



Department for
Energy Security
& Net Zero

2024 Government Greenhouse Gas Conversion Factors for company reporting

Major changes to the Conversion Factors



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Any enquiries regarding this publication should be sent to GreenhouseGas.Statistics@beis.gov.uk.

This document has been produced by Rebekah Bramwell, Peter Brown, Fabio Galatioto, Dom Ingledew, Eirini Karagianni, Alex Kelsall, Joanna MacCarthy, Joe London, Paddy Mullen, Charles Walker, Judith Bates, Nik Hill, Dan Willis, Jason Wong (Ricardo Energy & Environment) and Billy Harris (WRAP) for the Department for Energy Security & Net Zero.

1. Major Changes to the Conversion Factors

The following table summarises the major changes in conversion factors for the 2024 Greenhouse Gas (GHG) Conversion Factors, compared to the equivalent factors provided in the 2023 GHG Conversion Factors, and a short explanation for the reasons for the changes. We have considered major changes to be those greater than 5% for Scope 1 and 2 emission sources (applies to most fuel and electricity sources) and greater than 10% for Scope 3 (applies to most of the other emission sources). Please refer to the Glossary section at the end of this document for any acronyms used in the table below.

Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
Fuels						
No major changes this year.						Section 2
Bioenergy						
1	Grass/straw	CO ₂ e	All	-6%	Changes apply only to CH ₄ factor with N ₂ O remaining the same; decreased use in stationary combustion offset by increased use in power stations.	Section 9
2	Wood chips/logs/pellets	CO ₂ e	All	5%	Changes apply only to CH ₄ factor with N ₂ O remaining the same; decreased use in stationary combustion offset by increased use in power stations.	Section 9
Refrigerants and other						
Factors remained constant from the 2023 update.						
Passenger Vehicles						
3	Cars (by size) – Small car, Medium car, Average car - Hybrid	CO ₂	km and miles	5% to 11%	Hybrid cars factors increased due to updated uplift factors applied to WLTP test cycle emission data (after 2020). This change mainly affects hybrids and not petrol, diesel, or unknown fuel cars, the reason is that the number of hybrid cars has grown in recent years, while the number of other fuel types has remained stable over the years.	Section 5

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
4	Cars (by market segment) – Supermini, Lower medium, Upper medium, Executive, Luxury, Sports, Dual purpose 4X4, MPV - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	30% to 50%	PHEVs' direct emissions have significantly increased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. This increase outweighs the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
5	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	32% to 46%	As above.	Section 5
Delivery vehicles						
6	Vans - All fuels, all classes	CO ₂	km and miles	Diesel 8.0% Petrol 10-11% CNG 8% LPG 8% Unknown 8%	Increase in factors comes from increases to CO ₂ emission factors (kgCO ₂ /km) from the NAEI, which has bigger impact on petrol vans (11-14%) than diesel vans (8%). This is due to additional cold start excess included in NAEI22. COPERT 5.6 (NAEI22) includes a cold start excess for fuel consumption that wasn't in COPERT 5.4 (NAEI21). This cold start excess applies for light duty vehicles (LDVs) but not heavy duty vehicles (HDVs).	Section 6
SECR kWh pass & delivery vehs						
7	Cars (by size) – Small car, Medium car, Average car - Hybrid	CO ₂	km and miles	6% to 12%	Hybrid cars factors increased due to updated uplift factors applied to WLTP test cycle emission data (after 2020). This change mainly affects hybrids and not petrol, diesel, or unknown fuel cars, the reason is that the number of hybrid cars has grown in recent years, while the number of other fuel types has remained stable over the years.	Section 14
8	Cars (by market segment) – Supermini, Lower medium, Upper medium, Executive,	kWh	km and miles	30% to 51%	PHEVs' direct emissions have significantly increased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-	Section 14

