

Local Low Carbon  
**Accelerator**

# Delivering jobs and growth through local green infrastructure projects

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Summary for Whitehall  
policymakers



# Executive summary

**Green infrastructure projects in local areas can reduce energy bills, build our energy independence, improve air quality, reduce carbon emissions and deliver jobs and growth across UK cities and regions.** Accelerating delivery is crucial to decarbonising the heat and buildings and road transport sectors, which will deliver significant social, economic and environmental benefits for the UK. This could include 240,000 jobs decarbonising the heat and buildings sector by 2035<sup>1</sup>, and 72,000 jobs producing zero emission vehicles by 2050<sup>2</sup>. The investment required for home retrofit and low carbon heat, and road transport, is estimated at £100-135bn<sup>3</sup> and £140bn<sup>4</sup> respectively by 2035, and would reduce the UK's current greenhouse gas emissions by almost 30%<sup>5</sup> by 2035.

**Local and combined authorities, in collaboration with the private sector, have an important role in delivering these projects in a way that meets the specific needs of local communities and geographies.** However, there are many complex challenges to be faced to accelerate the deployment of local green infrastructure projects across the UK. Local authorities need the right capabilities to overcome the delivery hurdles they face and unlock private sector collaboration.

**The Local Low Carbon Accelerator (LLCA) is working with local and combined authorities to demonstrate replicable solutions to accelerate local infrastructure deployment.** Focusing on three projects – home energy efficiency measures, zero emission buses (ZEBs), and electric vehicle (EV) infrastructure – the LLCA is demonstrating the step-change in action that is possible when bringing local and combined authorities and the private sector together. Replicating similar projects nationwide will help create the right conditions across the nation for job creation, stimulating private investment and decarbonisation.

**These projects have demonstrated how public-private collaborations can deliver local energy transition projects while also driving value for money in public spending.** The creation of new innovative financial products for home retrofits, application of knowledge and data sharing to lower ZEB technology uncertainty, and collaborative strategy design for EV infrastructure delivery through an energy lens, provide replicable examples that other locations could use to unlock their local energy transition and deliver the benefits that provides.

**In this Summary for Whitehall Policymakers report, the LLCA outlines key recommendations for central Government to catalyse public-private collaboration and unlock investments needed to decarbonise cities and regions across the country.** Government needs to send clear and consistent policy signals to address previous Government funding gaps and leverage private investment. In some cases, Government may still need to provide limited funding and guarantees to create an enabling and supportive environment to allow local and combined authorities and the private sector to deliver.

**Implementation of these recommendations would catalyse greater private sector involvement in local green infrastructure projects.** In turn, this involvement would support local and combined authorities to be the lynchpin in ensuring a whole systems approach to the design and delivery of local green infrastructure, in a transition which leaves no one behind.

**The LLCA's recommendations for local authorities and other stakeholder groups can be found in the accompanying report, 'Delivering jobs and growth through local green infrastructure projects', which will be launched in 2023.**

## Words from the LLCA partner organisations

'The net zero transition has the opportunity to drive regeneration of cities and communities across the country.'  
*Charlie Nunn, Executive Director and Group Chief Executive, Lloyds Banking Group*

'LLCA is proof that we are better together. May this effort serve as a template for how we may progress to a greener future.'  
*Paula Rosput Reynolds, Chair, National Grid*

'The energy transition needs locally-driven action at pace and scale as well as businesses, communities and regional government pulling together in one clear direction.'  
*David Bunch, Country Chair, Shell UK*

'We must speed up the roll out of green infrastructure to bring cheap, clean power to everyone, wherever they live. This project shows that when business and Local Government work together we can move fast, create jobs and boost local economies.'  
*Greg Jackson, Founder and CEO, Octopus Energy*

The LLCA has identified five cross-cutting recommendations to the Government to replicate the outcomes from this work and drive deployment of local green infrastructure across the nation:

