

# Building Energy Rating (BER) for Non Domestic Buildings

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## Presentation Outline

- Energy Performance of Buildings Directive (EPBD)
- Transposition of EPBD Requirements
- Role of SEAI
- Building Energy Rating (BER)
- Demonstrating compliance with specific aspects of Part L of the Building Regulations
- Consideration of alternative energy systems for new buildings over 1,000m<sup>2</sup>
- BER Statistics
- Implications for Building Control

# Energy Performance of Buildings Directive (EPBD)

EN

Official Journal of the European Communities

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**DIRECTIVE 2002/91/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 16 December 2002  
on the energy performance of buildings**

## Main EPBD Requirements

- Energy Performance Certificate / Building Energy Rating (BER) certificate required when buildings are constructed, sold or rented
- Display Energy Certificates required for buildings over 1,000m<sup>2</sup> occupied by public authorities
- Consideration of alternative energy systems for new buildings over 1,000m<sup>2</sup>
  - Decentralised energy supply systems based on renewable energy
  - Combined Heat and Power (CHP)
  - District or block heating or cooling, if available
  - Heat pumps
- Inspection of boilers
- Inspection of air conditioning systems

## Transposition of EPBD Requirements

- S.I. No. 666 of 2006
  - Building Energy Rating
  - Alternative Energy Systems
  - Display Energy certificates
- S.I. No. 229 of 2008
  - Building Energy Rating
- S.I. No. 259 of 2008
  - Building Energy Rating
- S.I. No. 591 of 2008
  - Display Energy Certificates

## Role of SEAI

- SEAI is the designated Issuing Authority
- Provision of methodologies and calculation software
- Defining rules for competence and conduct
- Administering National BER Scheme:
  - Registering BER assessors
  - Processing BER assessments
  - Hosting BER registers
  - Quality Assurance and auditing
  - Helpline
- Promoting awareness of BER
- Advice and support to Government Departments

## Building Energy Rating (BER)

- Seller provides BER Certificate and Advisory Report to prospective buyers or tenants when a building is:
  - Constructed
  - Sold or
  - Rented
- Provisional BER Certificate and Advisory Report if selling off plans

## Exemptions

- a national monument for the purposes of the National Monuments Acts 1930 to 2004, including a recorded monument under the provisions of Section 12 of the National Monuments (Amendment ) Act 1994 or a registered historic monument under the provisions of the Section 5 of the National Monuments (Amendment) Act 1987
- a protected structure or proposed protected structure within the meaning of the Planning and Development Acts 2000 to 2006
- a building used as a place of worship or for the religious activities of any religion
- a temporary building as defined in Classes 10 to 13 of the Third Schedule to the Building Regulations 1997 (S.I. No 497 of 1997)
- an industrial building not intended for human occupancy over extended periods and where the installed heating capacity does not exceed 10 W/m<sup>2</sup>
- a non-residential agricultural building where the installed heating capacity does not exceed 10 W/m<sup>2</sup>
- a stand alone building with a total useful floor area of less than 50m<sup>2</sup>

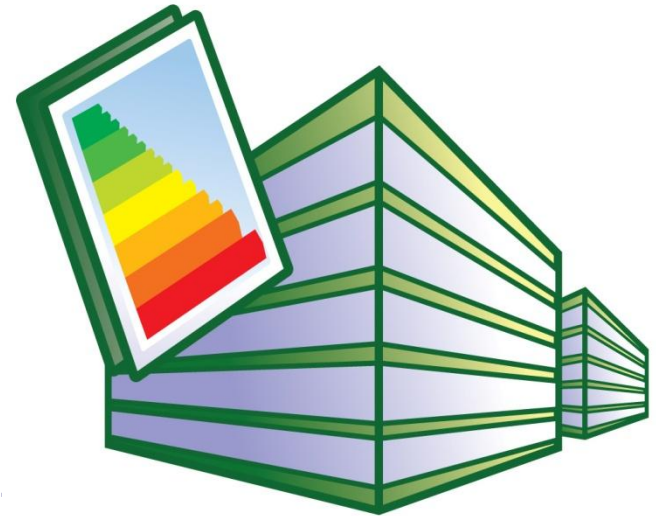
**NOTE: Short term lettings are NOT exempt**



## Introduction of BER for Non Domestic Buildings

- July 2008 - New Non Domestic Buildings\*
- January 2009 - Existing Non Domestic Buildings

