

Technical note 2011/01

Overview

This technical note gives guidance on the calculations required for the Low Carbon Homes Scheme in Northern Ireland.

The scheme

The scheme aims to encourage the building of low and zero carbon homes in Northern Ireland, by offering full rate relief to:

- the first occupier of a new low carbon home for up to two years;
- the first occupier of a new zero carbon home for up to five years.

In order to qualify for relief the occupier must submit a low or zero carbon certificate prepared by the On Construction Domestic Energy Assessor at the same time as the EPC is issued. The certificates are prepared using calculation worksheets from the BRE web site and data from SAP 9.81 calculations.

Low carbon homes

To qualify as a low carbon home the dwelling must have:

- a DER which is no more than 56% of the TER (comparable to the 44% reduction for CSH level 4); and,
- a space heating requirement not exceeding 23 kWh/m².

Note that the whilst the first criterion can often be achieved by means of efficient heating systems and renewable technologies, the space heating requirement is affected by the thermal performance of the fabric, which will need to be substantially better than that required simply to comply with the building regulations.

The calculation worksheet requires (Figure 1):

- the space heating requirement, box 81 on the SAP 9.81 worksheet;
- the total floor area, box 5 on the SAP 9.81 worksheet;
- the DER;
- the TER;

12	Space Heating Requirement from SAP worksheet, item (81)	2500	kWh	
13	Total floor area of dwelling from SAP worksheet, item (5)	120.00	m ²	
14	Annual Space Heating Requirement, kWh per square metre of total floor area	20.83		
15			kg/m ²	
16	DER as reported by approved software from Regulations Checklist or DER worksheet	11.25		Insert in kg/m ² per year
17	TER as reported by approved software from Regulations Checklist or TER worksheet	21.24		Insert in kg/m ² per year
18	DER as percentage of TER	53.0%		
19				
20				
21	Conditions to be satisfied for rates relief			
22	1. Space Heating Requirement does not exceed 23 kWh/m ² /year	20.83	Yes	
23	2. DER does not exceed 56% of TER	53.0%	Yes	
24				

Figure 1. Data entry for low carbon homes worksheet

Zero carbon homes

To qualify as a zero carbon home the dwelling must have:

- a Heat Loss Parameter (HLP) no greater than 0.8 W/m²K;
- a DER no greater than zero;
- net CO₂ emissions no greater than zero (kg/m²/year): this includes emissions from household and cooking appliances.

The target of zero net CO₂ emissions means a dwelling will not qualify unless there is significant on-site electricity generation which offsets the emissions from domestic appliances. Generation may be by microCHP or CHP, photovoltaic panels or wind turbine either on the property or linked to the development by private wire (see Appendix M of the SAP 2005 (9.82) document).

The information for the first two criteria can be found in the DER worksheet; the HLP is given at box 38. The net CO₂ emissions are determined using the Zero Carbon Homes calculation worksheet, which requires:

- the HLP;
- the DER;
- the annual CO₂ emissions per m², box 113 or 120 on the SAP worksheet;
- the additional CO₂ emissions for disallowed biomass (only applies for biomass community heating schemes), box 107 or 115 on the SAP worksheet;
- the additional CO₂ emissions from allowable electricity generation.

12	Heat loss parameter (HLP) from either SAP or DER worksheet, item (38)	HLP =	0.75	
13				kg/m ²
14	DER as reported by approved software from Regulations Checklist or DER worksheet	DER =	-0.45	
15	Annual CO ₂ emissions per square metre of total floor area from SAP worksheet		-2.30	
16				m ²
17	Total floor area of dwelling from either SAP or DER worksheet, item (5)		80.00	
18	CO ₂ emissions for household and cooking appliances			14.18
19	Total CO ₂ emissions including household and cooking appliances			13.73
20	CO ₂ saving from additional low-energy lights and omission of secondary heating			-1.85
21				kg/year
22	Additional CO ₂ emissions offset for biomass CHP disallowed, value from SAP worksheet			
23	Resulting CO ₂ emissions offset per m ²			0.00
24				kWh/m ²
25	Additional allowable electricity generation (calculated outside of SAP assessment)		34.00	
26	Resulting CO ₂ emissions offset from additional allowable electricity generation			-19.31
27				
28	Net CO ₂ emissions	Net CO ₂ =	-7.43	
29				
30	Conditions to be satisfied for rates relief			
31	1. HLP does not exceed 0.8 W/m ² K	Value	0.75	Condition satisfied Yes
32	2. DER does not exceed zero		-0.45	Yes
33	3. Net CO ₂ emissions do not exceed zero		-7.43	Yes

Figure 2. Data entry for zero carbon homes worksheet

Further information

Additional information about the scheme, including fact sheets, may be found at:
<http://www.nidirect.gov.uk/low-carbon-homes.htm>

The calculation worksheets can be downloaded from the BRE web site:
<http://projects.bre.co.uk/sap2005/ni-low-carbon.html>

Information about JPA Designer may be found at www.techlit.co.uk.

Technical support enquiries by email only to support@techlit.co.uk.

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