



# Electrification as the Engine of Bus Franchising

A Strategic Guide for Local Authorities to Design, Power and Optimise Zero-Emissions Networks

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## Executive Summary

An overview of how franchising and electrification are reshaping costs, control and outcomes.

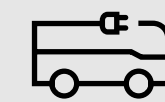
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## Introduction

The policy, market and funding context driving the transition to zero-emission franchised networks.

[Find out more](#)



## The Strategic Shift

Why electrification must be embedded into franchise design from day one to avoid costly mistakes.

[Find out more](#)



## Your Charging Strategy

How to design and manage energy infrastructure to ensure reliable, cost-effective operations.

[Find out more](#)



## Case Study

Real-world examples demonstrating how electrification can be successfully delivered at scale.

[Find out more](#)



## Powering the Franchise

How to reduce operating costs and unlock new value through smart energy and charging strategies.

[Find out more](#)



## Managing your Network

Ensuring resilience, safety and control across digital systems, infrastructure and operations.

[Find out more](#)



## From Plan to Performance

A practical roadmap to move from strategy to delivery and long-term optimisation.

[Find out more](#)





# Executive Summary

Bus franchising is accelerating across the UK. For Local Transport Authorities (LTAs) and Mayoral Combined Authorities (MCAs), this represents a generational shift in responsibility, moving from policy setting to asset ownership and operational risk.

Decisions made today regarding depots, grid connections, and fleet specifications will lock in costs and capabilities for decades. Electrification is not just an environmental add-on; it is the critical enabler of a successful modern franchise. A well-planned electric network delivers lower Total Cost of Ownership (TCO), improved passenger experience, and cleaner cities.

However, buying buses is the easy part. The challenge lies in the energy infrastructure. Buying assets before planning for the energy reality is the primary cause of "stranded investments."

This guide outlines how to leverage electrification, including Network-Led Design, Shared Charging Hubs, and Energy Markets, to de-risk your franchising journey and unlock long-term value.

Mike Nakrani  
CEO, VEV





# Introduction

Electric buses were first introduced at scale in China in the 2010s, before being gradually adopted across Europe and North America through pilot projects. In recent years, this transition has accelerated, with electrification moving from small-scale trials to full network rollouts, and zero-emission requirements increasingly embedded within transport tenders.

In the UK, this shift is closely linked to the rise of bus franchising, enabled by the Bus Services Act 2017. Franchising has been driven in part by declining service levels, as operators withdrew uneconomic routes and authorities sought greater control over network planning. For Mayoral Combined Authorities (MCAs) and Local Transport Authorities (LTAs), franchising represents an opportunity to deliver a more integrated, reliable and accessible “people’s network”, improving outcomes for passengers and communities.

Decarbonisation is now central to this ambition. Through programmes such as ZEBRA, government funding has supported the early adoption of zero-emission buses, while many MCAs are now moving into the next phase, taking greater ownership of depots, fleets and long-term infrastructure decisions. With multiple franchising schemes expected to launch over the next 2–3 years, authorities are actively shaping procurement models, ranging from fully owned assets to hybrid approaches.

The UK is already leading the transition, with over 3,000 battery-electric buses in operation, and continued government support accelerating deployment. However, as franchising moves from policy to implementation, the focus is shifting from vehicle procurement to network design, infrastructure and energy strategy.

As this transition gathers pace, now is the critical moment for both authorities and operators to define their approach to electrification, not as a standalone initiative, but as a core component of a successful franchised network.






# The Strategic Shift

**The Challenge:** In a franchised model, the Authority often takes ownership of the depot and the fleet. If you procure assets before understanding the energy requirements, you risk investing in depots that cannot handle the power load or vehicles that cannot complete duty cycles.

**The Solution:** Validate before you buy. Before a single tender is issued, Authorities must move from general policy to granular operational design.

To avoid expensive mistakes, three critical factors must be addressed before procurement:

At depot	Power Supply	Compare the cost
 <p>Diesel buses have a "fuel-and-go" workflow. Electric buses require a "park-and-charge" workflow.</p> <p><b>The Reality:</b> A depot that holds 100 diesel buses may only hold 85 electric buses once you account for charging cabinets, transformers, and safety barriers.</p> <p><b>The Fix:</b> Analyse parking density and workflow. If electrification reduces capacity, you may need to acquire additional land or split the fleet across multiple sites to maintain service levels.</p>		