\* Transitional exemption for new non domestic buildings that applied for planning permission before 1 July 2008 and substantially complete by 1 July 2010



# Non Domestic BER Certificate

- Calculated using official method
- Aligned with pr EN 15217
- Principal scale based on ratio of primary energy kWh/m<sup>2</sup>/year relative to notional building
- Secondary scale based on ratio of CO<sub>2</sub>/m<sup>2</sup>/year relative to notional building
- Must be produced by registered BER assessor
- Valid 10 years unless changes are made to building

NEAP Version X.Y.Z

## Building Energy Rating (BER)

BER for the building detailed below is: **C1**

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO<sub>2</sub> emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO<sub>2</sub> emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

|   |  |                               |
|---|--|-------------------------------|
| Name of Building,<br>Street Name One, Street Name Two,<br>Town Name One, Town Name Two,<br>County Name One, County Name Two | BER Number: XXXX-XXXX-XXXX-XXXX-XXXX               | Date of Issue: Day Month Year |
| Building Type: XXXXXX   | Useful Floor Area (m <sup>2</sup> ): XXXXXXXXXXXXX | Valid Until: Day Month Year   |
| Main Heating Fuel: XXXXXXXXXXXXX  | Building Environment: XXXXXXXXXXXXX                | BER Assessor No.: XXXXXX      |
|   |  | Assessor Company No.: XXXXXX  |
|   |  | Assessor Scheme: XXXXXX       |

### Building Energy Rating (Indicator)

**MOST EFFICIENT**

|       |    |
|-------|----|
| <0.17 | A1 |
| >0.17 | A2 |
| >0.34 | A3 |
| >0.50 | B1 |
| >0.67 | B2 |
| >0.84 | B3 |
| ≥1.00 | C1 |
| ≥1.17 | C2 |
| ≥1.34 | C3 |
| ≥1.50 | D1 |
| ≥1.75 | D2 |
| ≥2.00 | E1 |
| ≥2.25 | E2 |
| >2.50 | F  |
| >3.00 | G  |

**LEAST EFFICIENT**

### Carbon Dioxide (CO<sub>2</sub>) Emissions Indicator

**BEST**

0

1.0

2.0

**WORST**

>3.0

Calculated annual CO<sub>2</sub> emissions: XXX kgCO<sub>2</sub>/m<sup>2</sup>/yr

YYY

The less CO<sub>2</sub> produced, the less the building contributes to global warming.

**IMPORTANT:** This BER is calculated on the basis of data provided to and by the BER Assessor, and using the version of the assessment software quoted above. A future BER assigned to this building may be different as a result of changes to the building, its use or the assessment software.

## Non Domestic Energy Assessment Procedure (NEAP)

- Methodology for demonstrating compliance with specific aspects of Part L of the Building Regulations.
- Generates Building Energy Rating and advisory report
- Energy consumption is expressed in kWh/m<sup>2</sup>/yr and the CO<sub>2</sub> emissions expressed in kg CO<sub>2</sub>/m<sup>2</sup>/yr.
- NEAP permits use of approved software or default calculation tool, Simplified Building Energy Model.
- SBEM, based on CEN standards, was developed by BRE on behalf of the UK Department of Communities and Local Government.

# Demonstrating compliance with specific aspects of Part L of the Building Regulations

- Building complies with specific aspects of Part L of the Building Regulations
- Carbon performance Coefficient (CPC) 0.78 less than or equal to Maximum Permitted Carbon Performance Coefficient (MPCPC) 1.0
- Energy performance Coefficient (EPC) 0.76 less than or equal to Maximum Permitted Energy Performance Coefficient (MPEPC) 1.0
- U-values satisfy those specified in the overall heat loss method in the Building Regulations (Ireland) Part L

## BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) Part L

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

### Example building

Date: Tue Jul 15 16:45:53 2008

#### Administrative information

##### Building details

Address: Street Name One, Street Name Two, Town N

##### Certification tool

Calculation engine: SBEM

Calculation engine version: v3.2.b

Interface to calculation engine: SBEM

Interface to calculation engine version: v3.2.b

BRIRL compliance check version: v3.2.b

##### Occupier details

Name: John Jones

Telephone number: 987654321

Address: Any Road, Dublin,

##### Certifier details

Name: Energy Assessor

Telephone number: 9999999999

Address: <insert address>, <insert county>.

