

# A Local Authority Approach to Energy Management

The Dublin City Council Experience

2nd December 2020

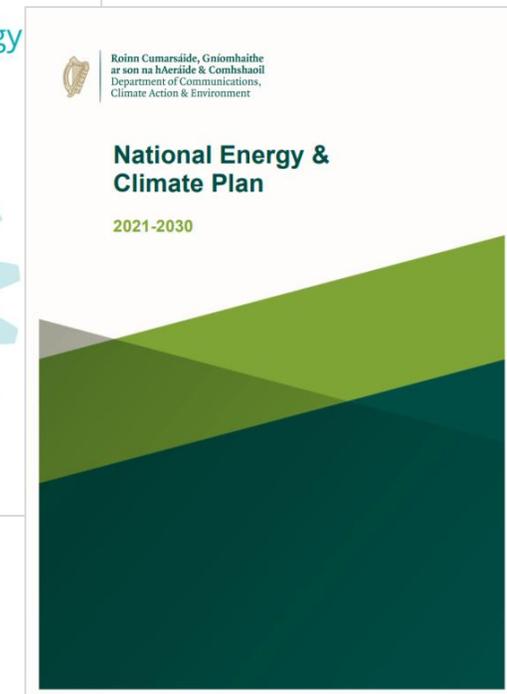
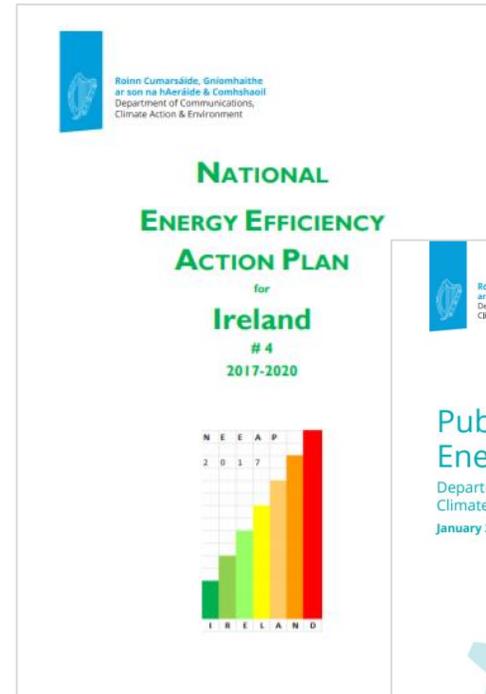
Céline Reilly, EPO and Executive Manager Dublin City Council

# Presentation Summary

- Local authority sector energy management, metering and monitoring and project pipelines\*
- Sector performance, ISO50001 in LAs\*
- National public lighting projects aiming to retrofit 300,000 public lights, performance based tendering
- EPC examples – procurement, delivery and results
- What 2030 target means for local authorities\*
- Energy community retrofit examples\*
- National Context
- Public Sector Strategy and Partnerships
- Approach to Energy Management
- 2030 targets and our Project Pipeline
- Action Areas to meet targets:
  - Long Term Housing Renovation Strategy
  - Decarbonisation
  - Mobility, Transport and Air Quality
- Community Retrofits

# National Context

- National Energy Efficiency Action Plan
  - Lead by example
  - 33% energy efficiency improvement
- SI 426
  - Exemplary role of public bodies
  - Public sector energy audits
- The Public Sector Energy Efficiency Strategy
  - SEAI public sector partnership programme
  - Public Sector ISO 50001 programme
- National Energy & Climate Plan
  - 50% improvement in energy efficiency
  - 40% reduction in CO<sub>2</sub> equivalent
  - All public buildings to reach BER 'B' rating



# Public Sector Local Authority Charter and Strategy

- Leverage the integrated resources of:

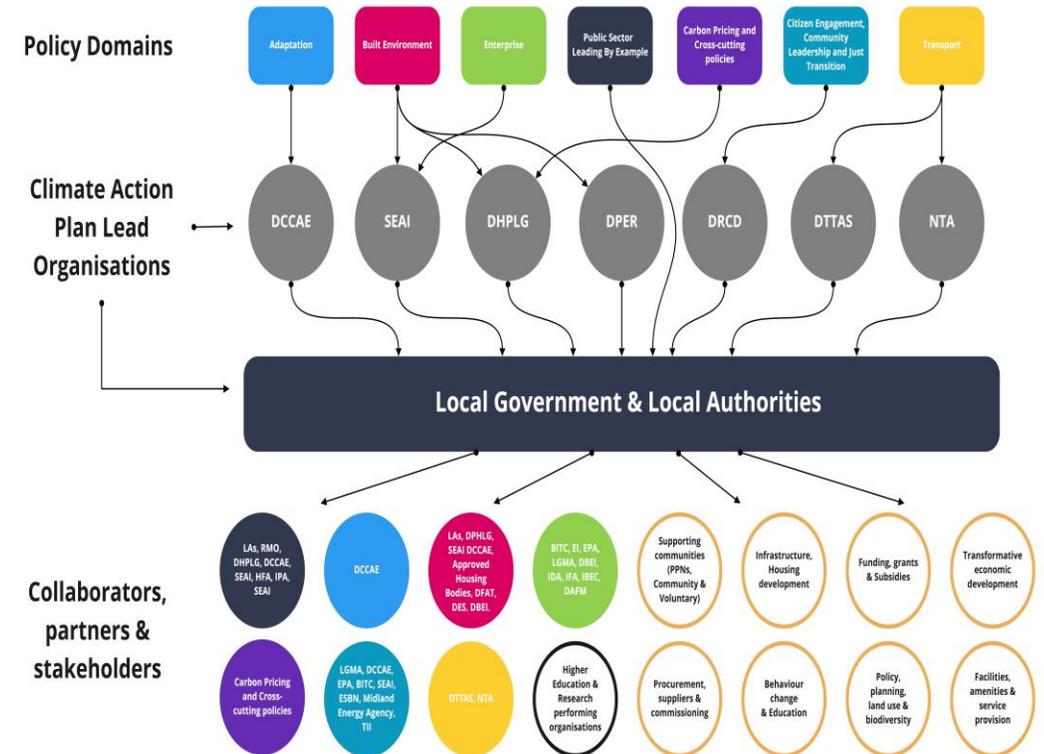
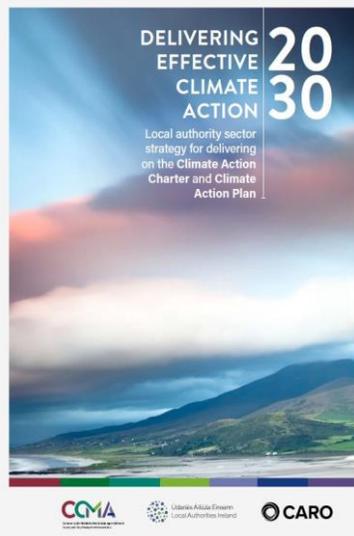
31 Local Authorities

28,000 Staff

Networks in Communities,  
In Businesses,

In Governmental and Non  
Governmental sectors

- 6 Strategic Goals
- Goal 2: Achieve the Energy Efficiency and GHG targets and prioritise Decarbonisation



# Local Context

## DCC Climate Change Action Plan



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Dublin City Council

- DCC Climate Change Action Plan 2019-2024 published.
- The plan sets out how the Council will improve energy efficiency and reduce greenhouse gas emissions in its own buildings and operations
- Five key areas, which will be continuously monitored, evaluated and updated to 2030 and beyond:

- Energy & Buildings
- Transport
- Flood resilience
- Nature Based Solutions
- Resource management



- The key targets included:
  - 33% improvement in the Council's energy efficiency by 2020
  - 40% reduction in the Council's greenhouse gas emissions by 2030



# Energy Management

## Energy Review



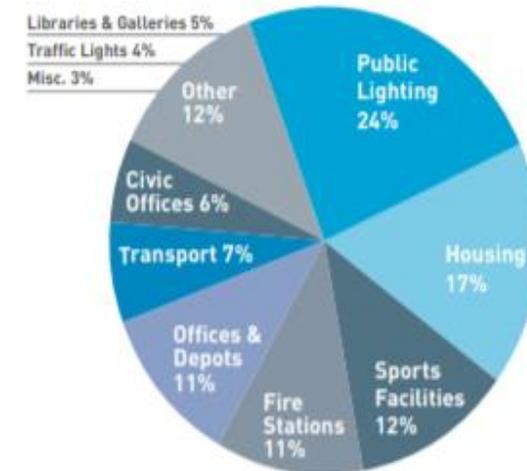
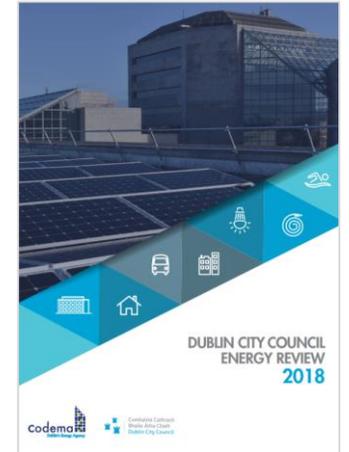
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DCC carries out an energy review annually highlighting total energy consumed in the past year, along with the total cost and carbon emissions associated with this energy use.

