IHER Energy Services Ltd

Ashbourne SEC

Energy Master Plan (EMP)

January 2025

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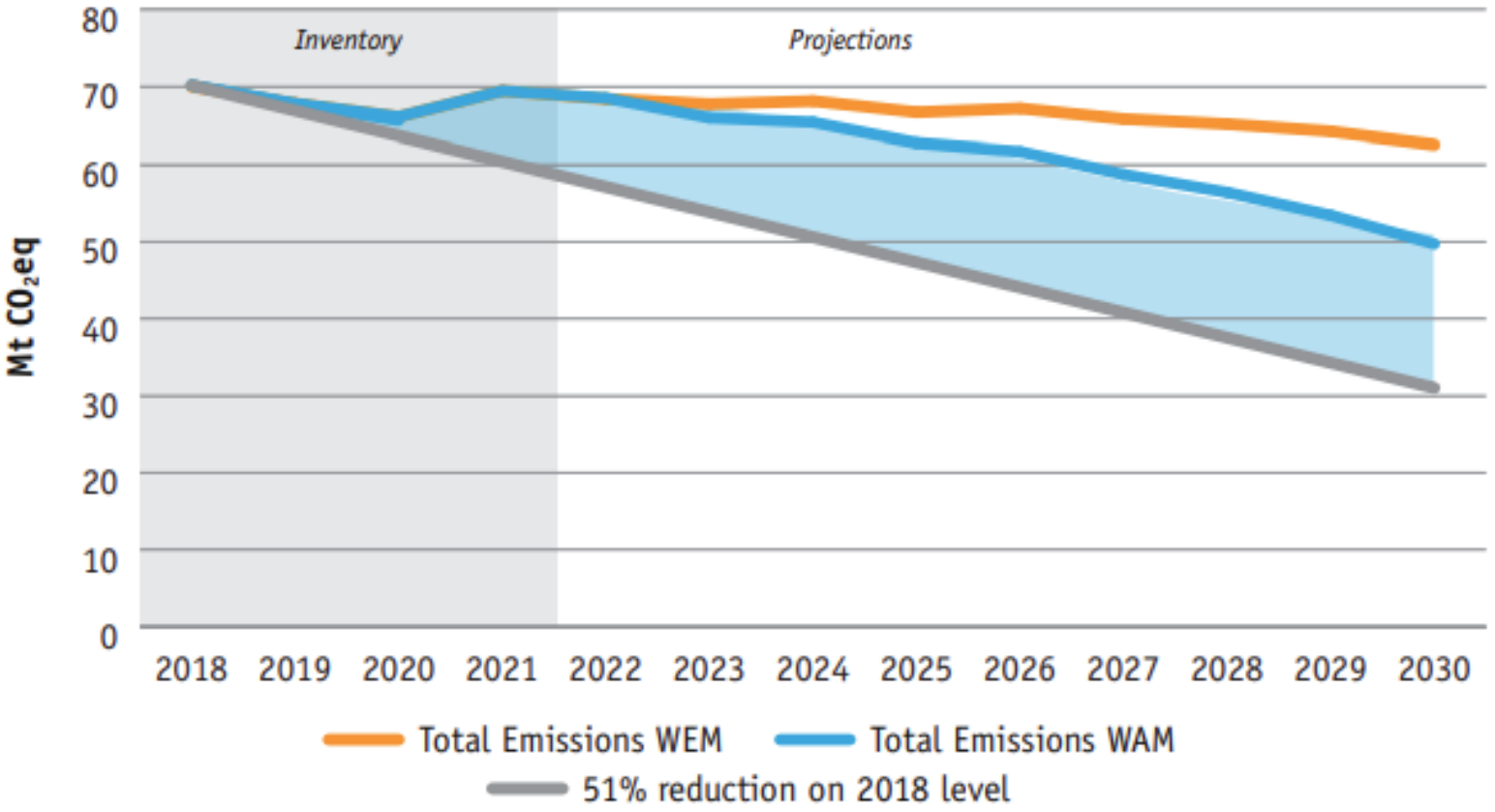
BERWoW

Total Greenhouse Gas Emissions With Existing Measures (WEM) and With Additional Measures (WAM) scenarios out to the year 2030

Ireland's Climate Action Plan set target of 51% reduction in Greenhouse Gas Emissions by 2030 from 2018 baseline



Gap exists between (With Additional Measures scenario) projections and the 51% target.

Source: Ireland's greenhouse gas emissions projections 2022-2040 (EPA, 2023**)**

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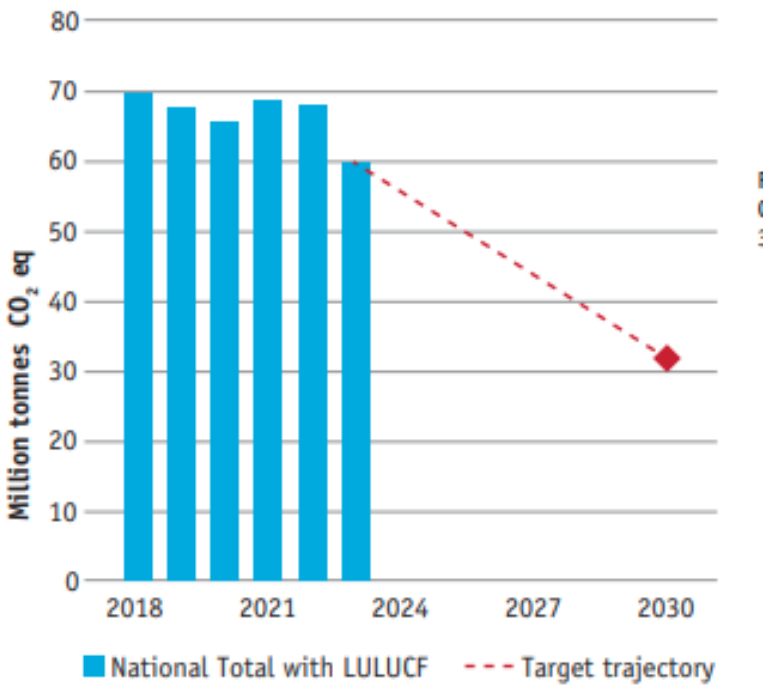
Progress from 2018 - 2023

Table 2. Sectoral Emissions reduction targets and progress

Sector	2018 (Mt CO_2eq)	2023 (Mt CO_2eq)	% change 2018-2023
Electricity	10.24	7.56	-26.2%
Transport	12.31	11.79	-4.2%
Buildings (Residential)	7.00	5.35	-23.6%
Buildings (Commercial and Public)	1.55	1.41	-8.9%
Industry	6.95	6.29	-9.6%
Agriculture	21.39	20.78	-2.9%
Other	2.14	1.83	-14.6%
LULUCF	4.19	5.61	34.1%
National Total (incl LULUCF)	**65.77**	**60.62**	**-7.8%**

Figure 3. Climate Act Target and Carbon Budgets



By end of 2023, a 7.8% reduction had been achieved from the 2018 baseline.
So, a big gap must be bridged by 2030.
(Source: EPA-Provisional GHG Report-July 2024**)**

LULUCF: land use, land use change, and forestry

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Ashbourne EMP Study Objective

The Government's **Climate Action Plan** (2024) CAP 2024 re-establishes the target to achieve a **51% reduction in (GHG)** emissions by **2030** from the 2018 baseline.

Athboy EMP presents a local energy model and local emissions reduction target & plan.

Baseline Study

- current energy demand across residential, commercial, public buildings and transport

