

Achieving Carbon Neutrality

Authors: Steve Rodrick Chief Officer
Colin White Planning Officer

Summary: The Board has adopted a policy of achieving carbon neutrality by 2011. This paper proposes a number of measures by which this might be achieved including reduction in energy use and mileage, installation of solar panels and development of a carbon offsetting scheme.

Purpose of Report: To advise the Board on how carbon neutrality might be achieved by 2011.

Background

1. The carbon emissions in 2006-07 were:

Source	Carbon Dioxide Emissions
Gas use for offices	7.6 tonnes
Electricity Use for Office	4.1 tonnes
Staff and Board member travel	9.2 tonnes
Sub Total	20.9 tonnes
Travel generated by attendance at Board events and meetings	10.5 tonnes
Total	30.5 tonnes

2. The planned phased reduction in emissions against the 2006-07 base line:

Year	Reduction	Net Emissions
2007-08	25% reduction	23.0 tonnes
2008-09	50%	15.2 tonnes
2009 - 2010	75%	7.6 tonnes
2010 - 2011	100%	0 tonnes

Measures planned to reduce emissions in 2007- 08

3. The loft insulation in the offices was significantly enhanced in spring 2007. The cost was approx £500 and met from the 2006-7 budget. The energy saving (gas) could be up to 10%. Drafty windows have been repaired and central heating system cured of its air lock problem. The combined carbon saving could be up to 700 Kg annually.

4. The solar PV cells will be installed during September. Maximum generation capacity will be up to 1.7KW. In practice over the year the output is estimated to be 1500 KWh which will save 500 kg of carbon. The part year saving for 2007-08 will be 200 kg, equivalent to a 2% reduction on total Carbon emissions for 2007-08.
5. In the spring of 2007 the amount of lighting was reduced which could save up to 30 Kwh over the year reducing emissions by approx 400 kg per annum.
6. The aim is to reduce staff and Board member travel by up to 10% thus saving 900 kg of carbon.
7. The total saving of these measures will be 2.3 tonnes, a 11.0% reduction compared to 2006-07 from emissions directly generated by the Board in its offices and travel by staff and members. The target of 25% requires a total reduction in emissions of carbon of 5.22 tonnes in 2007-08 leaving a deficit of 2.7 tonnes. The balance can only be covered through a carbon offsetting scheme.
8. The cost of installing the solar PV cells will be approx £11,000. A grant from the Energy Saving Trust has been secured of £4,900. The balance will be met from reserves. The other measures are likely to save the Board up to £500 per annum.
9. In September 2008 the Board's current three year electricity supply agreement will end, providing an opportunity to switch to a green tariff. This will save up 3.5 tonnes per year (2.00 tonnes in 2008-09)

Proposed Carbon Offsetting Scheme

10. Carbon offsetting schemes have attracted poor media coverage recently. This has primarily been for two reasons. Firstly it is believed that some may resort to offsetting without also reducing carbon emissions. Secondly some of the estimated savings through offsetting have been hard to prove, for example because the tree planting had been planned in any event or because the savings over a longer period cannot be ensured. The Board must ensure that if it creates an offsetting scheme that it can counter both of these possible charges.
11. The options open to the Board to achieve carbon neutrality are limited and most of the major steps to reduce emissions have already been taken or are planned. Further reduction in day to day emissions will be increasingly hard to achieve. It is almost certain the Board will need to resort to carbon offsetting. In view of the uncertainties and poor media coverage it is proposed that the Board create its own scheme rather than investing in an existing scheme operated by others, of which there are many. It is also worth considering giving it a title which avoids the use of the term carbon offsetting, e.g. Climate Investment Scheme