### Objectives:

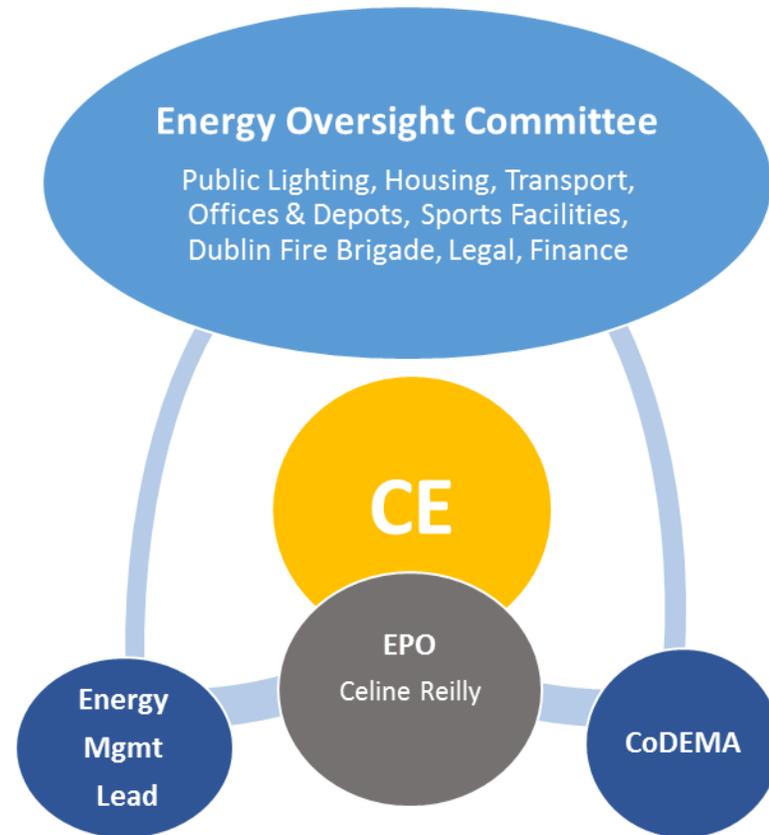
- To show clear understanding of the energy being used within the Local Authority.
- Break down energy consumption into Significant Energy Users (SEUs).
- Track energy performance with the development of Energy Performance Indicators (EnPIs).
- Identify the areas with greatest energy saving potential and what areas DCC needs to prioritise in order to meet targets.

- 8 SEUs identified
- Represents
  - 151 GWh of primary energy,
  - 27,900 tCO<sub>2</sub> and
  - €9.9 million in energy spend
- Represents 88% of the total primary energy requirement of DCC



# Energy Management

## Energy Oversight Committee



- DCC Completed SEAI ISO 50001 accelerator programme & set up interdepartmental **Energy Oversight Committee (EOC)**
- Representatives of **senior management** from all identified SEUs and departments that can significantly affect energy performance.
- Role to **coordinate all energy related matters** so that energy efficiency and carbon reduction efforts are **targeted, structured and monitored**.

# Metering and Monitoring

## Energy Efficiency



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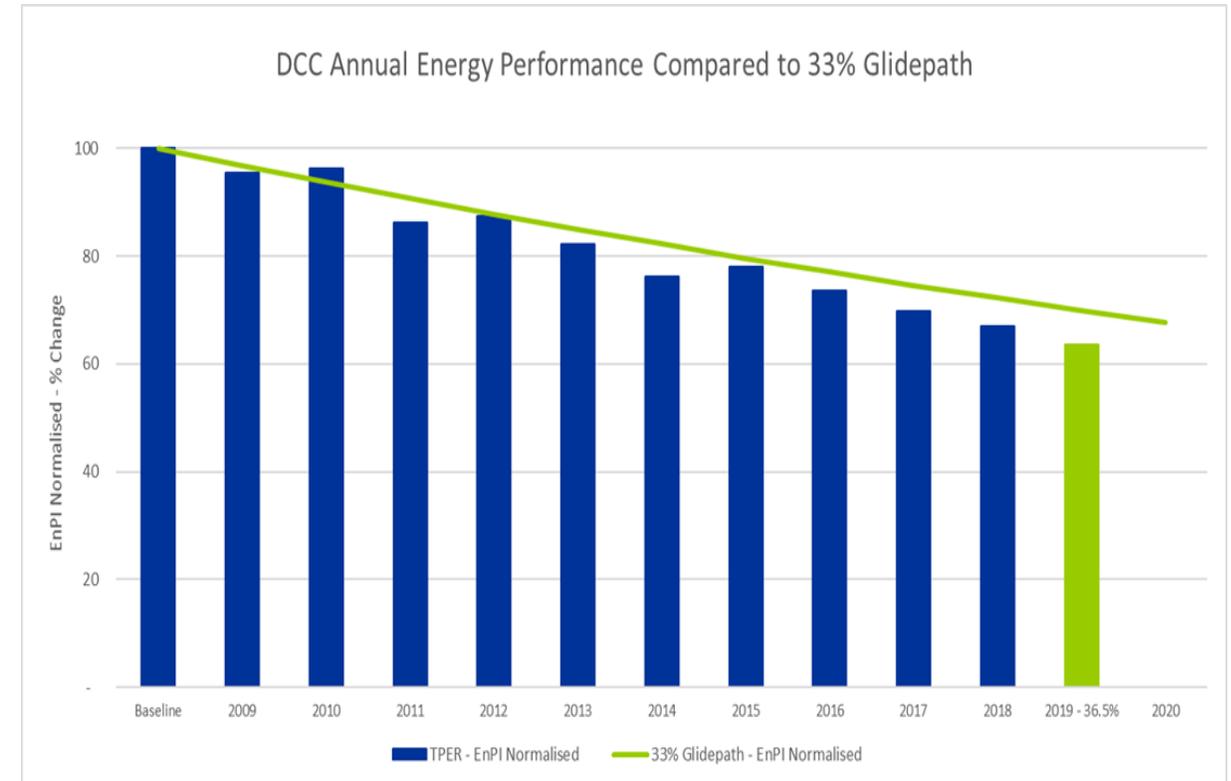
The public sector energy performance is tracked through SEAI's monitoring and reporting system.

### M&R tracks DCC's energy performance to 2020:

- Baseline year of Total Primary Energy Requirement (TPER) – Average between 2006 – 2008
- An activity metric of TPER/population served.

### DCC Performance: Energy Efficiency:

- DCC has achieved a **36.5%** energy efficiency improvement (2019)
- Represents **50.7 GWh** of primary energy and **17,316 tonnes of CO<sub>2</sub>** saved since baseline.



# 2030 Targets

## Energy Efficiency and GHG Emissions



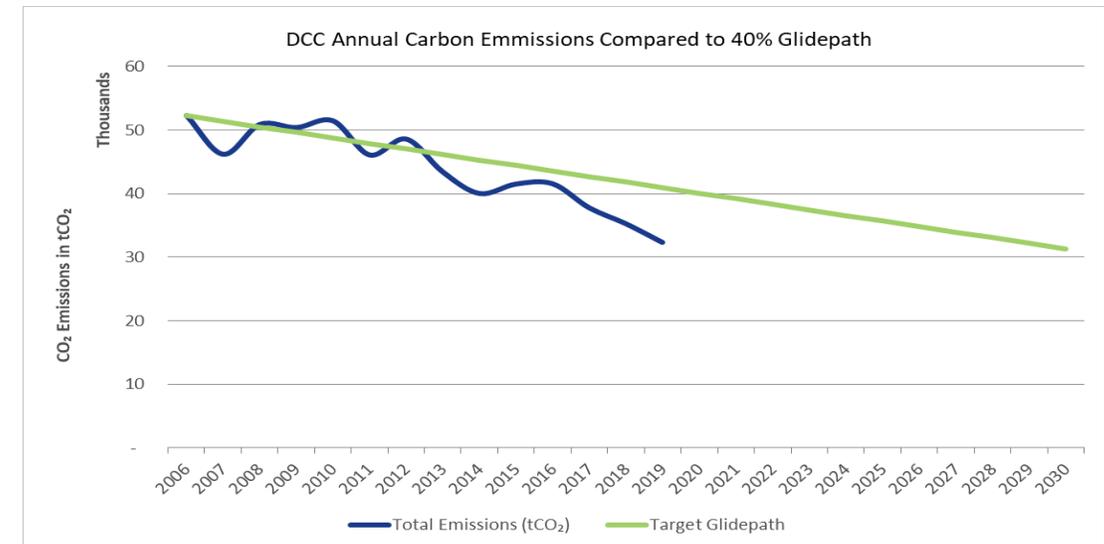
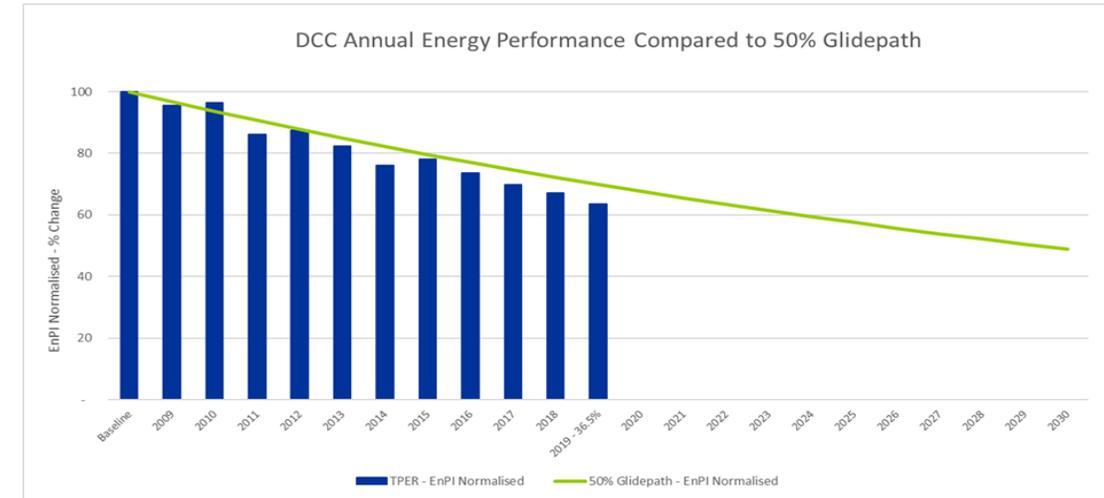
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- **Energy Efficiency**

- A new target: **50%** energy efficiency improvement by 2030.
- Requiring a further **37 GWh** of primary energy reduction.
- Annual target of **1.4%** or **3.7 GWh** of primary energy reduction.
- Compared to the baseline year, DCC's CO<sub>2</sub> emissions in 2019 had reduced by 38% to 32,247 tonnes of CO<sub>2</sub>.