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
	Luxury, Sports, Dual purpose 4X4, MPV - Plug-in Hybrid Electric Vehicle (PHEV)				world data. This increase outweighs the general decrease resulting from newer cars with lower emissions penetrating the fleet.	
9	Cars (by size) – All sizes - Plug in Hybrid	kWh	km and miles	33% to 47%	As above.	Section 14
10	Vans - All fuels, all classes	kWh	tonne.km, km and miles	Diesel 8% Petrol 11-15% CNG 8% LPG 8% Unknown 8%	Increase in factors comes from increases to CO ₂ emission factors (kgCO ₂ /km) from the NAEI, which has bigger impact on petrol vans (11-14%) than diesel vans (8%). This is due to additional cold start excess included in NAEI22. COPERT 5.6 (NAEI22) includes a cold start excess for fuel consumption that wasn't in COPERT 5.4 (NAEI21). This cold start excess applies for LDVs but not HDVs.	Section 14
11	Rigid HGV (all diesel) >7.5 tonnes-17 tonnes, Average laden	kWh	tonne.km	8%	Emission Factor in tonne.km has increased from last year due to lower goods moved despite fuel consumption staying relatively constant.	Section 14
12	Rigid HGV refrigerated (all diesel) >7.5 tonnes-17 tonnes, Average laden	kWh	tonne.km	8%	As above.	Section 14
UK Electricity						
No major changes this year.						Section 3
UK electricity for EVs						
13	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-18% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
14	Cars (by market segment) – All segments - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	-55% to -6%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
15	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-15% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
16	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	-50% to -6%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
17	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes), Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	km and miles	8% to 10%	Increase caused by newly registered vehicles being more energy intensive per km or miles as shown in VCA vehicle performance database.	Section 6
18	Vans – Class I (up to 1.305 tonnes), Class III (1.74 to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	-10% to -14%	The decrease in "per tonne.km" caused by newly registered vehicles with higher load capacity.	Section 6
19	Vans – Class II (1.305 to 1.74 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	5%	Increase caused by newly registered vehicles being more energy intensive per km as shown in VCA vehicle performance database, while load capacity remained at a similar level as last year.	Section 6

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
SECR kWh UK electricity for EVs						
20	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	kWh	km and miles	-18% to -10%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 14
21	Cars (by market segment) – Supermini, Lower medium, Upper medium, Executive, Luxury, Sports, Dual purpose 4X4, MPV- Plug-in Hybrid Electric Vehicle (PHEV)	kWh	km and miles	-55% to -6%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 14
22	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	kWh	km and miles	-15% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 14
23	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	kWh	tonne.km, km and miles	-50% to -6%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 14
24	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes), Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)	kWh	km and miles	10% to 11%	Increase caused by newly registered vehicles being more energy intensive per km or miles as shown in VCA vehicle performance database.	Section 14

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
25	Vans – Class I (up to 1.305 tonnes), Class III (1.74 to 3.5 tonnes) - Battery Electric Vehicle (BEV)	kWh	tonne.km	-14% to -10%	The decrease in "per tonne.km" caused by newly registered vehicles with higher load capacity.	Section 14
26	Vans – Class II (1.305 to 1.74 tonnes) - Battery Electric Vehicle (BEV)	kWh	tonne.km	5%	Increase caused by newly registered vehicles being more energy intensive per km while load capacity remained constant.	Section 14
Heat and Steam						
Factors remained constant from the 2023 update.						
WTT – fuels						
Factors remained constant from the 2023 update.						
WTT – bioenergy						
27	Avtur (renewable)	CO ₂ e	All	75 – 77%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
28	Biodiesel HVO	CO ₂ e	All	101%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
29	Biodiesel ME	CO ₂ e	All	7.5%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production	Section 9

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
					plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	
30	Bioethanol	CO ₂ e	All	-10%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
31	Biogas	CO ₂ e	All	-35%	Revisions due to updating the data source to obtain an up-to-date figure.	Section 9
32	Biomethane (liquified)	CO ₂ e	All	-56%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly. decreased WTT emissions which should be related to the emissions from the production plants.	Section 9
33	Biopropane	CO ₂ e	All	-16%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
34	Development diesel	CO ₂ e	All	-12.4%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the	Section 9

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
					weighted average factor for a specific fuel can change significantly.	
35	Development petrol	CO ₂ e	All	-10%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
36	Off road biodiesel	CO ₂ e	All	7.5%	WTT EFs reported under RTFO are very specific to the feedstock used to produce the fuel, the source of that feedstock, and process conditions at the production plant where the fuel is made. If the mix of feedstocks and production plants changes year on year the weighted average factor for a specific fuel can change significantly.	Section 9
Transmission and distribution (T&D)						
No major changes this year.						Section 3
UK electricity T&D for EVs						
37	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-16% to -9%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
38	Cars (by market segment) –Lower medium, Upper medium, Executive, Luxury, Sports, Dual purpose	CO ₂	km and miles	-54% to -47%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease	Section 5

