



**An  
Phríomh-Oifig  
Staidrimh**

Central  
Statistics  
Office

# **Single Integrated Metadata Structure (SIMS) Report**

**For**

## **Household Gas Consumption by Building Energy Ratings 2020**



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# **Household Gas Consumption by Building Energy Ratings 2020**

This documentation applies to the reporting period:  
**2020**

Last edited: 02/08/2022



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## 2. Introduction

This release combines microdata from building energy ratings with microdata from metered gas consumption. The main purpose of the release is to examine how gas consumption varies by type of dwelling and by energy rating. Only dwellings that used natural gas as their main space heating fuel have been included in the analysis.

## 3. Contact

<b>Contact Organisation:</b>	Central Statistics Office
<b>Contact Organisation Unit:</b>	Environment and Climate Division
<b>Contact Name:</b>	Dympna Corry
<b>Contact person function:</b>	Statistician
<b>Contact Mail address:</b>	Central Statistics Office, Ardee Road, Rathmines, Dublin 6, D06 FX52
<b>Contact email address:</b>	<a href="mailto:environment@csso.ie">environment@csso.ie</a>
<b>Contact Phone Number:</b>	01 498 4000
<b>Contact Fax Number:</b>	

## 4. Metadata Update

### 4.1. Metadata last certified

03/08/2022

### 4.2. Metadata last posted

08/08/2022

### 4.3. Metadata last update

28/07/2022



## 5. Statistical Presentation

### 5.1. Data Description

Data on energy use are important for environmental, social, and economic purposes.

The building energy rating microdata were obtained from the Sustainable Energy Authority of Ireland (SEAI). A Building Energy Rating (BER) is an *indication* of the energy performance of a dwelling and is measured in kilowatt hour per square metre of floor area of the dwelling per year (kWh/m<sup>2</sup>/year). The BER certificate indicates the annual primary energy usage associated with the provision of space heating, water heating, ventilation, lighting, and associated pumps and fans. The energy use is calculated based on a notional family with a standard pattern of occupancy.

The gas consumption data from Gas Networks Ireland (GNI) includes all connections to the mains gas network. The data are gross calorific values expressed in kilowatt hours. A kilowatt hour is a unit of energy equivalent to one kilowatt of power sustained over an hour.

### 5.2. Classification System

The BER rating scale is divided into categories from G (largest primary energy usage) to an A1 rating (lowest primary energy usage). The full range of categories is described in Table A. For the purposes of this release the categories have been combined to A/B, C, D, E, F/G.

Category	kWh/m <sup>2</sup> /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 A: BER categories

### 5.3. Sector Coverage

This analysis was restricted to BER audits using mains gas as their main space heating fuel. Dwellings with less than 10 square metres of total floor area were excluded. Dwellings using less than 1 kWh or more than 250 kWh per square metre were excluded.



## 5.4. Statistical Concepts and definitions

The data cover all dwellings connected to the natural gas network.

Networked gas consumption: gross calorific values expressed in kilowatt hours and Eircode. DBER: Energy rating, main space heating fuel, total floor area, type of dwelling, period of construction and Eircode.

**Gross Calorific Value (GCV)** is the amount of heat released by the complete combustion of a unit of natural gas.

**BER** is an indication of the energy performance of a dwelling (represented in units of kWh/m<sup>2</sup>/year). Actual energy performance will depend on how the occupants operate the dwelling. A BER is based on the characteristics of major components of the dwelling including wall, roof, and floor dimensions; window and door sizes and orientations, as well as the construction type and insulation, ventilation, and air tightness features; the system for heat supply (including renewable energy), distribution, and control; and the type of lighting.

**Main Space Heating system:** The main space heating system heats the largest proportion of the dwelling. This proportion is calculated using a count of the habitable rooms. It often provides hot water as well as space heating.

**Total Internal Floor Area of the dwelling:** the total area of exposed and semi-exposed floors. It excludes any unheated areas that are thermally separated from the dwelling. The total energy usage is divided by the dwelling floor area to determine the BER.

**Type of dwelling:** Apartment; Mid-terrace house; End-of-terrace house; Semi-detached house; and Detached house.

**Period of construction:** Period when the dwelling was originally built.

**Eircode:** Eircode is Ireland's postcode system, launched in July 2015. An Eircode is a seven-character alphanumeric postcode. Each Eircode is unique to a postal address and its geographic location.

