UCL ENERGY INSTITUTE

CarbonBuzz an RIBA CIBSE platform

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Summary of Audits Performed on CarbonBuzz by the UCL Energy Institute

The UCL Energy Institute has conducted a number of audits on the data contained in the CarbonBuzz platform since 2010 and will continue to do so in the future, with reports being published on the CarbonBuzz website. The audits examine the usage of the platform and analyse the data available to provide insights into issues such as the performance gap between design predictions and operational performance. The audits have shown a steady increase in the numbers of organisations using the platform as well as the numbers of projects and publicly displayed case studies. At the time of launching the new CarbonBuzz platform (6th June 2013), there are some 600 projects in the database and almost 200 companies entering data for their buildings.

Organisations using CarbonBuzz are now spread across all aspects of building design, operation and ownership; with architects, engineers and other consultants making up around 50% of the user base. There are a number of large property owning organisations from both the private and public sector that are using the platform to track the performance of the buildings within their portfolios.

The dataset now comprises buildings from the following categories: Civic & Community, Office, Education, Health, Residential, Retail, Sport & Leisure, Hospitality and Industrial. Offices are the largest contingent at around 40% of all buildings and Education is the second largest at just under 30%.

From the most recent audit conducted in April 2013 an analysis of the energy data for office and school buildings which contain both design and in-use records showed the following disparities (performance gaps):

Category	Mean Design Total Heat Consumption (kWh/m^2/yr)	Mean Actual Total Heat Consumption (kWh/m^2/yr)	Factor Change Design to Actual - 'Performance Gap'	Mean Design Total Electricity Use (kWh/m^2/yr)	Mean Actual Total Electricity Use (kWh/m^2/yr)	Factor Change Design to Actual - 'Performance Gap'
Office	46	73	1.59	71	121	1.71
Education	57	84	1.48	56	106	1.90

It is interesting to note that the design energy data comes almost equally from SBEM (30%), EPC (40%) and Full Energy Model (30%). In only very few cases have the 'unregulated' loads (associated with energy uses other than heating, hot water, lighting and HVAC) been explicitly included in design stage data and this is likely to be the most significant cause of the performance gap. Also, there is no marked difference in the performance gap between those buildings with design data emanating from SBEM and those where it comes from a Full Energy Model. Under-estimation of electricity use at the design stage seems to be greater than the underestimation of energy consumption for heating (including hot water and other non-electric fuel uses).

The above is only a glimpse at the full scope of the audits conducted by UCL and whilst the full audits provide many valuable insights into the performance gap and other issues, it will be forever true that more can be said if CarbonBuzz has more data.

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