



Department
for Transport



Office for
Zero Emission
Vehicles

21 November 2023

The transition to zero emission vehicles

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Overview

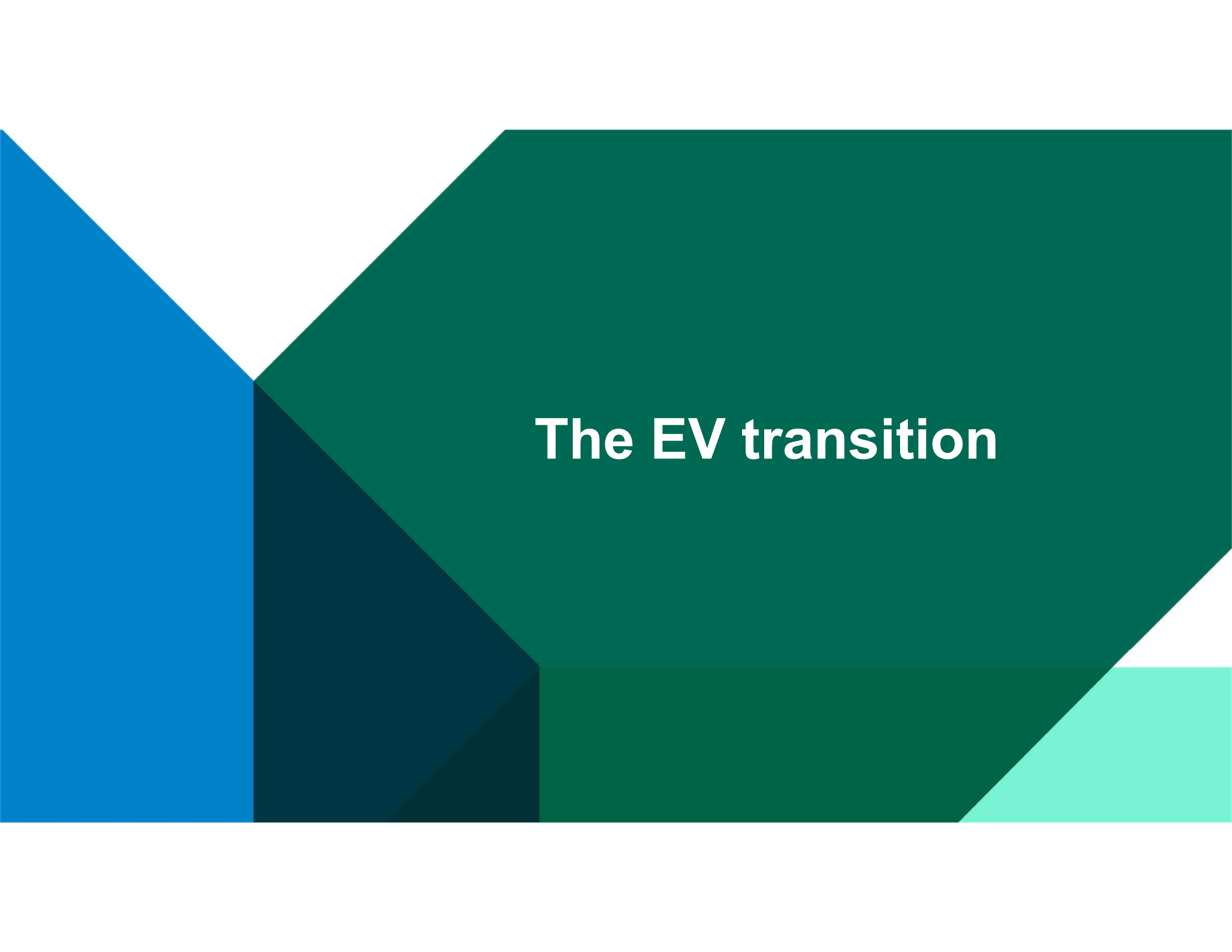
The EV transition

- Our aim
- Current landscape
- Used EV market

Battery regulations

- Global Technical Regulation No. 22
- Euro 7
- ZEV mandate





The EV transition

Our aim

“Improve air quality in our towns and cities, support economic growth, and meet our climate change obligations...