### Recommendation 1: Support the development of the required local and regional capability to design and drive delivery

Unlocking public-private investment in green infrastructure requires solutions to be brokered, designed and delivered locally. This requires a step-change in the local and regional capability to develop strategies, undertake detailed planning across systems, lead negotiations, undertake necessary market-building, and, on occasion, undertake consumer engagement. With the right high quality technical, commercial and strategic capability, the regional growth opportunities can be accelerated and costs optimised. There are options as to whether this capability is built within combined or local authorities, or potentially in specific arms-length regional bodies. As such, Government should:

- Work with relevant stakeholders to identify options for the right approach to building the required regional and local capability, and provide funding to enable this capability to be established with the appropriately skilled professionals.
- On the basis of the right capabilities being in place, recognise the central importance of local area energy planning (LAEP) being developed by the relevant regional authorities in collaboration with local private and public sector stakeholders. The relevant authorities should be incentivised to develop plans that cover all sectors of the energy system.



### Recommendation 2: Facilitate the right advisory support and share delivery best practices

The provision of advice and best practice based on practical lessons learnt is pivotal to enabling local and combined authorities to accelerate delivery, in particular where this advice is high quality and impartial. There are a range of lesson-sharing mechanisms underway established by either central Government or external partners, with a risk of disconnected and duplicative efforts. There is an opportunity to bring a coherent and technically informed approach to this, ensuring all local authorities have access to green infrastructure expertise. Government can:

- Support the establishment of an expert advisory body to provide energy market knowledge and best practice on green infrastructure delivery to local authorities and combined authorities. This will create a single point of contact, facilitate knowledge sharing, and bring together the public and private sectors. There are existing bodies, like the advisory function of the UKIB, that could provide some of the advice.
- Develop coherent and up-to-date cross-departmental guidance and frameworks for risk, financing and deal-making, in partnership with organisations such as Core Cities UK, the M10 mayoral group, and BEIS Local Net Zero Hubs.



### Recommendation 3: Create clear, long-term market signals which enable businesses to grow their activities in local green infrastructure value chains

Alongside specific regional interventions, long-term market signals from Government are essential to allow local authorities and the private sector to plan ahead and drive deployment. EV uptake has already benefited from this approach, but stronger signals are needed for building retrofit and zero emission buses to encourage the finance sector and supply chain to scale up in response. Government action can unlock the potential of the private sector through clear and strategic policy and fiscal interventions. In particular, Government should:

- Provide clear market signals by introducing further backstop regulation. For example: end the sale of diesel, petrol, hybrid and other non-zero emission bus technologies by a fixed date (in conclusion to the welcomed Government consultation earlier this year); and develop a clear roadmap for building energy efficiency requirements, whilst ensuring the Energy Performance Certificate (EPC) and Standard Assessment Procedure framework is reformed to drive adoption of thermal energy efficiency and building carbon intensity measures.
- Use fiscal policy and funding certainty to improve uptake of local green infrastructure in the short and medium term. This could be done by introducing incentive payments/tax rebates that goes beyond the £1.5bn Help to Heat funding announced<sup>6</sup> to support the scaled rollout of energy efficiency measures, and providing greater visibility over future ZEB funding allocations.



## Recommendation 4: Support the UK Infrastructure Bank to establish the financing conditions needed to crowd private capital into local green infrastructure projects

Energy efficiency, ZEB transition and EV infrastructure projects are subject to high upfront costs and long payback periods, and may have unattractive risk-return profiles for the private sector over the short to medium term. UKIB can help unleash the full potential of private capital by de-risking investment in local green infrastructure, and catalyse private financing into emerging energy transition finance models for local and combined authorities (e.g. through residual value guarantees). Government action is needed to:

- Refer combined and local authorities to the advisory function of the UKIB alongside Government bid processes, to help them develop more bankable and credible projects and access appropriate finance.
- Work with the UKIB, industry and local authorities to design efficient grant programmes that catalyse private sector investment and a stronger pipeline of projects.



