

Business Carbon Footprint

2014/15



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1. Introduction

The following commentary details the processes used to calculate the BCF for UK Power Networks specific to our three licensed distribution networks; Eastern Power Networks plc (EPN), London Power Networks plc (LPN) and South Eastern Power Networks plc (SPN).

All data in this commentary that is indicated with a yellow box as shown in the example below corresponds with the completed summary tables returned to Ofgem.

Example:

1.079

All data provided is for the Calendar reporting year (January 2014 to December 2014) unless stated otherwise. In all calculations the latest DEFRA conversion factors as recommended in the reporting guidelines from Ofgem have been used unless stated otherwise.

The Greenhouse Gas (GHG) Protocol categorises direct and indirect emissions into three broad scopes:

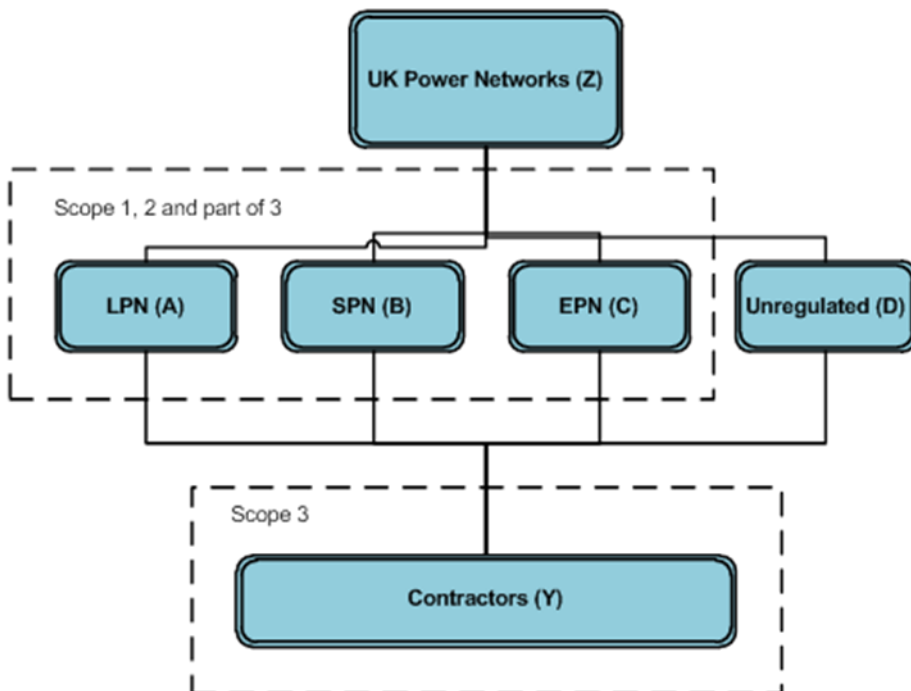
- Scope 1: Direct GHG emissions from sources owned or controlled by UK Power Networks.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by UK Power Networks, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

2. Scope

UK Power Networks is a parent company Z that has full ownership and financial control of operations A, B, C and D Unregulated. Data indicated with an X in our submission is inclusive of data from subsidiaries; A, B, and C unless stated otherwise.

Data defined as D refers to our unregulated business and is excluded from the tables.

Data indicated with a Y is from our main contractors and their sub-contractors for the regulated activities.



3. Building energy usage

Building Energy Use data is collated from electricity and gas bills received for each location. An allowance for electricity consumption is deducted from key locations used by the unregulated business (D) using headcount.

Data is measured in kWh then converted into tCO₂e. In shared buildings headcount is used as a factor to determine energy used per DNO.

We have used Gross CV instead of the previously used Net CV conversion factor for gas as recommended by DEFRA, as it represents the CO₂ content of gas as it is delivered to buildings. It has little effect on our carbon footprint as gas is a very minor element of our overall footprint.

We have carried out a number of building energy audits and have started to implement improvements. Combined with a proactive approach to energy efficient building management and less cold weather in 2014 our office energy use has decreased.

The table below shows a breakdown by energy type and licence area submitted to Ofgem.