Energy Audits

- 3 public buildings and 7 house types

2030 EMP

- Targets and Roadmap

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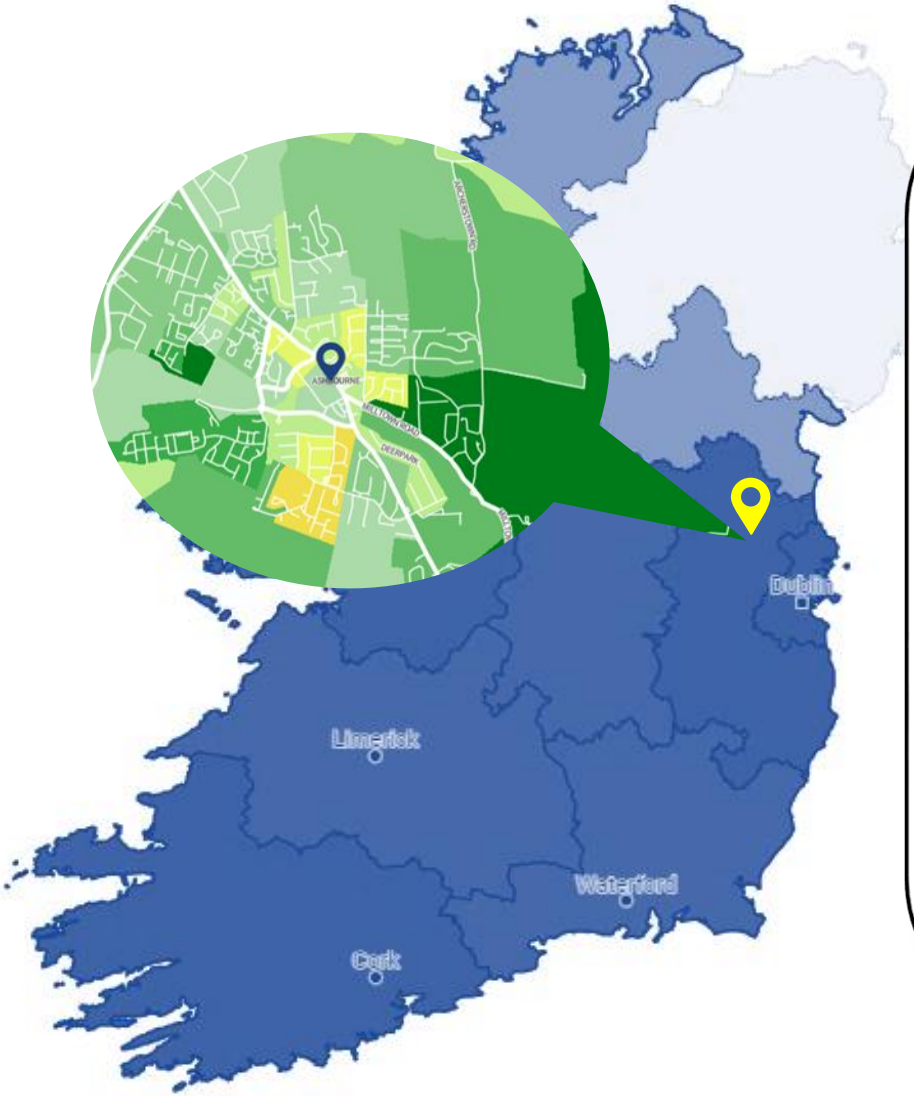
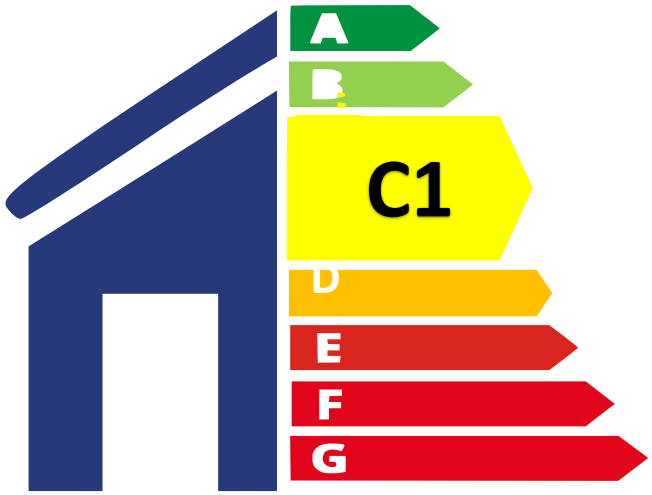
Residential Emissions



Ashbourne

5986 dwellings & 40% (2958) have BERs

- Average BER is **C1**



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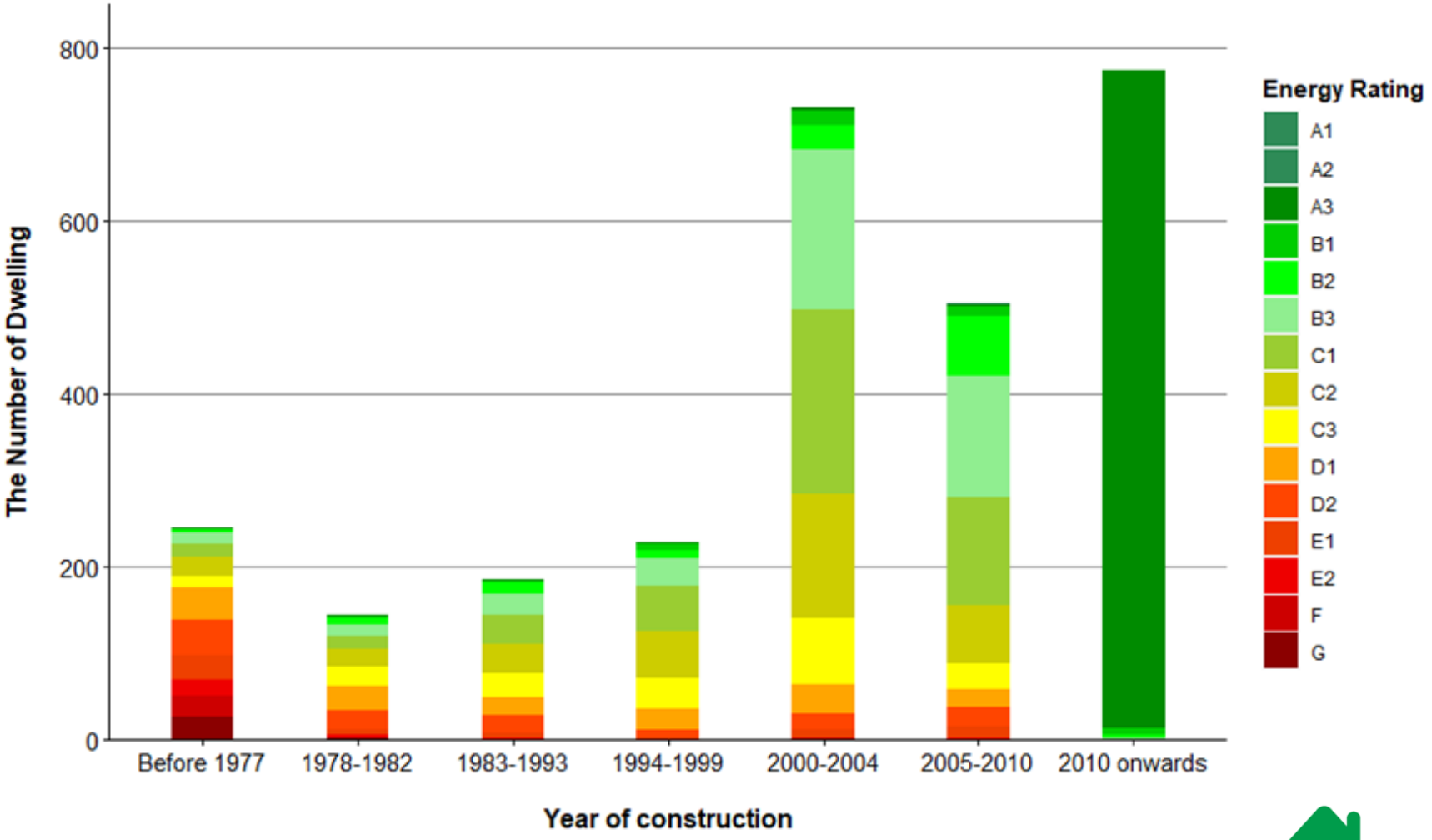
Residential Baseline – Total Stock BER Scores



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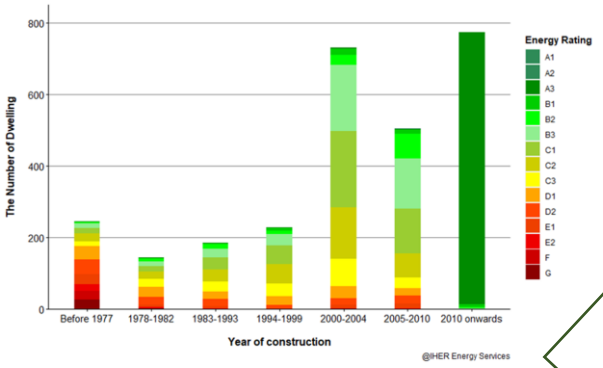
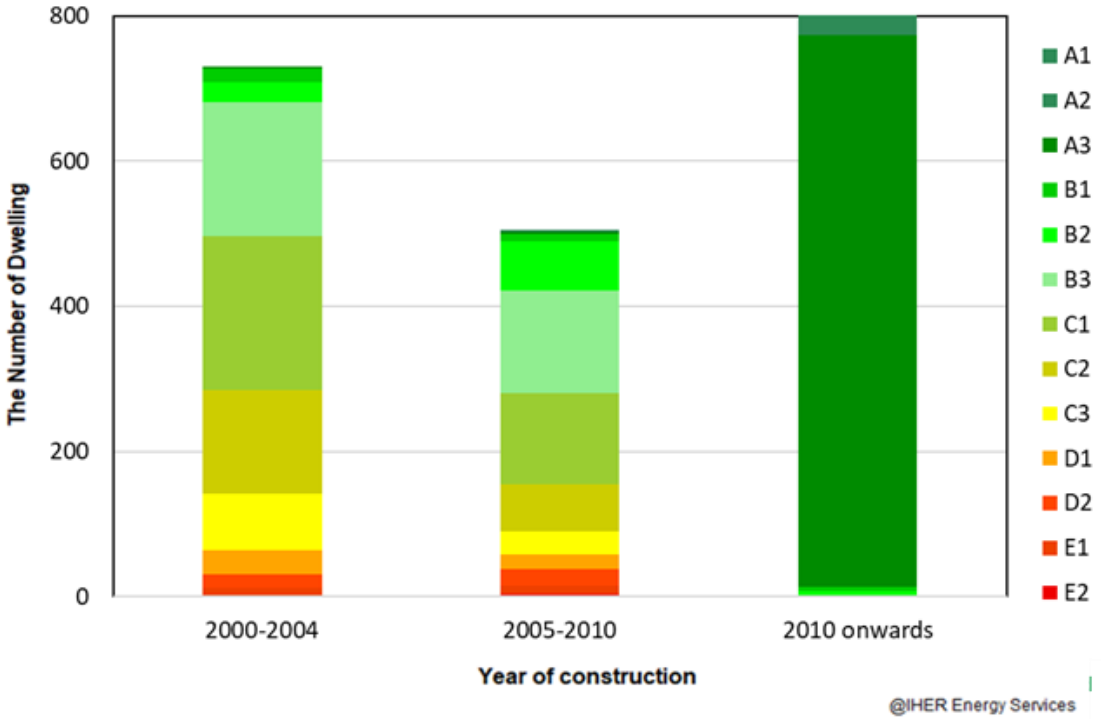


