



DÚN LAOGHAIRE- RATHDOWN COUNTY COUNCIL

ENERGY REVIEW SUMMARY 2021



01. INTRODUCTION

This Energy Review summary aims to highlight the total amount of energy that Dún Laoghaire-Rathdown County Council (DLRCC) 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 2021, the Government requires the public sector to achieve various energy and emission targets by 2030. These are:

50%



IMPROVEMENT IN ENERGY EFFICIENCY
(BASED ON A 2009 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



**DÚN LAOGHAIRE-
RATHDOWN
COUNTY
COUNCIL**

Current Status

In 2021, DLRCC consumed 22.62 Gigawatt hours (GWh) of energy (based on Total Final Consumption). This equates to 6,869 tonnes of CO₂, with an estimated energy cost of €2.85 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 50.9%, 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.

DLRCC has achieved a 27.8% reduction in thermal and transport GHG emissions since the baseline. This leaves a gap-to-target of 537 tonnes of CO₂ equivalent between now and 2030. Approximately 4% of DLRCC's space heating demand was met by renewable sources in 2021, primary via biomass boilers at the Lexlcon and Ballyogan Operations Depot. The projects outlined later in this summary will be key to the Council achieving the challenging targets in these areas.

DLRCC Energy Overview 2021



**CONSUMED
22.6 GWH
OF ENERGY**



**6,869
TONNES
OF CO₂
EMITTED**



**€2.85 MILLION
ASSOCIATED
ENERGY COST**

Public Sector Obligations



**50%
IMPROVEMENT
IN ENERGY
EFFICIENCY BY
2030**



**51%
REDUCTION
IN GHG
EMISSIONS
BY 2030**



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

DLRCC Progress



**IMPROVED
ENERGY
EFFICIENCY BY
50.9%**



**27.8%
REDUCTION
IN GHG
EMISSIONS**



**23.2%
REDUCTION IN
GHG EMISSIONS
NEEDED TO REACH
2030 GHG TARGET**



**4% OF THERMAL
SPACE HEAT
DEMAND MET
BY RENEWABLE
SOURCES**



**46% INCREASE NEEDED
IN THERMAL SPACE
HEAT DEMAND MET BY
RENEWABLE SOURCES
TO REACH 2030 TARGET**

01. INTRODUCTION

(CONTINUED)

Gap-to-Target

The graph shown below highlights DLRCC'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 DeliveREE programme and the GHG emissions of predicted new buildings that will be added to the Council's building stock between now and 2030.