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
A	LPN Electricity Usage	Energy Bills	0.494	(kWh to kgCO ₂ e)	1539.02	Measurement	2
B	SPN Electricity Usage	Energy Bills	0.494	(kWh to kgCO ₂ e)	1507.90	Measurement	2
C	EPN Electricity Usage	Energy Bills	0.494	(kWh to kgCO ₂ e)	2290.59	Measurement	2
A	LPN Gas Usage	Energy Bills	0.185 (Gross CV)	(kWh to kgCO ₂ e)	45.61	Measurement	2
B	SPN Gas Usage	Energy Bills	0.185 (Gross CV)	(kWh to kgCO ₂ e)	195.88	Measurement	2
C	EPN Gas Usage	Energy Bills	0.185 (Gross CV)	(kWh to kgCO ₂ e)	141.08	Measurement	2

Annual consumption of energy used in substations has been assessed based on the number and type of plant installed in each licence area. This method has been consistent with that used in previous years.

Note: Substation volumes were last updated in the 2009 project and therefore an alternative methodology will be investigated for next year's submission.

A detailed project took place to analyse electricity usage in our substations. Substations were separated into Grid, Primary and Secondary substations and comprehensive analysis of the energy usage of each type undertaken. Typical energy usage on aspects like heating, lighting and security were determined and then applied across the business based on the numbers of unmetered substations of that type in operation.

The table below shows the substation electricity usage for metered and unmetered sites by licence area.

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Estimated	Scope (GHG Protocol)
A	LPN Metered	Estimate	0.494	(kWh to kgCO ₂ e)	2179	Estimate	2
A	LPN Unmetered	Assessed	0.494	(kWh to kgCO ₂ e)	3179	Estimate	2
B	SPN Metered	Estimate	0.494	(kWh to kgCO ₂ e)	322	Estimate	2
B	SPN Unmetered	Assessed	0.494	(kWh to kgCO ₂ e)	4623	Estimate	2
C	EPN Metered	Estimate	0.494	(kWh to kgCO ₂ e)	5	Estimate	2
C	EPN Unmetered	Assessed	0.494	(kWh to kgCO ₂ e)	11138	Estimate	2

The table below shows the final substation electricity data submitted to Ofgem.

Substation Energy Use		
Key	Area	tCO ₂ e
A	LPN	5358.00
B	SPN	4945.00
C	EPN	11143.00

4. Operational transport

Fuel purchased for UK Power Networks fleet vehicles is captured via fuel cards. Contractor transport data is included from contractor fuel cards submitted via manual reporting. Appropriate conversion factors have been used according to fuel type.

The table below shows a breakdown of tCO₂e emitted from UK Power Networks fleet (X) and by our contractors (Y).

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated	Scope (GHG Protocol)
X	Petrol	Fuel Card	2.191	(litres to tCO ₂ e)	7.13	Measurement	1
X	Diesel	Fuel Card	2.602	(litres to tCO ₂ e)	13685.34	Measurement	1
X	LPG	Fuel Card	1.502	(litres to tCO ₂ e)	4.34	Measurement	1
X	Super unleaded	Fuel Card	2.191	(litres to tCO ₂ e)	60.71	Measurement	1
X	Unleaded	Fuel Card	2.191	(litres to tCO ₂ e)	65.56	Measurement	1
X	Gas Oil	Fuel Card	2.926	(litres to tCO ₂ e)	0.23	Measurement	1
Y	Diesel	Contractor fuel card	2.602	(litres to tCO ₂ e)	15479.64	Measurement	3
Y	Unleaded Petrol	Contractor fuel card	2.191	(litres to tCO ₂ e)	176.90	Measurement	3
Y	Super Unleaded Petrol	Contractor fuel card	2.191	(litres to tCO ₂ e)	22.98	Measurement	3
Y	Leaded Petrol	Contractor fuel card	2.191	(litres to tCO ₂ e)	0.00	Measurement	3
Y	Liquefied Petroleum Gas (LPG)	Contractor fuel card	1.502	(litres to tCO ₂ e)	0.00	Measurement	3
Y	Red diesel	Contractor fuel card	2.926	(litres to tCO ₂ e)	1445.39	Measurement	3
	Total				30,948.22		

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The methodology used for calculating operational transport is consistent each year to obtain comparable data. 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. (Though numbers may differ slightly year on year the percentage split is broadly constant). This method was favoured over geographic area as a split based on km² shows that our London network accounts for only 2% of the total km² across our three areas and this would be a disproportionate split of CO₂e from our transport fleet.

