



STRATEGY UPDATE:

# Zero emission buses

September 2023



# Sector summary: zero emission buses

## Government ambition

- > **Government is consulting on the date for ending the sale of non-zero emission buses**, with a proposed date between 2025 and 2032. The Department for Transport committed to support the funding of at least 4,000 more ZEBs between 2020 and 2025.
- > **Government's National Bus Strategy set out £3 billion of combined support for the bus sector** and detailed proposals to significantly improve bus services, with new priority lanes, lower and simpler fares, more integrated ticketing, and higher bus frequencies.

## Government funding

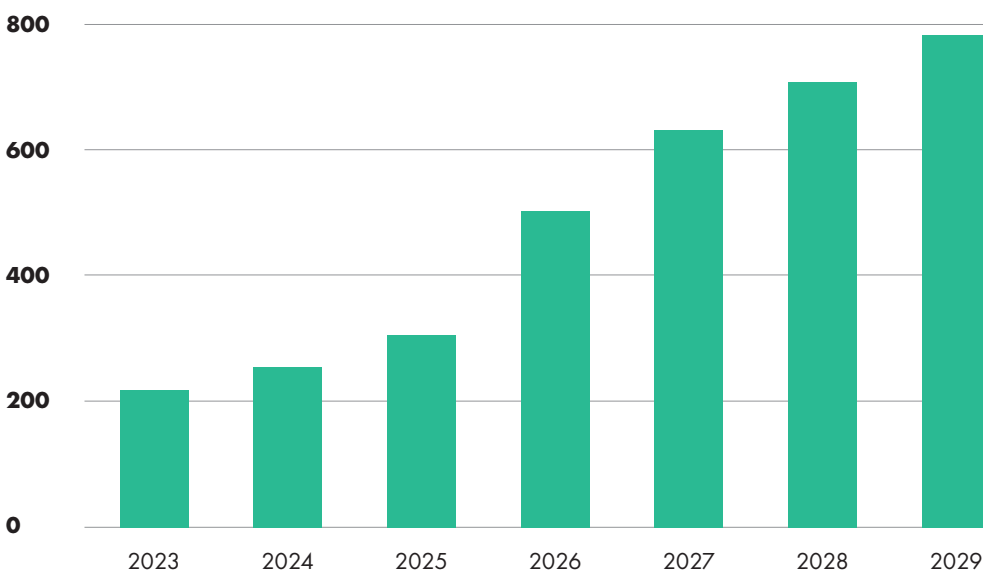
Government initiatives to lower the cost of procuring ZEBs:

- > **Zero Emission Bus Regional Area (ZEBRA) scheme** (£270 million in phase one, £129 million in phase two until 2025).
- > **Scottish Zero Emission Bus challenge (ScotZEB) fund** (£60 million to date, a second round of funding recently announced).
- > **Northern Ireland's Department for Infrastructure** provided £88 million for ZEB and associated infrastructure.

Wider Government funding for the bus sector:

- > **Bus Service Operator Grant:** grant funding paid to operators of eligible bus services to help recover fuel costs.
- > **Supplementary funding** to support fare caps, fare subsidies (e.g. bus passes, travel concessions)
- > **City Region Sustainable Transport Settlements:** grant funding for metropolitan areas to improve local transport networks and support combined authorities to franchise their bus networks.

## Private financing need (£m)



### Data note:

Financing need based on BloombergNEF estimates on demand for battery powered ZEBs multiplied by an assumed £450,000 vehicle cost (internal estimate based on our experience with existing deals).

## **Most of the UK's 36,500 buses are diesel powered. Transitioning to zero emission buses (ZEBs) is an important step in decarbonising the public transport sector.**

ZEBs are generally powered by an electric battery or a hydrogen fuel cell. These technologies are more expensive than diesel-powered vehicles and require new charging or refuelling infrastructure, increasing upfront costs for bus operators. This cost differential is expected to decrease over time. While a mix of powertrains will be needed for the transition, most ZEBs operating in the UK today are battery-electric and we expect this to continue.

The outcome of the consultation on the date for ending the UK sale of new non-zero emission buses is expected shortly, with a proposed date between 2025 and 2032.<sup>1</sup>

To date, investment in ZEBs has primarily been limited to the major bus operators, with significant grant funding support from central government. Many larger operators have put in place their own targets for transitioning to zero emission fleets. For example, First Bus have committed to not purchasing any new diesel buses after December 2022 and Mobico (formerly National Express) have committed to a fully zero-emission fleet by 2030.<sup>2</sup>

Local transport authorities have also invested in ZEBs. Coventry is due to become the UK's first all-electric bus city by 2025, Transport for Greater Manchester is rolling out 100 ZEBs by spring 2024 and Transport for London already have over 1,000 ZEBs in operation.