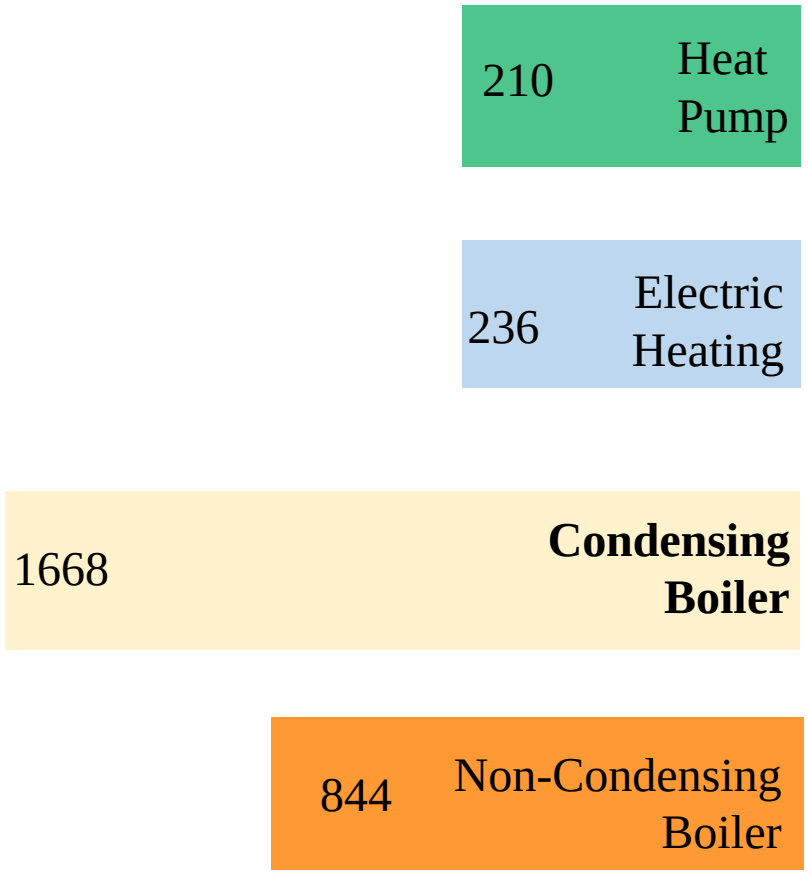
About 73% (2,381) of dwellings with published BER built from 2000 onwards

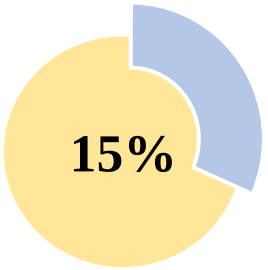
2000 onwards (2381):

- **B2** or better: **37%** (1102)
- **C3 – B3** : **34%** (1000)
- D: 10% (301)
- E or worse: 5% (146)

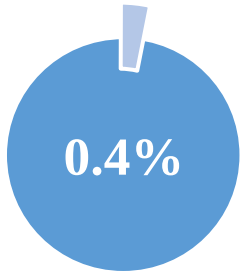


Residential Baseline – Residential Main Heating

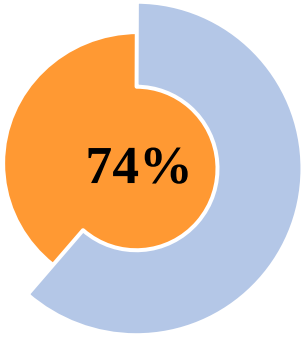




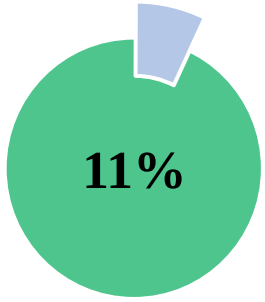
Electricity



Solid Fuels



Natural Gas



Heating Oil

(BER Database, 2023)

(Census, 2022)

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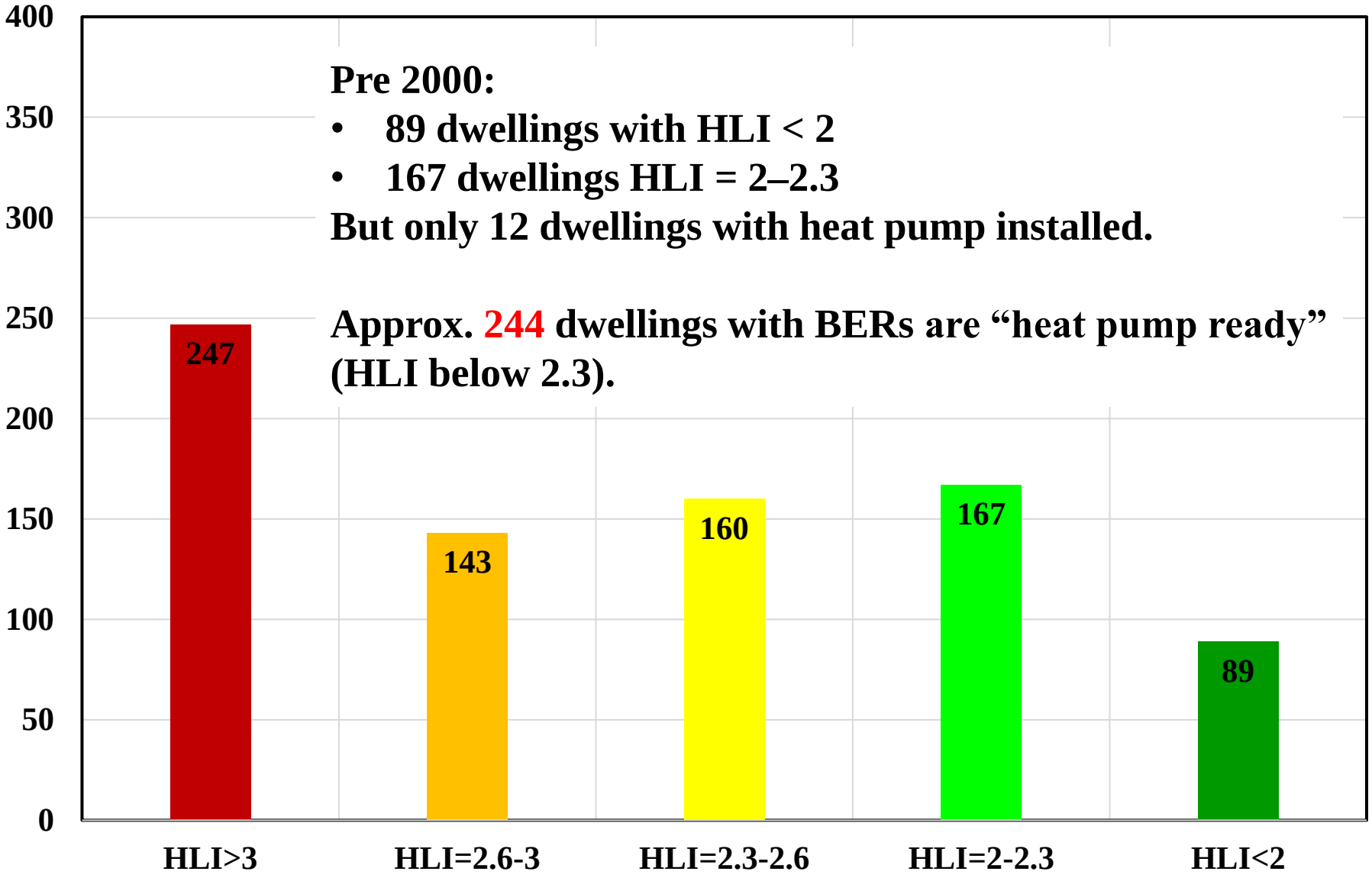
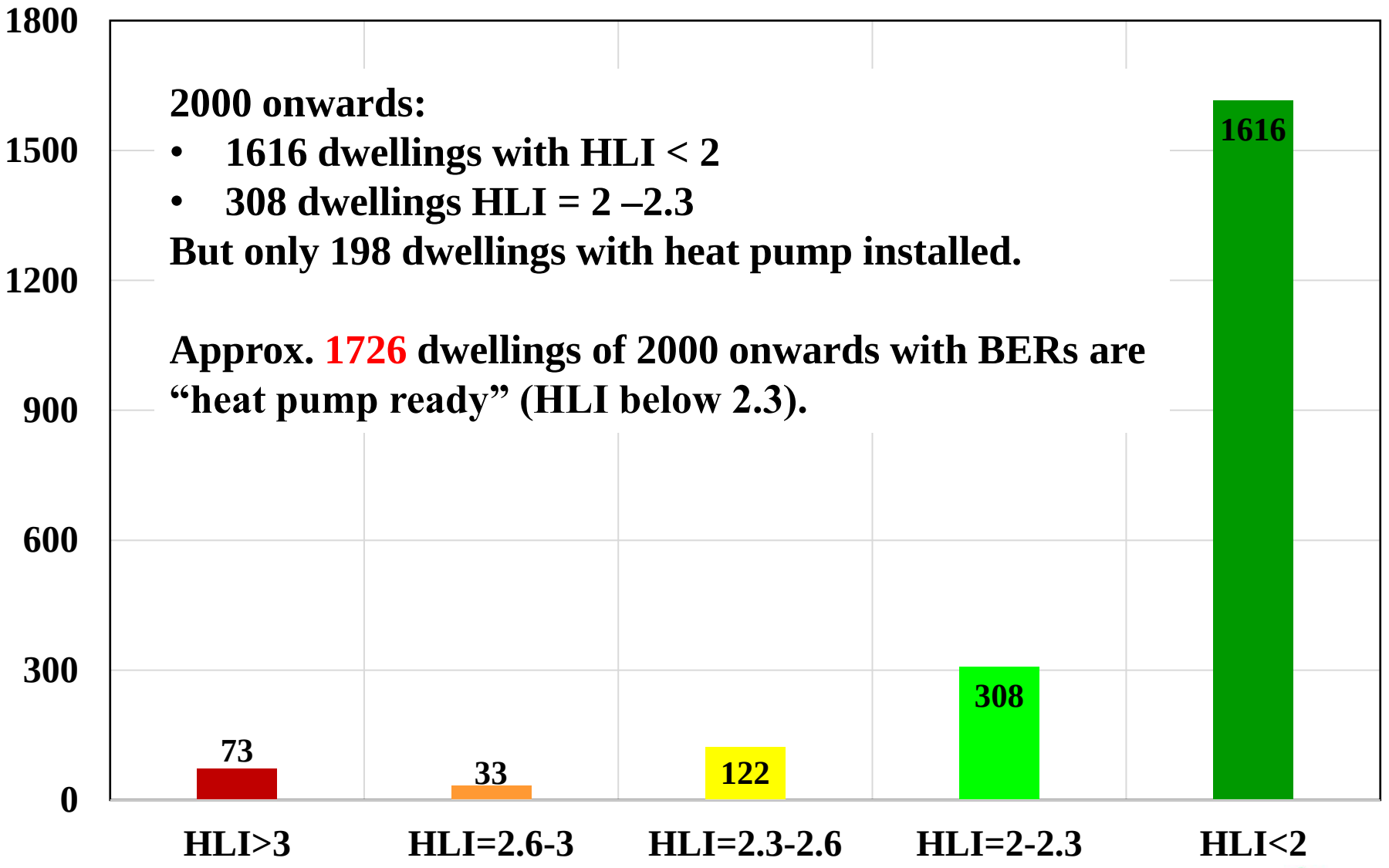
Residential Baseline – Heat Pumps Ready? pre 2000