## Recommendation 5: Bridge the local skills gap needed to decarbonise transport and building infrastructure across the UK

Critical infrastructure projects are already experiencing costly delays due to a shortage of skilled workers. Changes in standards and regulations can contribute to delivery bottlenecks. Enabling businesses to maximise use of the Apprenticeship Levy, guided by a comprehensive gap assessment, could future-proof supply chains and benefit communities. Government can facilitate this by:

- Allow more flexibility in the Apprenticeship Levy for it to be directed by employers to adult training providers that could meet employer future demands. This could be achieved in three parts:
  1. Increase the allocation of the donated levy (more than the current 25%)
  2. Revise the Government apprenticeship standards to ensure the full suite of training needs for Net Zero are covered under the Levy
  3. Give more market signals to local Further Education and technical institutions about the curriculum needed to meet the future employment needs of the private sector for Net Zero
- Building on the findings of the Unit for Future Skills and Green Jobs Taskforce, conduct a comprehensive assessment of when, where, and in which sectors there will be skill gaps specific to critical green infrastructure delivery. The scope should include energy efficiency and retrofit, ZEBs, and EV infrastructure, and take into account the impact of and opportunities to streamline the design and application of recently implemented standards and regulations, e.g. PAS 2035.



**The cross-cutting recommendations are explored in more detail in the follow sections, drawing through specific recommendations based on the findings from each project.** See pages 5 - 6 for energy efficiency, pages 7 – 8 on bus decarbonisation, and pages 9 – 10 for EV infrastructure for more information.

# Introduction – what is the LLCA?

**Four members of the Prime Minister’s Business Council – Lloyds Banking Group, Octopus Energy, Shell UK and National Grid – formed the LLCA to demonstrate how the private sector could collaborate with local Government to accelerate the local transition to Net Zero while maximising public value for money.** Surface transport and the built environment present the greatest opportunity to unlock private investment, boost local growth and improve energy independence. These sectors make up almost two thirds of energy use in the UK<sup>7</sup> and together account for 53% of total greenhouse gas emissions<sup>8</sup>. The technologies required to decarbonise them already exist, so deployment could be rapid with the right support and collaboration.

**Locally driven action is increasingly needed on the national journey to Net Zero, given the importance of decarbonising local transport and homes and buildings.** This will be led by local and combined authorities and supported and accelerated by collaboration with the private sector. Government has recognised that there is no uniform approach to delivering sustainable infrastructure<sup>2</sup>. Delivering the next phase of the energy transition in a just manner will involve both nationally and locally-led initiatives.

**The private sector has the potential to finance and support local and combined authorities in driving critical infrastructure projects.** However, to realise this potential, uncertainties will need to be addressed over infrastructure demand, technology risks, and difficulties identifying the right business models.

**Over the past six months, the LLCA has been working in collaboration with local Government to deliver projects in three areas:**

**Energy efficiency: the LLCA is working with Leeds City Council (LCC) to demonstrate a tenure agnostic city-wide retrofit scheme, starting with 500-1,000 able-to-pay owner-occupied and private rental homes, as a case study to examine replicable delivery and policy solutions**

Tenure: starting with privately owned and private rental properties  
 Building type: properties below EPC band C, majority built after 1930  
 Income group: low-to-middle income households  
 Energy efficiency measures: building fabrics measures (e.g. roof/wall/window/floor measures), heat pumps, rooftop solar generation and storage systems

**Bus decarbonisation: the LLCA is working with Liverpool City Region Combined Authority (LCRCA) to identify suitable financing options for a ZEB franchising model as a case study to develop replicable solutions to accelerate ZEB adoption**

Fleet size: 1,200 buses<sup>9</sup>  
 Passenger trips: 136 million / year<sup>10</sup>  
 Current network profile: 17 bus operators providing c.400 bus services across Liverpool City Region (LCR)<sup>9</sup>  
 Zero emission technology focus: Electric / hydrogen zero emission bus mix

**Infrastructure for EVs: the LLCA is supporting West Midlands Combined Authority (WMCA) to develop its strategy for zero emission vehicle infrastructure, providing a case study on planning for locally-led, whole system transport decarbonisation**

