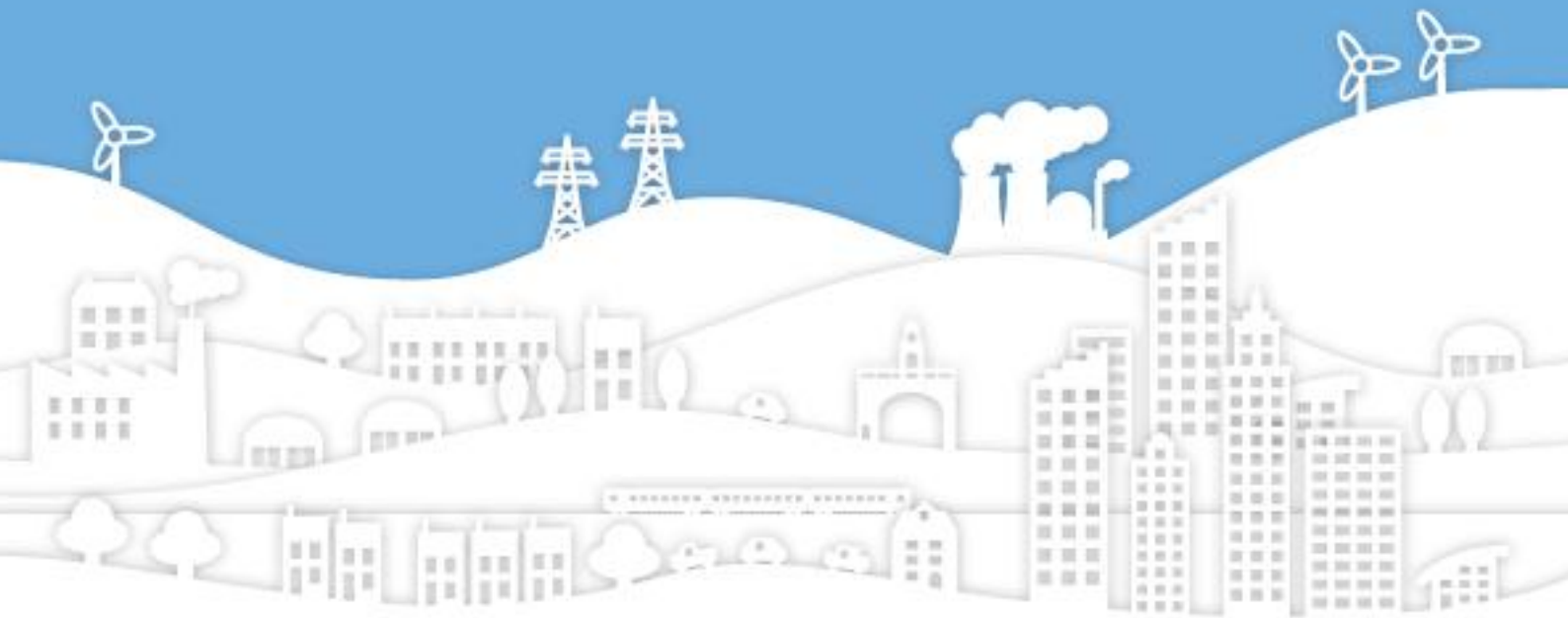


The logo for Electricity North West, featuring the word "electricity" in a dark blue sans-serif font and "north west" in a green sans-serif font below it. A green stylized leaf-like shape is positioned to the left of the text.

electricity
north west

Bringing energy to your door

Business Carbon Footprint Report 2012 - 2013



Electricity North West Carbon Footprint Report 2012-2013

1. Introduction

This report details the carbon consumption arising from the undertakings of Electricity North West Limited for the financial year 2012-2013.

2. Summary

2.1. Operational Carbon Footprint for 2012/13

2012/13	tonne CO ₂ Eq	Percentage of BCF (incl. losses)	Percentage of BCF (excl. losses)
Buildings energy usage	9,918	1.5%	39.5%
Operational Transport	9,894	1.4%	39.4%
Business Transport	1,303	0.2%	5.2%
Fugitive Emissions	1,199	0.2%	4.8%
Fuel Combustion	2,774	0.4%	11.1%
BCF (excl. losses)	25,088		100.0%
Losses	652,308	96.3%	
BCF (incl. losses)	677,396	100.00%	

Note that losses are reported separately due to their relative magnitude in the overall total.