Residential Baseline – Heat Pump Ready? 2000 +



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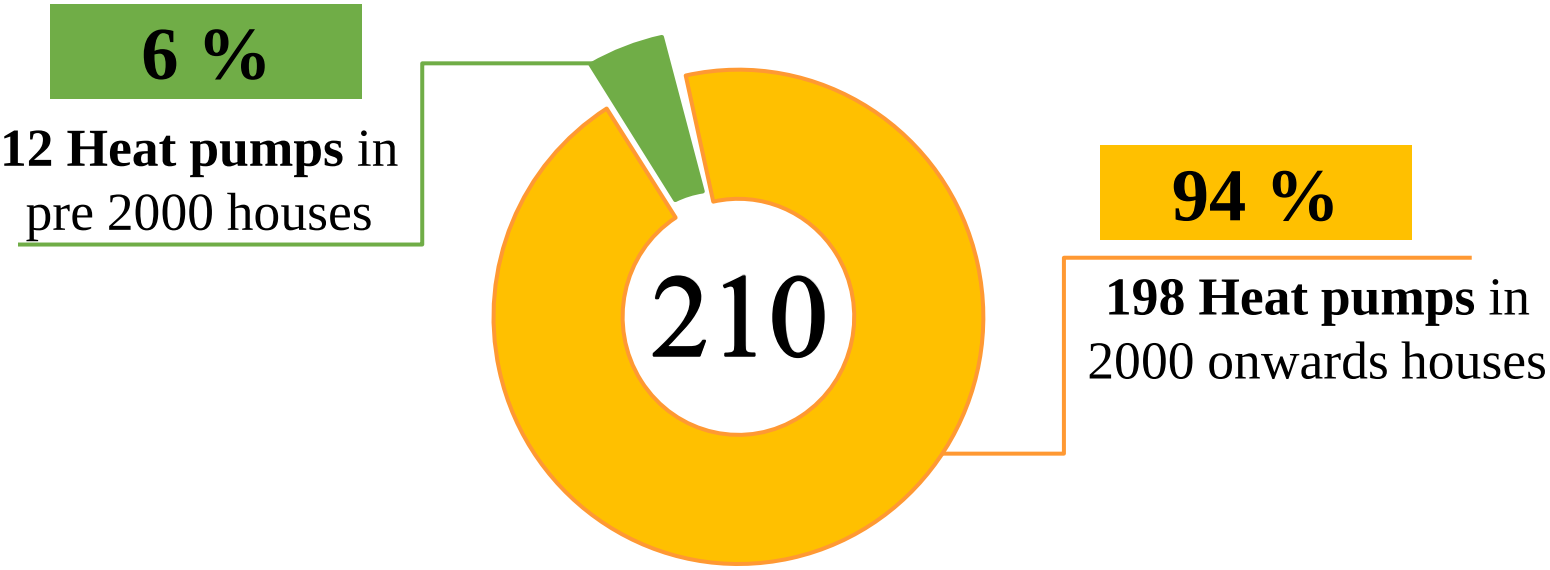
Residential Baseline – “Heat Pump ready” houses



Approx. 1,970 dwellings in Ashbourne with BERs are “heat pump ready” (HLI below 2.3).

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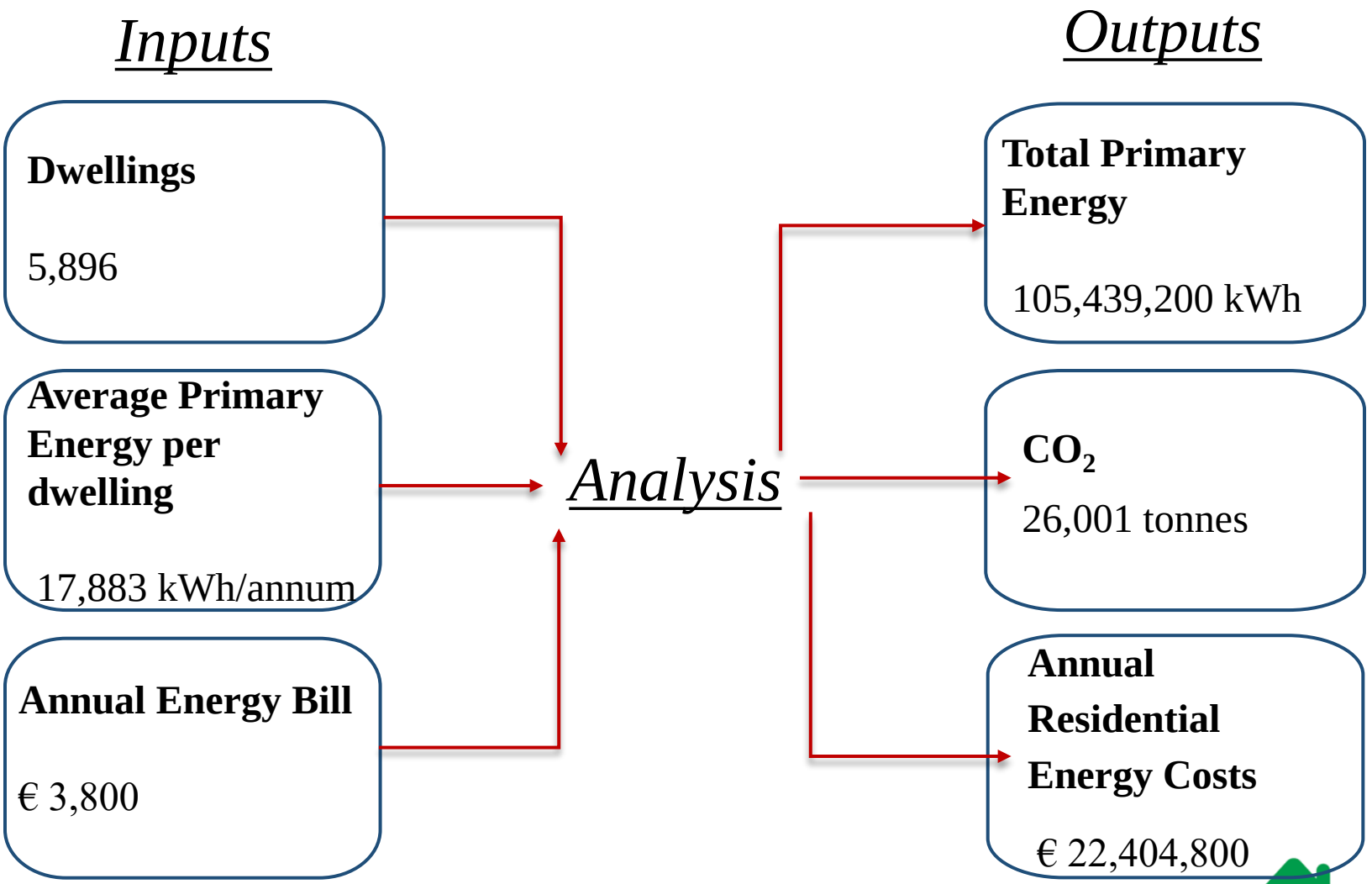
Residential Baseline Results