#### Primary Energy Consumption and CO2 Emissions

The Energy Performance Coefficient (EPC) and Carbon Performance Coefficient (CPC) satisfy the values specified in the Building Regulations (Ireland) Part L

|  |                      |
|--|----------------------|
| Calculated CO2 emission rate from reference building               | 170 kgCO2/m2.annum   |
| Calculated CO2 emission rate from actual building                  | 132.3 kgCO2/m2.annum |
| Carbon Performance Coefficient (CPC)                               | 0.78                 |
| Maximum Permitted Carbon Performance Coefficient (MPCPC)           | 1                    |
| Calculated primary energy consumption rate from reference building | 749.4 kWh/m2.annum   |
| Calculated primary energy consumption rate from actual building    | 568.4 kWh/m2.annum   |
| Energy Performance Coefficient (EPC)                               | 0.76                 |
| Maximum Permitted Energy Performance Coefficient (MPEPC)           | 1                    |

#### Heat Transmission through Building Fabric

The U values satisfy those specified in the overall heat loss method in the Building Regulations (Ireland) Part L

| Element - (Overall heat loss method)  | U <sub>max</sub> | U <sub>calc</sub> |
|---------------------------------------|------------------|-------------------|
| Walls                                 | 0.37             | 0.24              |
| Floors (ground and exposed)           | 0.37             | 0.15              |
| Roofs                                 | 0.25             | 0.25              |
| Windows, roof windows, and rooflights | -                | 2.1               |
| Personnel doors                       | -                | 2                 |
| Vehicle access & similar large doors  | -                | 0                 |
| High usage entrance doors             | -                | 0                 |
| Area-weighted average of all elements | 0.62             | 0.33              |

U<sub>max</sub> = Maximum area-weighted average U-values (W/m2K)

U<sub>calc</sub> = This building's calculated area-weighted average U-values (W/m2K)

## Consideration of Alternative Energy Systems for New buildings over 1,000m<sup>2</sup>

- Applies to the design of any large building for which a planning application is made, or a planning notice is published, on or after 1 January 2007
- Consideration of alternative energy systems for new buildings over 1,000m<sup>2</sup>
  - Decentralised energy supply systems based on renewable energy
  - Combined Heat and Power (CHP)
  - District or block heating or cooling, if available
  - Heat pumps
- The results of the consideration of the feasibility of alternative energy systems ... shall be incorporated in a report on the design of the relevant large building and shall be retained by the person who commissioned that building for a period of 5 years from the date of completion of the building and shall be produced, on demand, to the building control authority ....
- Proceedings for an offence under this Part may be brought and prosecuted by the building control authority ....

