

CIBSE TM54 (2022) - Overview of Updates

What is CIBSE TM54 and what is included in the update?

CIBSE TM54, entitled “Evaluating Operational Energy Use at the Design Stage”, is a guidance document providing practical steps for how to undertake predictive energy modelling of buildings. The methodology can be applied to any type of building, such as new or existing buildings. The document is written mainly for engineers and consultants working in the United Kingdom (UK).

TM54 was originally published in 2013. It was well received by industry, for example, being referenced in: Building Research Establishment Environmental Assessment Method (BREEAM); and several institutional sustainability standards such as University College London’s (UCL’s) Sustainable Building Standard. In 2022, CIBSE TM54 underwent a significant update and is also now referenced in the latest revision to Building Regulations Part L.

Key updates include:

- Greater emphasis on selecting the most appropriate modelling methodology at the start of the project (for example, Heating, ventilation, and air conditioning (HVAC) modelling, where appropriate).
- More detailed guidance around risks, target setting, scenario testing and sensitivity analysis.
- New approaches for benchmarking results, for example, high, low, expected and a new ‘worst case’.
- Updates to calculation methodology steps, for example, greater detail and considerations for fresh air loads and controls within ‘Step 11 - Modelling HVAC systems and their controls’.
- Introduction of a new ‘TM54 implementation matrix’ that sets out assumptions and confidence levels. It also provides a report structure, which makes it easier to compare and interrogate reports.
- More guidance on how to apply the approaches to residential buildings.
- Updates to thematic issues referenced and related publications, for example, net zero, post occupancy evaluation, National Australian Built Environment Rating System (NABERS) UK, The Passivhaus Planning Package (PHPP), UK Green Building Council (UKGBC), CIBSE TM61 to TM63, etc.

Mark Dowson, Buro Happold, February 2022

Key Issues

- Part L 2021 requires that buildings above 1,000m² should include a forecast of actual energy use in kWh/year, which is broken down by fuel type as part of the handover information. CIBSE TM54 (2022) is referred to as one of the applicable routes to achieve this requirement.
- Operational energy modelling should reduce the gap between modelled results and reality. However, a performance gap will always exist. It is important that the client should understand this aspect.
- TM54 (2022) recommends that where HVAC energy is expected to comprise a significant portion of energy use (for example, more than 25% to 30%), then the use of detailed HVAC modelling should be considered.

Links

- CIBSE TM54 - Evaluating Operational Energy Use at the Design Stage (2022): <https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y00000KHZqRQAT>
- CIBSE TM61 – Operational performance of buildings (2020): <https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q3Y0000010NKeQAN>
- CIBSE online energy benchmarking tool: <https://www.cibse.org/knowledge/benchmarking>
- UCL Sustainable Building Standard: <https://www.ucl.ac.uk/estates/policies/2020/jul/ucl-sustainable-building-standard>
- CIBSE EPG Carbon Bite - TM54 (2013): <https://www.cibse.org/getmedia/2c7d1fa0-88d7-4c60-8876-6676500c9ceb/Carbon-Bites-TM54.pdf.aspx>