

# THIMBLEBY SHOOTING LODGE

Renewable Energy Supplementary Planning Document - April 2010

## APPENDIX 4 CALCULATING THE 10% REQUIREMENT

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

### Stage 1. Work out the annual CO<sub>2</sub> emissions of the buildings

Complete either calculations 1, 2, 3 or 4

1. 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:

Annual benchmark CO<sub>2</sub> emissions per m<sup>2</sup> (a)  kgCO<sub>2</sub>/yr  
x floor area (b)  m<sup>2</sup>  
= annual CO<sub>2</sub> emissions (c)  kgCO<sub>2</sub>/yr

Building type 2:

Annual benchmark CO<sub>2</sub> emissions per m<sup>2</sup> (a)  kgCO<sub>2</sub>/yr  
x floor area (b)  m<sup>2</sup>  
= annual CO<sub>2</sub> emissions (c)  kgCO<sub>2</sub>/yr

Building type 3:

Annual benchmark CO<sub>2</sub> emissions per m<sup>2</sup> (a)  kgCO<sub>2</sub>/yr  
x floor area (b)  m<sup>2</sup>  
= annual CO<sub>2</sub> emissions (c)  kgCO<sub>2</sub>/yr

Total CO<sub>2</sub> emissions (c) + (c) + (c) = (d)  kgCO<sub>2</sub>/yr



OR

2. Annual CO<sub>2</sub> emissions from SAP assessment

CO <sub>2</sub> emissions (d)	kgCO <sub>2</sub> /yr
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OR

3. Annual CO<sub>2</sub> emissions from SBEM assessment

CO <sub>2</sub> emissions (d)	15323.8 kgCO <sub>2</sub> /yr
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OR

4. Annual CO<sub>2</sub> emissions from Act on CO<sub>2</sub> website

CO <sub>2</sub> emissions (d)	kgCO <sub>2</sub> /yr
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**Stage 2. Work out 10% of the annual CO<sub>2</sub> emissions**

10% of CO <sub>2</sub> emissions ((d)/100) x 10 = (e)	1532.38 kgCO <sub>2</sub> /yr
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**Stage 3. Select the renewable technology (or technologies) you wish to incorporate and work out the annual CO<sub>2</sub> savings**

Electricity generating technologies

S.O.K.N  
P.V.

Electricity generating renewable energy (f) 3745 kWh/yr

x 0.422<sup>21</sup> (g) 1581 kgCO<sub>2</sub>/yr

Heat generating technologies

Heat generating renewable energy (h) kWh/yr

x 0.194 or x 0.265<sup>22</sup> (i) kgCO<sub>2</sub>/yr

<sup>21</sup> Standard conversion factor for kWh electricity to kgCO<sub>2</sub>

<sup>22</sup> Standard conversion factors - use x 0.194 if displacing gas or x 0.265 if displacing oil

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Total CO<sub>2</sub> savings (g) + (i) = (j) 1581 kgCO<sub>2</sub>/yr

**Stage 4. Check that your chosen technology will provide enough CO<sub>2</sub> savings**

(j) should be equal to or greater than (e) to ensure that at least 10% of predicted CO<sub>2</sub> emissions are offset through renewable energy.

% of CO<sub>2</sub> emissions which will be offset  
by renewable energy (j) / (d) 10.3 %

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.