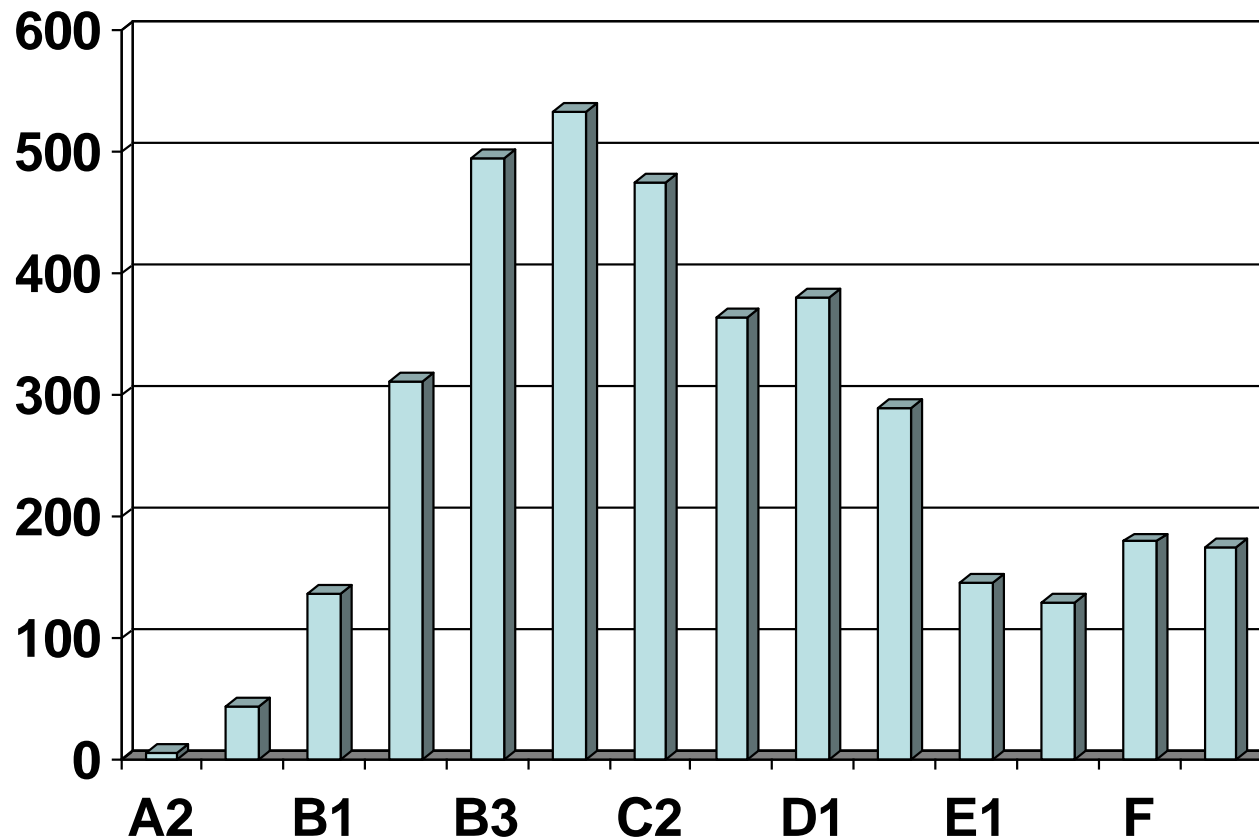
## Enforcement

- Building Control Authorities primarily responsible for enforcement
- Penalties apply to a person offering a building for sale or rent or any agent acting on their behalf
- Penalties include:
  - a fine of up to €5,000 or
  - up to three months in prison or both

## BER Statistics

- Non Domestic BERs published 3,659
- Registered Non Domestic BER assessors 434
- Certified Assessors (including registered assessors) 530
- Number of Active Assessors (with published ratings) 298

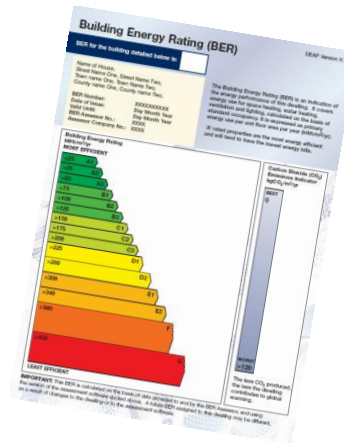
## Non Domestic BER Grades





# Implications for Building Control

- Energy Performance of Buildings Regulations (S.I. No. 666 of 2006) and subsequent amendments
- Building Energy Rating
- Alternative Energy Systems assessment



## Further Information

- Building Energy Rating (BER) helpline
  - 1890 734 237
  - [info@ber.seai.ie](mailto:info@ber.seai.ie)
  - [www.seai.ie/ber](http://www.seai.ie/ber)

The screenshot shows the SEAI Building Energy Rating (BER) website. The browser window title is "SEAI - BER Homepage - Windows Internet Explorer". The address bar shows "http://www.seai.ie/Your\_Building/BER/". The page content includes a navigation menu, a search bar, and a main heading "Building Energy Rating (BER)". Below this, there are several sections: "Assessors", "Householders", "Housing Developers and Designers/Specifiers", "Training Providers", and "BER for non-domestic buildings". A "General Information" section contains links to "What is Building Energy Rating (BER)?", "When is a BER required?", "Who will carry out a BER?", "Legislation and background", and "View our TV ad here". A sidebar on the left lists various programs and services under "Your Building". At the bottom, there is a footer with contact information and logos for the Irish Government and the European Union.

# Energy Show 2010 - RDS Dublin 14<sup>th</sup> and 15<sup>th</sup> April

**the energy show 2010**  
RDS Dublin 14<sup>th</sup>-15<sup>th</sup> April



# Thank you



EUROPEAN REGIONAL  
DEVELOPMENT FUND



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Programmes 2007 - 2013

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*The Sustainable Energy Authority of Ireland  
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and the European Union.*