



## 2011 Business Carbon Footprint (BCF) Report Commentary & Methodology

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## Introduction

This report and commentary presents the Business Carbon Footprint (BCF) for UK Power Networks in accordance with Ofgem guidelines. UK Power Networks has been working for a number of years to reduce the environmental impact of our network and associated operations including the impact from our contractors. We have set long term targets for our Business Carbon footprint and the wider sustainability agenda and will share these in an open and consultative way with our stakeholders.

## About UK Power Networks

UK Power Networks is owned by the Cheung Kong Group (CKG) which has a proven pedigree in running high-quality utility companies and a track record of wise investment and long-term plans. It already successfully operates electricity distribution businesses serving communities in Hong Kong, Australia and New Zealand

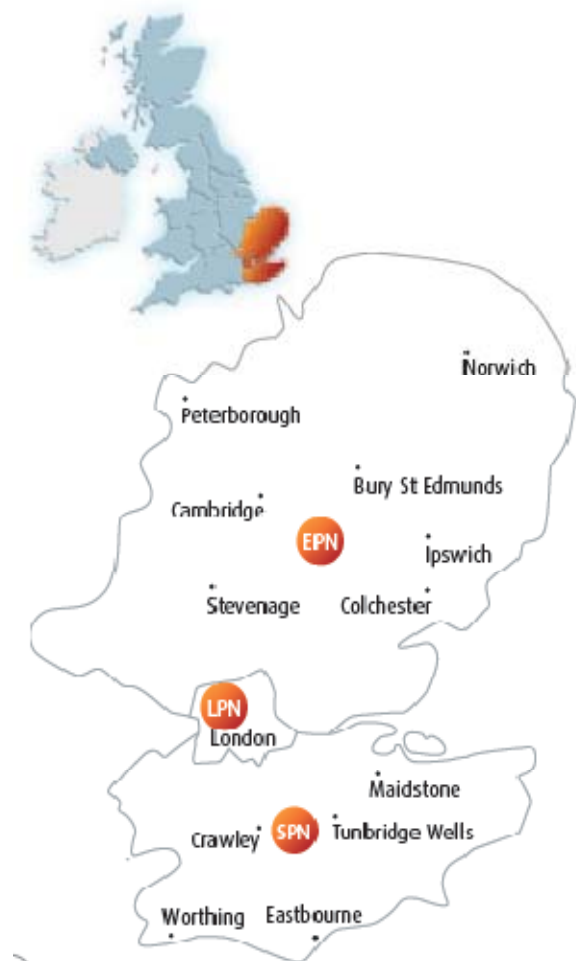
We are one of the largest Distribution Network Operators (DNOs) in the UK, covering an area of approximately 30,000km<sup>2</sup>, extending from The Wash in the East to Littlehampton on the Sussex coast. Approximately eight million connected customers depend on us for their power.

Our job is to deliver electricity to our customers safely, to 'keep the lights on' and to connect new customers.

UK Power Networks operate and manage three distribution networks, distributing electricity using over 170,000 kilometres of underground cables and overhead lines and more than 130,000 substations.

We are responsible for maintaining and modernising our networks and ensuring that there is adequate capacity to support the needs of our customers. We have an important part to play in supporting the Government's move to a low carbon economy. The energy industry is facing considerable challenges to meet increasing demand. We are helping accommodate new low carbon technologies such as electric vehicles and heat pumps by ensuring they integrate effectively and efficiently with our network, while planning for the rollout of smart meters.

This report covers our licensed distribution networks; East of England (EPN), London (LPN) and the South East (SPN).



## About this report

The following commentary has been provided to detail the processes used to calculate the BCF for UK Power Networks. In this commentary all data within a yellow box, as shown in the example below, corresponds with the completed summary tables returned to Ofgem.

### Example:

1,234

All data provided is for the Calendar reporting year (**Jan 11 to Dec 11**) unless otherwise stated. In all calculations the Defra recommended conversion factors outlined in Ofgem’s guidance notes have been used unless otherwise stated.

## Organisation Structure

Figure 2 shows UK Power Networks is a parent company (Z) that has full ownership and financial control of operations (A), (B), (C) and (D) (Unregulated). All data indicated with an (X) in our submission is; **inclusive of** data from subsidiaries (A), (B), and (C) unless stated otherwise. Data which is defined as our unregulated business (D) is **excluded** from all reporting.

