RdSAP 10

20 June 2025

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Introduction

- The new version of RdSAP 10 was introduced on 15th June
  - Replaces RdSAP v9.94 which has been in use since 2015
  - Full details at: https://www.bregroup.com/sap/sap10/
- There are a number of technical changes to improve accuracy and incorporate ‘new technologies’ as well as updated emissions factors and revised criteria for identifying recommendations
- Fuel tariffs used for the energy efficiency rating calculation are unchanged.
  - This is to avoid much lower energy efficiency ratings for electrically heated homes

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Energy tariffs

- Tariffs used for the energy efficiency rating calculation are fixed for each version so that the ratings don't change as tariffs change
- Tariffs used for the estimation of annual energy costs and potential savings from improvement measures are updated every 6 months

	Mains gas	Electricity import	Electricity export
For energy efficiency rating	3.48	13.19	13.19
For energy costs and potential savings	5.60	26.06	5.81

Main technical changes

- Full window details always required and new window types for post 2022
- More details for ‘rooms in the roof’
- Inclusion of PV diverters and battery storage (if PV is present)
- More details for low energy lighting (LEDs and CFLs)
- More options for insulation thickness and type
- Heated basement details included if applicable
- Default U-values for solid brick walls revised to account for wall thickness (and U-values of stone walls revised)
- More hot water system details including numbers and types of shower and hot water tank size (litres) and heat loss (kWh/day) included if available
- Mechanical ventilation is treated as in full SAP allowing PCDB entry, still allowing default values
- Ventilation algorithm allows more options and air pressure test result can be used if available.
- Distribution losses from heat networks defaulted on dwelling age

These will take a bit more time, especially in a larger property. Assessors would like to charge more but competition may keep prices down.

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Windows

- Measurements of width and height for all windows
- Orientation and location of each window in the relevant wall or roof type,
- More glazing types (post 2022) and inclusion of shutters
- Draughtproofing assessed for each window and door (software will calculate the percentage) and draught lobby.

Impact on EER: Could be increased or decreased

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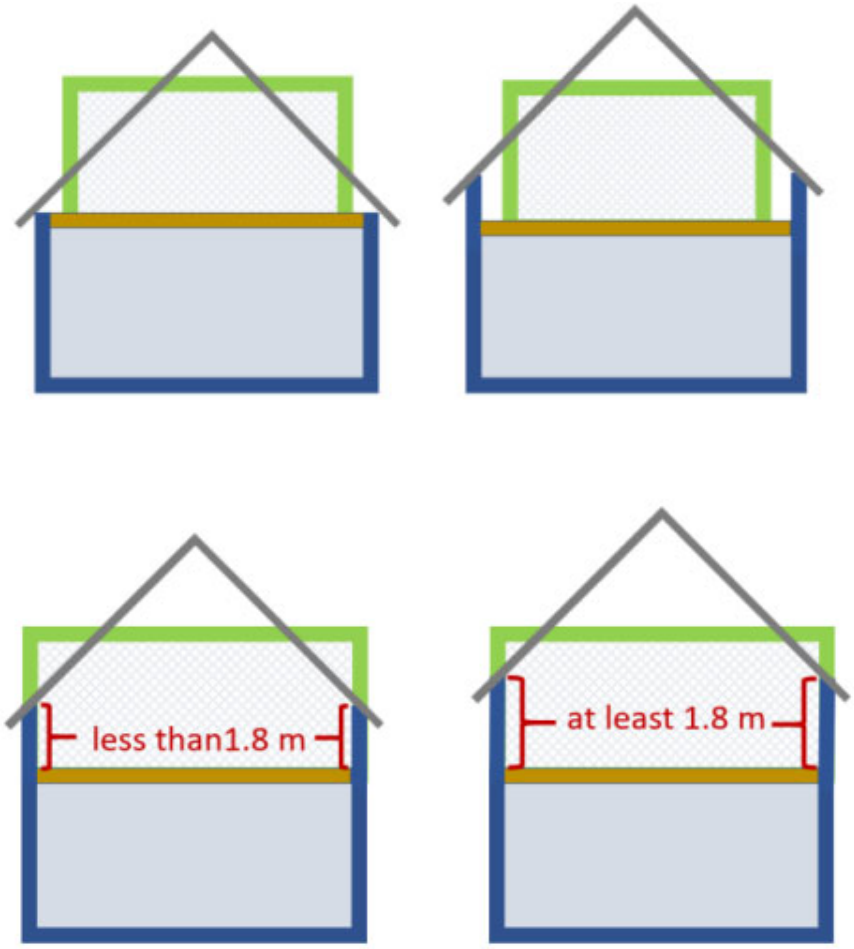
Rooms in the Roof



- More measurements required including gable width
- Type 1 fully within roof and Type 2 where there is a common wall
- Type of gable accounted for:
  - External, sheltered, party or connected

