

About CarbonBuzz

CarbonBuzz in a few words

CarbonBuzz is an RIBA CIBSE platform for benchmarking and tracking energy use in projects from design to operation. It is intended to encourage users to go beyond compliance of mandatory Building Regulations calculations and refine estimates to account for additional energy loads in-use. The platform allows users to compare design energy use with actual energy use side by side to help users close the design and operational energy performance gap in buildings.

Why it is needed

On an individual user and project level, CarbonBuzz helps better estimate actual energy performance, track that performance throughout design and construction and for building portfolios, benchmark against relevant and current buildings and understand major risks of underperformance. All of this can be easily shared with relevant project and building stakeholders to improve collaboration and energy awareness.

On a collective level, through the entry of data and energy efficiency features, the CarbonBuzz platform contributes to a contemporary and comprehensive database of forecast and actual building energy use for the UK. It will become an invaluable resource for informing future benchmarking, raising industry awareness about the performance gap and assisting further research into current trends in building energy use. As Building Regulations head towards setting Zero Carbon as standard, CarbonBuzz will assist with the understanding of energy consumption beyond regulated energy and will help to indicate how best to reduce actual carbon emissions.

Relation to Building Regulations and standards

Typically, a building's energy use and carbon emissions are calculated through compliance tools for Part L Building Regulations; however, these tools were not intended to predict detailed energy consumption, but instead to determine compliance. Therefore, when calculating and analysing a building's energy use, more complete estimates of operational energy use at the design stage are required to provide an accurate baseline rather than the reference provided by Part L calculations. The difference in energy use between compliance calculations and complete energy predictions is one of the causes behind the performance gap between the predicted energy consumption and actual energy consumption. The performance gap highlighted through the CarbonBuzz platform is in line with the findings of the recently published CIBSE TM99 paper, 'Evaluating operational energy use at design stage'.

The CarbonBuzz platform is compatible with all UK legislation documents: it allows users to enter data directly from Part L Building Regulations outputs, CIBSE TM22 inputs, Display Energy Certificate (DEC) reports, real life Post Occupancy Evaluation (POE) data and supports all forms of manual data entry. The platform encourages users to enter building loads and occupant loads, also known as regulated and

unregulated energy use, to ensure that all types of energy use are accounted for, differently from Part L, which assesses regulated energy only. Energy uses contributing to occupancy loads include: special energy uses (e.g. pools, laundry), separable energy uses (e.g. server rooms) building management related decisions, occupancy, building operational hours, IT infrastructure, and plug-in loads. By inviting users to submit data for unregulated energy use, the platform allows for the comparison of the design stage estimate and the actual metered consumption within existing CIBSE benchmarks. The platform then allows users to verify the effectiveness of their building design and operational procedures against CIBSE TM46 benchmark values. For most new buildings, it is generally expected that design energy use would be lower than the TM46 figures.

The CarbonBuzz database

In addition to TM46 benchmarks, users will be able to compare their building's energy use to similar-sector buildings in the UK using the CarbonBuzz database. The platform collates the anonymised data entered and develops statistical benchmarks that can be tailored according to specific building functions and characteristics, which will enable more accurate and comprehensive benchmarking of buildings in the UK.

All data on CarbonBuzz is anonymised (unless the user decides to publish the project), protected and regulated to ensure confidence in the tool. To improve the accuracy of the database, an auditor provides regular quality assurance checks on the data.

The Calculation methodology

The calculations are based on annualised energy figures entered by the user, and converted to CO₂ based on DEFRA emission factors (*2012 Guidelines to Defra/ DECC's GHG Conversion Factors for Company Reporting*) corresponding to the fuel chosen by the user. The data used includes unregulated energy use, in order to provide a whole energy calculation.

This is similar to a Display Energy Certificate (DEC) methodology, but also applied to design stage figures, in order to allow the like-for-like comparison of design and operational data. It is therefore not intended to align with Part L or Energy Performance Certificate (EPC) estimates, given the inclusion of unregulated energy and DEFRA emission factors.

These figures are grouped as electrical and non-electrical, and can either be entered as totals or as a break-down of end uses (e.g. lighting consumption as one of the contributors to electrical energy consumption). At the highest level of data granularity, users can take load and operational figures to generate energy consumption of detailed uses (e.g. installed lighting capacity and operation hours to generate lighting consumption), in effect providing the capability of carrying out a TM22 calculation via CarbonBuzz.

The energy and CO₂ results are displayed as totals per fuel and per end use. The former are directly comparable to figures for similar building types from both TM46 and the CarbonBuzz database, and the latter can be compared with database projects which show an end use breakdown.