2.2. Comparison With Previous Year

	2011/12 tonne CO ₂ Eq	2012/13 tonne CO ₂ Eq	Percentage Change
Buildings energy usage	11,362	9,918	-12.7%
Operational Transport	9,912	9,894	-0.2%
Business Transport	1,272	1,303	+2.4%
Fugitive Emissions	1,332	1,199	-10.0%
Fuel Combustion	2,395	2,774	+15.8%
BCF (excl. losses)	26,273	25,088	-4.5%
Losses	670,540	652,308	-2.7%
BCF (incl. losses)	696,813	677,396	-2.8%

Note: The reported losses figure is a snapshot of received data as of the date of this report and will change as further settlement reconciliation runs are carried out (up to 28 months after each relevant settlement date). The effect of reconciliation runs means that last year's reported number has also changed, but is not restated as final 2010/11 numbers will not be available until 2013.

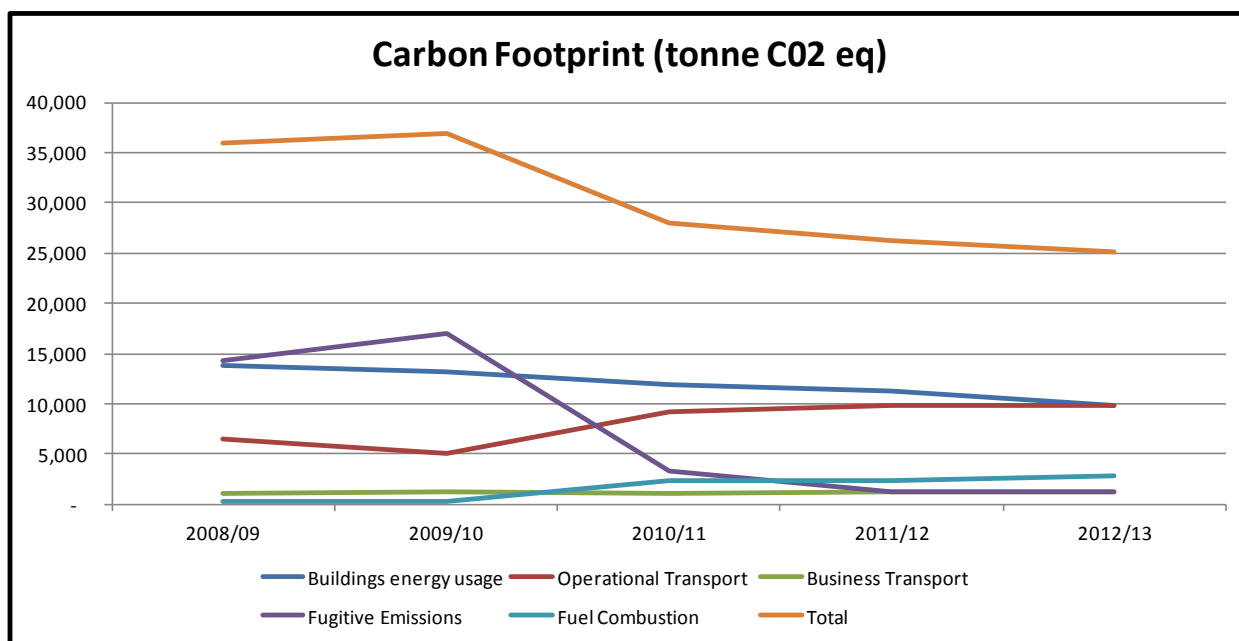
The Business Carbon Footprint (BCF), excluding losses was 25,088 tCO₂e for 2012-13, a reduction of 1,185 tCO₂e (4.5%) from the previous year and a reduction of 12,548 tCO₂e (33.3% from the 2010-11 baseline year).