Current regional penetration of electric vehicles: 0.35%<sup>11</sup>  
 Existing number of ZEV charging socket points: 1,127 (2022)<sup>12</sup>  
 Planned number of ZEV charging socket points: c. 15,422 (2030)<sup>13</sup>



# Move the dial on home energy efficiency across the nation

Like many other cities in the UK, Leeds City Council is keen to deliver home energy efficiency improvements at scale. It had designed an area retrofit scheme but was struggling to identify suitable financing options to attract private capital. The LLCA is providing finance, energy and delivery experts to support the Council's evolving thinking. Through a series of workshops, the LLCA is helping to identify the blockages and co-create financing and delivery solutions. This collaboration is supporting Leeds to accelerate its delivery of a city-wide retrofit programme. This project is demonstrating a replicable pathway for other cities and regions across the UK to deliver multi-tenure retrofits using private sector capital. However, further support from Government is needed to enable rollout across the country:

## 1. Support combined and local authorities establish delivery vehicles to undertake long-term building retrofit programmes for their urban and rural communities

Delivering retrofit projects at scale requires high levels of coordination and dedicated project management teams to navigate multifaceted challenges at planning, design and delivery phase. Leeds City Council has delivered a number of successful area retrofit schemes to different tenures in the past and leveraged its prior knowledge and experience to design the city-wide retrofit scheme. Not all local and combined authorities are as experienced, so we recommend that Government should:

- **Provide targeted funding to support and build local and combined authority delivery capacity (BEIS, DLUHC).** Provide funding to help local and combined authorities build broader planning and delivery capability for the Net Zero transition, similar to the £50m of resource funding allocated through the Local Electric Vehicle Infrastructure (LEVI) scheme<sup>14</sup>. For energy efficiency installation projects, doing so will subsidise costs incurred in building appropriate and stable levels of relevant strategic and delivery capability, that can be sustained beyond the life of individual projects or schemes.

## 2. Facilitate the right advisory support in energy efficiency and building decarbonisation

Given the complexity involved in designing and delivering retrofit programmes at scale, significant value could be unlocked through the establishment of the right expert hub to facilitate knowledge sharing and collaboration, providing a channel for places beginning their retrofit journey to obtain expert advice. We recommend that Government should:

- **Establish information and knowledge sharing pathways (BEIS, DLUHC).** Establish a single point of contact for local authorities, retrofit providers, housing associations, banks, future education providers, and many more. This could be undertaken alongside information sharing on other transition sectors, or separately. Ensure provision of coherent cross-departmental guidance, such as practical guidance on navigating PAS 2035.

## 3. Provide clear policy frameworks to create strong, consistent and sustained demand signals that stimulate response from the finance sector and supply chain

Public demand for energy efficiency measures is limited by a lack of understanding, the perceived disruptions from installation, and a lack of confidence in installers. Clear and strong demand signals and proven business models are needed to overcome these barriers and incentivise the supply chain to invest and innovate.



*Insight from*  
LCC

Leeds has demonstrated that positive sentiment in local communities, generated from providing seamless and hassle-free installations, can drive demand for energy efficiency among neighbouring communities. Community engagement has built momentum for a city-wide retrofit scheme, but on its own is too slow to build awareness and grow demand for energy efficiency across the nation.

To grow demand for energy efficiency across all socioeconomic groups, Government should:

- **Stimulate homeowner demand through fiscal incentives and backstop regulation (HMT, BEIS).** Introduce policy to encourage consumers to improve their energy efficiency through incentives such as tax breaks and voucher-based incentive payments for more energy efficient homes and keeping VAT relief on energy efficiency measures. This needs to

be coupled with the development of a clear roadmap for building energy efficiency requirements, whilst ensuring the Energy Performance Certificate (EPC) and Standard Assessment Procedure framework is reformed to drive adoption of thermal energy efficiency and building carbon intensity measures.