- **GHG Emissions:**

- This is a reduction of 19,900 tonnes of CO<sub>2</sub>.
- This leaves a gap-to-target of 920 tonnes of CO<sub>2</sub> between now and 2030.
- This will be reviewed following the publication of revised targets nationally



# Tracking Progress – Driving Change



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5 Year Energy Estimate: €58,658,933 i

Print PDF

Export CSV



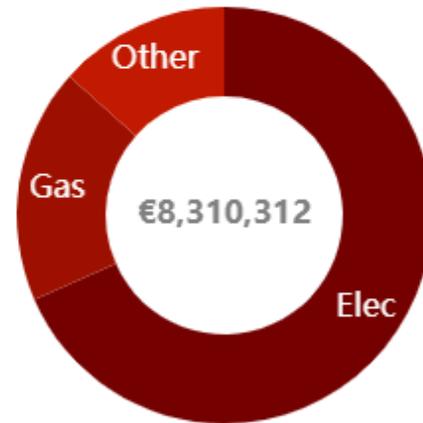
Timeframe ∨

Years ∨

- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011
- 2010
- 2009
- 2008

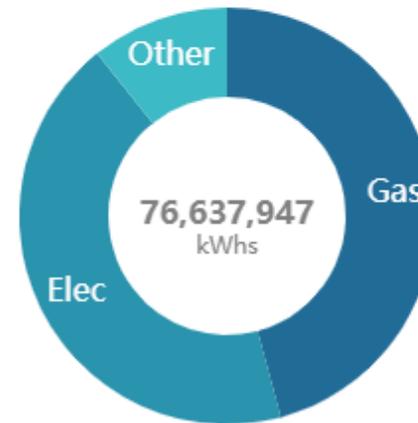
Totals ∨

Cost (Inc VAT) - 2020 i



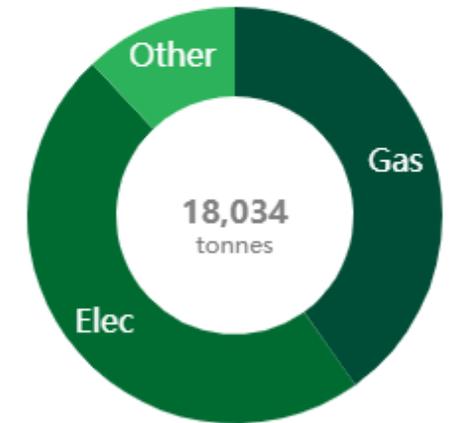
€10,603,353 Per Year.  
**11% decrease on 2019** ↓

Consumption (KWhs) - 2020 i



98,031,444 kWhs Per Year.  
**15% decrease on 2019** ↓

Carbon (Tonnes) - 2020 i



23,069 Carbon (tonnes) Per Year.  
**19% decrease on 2019** ↓

# Tracking Progress – Data

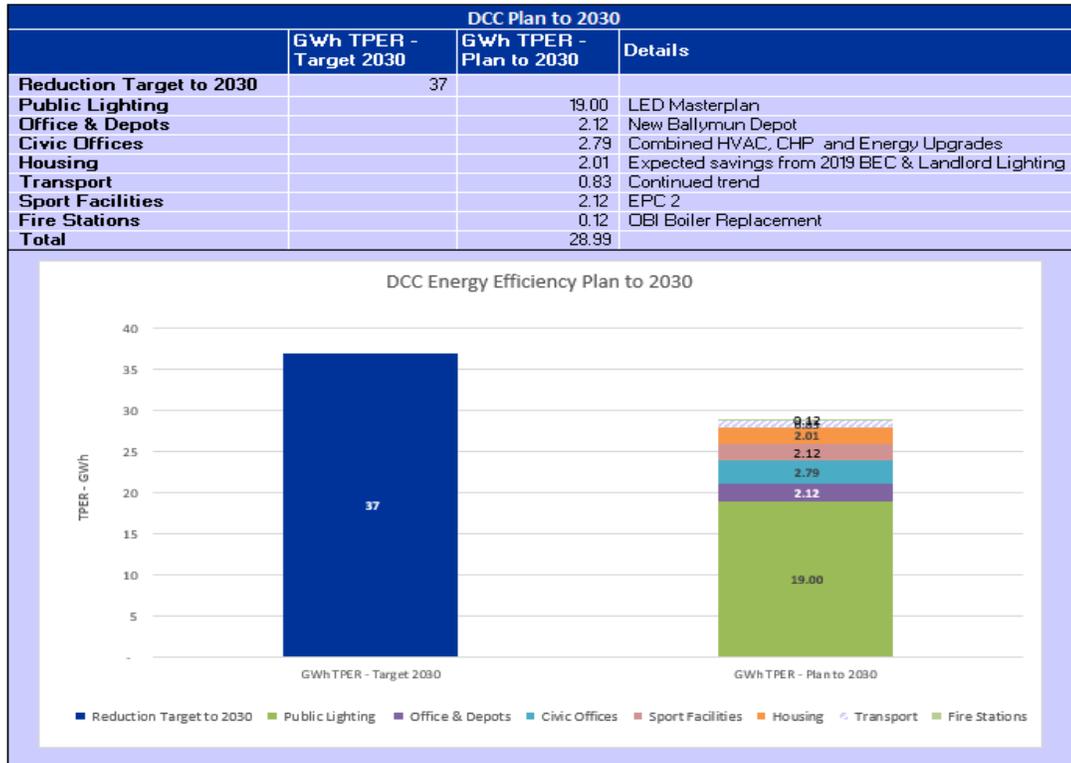
-  Civic Offices
-  Fire Stations
-  Fleet for Fuel Card Number: 4059
-  Fleet for Meter Point 3031
-  Fleet for Meter Point 3037
-  Housing
-  Leisure Centres
-  Libraries & Galleries
-  Metered Public Lighting
-  Offices & Depots
-  Sports Facilities
-  The Base Creche Ltd C/O Familibase, Unit 3 Ballyfermot Leisure Centre
-  Transport

DCC has organised all energy data into SEUs or Business Divisions to drive accountability to where energy is consumed.

DCC can drill down into each SEU to track individual assets, identify anomalies and identify potential EE projects.

-  Leisure Centres
-  Libraries & Galleries
  - Dashboard Lane Municipal Gallery, Parnell Square, Dublin 1. CC 641000. Dept CRA. Libraries. Div: Gallery.
  - Data Audit CENTRE FOLEY STREET DUBLIN 1 CO. DUBLIN
  - Cost TH APT & STUDIO RED STABLES SAINT ANNES PARK RAHENY
  - Consumption TH APT & STUDIO RED STABLES SAINT ANNES PARK RAHENY DUBLIN 5 CO. DUBLIN
  - Carbon IO B RED STABLES ST ANNES PARK DUBLIN 5
  - Delete
-  0501013. YARD LIGHTING RED STABLES ST ANNES PARK DUBLIN 5
-  0501014. Mater Dei Institute of Educati CLONLIFFE ROAD DUBLIN 3
-  SEU 05 02

# Project Pipeline



## EPCI & EPCII

Total EPC 10 buildings, 5.2GWhs, 1000 tCO<sub>2</sub>. EEOS used to fund M&V

## Public Lights

9,500/47,000 PLs to LED to date. 50% plus savings anticipated.  
5 year plan remaining to upgrade to LEDs

## Housing:

Houses: Fabric Upgrade  
Flats: Long Term Building Renovation Strategy  
PL: 92 Housing Sites upgraded: 53% EE; 16.5 tCO<sub>2</sub> pa

## Transport

20% van fleet EV  
Sustainable Mobility  
Offsets for Flights: Voluntary Carbon Trading using NGO VITA

Civic Offices: Upgrade to LEDs and install CHP

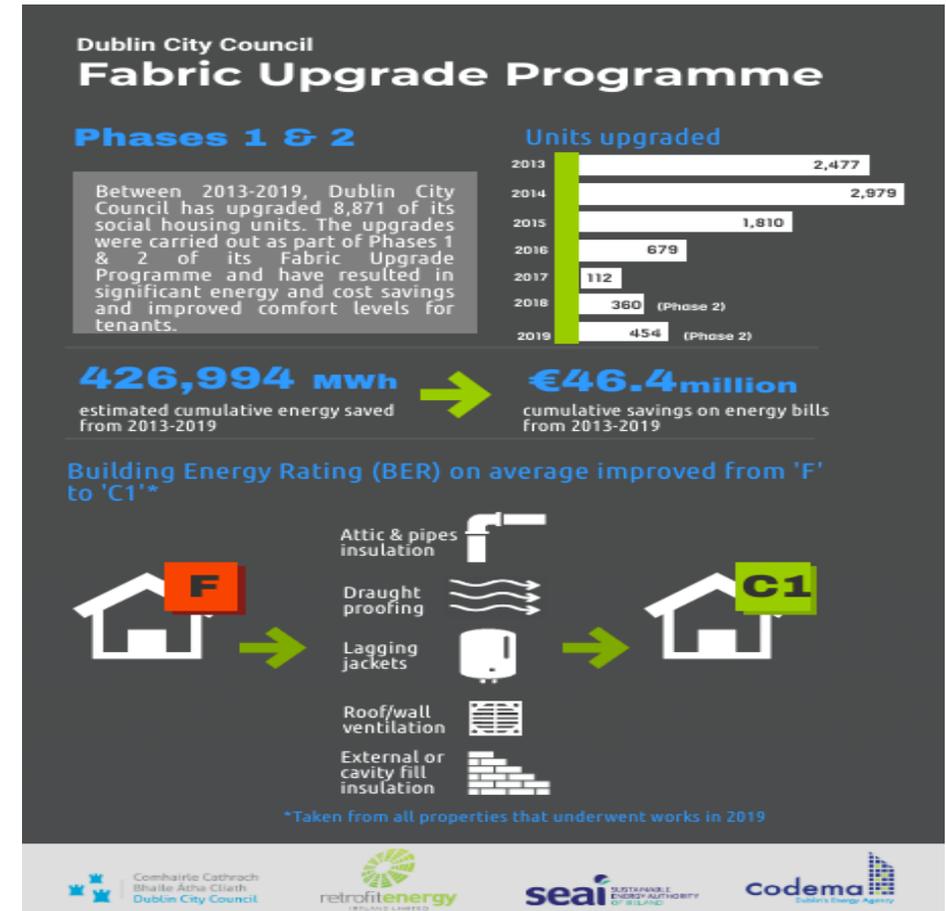
Public Buildings: DECs

# Long-term Building Renovation Strategy

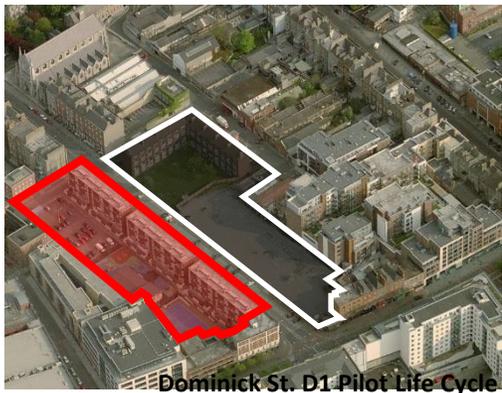
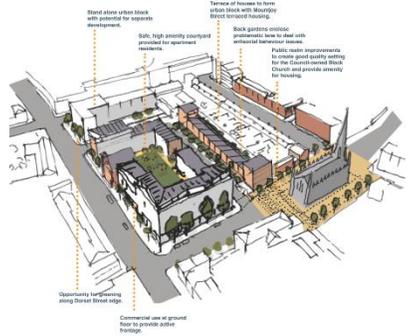