The key reduction in the year was in the carbon footprint associated with our buildings energy usage which fell by 1,444 tCO₂e (12.7%) due to a combination of factors including the inclusion of energy efficiency measures in the refurbishment of our Preston offices and the vacating of rented premises at the United Utilities sites in Oldham and Davyhulme (Manchester). A significant decrease in energy usage was also seen in relation to our substation electricity usage following a thorough review of and revision of our estimated annual consumption.

Other decreases in carbon emissions were gained in operational transport where our fuel consumption decreased by 18 tCO₂e whilst delivering our biggest ever capital programme, due entirely to the implementation of fleet fuel efficiency measures, and in further reductions in SF₆ emissions due to improvements in leak response procedures. A reduction in emissions associated with air conditioning units was also recorded in the year due to the replacement of older units and the application of the improved methodology for calculating air conditioning unit emissions.

There were some small increases in 2012-13. These were in business transport emissions which reflected an increased amount of management road, rail and air travel associated with the increased business planning and delivery activity in the year and in diesel consumption associated with the increased deployment of generators in the year to improved customer service in relation to planned outages.

The relative significance of the main elements of our operational carbon footprint is demonstrated in the graph below, showing performance over a five year period.



3. Detailed Calculations

The classification of carbon sources in the calculations below follows the requirements of the industry regulator, Ofgem, for the purposes of reporting Business Carbon Footprint.

Unless otherwise stated in this document, all conversion rates are extracted from specific annexes listed in the 2012 Defra/DECC Greenhouse Gas (GHG) Conversion Factors for Company Reporting template. The data for each respective source is set out in the detailed tables.

4. Buildings Energy Usage

The buildings-electricity energy usage figure is calculated using the kWh usage data provided by the business energy suppliers and/or landlords for whole buildings or parts of buildings occupied by Electricity North West.

To convert the usage into tCO₂e the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* "Grid Rolling Average" Scope 2, 3 conversion factor of 0.52037 kgCO₂e per kWh is used. This factor is contained in the UK Grid Electricity Year 2010 line in Table 3a on page 15 of the 2012 document.

The kWh total is multiplied by the conversion factor to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Direct purchased non-operational consumption = 3,324,905 kWh
- Purchased via landlord = 2,281,507 kWh

- Total buildings electricity usage = 5,606,412 kWh

5,606,412 kWh x 0.52037 / 1,000 = **2,917.41 tCO₂e.**

The substation-electricity usage data is calculated from kWh usage data provided by the business energy suppliers for metered supplies and the estimated consumption figure as submitted in the unmetered MPAN certificate.

To convert the usage into tCO₂e the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* "Grid Rolling Average" Scope 2, 3 conversion factor of 0.52037 kgCO₂e per kWh was used. This factor is contained in the UK Grid Electricity Year 2010 line in Table 3a on page 15 of the 2012 document.

The kWh total is multiplied by the conversion factor to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Direct purchased metered operational consumption = 162,463 kWh
- Unmetered operational consumption = 13,290,296 kWh

- Total operational consumption = 13,452,759 kWh

13,452,759 kWh x 0.52037 / 1,000 = **7,000.41 tCO₂e**.

5. Operational Transport

The operational transport figure is calculated from fuel litres purchased data provided by the business fuel card suppliers for the directly controlled fleet vehicles and from fuel litres used data provided by contractors in relation to their fleet usage on behalf of Electricity North West Limited. All Electricity North West owned operational vehicles have diesel engines.

To convert the usage into tCO₂e the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* Scope 1 conversion factor for Diesel (average biofuel blend) of 2.5835 kgCO₂e per litre is used. This factor is contained in Table 1b on page 8 of the 2012 document.

The litreage total is multiplied by the conversion factor to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Electricity North West fuel card purchased: 1,548,504.88 litres (diesel)
- Contractor reported use: 2,281,142.00 litres (diesel)
- Total operational fuel use = 3,829,647 litres (diesel)

3,829,647 litres x 2.5835 / 1,000 = **9893.89 tCO₂e**

6. Business Transport

6.1. Road Travel

The business transport figure for road travel is calculated from the mileages claimed back through the electronic business corporate expenses system (ESS). Excluded from the figures were mileages claimed back through any manual expenses claims and any incidental-contractor business mileage as the collation of data for both is impractical.

