



# Carbon Footprint Report

2011 – 2012



## Electricity North West Carbon Footprint Report 2011-2012

### 1. Introduction

This report details the carbon consumption arising from the undertakings of Electricity North West Limited for the financial year 2011-2012.

### 2. Summary

#### 2.1. Operational Carbon Footprint for 2011/12

2011/12	tonne CO <sub>2</sub> Eq	Percentage of BCF (incl. losses)	Percentage of BCF (excl. losses)
Buildings energy usage	11,362	1.6%	43.3%
Operational Transport	9,912	1.4%	37.7%
Business Transport	1,272	0.2%	4.8%
Fugitive Emissions	1,332	0.2%	5.1%
Fuel Combustion	2,395	0.3%	9.1%
<b>BCF (excl. losses)</b>	<b>26,273</b>		100.0%
Losses	670,540	96.3%	
<b>BCF (incl. losses)</b>	<b>696,813</b>	100.00%	

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

#### 2.2. Comparison With Previous Year

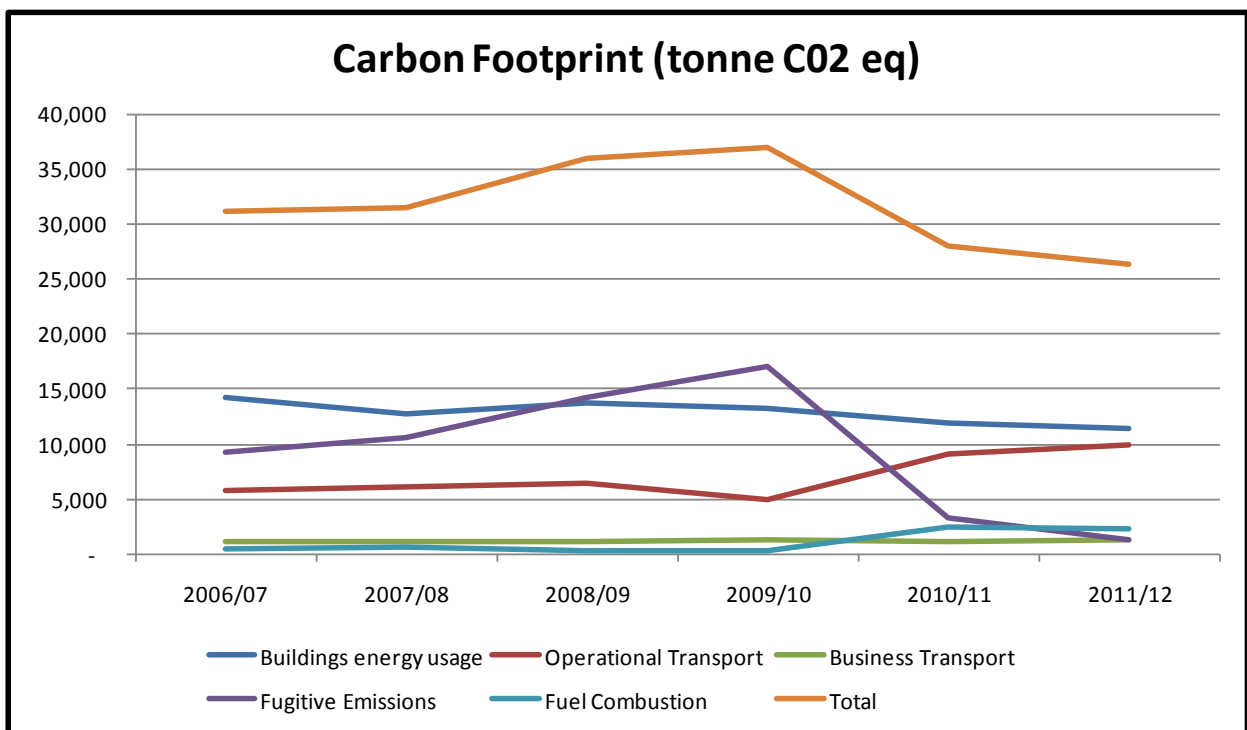
	2010/11 tonne CO <sub>2</sub> Eq	2011/12 tonne CO <sub>2</sub> Eq	Percentage Change
Buildings energy usage	11,872	11,362	-4.3%
Operational Transport	9,150	9,912	+8.3%
Business Transport	1,136	1,272	+12.0%
Fugitive Emissions	3,387	1,332	-60.7%
Fuel Combustion	2,435	2,395	+1.6%
<b>BCF (excl. losses)</b>	<b>27,980</b>	<b>26,273</b>	<b>-6.1%</b>
Losses	971,037	670,540	-31%
<b>BCF (incl. losses)</b>	<b>999,017</b>	<b>696,813</b>	<b>-30.3%</b>