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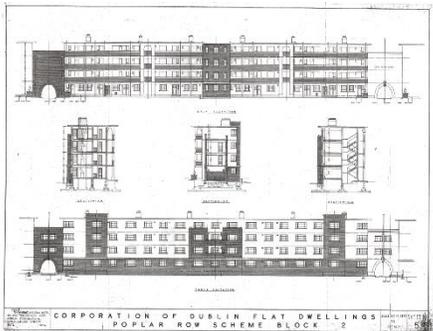
- Warmth and Wellbeing Scheme.
  - Objective is to improve the living conditions of vulnerable people in receipt of fuel allowance and living with chronic respiratory conditions
- Better Energy Communities:
  - Expected Energy Savings of 845MWh per annum
- Fabric Upgrade:
  - 8,871 Units
  - BER improvement F to C1
  - €46.4 Million saved in energy bills
  - 70% Houses in housing stock improved



# Long-term Building Renovation Strategy



Dominick St. D1 Pilot Life Cycle Assessment (LCA) Study



St Bricin's: 'Retrofitting and Renovation Project of the Year' award, Irish Building and Design Awards 2019.

## Overall Programme for Flat Complexes

- 6,000 of 10,000 flats are over 40 years old and in need of renewal. Existing BER ratings E - G
- Initial programme of 10 estates (1,300 homes). Mix of deep retrofit or demolition & new build.
- Apartments will meet 2050 Zero Carbon (operational) standards.

## Specific Projects

- Deep retrofits: Dolphin House
- Home Performance Index (HPI)
- Pilot Life Cycle Assessment (LCA) Study
- Enerphit Certification
- Protected Structures: 1,000 homes are Protected Structures (PS) or are of historic interest.

# Action Areas – Public Buildings



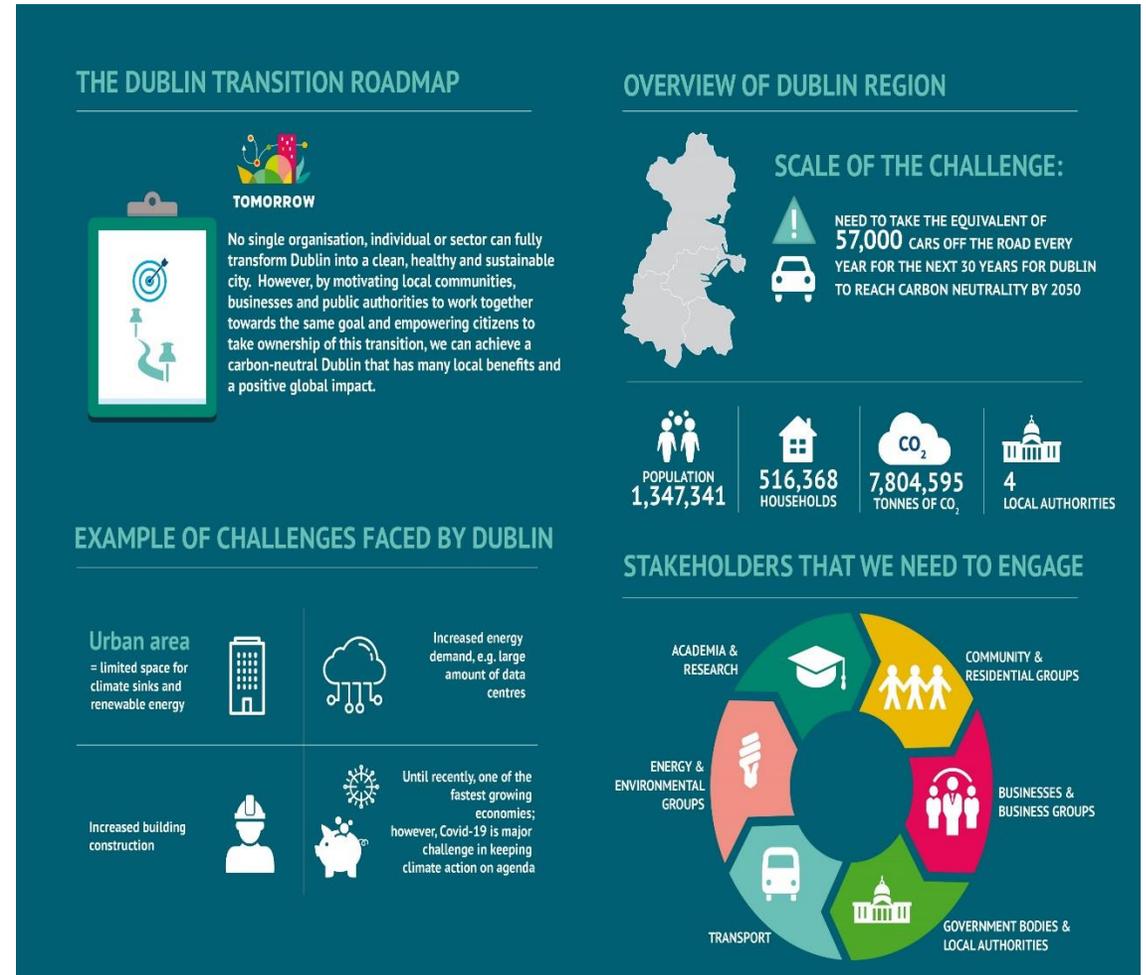
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| Building                                 | Rating | Total m <sup>2</sup> | Conditioned area (m <sup>2</sup> ) | kWh/m <sup>2</sup> /yr | kWh indicator | kgCO <sub>2</sub> /m <sup>2</sup> /yr | kgCO <sub>2</sub> indicator | Heating kWh/m <sup>2</sup> /yr | Electricity kWh/m <sup>2</sup> /yr | Typical Building kWh/m <sup>2</sup> /yr |
|--|--------|----------------------|------------------------------------|------------------------|---------------|---------------------------------------|-----------------------------|--------------------------------|------------------------------------|---|
| Civic Offices                            | D2     | 40862                | 39383                              | 283                    | 97            | 55                                    | 98                          | 72                             | 211                                | 292                                     |
| Tara Street Fire Station                 | E1     | 5571                 | 5125                               | 522                    | 101           | 100                                   | 103                         | 233                            | 289                                | 516                                     |
| O'Brien Institute                        | F      | 3666                 | 3283                               | 584                    | 131           | 111                                   | 131                         | 359                            | 225                                | 446                                     |
| Pearse Street Library                    | C1     | 3535                 | 3462                               | 268                    | 56            | 51                                    | 57                          | 112                            | 156                                | 477                                     |
| Ballymun Leisure Centre                  | C1     | 4508                 | 3279                               | 859                    | 58            | 160                                   | 58                          | 729                            | 130                                | 1475                                    |
| Finglas Leisure Centre                   | D1     | 2690                 | 2171                               | 1177                   | 76            | 220                                   | 75                          | 969                            | 207                                | 1549                                    |
| Cabra Parkside Sports Centre             | B2     | 2256                 | 2006                               | 211                    | 36            | 40                                    | 36                          | 94                             | 117                                | 587                                     |
| Central Library                          | E1     | 2013                 | 1934                               | 479                    | 101           | 93                                    | 103                         | 111                            | 368                                | 473                                     |
| St Catherine's Sports Centre             | E1     | 1925                 | 1925                               | 570                    | 108           | 107                                   | 107                         | 405                            | 165                                | 529                                     |
| Cabra Library                            | B3     | 1860                 | 1786                               | 213                    | 48            | 41                                    | 48                          | 88                             | 124                                | 445                                     |
| Inchicore Sports Centre                  | B1     | 1669                 | 1592                               | 191                    | 29            | 36                                    | 29                          | 122                            | 69                                 | 668                                     |
| Ballybough Community and Sports Centre   | B3     | 1495                 | 1461                               | 254                    | 48            | 49                                    | 48                          | 115                            | 139                                | 530                                     |
| Clogher Road Community and Sports Centre | C1     | 1497                 | 1470                               | 183                    | 58            | 36                                    | 58                          | 123                            | 66                                 | 329                                     |
| Markievicz Leisure Centre                | E1     | 1424                 | 1182                               | 1274                   | 105           | 241                                   | 106                         | 770                            | 504                                | 1211                                    |
| Phibsboro Fire Station                   | D1     | 1354                 | 1218                               | 490                    | 81            | 93                                    | 82                          | 307                            | 183                                | 606                                     |
| North Strand Fire Station                | D1     | 1100                 | 1074                               | 499                    | 82            | 95                                    | 83                          | 292                            | 207                                | 606                                     |
| Aughrim Street Sports Centre             | C1     | 1008                 | 996                                | 143                    | 55            | 27                                    | 55                          | 108                            | 36                                 | 260                                     |
| Ballyfermot Leisure Centre               | C2     | 4429                 | 4086                               | 776                    | 64            | 147                                   | 64                          | 494                            | 283                                | 1222                                    |
| City Hall                                | D2     | 2051                 | 2011                               | 346                    | 89            | 66                                    | 89                          | 172                            | 174                                | 390                                     |
| Irishtown Sports and Fitness             | C2     | 1482                 | 1221                               | 400                    | 63            | 75                                    | 63                          | 262                            | 138                                | 636                                     |
| St Laurence O'Toole Recreation Centre    | C3     | 1002                 | 996                                | 229                    | 70            | 43                                    | 69                          | 171                            | 58                                 | 328                                     |
| Poppintree Community Sports Centre       | C1     | 2513                 | 2315                               | 258                    | 55            | 49                                    | 55                          | 145                            | 113                                | 470                                     |
| Dolphin's Barn Fire Station              | E2     | 989                  | 949                                | 731                    | 121           | 138                                   | 121                         | 476                            | 255                                | 606                                     |
| Biancardstown Fire Station               | D1     | 989                  | 905                                | 469                    | 77            | 89                                    | 78                          | 293                            | 176                                | 606                                     |
| Donnybrook Fire Station                  | E2     | 946                  | 805                                | 693                    | 114           | 131                                   | 115                         | 436                            | 257                                | 606                                     |
| Finglas Fire Station                     | C2     | 908                  | 804                                | 397                    | 65            | 76                                    | 67                          | 184                            | 213                                | 606                                     |
| Tallaght Fire Station                    | E2     | 880                  | 794                                | 721                    | 119           | 137                                   | 120                         | 438                            | 284                                | 606                                     |
| Killbarrack Fire Station                 | D2     | 852                  | 772                                | 538                    | 89            | 101                                   | 89                          | 364                            | 174                                | 604                                     |
| Ballymun Library                         | D1     | 831                  | 813                                | 306                    | 82            | 58                                    | 83                          | 150                            | 156                                | 373                                     |
| Rathfarnham Fire Station                 | E2     | 804                  | 702                                | 730                    | 120           | 137                                   | 121                         | 547                            | 184                                | 606                                     |
| Central Area Office                      | D1     | 678                  | 678                                | 250                    | 77            | 48                                    | 77                          | 99                             | 151                                | 325                                     |
| Swords Fire Station                      | E1     | 670                  | 646                                | 635                    | 105           | 121                                   | 107                         | 286                            | 349                                | 606                                     |
| Finglas Library                          | C3     | 629                  | 629                                | 258                    | 69            | 49                                    | 70                          | 124                            | 134                                | 374                                     |
| Coolock Swimming Pool                    | E1     | 782                  | 698                                | 2020                   | 110           | 378                                   | 109                         | 1599                           | 421                                | 1844                                    |
| Charleville Library                      | D1     | 424                  | 419                                | 323                    | 85            | 61                                    | 84                          | 210                            | 112                                | 382                                     |
| Dolphin's Barn Library                   | D2     | 546                  | 477                                | 362                    | 95            | 68                                    | 95                          | 231                            | 131                                | 382                                     |
| Terenure Library                         | D1     | 295                  | 288                                | 294                    | 80            | 66                                    | 95                          | 170                            | 124                                | 370                                     |
| Pembroke Library                         | C2     | 342                  | 333                                | 239                    | 62            | 46                                    | 63                          | 85                             | 154                                | 385                                     |
| Donaghmede Library                       | C1     | 470                  | 470                                | 196                    | 50            | 39                                    | 52                          | 121                            | 76                                 | 389                                     |
| Raheny Library                           | D1     | 442                  | 432                                | 344                    | 85            | 66                                    | 86                          | 154                            | 191                                | 404                                     |
| Pearse Area Recreational Centre          | E2     | 259                  | 250                                | 359                    | 113           | 68                                    | 113                         | 193                            | 166                                | 318                                     |
| Dublin Municipal Rowing Centre           | D1     | 326                  | 143                                | 537                    | 87            | 101                                   | 87                          | 358                            | 179                                | 614                                     |
| Sean McDermott Street Swimming Pool      | D2     | 914                  | 826                                | 1714                   | 93            | 322                                   | 93                          | 1214                           | 500                                | 1844                                    |



