

# The energy efficiency of Irish homes

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## **Key Point:**

The Climate Action Plan published in June 2019 set several targets aimed at improving levels of energy efficiency in the Irish housing stock. One of the central aims of the plan is to upgrade an additional 500,000 homes to a Building Energy Rating of B2 or above by 2030. The BER system measures the energy efficiency in Irish homes. In 2018, it is estimated that 185,000 housing units, or 12% of the Irish housing stock, hold an A and/or B energy rating. In terms of energy emissions, an A rated home omits 1.1 tonnes of CO<sub>2</sub> at a cost of €380 per annum. For F or G rated homes the emissions and costs are far higher – with 10.8 tonnes of CO<sub>2</sub> at a cost of €3,600 annually. The Sustainable Energy Authority of Ireland (SEAI) administers grants to support home insulation and renewable energy upgrades. Over 390,00 of such upgrades were completed between 2006 and 2018. The pace of home improvements will need to accelerate if the Climate Action plan target is to be achieved by 2030.

## **Policy Context**

A BER rating is a measure of the overall energy efficiency of a building (residential or commercial). The BER calculation is based on the level of energy usage, in terms of space, hot water heating, ventilation and lighting. The ratings are similar to the energy labels on household appliances (e.g. fridges) and are denoted on a scale of A to G, with A being the most efficient and G the least. BERs are generated by independent assessors registered with the SEAI. A BER certificate is valid for 10 years.

Despite significant improvements in recent years, Ireland's per dwelling energy use remained 7% higher than the EU average in 2015 (SEAI, 2018). In 2019, 80% of Irish homes and other buildings had a BER rating of C or lower. The Climate Action plan has set a target of retrofitting 500,000 buildings to a B rating or above by 2030. The current number of retrofits annually is 23,000 (DCCAE, 2019). The level of emissions reduction required could be achieved by increasing the cumulative number of buildings that are retrofitted to a B2 equivalent BER to circa 500,000 by 2030. The Climate Action Plan also sets a target of increasing the number of renewable energy sources (e.g. heat pumps) used in residential buildings to 600,000 by 2030 (DCCAE, 2019). At present, financial incentives are administered by the SEAI for the following energy-saving and renewable

solutions: insulation, heat pump systems, heating control upgrades and solar thermal solutions<sup>1</sup>.

Government grant schemes that have enabled these improvements include (SEAI 2019):

- Free Upgrades for Eligible Homes (2000 to date, currently open). This scheme funds energy efficiency improvements in the homes of vulnerable people in, or at risk of, energy poverty. The Warmth and Wellbeing scheme targets those living with chronic respiratory conditions.
- Home Energy Grants (2006 to date, currently open) supports home insulation, heating and renewable energy upgrades.

### Building Energy Ratings Trends by period of construction

Table 1 shows BER rated homes based on a sample of the Irish housing stock between the years 2009 and 2019. The proportion of homes with A or B ratings have increased dramatically from 5% of houses built between 1950 and 1999 to 32% of houses built since 2000. By contrast, the percentage of F or G rated houses with low energy efficiency rating has fallen dramatically from almost 12% of houses built between 1950 and 1999 to just 1% over the last two decades. Furthermore, 60% of houses hold a medium energy rating. This highlights the necessity of the energy upgrades of older properties to meet recently established targets.

**Table 1: BER Ratings by Period of Construction**

Period of Construction	Energy Rating						Total
	A	B	C	D	E	F/G	
1700-1949	0	3	12	18	19	47	106,549
1950-1999	0	5	34	33	16	12	379,532
2000-2019	11	21	49	14	4	1	331,835
<b>Total</b>	<b>4</b>	<b>11</b>	<b>37</b>	<b>24</b>	<b>11</b>	<b>12</b>	<b>817,916</b>

Source: CSO (2019)

Table 2 shows a breakdown of BER rating across the entire Irish housing stock. The data cover the large number of houses constructed before the advent of sophisticated energy efficient materials. About 185,000 Irish homes had a positive BER rating (A and/or B): this represents 12% of the total housing stock of over 1.5m units. The Climate Action plan aims to retrofit 500,000 homes to B2 level or above by 2030.