...by phasing out the sale of new petrol and diesel cars and vans by 2035”

Current landscape

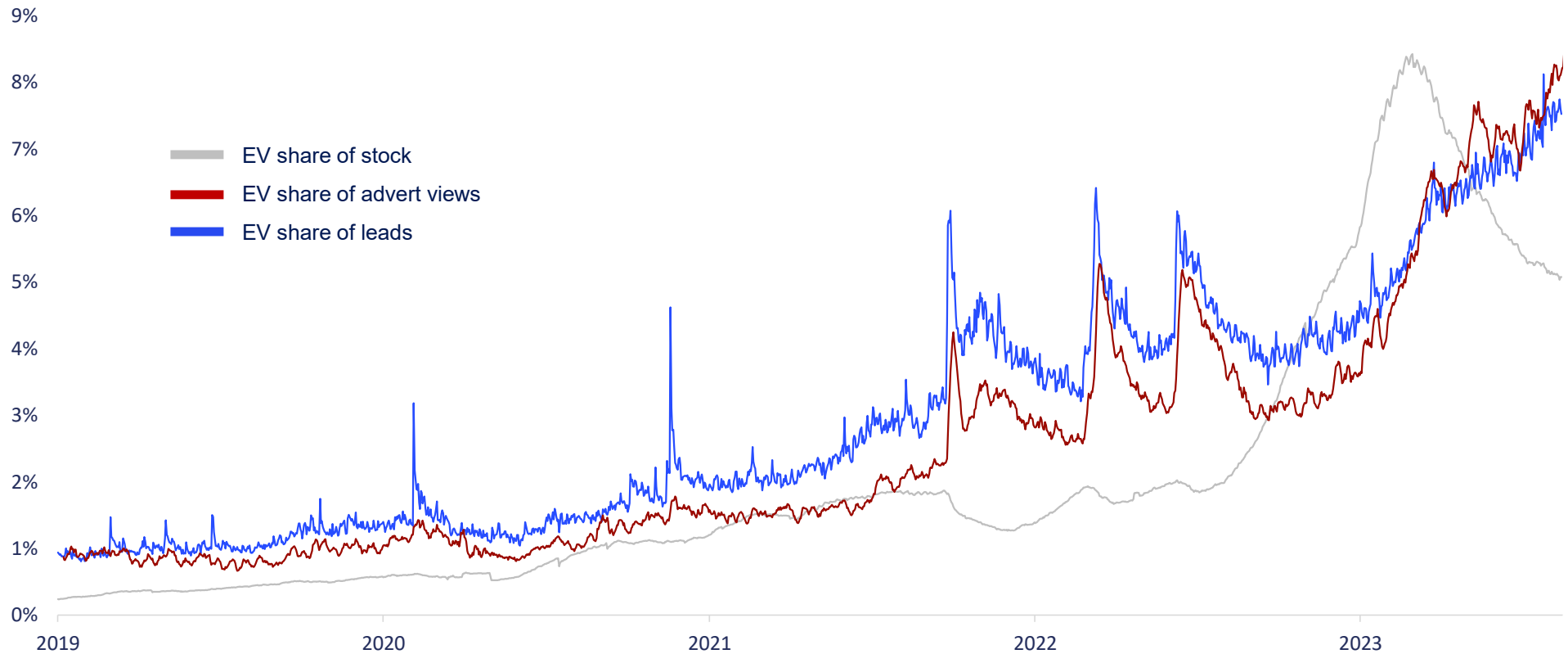
Government has already spent **more than £2 billion** to support the transition to zero emission vehicles

Currently, **1 in every 5** cars sold in the UK is fully electric

Government has funded the installation of more than **380,555 domestic charging devices**, and with industry we have supported the installation of more than **49,220 public charging devices**:

- Home
- On street
- Workplace
- On route (e.g. motorway services)

