OUR WORKINGS & SOURCES '23

Diesel Van Well to Wheel calculation

Based on a new 2024 Ford Transit H2 290 L2

Well to Tank (WtT): 54.51 gCO2e/km:

WLTP figure (1): 8.6L / 100km
Diesel emission factor (2): 745.7kg CO2e /tonne

1L = 0.85kg diesel
0.086L per km 0.086L = 0.0731kg diesel
0.0545 kgCO2e/km = 54.51g CO2e/km

Tank to Wheel (TtW): 255.17 gCO2e/km:

WLTP figure (1): 225 g CO2/km
'Real World' uplift to be applied in line with 2023 Government Greenhouse Gas Conversion Factors for Company Reporting (3): 13.41% = + 30.17g CO2e/km

Well to Wheel (WtW): 309.68 gCO2e/km

Electric Van Well to Wheel calculation

Based on a new 2024 Ford eTransit H2 290 L2

Well to Tank (WtT): 81.66 gCO2e/km:

Combined energy consumption kWh per 100 kms(4): 36kWh
0.36kWh per km
Grid emission factor (5): 207gCO2e/kWh
= 74.52gCO2e per km

Transmission & distribution losses(5): +7.14gCO2e/km for a Class III (1.74-3.5 tonnes)
Ford eTransit kerb mass(4): 2465-2492kg

Tank to Wheel (TtW): 0 gCO2e/km

Well to Wheel (WtW): 81.66 gCO2e/km

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GTrike Well to Wheel calculation

Well to Tank (WtT): 14.92 gCO2e/km:

100km range from a 5.5kWh battery: 0.055kWh per km
Grid emission factor (5): 207gCO2e/kWh
= 11.39gCO2e per km

Transmission & distribution losses (5): +3.53gCO2e/km for a small mini car

Tank to Wheel (TtW): 0 gCO2e/km

Well to Wheel (WtW): 14.92 gCO2e/km

Climate Impact calculations

202 tonnes CO2e saved in 2023 compared to a scenario with our last mile deliveries done via diesel van.

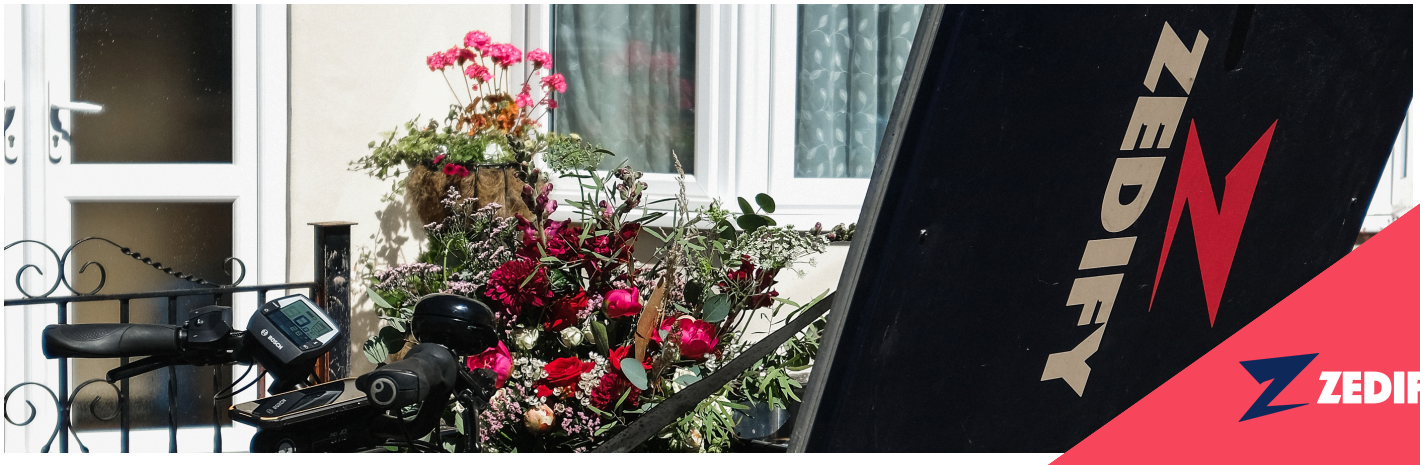
2023 total km on GTrike: 600,685 = 8,962,220.2g CO2e = 8.96 tonnes CO2e
If same distance covered by diesel van: 186,020,130.8g CO2e = 186.02 tonnes CO2e
= 177.06 tonnes CO2e saved