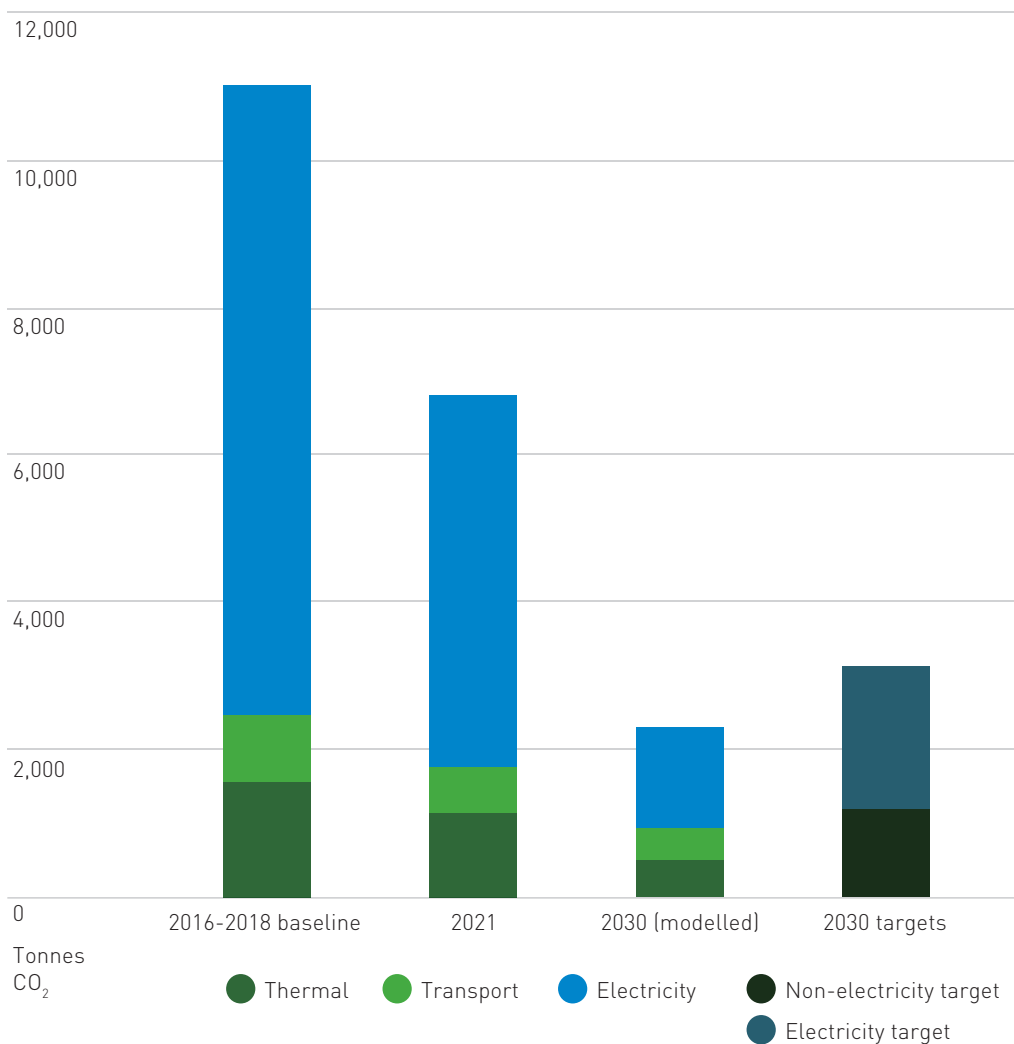


Figure 1: SEAI Gap-to-Target Analysis for DLRCC's GHG Emissions

02. SIGNIFICANT ENERGY USERS

Codema has identified six Significant Energy Users (SEUs) within Dún Laoghaire-Rathdown 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 DLRCC, these are:

- Public Lighting
- DLR Leisure and Civic Campus
- Fleet
- Corporate Services
- Libraries
- Ballyogan Operations Depot

In total, these six SEUs accounted for 85.6% 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 six SEU areas is critical for DLRCC 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.

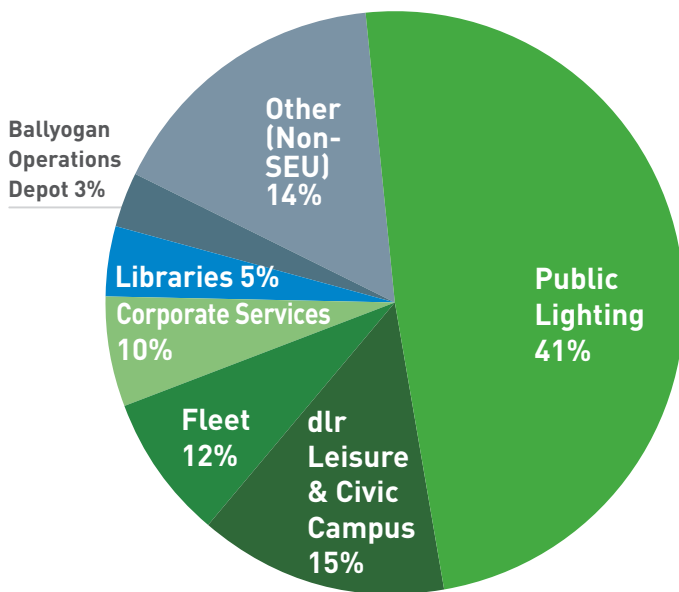


Figure 2: DLRCC SEU Breakdown

KEY SEUs



PUBLIC LIGHTING



dlr LEISURE & CIVIC CAMPUS



FLEET



CORPORATE SERVICES



LIBRARIES



BALLYOGAN OPERATIONS DEPOT

02. SIGNIFICANT ENERGY USERS

(CONTINUED)



PUBLIC LIGHTING

DLRCC Public Lighting 2021



**CONSUMED
9.37 GWH
OF ENERGY**



**3,331
TONNES
OF CO₂
EMITTED**



**€1.37M
ASSOCIATED
ENERGY COST**



**41% OF DLRCC'S
TOTAL ENERGY
CONSUMPTION**

Current Situation

Public Lighting is the largest SEU within DLRCC. In 2021, Public Lighting accounted for 41% of DLRCC's total consumption, which amounted to 9.37 GWh, 3,331 tonnes of CO₂ and an estimated €1.37 million in energy costs. Public Lighting consists of around 24,200 street lamps, the vast majority of which (20,626) 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.