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 <p>Grid constraints are the single largest barrier to fleet electrification. A depot designed for lights and tools now needs the power consumption equivalent of a small town. For large bus fleets, grid connections can take years and cost millions.</p> <p><b>The Reality:</b> Many organisations overestimate the size of grid connection required, often assuming all vehicles will charge simultaneously. In practice, charging demand can be optimised and flexed, and solutions such as smart charging and on-site energy can significantly reduce the required upgrade size and associated cost.</p> <p><b>The Fix:</b> First, right-size your grid requirement by modelling real-world charging behaviour and optimising energy demand. Then engage an ICP such as VEV to assess available capacity, optimise existing infrastructure, and deliver a faster, more cost-effective connection strategy. This approach reduces delays, avoids overinvestment, and accelerates your path to electrification.</p>		




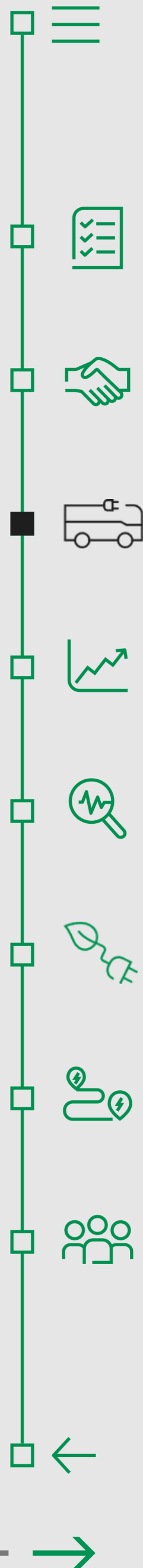
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<p> Is it more cost-effective to upgrade or build new?</p> <p><b>The Reality:</b> Retrofitting a small, city-centre depot often costs more than building a new site on the outskirts. However, relocating depots introduces additional “dead mileage” costs and operational complexity. More broadly, many authorities face a fundamental sequencing challenge — whether to franchise first and electrify later, or design both together.</p> <p><b>The Fix:</b> Compare the total costs and implications of different sequencing approaches. Designing for an electric network from day one, rather than retrofitting after franchising, enables better depot strategy, optimised infrastructure investment, and more efficient operations. Integrating electrification into franchise design avoids costly rework, reduces long-term system inefficiencies, and ensures the network is built around future energy requirements, not legacy constraints.</p>		





# Designing Your Charging Strategy

**The Challenge:** High upfront capital expenditure (CapEx) and grid constraints are major barriers. Traditional "return-to-depot" charging models may not work for every route in a franchised network.

**The Solution:** Innovative Charging Infrastructure. A successful franchise requires a mix of charging solutions to ensure reliability and minimize costs.

## B2B Shared Charging Hubs

## Opportunity Charging



Traditionally, a bus depot is a closed ecosystem. In a franchised electric network, this is a wasted opportunity.

- **Cost Sharing:** By designing a hub that serves multiple users, such as the bus fleet, council RCVs, and logistics fleets, you distribute the infrastructure costs.
- **Revenue Generation:** Opening the depot to third parties, creates a new revenue stream. Logistics vans and HGVs pay to use the high-speed chargers, offsetting the Authority's energy costs,.
- **Grid Utilisation:** This model utilises the grid connection 24/7 rather than just overnight, maximising the return on the grid investment.





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## B2B Shared Charging Hubs

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For long, intense routes, returning to the depot to charge isn't viable.

- **How it works:** Inverted pantographs at bus stations or terminuses provide high-power top-ups (150kW–550kW) in minutes.
- **The Benefit:** This keeps the vehicle in service longer and reduces the weight of the battery required on the bus, improving efficiency.





## KINCHBUS

# Powering Zero-Emission Services in Loughborough

Kinchbus appointed VEV to deliver the charging and energy infrastructure at its Loughborough depot as part of an £8m transition to zero-emission buses.

VEV installed high-powered smart charging for 22 electric buses, fully managed through the VEV-IQ platform. The site includes 53kWp of on-site solar, generating 44MWh annually and saving around 10 tonnes of CO<sub>2</sub> per year.

“Working with VEV has been a really positive experience... We’re excited to see the impact as the buses go live.”