#### 4. Leverage Government funding and the UK Infrastructure Bank to crowd in private capital through new financing models

Government funding schemes and obligations have been introduced previously to boost energy efficiency uptake, but have largely been stop-start in nature and fall short of the estimated £35-68bn<sup>3</sup> needed to retrofit 19 million UK homes to reach EPC C<sup>15</sup>. Retrofit cannot scale in the long-term without private debt.

The finance sector has a vital role in increasing the flow of private finance into retrofit projects and the range of financing products available to households of different tenure for retrofit measures. Innovative financing solutions could significantly lower or even remove upfront home energy efficiency improvement costs. Property-linked finance packages are an example where the upfront costs of home improvements are defrayed and linked to the property rather than an individual borrower. Given the unattractive risk-return profiles of energy efficiency investments and nascent business models, Government action is needed to:

- **Leverage private sector funding for retrofits on social housing and vulnerable homes (HMT, BEIS).** Ensure existing and future means-tested Government funding schemes for improving building fabric, such as the Energy Company Obligation (ECO) scheme, deliver funding in a way that leverages private financing. Options should be explored for additional mechanisms to crowd in private financing for Registered Providers.
- **Use UK Infrastructure Bank to crowd in private capital (HMT).** Leverage long-term patient capital and other mechanisms (such as guarantees) to de-risk critical infrastructure projects that face challenging financing models and demand volatility, or are subject to new technology risk.



*Insight from project with LCC*

A property-linked finance product is under development and has the potential to be structured to deliver retrofit projects at no upfront cost to homeowners. Subject to testing, the model could enable 100% or up to 80% of home retrofit costs to be financed with private capital. Further details of this finance model and findings will be shared in the accompanying report in 2023.

#### 5. Set a direction of travel for the private and education sectors to bridge the skills gap and review standards that are contributing to these gaps

The Government's Heat and Buildings Strategy outlined a potential skills gap of 105,000 energy efficiency installers, 15,000 energy efficiency assessors, and 10,000 retrofit coordinators<sup>1</sup>, resulting in project backlogs and poor customer service. Retrofit advisor training initiatives are being driven across the country by organisations such as Generation UK partnering with local and combined authorities, including Leeds. However, bridging the skills gap requires multiple solutions.

The private sector has a role in delivering targeted training and apprenticeship programmes to close the skills gap, and should do so by treating skills shortages as a principal risk to business operations, bottom lines, and long-term competitiveness. Such measures will likely take effect in the medium to long-term, so the public sector must build on the recommendations of the Green Jobs Taskforce to review and enhance apprenticeships and other training pathways. Action must be taken to boost skills availability in the short term and ensure development of a Net Zero-aligned workforce in the long-term (e.g. driving availability and take-up of traineeships, apprenticeships, and other retrofit-enabling learning pathways):

- **Streamline the design and application process of retrofit standards to relieve supply chain pressures (DLUHC, BEIS).** Review past cases involving the application of standards (particularly those newly introduced, e.g. PAS 2035), and launch a consultation to identify efficiency opportunities that have the potential to increase supply chain capacity.
- **Improve the flexibility of the Apprenticeship Levy, including an increase in allocation of donated levy and the type of training allowed (HMT, BEIS, DfE).** The energy efficiency supply chain needs another 130,000 skilled workers to help every building use less energy<sup>1</sup>.



*Insight from LCC*

Retrofit projects in Leeds continue to face bottlenecks due to a shortage of retrofit coordinators, and of experienced architects required for more complicated whole-house retrofits of Victorian houses. This is exacerbated by the rigid application of PAS 2035 which requires retrofit coordinators for all domestic retrofit projects but creates additional administrative burden which discourages prospective labour.

# Pressing the pedal on financing zero emission buses

Investment in ZEBs is hindered by high upfront costs, residual value and technology uncertainty, and the complexity of ZEB infrastructure and bus integration, which is limiting uptake. Liverpool City Region Combined Authority is looking to identify suitable financing options that will attract private investment. The LLCA is providing financial and energy expertise to identify suitable financing solutions to accelerate deployment of ZEB fleets and depots, with consideration given to ZEB technology choice. Further support from Government is needed to replicate this work in other places.