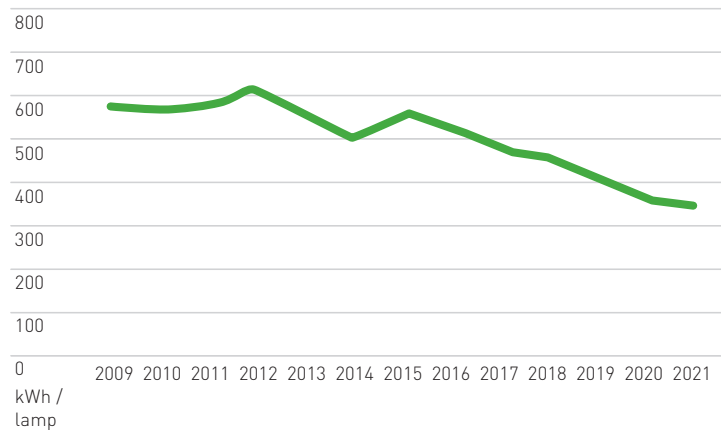


Figure 3: Public Lighting Annual Energy Performance

Future Recommendations

Within DLRCC's stock of public lighting, there are currently 2,244 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. This programme is expected to be completed by 2024 and could achieve energy savings of 1.72 GWh and 510 tonnes of CO₂. In addition, to help reach the 2030 energy efficiency target, a solar photovoltaic (PV) project will be implemented, with annual energy generation of 216 MWh (initially for the generation of 24 MWh, with potential to generate a further 192 MWh).

The target within Public Lighting is to reduce energy consumption by 3.82 GWh. 1.72 GWh of savings will be accounted for through the LED replacement programme and 0.22 GWh through the solar PV project. However, the remaining 1.88 GWh of savings needs to be planned for.

The Council is also exploring the use of public lighting columns to facilitate EV charging points. Until such time as metering and a customer payment system is implemented on these EV charging points, this will have a negative effect on the energy performance of public lighting and on the local authority overall.

dIrr LEISURE & CIVIC CAMPUS

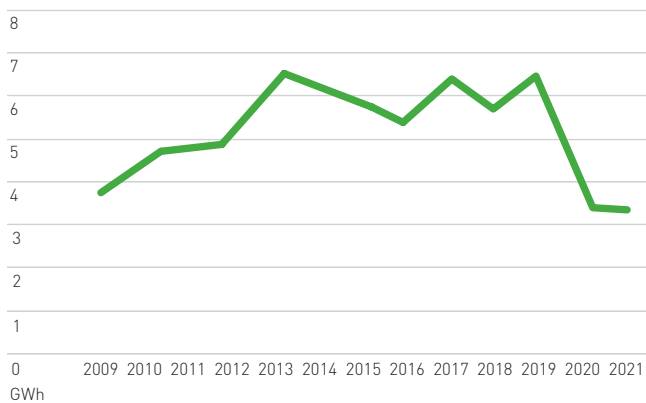


Figure 4: DLR Leisure & Civic Campus Annual Energy Consumption

DLR Leisure & Civic Campus 2021



**CONSUMED
3.35 GWH
OF ENERGY**



**824
TONNES
OF CO₂
EMITTED**



**€278,000
ASSOCIATED
ENERGY COST**



**14.8% OF DLRC's
TOTAL ENERGY
CONSUMPTION**

Current Situation

DLR Leisure and Civic Campus are the second largest energy consumers within the Council. This SEU includes Loughlinstown, Monkstown and Meadowbrook Leisure Centres and the Civic Campus. In 2021, these facilities accounted for 14.8% of DLRC's energy use. This amounts to 3.35 GWh, 824 tonnes of CO₂ and an estimated €278,000 in energy spend.

As can be seen in the graph above, there was a significant decrease in energy consumption within the Leisure Centres in 2020 and 2021, mainly due to the closure of these buildings during the Covid-19 pandemic. In 2021, an Energy Performance Contract (EPC) was also awarded by the Council for the upgrade of the leisure centres, which so far has resulted in a number of upgrades being carried out in Loughlinstown and Monkstown, such as the replacement of the pool circulation pumps, the upgrade of the floodlights to LEDs and the AHU System and optimisation of the BMS.

Future Recommendations

The upgrades as part of the EPC project were completed in Loughlinstown and Monkstown Leisure Centres in March 2022. Upgrades as part of the same EPC project will be completed in Meadowbrook Leisure Centre in early 2023 and will include HVAC and AHU control optimisation, the replacement of the low pressure hot water pumps and the upgrade of the CHP. These improvements in Meadowbrook Leisure Centre aim to save 330 MWh of energy per annum, equivalent to 117 tonnes of CO₂.