**Tom Morgan, Managing Director, Kinchbus**

[View The Case Study](#)



## STAGECOACH YORKSHIRE

# Transforming Chesterfield into a Fully Electric Depot

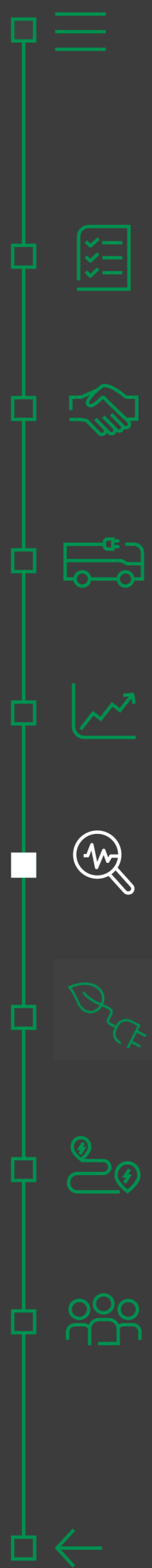
Stagecoach partnered with VEV to transform its 60-year-old Chesterfield depot into a modern EV charging and energy hub.

The project will deploy 57 electric buses supported by 27 dual 120kW chargers and a new 11kV power connection. A 234kWp solar installation will generate around 200MWh annually, reducing energy costs and emissions.

VEV-IQ smart charging optimises fleet readiness while enabling dynamic energy management

[View The Case Study](#)

**VEV**




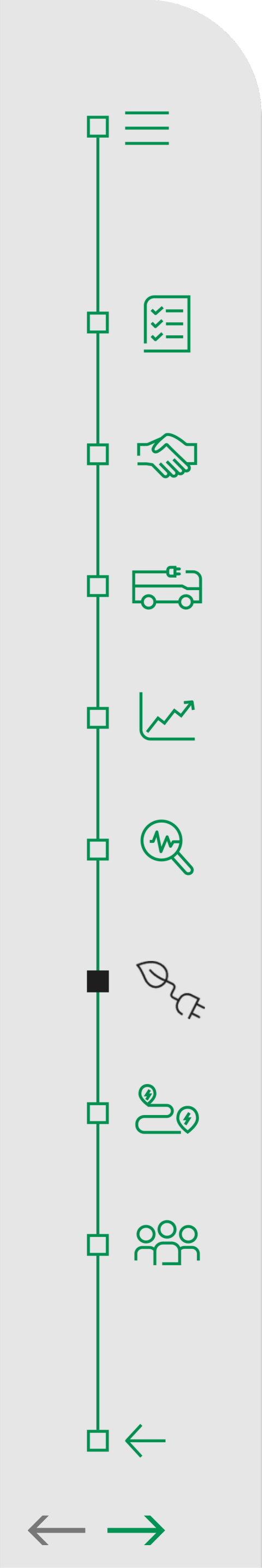


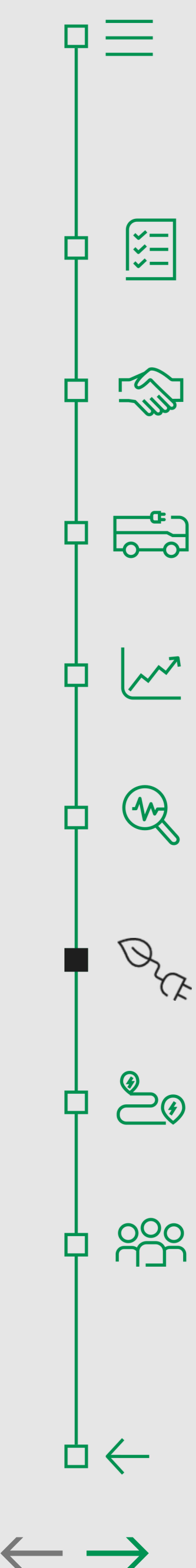
# Powering the Franchise

**The Challenge:** In an electric franchise, energy becomes a significant and dynamic cost. Prices fluctuate on a half-hourly basis, and without the right tariff and charging strategy, Authorities risk overpaying for power. Treating electricity like diesel can lead to consistently higher costs and inflated Total Cost of Ownership.

**The Solution:** Turning Energy into a Strategic Advantage. By combining smart charging, tariff optimisation and energy market participation, Authorities can actively manage energy use, reduce costs and protect against price volatility — transforming energy from a risk into an opportunity, with potential to generate revenue through capacity markets.

Smart Charging	Flexibility Markets	Solar & Storage
 <p>MCA's need the capability to dynamically adjust charging to capitalise on falling power prices, while ensuring vehicles are fully charged for planned routes.</p> <ul style="list-style-type: none"> <li>• <b>Tariff Optimisation:</b> Smart software automatically schedules charging during lower-cost periods, reducing power costs by up to 30%.</li> <li>• <b>Peak Shaving:</b> By intelligently spreading load, fleets avoid peak demand charges and reduce strain on grid connections.</li> <li>• <b>Automated Control:</b> Charging is continuously optimised in real time, balancing cost, grid constraints and operational requirements without manual intervention.</li> </ul>		





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- **Virtual Power Plants:** Aggregating the battery capacity of a franchised fleet allows you to bid into "Capacity Markets" and be paid for providing flexible loads.
- **Demand Side Response (DSR):** The National Grid pays operators to pause charging during moments of extreme grid stress. This generates revenue without affecting vehicle readiness.