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
	4X4, MPV- Plug-in Hybrid Electric Vehicle (PHEV)				resulting from newer cars with lower emissions penetrating the fleet.	
39	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-14% to -9%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
40	Cars (by size) – Medium, Large, Average - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	-49% to -46%	PHEVs' emissions from electricity use have significantly decreased this cycle mainly due to the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. There is also a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
41	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes), Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	km and miles	10% to 13%	Increase caused by newly registered vehicles being more energy intensive per km or miles as shown in VCA vehicle performance database.	Section 6
42	Vans – Class I (up to 1.305 tonnes), Class III (1.74 to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	-12% to -8%	The decrease in "per tonne.km" caused by newly registered vehicles with higher load capacity.	Section 6
43	Vans – Class II (1.305 to 1.74 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	8%	Increase caused by newly registered vehicles being more energy intensive per km while load capacity remained at a similar level as last year.	Section 6
WTT- UK & overseas elec						
No major changes this year.						Section 3 & 10
WTT- heat and steam						
No major changes this year.						Section 3

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
Water supply						
44	Water supply	CO ₂ e	All	-13%	2024 figures reflect the latest data reported by the water companies, and this shows considerable interannual variation	Section 9
Water treatment						
45	Water treatment	CO ₂ e	All	-8%	2024 figures reflect the latest data reported by the water companies, and this shows considerable interannual variation	Section 9
Material use						
46	Construction - Concrete, Wood - Primary material production	CO ₂ e	tonnes	-14% to -10%	Updated with the latest data from ecoinvent lifecycle database	Section 12
47	Construction - Wood - Closed-loop source	CO ₂ e	tonnes	-100%	Removed as the historical figure was not representative of closed loop recycling processes and a suitable replacement has not been sourced. All recycling processes that involve adding binders or adhesives to the wood at end of life (e.g. manufacture of fibreboard) are covered under the open loop recycling factor.	Section 12
48	Plastic - All (except average plastics, average plastic rigid, HDPE (incl. forming), PET (incl. forming) - Primary material production, Closed-loop source	CO ₂ e	tonnes	-49% to +16%	Replaced old figures for resin production, recycled content production and forming emissions with ecoinvent data.	Section 12
49	Paper - All - Primary material production, Closed-loop source	CO ₂ e	tonnes	+43% to +56%	Replaced virgin material factors with ecoinvent data.	Section 12
Waste disposal						

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
50	Construction – Mineral oil, Plasterboard, Tyres, Wood – Closed-loop, Combustion	CO ₂ e	tonnes	-70%	An error affecting the transport emissions for the recycling and EfW (Energy from Waste) factors has been corrected. The transport emissions associated with these disposal approaches were reduced.	Section 12
51	Other – All – Open-loop, Closed-loop, Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
52	Refuse - All - Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
53	Electrical items - All - Open-loop, Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
54	Metal - All - Open-loop, Closed-loop, Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
55	Plastic - All - Open-loop, Closed-loop, Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
56	Paper - All - Closed-loop, Combustion	CO ₂ e	tonnes	-70%	As above.	Section 12
57	Other - Books - Composting	CO ₂ e	tonnes	8%	An error in last year's "Books - Composting" was corrected.	Section 12
Business travel- air						
Factors remained constant from the 2023 update.						Section 8
WTT- Business travel- air						
Factors remained constant from the 2023 update.						Section 8
Business travel- sea						
Factors remained constant from the 2023 update.						Section 7
WTT- Business travel- sea						
Factors remained constant from the 2023 update.						Section 7

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
Business travel - land						
58	Cars (by size) – Small car, Medium car, Average car - Hybrid	CO ₂	km and miles	5% to 11%	Hybrid cars factors increased due to updated uplift factors applied to WLTP test cycle emission data (after 2020). This change mainly affects hybrids and not petrol, diesel, or unknown fuel cars, the reason is that the number of hybrid cars has grown in recent years, while the number of other fuel types has remained stable over the years.	Section 5
59	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-18% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
60	Cars (by market segment) – Supermini, Upper medium, Luxury, Sports, Dual purpose 4X4 - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	12% to 32%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
61	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-15% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
62	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	10% to 18%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general	Section 5