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Commercial / Public Buildings Baseline Results

Inputs

- 96 Small businesses
- 160 Medium businesses
- 29 Large businesses
- 3 Energy audits of business premises

(St Declan's National School, REM, Hugh Maguire Butchers)

Energy bills from audits & SEAI annual estimates

Analysis

Outputs

Total Primary Energy

146,833,810 kWh

CO_2

34,197 tonnes

Annual Business Energy Costs

€17,873,113

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Transport Baseline Results

Inputs

Car Split (Dept of Transport- 2022):
3,049 Petrol
4,805 Diesel
662 BEVs
8,516 Total

National Annual Average

12,113 km Petrol
19,681 km Diesel
12,958 km BEVs

Analysis

Outputs

Total Primary Energy

96,415,260 kWh

CO_2

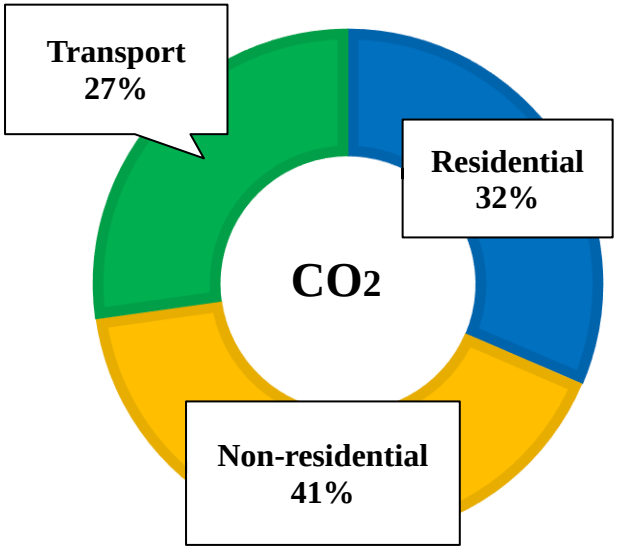
22,517 tonnes

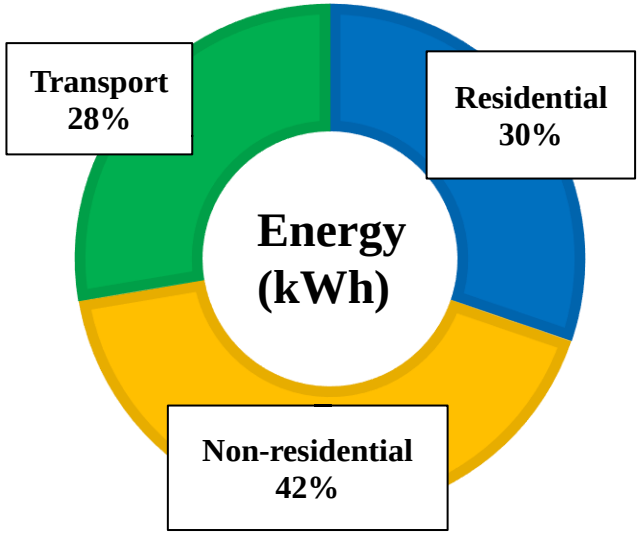
Annual Transport Costs

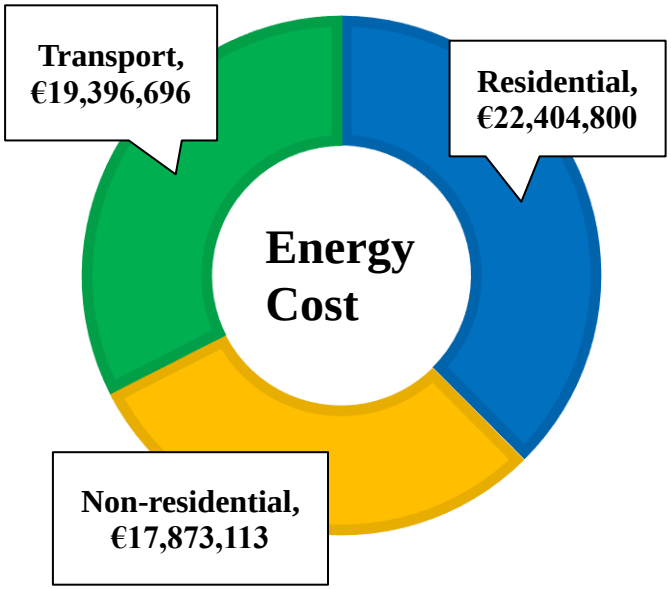
€19,396,696

Note: 1000 kg CO_2 = 1 Tonne CO_2
National statistics based on average distances travelled, kWh/km and gCO_2/km

Athboy Summary Baseline - 2023







Baseline is 82,715 tonnes CO_2 and 348.7 GWh energy per annum in 2023

	Total CO2 Emission (tonnes)	Total Energy Consumption (GWh)
Residential	26,001	105.44
Non-residential	34,197	146.83
Transport	22,517	96.42
Total	82,715	348.7

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Audits - 7 x Residential Survey & Analysis

Note: Heat loss indicator (HLI) **must be <=2.3** to qualify for SEAI Heat Pump grant

- **Starter**: roof insulation, heating controls
- **Standard**: + external/internal wall insulation, condensing boiler & stove
- **Advanced**: + external/ internal wall insulation, double glazed windows, heat pump, stove, whole house ventilation

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BERWoW

Variant	BER	Energy Cost	Savings	Investment Cost	SEAI Grants	Costs inc. grants	Payback (years)	HLI
Current state	E1	€3,715	N/A	N/A	N/A	N/A	N/A	3.45
Starter package	D1	€2,880	€835	€4,140	€2,000	€2,140	2.6	3.27
Standard measures	B2	€1,352	€2,363	€39,890	€8,000	€31,890	13.5	1.78
Advanced measures	A2	€934	€2,781	€57,890	€15,400	€42,490	15.3	1.78

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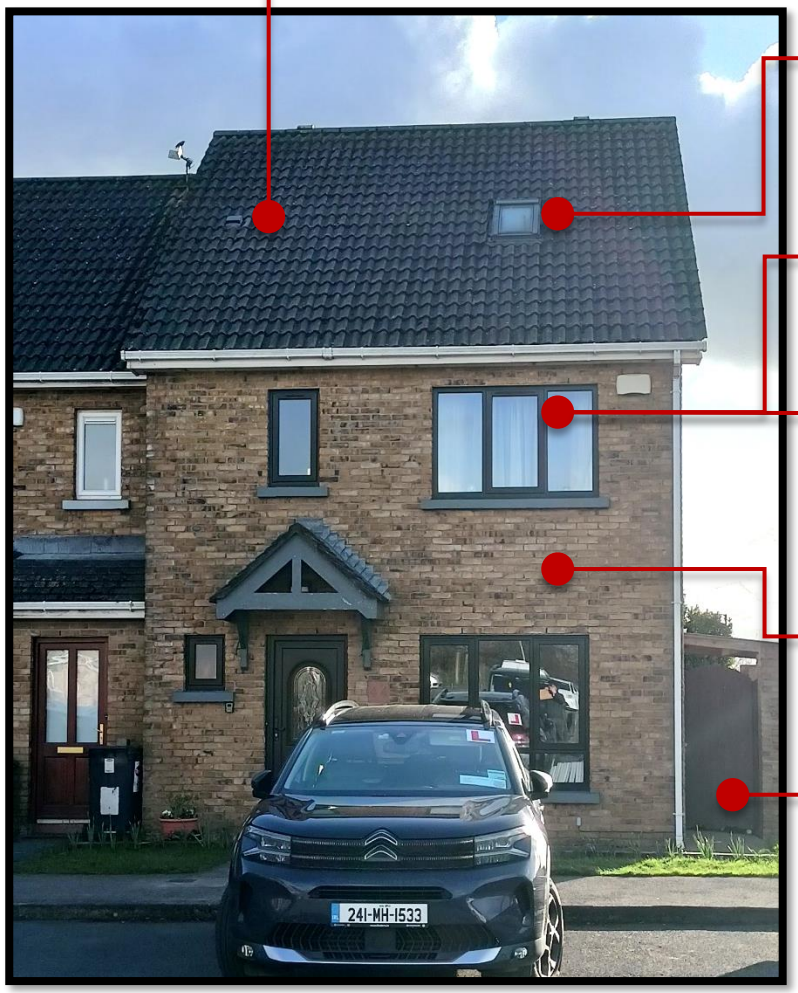
Residential Survey – Brindley Park

PV panels (2 kW)



300mm attic insulation, sloping roof insulation (U=0.20)

Low energy lights

New double glazed low-e windows (U=1.4)

Cavity wall insulation (U=0.35)

Air to water heat pump, (including full heating controls)

