



Department for
Energy Security
& Net Zero

2025 GOVERNMENT GREENHOUSE GAS CONVERSION FACTORS FOR COMPANY REPORTING

Major changes to the Conversion Factors

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1. Major Changes to the Conversion Factors

The following table summarises the major changes in conversion factors for the 2025 Greenhouse Gas (GHG) Conversion Factors, compared to the equivalent factors provided in the 2024 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	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2024 update	Reason for change	For more information see relevant section in methodology report:
Fuels						
No major changes this year						
Bioenergy						
1	Grass/straw	CO ₂ e	All	-12%	Changes apply only to CH ₄ factor with N ₂ O remaining the same; this is due to more accurate data on emissions from power stations now being available from the Pollutant Inventory for some straw fired power stations	Section 9
Refrigerants and other						
Factors remained constant from the 2024 update						
Passenger Vehicles						
2	Cars (by market segment) – Sports, PHEVs	CO ₂ e and CO ₂	km and miles	16%	Sports PHEV direct emissions increased this cycle because of a new car model which has relatively higher direct emissions than previous Sports PHEV models in the fleet and saw a high number of registrations in 2023	Section 5
Delivery vehicles						
No major changes this year						

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Ref. number	Emission factor	GHG/ Unit	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2024 update	Reason for change	For more information see relevant section in methodology report:
SECR kWh pass & delivery vehs						
3	Cars (by market segment) - PHEVs, Sports	kWh	km and miles	16%	Sports PHEV direct emissions increased this cycle because of a new car model which has relatively higher direct emissions than previous Sports PHEV models in the fleet and saw a high number of registrations in 2023	Section 5
4	Vans - Class I (up to 1.305 tonnes), Petrol	kWh	tonne.km	22%	Decrease in average payload rates for Class I petrol vans leads to an increase in the kWh factor per tonne-km. The payload is calculated from registration data; Class I registrations show 71,786 diesel compared to 6,546 petrol, so smaller relative changes in annual sales for petrol vehicles will have a larger proportional impact.	Section 6
5	HGVs – Rigid (>17.5-17 tonnes) Rigid (>17 tonnes) and All Rigid, average laden	kWh	tonne.km	-7% to 9%	Decreases in the average goods loaded per vehicle (as reported in DfT data) leads to higher kWh per tonne of goods and, conversely, increases in the average goods loaded per vehicle leads to lower kWh	Section 6
6	HGVs – Articulated (>3.5-33 tonnes), 50% laden, 100% laden and average laden	kWh	tonne.km	9% to 11%	Decreases in the average goods loaded per vehicle (as reported in DfT data) leads to higher kWh per tonne of goods	Section 6
UK Electricity						
7	UK Electricity	CO ₂ e and CO ₂	kWh	-15%	Decrease primarily due to less natural gas use in power stations and increase in net imports of electricity	Section 3
UK electricity for EVs						
8	Cars (by market segment)	CO ₂ e and CO ₂	km and miles	-13% to -22%	For xEVs electricity, the CO ₂ decrease is caused by (i) a decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 5
9	Cars (by size)	CO ₂ e and CO ₂	km and miles	-15% to -18%	As above	Section 5

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Ref. number	Emission factor	GHG/ Unit	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2024 update	Reason for change	For more information see relevant section in methodology report:
10	Vans	CO ₂ e and CO ₂	tonne.km, km and miles	-12% to -22%	New registered Class I vans have higher capacity, so the CO ₂ per tonne.km reduced. Also for xEVs electricity, the CO ₂ decrease is caused by (i) decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 6
SECR kWh UK electricity for EVs						
11	Cars (by market segment) - MPV, BEVs	kWh	km and miles	-9%	For xEVs electricity, the kWh decrease is caused by (i) a decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 5
12	Vans - Class I (up to 1.305 tonnes), BEVs	kWh	tonne.km, km and miles	-9%	New registered Class I vans have higher capacity, so the kWh per tonne.km reduced. Also for xEVs electricity, the kWh decrease is caused by (i) decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 6
Heat and Steam						
No major changes this year						
WTT – fuels						
Factors remained constant from the 2024 update						
WTT – bioenergy						
13	Avtur (renewable)	CO ₂ e	All	48%	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
14	Biodiesel ME	CO ₂ e	All	-18%	As above	Section 9
15	Biodiesel ME (from tallow)	CO ₂ e	All	-19%	As above	Section 9

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Ref. number	Emission factor	GHG/ Unit	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2024 update	Reason for change	For more information see relevant section in methodology report:
16	Bioethanol	CO ₂ e	All	19%	As above	Section 9
17	Biomethane (compressed)	CO ₂ e	All	21%	As above	Section 9
18	Biomethane (liquified)	CO ₂ e	All	125%	As above	Section 9
19	Biopropane	CO ₂ e	All	-27%	As above	Section 9
20	Off road biodiesel	CO ₂ e	All	-18%	As above	Section 9
Transmission and distribution (T&D)						
No major changes this year						
UK electricity T&D for EVs						
No major changes this year						
WTT- UK electricity						
No major changes this year						
WTT- heat and steam						
No major changes this year						
Water supply						
21	Water supply	CO ₂ e	All	25%	2025 figures reflect the latest data reported by the water companies, and this shows considerable interannual variation	Section 9
Water treatment						
No major changes this year						
Material use						
No major changes this year						
Waste disposal						
22	Construction (Average), Refuse – Incineration with Energy Recovery	CO ₂ e	tonnes	-27%	Changes are due to updated assumptions about GHG emissions from waste being sent to MRF facilities. MRF operation now has a factor of 1.64 kg per tonne of input	Section 12

