



# A Guide to SAP Calculations (New Build)

SAP calculations are a Building Regulations requirement for all new houses & conversions and some extensions. The Standard Assessment Procedure (SAP) is a measure of the energy efficiency of a property and must be carried out by an accredited company such as MES Building Solutions.

## What does SAP measure?

SAP is the calculation of the annual energy cost for space heating, water heating, ventilation and lighting. It also quantifies the total CO<sub>2</sub> emissions from the property each year and this information is also used to produce the Energy Performance Certificate.

## Dwelling Emission Rate < Target Emission Rate

SAP sets a target for all new dwellings based on a notional dwelling of the same size and dimensions floor area built to defined specification (TER). The new dwelling (DER) must produce lower CO<sub>2</sub> emissions than the TER to achieve a Building Regulations pass.

## Dwelling FEE < Target FEE

Part L 2013 also sets a fabric efficiency target for all new dwellings – the Fabric Energy Efficiency Standard (FEES). Only the performance of the building fabric is considered – use of renewables or high efficiency building services will not affect this. As with the carbon emissions, a TFEF based on a notional dwelling is calculated and the new dwelling's FEE must be lower than this target.

## What is involved?

- 1) *The Design Stage Calculation:* The initial calculations are done at design stage to ensure the property will meet the minimum SAP requirements.
- 2) *The 'As Built' Calculation:* When the property is finished an air leakage test is carried out and the Design Stage SAP calculations are updated to provide final SAP & FEE ratings and an EPC.

## Energy Performance Certificates (EPC)

All new houses and conversions must also have an EPC to fulfil Building Regulations requirements. These can only be produced by 'on-construction' accredited SAP assessment companies such as MES Building Solutions.

## What do we need from you?

To produce SAP calculations we require a full set of scale plans, preferably as .pdf's (inc. sections, elevations and a site plan showing North). We also need our SAP Form completing which we can send to you or it can be downloaded from our website.

## What influences SAP?:

- The shape & orientation of the dwelling: south facing windows benefit from passive solar gain
- Boiler efficiency and type of fuel used
- Thermal efficiency of walls, floors and roof
- Thermal efficiency of windows and doors
- Secondary heating: open fire's score very badly however enclosed log burners score well
- Underfloor heating tends not to score well unless connected to a heat pump
- Controllability of heating systems
- Proportion of low energy light fittings
- Thermal bridging
- Solar panels, heat pumps, bio fuel boilers, certain wind turbines etc. can improve SAP ratings
- Air tightness testing results (we are also accredited Air Tightness Engineers)

## Conversions

All conversions should also have SAP calculations to fulfil Building Regulations requirements. This is done in a slightly different way to new-build homes but the principles are the same.

## Extensions

Extensions with lots of glass (more than the equivalent of 25% of the floor area) should also have a SAP calculation to ensure Building Regulations compliance.

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