All data indicated with a (Y) in our submission is data from our contractors and their subcontractors. We have a large number of **contractors and sub contractors** who work for us and it would not be feasible nor productive to include data from every single one so we have scoped (Y) using the Contractor definition at the end of this document:

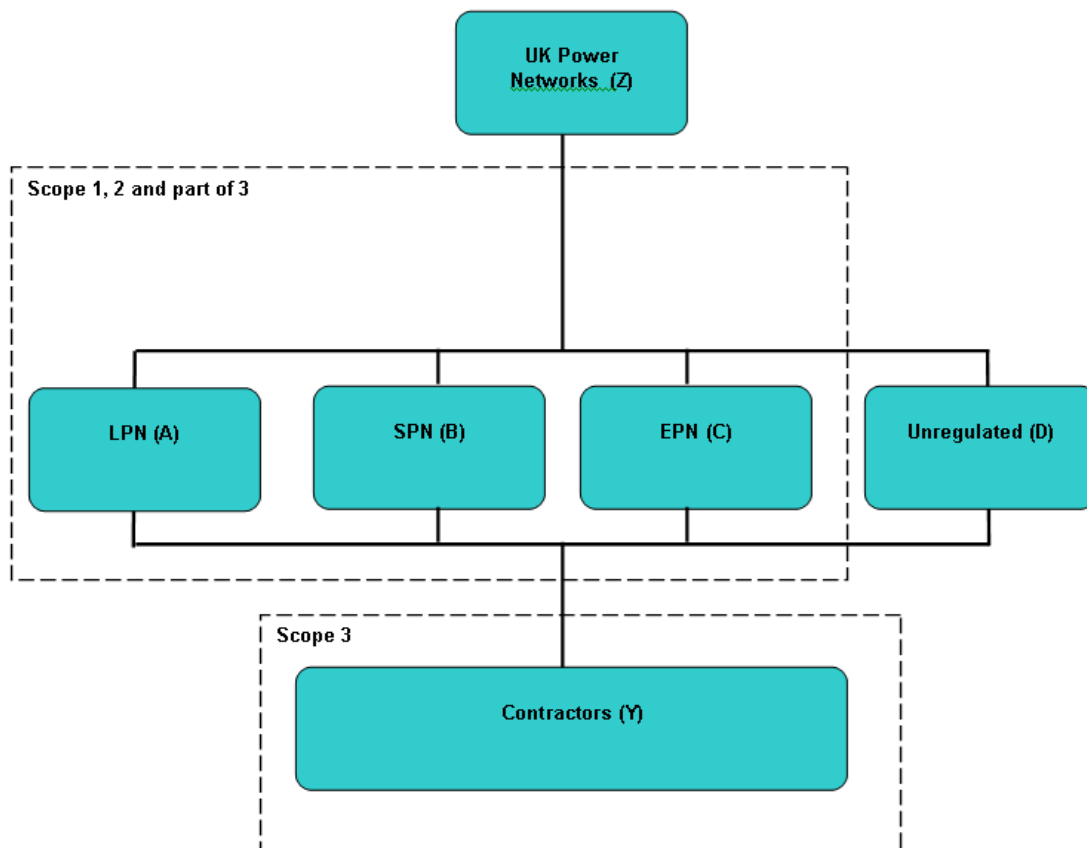


Figure 2 UK Power Network scope of business carbon footprint reporting

# 2011 Business Carbon Footprint (BCF) Report



## Building energy usage

Building data is collated from electricity and gas bills received for each building. Data is measured in kWh then converted into tCO<sub>2</sub>e.

**Table 1.a** shows a breakdown of the submitted building energy use by energy type (gas and electricity) and by licence area. For buildings that are used by all three licensed areas the energy use is apportioned by headcount for each licence area.