Audits – 3 Commercial buildings

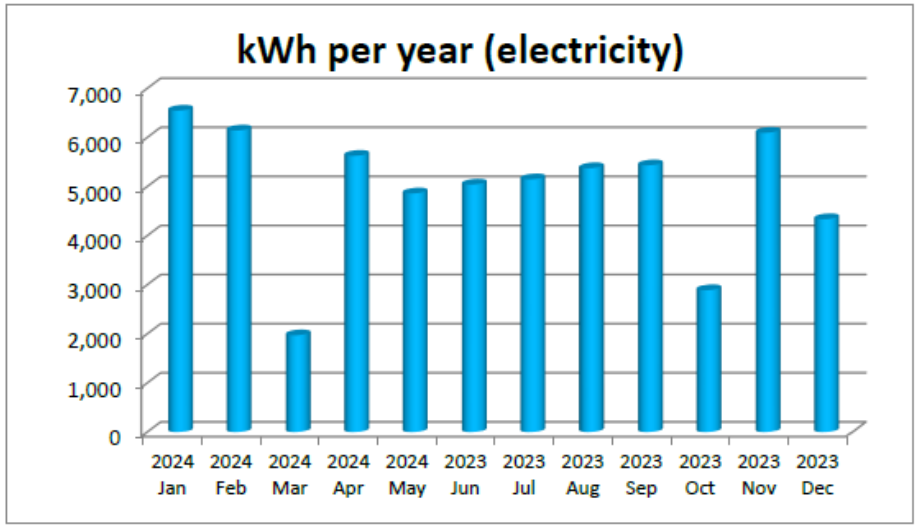


Figure 4.1 Electricity bills summary

Electricity Bill Summary

Date	kWh used	Total cost of bill
Jan 2024	6,548	€1,699
Feb 2024	6,148	€1,486
Mar 2024	1,970	€477
Apr 2024	5,631	€1,525
May 2024	4,857	€1,186
Jun 2023	5,042	€1,334
Jul 2023	5,153	€1,239
Aug 2023	5,371	€1,357
Sep 2023	5,431	€1,405
Oct 2023	2,887	€852
Nov 2023	6,099	€1,735
Dec 2023	4,330	€1,086
Total	**59,467**	**€15,379**

Table 4.1 Electricity bills summary

(Codex, 2024)

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Residential Upgrade Scenario (2024-2028)

A1

- **Category 4A- Advanced measures** (Standard with heat pump and whole house ventilation) & **PV** – **100 homes**
- **Category 5A - Heat pump &PV only -2011 onwards – 100 homes**

A2

- **Category 4A- Advanced measures** (Standard with heat pump and whole house ventilation) & **PV** – **100 homes**
- **Category 5A - Heat pump &PV only -2011 onwards – 100 homes**

A3

- **Category 3A - Standard measures** package (roof insulation, internal or external wall insulation, boiler and heating controls , wood stove) & **PV – 150 homes**
- **Category 4 - Advanced measures** (Standard with heat pump and whole house ventilation) – **200 homes**
- **Category 5 - Heat pump only -2001-2010 – 300 homes**

B2

- **Category 1 – PV only – 250 homes**
- **Category 2A** – Roof insulation, heating controls &PV – **75 homes**
- **Category 3 -** Standard measures package (roof insulation, internal or external wall insulation, boiler and heating controls, wood stove) – **150 homes**

B3

- **Category 2** – Roof insulation and heating controls: 2001-2010– **50 homes**

C1

- **Category 2** – Roof insulation and heating controls: 1981-2000 – **100 homes**

D1

- **Category 2 - Roof insulation and heating controls: pre 1980** – **75 homes**

Assumption: 30% of dwellings will be upgraded in next 5 years

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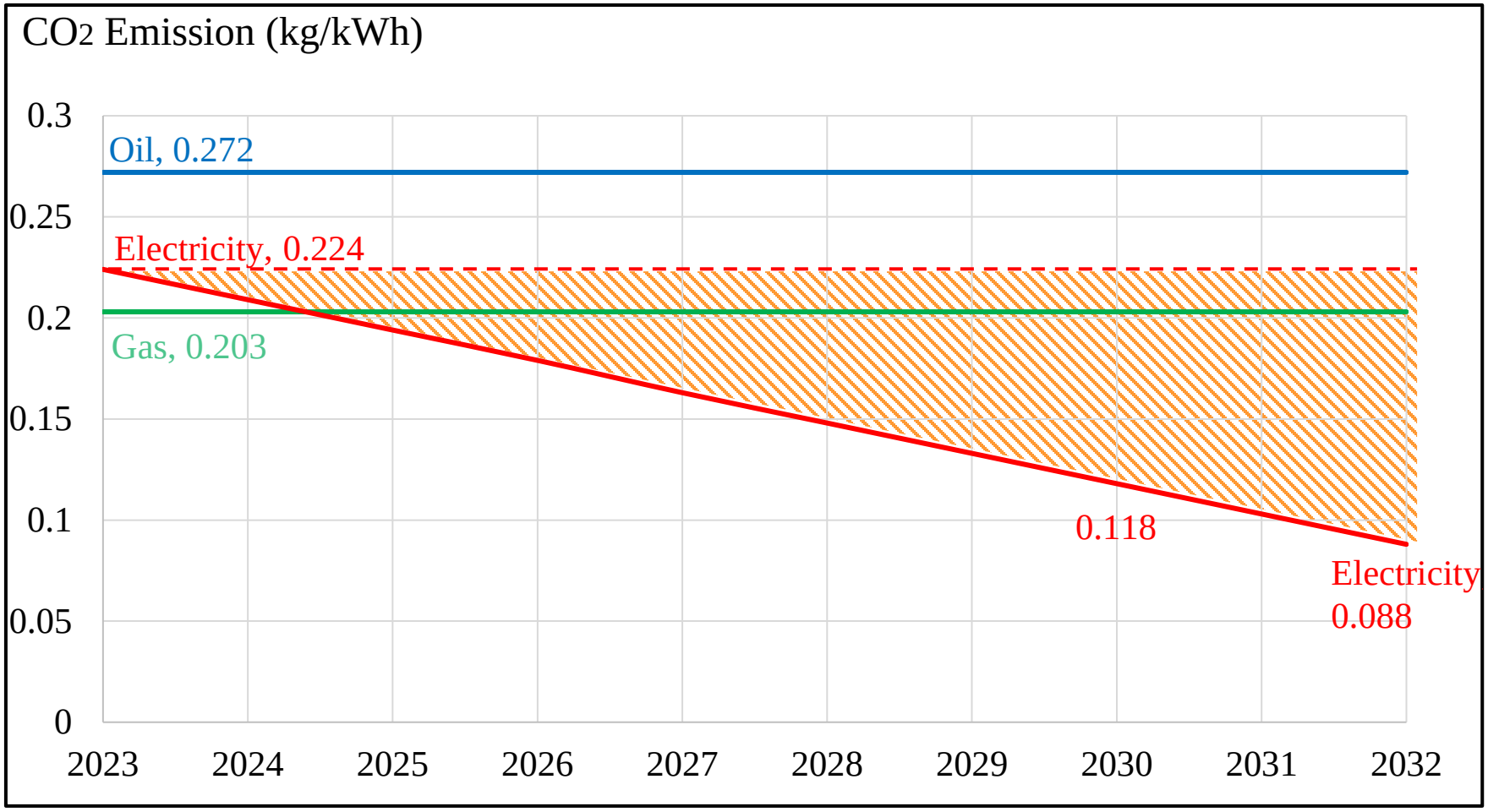
Impact of De-carbonising Electricity in Ireland



32% all electricity generated in 2019 was from wind and **avoided 3.9 million tonnes of CO2 emissions**. 4,332.5 MW Installed capacity in Ireland as of May 2022. (SEAI, 2023)

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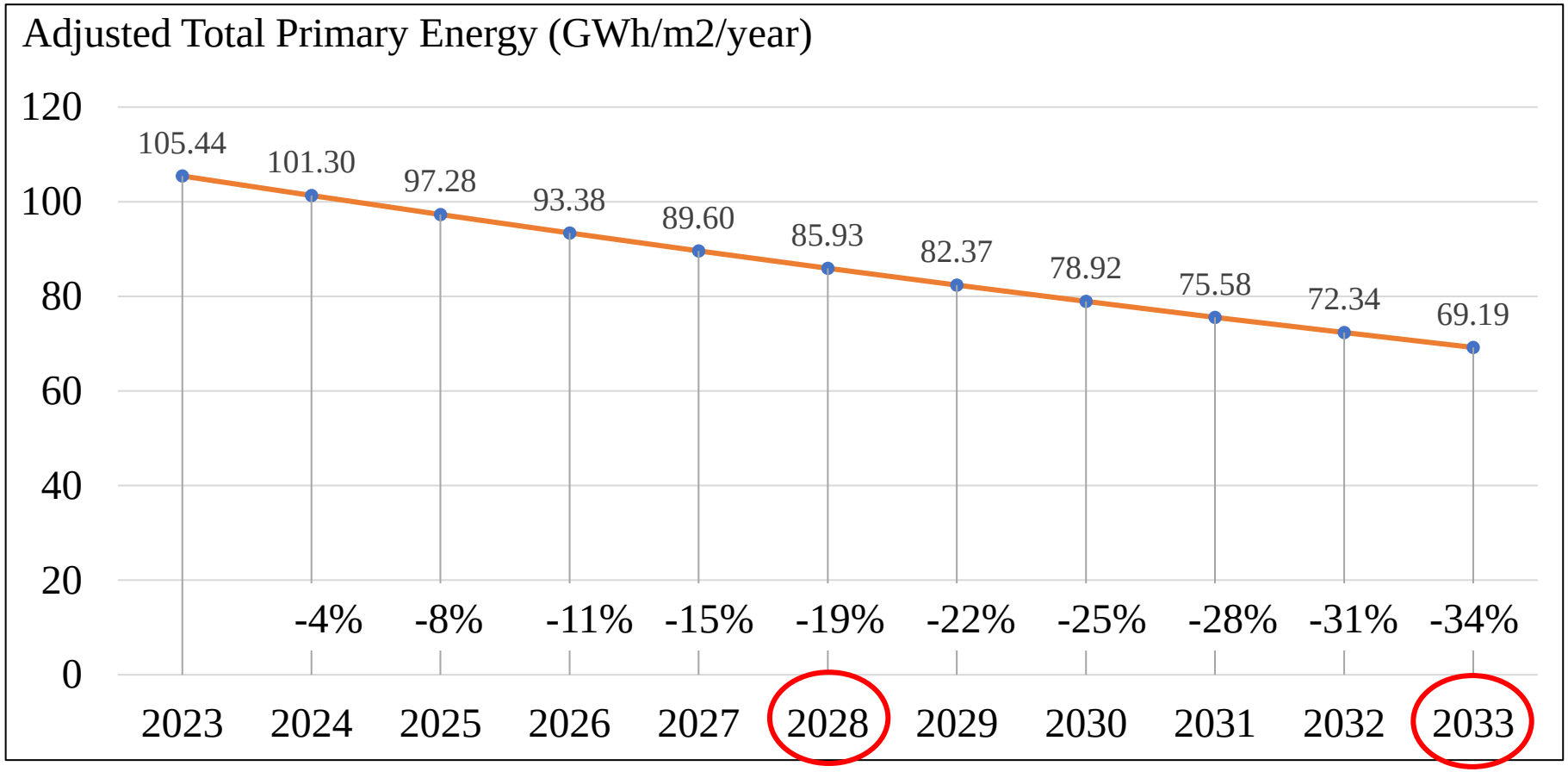
Residential – Energy Reduction Model (2023-2033)