## 1. Support local and combined authorities to setup a dedicated team focused on Net Zero whole systems planning to unlock all the benefits from ZEB fleet integration

Integrating a ZEB fleet into the transport system must be achieved through a place-based approach. Local Area Energy Planning can identify the interdependencies between the local transport, energy and spatial planning processes to better inform long-term transport decarbonisation strategies. This data will help authorities to assess the costs of different bus technology and infrastructure options, and help future-proof decisions. To support this, Government should:

- **Encourage and incentivise LAEP at a regional level (BEIS, DfT, DLUHC).** This will enable a strategic and holistic approach to local transport infrastructure and regional energy system planning, thereby unlock better ZEB fleet integration and decision making around bus technology and infrastructure. Endorsing the benefits of locally-led LAEP and encouraging distribution network operator (DNO) participation are key to delivering smart, integrated systems that deliver cross-sector energy and economic efficiencies.
- **Provide targeted funding to support and build local and combined authority delivery capacity (DfT).** Provide funding to help local and combined authorities build broader whole system planning and delivery capability for the Net Zero transition, similar to the £50m of resource funding allocated through the LEVI scheme<sup>14</sup>. Doing so will support authorities to carry out LAEP and deliver bus franchising and ZEB uptake, as part of a coherent overall approach to building regional capability for the Net Zero transition.

## 2. Facilitate the right information sharing for ZEB fleet and local energy network optimisation

Cross-sector collaboration between local Government and the private sector is needed to optimise ZEB network planning and plug information gaps. Pursuing a ZEB transition is complex and requires consideration of higher peak vehicle requirements, technology options, grid connections, depot location, and active management of ZEB assets. A whole systems approach needs to be taken, presenting local and combined authorities with significant resource commitment challenges. Energy suppliers and network operators can support local and combined authorities to understand these complexities, assess the whole project costs of different options, and optimise ZEB and energy network planning. This will enable economic and operational efficiencies in ZEB networks and better long-term planning.

- **Establish information and knowledge sharing pathways (BEIS, DfT).** Establish a single point of contact for local authorities, bus operators, energy network operators, manufacturers and other sector stakeholders. This should work with existing knowledge hubs such as the Bus Centre of Excellence to improve regional capabilities to integrate ZEB networks into the transport system, attract private financing, and successfully apply for Government funding, and encourage information sharing between financiers and technology owners to plug information gaps.



*Insight from project with LCRCA*

Financiers are grappling with the lack of quality data on battery performance and degradation profiles, which are increasingly collected and analysed by energy market players. In supporting LCRCA to identify potential financing options for ZEBs, the LLCA partners are also exploring how this data can be shared between parties to help lower technology and residual value uncertainty and improve investor confidence, ultimately enhancing the attractiveness of the financing models available.

### 3. Provide clear market signals to give long-term demand and technology certainty to manufacturers and financiers

Clear long-term policy direction is required to underpin growth and competition in the private sector. High upfront costs of ZEB assets and infrastructure are causing low levels of uptake among local and combined authorities and operators. With low demand for ZEBs, manufacturers will be slow to reach economies of scale, and the sector will be slow to develop an affordable second hand market, which is key to creating value around the end-of-life use of ZEB assets and for the rollout of ZEBs to non-urban areas. The Government should:

- **Provide clear long-term policy signals (beyond Zero Emission Bus Regional Areas (ZEBRA) scheme & Bus Service Improvement Plans (BSIP)) to industry and local and combined authorities to accelerate deployment of ZEB infrastructure and improve bus services (DfT).** For example, by announcing a date for ending the sale of non-ZEBs (in conclusion to the welcomed Government consultation earlier this year) and providing greater long-term clarity over funding timescales and allocation rounds.