12. The Board has planted 100 trees in each of the past two years which provides a possible basis for an offsetting scheme.
13. The Board's direct emissions are approximately 21 tonnes of carbon per year. This is increased to 31 tonnes when the emissions generated by travel to events organised or promoted by the Board are taken into account. The estimate is that in 2007-08 emissions will be reduced by approx 2.3 tonnes. Given the limited scope for further reductions it is estimated that by 2011 a total reduction of up to 6 – 7 tonnes of carbon might be possible. This leaves a net carbon footprint of 12 tonnes per annum resulting from direct activity and 22 tonnes based on all activity. Carbon offsetting provides a potential means of covering this figure.
14. It is proposed that the Board operates its own carbon offsetting scheme based on a combination of giving away low energy light bulbs to community buildings, and tree planting. Offsetting up to 25 tonnes per year could be achieved by giving away approx 210 11watt low energy light bulbs or planting 500 trees each year. A combination might be 150 low energy light bulbs and planting 150 trees. The calculations are given in Appendix 1. The cost of both approaches is similar. The cost of planting and maintaining a tree will be £5 and the cost of a light bulb will also be approx £5. The light bulbs offer more immediate and greater carbon reduction for the cost. On the other hand the tree planting provides additional landscape and biodiversity benefits. It is, therefore suggested that a combination approach be adopted.
15. The tree planting would be a continuation of the current scheme. The Board has planted trees in a field now owned by the Common Wood Group (Tyler's Green near Hugh Wycombe). These are trees which would not otherwise be planted; they would be planted and maintained directly by the Board. There is an additional environmental benefit arising from the new planting linking two existing woodlands.
16. The low energy bulbs would be offered to village halls and other public buildings. They could also be given away at events as prizes.
17. The total cost per annum (excluding staff time) will be approx £1,500. This could be covered by £500 in reduced operating costs arising from energy savings and reduced travel claims. It is proposed to cover the balance through delegate fees for events. All delegates will be told that a proportion of the fee has been used to invest in carbon offsetting scheme. Attempts will also be made to find a sponsor.
18. If this approach is successful it could be increased in scale to ensure the Board achieves a zero net carbon footprint by 2011.

Recommendations

- 1. The Committee notes the current measures to reduce carbon emissions.**
- 2. The Board creates its own Carbon Emissions Offsetting Scheme.**
- 3. The Offsetting Scheme should be based, in 2007- 08, on planting 100 native trees and giving away 150 low energy light bulbs.**
- 4. The Board switches to green tariff for its energy supply from September 2008 onwards- subject to agreement that the renewable energy is being generated in way acceptable to the Board.**
- 5. That a budget of £2,500 be created based on £500 savings on energy and mileage costs, £1,000 raised from delegates fees for events the Board organises and £500 allocated from the core budget.**

Appendix 1

Proposed Chilterns Carbon Offsetting Scheme

Low Energy Light Bulbs

It is proposed to give away 11W low energy light bulbs (suitable to replace either 60W or 100W traditional bulbs). The calculations are based on replacing 60W bulbs.

The industry calculates that the average light bulb is on for 1700 hours per year. This calculation assumes only 800 hours.

Low energy light bulbs have a predicted lifespan of 8000 hours - 10 years.

1 kWh of electricity use results in approx 0.3 kg of carbon dioxide

The carbon saving over 10 years resulting from replacement of a 60W traditional bulb by an 11W low energy bulb would be:

49 Watts x 800hours x 10 years = 392 KWH x 0.3Kg CO₂ = **117 Kg of CO₂**

100 bulbs would result in a carbon saving of 11.76 tonnes over 10 years.

Tree Planting

A fully grown mature native hardwood tree will absorb approx 0.5 tonnes of carbon over a lifespan of 100 years.

It has been assumed that of each 1000 trees planted only 100 will reach maturity (10%).

Based on a survival rate of 10%, each tree planted will ultimately result in 50Kg of carbon absorption if those trees which survive live to 100 years or more (this will depend upon the species thus long lived species such as oak will be preferred).

100 trees planted could result in 5.0 tonnes of carbon being absorbed.