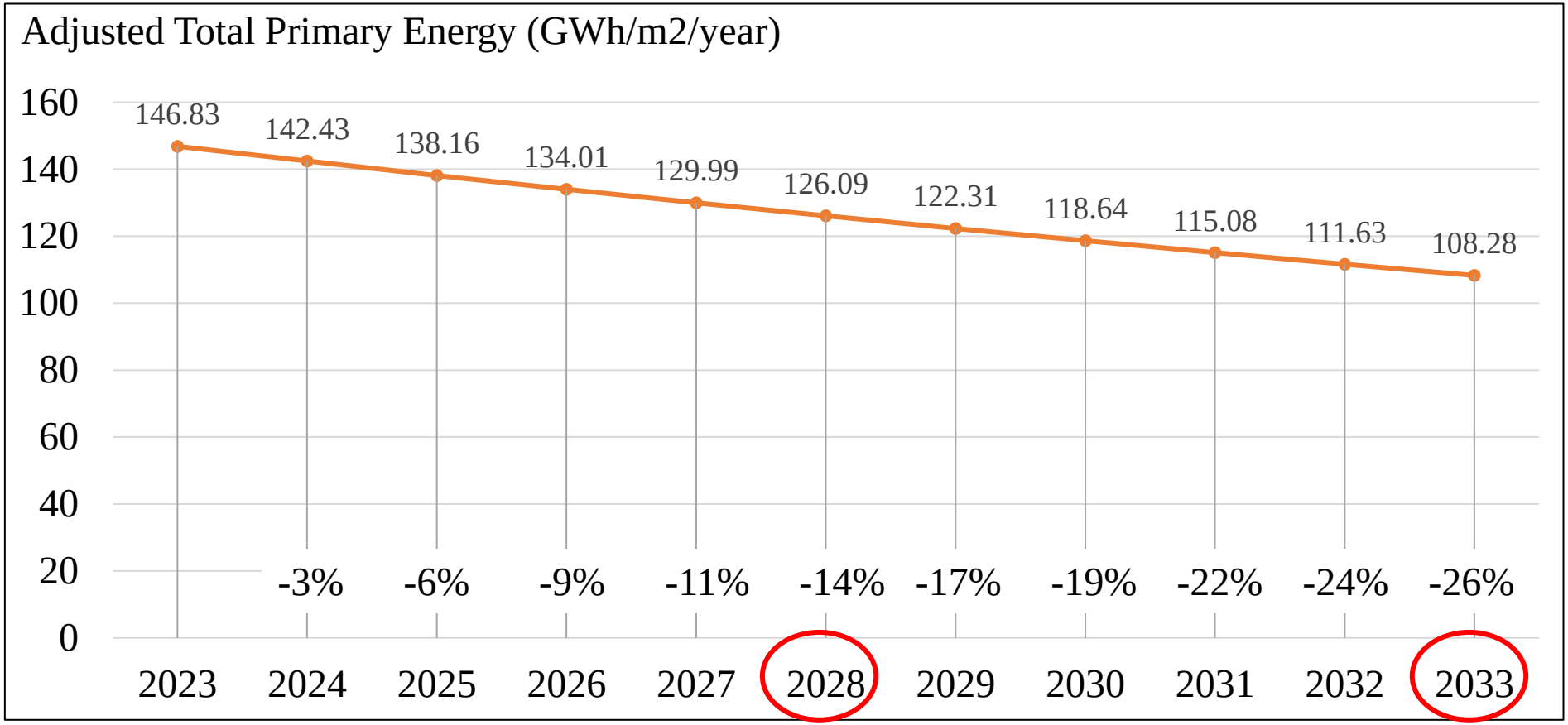
This upgrade plan is equivalent to a 2% annual reduction in energy usage.

When accounting for the ongoing decarbonisation of electricity, there will be a 19% reduction by 2028 & 34% by 2033.



Non-domestic Buildings Energy Model

3% reduction in Commercial/ Public Building Energy Usage



*** **All public buildings and businesses in Ashbourne need to develop energy and carbon reduction plans**

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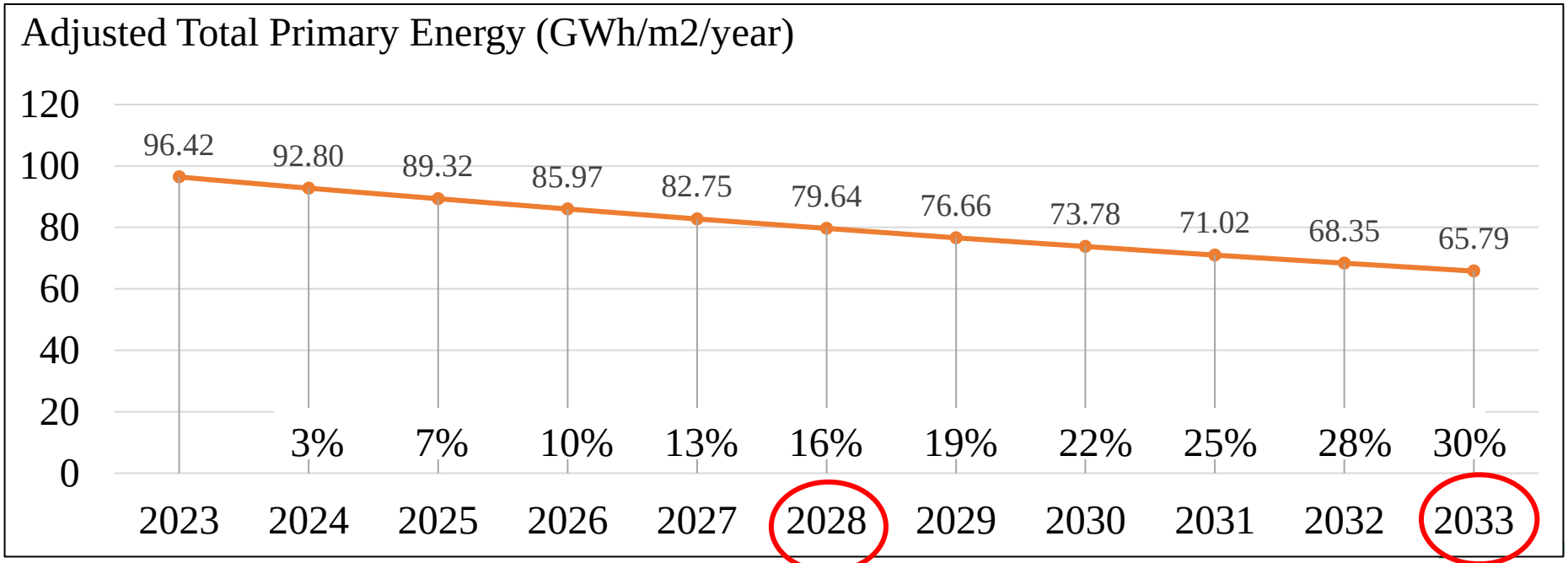
Transport Projections to 2033