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 most significant changes are:

- A decrease in buildings energy usage. This reflects obtaining of more accurate data relating to substation electricity usage.
- An increase in operational fuel used. This reflects the increased volume of work being carried out on our operational activities.
- An increase in business transport emissions. This reflects additional travel on road, rail and air in response to a general increase in business activity.
- A reduction in fugitive emissions, mainly relating to our investment to remove ageing SF<sub>6</sub> insulated switchgear from our Whitegate substation in East Manchester.
- An increase in fuel used in portable generators. This reflects an increased use of generators to improve customer service.

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



Note that data relating to earlier years is generally of a lower quality, as we have developed more accurate identification of relevant equipment and their associated emissions over time.

### 3. Detailed Tables

The classification of carbon sources in the tables follows the requirements of the industry regulator, Ofgem, for the purposes of reporting Business Carbon Footprint. We have been developing the capability to report our carbon footprint for several years, leading to more accurate identification of relevant equipment and their associated emissions.

Unless otherwise stated in this document, all conversion rates are extracted from specific annexes listed in the 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 use of energy in our buildings comprises the electricity used in our offices and depots and also our substations, which are reported separately here.

The buildings consumption total is made up of the invoiced amounts from the electricity supplier for whole buildings (or parts of buildings) occupied by Electricity North West. The substation-electricity usage data is calculated using the estimated consumption figure as submitted in the unmetered MPAN certificate.

The DEFRA Grid Rolling Average conversion factor of 0.54522 kg CO<sub>2</sub>/kWh has been used in the calculations.

	Consumption (kWh)	Conversion Rate (kg CO <sub>2</sub> /kWh)	kg CO <sub>2</sub> e
Buildings	5,904,048	0.54522	3,219,005
Substations	14,935,440	0.54522	8,143,101
<b>Total</b>	<b>20,839,488</b>		<b>11,362,106</b>

#### 5. Operational Transport

##### 5.1. Electricity North West Vehicle Fleet

The fleet transport figure is calculated from fuel litres purchased data provided by the fuel card supplier for the directly controlled fleet vehicles.

Fuel Type	Quantity (Litres)	Emission Factor (kg CO <sub>2</sub> /Litre)	kg CO <sub>2</sub> e
Petrol	27,873	2.3220	64,721
Diesel	1,478,751	2.6720	3,951,222
<b>Total</b>	<b>1,506,624</b>		<b>4,015,943</b>

##### 5.2. Contractor Transport

The contractor transport figure is calculated from fuel litres purchased data provided by sub-contractors in relation to their fleet usage on behalf of Electricity North West Limited.

The fuel usage figure from contractors comprises the usage by our major DPCR5 framework contractors. It excludes any usage by smaller, low volume sub-contractors where the collation of data is impractical.

Fuel Type	Quantity (Litres)	Emission Factor (kg CO <sub>2</sub> /Litre)	kg CO <sub>2</sub> e
Petrol	88,113	2.3220	204,598
Diesel	2,130,202	2.6720	5,691,900
<b>Total</b>	<b>1,810,163</b>		<b>5,896,498</b>

The total carbon footprint for operational transport is therefore 9,912,441 kg CO<sub>2</sub>e.

## 6. Business Transport

### 6.1. Road Travel

This category includes business mileage (excluding commuting), based on mileages claimed through the corporate electronic expenses system (ESS).