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
					decrease resulting from newer cars with lower emissions penetrating the fleet.	
63	Local bus (not London)	CO ₂	passenger.km	10%	Lower fuel consumption to reflect the recovery from pandemic, but also an artificial drop in passenger vkm compared to last year when we rolled passenger vkm from 2018.	Section 5
WTT – pass vehs & travel- land						
64	Cars (by size) – Small car, Medium car, Average car - Hybrid	CO ₂	km and miles	6% to 12%	Hybrid cars factors increased due to updated uplift factors applied to WLTP test cycle emission data (after 2020). This change mainly affects hybrids and not petrol, diesel, or unknown fuel cars, the reason is that the number of hybrid cars has grown in recent years, while the number of other fuel types has remained stable over the years.	Section 5
65	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-18% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
66	Cars (by market segment) – Supermini, Lower medium, Upper medium, Executive, Luxury, Sports, Dual purpose 4X4 - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	11% to 36%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
67	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-15% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
68	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	14% to 22%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
69	WTT - Local bus (not London)	CO ₂ e	passenger.km	10%	Increase due to the changes to the direct CO ₂ transport and CO ₂ fuel factors.	Section 5
Freighting goods						
70	Vans - Petrol, all classes	CO ₂	tonne.km, km, miles	10% to 14%	Although other fuels (diesel, cng, lpg) also see increases they do not meet the 10% threshold for scope 3. Increase in factors comes from increases to CO ₂ emission factors (kgCO ₂ /km) from the NAEI, which has bigger impact on petrol vans (11-14%) than diesel vans (8%). This is due to additional cold start excess included in NAEI22. COPERT 5.6 (NAEI22) includes a cold start excess for fuel consumption that wasn't in COPERT 5.4 (NAEI21). This cold start excess applies for LDVs but not HDVs.	Section 6
71	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes), Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	km and miles	11%	Increase caused by newly registered vehicles being more energy intensive per km or miles as shown in VCA vehicle performance database.	Section 6
72	Vans – Class I (up to 1.305 tonnes), Class III (1.74 to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	-14% to -10%	The decrease in "per tonne.km" caused by newly registered vehicles with higher load capacity.	Section 6

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Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
WTT – delivery vehs & freight						
73	Vans - Petrol, all classes	CO ₂ e	tonne.km, km, miles	11% to 15%	Although other fuels (diesel, cng, lpg) also see increases they do not meet the 10% threshold for scope 3. Increase in factors comes from increases to CO ₂ emission factors (kgCO ₂ /km) from the NAEI, which has bigger impact on petrol vans (11-14%) than diesel vans (8%). This is due to additional cold start excess included in NAEI22. COPERT 5.6 (NAEI22) includes a cold start excess for fuel consumption that wasn't in COPERT 5.4 (NAEI21). This cold start excess applies for LDVs but not HDVs.	Section 6
74	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes), Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	km and miles	10% to 11%	Increase caused by newly registered vehicles being more energy intensive per km or miles as shown in VCA vehicle performance database.	Section 6
75	Vans – Class I (up to 1.305 tonnes), Class III (1.74 to 3.5 tonnes) - Battery Electric Vehicle (BEV)	CO ₂	tonne.km	-14% to -10%	The decrease in "per tonne.km" caused by newly registered vehicles with higher load capacity.	Section 6
Hotel Stay						
Factors remained constant from the 2022 update.						Section 11
Managed assets- electricity						
No major changes this year.						Section 3
Managed assets- vehicles						
76	Cars (by size) – Small car, Medium car, Average car - Hybrid	CO ₂	km and miles	5% to 11%	Hybrid cars factors increased due to updated uplift factors applied to WLTP test cycle emission data (after 2020). This change mainly affects hybrids and not petrol, diesel, or unknown fuel cars, the reason is that	Section 5

2024 Government greenhouse gas conversion factors for company reporting: Major changes to the Conversion Factors

Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
					the number of hybrid cars has grown in recent years, while the number of other fuel types has remained stable over the years.	
77	Cars (by market segment) – Mini, Supermini, Lower medium, Upper medium, Executive, Sports, Dual purpose 4X4, MPV - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-18% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
78	Cars (by market segment) – Supermini, Upper medium, Luxury, Sports, Dual purpose 4X4 - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	12% to 32%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
79	Cars (by size) – All sizes - Battery Electric Vehicle (BEV)	CO ₂	km and miles	-15% to -11%	For BEV, there is a general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
80	Cars (by size) – All sizes - Plug-in Hybrid Electric Vehicle (PHEV)	CO ₂	km and miles	10% to 18%	PHEVs' increase in emission mainly caused by the updated PHEV utility factors, which represent the percentage of distance driven solely by electricity in PHEVs, to align with real-world data. The significantly increased direct emissions outweighs the decrease in emissions from electricity use and the general decrease resulting from newer cars with lower emissions penetrating the fleet.	Section 5
81	Vans – Class I (up to 1.305 tonnes), Class II (1.305 to 1.74 tonnes),	CO ₂	km and miles	10% to 11%	Increase caused by newly registered vehicles being more energy intensive per km or miles.	Section 6