## 5.5. Statistical Unit

Domestic dwellings

## 5.6. Statistical Population

Domestic dwellings that have had a BER audit carried out with natural gas as their main space heating fuel and a total floor area of 10 or more square metres.

## 5.7. Reference Area

State

## 5.8. Time Coverage

Gas meter file: 2015 – 2020. Domestic BER file: audits that were undertaken in 2009 - 2020. For dwellings with more than one energy audit, only the latest was used.



## 5.9. Base period

Not applicable.

## 6. Unit of Measure

A kilowatt hour is a unit of energy equivalent to one kilowatt of power sustained over an hour.

The building energy rating is expressed as kilowatt hours per square metre floor area per year (kWh/m<sup>2</sup>/year). Total floor area is taken into account by publishing an indicator on mean kilowatt hours per square metre (kWh/m<sup>2</sup>).

The gas consumption data are gross calorific values expressed in kilowatt hours (kWh). The gas consumption data were originally collected as meter readings.

## 7. Reference Period

2020

## 8. Institutional Mandate

### 8.1. Legal Acts and other agreements

S.I. 243 of 2012 which makes provisions for the inclusion of BER information in property sale and rental advertisements.

National reporting of networked gas consumption data is done on a voluntary basis.

### 8.2. Data Sharing

The CSO obtained access to the BER data collected by the SEAI and the networked gas consumption data from GNI under Section 30 of the Statistics Act, 1993.

## 9. Confidentiality

### 9.1. Confidentiality – policy

All information supplied to the CSO is treated as strictly confidential. The Statistics Act, 1993 sets stringent confidentiality standards: Information collected may be used only for statistical purposes, and no details that might be related to an identifiable person or business undertaking may be divulged to any other government department or body.

These national statistical confidentiality provisions are reinforced by the following EU legislation: Council Regulation (EC) No 223/2009 on European statistics for data collected for EU statistical purposes. Further details are outlined in the CSO's Code of Practice on Statistical Confidentiality.

For more information on the CSO confidentiality policy please visit:

<https://www.cso.ie/en/aboutus/lqdp/csodatapolicies/statisticalconfidentiality/>





## 9.2. Confidentiality – data treatment

All confidential data are treated in accordance with Part V of the Statistics Act, 1993.

## 10. Release Policy

### 10.1. Release Calendar

The date of dissemination of all statistics released by the CSO can be found in the Release Calendar published by the CSO. This calendar is regularly updated.

### 10.2. Release calendar access

The release calendar can be accessed via the CSO website, [www.cso.ie](http://www.cso.ie), or directly from this link:

<https://www.cso.ie/en/csolatestnews/releasecalendar/>

### 10.3. User access

In accordance with Principle 6 of the European Statistics Code of Practice all users of CSO statistics have equal access via the CSO website at the same time of 11 am. Any privileged pre-release access to any outside user is limited, controlled, and publicised. In the event that leaks occur, pre-release arrangements are revised so as to ensure impartiality.

The CSO recognises that in very limited circumstances a business need for pre-release access may be substantiated. Any form of pre-release access is a privilege and a strict CSO pre-release access policy is adhered to for these special requests. The full pre-release access policy can be accessed at:

<https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/csopolicyonpre-releaseaccess/>

The various results are published nationally in statistical release format as well as on the CSO website ([www.cso.ie](http://www.cso.ie)). Selected extracts from the results are posted on the CSO's data dissemination database, PxStat.

## 11. Frequency of Dissemination

Annual

## 12. Accessibility and clarity

### 12.1. News release

Not applicable.

### 12.2. Publications

The data is made available on the CSO website at 11am on the day of publication. The most recent releases can be found via this link:

<https://www.cso.ie/en/statistics/energy/>



### **12.3. On-line database**

BER data (BER rating, Dwelling type, Main space heating fuel, Period of construction, County and Dublin postal district and Year) are also accessible from the CSO dissemination database, PxStat, via this link: <https://data.cso.ie/table/EBA02>

Metered gas consumption data (County and Dublin postal district, Sector and Quarter) are also accessible from the CSO dissemination database, PxStat, via this link: <https://data.cso.ie/product/mgc>

#### **12.3.1. AC 1. Data tables -consultations**

Not calculated.

### **12.4. Micro-data Access**

Links to a National BER Research Tool is available on the SEAI website at:

<https://ndber.seai.ie/BERResearchTool/Register/Register.aspx>

The SEAI have extensive documentation. The CSO may compile special analyses if requested.