Our operational transport emissions are broadly similar to our emissions the previous year.

The table below shows the breakdown and the final submitted figures to Ofgem per licence area.

Key	Area	Direct op. staff	Percentage of staff	tCO ₂ e
A	LPN	790	30%	9,284.47
B	SPN	852	33%	10,212.91
C	EPN	964	37%	11,450.84

5. Business transport

This section refers primarily to employee X and our contractor Y business travel (attending meetings etc.) which constitutes our indirect operational emissions. Some of the emissions included will be directly related to our operational work due to the data being combined. Any source data available as costs only, has been converted into miles using industry standard methodologies before applying the DEFRA conversion factors.

Transport records for shared services such as IT, HR, etc relating to the unregulated business (D) is not recorded separately and all data is included within the calculations. This is consistent with previous years' submissions. The tables below show a breakdown of tCO₂e emitted by our employees (X) and by our contractors (Y).

Business Transport - Passenger ROAD							
Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
X	Business Miles	SAP	0.305	(Miles to tCO ₂ e)	2563.93	Measurement	3
Y	Contractor Business Miles	Contractor records	0.305	(Miles to tCO ₂ e)	554.08	Measurement	3
X	Diesel	Fuel Card	2.602	(litres to tCO ₂ e)	714.40	Measurement	3
X	Petrol	Fuel Card	2.191	(litres to tCO ₂ e)	13.69	Measurement	3
X	LPG	Fuel Card	1.502	(litres to tCO ₂ e)	1.37	Measurement	3
X	Taxi Expense Claims	SAP	0.186	(£ to tCO ₂ e)	6.47	Estimate	3
X	Fuel Expense Claims	SAP	1.829	(£ to tCO ₂ e)	28.12	Estimate	3
X	Car Hire	Corporate Credit Card	0.305	(Miles to tCO ₂ e)	0.00	Estimate	3
X	Car Hire	Carlson Wagonlit	0.305	(Miles to tCO ₂ e)	0.00	Estimate	3
X	Taxi	Corporate Credit Card	0.186	(£ to tCO ₂ e)	3.35	Estimate	3
	Total				3,885.41		

Business Transport - Passenger RAIL							
Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
X	Rail Expense Claims	SAP	0.336	(£ to tCO ₂ e)	113.27	Measurement	3
X	Rail	Corporate Credit Card	0.336	(£ to tCO ₂ e)	345.21	Estimate	3
X	Rail - Domestic	Carlson Wagonlit	0.047	(Miles to tCO ₂ e)	7.51	Measurement	3
X	Rail – Eurostar Intercontinental	Carlson Wagonlit	0.012	(Miles to tCO ₂ e)	0.17	Measurement	3
	Total				466.16		

Business Transport - Passenger AIR							
Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
X	Air - Domestic	Corporate Credit Card	0.293	(£ to tCO ₂ e)	0.18	Estimate	3
X	Air - Short Haul	Corporate Credit Card	0.166	(£ to tCO ₂ e)	0.23	Estimate	3
X	Air - Long Haul	Corporate Credit Card	0.210	(£ to tCO ₂ e)	1.45	Estimate	3
X	Air - Domestic	Carlson Wagonlit	0.293	(Miles to tCO ₂ e)	6.82	Measurement	3
X	Air - Short Haul	Carlson Wagonlit	0.166	(Miles to tCO ₂ e)	2.86	Measurement	3
X	Air - Long Haul	Carlson Wagonlit	0.210	(Miles to tCO ₂ e)	100.67	Measurement	3
	Total				112.21		

Business transport data is captured from four different sources:

- SAP (financial management system): mileage and travel claimed through expenses
- Carlson Wagonlit (CWL): our approved travel provider for the time period covered by this report
- Corporate credit card (CCC): travel purchased through company credit cards
- Transport: fuel purchased through company fuel cards

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

Business travel data is not recorded by each licence area; therefore the total business mileage has been apportioned based on the number of staff employed per area. For the 74% of the vehicles owned by UK Power Networks the actual CO2 rating has been used to improve the quality and accuracy of data while for the 26% privately owned vehicles the DEFRA average has been used.