**Table 1.a**

Key	Data Type/Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
A	LPN Electricity Usage	Billing for each site	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	1,639	Measurement	2
B	SPN Electricity Usage	Billing for each site	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	1,151	Measurement	2
C	EPN Electricity Usage	Billing for each site	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	2,693	Measurement	2
A	LPN Gas Usage	Billing for each site	See process	0.204 (Net CV )	(Kwh to Kg CO <sub>2</sub> )	50	Measurement	2
B	SPN Gas Usage	Billing for each site	See process	0.204 (Net CV )	(Kwh to Kg CO <sub>2</sub> )	74	Measurement	2
C	EPN Gas Usage	Billing for each site	See process	0.204 (Net CV )	(Kwh to Kg CO <sub>2</sub> )	196	Measurement	2

## Substation energy usage

Annual consumption is assessed based on the number and type of plant installed in each licence area.

**Table 1.b** shows the substation electricity usage broken down into the metered and unmetered categories. All data is measured in kWh then converted to tCO<sub>2</sub>e by using the Defra recommended grid rolling average.

**Table 1.c** shows the final data submitted to Ofgem.

**Table 1.b**

Key	Data Type/Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	LPN Metered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	2,313	MeasurementEstimate	2
X	LPN Unmetered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	3,374	MeasurementEstimate	2
X	SPN Metered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	342	MeasurementEstimate	2
X	SPN Unmetered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	4,907	MeasurementEstimate	2
X	EPN Metered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	5	MeasurementEstimate	2
X	EPN Unmetered	Estimate	See process	0.52 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	11,822	MeasurementEstimate	2

**Table 1.c**

Key	Area	tCO <sub>2</sub> e
A	LPN	5,687
B	SPN	5,249
C	EPN	11,828

## Operational Transport

Fuel purchased for fleet vehicles is captured via fuel cards. Appropriate conversion factors have been used according to fuel type. Emission **Table 2.b** shows a breakdown of tCO<sub>2</sub>e emitted from the UK Power Networks fleet (X) and by our contractors (Y).

Fuel usage is not recorded separately for each licence area. The total has been apportioned based on the number of direct operational staff per area. This method was favoured over geographic area as a split based on km<sup>2</sup> shows that our London network accounts for only 2% of the total km<sup>2</sup> across our three areas and this would be a disproportionate split of CO<sub>2</sub> from our transport fleet. This method is the same as the previous year allowing a fair comparison year on year. **Table 2.a** shows this breakdown and the final submitted figures to Ofgem per licence area.

Through an audit and subsequent improvement project the quality and accuracy of this data has been greatly improved.

**Table 2.a**

Key	Area	Direct op. staff	Percentage of staff	tCO <sub>2</sub> e
A	LPN	417	22%	7,113
B	SPN	617	33%	10,525
C	EPN	858	45%	14,636

**Table 2.b**

Key	Data Type/ Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	Petrol	Fuel Card	See process	2.312	(litres to kg CO <sub>2</sub> )	0	Measurement	1
X	Diesel	Fuel Card	See process	2.668	(litres to kg CO <sub>2</sub> )	12,251	Measurement	1
X	LPG	Fuel Card	See process	1.492	(litres to kg CO <sub>2</sub> )	4	Measurement	1
X	Super unleaded	Fuel Card	See process	2.312	(litres to kg CO <sub>2</sub> )	8	Measurement	1
X	Unleaded	Fuel Card	See process	2.312	(litres to kg CO <sub>2</sub> )	71	Measurement	1
X	Gas Oil	Fuel Card	See process	3.060	(litres to kg CO <sub>2</sub> )	0	Measurement	1
Y	Petrol	Contractor fuel card	See process	1.492	(litres to kg CO <sub>2</sub> )	1	Measurement	3
Y	Diesel	Contractor fuel card	See process	2.668	(litres to kg CO <sub>2</sub> )	18,701	Measurement	3
Y	LPG	Contractor fuel card	See process	1.492	(litres to kg CO <sub>2</sub> )	0	Measurement	3
Y	Super unleaded	Contractor fuel card	See process	2.312	(litres to kg CO <sub>2</sub> )	2	Measurement	3
Y	Unleaded	Contractor fuel card	See process	2.312	(litres to kg CO <sub>2</sub> )	907	Measurement	3
Y	Gas Oil	Contractor fuel card	See process	3.060	(litres to kg CO <sub>2</sub> )	330	Measurement	3
	<b>Total</b>					<b>32,274</b>		



## Business Transport

This section refers primarily to employee business travel (attending meetings etc) which constitutes our indirect operational emissions. However, some of the emissions included will be directly related to our operational work. There is no simple way of separating this data so it has been submitted together.

