

## How is a BER calculated?

The Dwelling Energy Assessment Procedure (DEAP) is adopted as the Irish official method for calculating the energy performance of dwellings.

The calculation is based on the energy balance taking into account a range of factors that contribute to annual energy usage, associated CO<sub>2</sub> emissions and energy costs for the provision of space heating, water heating, ventilation and lighting of a dwelling.

These factors include:

- Size, geometry and exposure of the dwelling
- Materials used for construction of the dwelling
- Thermal insulation of the different elements of the building fabric
- Ventilation characteristics of the dwelling and ventilation equipment
- Efficiency, responsiveness and control characteristics of the heating system(s)
- Solar gains through glazed openings of the dwelling
- Thermal storage (mass) capacity of the dwelling
- The fuel used to provide space and water heating, ventilation and lighting
- Renewable and alternative energy generation technologies incorporated in the dwelling.

The calculation is made using standardised assumptions regarding occupancy, levels and durations of heating, usage of domestic electrical appliances, etc. It is thus independent of the individual characteristics of the household occupying the dwelling when the rating is calculated, for example:

- household size and composition;
- individual heating patterns and temperatures;
- ownership and efficiency of particular domestic electrical appliances.

The procedure calculates a monthly energy balance for space heating and aggregates these figures over a heating season spanning October to May inclusive. It then takes account of hot water energy demand based on the size of the dwelling, of heating system control, responsiveness and efficiency characteristics and of fuel characteristics. Finally, account is also taken of calculated lighting energy (electricity) requirement in determining the overall results.

Calculated results are not affected by the geographical location, so that a given dwelling specification will yield the same result in all parts of Ireland in respect of Building Regulations compliance and BER.

The procedure used for the calculation is based on the European Standard IS EN 13790: 2004, and draws heavily on the UK's Standard Assessment Procedure (SAP) 2005.