Clear market signals will enable the supply chain to invest in meeting future demand, incentivise the standardisation of fleets, and ultimately lower ZEB costs for local and combined authorities and operators. Financiers, manufacturers, and operators can then work to establish a secondary market channel for ZEB assets to help provide residual value certainty and enable quicker rollout of ZEBs to non-urban areas.



Longer term visibility of Government funding timescales and allocation rounds for buses will allow LCRCA to prepare resources further in advance of funding deadlines. Clarity on the date of the end of sale of non-ZEBs would also allow LCRCA to better plan ZEB procurement timeframes and operating budgets, while giving manufacturers and the supply chain time and certainty to plan to meet demand. Certainty over future green hydrogen availability and price will also support the LCRCA in investing in assets and infrastructure for the uptake of hydrogen ZEBs

### 4. Provide certainty around the residual value of key ZEB assets to help alleviate technology risks for private lenders

The private sector will play a key role in delivering the scale of finance required to transition towards ZEBs. An estimated financing challenge of £7.5bn is required to purchase ZEBs between now and 2035, based on 2021 prices<sup>16</sup>. Historically, the private sector has typically provided 60-70% of the financing for fleets of diesel buses for public transport<sup>17</sup>. Assuming the amount of private sector financing remains constant, this leaves a financing gap of approximately £4bn<sup>18</sup> (after taking into account £0.5bn of Government funding<sup>19</sup>). With the right level of Government support, the private sector could help close this gap.

Residual value uncertainty of ZEBs remains a key concern of financiers. Reducing this uncertainty would allow private lenders to increase the scale and range of financing products available. For example, solutions such as mezzanine loans and 'as-a-service' models can be introduced at scale, which reduce the high upfront costs of ZEB assets for fleet owners, allow better sharing of risk between parties, and enable off-balance sheet access to bus fleets. Government should:

- **Reduce technology risk for financiers by providing residual value guarantees (DfT, supported by UKIB and HMT).** Through the UKIB and DfT, develop a residual value guarantee scheme for ZEB technologies to provide asset value security. Grant funding or an arrangement similar to Contracts for Difference could be used as part of a guarantee scheme to provide financiers reassurance that the residual value of an asset will not fall below a certain level.



A number of ZEB acquisition and financing options are available to support local/regional transport authorities as they introduce bus franchising. However, traditional financiers are limited by the residual value risk associated with new ZEB technologies such as batteries and fuel cells. This risk is the common thread limiting investor appetite for ZEB projects, affecting most acquisition and financing options

# Charging up infrastructure for zero emission vehicles

The transport sector currently accounts for c.30% of WMCA's carbon emissions<sup>20</sup>, and is a key sector of focus in achieving the region's Net Zero target by 2041. The WMCA is an early mover on transport and spatial planning processes to tackle these emissions, through their Local Transport Plan and Five Year Plan. However, there is currently limited collaboration between regional transport system planners and the electricity and gas system. The WMCA are in the process of developing an Infrastructure for Zero Emission Vehicle (IZEV) strategy to align the investment and planning decisions for regional transport and energy infrastructure. The LLCA is providing experts in energy network operation, technology, and charging infrastructure to support to completion of this strategy. This strategy will support WMCA identify low regrets infrastructure investment options. Government can help to replicate this collaboration in several ways:

## 1. Empower local and combined authorities to take a systems approach to zero emission vehicle infrastructure

Zero emission vehicle infrastructure planning must take a systems approach given the interdependencies between local transport needs, energy infrastructure, and spatial planning processes. Transport infrastructure strategies cannot be developed in isolation. They must bring together energy systems and other energy users, and take into account the needs of residents, businesses, fleets and visitors, to fully capture the opportunities presented by the transition towards Net Zero.

