bring some of these projects through the EU Horizon 2020 funded DeliveREE project, under which a dedicated Project Implementation Unit has been established.

Codema is also working with the four Dublin Local Authorities to avail of SEAI's Pathfinder funding programme, which could provide significant financial assistance towards the development of these projects. The terms of such an arrangement are currently being negotiated with SEAI.

0.4 ESTIMATED SAVINGS BY SEU

SEU AREA	ACTION	ESTIMATED ENERGY SAVINGS	ESTIMATED CARBON SAVINGS $t/CO_2/yr$
PUBLIC LIGHTING 	CONTINUED ROLL-OUT OF LED PROGRAMME	2.8 GWh	961
TRANSPORT 	REPLACEMENT OF FLEET WITH ELECTRIC VEHICLES	1.26 GWh	236
LARGE OFFICES 	DECARBONISATION RETROFITS TO COUNTY HALL IN SWORDS AND CIVIC OFFICES IN BLANCHARDSTOWN	1.3 GWh	352
LIBRARIES 	DECARBONISATION RETROFITS TO BLANCHARDSTOWN LIBRARY, DRAÍOCHT THEATRE AND RUSH LIBRARY	1.1 GWh	177
OPERATIONS 	DECARBONISATION RETROFITS TO MALAHIDE CASTLE	181 MWh	61
OTHER AREAS	UPGRADES TO 12 SMALL BUILDINGS FOR ENERGY EFFICIENCY MEASURES	890 MWh	302
	ENERGY EFFICIENCY REFURBISHMENT UPGRADES TO 5 HERITAGE BUILDINGS / DEPOTS	171 MWh	58
	TOTAL	7.7 GWh	2,147

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