### **12.5. Other**

Background notes are provided with each release on the CSO website.

#### **12.5.1. AC2. Metadata consultations**

Not calculated.

### **12.6. Documentation on Methodology**

Further information on the methodology used for this release can be found in the CSO methods page:

<https://www.cso.ie/en/methods/climateandenergy/>

#### **12.6.1. AC3 – Metadata completeness – rate**

Not calculated.

### **12.7. Quality Documentation**

Metadata information on the quality of this release is available from the CSO methods page:

<https://www.cso.ie/en/methods/climateandenergy/>



## 13. Quality Management

### 13.1. Quality Assurance

#### Quality Management Framework

The CSO avails of an office wide Quality Management Framework (QMF). This framework allows all CSO processes and outputs to meet the required standard as set out in the European Statistics Code of Practice (ESCOPE). The QMF foundations are based on establishing the UNECE's Generic Statistical Business Process Model (GSBPM) as the operating statistical production model to achieve a standardised approach to Quality Management. All and any changes implemented to CSO processes and outputs require adherence to the QMF.

### 13.2. Quality Assessment

Quality assessments are carried out on the Domestic BER and Networked Gas Consumption microdata. Outliers were excluded and categories were aggregated.

## 14. Relevance

### 14.1. User Needs

Data on energy use are important for national environmental, social, and economic purposes.

#### 14.1.1. Main National Users

SEAI, Government, policy makers, energy sector, researchers, academics, media, and the public.

#### 14.1.2. Principal External Users

SEAI, Government, policy makers, energy sector, researchers, academics, media, and the public.

### 14.2. User Satisfaction

Not measured.

### 14.3. Data Completeness

Similar analyses will be published combining metered electricity consumption with domestic and non-domestic building energy ratings.

#### 14.3.1. Data Completeness rate

Not measured.

## 15. Accuracy and reliability

### 15.1. Overall accuracy

Domestic BER data is collected and produced using standardised software to estimate energy performance.



The gas consumption data are considered reliable. The meter readings data were converted to monthly and quarterly consumption estimates by GNI. Meter readings can be actual or estimated. In some cases, an estimated reading that was too high results in a negative reading for a subsequent period i.e., no attempt was made to adjust the earlier over- or under-estimate. The data file provided to the CSO did not provide information on whether the consumption in a period was based on an estimated reading.

## **15.2. Sampling Error**

Not applicable.

### **15.2.1. A1. Sampling error indicator**

Not applicable.

## **15.3. Non-sampling Error**

Not applicable.

### **15.3.1. Coverage error**

Not applicable.

#### **15.3.1.1. A2. Over coverage rate**

Not applicable.

#### **15.3.1.2. A3. Common units – proportion**

Not applicable.

### **15.3.2. Measurement error**

Not applicable.

### **15.3.3. Non-Response Error**

Not applicable.

#### **15.3.3.1. Unit non response rate**

Not applicable.

#### **15.3.3.2. Item non response rate**

Not applicable.



#### **15.3.4. Processing error**

Not applicable.

#### **15.3.5. Model assumption error**

Not applicable.

## **16. Timeliness and punctuality**

### **16.1. Timeliness**

The DBER release is published on a quarterly basis and the Networked Gas Consumption release is published on an annual basis. The results of the annual Domestic Building Energy Rating and Networked Gas Consumption release have a target timeliness of 30 days after the receipt of the annual gas consumption file.

#### **16.1.1. TP1. Time lag – First results**

Not applicable.

#### **16.1.2. TP2. Time lag – Final results**

DBER data is received on a quarterly basis and Networked Gas Consumption data is received on an annual basis. The annual DBER and Networked Gas Consumption release will be published within t+30 days of the receipt of the annual gas consumption file.

### **16.2. Punctuality**

This release was published on time in accordance with the time frame specified in the CSO release calendar.

#### **16.2.1. TP3. Punctuality – Punctuality - delivery and publication**

0 days.

## **17. Comparability**

### **17.1. Comparability – Geographical**

Not applicable.

#### **17.1.1. CC1. Asymmetry for mirror flow statistics**

Not applicable.



## **17.2. Comparability over time**

No break in the series has occurred to date however possible changes in the legislative basis for the collection of the Domestic BER data or changes to the software collecting the data could introduce a break in the series in the future.

### **17.2.1. Length of Comparable Time series**

6 years.