# Decarbonisation

- Dublin City Spatial Energy Demand Analysis
- District Heating
  - Dublin Waste to Energy Project
- Dublin Region Energy Masterplan
- Action 165 Climate Plan – Decarbonisation Zones
- DLA Regional Proposal: Green Roofs and Solar Installations
- Decarb City Pipes
- Geothermal Potential
- Tomorrow Project
- Dublin and Mid-East Sustainable Energy Communities
- Home Energy Saving Kits/LED Demo



# Action Areas – Sustainable Energy Communities



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- **Codema – DCC’s Energy Agency** – appointed as coordinator of the Dublin/Mid-East region
- **National Climate Action Plan 2019: goal of 500 SECs by 2025 and 1,500 by 2030** – Currently there are 101 SECs in Dublin Mid East and 19 in DCC area
- **Goal of the programme** is to organise communities, to educate in Energy and Climate Change, to undertake local energy masterplans to show possible projects, and to develop these projects
- **DCC enables Codema** to manage this process but also acts as **Lead Applicant** on behalf of communities who want to undertake an energy masterplan
- DCC hopes to partner with some of these SECs to develop energy projects involving **council buildings and access grant funding**.
- The project allows DCC to **empower citizens** in the energy transition

# Leadership in Public Sector

DCC winners of

“Leadership in the Public Sector” at the SEAI Energy Awards 2020

<https://www.youtube.com/watch?v=yYJN9PY-duA>  
<https://www.youtube.com/watch?v=yYJN9PY-duA>



Thank You

[celine.reilly@dublincity.ie](mailto:celine.reilly@dublincity.ie)

# Examples of Energy Performance Contracting in Dublin

Joe Hayden  
Senior Executive Engineer  
CODEMA

# OUR TEAM

- Energy Advisers to Dublin Local Authorities
- Founded in 1997 as **not-for-profit** organisation
- 15 staff in Temple Bar



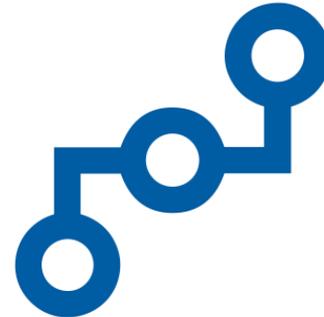
# OUR SERVICES



**ENERGY  
MONITORING &  
MANAGEMENT**



**ENERGY  
AWARENESS**



**ENERGY  
POLICY &  
PLANNING**



**PROJECT  
MANAGEMENT**



**MATCH  
FUNDING**

# Codema EnPC EXPERIENCE

## European Projects



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696040.*

## EnPC Projects

- 1. DCC EPC for 3 Leisure Centres**  
(In year 4 of an 8-year contract)
- 2. DCC EPC for 7 Sports Centre**  
(In year 1 of an 8-year contract)
- 3. Fingal CoCo EPC for 2 Public Buildings**  
(Currently at Invitation to Submit Final Tender)
- 4. Dlr leisure EPC for 3 Leisure Centres**  
(Currently at Invitation to Submit Final Tender)
- 5. Tallaght District Heating System ESC**  
(Contract awarded project under construction)

# DCC EPC for 3 Leisure Centres



- The contract was signed in **July 2016**
- Works began in **August 2016** and were **completed by November 2016**

# PROJECT Key Findings



The EPC has operated as expected to date, achieving verified **energy savings of 38%**



The EPC has **reduced operational costs** by almost **one third** (as recorded by invoices for utilities and maintenance)

|                                 | 2013            | 2014            | 2015            |  | 2017            | 2018            |
|---------------------------------|-----------------|-----------------|-----------------|--|-----------------|-----------------|
| <i>Energy Costs (Ex. Vat)</i>   | €495,155        | €470,200        | €457,388        |  | €269,989        | €275,424        |
| <i>Maintenance &amp; Repair</i> | €131,567        | €103,946        | €122,432        |  | €32,126         | €15,375         |
| <i>Service Payments</i>         | €0              | €0              | €0              |  | €119,449        | €119,520        |
| <b>TOTAL</b>                    | <b>€626,722</b> | <b>€574,146</b> | <b>€579,820</b> |  | <b>€404,884</b> | <b>€426,999</b> |



There is an average annual operational saving of **€178,000**

# BUSINESS AS USUAL Vs EPC

Table 7: Energy Performance Contract (Forecast Based on Performance of Years 1 & 2)

|  | Year 1<br>2017 | Year 2<br>2018 | Year 3<br>2019 | Year 4<br>2020 | Year 5<br>2021 | Year 6<br>2022 | Year 7<br>2023 | Year 8<br>2024 | Total      |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|
| <b>Energy Costs</b>  | €269,989       | €275,424       | €272,707       | €278,161       | €283,724       | €289,398       | €295,186       | €301,090       | €2,265,679 |
| <b>Service Payments<sup>[2]</sup></b>                                      | €119,449       | €119,520       | €119,449       | €119,449       | €119,449       | €119,449       | €119,449       | €119,449       | €955,596   |
| <b>Repair Payments</b>   | €32,126        | €15,375        | €27,089        | €27,631        | €28,183        | €28,747        | €29,322        | €29,908        | €218,382   |
| <b>TOTAL</b>   |                |                |                |                |                |                |                |                | €3,439,656 |
| <i>Avoided spend on energy utilities over the duration of the EPC</i>      |                |                |                |                |                |                |                |                | €1,682,503 |
| <i>Total savings as a result of EPC (including maintenance and repair)</i> |                |                |                |                |                |                |                |                | €1,532,604 |