Used EV market: supply & demand



Used EV market: key areas



**Battery Health
Confidence**



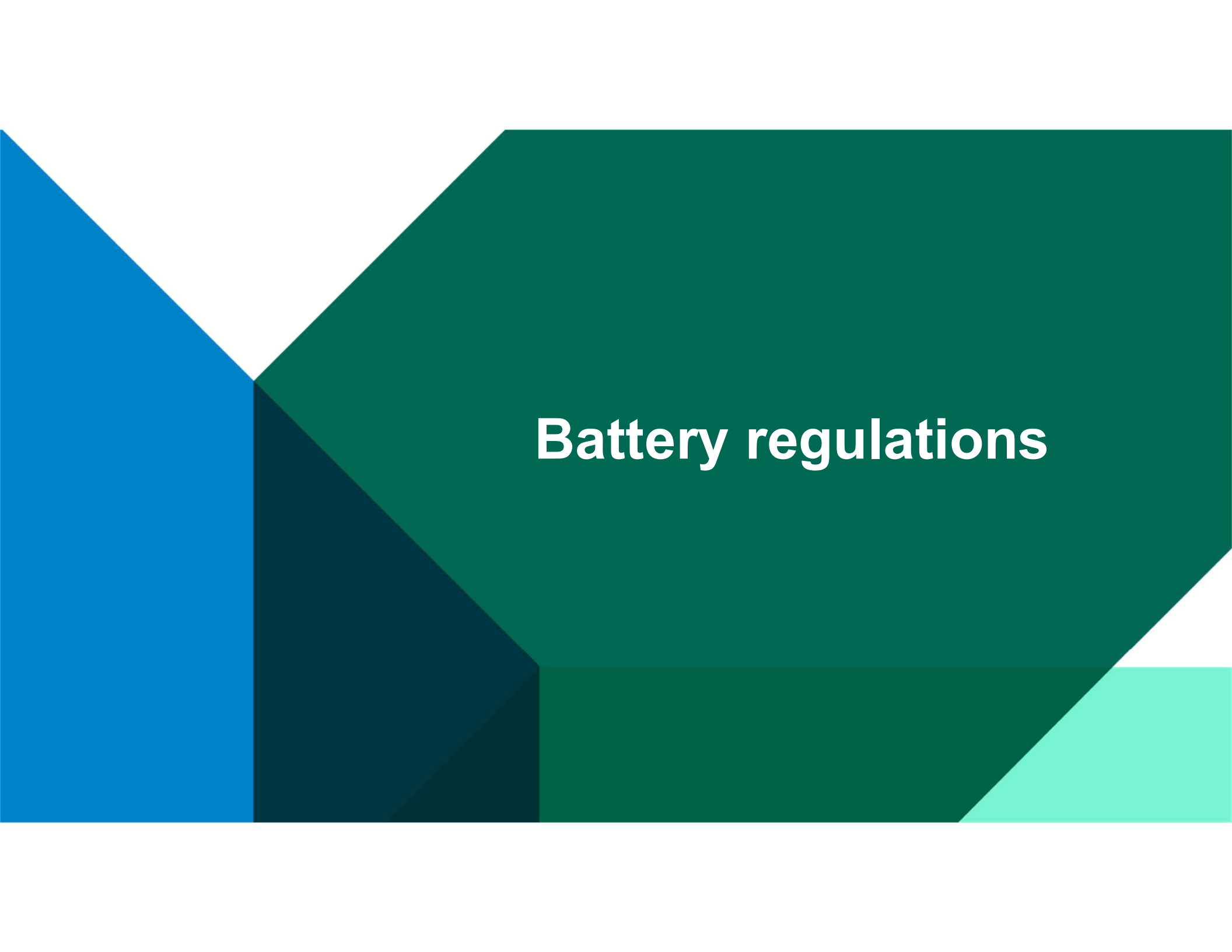
**Mechanic &
Dealership Skills**



**Point of Sale
Information**



Affordability



Battery regulations

Global Technical Regulations No.22

Introduction to the UNECE

- The United Nations Economic Commission for Europe (UNECE) established to promote **economic cooperation** and **integration**
- ~80% of UK vehicle regulations are developed via the UNECE's **World Forum for Harmonisation of Vehicle Regulations**
- **Global Technical Regulations** (GTRs) provide a regulatory framework, typically containing harmonised **test procedures** and **requirements**
- UN Regulations are similar to GTRs, but also include administrative procedures for **type approval** and **mutual recognition**

