

Carbon Hotspots update for the health and care sector in England 2015

- Healthcare purchased from outside the NHS is the single biggest hotspot at 3 million tonnes of carbon dioxide equivalent (MtCO₂e)
- Pharmaceuticals are the biggest hotspot for GPs (2.4 MtCO₂e)
- Medical instruments, electricity and gas and are all significant for acute organisations (1.9, 1.7 and 1.4 MtCO₂e respectively)
- Dentists have high emissions from patient and staff travel (32% and 31% respectively)



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Introduction

Since 2008 the move towards a more sustainable health system has been supported by the development of a carbon footprint for the NHS, public health and social care sector. The health and care sector carbon footprint and projections to 2050 have been published alongside this report¹.

Carbon Hotspots were also published alongside the NHS carbon footprint in 2012 to provide a more detailed breakdown. Organisations within the health and care sector have various characteristics which have been used to model the carbon hotspots for these organisation types. The estimates have been extended to the NHS, public health and social care sector and provide broad guidance on the scale and categories of emissions with the most impact.

Various data sources have been combined to create estimates of the carbon footprint for each organisation type. Sources include: financial information, activity figures, case studies of detailed estimates, expenditure category breakdowns, estates information, sustainability reporting etc.

Carbon footprint breakdown here can be used in conjunction with bottom-up estimates of patient pathway modules². Estimates included here are higher than bottom-up estimates as all overheads have been apportioned to activity.

Health and care breakdown – by organisation type

The ‘hotspots’ for different types of organisation depend on the services being provided. Healthcare purchased from outside the NHS is the single biggest hotspot (3 MtCO₂e) as shown below.

Pharmaceuticals are the biggest hotspot for GPs (2.4 MtCO₂e), particularly Meter Dose Inhalers (0.8 MtCO₂e). Medical instruments, electricity and gas are all significant for acute organisations (1.9, 1.7 and 1.4 MtCO₂e respectively). Dentists have high emissions from patient and staff travel compared to their carbon footprint (32% and 31% respectively). CCGs have high emissions from business travel (0.2 MtCO₂e) along with an influence over the total carbon footprint of providers through commissioning arrangements (11.6 MtCO₂e, 98% of their influence, not shown on the graphic).

¹ Carbon update for the health and care sector in England 2015, Sustainable Development Unit, 2016. Available at: www.sduhealth.org.uk/report

² Sustainable Care Pathways Guidance - Main Document, CSPM, 2015. Available at: <http://www.sduhealth.org.uk/areas-of-focus/carbon-hotspots/pharmaceuticals/cspm/sustainable-care-pathways-guidance.aspx>



Further information about the organisation breakdown in Appendix 1 – Detail sector breakdown 2015.



Biggest hotspots by organisation type

Percentages are shown of the organisation total

Organisation type	Category	Carbon footprint (ktCO2e)	Percentage
CCG	Commissioned health and social care services	11602	98%
GP	Pharmaceuticals excluding inhalers	1609	43%
	Meter Dose Inhalers	806	22%
Dentist	Patient Travel	210	32%
	Staff Travel	205	31%
Community	Medical Instruments /equipment	68	15%
	Business services	65	14%
Mental Health	Electricity	289	16%
	Gas	195	11%
Ambulance	Fleet	200	36%
	Anaesthetic gases	77	14%
Specialist	Medical Instruments /equipment	144	21%
Acute	Medical Instruments /equipment	1919	17%
	Electricity	1788	15%
Adult Social Care	Commissioned health and social care services	815	25%
	Food and catering	444	14%
Public Health	Electricity	98	17%

Service type carbon intensities

Carbon intensities can be used to benchmark organisations or to estimate carbon emissions for parts of a patient pathway. For example, carbon emissions have been included in the Unit Costs of Health and Care³ report for the first time in 2015. The following are average carbon intensities for different types of services:

	Carbon intensity (kgCO₂e/£000)	Carbon intensity per head of population (kg/person)	Carbon per unit activity⁴
GP	150	70	Per patient contact lasting 11.7 minutes 6 kgCO ₂ e (including pharmaceuticals is 18 kgCO ₂ e)
Dentist	210	10	NHS dentist – performer-only per hour 17 kgCO ₂ e per hour patient contact 21 kgCO ₂ e Dentist – providing-performer per hour 19 kgCO ₂ e per hour patient contact 27 kgCO ₂ e
Community	160	10	See acute below
Mental Health	160	30	
Ambulance	260	10	Ambulance - See and treat and refer 30 kgCO ₂ e Ambulance - See and treat and convey 38 kgCO ₂ e
Specialist	210	10	See acute below
Acute	210	210	Elective inpatient stays 708 kgCO ₂ e Non-elective inpatient stays (long stays) 595 kgCO ₂ e Non-elective inpatient stays (short stays) 126 kgCO ₂ e Day cases average of all stays 146 kgCO ₂ e Average of all outpatient attendances 23 kgCO ₂ e
Adult Social Care	220	60	
Public Health	160	10	

³ PSSRU Unit Costs of Health and Care, 2015. Available at: <http://www.pssru.ac.uk/project-pages/unit-costs/2015/index.php>

⁴ PSSRU Unit Costs of Health and Care, 2015. Available at: <http://www.pssru.ac.uk/project-pages/unit-costs/2015/index.php>

Appendix 1 – Detail sector breakdown 2015

Category	Total	GP	Dentist	CCG	Community	Mental Health	Ambulance	Specialist	Acute	Adult Social Care	Public Health	Dept and ALBs
Patient Travel	1,245	317	210	-	31	111	-	15	487	73	-	-
Visitor Travel	628	-	-	-	1	115	-	4	194	314	-	-
Staff Travel	616	36	205	11	17	57	11	11	219	49	-	-
Business Travel	980	4	21	157	36	157	66	26	215	245	21	31
Electricity	2,938	168	49	33	45	289	38	92	1,788	308	98	31
Gas	2,086	248	46	-	35	195	18	67	1,406	53	11	8
Oil	32	-	-	-	0	2	0	0	26	2	0	1
Coal	23	-	-	-	-	0	-	-	21	2	0	-
Pharmaceuticals including inhalers	3,619	2,415	22	-	2	40	1	70	980	4	85	-
Medical Instruments /equipment	2,586	181	22	0.1	68	93	17	144	1,919	66	76	-
Freight transport	872	-	0	-	33	79	200	27	346	140	22	25
Business services	2,790	101	68	0.1	65	156	37	48	916	431	71	896
Paper products	587	147	1	0.0	15	25	27	29	261	60	16	7
Other manufactured products	480	-	5	0.1	8	13	11	6	319	64	13	41
Manufactured fuels, chemicals and gases	631	30	-	0.1	19	68	7	21	373	53	17	43
Food and catering	1,299	-	-	0.2	22	72	12	27	654	444	26	43
Construction	658	13	3	0.0	13	65	9	16	316	67	18	138
Information and communication technologies	431	55	4	0.0	6	41	6	16	136	57	11	99
Water and sanitation	199	1	1	0.0	6	30	4	8	127	9	6	7
Waste products and recycling	511	9	1	0.0	16	76	11	20	320	24	15	18
Other procurement	-	-	-	-	-	-	-	-	-	-	-	-
Anaesthetic gases	477	-	5.8	-	-	-	77	12	382	-	-	-
Commissioned health and social care services	3,048	-	-	11,602	19	80	7	12	205	815	68	-
Total Procurement inc anaesthetics and MDIs	15,141	2,952	133	1	272	757	419	444	7,052	1,418	376	1,318
Total Procurement with commissioned	18,189	2,952	133	11,603	291	837	426	456	7,258	2,233	444	1,318
Total	23,689	3,725	664	202	437	1,683	552	659	11,410	2,463	506	1,388
Total inc commissioned	26,737	3,725	664	11,804	456	1,763	560	671	11,615	3,279	574	1,388

Note: Numbers may vary from other documents and not sum due to rounding. Commissioned activity includes transfers between organisation types so does not sum.

