

APPENDIX 4 CALCULATING THE 10% REQUIREMENT

See Section 7 for detailed guidance on how to undertake the calculations.

Stage 1. Work out the annual CO₂ emissions of the buildings

Complete either calculations 1, 2, 3 or 4

- Calculations where there is no Standard Assessment Procedure or Simplified Building Energy Model data

Where there is more than one type of building you will need to undertake this calculation separately for each building type.

| | | | | |
|-------------------------------|---|---|-----------------------|-----------------------|
| Building type 1: | | | | |
| Building A 2 semi-detached | Annual benchmark CO ₂ emissions per m ² (a) | 32.1 | kgCO ₂ /yr | |
| | x floor area (b) | 353 | m ² | |
| | = annual CO ₂ emissions (c) | 11,331.3 | kgCO ₂ /yr | |
| Building type 2: | | | | |
| Building B 2 semi-detached | Annual benchmark CO ₂ emissions per m ² (a) | 32.1 | kgCO ₂ /yr | |
| | x floor area (b) | 115 | m ² | |
| | = annual CO ₂ emissions (c) | 3691.5 | kgCO ₂ /yr | |
| Building type 3: | | | | |
| Building C 1 detached | Annual benchmark CO ₂ emissions per m ² (a) | 32.5 | kgCO ₂ /yr | |
| | x floor area (b) | 145 | m ² | |
| | = annual CO ₂ emissions (c) | 4,712.5 | kgCO ₂ /yr | |
| | | Total CO ₂ emissions (c) + (c) + (c) = (d) | 19,735.3 | kgCO ₂ /yr |

OR

2. Annual CO₂ emissions from SAP assessment

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|--|--|
| | CO ₂ emissions (d) <input type="text"/> kgCO ₂ /yr |
|--|--|

OR

3. Annual CO₂ emissions from SBEM assessment

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| | CO ₂ emissions (d) <input type="text"/> kgCO ₂ /yr |
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OR

4. Annual CO₂ emissions from Act on CO₂ website

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|--|--|
| | CO ₂ emissions (d) <input type="text"/> kgCO ₂ /yr |
|--|--|

Stage 2. Work out 10% of the annual CO₂ emissions

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| | 10% of CO ₂ emissions ((d)/100) x 10 = (e) <input type="text"/> 1,973.53 kgCO ₂ /yr |
|--|---|

Stage 3. Select the renewable technology (or technologies) you wish to incorporate and work out the annual CO₂ savings

| | |
|-------------------------------------|---|
| Electricity generating technologies | |
| <input type="text"/> | Electricity generating renewable energy (f) <input type="text"/> kWh/yr x 0.422 ²¹ (g) <input type="text"/> kgCO ₂ /yr |

| | |
|------------------------------|--|
| Heat generating technologies | |
| GSHP 12m | Heat generating renewable energy (h) <input type="text"/> 10,512 kWh/yr x 0.194 or x 0.265 ²² (i) <input type="text"/> 2,039.3 kgCO ₂ /yr |

²¹ Standard conversion factor for kWh electricity to kgCO₂

²² Standard conversion factors - use x 0.194 if displacing gas or x 0.265 if displacing oil

Total CO₂ savings **(g) + (i) = (j)** 2,039.3 kgCO₂/yr

Stage 4. Check that your chosen technology will provide enough CO₂ savings

(j) should be equal to or greater than **(e)** to ensure that at least 10% of predicted CO₂ emissions are offset through renewable energy.

% of CO₂ emissions which will be offset
by renewable energy **(j) / (d)** 10.33 %

If this figure is less than 10%, look at increasing the size / capacity of the installation, try other technologies or look at using a mix of technologies.