Emissions **Table 3.b** shows a breakdown of the amount of tCO<sub>2</sub>e emitted as a result of our employees business travel (X) by each type of travel and our contractors business travel (Y). Any source data available as finance only, has been converted into miles before applying the Defra conversion factors.

**Table 3.a**

Business Transport- Passenger ROAD				
Key	Area	Headcount	Percentage of staff	tCO <sub>2</sub> e
A	LPN	1,328	27%	1,733
B	SPN	1,495	31%	1,950
C	EPN	2,050	42%	2,675

Business Transport- Passenger RAIL				
Key	Area	Headcount	Percentage of staff	tCO <sub>2</sub> e
A	LPN	1,328	27%	93
B	SPN	1,495	31%	105
C	EPN	2,050	42%	144

Business Transport- Passenger Air				
Key	Area	Headcount	Percentage of staff	tCO <sub>2</sub> e
A	LPN	1,328	27%	11
B	SPN	1,495	31%	12
C	EPN	2,050	42%	17

**Table 3.b**

### Business Transport- Passenger- Road

Key	Data Type/Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	Business Miles	SAP	See process	0.32926	(Miles to kg CO <sub>2</sub> )	3,647	Measurement	3
Y	Contractor Business Miles	Contractor records	See process	0.32926	(Miles to kg CO <sub>2</sub> )	2,683	Measurement	3
X	Taxi Expense Claims	SAP	See process	0.12903	(£ to miles to km to kg CO <sub>2</sub> )	2	Measurement	3
X	Fuel Expense Claims	SAP	See process	1.846	(£ to miles to kg CO <sub>2</sub> )	24	Measurement	3
X	Car Hire	Europcar	See process	0.32926	(Miles to kg CO <sub>2</sub> )	0	Estimate	3
X	Taxi	Corporate Credit Card	See process	0.12903	(£ to miles to km to kg CO <sub>2</sub> )	1	Estimate	3
	<b>Total</b>					<b>6,358</b>		



## Business Transport- Passenger- Rail

Key	Data Type/ Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	Rail Expense Claims	SAP	See process	0.462	(£ to miles to kg CO <sub>2</sub> )	100	Measurement	3
X	Rail	Corporate Credit Card	See process	0.462	£ to miles to km to CO <sub>2</sub>	237	Estimate	3
X	Rail	Carlson Wagonlit	See process	0.091	National Rail factor applied to all train travel	6	Measurement	3
X	Rail	Carlson Wagonlit Eurostar and Continental	See process	0.024	(Miles to km to kg CO <sub>2</sub> )	0	Measurement	3
	<b>Total</b>					<b>342</b>		

## Business Transport- Passenger- Air

Key	Data Type/ Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	Air - Domestic	Carlson Wagonlit Corporate Credit Card	See process	0.289	(Miles to km to kg CO <sub>2</sub> )	2	Measurement	3
X	Air - Short Haul	Carlson Wagonlit Corporate Credit Card	See process	0.162	(Miles to km to kg CO <sub>2</sub> )	21	Measurement	3
X	Air - Long Haul	Carlson Wagonlit Corporate Credit Card	See process	0.196	(Miles to km to kg CO <sub>2</sub> )	17	Measurement	3
	<b>Total</b>					<b>40</b>		

The data is captured through 3 different sources:

- 1) SAP (financial management system): mileage and travel claimed through expenses
- 2) Carlson Wagonlit (CWL): our approved travel provider
- 3) Corporate credit card: travel purchased through company credit cards

The data is recorded by type of travel e.g. air, rail and road.

Business travel is not separately recorded by each licence area. The total business mileage has been apportioned based on the number of staff employed per area. The actual CO<sub>2</sub> rating of the vehicle as opposed to the DEFRA average has been used this year to reflect the investment we have made in lower emission vehicles. **Table 3.a** shows this breakdown and the final figures per licence area submitted to Ofgem.