Separately, the Civic Campus has been selected to participate in the new DeliveREE pipeline of projects. Coordinated by Codema, DeliveREE is a standardised project delivery system for rolling out energy efficiency and renewable projects across Dublin (initially in local authority buildings). Within this, the Civic Campus, along with a number of other Council buildings, will undergo a number of upgrades as part of a new EPC project. When carried out, these upgrades will aim to save 189 MWh of energy per annum within the Civic Campus, corresponding to 39 tonnes of CO₂.

02. SIGNIFICANT ENERGY USERS

(CONTINUED)



FLEET

DLRCC Fleet 2021



**CONSUMED
2.63 GWH
OF ENERGY**



**657
TONNES
OF CO₂
EMITTED**



**€321,700
ASSOCIATED
ENERGY COST**



**11.6% OF DLRCC'S
TOTAL ENERGY
CONSUMPTION**

Current Situation

Fleet is the third largest SEU within DLRCC and accounted for 11.6% of the Council's total consumption in 2021. This amounted to 2.63 GWh, 657 tonnes of CO₂, or approximately €321,700 in energy costs. Fleet consists of 253 vehicles, of which 31 are fully-electric (as of October 2022). Diesel accounts for 99% of the fuel used within Fleet (not including the electric vehicles), as petrol is only used to fuel small equipment.

The database shows that in 2021, the energy consumption of the Fleet has decreased by 21% since the baseline year of 2019. This consumption is likely to continue decreasing towards 2030, as diesel-fuelled vehicles continue to be replaced with electric vehicles.

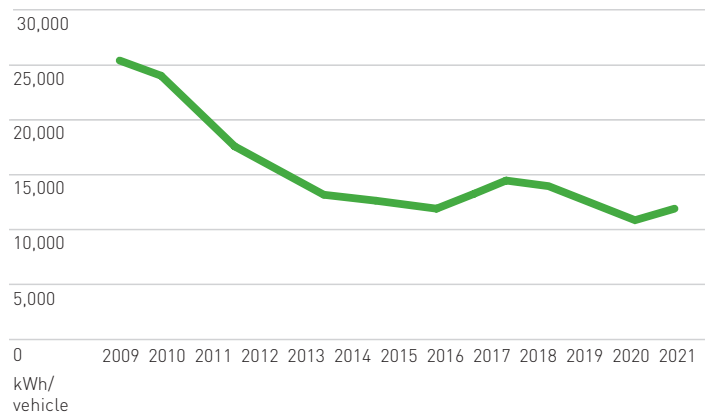


Figure 5: Fleet Annual Energy Performance

Future Recommendations

Dún Laoghaire-Rathdown County Council is making significant efforts to electrify its fleet, and has a replacement programme in place to dispose, replace and purchase vehicles towards a more efficient fleet for 2030.

Under the Council's Fleet Replacement Programme, approximately 69 vehicles will be replaced with electric vehicles by 2025 if suitable alternatives become available on the market. This figure is expected to increase to 76 vehicles by 2030. This would represent an estimated savings of 1.01 GWh or 244 tonnes of CO₂ per year.

CORPORATE SERVICES

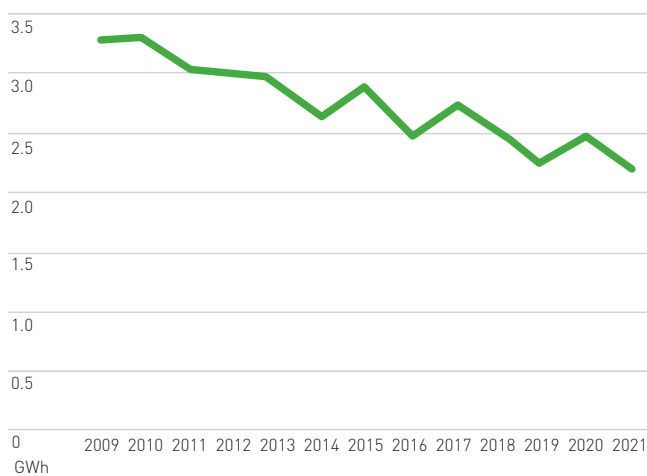


Figure 6: Corporate Services' Annual Energy Consumption

Current Situation

The Corporate Services SEU consists of County Hall and Block One Harbour Square. In 2021, these facilities accounted for 9.7% of DLRC's total consumption. This equates to 2.2 GWh, 573 tonnes of CO₂ and an estimated €197,000 in energy spend.

