Figure 1

Ultra-low emission car technologies currently available in the UK

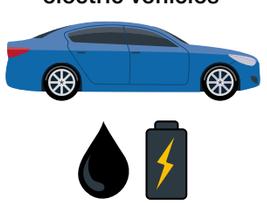
There are numerous types of ultra-low emission cars

ULEVs

Ultra-low emission vehicles

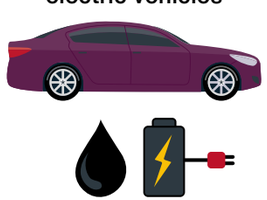
ULEVs are currently defined as **vehicles which emit less than 75g of CO_2 per kilometre travelled.** The statistical definition will be made more stringent in 2021 and ULEVs will then need to emit 50 of CO_2 per kilometre travelled or less. Any vehicle which meets the criteria qualify as ULEVs, so the definition could include conventional petrol or diesel cars. However, the **most popular ULEVs to date have been hybrid cars**:

Hybrid electric vehicles



Use a conventional internal combustion engine that charges a small battery while driving, allowing them to travel short distances on the battery alone.

Plug-in hybrid electric vehicles



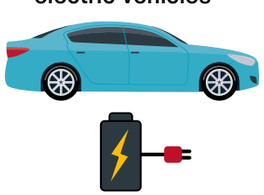
Use a conventional internal combustion engine, but also have a battery that needs to be plugged in to charge. Typically, these have a longer zero emission range than a standard hybrid.

ZEVs

Zero emission vehicles (a subsection of ULEVs)

ZEVs are **vehicles that produce no tailpipe emissions**. Government's plans to eliminate carbon emissions from cars rely on ZEVs completely replacing the current UK fleet. **Presently there are two types of ZEVs**:

Battery electric vehicles



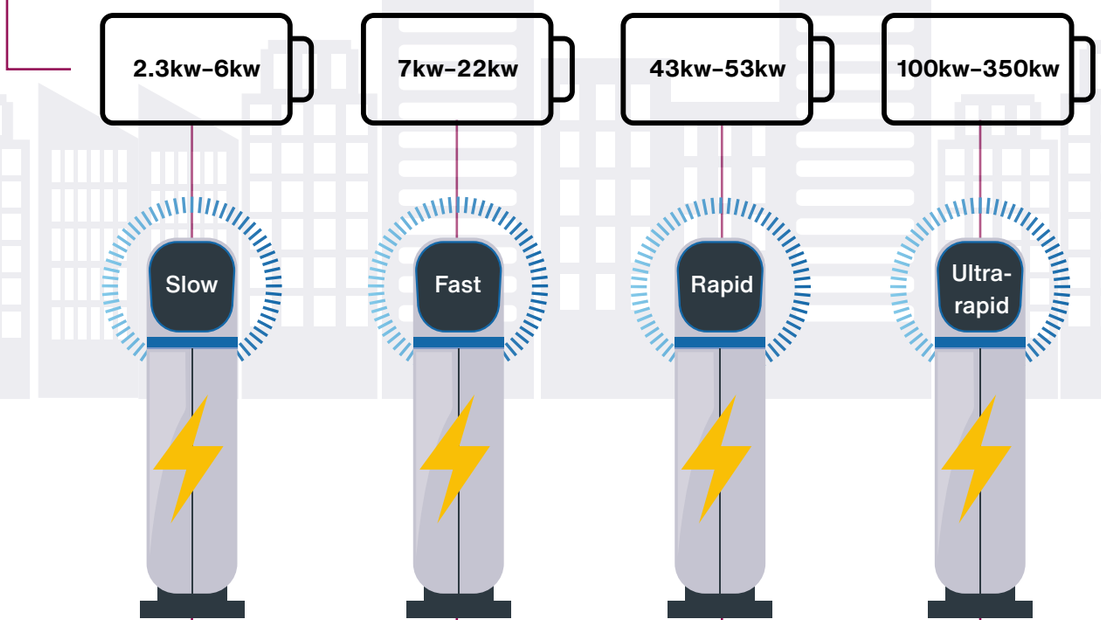
Have a plug-in battery as the sole source of power. The trend has been for larger batteries to be fitted, extending the range of battery electric vehicles between charges.

Hydrogen fuel cell vehicles

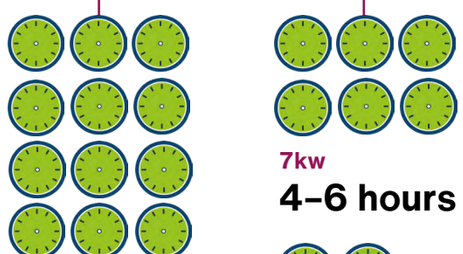
Use hydrogen to power a fuel cell that generates electricity to run an electric motor. These vehicles need to be refuelled with hydrogen at a filling station in much the same way as a conventional car.

Types of electric vehicle chargers

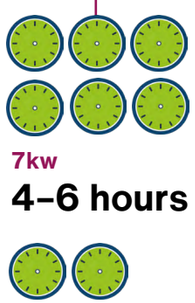
Power consumption



A full charge typically takes



6–12 hours



7kw

4–6 hours

22kw

1–2 hours

Around

20 minutes to 1 hour

20–40 minutes

Source: National Audit Office analysis of public data