2023 total km on EV: 110,000 =8,982,600g CO2e = 8.98 tonnes CO2e
If same distance covered by diesel van: 34,064,800g CO2e = 34.06 tonnes CO2e
= 25.08 tonnes CO2e saved

177.06 + 25.08 = 202.14 tonnes CO2e total savings

Saving is equal to:

- 3,110 smart phones (6): 1 phone = 65kg CO2e
- Tailpipe emissions from driving from Land's End to John o'Groats and back:
  - 0.328kg CO2e per mile tailpipe emissions for a petrol SUV (5)
  - 202.14 tonnes CO2e = 616,280.48 miles worth driven
  - 837 miles from Land's End to John o'Groats to drive (7)
- Annual electricity consumption of an average British household is 2,700kWh (8)
  - Applying grid emission factor of 0.207kgCO2e (5) = 559.1 kgCO2e per household



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Climate Impact workings

If up to 7.5% of urban motorised traffic could be shifted to cargo bikes, and if the UK was able to replace urban diesel van journeys with cargo bikes at this rate, this could have a greater impact than ceasing all domestic aviation emissions.

"If the UK were able to replace urban diesel van journeys with e-cargo bikes at this rate, we estimate the annual carbon saving would amount to 0.35-1.76MtCO2 e. At the upper end of this range, switching diesel vans to e-cargo bikes could have a greater impact than eliminating all UK domestic aviation emissions." (9)

Based on BEIS estimation of 1.4MtCO2 e of domestic aviation emissions from 2019. In 2022 (most recent dataset), this fell to 1.1MtCO2e (10) so still relevant.

Healthier cities workings

426kg of NOx saved in 2023 compared to a scenario with our last mile deliveries done via diesel van.

0.5g/km 0% payload, 0.7g/km 100% payload. See Table 5, 50% payload assumed for average (11)
710,685km total distance covered in 2023.

Other claims cited throughout

NOx and PM2.5 are both emitted in significant quantities by diesel vans with over a third of the UK's NOx emissions and 14% of PM2.5 emissions coming from transport in 2021. (12)

It is estimated that 51% of deliveries in cities could be made by cargo bikes (13)

Vans have been proven to be up to 60% less efficient at delivering parcels in urban areas compared to cargo bikes. (14)

Domestic transport was responsible for 28% of the UK's greenhouse gas emissions in 2022 - the main source of these were from diesel and petrol road vehicles (15)

Urban last-mile delivery emissions are on track to increase by over 30% by 2030 in the top 100 cities globally. Without intervention, these emissions could reach 25 million tons of CO2 emitted annually by 2030 (16)

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Source list

Below source links accessed April 2024. We recognise that these numbers are very much subject to change, and will never achieve 100% accuracy so they will be continually reviewed and updated as appropriate as research evolves.

(1)
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https://assets.publishing.service.gov.uk/media/65c0d15863a23d0013c821e9/2022-final-greenhouse-gas-emissions-statistical-release.pdf

(16)
https://www.weforum.org/press/2020/01/urban-deliveries-expected-to-add-11-minutes-to-daily-commute-and-increase-carbon-emissions-by-30-until-2030-without-effective-intervention-e3141b32fa/#:~:text=New%20York%2C%20USA%2C%2010%20January,CO2%20emitted%20annually%20by%202030.

We would like to thank our Zedify Bristol rider, Tad Jiunn Kho, for his excellent photographic contributions to our bank of images, many of which have featured in our Impact Report this year.

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