

This is one of our most popular charts from the BBP’s Real Estate Environmental Benchmark (REEB). This latest update (based on 2022-23 data) compares the Energy Performance Certificate (EPC) scores for 427 of our members’ office buildings, with their actual energy use intensity (measured in kWh/m<sup>2</sup>/year).

The EPC for an office is based on the physical characteristics of the building – e.g. it’s walls, windows, and building services. [An approved government calculation](#) takes this information and predicts its energy use in operation, which

is reflected in the score it receives. The offices included in the chart below are grouped according to their EPC across the x-axis.

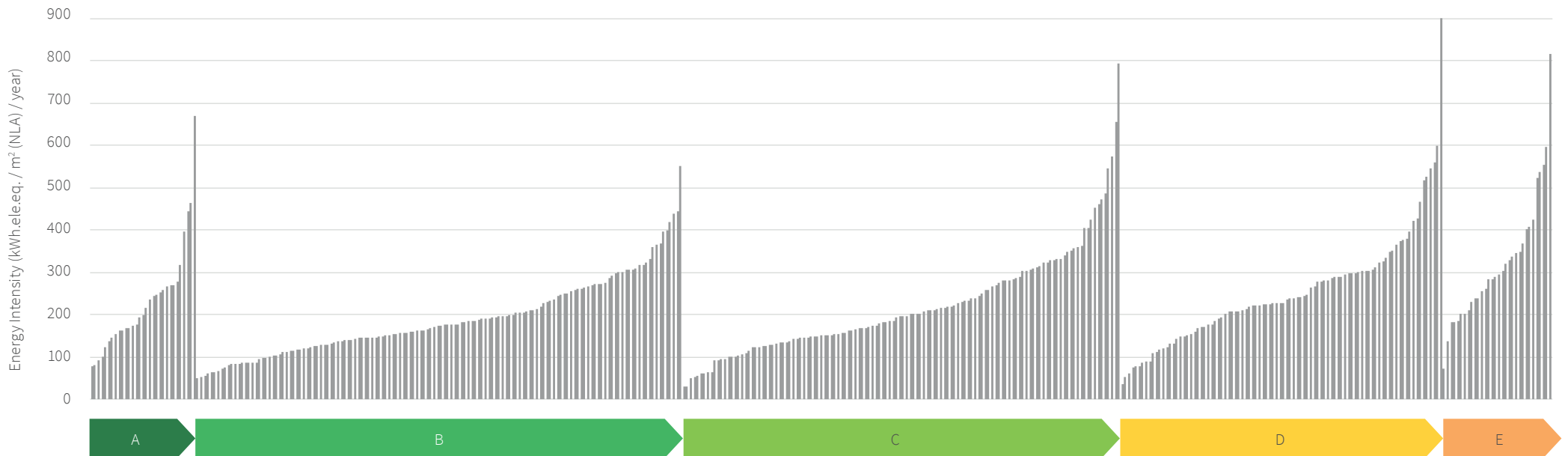
The energy intensity of each office is plotted on the y-axis, and is based on the actual annual energy use of the office, divided by its floor area. This energy intensity value normalises for the fact that we would expect a bigger office to use more energy, and vice versa.

The chart shows a very weak correlation between the modelled/energy performance of an office (based on its EPC), and its actual energy performance in use.

The BBP have been producing this chart from the REEB project for a number of years, and the result has always shown a weak correlation between EPC scores and actual energy use intensity. What has been changing is the distribution of EPC results – the chart below shows that 41% of the member offices are now rated A or B, up by 16% from the previous year. This has likely been driven by the increased focus on EPCs through government policy and sustainable finance trends, alongside some recent changes to the methodology for producing EPCs. It makes this chart more important than ever, as whilst EPCs do have value, they will not alone deliver the energy efficient offices required for future decarbonisation pathways.

**41% OF THE MEMBER OFFICES INCLUDED ARE NOW RATED A OR B, UP BY 16%...**

This trend alone will not deliver the energy efficient offices required for future decarbonisation pathways.



## Why we produce this analysis

This analysis is relevant for a number of reasons:

It shows what many people who manage buildings instinctively know to be the case – that buildings often do not operate as efficiently as designed, and that a well-managed building is key, regardless of its built characteristics.

For designers and those refurbishing buildings, it shows that a high EPC score – whilst having benefits, is no guarantee that the building will actually perform well, and that they need to commission and handover buildings carefully as part of a holistic approach to making buildings energy efficient in practice.

For policymakers, and those building real estate organisational strategies – it shows some of the limitations of focusing solely on EPC improvements to drive asset/portfolio performance.

## Limitations of the analysis

This analysis is confined to office buildings at present, and is based on 427 BBP member buildings.

It is not clear whether the same poor correlation for offices applies to other building types, and across the wider national building stock. There have been [some studies looking at this](#), but more research is needed to understand the correlations between EPCs and actual energy use intensity for other building types.

Moreover, this analysis does not mean that EPCs are not useful for office buildings. A higher EPC score will equate to benefits for the building assessed, but it should be seen as one indicator of an efficient office, and a corresponding focus on energy performance in-use is also critical.

## How can this analysis go further?

This analysis shows how ‘operational performance’ compares with ‘designed performance’ for office buildings.

There are large public datasets available for both ‘[operational energy use data](#)’ and ‘[EPC Data](#)’ offering potential for doing this analysis on a larger scale, both in the breadth of building types covered and the numbers of assets involved. At present the maturity & granularity of the public datasets is limited, and cross referencing between them can be very challenging. However, if these obstacles can be overcome, it would help understand the extent to which EPCs influence performance in-use across the building stock as a whole.

As the market for building energy ratings continues to evolve, this type of analysis can also be used to show which rating types best correlate to actual energy performance in-use. For example, the BBP have previously produced analysis showing a [stronger correlation with indicative NABERS UK ratings](#).

## WHAT IS REEB AND WHAT ARE REEB INSIGHTS?

The BBP’s Real Estate Environmental Benchmark (REEB) project collects asset level data from BBP members to produce public benchmarks for the sector, facilitate working groups and events, and support wider industry initiatives to improve the environmental performance of buildings.

REEB Insights provide additional analytical outputs – focused on a single topic – to improve professional understanding, generate discussion, and support those wishing to build upon the BBP’s analysis.