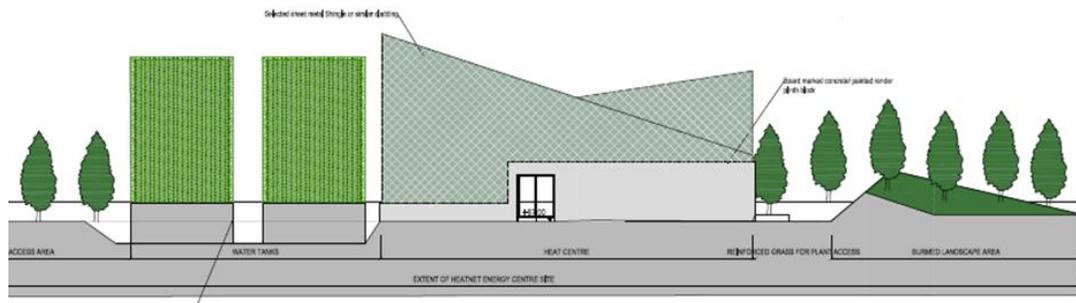
<sup>2</sup> Service payments are not subject to inflation as they are calculated according to fixed gas and electricity unit costs (€/kWh), as set out in the contract and measured energy savings (kWh)

- **Avoided spend on energy utilities over the duration of the EPC - €1,682,503**



# Tallaght District Heating Scheme

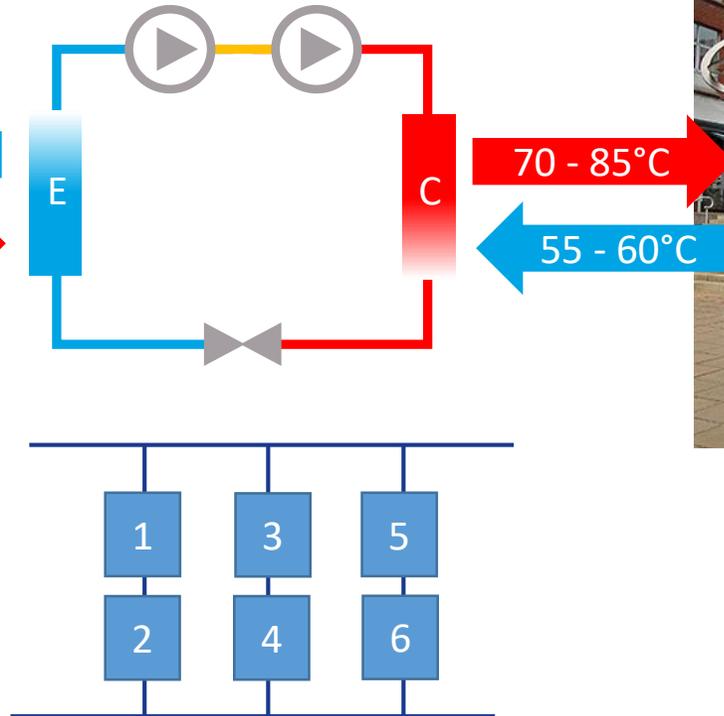
Heat Source: Data Centre Waste Heat



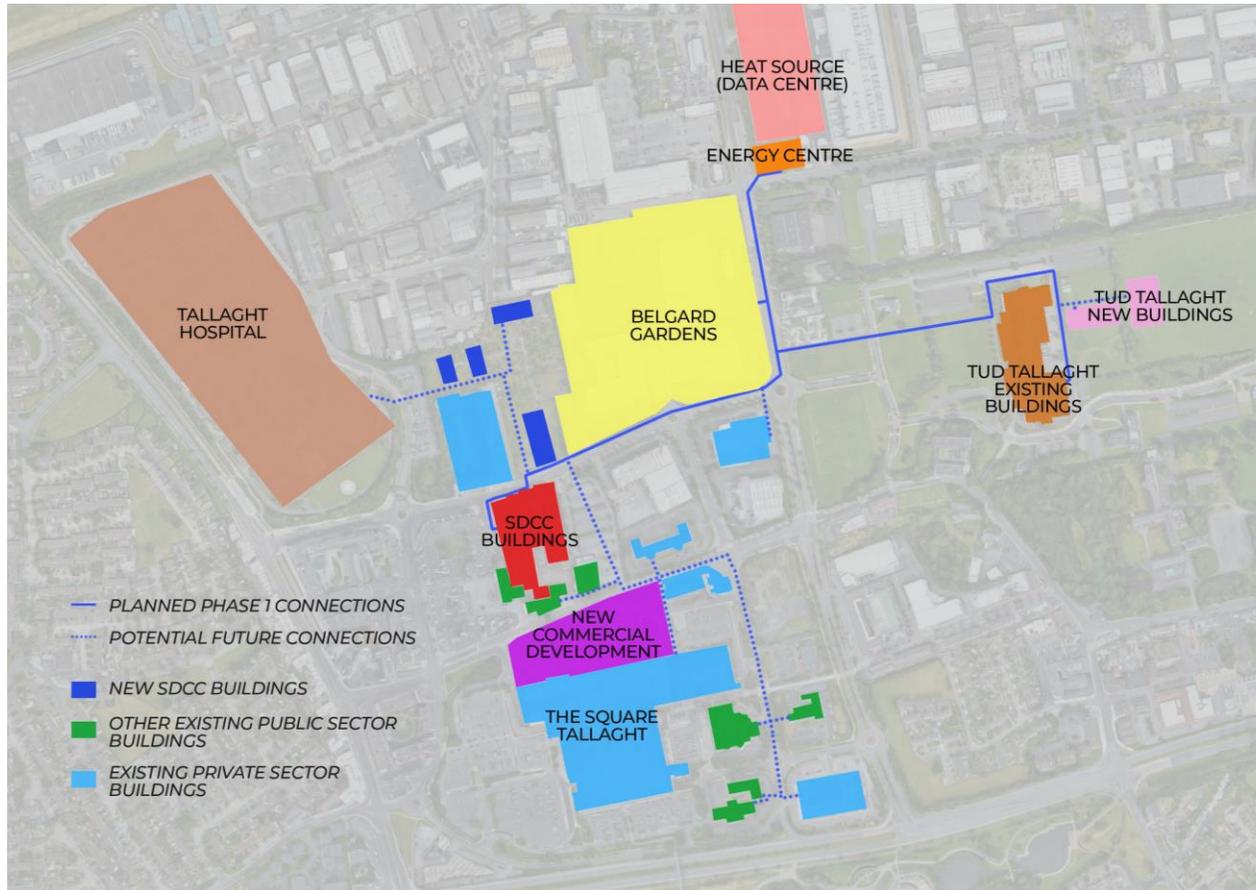
# TDHS Design Concept



2-Stage Heat Pump



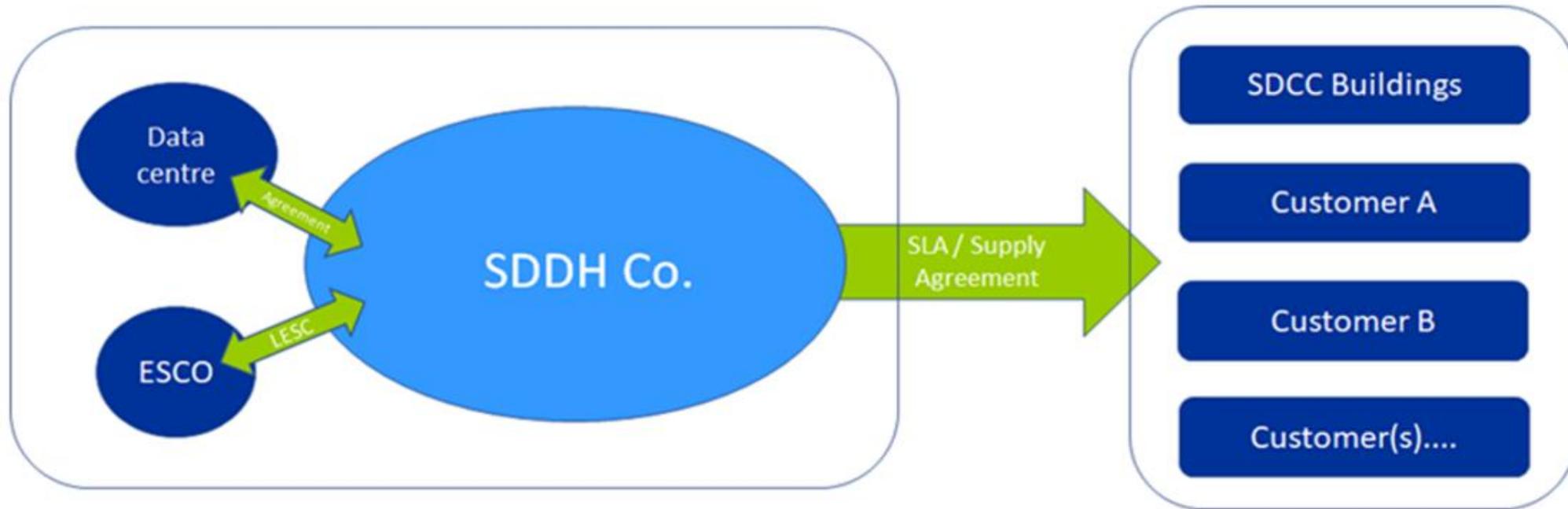
# Tallaght District Heating Scheme



## Energy System benefits:

- CO<sub>2</sub> savings of ~**1,400 tCO<sub>2</sub>** per year for proposed Ph. 1
- 100% electric system
- Cleaner air – no particulates
- Utilises off-peak electricity
- Utilises waste heat which currently has no value
- Provides cooling as well as heating (high combined efficiency & lower water consumption)
- Integrates electricity and heat networks – allows balancing of the grid, greater utilization of renewable electricity

# Relationship between stakeholders



- South Dublin County Council established a **public not-for-profit utility** which owns the system
- ESCo responsible for **Design Build Operation and Maintenance** of system
- Contract between ESCo and SDDH Co. is an **Energy Supply Contract** where ESCo gets paid based on units of heat produced at a fixed price.