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					whereas the previous figure used was 3.44 kg per tonne.	
23	Construction (tyres, plasterboard) - Closed Loop	CO ₂ e	tonnes	-27%	As above	Section 12
24	Construction (mineral oil, wood), Other (books, clothing), Paper - Closed Loop and Incineration with Energy Recovery	CO ₂ e	tonnes	-27%	As above	Section 12
25	Other (glass), Metal, Plastic - Open Loop, Closed Loop and Incineration with Energy Recovery	CO ₂ e	tonnes	-27%	As above	Section 12
26	Electrical Items (WEE - Large, mixed and small) - Open Loop and Incineration with Energy Recovery	CO ₂ e	tonnes	-27%	As above	Section 12
27	Electrical Items (WEE- fridges and freezers, batteries) - Open Loop	CO ₂ e	tonnes	-27%	As above	Section 12
Business travel- air						
28	All factors	CO ₂ e	passenger.km	-16% to -42%	The last time these figures were updated was in the 2023 publication, which used data from 2021. The 2021 data was COVID-impacted, so load factors were unusually low. Now load factors have gone back up, so emissions per passenger.km have reduced.	Section 8
WTT- Business travel - air						

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Factors remained constant from the 2024 update						
Business travel - sea						
Factors remained constant from the 2024 update						
WTT- Business travel - sea						
Factors remained constant from the 2024 update						
Business travel - land						
29	Cars (by market segment) - PHEVs, Sports	CO ₂ e and CO ₂	km and miles	14%	Sports PHEV direct emissions increased this cycle because of a new car model which has relatively higher direct emissions than previous Sports PHEV models in the fleet and saw a high number of registrations in 2023	Section 5
30	Cars (by market segment) and Cars (by size) - BEVs	CO ₂ e and CO ₂	km and miles	-11% to -21%	For xEVs electricity, the CO ₂ decrease is caused by (i) a decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 5
WTT – pass vehs & travel- land						
Factors remained constant from the 2024 update						
Freighting goods						
31	Vans - Class I (up to 1.305 tonnes), Petrol	CO ₂ e and CO ₂	tonne.km	22%	Decrease in average payload rates for Class I petrol vans leads to an increase in the CO ₂ factor per tonne-km. The payload is calculated from registration data; Class I registrations show 71,786 diesel compared to vs 6,546 petrol, so a relatively smaller change in annual sales for petrol vehicles can have a larger proportional impact.	Section 6
32	Vans - BEVs	CO ₂ e and CO ₂	tonne.km, km and miles	-11% to -21%	For xEVs electricity, the CO ₂ decrease is caused by (i) a decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 6

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Ref. number	Emission factor	GHG/ Unit	Unit (all units are kgCO ₂ e per “unit” of GHG, unless stated)	Magnitude of change vs 2024 update	Reason for change	For more information see relevant section in methodology report:
33	HGVs – Rigid (>17 tonnes) and All Rigid, average laden	CO ₂ e and CO ₂	tonne.km	11% to 12%	Decreases in the average goods loaded per vehicle (as reported in DfT data) leads to higher emissions CO ₂ per tonne of goods	Section 6
34	HGVs – Articulated (>3.5-33 tonnes), 50% laden, 100% laden and average laden	CO ₂ e and CO ₂	tonne.km	12% to 14%	Decreases in the average goods loaded per vehicle (as reported in DfT data) leads to higher emissions CO ₂ per tonne of goods	Section 6
35	Freight flights	CO ₂ e and CO ₂	tonne.km	-18% to -23%	The last time these figures were updated was in the 2023 publication, which used data from 2021. The 2021 data was COVID-impacted, so load factors were unusually low. Now load factors have gone back up, so emissions per tonne.km have reduced. Changes are also due to improvements in the aviation model which replaced 2012 CAA data with more recent publicly available data.	Section 8
WTT – delivery vehs & freight						
Factors remained constant from the 2024 update						
Hotel Stay						
Factors remained constant from the 2024 update						
Managed assets - electricity						
36	Managed assets - electricity	CO ₂ e and CO ₂	kWh	-15%	Decrease primarily due to less natural gas use in power stations and increase in net imports of electricity	Section 3
Managed assets- vehicles						
37	Cars (by market segment) - PHEVs, Sports	CO ₂ e and CO ₂	km and miles	14%	Sports PHEV direct emissions increased this cycle because of a new car model which has relatively higher direct emissions than previous Sports PHEV models in the fleet and saw a high number of registrations in 2023	Section 5
38	Cars (by market segment) and Cars (by size) - BEVs	CO ₂ e and CO ₂	km and miles	-11% to -21%	For xEVs electricity, the CO ₂ decrease is caused by (i) a decrease in the UK electricity generation factor, and	Section 5

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					(ii) newly registered vehicles being more energy efficient	
39	Vans - BEVs	CO ₂ e and CO ₂	km	-11% to -15%	For xEVs electricity, the CO ₂ decrease is caused by (i) a decrease in the UK electricity generation factor, and (ii) newly registered vehicles being more energy efficient	Section 5
Homeworking						
Factors remained constant from the 2024 update						
Outside of scopes						
40	Forecourt fuels containing biofuel - Diesel (average biofuel blend)	CO ₂	All	-13% to -50%	Year on year revisions are due to the genuine trend in RTFO stats; decreased use of biofuels this year. The % difference is distorted by the small value of the factor (per litre and per kWh) and the rounding of the factor which is taking place. 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
MRF	Material recovery facility
MTBE	Methyl tert-butyl ether
NAEI	National Atmospheric Emissions Inventory
NCV	Net calorific value
NEDC	New European Driving Cycle

Abbreviation	Definition
N ₂ O	Nitrous oxide
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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