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Smart Charging

Flexibility Markets

Solar & Storage



## Solar Generation

- **Hedge Volatility:** On-site solar reduces exposure to price spikes with predictable, zero-marginal-cost power.
- **Cut Grid Imports:** Supports daytime charging and depot loads, lowering peak demand and carbon intensity.

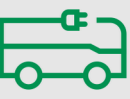
## Battery Energy Storage (BESS)

- **Arbitrage & Peak Control:** Store off-peak or excess solar energy, discharge at peak to reduce costs and demand charges.
- **Flexibility Revenue:** Earn income from grid balancing and flexibility markets.

**Solar + Storage Integration:** Solar alone is not sufficient for peak charging demand. When paired with storage, energy can be shifted from day to evening use — reducing costs and improving resilience.



VEV





# Protecting your Network

**The Challenge:** As fleets electrify, they become part of the critical national infrastructure. A digital or physical breach can lead to operational paralysis.

**The Solution:** Combining robust cybersecurity, real-time control systems, and people-first infrastructure designed to ensure the network remains safe, reliable, and always operational.

## Cybersecurity

## Physical Safety



### Protecting Data

An electric fleet is a digital ecosystem. There is a constant flow of data between the bus, the charger, and the grid.

- **ISO 27001 Accreditation:** Authorities should mandate that their electrification partners hold this gold standard for information security. It ensures robust protocols are in place to prevent cyberattacks that could disable chargers remotely.
- **Secure Platforms:** A “Control Tower” platform must encrypt telematics and energy data, protecting against cyber threats. This is reinforced with regular simulations and clear contingency protocols, ensuring services can continue even if charging systems are disrupted.





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Cybersecurity

Physical Safety



## Designing for People

Franchising guidance explicitly requires Authorities to uphold personal safety, specifically regarding Violence Against Women and Girls (VAWG).

- **Lighting and Layout:** Unlike dark diesel depots, electric hubs require high-quality lighting for cable handling, directly enhancing safety for staff working late shifts.
- **Monitoring:** Integrated CCTV on modern charging infrastructure should be leveraged to monitor for anti-social behavior at depots and shared hubs.
- **Driver Welfare:** Opportunity charging locations must be designed with well-lit, secure welfare facilities for drivers waiting during charge cycles.





# From Plan to Performance

Bus franchising offers a unique opportunity to redesign local transport for the better!

By placing electrification at the heart of your franchising strategy, you can decouple your network from volatile fossil fuel costs, improve air quality, and deliver a superior passenger experience.

The journey involves three distinct steps:

1. **Decide:** Plan your network based on real-world energy data to avoid stranded assets.
2. **Build:** Implement resilient infrastructure with B2B hubs and opportunity charging.
3. **Optimise:** Use smart charging and capacity markets to lower TCO and generate revenue.

Ready to start your transition? VEV supports authorities across the full electrification journey, acting as the single point of accountability for design, build, and operation.

VEV





## About VEV

VEV helps organisations accelerate fleet electrification and achieve their carbon reduction goals with an end-to-end solution spanning strategy, infrastructure, energy and ongoing operations. Integrating across vehicles, charging and power, VEV designs and delivers electrification programmes tailored to each fleet's operational and energy requirements, ensuring better performance, resilience and cost control over the long term.

At the core of VEV's offering is VEV IQ, its intelligent charging and energy management platform. Now deployed across more than 65 operational sites, managing over 1,500 charging connectors and over 40 GWh of annual energy throughput, VEV IQ provides real-time visibility and control across vehicles, chargers and on-site energy assets. This enables smart charging optimisation, reduced energy costs and reliable fleet performance at scale, already delivering over 25,000 tonnes of CO<sub>2</sub> savings per year.

Owned by Vitol, a global leader in energy, VEV combines deep energy expertise with advanced digital capabilities to help organisations reduce emissions, optimise total cost of ownership and transition confidently to an electrified future.

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More information at [VEV.com](https://www.vev.com)  
Contact us [ask@vev.com](mailto:ask@vev.com)

**VEV**