# EnPC Funding Structure

| Project Name              | Contract | Contract duration | Contract Value     | Capital investment | Source of Funding     | Client            | Grant             | Private (via ESCo) | Number of Buildings |
|---------------------------|----------|-------------------|--------------------|--------------------|-----------------------|-------------------|-------------------|--------------------|---------------------|
| Leisure centres EPC       | EPC      | 8 years           | €1,473,592         | €750,000           | 70% Grant / 30% ESCo  |                   | €525,000          | €225,000           | 3                   |
| Sports and Leisure EPC    | EPC      | 8 years           | €1,384,000         | €630,000           | 63% Client / 37% ESCo | €396,900          |                   | €233,100           | 7                   |
| Fingal CoCo EPC           | EPC      | 8 years           | €1,960,000         | €960,000           | 50% Client / 50% ESCo | €480,000          |                   | €480,000           | 2                   |
| Dlr Leisure EPC           | EPC      | 6 years           | €1,692,000         | €700,000           | 40% Client / 60% ESCo | €280,000          |                   | €420,000           | 3                   |
| Tallaght District Heating | ESC      | 10 years          | €9,820,000         | €7,972,000         | 61% Grant / 39% ESCo  |                   | €4,862,920        | €3,109,080         | 5                   |
| <b>Overall Total</b>      |          |                   | <b>€16,329,592</b> | <b>€11,012,000</b> |                       | <b>€1,156,900</b> | <b>€5,387,920</b> | <b>€4,467,180</b>  | <b>20</b>           |
| <b>Total</b>              |          |                   |                    |                    |                       | <b>11%</b>        | <b>49%</b>        | <b>41%</b>         |                     |
| <b>EPC only</b>           |          |                   | <b>€6,509,592</b>  | <b>€3,040,000</b>  |                       | <b>€1,156,900</b> | <b>€525,000</b>   | <b>€1,358,100</b>  |                     |
|                           |          |                   |                    |                    |                       | <b>38%</b>        | <b>17%</b>        | <b>45%</b>         |                     |



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696040.*

# DLA Project Pipeline

- We have identified pipeline of **20 projects** to be delivered using EnCP in the next 3 years.
- Includes **146 buildings**
- Estimates CAPEX - **€19,503,262**
- Estimates savings – **29%** (25GWh)
- Funding structure:** 50% Public (20% Local Authority – 30% Grant) – 50% ESCo

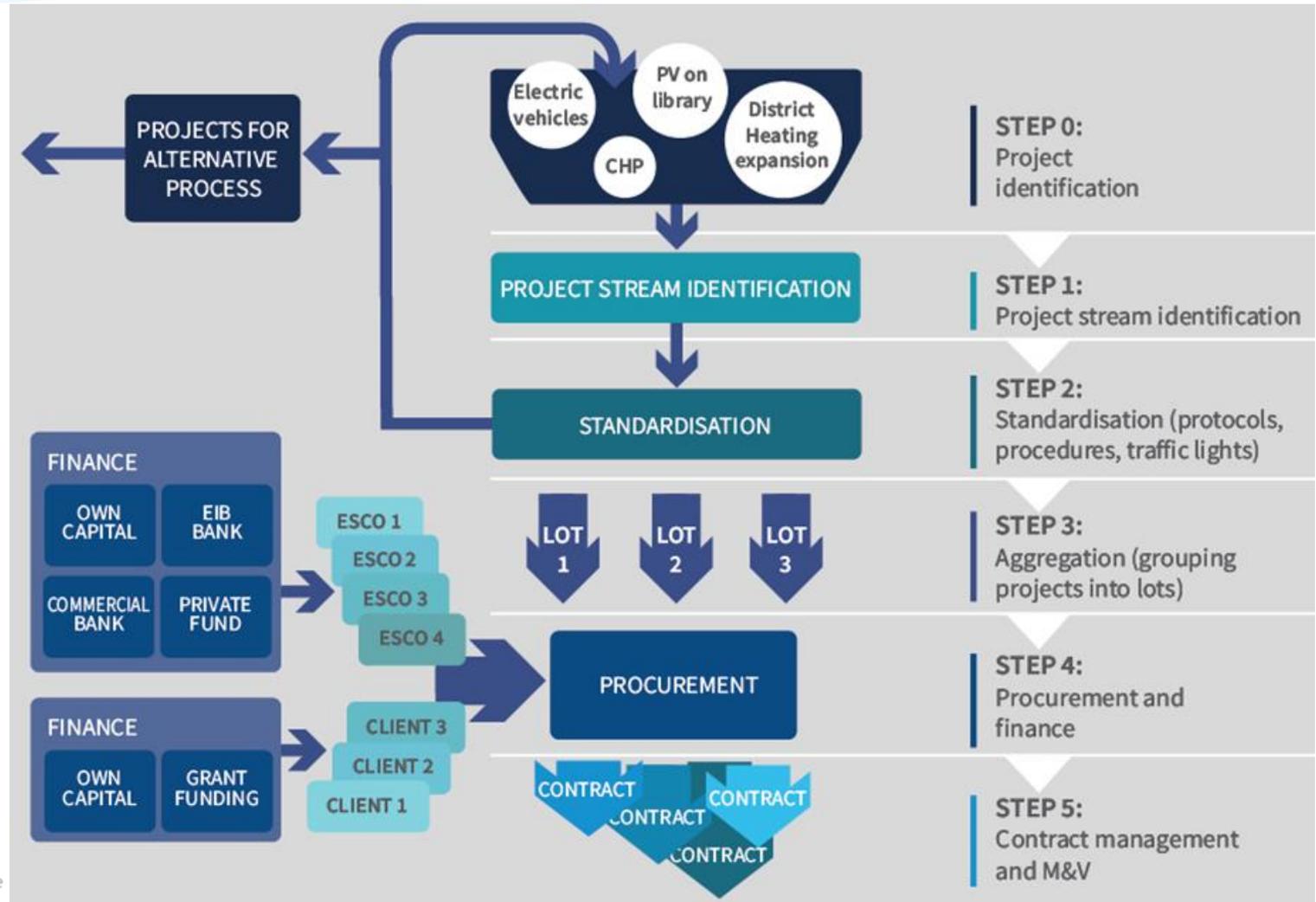
| Location (area, town_) | Type of investment(1)          | Description of the investment  | Quantification (Buildings) | Current energy consump- | Energy savings (%) | Renewable energy production | Energy investment costs |
|------------------------|--------------------------------|--|----------------------------|-------------------------|--------------------|-----------------------------|-------------------------|
| DCC                    | Building Energy Efficiency     | 1 Building for energy efficient LED lighting - Civic Office  | 1                          | 16,020,528              | 22%                | -                           | 1750,590                |
| DCC                    | Building Energy Efficiency     | 2 Loan Leasing Contract for energy efficiency measure  | 1                          | 4,330,478               | 26%                | -                           | 1307,650                |
| DCC                    | Building Energy Efficiency     | 3 Buildings for energy efficiency measure (LEC, HP, PV)  | 20                         | 6,446,617               | 26%                | -                           | 11,620,000              |
| DCC                    | Building Energy Efficiency     | 4 Buildings for energy efficiency measure  | 6                          | 3,380,164               | 25%                | -                           | 1500,306                |
| DCC                    | Building Energy Efficiency     | 5 Commercial Buildings Energy Efficient measure - Solar Photovoltaic and   | 2                          | 2,752,757               | 25%                | -                           | 1245,704                |
| DLP                    | Building Energy Efficiency     | 6 Buildings for energy efficiency measure - County Hall, Ballinacorney, Ballynagowan and                                     | 4                          | 7,000,000               | 45%                | -                           | 11,825,183              |
| DLP                    | Building Energy Efficiency     | 7 Leasing Contract for Energy Efficient refurbishment - Meads, Meads, Meads and Meads  | 2                          | 6,996,400               | 26%                | -                           | 1600,000                |
| DLP                    | Building Energy Efficiency     | 8 Buildings for energy efficiency measure (LEC, HP, PV)  | 50                         | 5,704,711               | 16%                | -                           | 12,024,511              |
| FCC                    | Building Energy Efficiency     | 9 Buildings for energy efficiency measure - St. James's Park, Dublin City Hall, Dublin City Library, Dublin City Council     | 2                          | 6,245,423               | 26%                | -                           | 11,714,576              |
| FCC                    | Building Energy Efficiency     | 10 Buildings for energy efficiency measure (LEC, HP, PV)   | 15                         | 4,670,240               | 26%                | -                           | 1750,000                |
| FCC                    | Building Energy Efficiency     | 11 Heritage building for energy efficient refurbishment  | 6                          | 2,100,365               | 12%                | -                           | 140,116                 |
| FCC                    | Electrical/Electrical Charging | EV charging hubs for electric vehicles at the depot in The Mall, City Hall and 100 WDC for charging and 100 WDC for charging | 2                          | -                       | -                  | -                           | 1100,000                |
| SDCC                   | Building Energy Efficiency     | 12 Leasing contract for Energy Efficient refurbishment - Clonsilla and   | 2                          | 6,916,025               | 28%                | -                           | 1485,000                |
| SDCC                   | Building Energy Efficiency     | 13 Commercial Buildings for energy efficiency measure including theatre and dance  | 2                          | 674,055                 | 25%                | -                           | 1161,351                |
| SDCC                   | Building Energy Efficiency     | 14 Office building for energy efficient measure including County Hall and Clonsilla office                                   | 2                          | 5,667,651               | 15%                | -                           | 1710,225                |
| SDCC                   | Building Energy Efficiency     | 15 Buildings for energy efficiency measure (LEC, HP, PV)   | 15                         | 2,442,242               | 26%                | -                           | 1250,000                |
| SDCC                   | Renewable Energy               | 16 Solar Photovoltaic (PV) project - 25kW solar project to cover the facade of the lockgate                                  | 1                          | 1,465,000               | 12%                | -                           | 105,000                 |
| SDCC                   | Renewable Energy               | 17 Photovoltaic (PV) - 5MW commercial PV farm, developed for a Community-led   | 0                          | -                       | -                  | 4,400                       | 11,000,000              |
| SDCC                   | Electrical/Electrical Charging | EV charging hubs for electric vehicles at the depot  | 1                          | -                       | -                  | -                           | 1100,000                |
| SDCC                   | District Heating               | 18 District Heating - to connect Civic Theatre and PM Group to DWH system  | 2                          | 465,000                 | 72%                | -                           | 1605,271                |
| <b>Total/Average</b>   |                                |  | <b>146</b>                 | <b>15,505,000</b>       | <b>29%</b>         | <b>4,400</b>                | <b>119,503,262</b>      |



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696040.