<sup>1</sup> For further information on Home Energy Grants available see: <https://www.seai.ie/grants/home-energy-grants/#comp00005b3cd2ca000000b2ba5132>

**Table 2: BER Ratings Weighted to National Level**

A	B	C	D	E	F/G	Total Housing Stock
3%	9%	35%	25%	13%	15%	1,537,038

Source: CSO (2019)

Table 3 compares the emission rates and heating costs for a 3-bedroom semi-detached house across each BER ratings bracket. Houses with an A or B rating are considered to have a positive energy rating, whereas homes with a C and D ratings account for an average level of energy efficiency. The least energy efficient homes are those with a rating of E, F or G.

In terms of the energy usage of a 3-bedroom semi-detached home<sup>2</sup>, an A rated home emits 1.1 tonnes of CO<sub>2</sub> at a cost of €380 per annum. However, homes with the lowest energy efficient rating (categories F or G) emit 10.8 tonnes of CO<sub>2</sub> at a cost of €3,600 annually.

**Table 3: Annual Energy costs for a 3 Bed semi-detached house**

Energy Rating	Tonnes CO <sub>2</sub> *	Cost (€)*
A	1.1	€380
B	2.2	€800
C	3.7	€1,300
D	5.4	€1,850
E	7.2	€2,500
F/G	10.2	€3,600

Source: SEAI (2014) \* Note this is an estimate of CO<sub>2</sub> emissions and annual fuel cost based on typical occupancy and heating the entire dwelling to a comfortable level.

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<sup>2</sup> Indicative annual CO<sub>2</sub> emissions and running costs for different rating bands for space and water heating. Based on a 3 Bed semi-detached house off approximately 100m<sup>2</sup> in total surface area.

**Table 4: Home Energy Upgrades by County 2018**

County	Home Energy Grants	Free Energy Upgrades	Total Homes Upgraded	% Homes Upgraded
Carlow	2,711	1,839	4,550	20%
Cavan	4,654	2,249	6,903	21%
Clare	10,898	3,069	13,967	25%
Cork	35,288	13,816	49,104	21%
Donegal	6,703	5,413	12,116	14%
Dublin	48,562	18,484	67,046	13%
Galway	19,011	6,249	25,260	23%
Kerry	11,983	4,097	16,080	22%
Kildare	8,460	4,424	41,340	16%
Kilkenny	5,183	1,926	7,109	18%
Laois	3,652	1,926	5,578	17%
Leitrim	1,455	1,716	3,171	18%
Limerick	15,255	5,617	20,872	25%
Longford	1,900	1,700	3,600	19%
Louth	7,877	4,658	12,535	24%
Mayo	7,421	5,936	13,357	20%
Meath	9,246	4,023	13,269	19%
Monaghan	3,930	1,806	5,736	23%
Offaly	3,038	2,587	5,625	18%
Roscommon	3,632	2,870	6,502	21%
Sligo	3,053	2,337	5,390	16%
Tipperary	10,220	5,437	15,657	23%
Waterford	8,407	4,300	12,707	24%
Westmeath	4,062	2,924	6,986	19%
Wexford	10,149	4,998	15,147	22%
Wicklow	5,570	3,297	8,867	16%
Homes Completed Prior to 2009	-	20,881	20,881	-
<b>Total</b>	<b>252,320</b>	<b>138,579</b>	<b>390,899</b>	<b>20%</b>

Source: SEAI (2019)

Home Energy Grants support home insulation, heating and renewable energy upgrades; they have been administered since 2006. The free energy upgrade scheme funds energy efficiency improvements in the homes of vulnerable people beginning in 2000. In total approximately 390,000 upgrades have been installed since these grants were established. It is estimated that 20% of the national housing stock have received funding for energy upgrades. Clare and Limerick account for the highest share of homes that have availed of such grants at 25%. By contrast, Dublin accounted for the lowest proportion of homes availing of energy upgrades at just 13%.

Table 4 shows the number of home energy grants and free energy upgrades issued by the SEAI until November 2018. The home energy grant system was established in 2006 and the Free Energy Upgrades have been administered since 2000. Consequently, it is difficult to generate an accurate estimate of annual progress in these grants. If the target in the Climate Action Plan to retrofit 500,000 houses to BER B or above by 2030 is to be achieved, activity would need to accelerate over the next decade.

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