Impact on EER: Often increases as previous assumptions about heat loss areas were very pessimistic

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Rooms in the roof example

- Pre-1900 terraced house with room in the roof and gas boiler
- Gable walls sheltered

RdSAP 9.94	RdSAP 10	Change
53	57	+4

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Solar PV

- Proportion used in the dwelling is now calculated
- Is there an ‘export capable meter’?
  - If ‘yes’, all excess solar electricity is assumed exported with a value of 13.19p/kWh
  - If ‘no’, there is no benefit assigned to the excess solar generation
- PV diverters or PV batteries can be recorded
  - But will show no benefit unless there is no ‘export capable meter’ because reduction in export income (at 13.19p) is greater than reduction in water heating cost.

Impact on EER: No change if there is an ‘export capable meter’; otherwise, the rating is reduced (i.e. the value of PV is/remains artificially high in RdSAP provided there is an ‘export capable meter’)

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Lighting

- Introduced distinction between CFL and LED
- Record total number of bulbs (not fittings), number of LEDs, number of CFLs and number of incandescent bulbs
  - LEDs 100 Lm/W (9W)
  - CFLs 55 Lm/W (19W)
  - Incandescent 11.2 Lm/W (60W)

Impact on EER: Will increase if there are LEDs present

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Building fabric

- More options for insulation thickness and type
  - To nearest 25mm
  - Conductivity 0.04, 0.03 or 0.025
- Heated basement details included if applicable
- Default U-values for solid brick walls revised to account for wall thickness
- Revised formulae for U-values of stone walls from thickness

Wall thickness, mm	U-value, W/m2K
Up to 200 mm	2.5
200 to 280 mm	1.7
280 to 420 mm	1.4
More than 420mm	1.1

Impact on EER: Only significant for solid brick walls that are not single brick

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Hot water

- Numbers and types of shower
  - And number of baths
- Hot water tank size (litres) and heat loss (kWh/day) included if available

Hot water supply type	Default flow rate (l/min)	Default rated power (kW)
Vented hot water system	7 (existing dwellings) 8 (new dwellings)	-
Vented hot water system + pump	12	-
Combi boiler or unvented hot water system	11	-
Instantaneous electric shower	-	9.3
Unable to determine	9	-

Impact on EER: Will reduce the rating compared to a mixer shower if gas boiler - by two points in the example I have checked - but increases it by a point if electric heating.

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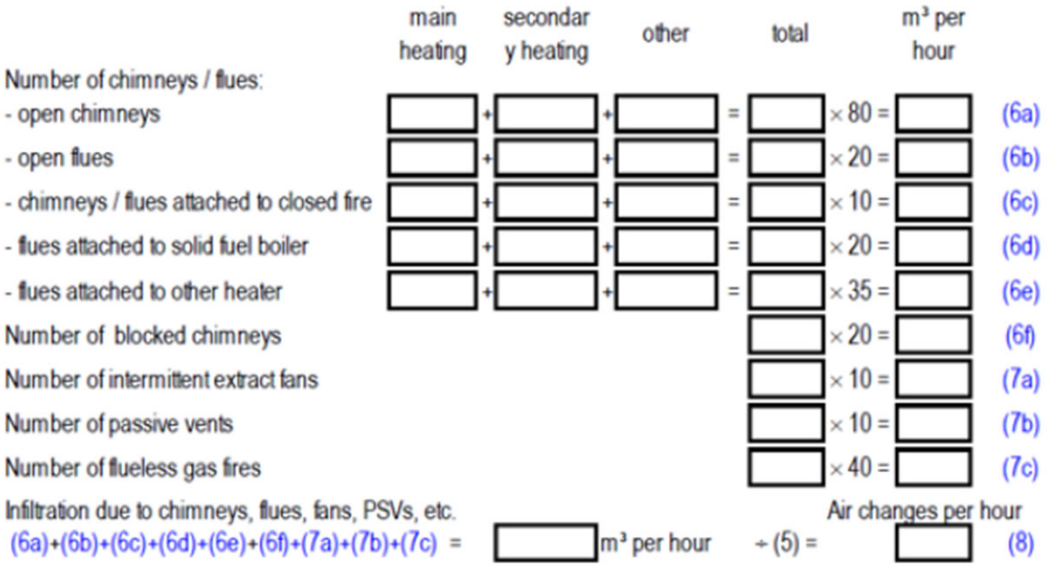
Ventilation