In 2021, Corporate Services reduced its energy consumption by 1.7% compared to the 2019 baseline. However, energy consumption increased in 2020 due to extended operating hours in both County Hall and Harbour Square, due to Covid-19. Heating and lighting were used more than usual as staff were spread out across the building due to social distancing measures.

DLRC Corporate Services 2021



**CONSUMED
2.2 GWH
OF ENERGY**



**573
TONNES
OF CO₂
EMITTED**



**€197,000
ASSOCIATED
ENERGY COST**



**9.7% OF DLRC'S
TOTAL ENERGY
CONSUMPTION**

Future Recommendations

Both County Hall and Block One Harbour Square have been included in a pipeline of projects through the DeliveREE project (mentioned earlier). By being included in DeliveREE, County Hall can save over 1.3 GWh of energy per year, with a further 100 MWh of savings in Block One Harbour Square. The estimated emissions savings for the two buildings combined will be 291 tonnes of CO₂ per year. 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.

02. SIGNIFICANT ENERGY USERS

(CONTINUED)



LIBRARIES

DLRCC Libraries 2021



**CONSUMED
1.15 GWH
OF ENERGY**



**337
TONNES
OF CO₂
EMITTED**



**€156,700
ASSOCIATED
ENERGY COST**



**5% OF DLRCC'S
TOTAL ENERGY
CONSUMPTION**

Current Situation

Libraries are the fifth largest energy consumer within DLRCC. The Council currently operates the Lexlcon Library and seven smaller libraries in the region, which together accounted for 5% of the Council's total consumption in 2021. This equates to 1.15 GWh, 337 tonnes of CO₂ and approximately €156,700 in energy spend.

Energy consumption reduced within the Libraries during parts of 2020 and 2021, mainly due to the branches being closed during the pandemic. The Lexlcon Library is by far the largest energy consumer, accounting for 76% of total consumption within the Libraries. The next largest consumers are Dalkey with 8.5% and Deansgrange with 6.8%. These two branches have had a steady increase in energy demand since September 2021 due to these branches participating in the My Open Library scheme, where their opening hours were extended to the public.

The next largest energy user is Shankill Library at 4.1%, while other libraries like Stillorgan, Blackrock, Dundrum and Cabinteely account for the remaining 5%.

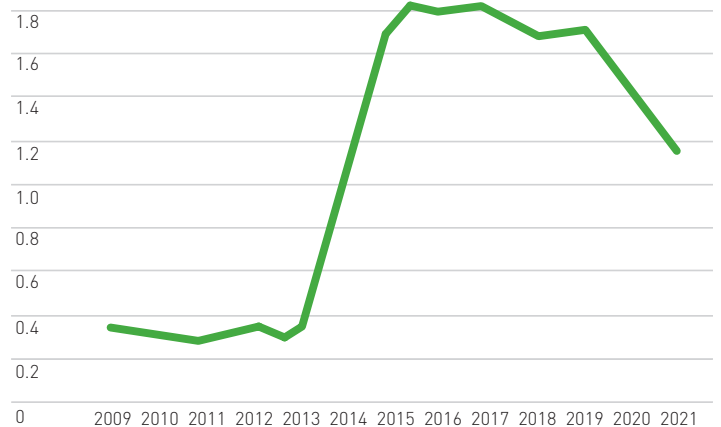


Figure 7: Libraries Annual Energy Consumption

Future Recommendations

The Lexlcon is included in the DeliveREE pipeline of projects. Through DeliveREE, the Lexlcon will be upgraded through an EPC project and aims to save 140 MWh of energy per year or 22 tonnes of CO₂. These upgrades are likely to include the installation of heat pumps and solar PV.

In addition, Deansgrange and Dalkey Libraries have received funding from My Open Libraries to install a heat pump and solar PV in both facilities, along with some building fabric upgrades. These upgrades in both branches aim to save up to 138 MWh of energy per year and 26 tonnes of CO₂. These works will begin before the end of 2022.