To convert the usage into tCO₂e the following conversion factors from the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* were used:

- Scope 1 conversion factor for small petrol cars of 0.26590 kgCO₂e per mile
- Scope 1 conversion factor for medium petrol cars of 0.33418 kgCO₂e per mile
- Scope 1 conversion factor for large petrol cars of 0.47949 kgCO₂e per mile

The above factors are contained in Table 6b on page 21 of the 2012 document.

- Scope 1 conversion factor for small diesel cars of 0.23009 kgCO₂e per mile
- Scope 1 conversion factor for medium diesel cars of 0.28574 kgCO₂e per mile
- Scope 1 conversion factor for large diesel cars of 0.37921 kgCO₂e per mile

The above factors are contained in Table 6c on page 21 of the 2012 document.

- Scope 1 conversion factor for average small car (unknown fuel) of 0.25682 kgCO₂e per mile
- Scope 1 conversion factor for average medium car (unknown fuel) of 0.31290 kgCO₂e per mile
- Scope 1 conversion factor for average large car (unknown fuel) of 0.41399 kgCO₂e per mile
- Scope 1 conversion factor for average car (unknown fuel) of 0.31332 kgCO₂e per mile

The above factors are contained in Table 6e on page 22 of the 2012 document.

- Scope 1 conversion factor for average petrol motorbike (unknown engine size) of 0.19156 kgCO₂e per mile

The above factor is contained in Table 6j on page 25 of the 2012 document.

The mileage totals are multiplied by the conversion factors to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Small petrol car: 103,746 miles x 0.26590 / 1,000 = 27.59 tCO₂e
- Medium petrol car: 352,679.6 miles x 0.33418 / 1,000 = 117.86 tCO₂e
- Large petrol car: 88,397 miles x 0.47949 / 1,000 = 42.39 tCO₂e
- Small diesel car: 170,343 miles x 0.23009 / 1,000 = 39.19 tCO₂e
- Medium diesel car: 1,968,675.9 miles x 0.28574 / 1,000 = 562.53 tCO₂e
- Large diesel car: 460,761 miles x 0.37921 / 1,000 = 174.73 tCO₂e
- Small unknown car: 249,160.8 miles x 0.25682 / 1,000 = 63.99 tCO₂e
- Medium unknown car: 385,034.4 miles x 0.3129 / 1,000 = 120.48 tCO₂e
- Large unknown car: 33,388 miles x 0.41399 / 1,000 = 13.82 tCO₂e
- Average unknown car: 235,122.5 miles x 0.31332 / 1,000 = 73.67 tCO₂e
- Average petrol motorcycle: 307 miles x 0.19156 / 1,000 = 0.06 tCO₂e

Total business transport road tCO₂e = **1236.30 tCO₂e**

6.2. Rail Travel

The business transport figure for rail is calculated using details provided by the business' travel supplier of rail journeys undertaken by Electricity North West employees. The journey details are split into those travelled on national rail, London underground and Eurostar and then the mileages for each journey calculated using the distances between stations published on the Network Rail web-site. The mileages are then converted into kilometres for calculating the tCO₂e.

For London Underground journeys, nominal mileages were used for unspecified Zones 1, 2 and 3+ journeys based on typical locations visited by Electricity North West staff e.g. Ofgem offices, Energy Networks Association offices. Zone 1 journeys were taken a 3 miles one-way, Zone 2, 6 miles one-way and Zone 3, 9 miles one-way.

Excluded from the rail journey calculations are any journey's booked by employees direct and claimed back through the corporate expenses system and these are minimal and the details not specific enough to make a valid calculation.