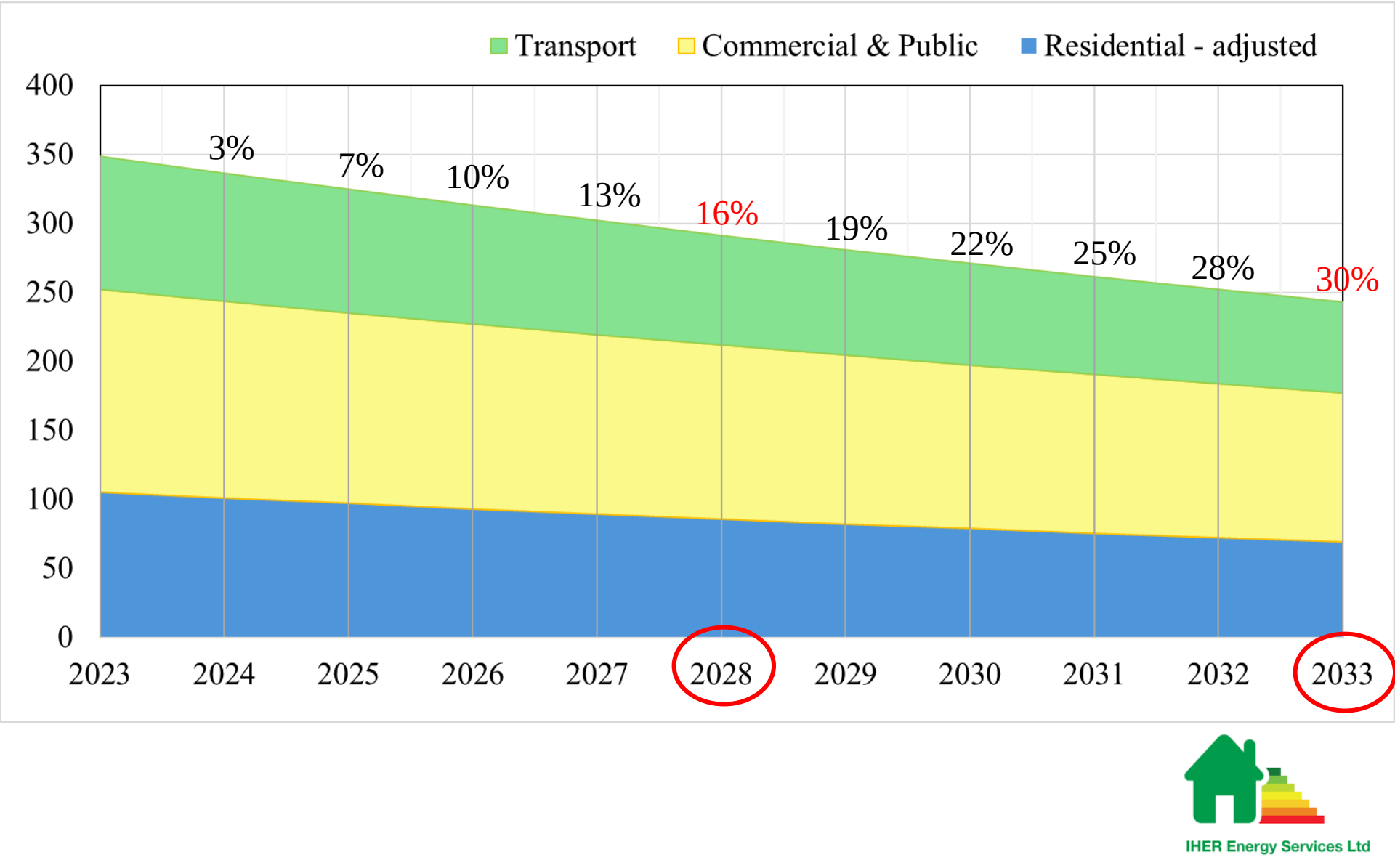
Assume 29.5% EV Market Share by 2030

3.75% reduction in Car Transport Energy Usage

Ashbourne 2030	Petrol	Diesel	Battery EV	Totals
National annual average km	12,113	19,681	12,958	
kWh per car/annum	7,516	11,710	4,924	-
kg CO2 per car/annum	1,719	2,794	842	-
Total cars split	2,134	3,363	2,555	8,052
kWh -all cars/a	16,040,919	39,385,660	12,579,937	68,006,516
kg CO2 - all cars/a	3,669,635	9,396,293	2,151,831	15,217,759



Ashbourne SEC Energy Reduction Projection – All Sectors (2023-2033)



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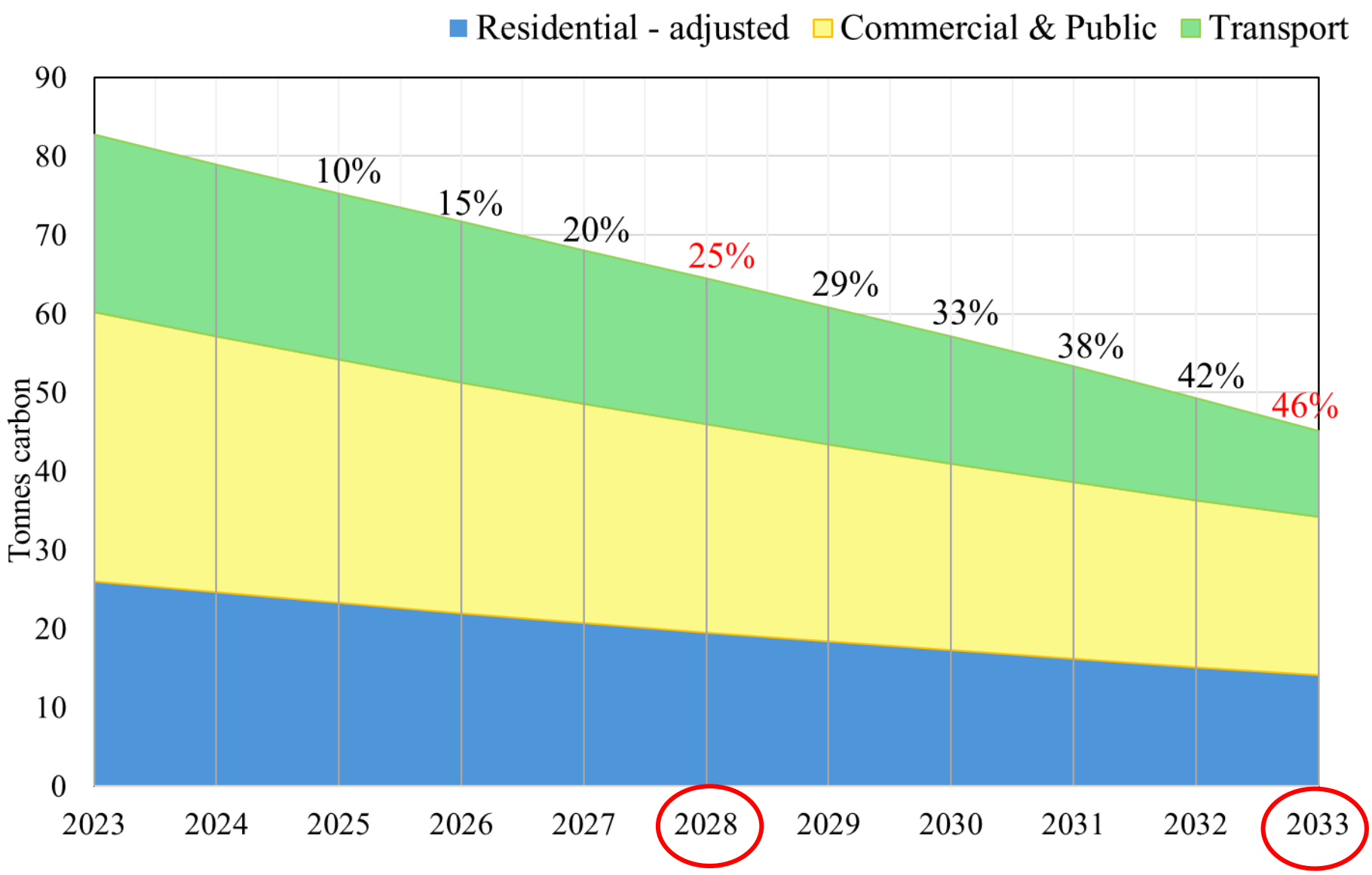
Ashbourne SEC Carbon Reduction Projection – All Sectors (2023-2033)



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Solar Farms

	Applicant	Approx Area (Hectares)	Location	Megawatt (MW)
1	Wexford Solar Limited	9.81	Kilbreckstown	4
2	Power Capital Renewable Energy Limited	10.82	Irishtown	8.7
3	Starrus Lfg Ltd	13.7	Knockharley	3
4	Bnrgn Hilltown Ltd.	25.87	Hilltown	19
5	Jbm Solar Development Ltd	89.22	Ballymacarney & Part Of Baytown	65
6	Lightsource Renewable Energy Ireland Ltd	68.3	Muckerstown	34
7	Energia Solar Holdings	35.19	Ballaghaweary, Ashbourne	18.27
8	Kilbrew Eco Developments Ltd	42.88	Townlands of Reask and Loughlinstown, Kilbrew, Ashbourne	18
9	Solar Farmers Ltd (Part of Energia Group)	23.52	BALLYBIN (KILBREW)	13.5
10	Obton Limited	124.07	Hawkinstown, Riverstown (Ardcath), Scatternagh, Balgeeth, Ardcath, Co.	85
				268.47

One gigawatt (1GW) of solar PV power is deemed enough to power 750,000 homes.

With 268 MW equal to 0.268 GW, the ten Ashbourne solar farms will have capacity to power 200,00 homes, just shy of the total of 220,000 homes for all of County Meath (Census 2022).

Key Takeaways

- **Every** energy saving & carbon reduction measure is valuable
- Encourage homeowners to consider developing their own 5 or 10-year plan to reduce energy and carbon for their home
- Business owners and public building managers need to buy into the Energy Master Plan goals for Ashbourne
- Encourage business owners and public building managers should report on annual energy use and conduct energy audits. Also develop a 5-year energy and CO_2 reduction plan for their businesses
- Engage directly with One Stop Shop providers if proceeding with deep retrofits

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