

Residential Buildings in Ireland: Approach to selecting the top 15% energy efficient buildings (derived from the Central Statistics Office methodology publications¹)

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 Framework¹ and eligible loan portfolio.

This document is sourced entirely from the latest Central Statistics Office (CSO) publication: *'Domestic Building Energy Ratings Q1 2023'*, released on 14 April 2023², unless otherwise stated.

Definitions/clarifications:

"BER" means a building energy rating recorded on the BER register on the bases of 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 1,084,203 unique domestic BERs (one per dwelling) completed in the period 2009 to the end of March 2023³. This compares with ~1.71 million occupied private households, as per the Census of Population 2016⁴.

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 March 2023, 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

¹ <https://aib.ie/content/dam/frontdoor/investorrelations/docs/debt-investors/green-bonds/aib-green-bond-framework.pdf>

² [Domestic Building Energy Ratings Quarter 1 2023 - CSO - Central Statistics Office](#)

³ [Table 3 BERs by Type of Dwelling \(2009-2023\) Domestic Building Energy Ratings Quarter 1 2023 - CSO - Central Statistics Office](#)

⁴ [Housing Stock - CSO - Central Statistics Office. Note that the 2022 Census of Population recorded 1,841,152 private occupied dwellings.](#)

⁵ [Table 16 BERs Weighted to National Level \(2009-2023\) \(Domestic Building Energy Ratings Quarter 1 2023 - CSO - Central Statistics Office](#)

⁶ [Domestic Building Energy Ratings - CSO - Central Statistics Office](#)

BER contains more disaggregated dwelling types, e.g. mid-terrace house, but these had to be aggregated to correspond to the Census classification.

Year of construction is when the period in the dwelling was originally built

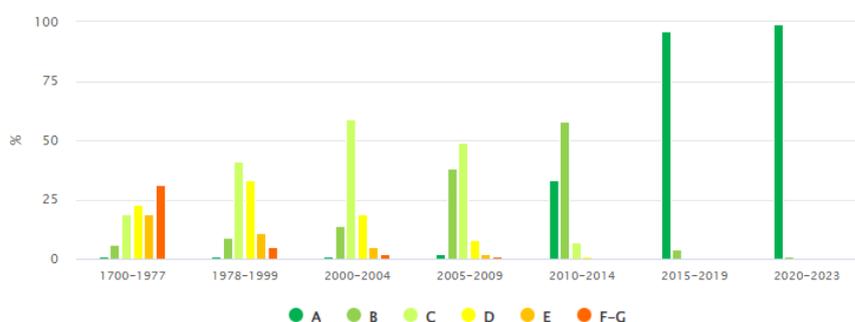
Tables & Figures:

Table 2 BERs by Period of Construction (2009-2023)

Period of Construction	Energy Rating													Total
	A	B1	B2	B3	C1	C2	C3	D1	D2	E1	E2	F	G	
1700-1899	1	1	1	2	3	3	5	7	10	9	10	13	36	27,894
1900-1929	1	1	1	2	3	4	5	7	10	9	9	13	35	61,256
1930-1949	1	1	2	4	5	6	7	9	12	9	9	12	23	51,355
1950-1966	2	1	2	4	5	6	8	11	13	10	10	12	15	80,028
1967-1977	1	1	2	4	7	9	11	14	16	10	9	8	8	100,930
1978-1982	1	1	2	5	9	13	15	17	16	9	5	4	3	63,466
1983-1993	1	1	2	6	10	14	16	18	16	7	4	3	2	106,252
1994-1999	1	1	2	7	12	16	18	18	12	5	3	2	1	116,006
2000-2004	1	1	3	10	18	22	19	12	7	3	2	1	0	182,939
2005-2009	2	4	11	23	24	17	8	5	3	1	1	0	0	172,222
2010-2014	33	28	19	11	4	2	1	1	0	0	0	0	0	13,479
2015-2019	96	2	1	1	0	0	0	0	0	0	0	0	0	57,900
2020-2023	99	0	0	0	0	0	0	0	0	0	0	0	–	50,476
Total	11	2	4	8	11	12	11	11	9	5	4	4	6	1,084,203

– No dwelling received this BER for this period of construction

Figure 4: BER Ratings by Period of Construction



Source: CSO Ireland

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

Table 2 and Figure 4⁷ 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.

⁷ BERs by Period of Construction (2009-2023) Domestic Building Energy Ratings Quarter 1 2023 - CSO - Central Statistics Office

Table 16 BERs Weighted to National Level (2009-2023)

Dwelling Type	Energy Rating												G	Total
	A	B1	B2	B3	C1	C2	C3	D1	D2	E1	E2	F		
Apartment	12	2	5	9	11	10	10	10	10	6	4	4	7	166,178
Detached house	7	2	4	8	10	11	11	11	10	6	5	5	10	685,618
Semi-detached house	9	1	2	6	11	13	13	13	11	6	5	5	5	441,894
Terraced house	8	1	2	6	10	11	10	11	11	7	6	7	8	259,967
Total	8	2	3	7	10	11	11	12	10	6	5	5	8	1,553,656

Figure 3: Dwellings with BERs compared with All Dwellings (2009-2023) - data from Table 16¹



Source: CSO Ireland

Table 16⁸ examines the dwellings issued with a BER rating, up to end of March 2023, and weights these to national level using data from Census of Population 2016. 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, 8% of dwellings would have received an 'A' rating at the national level, whereas 11% of dwellings that have had a BER assessment were given an 'A' rating (see also Figure 3)⁹.

⁸ Table 16 BERs Weighted to National Level (2009-2023) [Domestic Building Energy Ratings Quarter 1 2023 - CSO - Central Statistics Office](#)

⁹ Figure 3: Dwellings with BERs compared with All Dwellings (2009-2023) [Domestic Building Energy Ratings Quarter 1 2023 - CSO - 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 ~63.5% relative to the total building stock [1,084,203/1,707,453¹⁰], 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 end Q1 2023, the threshold lies between B2 and B3, where the cumulative total for B2 rated buildings and better equals 13%, and B3 and better equals 20%.

While a portion of buildings with a B3 rating fall within the top 15% threshold, given that all B2 rated buildings and better are comfortably inside the 15% level, applying a B2 BER threshold is a valid eligibility criterion¹¹ for the Green Bond Framework.

¹⁰ This coverage ratio is relative to the total building stock as per the 2016 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. Hence, the coverage ratio relative to the 2022 building stock statistics = c. 59%.

¹¹ 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. Therefore, the current approach is conservative in using the latest available data.



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