To convert the usage into tCO₂e the following conversion factors from the 2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting were used:

- Scope 3 direct GHG conversion factor for national rail of 0.05818 kgCO₂e per kilometre
- Scope 3 direct GHG conversion factor for international rail (Eurostar) of 0.01512 kgCO₂e per kilometre
- Scope 3 direct GHG conversion factor for London Underground of 0.07190 kgCO₂e per kilometre

The kilometre travelled totals are then multiplied by the conversion factors to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- National Rail: $511,778.31 \text{ km} \times 0.05818 / 1,000 = 29.78 \text{ tCO}_2\text{e}$
- Eurostar: $2,986.94 \text{ km} \times 0.01512 / 1,000 = 0.05 \text{ tCO}_2\text{e}$
- London Underground: $1,390.92 \text{ km} \times 0.0719 / 1,000 = 0.10 \text{ tCO}_2\text{e}$

Total business transport rail tCO₂e = **29.92 tCO₂e**

6.3. Air Travel

The business transport figure for air travel is calculated using details of provided by the business' travel supplier of air journeys undertaken by Electricity North West employees. The journey details are split into domestic, short haul international and long haul international and the kilometres travelled for each journey calculated using the air journey distance calculator on the www.webflyer.com website.

For domestic and short haul international flights economy class is used and for long haul international flights business class is used.

To convert the usage into tCO₂e the following conversion factors from the 2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting were used:

- Scope 3 direct GHG conversion factor for domestic average cabin class of 0.16685 kgCO₂e per kilometre plus 109% uplift
- Scope 3 direct GHG conversion factor for short haul international economy cabin class of 0.09074 kgCO₂e per kilometre plus 109% uplift
- Scope 3 direct GHG conversion factor for long haul international business cabin class of 0.23066 kgCO₂e per kilometre plus 109% uplift

The kilometre travelled totals are then multiplied by the conversion factors and uplift factor to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Domestic Economy Class : $25,553 \text{ km} \times 0.05818 \times 1.09 / 1,000 = 4.65 \text{ tCO}_2\text{e}$
- Short Haul International Economy Class : $39,788 \text{ km} \times 0.09074 \times 1.09 / 1,000 = 3.94 \text{ tCO}_2\text{e}$
- Long Haul International Business Class: $111,845 \text{ km} \times 0.23066 \times 1.09 / 1,000 = 28.12 \text{ tCO}_2\text{e}$

Total business transport air tCO₂e = **36.70 tCO₂e**.

7. Fugitive Emissions

This category includes gases identified as having a high global warming potential (GWP) value (as published by the IPCC in its Second Assessment Report (Climate Change 1995). The relevant gases for Electricity North West are Sulphur Hexafluoride (SF₆) and Hydrofluorocarbons (HFCs).

7.1. Sulphur Hexafluoride (SF₆)

The amount of SF₆ emitted is calculated using the actual kg of SF₆ used when topping up or replacing distribution network apparatus with low gas or gas loss. The top-up amounts are the actual amounts recorded by the Engineers on-site when topping up. The loss amounts for apparatus that has been replaced as a result of gas loss are the amounts of gas held by those units.

To convert the usage into tCO₂e the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* conversion factor for Sulphur hexafluoride of 23,900 tCo₂e per tonne was used. This factor is contained in Table 5a on page 18 of the 2012 document.

The amount of gas emitted is then multiplied by the conversion factor to give the tCO₂e number.

For 2012/13 the calculation is as follows:

$$0.0498 \text{ tonnes} \times 23,900 = \mathbf{1190.22 \text{ tCO}_2\text{e}}$$

7.2. Hydrofluorocarbons (HFCs)

The "gases other" figure is calculated using data held on the capacity and type of HFC gases contained in air conditioning units in use within Electricity North West occupied offices.

An estimated leakage rate is taken from Table 8B in Annex 8 or the 2012 - Defra Guidelines. To determine which leakage rate applies the units were compared with the sizing guide in the December 2011 ICF document *Development of the GHG Refrigeration and Air Conditioning Model Final Report*. All units were judged to be "Small Stationary Air Conditioning" units.

The time used by each unit was calculated as 24% of time available in the year based on an assumed usage of 8 hours per day, 5 days per week = 40 hours per week/168 hours in week= 24%.

To convert the usage into tCO₂e the following conversion factors from the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* were used:

- HCFC-22/R22 Chlorodifluoromethane - 1,810 tCO₂e per tonne.

This factor is contained in Table 5b on page 19 of the 2012 document.