While progress has been made by the industry, the transition to ZEBs has a long way to go. Based on a typical 15-20 year lifecycle, approximately 2,000 - 2,500 buses need to be replaced each year in the UK. To transition swiftly to a zero-emission fleet, most new bus purchases need to be ZEBs. However, in Q1 of 2023 only around two thirds of new buses entering the UK fleet were zero-emission, with significant numbers of new diesel buses still being purchased.<sup>3</sup>

We estimate transitioning to a fully ZEB fleet will require approximately £20 billion of investment (in 2023 prices) to replace 32,000 vehicles and build the associated recharging and refuelling infrastructure.

The industry is reliant on sizeable government funding and subsidies. Transitioning to a zero-emission fleet will only add to the funding challenge. We will focus on addressing financing challenges to support the sector's transition to net zero.

<sup>1</sup> [Department for Transport, 'Consultation: Ending UK sales of new, non-zero emission buses and calls for evidence on coaches and minibuses' \(2022\)](#)

<sup>2</sup> [Confederation of Passenger Transport, 'Ending the Sale of New Non Zero Emission Buses' \(2022\)](#)

<sup>3</sup> [International Council on Clean Transport, 'Electric city bus sales overtake diesel in Europe' \(2023\)](#)

# Problems we want to address

## Cost of purchase

Battery electric and hydrogen ZEBs are currently 50-75% and 100-150% more expensive, respectively, than their diesel equivalents. The difference between the total cost of ownership of battery electric ZEBs and diesels is less stark because of lower operating and maintenance costs. The larger upfront capital expenditure is a significant barrier to transitioning fleets, particularly for smaller operators.

Government subsidy schemes have helped to reduce the upfront cost of ZEBs. Over time, the industry will need to move away from using subsidies to fund ZEBs because it is not a sustainable model. Until viable funding and financing models emerge and cost differentials close, the prevalence and timing of grant rounds remains likely to determine the speed at which fleets transition.

## Fleet management and transition planning

The transition to ZEBs will require different recharging and refuelling models and may also require a shift in how operators manage their fleets.

Operators do not have the financial means to replace all their existing diesel buses at once, meaning there will be a period where they need to “dual run” a mix of diesel and ZEBs. This can be expensive and complicate their infrastructure, refuelling and maintenance needs.

Bus chassis have a useful life of 15-20 years, while batteries and hydrogen fuel cells have a useful life of 7-10 and 3-6 years respectively. This means new battery management and replacement strategies are required.

## Limited existing financing solutions

Operators have typically funded new vehicles on their own balance sheets. However, operators will not have the capacity to fully fund the UK's transition of both vehicles and infrastructure. Availability of grant support has also meant that there has been limited need to date for other financing solutions to emerge. As grant schemes reduce or end, the need for long term efficiently priced capital will increase.

To date, ZEB purchases have generally consisted of many small orders which are typically not at a sufficient scale to support the development of new long-term financing models. The residual value risk associated with batteries, trajectory of future cost decreases, and uncertainty over future demand for ZEBs (and buses more generally) means finance is often only available over shorter tenors, which adds to the cost of ZEB transition and ownership.

# Our solution

**We want to help accelerate the UK's transition to a fully ZEB fleet. A variety of financing and ownership models will be required to meet the different needs of individual operators, local authorities and investors.**

We want to support the development of new and existing models that increase the availability and depth of efficiently priced capital, helping reduce the upfront cost and accelerate the transition.

We will look to support:

- > **Third party funding solutions**, such as traditional leasing or 'as a service' models, that can make ZEBs and the associated depot infrastructure an investable asset class for a broader range of investors. These models could make ZEBs accessible to those operators currently lacking the ability to finance and own ZEBs themselves and allow third party owners to mitigate and manage risk through portfolio ownership. We can provide short-term financing to help develop and bridge these models to the point at which investors can support them longer-term. We can also help crowd-in long-term investors by deploying our finance alongside the market on similar terms.
- > **Operators looking to raise corporate or non-recourse facilities** to finance the transition to ZEBs. The scale of financing required across the market could lead to short-term leverage constraints for borrowers and concentration limits for lenders. We can help overcome this by lending directly to operators.

We also recognise that for some local authorities, public ownership and financing of buses is the right solution. As well as supporting the development of private financing markets, we also want to work with local authorities looking to accelerate use of ZEBs through models such as bus franchising, traditional public ownership, or by leasing ZEBs to local operators. By offering impartial, expert advice and lending, currently at gilts +40bps, our Local Authority Function can:

- > **Support large scale bus procurements** by local authorities or combined authorities, either by lending to local authorities to finance the fleet (if publicly owned), or by supporting bidders in raising private finance from the market.
- > **Provide lending to finance the transition of depots to zero emission infrastructure**, or the development of new "green" depots.

We will continue to develop our support for the sector, through both our private financing and local authority advisory and lending functions and adapt our approach as the market develops. We remain open to considering all projects from operators, local authorities and financiers that will help accelerate the transition to ZEBs.

**Across all our private products, our indicative minimum ticket size is £25 million.  
For our local authority lending, our minimum ticket size is £5 million.**

# Get in touch

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