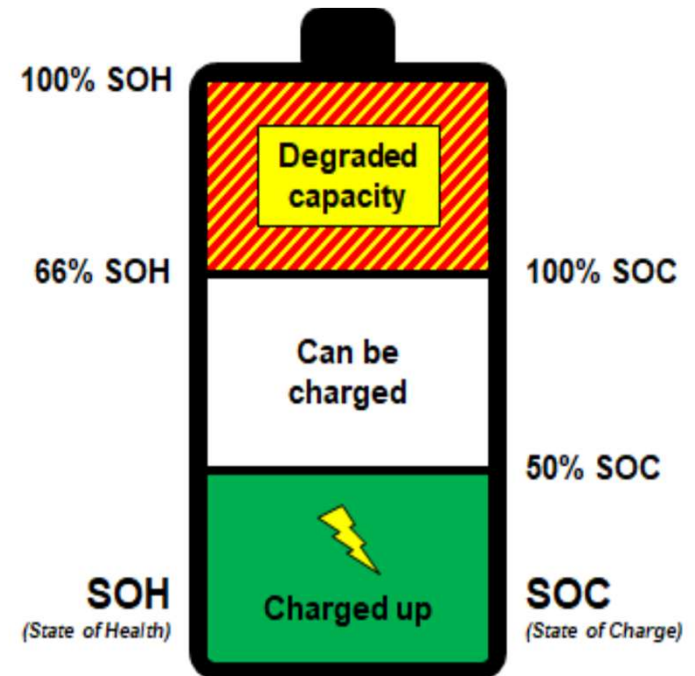


GTR22: Background

- UN GTR No. 22 on *In-vehicle Battery Durability for Electrified Vehicles* published in 2022 (openly available [online](#)), with key input from DfT

- **Aim:** Develop a battery durability standard for new BEVs/PHEVs to ensure that inferior products do not enter the market

- Secondary benefits could include:
 - Improved consumer confidence in **performance over time**
 - Improved confidence once vehicles reach **second-hand market**



GTR22: Approach

Part A

- Mandates installation of state of health (SOH) monitors and **accessible display** to consumer
- Requires the SOH monitors to meet an **accuracy** requirement
- Validate accuracy of SOH monitors over time/mileage through **in-service testing** against regulatory test cycle (WLTP)

Part B

- Adopt a minimum performance requirement (MPR) for battery durability:
 - Min. **80% capacity remaining after 5 years or 100,000 km** (62,000 mi)
 - Min. **70% capacity remaining after 8 years or 160,000 km** (100,000 mi)
- Validate MPR is met by assessing SOH values on vehicles in service (e.g., via MOT or over-the-air telematics)
- Use a statistical process to determine pass/failure for a vehicle model

GTR22: Global views on implementation

USA/Canada

- EPA included GTR in their next emissions package, starting in **2027**
- Canada likely to follow USA timeline

European Union

- GTR included in Euro 7 package
- Euro 7 proposed to become mandatory for new vehicles from **July 2025**, but **highly likely to slip**

UK (GB)

- Considering options for implementation
- Currently conducting analysis on benefits of UK implementation

Japan

- SOH monitors to be required from **October 2024**
- Implementation dates of other aspects of GTR to be confirmed

GTR22: Updates

- GTR amendments drafted to cover minimum performance requirements for **light commercial vehicles** (LCVs) – expected to be adopted at UN in early 2024
 - 75% minimum SOH after 5y/100,000 km
 - 65% minimum SOH after 8y/160,000 km
- Amendments also update required data fields to be made available via on-board diagnostics (OBD) – update of OBD standard underway
- Work ongoing to develop a separate GTR for **electric heavy-duty vehicles**, expected to be published in late 2024



Euro 7

- DfT commissioned an analysis of the **costs, benefits and impacts** of introducing aspects of the **Euro 7 emission package** in the UK
- The analysis will inform **recommendations to Ministers**
- The proposed **EU package** includes battery health standards based on **GTR22**
- Negotiation on the Euro 7 package still underway in EU, but **delay** on the originally proposed implementation dates (July 2025) **seems highly likely**



Brussels, 10.11.2022
COM(2022) 586 final
2022/0365 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on type-approval of motor vehicles and engines and of systems, components and separate technical units intended for such vehicles, with respect to their emissions and battery durability (Euro 7) and repealing Regulations (EC) No 715/2007 and (EC) No 595/2009

(Text with EEA relevance)

{SEC(2022) 397 final} - {SWD(2022) 358 final} - {SWD(2022) 359 final} -
{SWD(2022) 360 final}

ZEV mandate

- Introduces warranty requirements for new cars and vans, including:
 - minimum **8 years or 100,000 miles** for traction batteries
 - replacement battery if a vehicle battery falls below **70% capacity** (for cars; 65% for vans) during the warranty period
- A step towards an internationally binding set of standards on battery durability



Zero emission vehicle (ZEV) mandate
consultation: Summary of responses
and joint government response



September 2023

Summary

- If GTR22 were to be introduced in the UK, battery health information would be **accessible** and **comparable** across vehicle models and manufacturers
- The government continues to assess the costs and benefits of implementing **international battery health standards** into UK legislation
- The publication of the **ZEV mandate** has brought the UK one step closer to the **introduction of battery durability standards**