BALLYOGAN OPERATIONS DEPOT

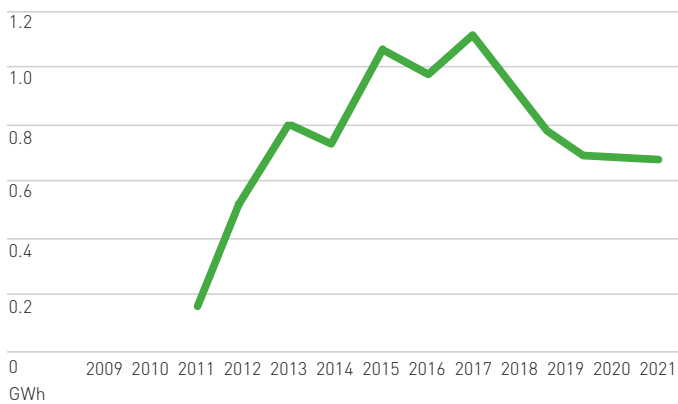


Figure 8: Ballyogan Operations Depot Annual Energy Consumption

Current Situation

Ballyogan Operations Depot is the sixth and final SEU within DLRC, accounting for 3% of the total energy consumed in the Council in 2021. This equates to 0.67 GWh, 161 tonnes of CO₂ and an estimated €78,200 in energy spend. The Ballyogan Operations Depot is a purpose-built, shared service facility that incorporates the Water, Cleansing, Transportation and Drainage Departments.

As can be seen in the graph above, the energy consumption (both electricity and thermal demand) at Ballyogan Operations Depot decreased significantly (by 40%) from 2017 through to 2021. In 2018, the biomass boiler was reinstated and improvements to the usage and set-points of flood lighting in the operations yard, refinement of the lighting management system and the installation of PV were all carried out. In 2019, the improvement of the DALI lighting control and monitoring system via PIR sensors, dimmable functionality and set point refinement led to more efficient use of the lighting system. Most recently, the solar array has been repaired to ensure the generation of energy when possible.

DLRC Ballyogan Operations Depot 2021



**CONSUMED
0.67 GWH
OF ENERGY**



**161
TONNES
OF CO₂
EMITTED**



**€78,200
ASSOCIATED
ENERGY COST**



**3% OF DLRC'S
TOTAL ENERGY
CONSUMPTION**

Future Recommendations

The Ballyogan Operations Depot is also included in the DeliveREE pipeline of projects, which will help to save 131 MWh of energy per year or 21 tonnes of CO₂ through various upgrades at the site. These include a lighting LED retrofit for the garages, replacement of the biomass metering system, adding submetering for the EV chargers and maintaining the DALI lighting system.

03. CONCLUSION

According to the SEAI M&R System, DLRCC has improved its energy efficiency by 50.9% between the baseline year and 2021, meaning that the Council has already achieved and even exceeded its 50% energy efficiency target. 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 27.8% has been reduced since the baseline. This means that a further 537 tonnes of CO₂ 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 DLRCC to meet this target.

The projects set out on the next page from each of the SEUs will make a significant contribution to DLRCC's energy efficiency and emission targets for 2030 and together will achieve energy savings of 7.67 GWh or 1,992 tonnes of CO₂.

Significant resources will be required to progress these projects. Codema is working with DLRCC to bring some of these projects through the EU Horizon 2020 funded DeliveREE project, under which a dedicated Project Implementation Unit has been established. Under the DeliveREE project, some element of energy performance contracting must be incorporated into each project, to ensure that the promised energy savings are initially achieved and then maintained over the longer term.

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 AND SOLAR PV PROGRAMMES	3.8 GWh	1,125
DLR LEISURE & CIVIC CAMPUS 	CIVIC CAMPUS PHASE I, THROUGH DELIVEREE PROJECT	190 MWh	39
	COMPLETION OF PREVIOUS EPC WITH MEADOWBROOK	330 MWh	117
FLEET 	REPLACEMENT OF FLEET WITH ELECTRIC VEHICLES	1 GWh	244
CORPORATE SERVICES 	UPGRADES TO COUNTY HALL AND BLOCK ONE HARBOUR SQUARE, THROUGH THE DELIVEREE PROJECT	1.5 GWh	291
LIBRARIES 	UPGRADES TO LEXICON THROUGH THE DELIVEREE PROJECT	140 MWh	22
	UPGRADES TO DEANSGRANGE AND DALKEY THROUGH MY OPEN LIBRARIES	138 MWh	26
BALLYOGAN OPERATIONS DEPOT 	OPERATIONAL CONTROLS & ENERGY AWARENESS PROGRAMME	131 MWh	21
OTHER AREAS	UPGRADES TO 25 SMALL BUILDINGS FOR ENERGY EFFICIENCY MEASURES THROUGH THE DELIVEREE PROJECT	447 MWh	107
	TOTAL	7.67 GWh	1,992



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