

Residential Buildings in Ireland: Approach to selecting the top 15% energy efficient buildings (derived from the Central Statistics Office methodology publications)

This memo serves as an executive summary of the energy efficiency of residential buildings in Ireland, to enable identification of an appropriate threshold for the top 15% of energy efficient residential buildings. This document includes conclusions, which are made to provide clarity, explanation, and context solely for AIB's Green Bond Framework – September 2024¹ and eligible loan portfolio.

This document is sourced entirely from the latest Central Statistics Office (CSO) publication: *'Domestic Building Energy Ratings Quarter 3 2024'*, released on 17 October 2024², unless otherwise stated.

Definitions/clarifications:

"BER" means a 'building energy rating', recorded on the BER register following a BER assessment;

Domestic vs. non-domestic BER – The SEAI (Sustainable Energy Authority of Ireland) uses two different methodologies to compute BER ratings depending on the type of building.

"Domestic" refers to residential buildings – such as houses and apartments, but does not include nursing homes or other institutional residential buildings;

"Non-domestic" refers to commercial buildings – such as hotels, offices, retail buildings, warehouses, schools, etc.;

National Representativeness – There were 1,214,581 unique domestic BERs (one per dwelling) completed in the period 2009 to the end of September 2024³. This compares with ~1.9 million occupied private households, as per the Census of Population 2022⁴. The Census of Population includes questions pertaining to the type of dwelling, the location by county, and the period in which the dwelling was built. This data allows for weighting of BERs to national level⁵. The weights are calculated by dividing the number of non-vacant households in the Census, by the number of unique BER households. In cases where a household has more than one BER carried out in the period 2009 to end September 2024, only the most recent BER was used. Around 8% of Census households were excluded because there were no BER households in a given stratum, e.g. detached houses in Dublin 1 that were constructed in the period 1919-1945. A Stratum is classified as a unique combination of 'county' (52 categories – Dublin postal districts were distinguished), 'period of construction' (nine categories), and 'dwelling type' (four categories)⁶. The BER contains more disaggregated dwelling types, e.g. mid-terrace house, but these had to be aggregated to correspond to the Census classification⁷.

Year of construction is the period in which the dwelling was built.

¹ Green Bond Framework - September 2024

² Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

³ Table 3 BERs by Type of Dwelling (2009-2024) Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

⁴ Housing Stock Census of Population 2022 Profile 2 - Housing in Ireland - Central Statistics Office

⁵ Table 16 BERs Weighted to National Level (2009-2024) Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

⁶ Domestic Building Energy Ratings - CSO - Central Statistics Office

⁷ Background Notes Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

Tables & Figures:

Table 2 BERs by Period of Construction (2009-2024)

Period of Construction	Energy Rating													Total
	A	B1	B2	B3	C1	C2	C3	D1	D2	E1	E2	F	G	
1700-1899	2	1	2	3	3	4	5	7	10	9	9	13	33	31,669
1900-1929	2	1	2	3	3	4	5	7	10	9	9	13	33	68,541
1930-1949	2	1	2	4	5	6	7	9	11	9	9	11	21	56,939
1950-1966	3	1	3	5	6	7	8	11	13	10	9	11	14	88,485
1967-1977	2	1	2	5	7	9	11	14	15	10	8	7	7	112,201
1978-1982	2	2	3	6	9	13	15	16	15	8	5	4	3	68,550
1983-1993	2	2	3	7	10	14	15	17	15	7	4	3	2	114,929
1994-1999	2	2	4	8	12	16	17	17	11	4	3	2	1	125,181
2000-2004	2	2	4	11	18	21	18	11	6	3	2	1	0	196,430
2005-2009	4	5	12	23	23	16	8	5	3	1	1	0	0	185,432
2010-2014	36	27	19	10	3	2	1	1	0	0	0	0	0	14,640
2015-2019	95	3	1	1	0	0	0	0	0	0	0	0	0	59,733
2020-2024	99	0	0	0	1	0	0	0	0	0	0	0	-	91,851
Total	15	2	4	9	11	11	11	10	8	5	4	4	6	1,214,581

- No dwelling received this BER for this period of construction

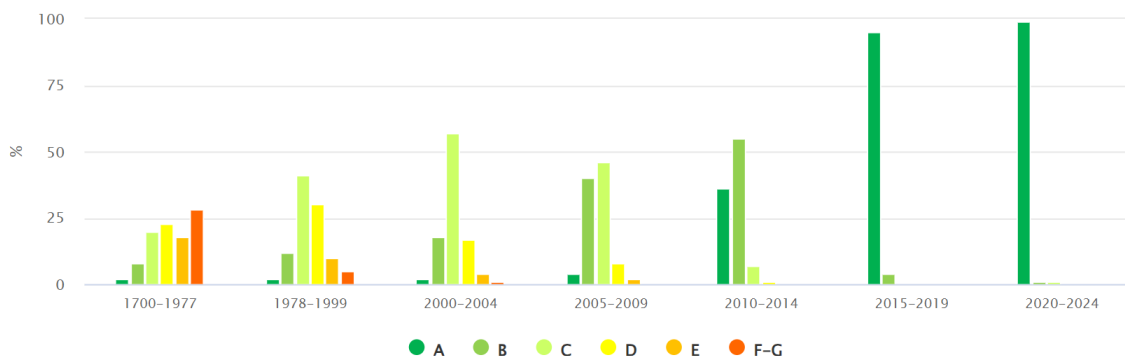
Table 2 and Figure 4⁸ provide a distribution of all outstanding BERs, issued up to the end of March 2023.