## Fugitive Emissions

Our online reporting system called Ellipse is used to capture data for any SF6 lost through top-ups. We have calculated our SF6 emissions in accordance with ENA-ER S38 and the Defra conversion factors. Submitted SF6 data is for the regulatory reporting year (April 2011 - March 2012) rather than calendar year 2011. This is consistent with our return last year and the reporting of SF6 elsewhere in the rigs. **Table 4.a** shows the data by licence area submitted to Ofgem.

**Table 4.a**

Key	Data Type/Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
<b>A</b>	LPN SF6 Losses	Ellipse	See process	*23,900	(Kg to KgCO <sub>2</sub> )	454	Measurement	1
<b>B</b>	SPN SF6 Losses	Ellipse	See process	*23,900	(Kg to KgCO <sub>2</sub> )	478	Measurement	1
<b>C</b>	EPN SF6 Losses	Ellipse	See process	*23,900	(Kg to KgCO <sub>2</sub> )	1,697	Measurement	1

## Fuel combustion

Two contractors provide standby diesel generators and report monthly fuel usage. **Table 5.b** shows the methodology used to calculate the total tCO<sub>2</sub>e emissions from non-buildings.

Generator fuel usage is not reported by licence area. The same methodology as substation energy usage has been used to apportion for each licence area. **Table 5.a** shows the breakdown of the data submitted to Ofgem .

Submitted data:

**Table 5.a**

Key	Area	No. of substations	% substations	tCO <sub>2</sub> e
<b>A</b>	LPN	16,927	24%	1,553
<b>B</b>	SPN	21,548	30%	1,941
<b>C</b>	EPN	33,030	46%	2,977

**Table 5.b**

## Stand-by diesel mobile generators

Key	Data Type/ Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
X	Stand-by Diesel generators	MEMs & Aggreko	See process	2.668	(litres to kg CO <sub>2</sub> )	6,471	Measurement	1

## Losses

The calculations for units entering and units exiting are as per Ofgem's directions in the Cost and Revenue Reporting RIGs for worksheet V15 (paras 4.97 to 4.126).

In summary 'units exiting' is the sum of units exiting at embedded interconnectors and embedded BMUs plus units distributed to HH and NHH customers; 'units entering' is the sum of all units entering at GSPs, interconnectors and BMUs, less units exiting at GSPs and other interconnectors and other BMUs plus generation exports by HH and NHH customers (i.e. DG).

The data supplied is based upon the latest available reconciliation run although the NHH data is not yet available for 29th to 31st March, hence this period is estimated based on the previous week. This report is compiled several months earlier than last year, hence there have been less reconciliation runs making the data for the two years not comparable. There are still many reconciliations to go through before the data is complete for the purposes of loss reporting. The final data for 2011/12 will be available in July 2013 and the losses performance is expected to deteriorate as future reconciliations are received, the current position should not be taken as a forecast of future performance.

**Table 6.a**

Key	Data Type/ Description	Data Source	Process for recording, estimating, converting to kgCO <sub>2</sub> e	Conversion Factor	Conversion Factor explained	Total April 11- March 12 (tCO <sub>2</sub> e)	Details of data provided e.g. Direct measurement, Estimated or excluded data	Scope (GHG protocol)
A	LPN Losses	Billing for each site	See process	0.524 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	794,489	Measurement	1
B	SPN Losses	Billing for each site	See process	0.524 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	659,789	Measurement	1
C	EPN Losses	Billing for each site	See process	0.524 (Grid rolling average)	(Kwh to Kg CO <sub>2</sub> )	1,049,245	Measurement	1

## Contractors

### Contractor Definition

Contractor data (Y) is made up of data provided by the main contractors who contribute to 90% of our sub contracted work. 19 contractors in total have been captured in this category. These 19 contractors were selected by the size of the financial contract and their scope of work.

As part of our agreement with our contractors they are required to include any data from work that they sub-contract, and to only report data that is accumulated as a direct result of works undertaken for UK Power Networks. This methodology does however mean that we ask our contractors to make some assumptions for example:

### Transport

Whilst mileage reporting is relatively straightforward and contract specific, with fuel usage the contractors split the fuel consumption by the number of companies they are working for dependant on the size of the contract they have with each company.

## Further enquiries

If you have any questions about this report please do not hesitate to contact:

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