# Project Implementation Unit (PIU)

- 'one stop shop'
- project **finance** and **delivery** structure
- **standardised** the project **development** process
- **Aggregating** projects
- Facilitating **private finance**



This project has received funding from the Horizon 2020 research and innovation programme under grant agreement No 696040.

## What we have learned:

- EnPC is an essential tool for **project aggregation** – Aggregation of buildings (**technical**) and aggregation of contracts (**financial**)
- EnPC encourages a more **holistic whole building approach** to renovation and not individual measures (aggregation of measures)
- EnPC works with a **CAPEX** as low as €500k – It is a viable solution for smaller buildings
- EnPC **procurement is not more difficult, time consuming and costly**. It is of similar complexity to the procurement “traditional” contracts.



# FOR MORE INFORMATION

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Web [www.codema.ie](http://www.codema.ie)

# Local Authority Public Lighting Energy Efficiency Project

## Energy Efficiency Directive Ireland Study Visit

Online Presentation

2<sup>nd</sup> December 2020

*Presented by: Brian Ahern BEng*

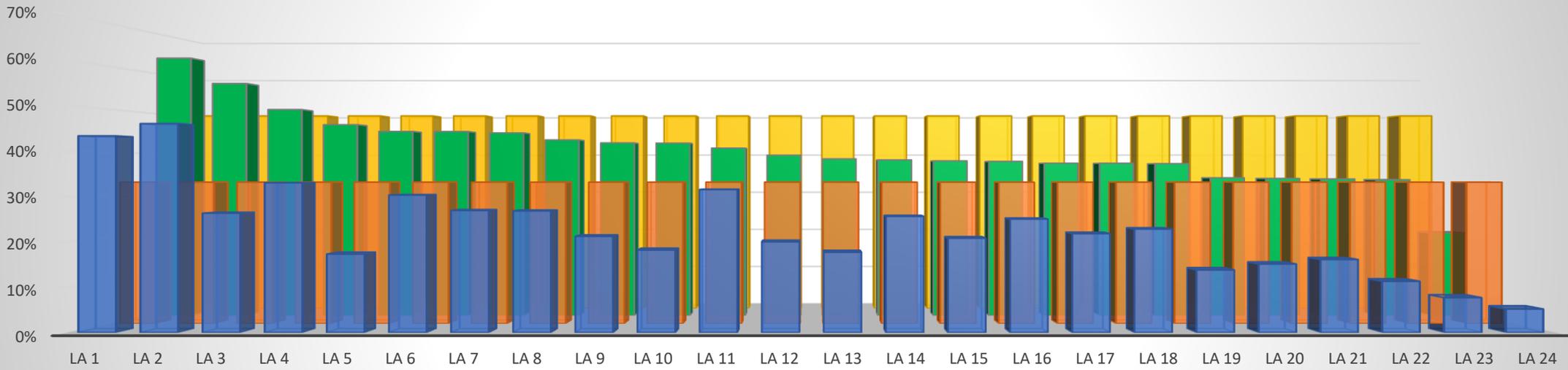
*The Road Management Office (RMO) Public Lighting Unit*

The logo features a stylized white 'E' shape above the letters 'LED' in a bold, sans-serif font, all contained within a grey square.

Do Chomhairle: ag lasadh ár bpobal –  
ag cosaint ár n-aeráid

Your Council: lighting our community –  
protecting our climate

# LA Energy Efficiency Targets



■ Current Efficiency 
 ■ Target Efficiency 
 ■ Efficiency Post Retrofit 
 ■ 2030 Targets

# Dedicated Resource to Drive Project



## Road Management Office

Shared Service between LA's – Donegal County Council Lead LA



## Public Lighting Unit set up 2017

Develop a Business Case for a Public Lighting retrofitting Project



## Team

Daragh Quill

Brian Ahern

Brian Bourke



# Summary of Project Inventory

- 21 Local Authorities Participating in the Project
- Approx. 250,000 PL's to be retrofitted
  - 80,000 Southern Region
  - 100,000 Eastern region
  - 70,000 North West Region
- Installed Capacity **31,500 kW** to be retrofitted

# Contract Structure

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Design and Build Project

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NEC4 Option C Contract (Target Cost)

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Minimum Energy Efficiency target 55%

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Bonus for overachieving energy efficiency

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Using EEOS for additional support once programme of works agreed

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First tender back 18<sup>th</sup> December 2020

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Starting Retrofitting June/July 2021

# Summary of Project?



A collaboration of 21 Local Authorities to retrofit their Public Lighting inventory to LED high efficiency lights



Total estimated CAPEX of approx. **€150m**



Once completed project will save LA's **€200 million** in energy and maintenance cost savings over the 20 year project horizon.



Save around **25,00 tonnes CO<sup>2</sup>** per year



Save **72,000 MWh/year** in final energy per year (min 55% energy efficiency)

**ELENA**  
**European Local**  
**Energy Assistance**



ELENA Support

- Project is receiving **€1.9 million** is Project Assistance funding



# Climate Action Fund

28 November 2018

On completion of the Assessment Stage of the First Call for Applications for support under the Climate Action Fund, the following seven projects have been approved as eligible for support by the Minister for Communications, Climate Action and Environment, Richard Bruton T.D.

These projects will now proceed to the Validation Stage of the process. Projects that do not satisfactorily complete this stage will not progress to be supported by the Climate Action Fund.

| Organisation / Lead Applicant | Project Name  | Maximum Support Approved |
|-------------------------------|---|--------------------------|
| ESB eCars                     | ESB Electric Vehicle High Power Charging Infrastructure Development Project | €10,000,000              |
| Gas Networks Ireland          | GRAZE Gas – Green Renewable Agricultural Zero Emissions Gas                 | €8,474,340               |
| Irish Rail                    | Hybrid Drive for Inter City Railcar (ICR 22000) fleet                       | €15,000,000              |
| Dublin City Council           | Dublin District Heating System  | €20,000,000              |
| South Dublin County Council   | The South Dublin County Council District Heating Scheme                     | €1,447,952               |
| Road Management Office        | Local Authority Public Lighting Energy Efficiency Project                   | €17,470,000              |
| 3 Counties Energy Agency CLG  | Driving HGV Efficiently into Brexit   | €1,373,400               |
| <b>Total</b>                  |   | <b>€76,765,692</b>       |

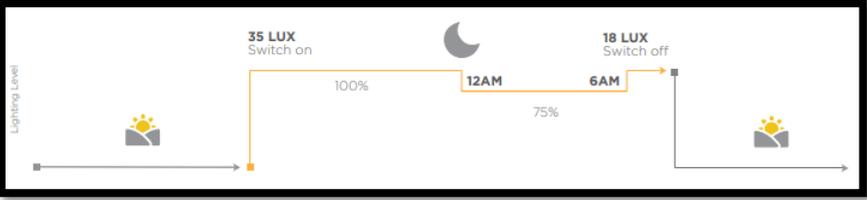
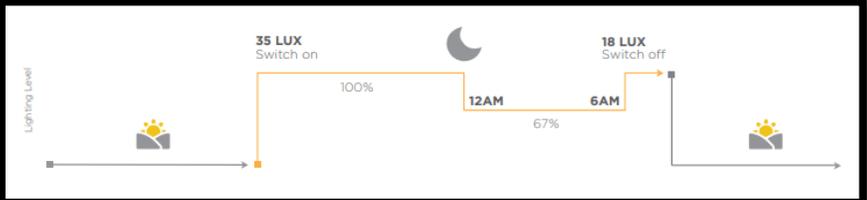
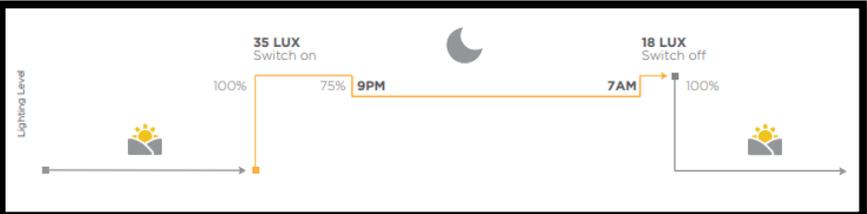
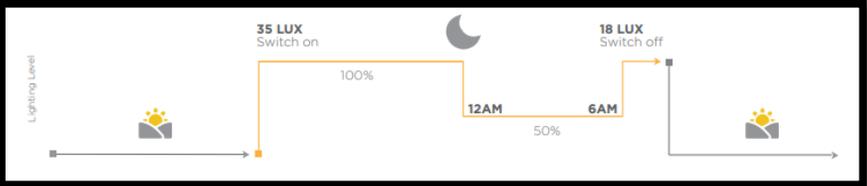


# Climate Action Fund Receiving €17.47m grant assistance from CAF



# Project Colour Temperature

Project will be installing warm temperature lights **(up to 3300k)**

| Location   | Project Dimming and Trimming Profile            |   |
|--|---|---|
| <b>National Road Networks</b>                                | As per the TII- DN-LHT-03038 document           |   |
| <b>City/town centres, main roads</b>                         | <b>Profile U14</b><br>25% reduction at midnight |    |
| <b>Residential Estates and Rural Residential Settlements</b> | <b>Profile U15</b><br>33% reduction at midnight |    |
| <b>Carparks</b>  | <b>Profile U17</b><br>25% reduction at 9pm      |   |
| <b>Park areas, pedestrian areas</b>                          | <b>Profile U16</b><br>50% reduction at midnight |  |

## Public Lighting (Pre-LED retrofitting)

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- **490,000+** Public Lights
  - **58,800 kW** installed capacity
    - **244 GWh/Year** electricity consumed
  - Nationally once LED retrofit completed LA's will have saved at least **144 GWh/year** (50% eff)
- 



# Thank You

**Brian Ahern** A/Senior Executive Engineer

Road Management Office

[contact@rmo.ie](mailto:contact@rmo.ie)

Any Questions?