2024 Government greenhouse gas conversion factors for company reporting: Major changes to the Conversion Factors

Ref. number	Emission factor	GHG	Unit (all units are kgCO ₂ e per "unit" of GHG, unless stated)	Magnitude of change vs 2023 update	Reason for change	For more information see relevant section in methodology report:
	Average (up to 3.5 tonnes) - Battery Electric Vehicle (BEV)					
82	Vans - Petrol, all classes	CO ₂	km	10% to 11%	Although other fuels (diesel, cng, lpg) also see increases they do not meet the 10% threshold for scope 3. Increase in factors comes from increases to CO ₂ emission factors (kgCO ₂ /km) from the NAEI, which has bigger impact on petrol vans (11% to 14%) than diesel vans (8%). This is due to additional cold start excess included in NAEI22. COPERT 5.6 (NAEI22) includes a cold start excess for fuel consumption that wasn't in COPERT 5.4 (NAEI21). This cold start excess applies for LDVs but not HDVs.	Section 6
Homeworking						
Factors remained constant from the 2023 update.						Section 15
Outside of scopes						
83	Forecourt fuels containing biofuel - Diesel (average biofuel blend)	CO ₂	All	14% to 100%	Year on year revisions are due to the genuine trend in RTFO stats; increased use of biodiesel this year. Non-uniform percentage changes across units are due to the differences of density and net calorific values between biofuels and fossil fuels.	Section 9
84	Forecourt fuels containing biofuel - Petrol (average biofuel blend)	CO ₂	All	8% to 18%	Year on year revisions are due to the genuine trend in RTFO stats; increased use of bioethanol this year. Non-uniform percentage changes across units are due to the differences of density and net calorific values between biofuels and fossil fuels.	Section 9

Glossary

Abbreviation	Definition
ANPR	Automatic Number Plate Recognition
BEV	Battery electric vehicle
CAA	Civil Aviation Authority
CBS	National Bureau for Statistics in the Netherlands
CEF	Carbon emission factor
CH ₄	Methane
CHP	Combined Heat and Power
CHPQA	Combined Heat and Power Quality Assurance
CNG	Compressed natural gas
CO ₂	Carbon dioxide
DfT	Department for Transport
DUKES	Digest of UK Energy Statistics
EEA	European Environment Agency
EF	Emission factor
ETS	Emissions Trading System
FAME	Fatty Acid Methyl Ester
GCV	Gross calorific value
GHG	Greenhouse gas
GVW	Gross vehicle weight
GWP	Global Warming Potential
HGVs	Heavy goods vehicles
IPCC	Intergovernmental Panel on Climate Change
LCA	Life cycle assessment
LGVs	Light goods vehicles
LPG	Liquefied petroleum gas
MTBE	Methyl tert-butyl ether
NAEI	National Atmospheric Emissions Inventory
NCV	Net calorific value
NEDC	New European Driving Cycle
N ₂ O	Nitrous oxide

2024 Government greenhouse gas conversion factors for company reporting: Major changes to the Conversion Factors

Abbreviation	Definition
ORR	Office of Rail and Road
PHEV	Plug-in hybrid electric vehicle
RF	Radiative forcing
RoPax	Roll on/roll off a passenger
RTE	French transmission system operator
RTFO	Renewable Transport Fuel Obligation
RW	Real-world
SEAI	Sustainable Energy Authority of Ireland
SECR	Streamlined Energy and Carbon Reporting
SMMT	Society of Motor Manufacturers and Traders
T&D	Transmission & Distribution
TfL	Transport for London
TTW	Tank-To-Wheel (i.e. direct emissions at the point of use)
UK GHGI	UK's Greenhouse Gas Inventory
UNFCCC	United Nations Framework Convention on Climate Change
WLTP	Worldwide Harmonised Light Vehicle Test Procedure
WTT	Well-To-Tank (i.e. upstream emissions from the production of fuel or electricity)
WTW	Well-To-Wheel (= Well-To-Tank + Tank-To-Wheel)
xEV	Generic term for battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV), range-extended electric vehicles (REEV) and fuel cell electric vehicles (FCEV)

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