- More factors considered:
  - Open flues, blocked chimneys, intermittent extract fans, passive vents, flueless gas fires
- Open chimneys - assumed losses doubled
- Draught lobby
- Air pressure test result if available



	main heating	secondary heating	other	total	m³ per hour	
Number of chimneys / flues:						
- open chimneys		+	+	=	× 80 =	(6a)
- open flues		+	+	=	× 20 =	(6b)
- chimneys / flues attached to closed fire		+	+	=	× 10 =	(6c)
- flues attached to solid fuel boiler		+	+	=	× 20 =	(6d)
- flues attached to other heater		+	+	=	× 35 =	(6e)
Number of blocked chimneys					× 20 =	(6f)
Number of intermittent extract fans					× 10 =	(7a)
Number of passive vents					× 10 =	(7b)
Number of flueless gas fires					× 40 =	(7c)

Infiltration due to chimneys, flues, fans, PSVs, etc. (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(7a)+(7b)+(7c) = m³ per hour ÷ (5) = Air changes per hour (8)

Impact on EER: Rating reduced if these factors present, especially open chimneys. Offset slightly if draught lobby present.

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Mechanical ventilation

Wet Rooms	Flow Rate	Sfp	Efficiency
1	15	0.47	90
2	21	0.53	90
3	27	0.65	87
4	33	0.79	87
5	39	0.94	87
6	45	1.1	88

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MV Details:

MEV System: Itho HRU ECO 4

From: Itho Ventilation Ltd
Manufactured: 2008 - current
Main type: Balanced whole-house mechanical ventilation with heat recovery

Status: Normal

Type of mechanical ventilation	SFP, W/(litre/sec)	Heat recovery efficiency
Mechanical extract ventilation (centralised or decentralised), or positive input ventilation from outside	0.8	-
Balanced whole house mechanical ventilation, without heat recovery	2.0	-
Balanced whole house mechanical ventilation, with heat recovery	2.0	66%

- Continuously running fans
  - dMEV, cMEV, PIV or MVHR
- Select from Product Characteristics Database (PCDB) if possible
- Otherwise, very pessimistic defaults are used

Impact on EER: Rating reduced significantly if the defaults are used.

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Mechanical ventilation example

	RdSAP 10 EER
Baseline with two extract fans	77
With dMEV default	72
With Greenwood Unity CV3 dMEV	77
With MVHR default	71
With Itho HRU Eco4 MVHR	79
With Itho HRU Eco4 MVHR if approved and SFP confirmed on commissioning certificate	80

- Semi-detached bungalow with electric room heaters and solar PV

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Heat networks

- Select system from PCDB if possible
  - Only four systems in PCDB at present
- Otherwise, efficiency and distribution losses defaulted on dwelling age
  - Efficiency 80% boiler, 300% heat pump
  - DLF ranges from 1.2 to 1.5 (older better) whereas previously 1.1.
- Example 1967-76 flat SAP EER is three points lower (DLF 1.41).

Network name	Version Number	Provisional or actual data	
QE Olympic Park and Stratford City Heat Network	02	Forecast	Details
Monkerton Energy Centre	02	Forecast	Details
Greenwich Peninsula ESCO Ltd	01	Forecast	Details
Chilton Woods	01	Forecast	Details

Impact on EER: Rating reduced significantly if the defaults are used.

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Heat pump recommendations

- ASHP or GSHP no longer an alternative measure and only included if SAP EER is no worse than that with other heating systems.
  - Heat pumps won't be an EPC recommendation where there is gas as the ratio of electricity p/kWh over gas p/kWh is more than 4 (It is now 4.14 assuming 88.9% boiler efficiency 0 it needs to be below 3.28 for ASHP with radiators).
- Reasonably good efficiencies are assumed when modelling heat pumps as an improvement measure (much better than defaults).
  - 414% is the assumed efficiency for GSHP with underfloor heating - therefore a recommendation for a GSHP is possible if there is already underfloor heating.

	Radiators	Fan coils	Underfloor
Air source	328.2%	359.1%	359.7%
Ground source	374.5%	411%	414%

Solar PV recommendations

- PV diverter or battery if PV already present
  - And an addendum added to the EPC recommending these are considered if solar PV is recommended

Impact on EER:
In practice these recommendations (apart from the addendum) will not appear on an EPC because exported electricity is given the same value as electricity used in the dwelling.

The benefit of the solar PV recommendation will vary considerably according to whether or not there is an ‘export capable meter’.

	Without export meter	With export meter
Modern semi with gas boiler	84	92
Pre-1900 mid terrace	67	74

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Other recommendations

- Better U-value (0.16) for flat roof and room in the roof insulation
- Better U-value for double glazing, secondary glazing or insulated doors (1.4)
- Low energy lights to 100% with average 80 Lm/W (mix of CFL and LED)
- Separate time and temperature control for hot water if no separate hot water controls

Impact on EER: Better potential ratings where these measures are applicable

- Recommendation removed:
  - Party wall insulation

Impact on EER: Worse potential ratings where this measure is applicable (especially for a mid-terrace house)

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