Fuel Type	Quantity (Miles)	Emission Factor (kg CO <sub>2</sub> /mile)	kg CO <sub>2</sub> e
Petrol	643,628	0.34094	219,439
Diesel	2,329,575	0.31649	737,287
Unknown Fuel	795,709	0.33515	266,682
Motorbike	103	0.19199	20
<b>Total</b>	<b>3,769,015</b>		<b>1,223,428</b>

### 6.2. Rail Travel

The distances travelled on staff rail journeys were sourced from the Network Rail website and the number of journeys calculated from invoices supplied by the company travel consultants. Travel on the London underground is excluded from these figures as the collation of this data was impractical given the small number of kilometres travelled.

	Passenger km Travelled	Conversion Rate (kg CO <sub>2</sub> /pkm)	kg CO <sub>2</sub> eq
National Rail	447,454	0.05651	25,286
<b>Total</b>	<b>447,454</b>		<b>25,286</b>

### 6.3. Air Travel

The journeys travelled on staff air journeys were sourced from the company travel consultants and the distances calculated from the WebFlyer web site.

	Passenger km Travelled	Conversion Rate (kg CO <sub>2</sub> /pkm)	kg CO <sub>2</sub> eq
Domestic	4,808	0.17328	833
Short Haul	14,450	0.09336	1,349
International			
Long Haul	88,358	0.24200	21,383
International			
<b>Total</b>	<b>107,616</b>		<b>23,565</b>

The total carbon footprint for business travel (road, rail and air) is therefore 1,272,279 kg CO<sub>2</sub>e.

## 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 (SF<sub>6</sub>) and Hydrofluorocarbons (HFCs).

## 7.1. Sulphur Hexafluoride (SF<sub>6</sub>)

SF<sub>6</sub> is used as an insulator in several switchgear types in use on our network. We are working in conjunction with the electricity industry manufacturers to develop vacuum and solid state switchgear to eliminate, in the long term, the use of SF<sub>6</sub> as an insulator. Wherever practicable, we invest in low SF<sub>6</sub> loss distribution equipment.

The SF<sub>6</sub> emissions figure is calculated using estimated and actual kg of SF<sub>6</sub> used when topping up distribution network apparatus with low gas or gas loss, or gas lost from apparatus replaced as a result of gas loss. The estimated amounts are based on historical records or previous top-ups on the same apparatus or experience of staff responsible for topping up.

	Quantity (tonne)	Conversion Rate (kg CO <sub>2</sub> /tonne)	kg CO <sub>2</sub> eq
SF <sub>6</sub>	0.0515	23,900,000	1,230,850
<b>Total</b>	<b>0.0515</b>		<b>1,230,850</b>

## 7.2. Hydrofluorocarbons (HFCs)

We use various blends of HFC gases in air conditioning units within Electricity North West occupied offices. The Defra “screening” method using Defra leakage rates and global warming potential figures was used to estimate the associated emissions.

HFC Type	Quantity (kg)	Emission Factor (kg CO <sub>2</sub> /kg)	kg CO <sub>2</sub> e
R410	8.67	1,725	14,956
R22	47.09	1,810	85,233
R407	0.43	1,526	656
<b>Total</b>	<b>56.19</b>		<b>100,845</b>

The total carbon footprint for fugitive emissions is therefore 3,387,095 kg CO<sub>2</sub>e.

## 8. Fuel Combustion

We use gas oil as the fuel for back-up generators, used in order to maintain supplies in certain situations where supplies would otherwise be interrupted. The volume data is sourced from our fuel suppliers and framework generator provider.

Fuel Type	Quantity (Litres)	Emission Factor (kg CO <sub>2</sub> /Litre)	kg CO <sub>2</sub> e
Gas Oil	792,699	3.0212	2,394,902
<b>Total</b>	<b>792,699</b>		<b>2,394,902</b>

## 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.

	GWh	Conversion Rate (kg CO <sub>2</sub> /kWh)	kg CO <sub>2</sub> e
Losses	1230	0.54522	670,540,000
<b>Total</b>	<b>1230</b>		<b>670,540,000</b>