Air travel data is provided by CWL as actual miles; however the air travel data from SAP is in monetary value only. A cost per mile calculation is ascertained using the CWL data and applied to the SAP data. This includes an assumption that the cost of air transport from SAP data will be the similar to the cost of air transport from CWL data.

Rail & taxi data is in monetary value only. A cost per mile calculation is ascertained using national methodologies and applied to the SAP data. This includes an assumption that the cost of road and rail transport from SAP data will be the similar to the cost from CWL data.

The table below shows the breakdown and the final figures per licence area submitted to Ofgem.

Business Transport - Passenger ROAD				
Key	Area	Headcount	Percentage of staff	tCO ₂ e
A	LPN	1,328	30%	1165.62
B	SPN	1,495	33%	1282.19
C	EPN	2,050	37%	1437.60

Business Transport - Passenger RAIL				
Key	Area	Headcount	Percentage of staff	tCO ₂ e
A	LPN	1,328	30%	139.85
B	SPN	1,495	33%	153.83
C	EPN	2,050	37%	172.48

Business Transport - Passenger AIR				
Key	Area	Headcount	Percentage of staff	tCO ₂ e
A	LPN	1,328	30%	33.66
B	SPN	1,495	33%	37.03
C	EPN	2,050	37%	41.52

6. Fugitive emissions

SF₆ is an electrical insulating gas that is commonly found in modern electrical switchgear. This gas can leak following faults or from old equipment.

We continue to actively monitor our assets and have a number of procedures to minimise the escape of SF₆ to the environment. The SF₆ that is lost we measure and record under fugitive emissions. Submitted SF₆ data is for the regulatory reporting year (April 2014 - March 2015) rather than calendar year 2014.

Emissions from air conditioning has not been included, this is consistent with our return last year.

The table below shows the data by licence area submitted to Ofgem.

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Apr 14 to Mar 15 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
A	LPN SF ₆ Losses	Ellipse	23,900	(kg to tCO ₂ e)	28.68	Measurement	A
B	SPN SF ₆ Losses	Ellipse	23,900	(kg to tCO ₂ e)	301.14	Measurement	B
C	EPN SF ₆ Losses	Ellipse	23,900	(kg to tCO ₂ e)	1418.70	Measurement	C

7. Fuel combustion

This section refers to the emissions from plant and equipment such as temporary generators used during fault repairs and planned work on the network.

The data is captured through two different sources:

- Contractors provide standby diesel generators and report monthly fuel usage. Invoices from diesel fuel supplied are used to collate the monthly fuel usage by licence area.
- Data from fuel cards capture the fuel used by company owned plant and equipment.

The source data is separated by area. This is consistent with previous years.

The table below details a breakdown of the information by data source.

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Jan - Dec 14 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
X	Stand-by Diesel generators	Contractor records	2.926	(litres to tCO ₂ e)	11544.47	Measurement	X
X	Plant and equipment	UK Power Networks owned & Fuel Cards	2.926	(litres to tCO ₂ e)	823.37	Measurement	X

The table below shows the final figures per licence area submitted to Ofgem.

Key	Area	tCO ₂ e
A	LPN	1,717.71
B	SPN	6,328.58
C	EPN	4,321.55

8. Losses

These calculations were prepared as per Ofgem's directions in the now discontinued Cost and Revenue Reporting RIGs for worksheet V15, maintaining consistency with previous reporting.

It measures units exiting our distribution network compared to units entering from Grid Supply Points and any other sources.

Figures are from the regulatory year April 2014 to March 2015. Please note the final data for 2014/15 will not be available until July 2016 and the losses performance is expected to deteriorate as future reconciliations are received.

The current position should therefore not be taken as a forecast of future performance.

The table below shows the data by licence area submitted to Ofgem.

Key	Data Type/Description	Data Source	Conversion Factor	Conversion Factor Detail	Total Apr 14 to Mar 15 tCO ₂ e	Details of data provided e.g. Direct Measurement, Estimated or Excluded Data	Scope (GHG Protocol)
A	LPN Losses	Billing for each site	0.494	(kWh to tCO ₂ e)	913,886.74	Measurement	A
B	SPN Losses	Billing for each site	0.494	(kWh to tCO ₂ e)	663,791.18	Measurement	B
C	EPN Losses	Billing for each site	0.494	(kWh to tCO ₂ e)	1,178,315.84	Measurement	C