## **17.3. Coherence – cross domain**

Not applicable.

### **17.3.1. Coherence – Sub annual and annual statistics**

Not applicable.

### **17.3.2. Coherence with National Accounts**

Not applicable.

## **17.4. Coherence – internal**

Not applicable.

## **18. Cost and Burden**

The Domestic Building Energy Rating and Networked Gas Consumption release reuses data collected by the SEAI under S.I. 243 of 2012 and gas meter data collected by GNI. There is no additional cost and burden.

## **19. Data Revision**

### **19.1. Data Revision Policy**

Revisions refer to changes made to published statistical data when the information used in its production has been updated or corrected. This information includes all data used in compiling the statistic e.g., respondent data, administrative data, weights and factors, methodology, classifications, definitions, modifications to survey questionnaires, survey scope and data collection methods.

The data revision policy that CSO statistics adheres to can be found via the following link:

<https://www.cso.ie/en/methods/quality/treatmentofrevisions/>

### **19.2. Data Revision Practice**

Revisions are made quarterly to Domestic BER data if updated assessments are performed on a previously assessed dwelling.



### **19.2.1. Data Revision – Average size**

Not calculated.

## **20. Statistical processing**

### **20.1. Source Data**

SEAI BER administrative data and GNI gas meter data which are based on a mixture of actual and estimated meter readings.

#### **20.1.1. Population and sampling frame**

Domestic dwellings that have had a BER assessment carried out and use natural gas as their main space heating fuel.

#### **20.1.2. Sampling design**

Not applicable.

#### **20.1.3. Survey size**

Not applicable.

#### **20.1.4. Survey technique**

Domestic BER data was collected and produced by the SEAI using standardised software.

### **20.2. Frequency of data collection**

Domestic BER data is collected each time an audit is carried out on a dwelling. Gas consumption data is collected each time a meter reading is taken or estimated.

### **20.3. Data Collection**

The collection of the Domestic BER data is the responsibility of the SEAI and the collection of the gas consumption data is the responsibility of GNI. GNI gas meter data are based on a mixture of actual and estimated meter readings.

#### **20.3.1. Type of Survey/Process**

Administrative data based on the assessment of the energy performance of a domestic dwelling and gas meter data based on usage.

#### **20.3.2. Questionnaire (including explanations)**

<https://www.seai.ie/home-energy/building-energy-rating-ber/support-for-ber-assessors/domestic-ber-resources/deap4-software/>



### **20.3.3. Survey Participation**

Domestic BERs are mandatory for all dwellings offered for sale or rent since 2009 and required when applying for some grants to improve energy performance. Gas meter data is collected for all dwellings the use gas as their main space heating fuel for billing purposes.

### **20.3.4. Data Capture**

Data on the dwelling is collected by the SEAI using standardised software:

<https://www.seai.ie/home-energy/building-energy-rating-ber/support-for-ber-assessors/domestic-ber-resources/deap4-software/>

## **20.4. Data Validation**

Not applicable.

## **20.5. Data Compilation**

The Eircode was used as the matching variable between the building energy ratings and gas consumption files. The CSO supplemented the building energy ratings file with Eircodes from an ESB electricity customer file. This was possible because the meter point reference number (MPRN) was in both files. This step added more Eircodes to the BER file.

The networked gas microdata contained an Eircode and geo-coordinate linking variables to GeoDirectory, which is a national register of post delivery points. The gas meter data were matched by the CSO to GeoDirectory using the X/Y coordinates. The Eircode in GeoDirectory was compared with the Eircode in the gas meter microdata as a data quality check.

The building energy ratings file contained audits that were undertaken in 2009 to 2020. Only dwellings with natural gas as their main space heating fuel and a total floor area of 10 or more square metres were used. For dwellings with more than one energy audit, only the latest was used.

There were 210,500 BER records matched compared with 363,298 audits with mains gas space heating in the Q4 2020 Domestic Building Energy Ratings release.

### **20.5.1. Imputation (for Non-Response or Incomplete Data Sets)**

No imputation is done, only matched records are used to produce the tables in the release.

#### **20.5.1.1. A7. Imputation rate**

Not applicable.

### **20.5.2. Grossing and Weighting**

Not applicable.

## **20.6. Adjustment**

Not applicable.





### **20.6.1. Seasonal Adjustment**

No adjustment was made for variations in the annual temperature. A cold Winter is likely to cause an increase in gas consumption.

## **21. Comment**