Since January 1st, 2009, a BER Certificate and advisory report is compulsory for all homes being sold or offered for rent. A BER is also required for new dwellings that apply for planning permission on or after 1st January 2007.

Table B: Building Energy Rating Categories

Category	kWh/m ² /year
A1	≤ 25
A2	> 25
A3	> 50
B1	> 75
B2	> 100
B3	> 125
C1	> 150
C2	> 175
C3	> 200
D1	> 225
D2	> 260
E1	> 300
E2	> 340
F	> 380
G	> 450

Figure 4: BERs by Period of Construction



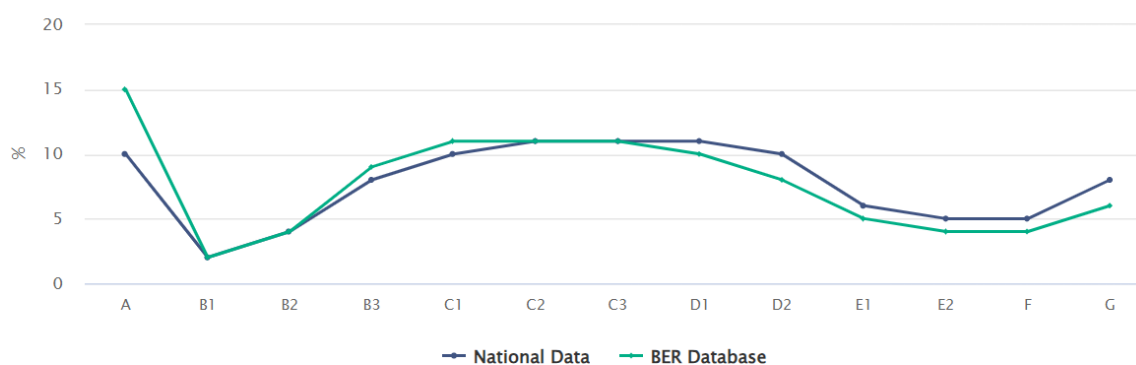
Source: CSO Ireland

⁸ BERs by Period of Construction (2009-2024) Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

Table 16 BERs Weighted to National Level (2009-2024)

Dwelling Type	Energy Rating													Total
	A	B1	B2	B3	C1	C2	C3	D1	D2	E1	E2	F	G	
Apartment	16	2	5	9	10	10	9	10	9	5	4	4	7	166,280
Detached house	9	3	5	9	10	10	10	10	9	5	4	5	10	685,957
Semi-detached house	11	2	3	7	11	13	12	12	10	6	5	5	4	442,005
Terraced house	10	2	3	7	10	11	10	11	11	7	6	6	8	260,041
Total	10	2	4	8	10	11	11	11	10	6	5	5	8	1,554,282

Figure 3: Dwellings with BERs compared with All Dwellings (2009-2024) - data from Table 16¹



Source: CSO Ireland.

Table 16⁹ examines the dwellings issued with a BER rating up to end of September 2024 and weights these to national level using data from Census of Population 2022. The national level data shows that 5% of dwellings in Ireland would have received a rating of ‘F’ compared with 4% of dwellings that have had a BER assessment. Similarly, 8% of dwellings would have received a rating of ‘G’ compared with 6% of dwellings in the actual BER data. In contrast, 10% of dwellings would have received an ‘A’ rating at the national level, whereas 15% of dwellings that have had a BER assessment were given an ‘A’ rating (see also Figure 3)¹⁰.

⁹ Table 16 BERs Weighted to National Level (2009-2024) Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

¹⁰ Figure 3: Dwellings with BERs compared with All Dwellings (2009-2024) Domestic Building Energy Ratings Quarter 3 2024 - Central Statistics Office

BER Eligibility Criteria Conclusions

Conclusion 1: Approach to select top 15% energy efficient residential buildings in Ireland by BER rating

Given BER ratings have a coverage ratio of ~65.4% relative to the total building stock [1,214,581/1,858,526¹¹], they are indicative and not perfectly representative of the entire residential building stock in Ireland. Table 16 extrapolates the BER database to estimate the expected distribution for the whole building stock. The difference when comparing these two distributions is shown in Figure 3, which illustrates that the BER database is skewed to newer and hence more energy efficient buildings. Nevertheless, Table 16 provides the most representative data available to construct the top 15% BER rating threshold.

Thus, it can be inferred from table 16 that as at Q3 2024, the threshold lies between B1 and B2, where the cumulative total for B1 rated buildings and better equals 12%, and B2 and better equals 16%.

While a portion of buildings with a B2 rating fall within the top 15% threshold, given that all B1 rated buildings and better are comfortably inside the 15% level, applying a B1 BER threshold is a valid eligibility criterion¹².

¹¹ This coverage ratio is relative to the total building stock as per the 2022 Census of Population, which is the baseline used by the CSO in its BER weighting analysis. The total building stock as per the **Census of Population 2022 – Preliminary Results** =1,858,526.

¹² For buildings built before 31 December 2020, to be aligned with the substantial contribution criteria of the EU Taxonomy Delegated Act, the building must be within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31 December 2020 and at least distinguishes between residential and non-residential buildings. **As at 31 December 2020, the top 15% of the national stock in terms of primary energy demand is equivalent to a minimum BER B3 label threshold.**

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