- R407C - 1,526 tCO₂e per tonne.
- R410A - 1,725 tCO₂e per tonne.

These factors are contained in Table 5a on page 18 of the 2012 document.

The capacity for each HFC type is multiplied by the time used percentage, the annual leak rate and the global warming potential conversion factor to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- R22: 0.505 tonnes charging capacity x 24% usage x 3% leakage rate x 1,810 = 6.58 tCO₂e.
- R407C: 0.005 tonnes charging capacity x 24% usage x 3% leakage x 1,526 = 0.05tCO₂e.
- R410A: 0.157 tonnes charging capacity x 24% usage x 3% leakage x 1,725 = 1.95tCO₂e.

Total emissions gases other tCO₂e = **8.59 tCO₂e**.

8. Fuel Combustion

8.1. Diesel

The fuel combustion, diesel, figure is calculated from fuel litres purchased data provided by the business fuel card suppliers for fuel used for the directly controlled generators and plant.

To convert the usage into tCO₂e the Scope 1 total direct GHG conversion factor for Diesel (average biofuel blend) of 2.5835 kgCO₂e per litre. This factor is contained in Table 1b on page 8 of the 2012 document.

The litreage total is multiplied by the conversion factor to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

Electricity North West fuel card purchased: 25,590.34 litres (average biofuel diesel) x 2.5835 / 1,000 = **66.11 tCO₂e**

8.2. Other

The fuels other figure is calculated from fuel litres purchased data provided by the business fuel card suppliers for the directly controlled generators and plant and from fuel litres used data provided by sub-contractors in relation to their generator and plant usage on behalf of Electricity North West Limited.

To convert the usage into tCO₂e the following conversion factors from the *2012 Guidelines to Defra/DECC's GHG Conversion Factors for Company Reporting* were used:

- Scope 1 total direct GHG conversion factor for Petrol (average biofuel blend) of 2.2423 kgCO₂e per litre.
- Scope 1 total direct GHG conversion factor for Gas Oil of 3.0213 kgCO₂e per litre.

These factors are contained in Table 1b on page 8 of the 2012 document.

The litreage totals are multiplied by the conversion factors to give the kgCO₂e number and then divided by 1,000 to provide the tCO₂e number.

For 2012/13 the calculation is as follows:

- Electricity North West fuel card purchased: 25,688.51 litres (average biofuel petrol) x 2.2423 / 1,000 = 57.60 tCO₂e
- Contractor reported use: 24,775.70 litres (average biofuel petrol) x 2.2423 / 1,000 = 55.56 tCO₂e
- Electricity North West purchased: 295,129 litres (Gas oil) x 3.0213 / 1,000 = 891.67
- Contractor reported use: 563,714 litres (Gas oil) x 3.0213 / 1,000 = 1,703.15 tCO₂e

Total fuel combustion other tCO₂e = **2,707.98 tCO₂e**

9. System Losses

Losses occur in all electricity networks, and for GB distribution companies typically represent 5-10% of energy distributed to end customers. Losses are usually divided into two categories: technical and non-technical. Technical losses can be further divided into fixed losses (e.g. transformer iron losses) and variable losses which are dependent on power flows in circuits, both of which have a direct carbon impact. Non-technical losses include unregistered or illegal connections, theft, meter inaccuracies, meter settlement errors and other settlement data issues.

Losses are measured as the difference between energy entering (generation) and energy exiting the network (demand), as recorded under the Balancing and Settlement Code (BSC) arrangements. Reported losses therefore do not distinguish between technical and non-technical losses.

The reported figure is a snapshot of received data as of the date of this report and will change as further settlement reconciliation runs are carried out (up to 28 months after each relevant settlement date).

The effect of reconciliation runs means that last year's reported number has also changed, but is not restated as final 2010/11 numbers will not be available until 2013.

For 2012/13 the calculation is as follows:

- Reported losses: 1,267 GWh = 1,267,000,000 kWh
- Less substation electricity: 13,453,749 kWh
- Total losses= 1,253,547,251 kWh
- Conversion factor = 0.52037

Total losses tCO₂e = **652,308 tCO₂e**