Appendix 2 – Travel model

Type	Number	Patient trips/ type	Patient trips	Patient journey distance (miles)	Patient distance (miles)	Visitor trips/ type	Visitor trips	Visitor journey distance (miles)	Visitor distance (miles)	Carbon footprint per unit activity (patient) - kgCO ₂ e	Carbon footprint per unit activity (visitor) kgCO ₂ e	Carbon footprint travel (patient) kgCO ₂ e	Carbon footprint travel (visitor) kgCO ₂ e
Inpatient admissions (2013/14)	16.0 million	2	32.0 million	9.4	301.0 million	0.5	8.0 million	9.4	75.2 million	4.7	1.16	74.5 million	18.6 million
Inpatient stay beddays (2013/14)	47.7 million	0		9.4	.0 million	2	95.3 million	9.4	895.8 million	0.0	4.65	.0 million	221.7 million
Outpatients (consultant) (2013/14)	45.7 million	2	91.4 million	9.4	858.9 million	1	45.7 million	9.4	429.4 million	4.7	2.33	212.6 million	106.3 million
Other (estimate) inc. diagnostics, community, maternity, Mental Health, A&E	119.3 million	2	238.6 million	9.4	2243.0 million	1	119.3 million	9.4	1121.5 million	4.7	2.33	555.2 million	277.6 million
Total hospital travel	109.3 million		362.0 million	9.4	3402.8 million		268.3 million	9.4	2522.0 million	0.0	0.00	842.3 million	624.2 million
GP (2014)	340.0 million	2	680.0 million	2.0625	1402.5 million	0.02	6.8 million	2.0625	14.0 million	1.0	0.01	347.1 million	3.5 million
Dentists	87.2 million	1.5825	138.0 million	7.57	1044.9 million	0.02	1.7 million	7.57	13.2 million	3.0	0.04	258.6 million	3.3 million

Note: Totals were scaled to match national figures.

Average carbon intensity of 0.25 kg CO₂e per mile

Appendix 3 – Detail data sources used

Description	Link
Non-NHS commissioned activity expenditure	http://www.ons.gov.uk/ons/dcp171766_393405.pdf
Pharmaceuticals spend breakdown	http://www.hscic.gov.uk/searchcatalogue?productid=16392&topics=0%2fPrescribing&sort=Relevance&size=10&page=1#top
Estates and Facilities Information Collection (ERIC)	http://hefs.hscic.gov.uk/
Workforce numbers	http://www.hscic.gov.uk/searchcatalogue?productid=17327&q=monthly+nhs+hospital+and+community+service+workforce+statistics&sort=Most+recent&size=10&page=1#top
Reference costs	https://www.gov.uk/government/publications/nhs-reference-costs-2013-to-2014
Accounts breakdown for NHS Foundation Trusts	https://www.gov.uk/government/publications/nhs-foundation-trust-accounts-consolidation-ftc-files-201415
Unit Costs of Health and Social Care from PSSRU	http://www.pssru.ac.uk/project-pages/unit-costs/2015/index.php
UK carbon conversion factors	http://www.ukconversionfactorscarbonsmart.co.uk/
UK carbon footprint and consumption emissions factors	https://www.gov.uk/government/statistics/uks-carbon-footprint

Appendix 4 – Anaesthetic gas breakdown

Carbon dioxide equivalent emissions from anaesthetic gases by organisation type and activity type

	Anaesthetic gases	Maternity (N ₂ O)	Mobile (ambulance and emergency N ₂ O)	Surgery (N ₂ O and other gases)
Total	477	130	138	209
GP	-	-	-	-
Dentist	5.8	-	-	5.8
Community	-	-	-	-
Mental Health	-	-	-	-
Ambulance	77	-	77	-
Specialist	12	-	-	12
Acute	382	130	61	191



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