Local and combined authorities, in possession of sufficient flexibility, capability and resources, are best placed to deliver a region-fitting whole systems approach (in particular across transport and energy systems) to the planning and delivery of infrastructure for zero emissions vehicles. To support this, Government should:

- **Encourage and incentivise LAEP at a regional level (BEIS, DfT, DLUHC).** This will enable a strategic and holistic approach to local transport infrastructure and regional energy system planning, thereby helping to identify low regret infrastructure investments and provide access to green infrastructure for all communities. Endorsing the benefits of locally-led LAEP and encouraging DNO participation are key to delivering smart, integrated systems that unlock cross-sector co-benefits.
- **Provide targeted funding to support and build local and combined authority delivery capacity (DfT).** Build on the £50m of LEVI resource to help local and combined authorities build their capacity to carry out LAEP and form delivery vehicles to support wider IZEV rollout.

## 2. Facilitate the right information sharing between the public and private sector in zero emission vehicles infrastructure

Cross-sector communication, particularly between transport planners and the electricity and gas systems, is critical to appropriately deploy energy and transport infrastructure. Effective knowledge sharing reduces the information asymmetry between regional transport planners and energy systems that is currently limiting the alignment of planning and infrastructure decisions. Government should:

- **Establish information and knowledge sharing pathways (BEIS, DfT).** Establish a single point of contact for regional transport planners, electricity and gas system operators, and other industry bodies. Use this platform to share a common, collaborative methodology for LAEP, provide learnings and insights from IZEV case studies from around the UK, and support authorities to unlock and effectively use Government funding such as the LEVI funding. This centre of excellence should work with existing information sharing hubs such as the Energy Saving Trust's Local Government Support Programme.



Insight from  
WMCA

WMCA is applying an energy lens to its long-term transport decarbonisation through Energy Capital, the WMCA's smart energy partnership. Transport hubs in the West Midlands are being developed to find and match complementary energy demand profiles, such as park-and-ride cars with buses. Finding these complementary opportunities is key in navigating zero emission vehicle infrastructure planning around grid constraints and maximising benefits associated, without higher infrastructure costs. This energy view has been explored in Coventry and is being extended into other cities.

### 3. Allocate funding to address previous Government funding gaps and leverage private investment

Private sector infrastructure delivery is currently limited by planning requirements, variable and often high installation costs, and limited site availability. The private sector has a critical role to play in providing convenient, affordable, and reliable charging for all in support of the transition to zero emission road transport. Despite good progress in many areas, progress is patchy, giving rise to either underdeveloped geographies and/or technology types. Understanding what is deliverable by the private sector is crucial for understanding where the public sector needs to intervene to ensure the zero emission vehicle infrastructure is accessible for all.

Limited deployment is particularly evident for on-street charging and mixed-use and mixed-fuel transport hubs. On-street charging and mixed-use, mixed-fuel hubs not only support zero emission vehicle uptake, but also have significant potential to deliver broader transport and energy system benefits.

To address these delivery gaps, the private sector has a role to play in developing financing solutions that support critical but under-invested network segments together with public authorities, but requires further direction and incentives from the Government to ensure support is appropriately targeted. Government should:

- **Shape funding allocations to address market failures in deploying zero emission vehicle infrastructure (HMT).** Continue to shape funding schemes (such as the LEVI scheme) to address underserved areas of the network, ensuring the transition to zero emission vehicles is equitable and benefits all communities. Consider targeting the funding based on the needs of regions, communities and demographics, and underpin funding with mechanisms designed to incentivise long-term private investment commitments. Ensure funding gaps for grid connection costs, large scale deployment of on-street charging, mixed-use transport hubs, and workplace and depot charging / refuelling infrastructure remain in focus.

### 4. Address the shortage of skilled EV charge point installers and support the reskilling of electricians

The job growth potential associated with EV infrastructure remains largely untapped, with particular areas of growth being in the installation, operation and maintenance of chargepoints<sup>21</sup>. However, there is a clear gap in the availability of skilled labour, with over 74% of UK organisations delivering charge points surveyed reporting that they do not always have access to the skilled employees they need for their projects<sup>22</sup>. Studies have also found that nearly 70% of electricians feel that they do not have the necessary skills and knowledge to install EV equipment confidently<sup>23</sup>.

Industry needs to work with Government to deliver targeted training and apprenticeship programmes addressing skilled workforce shortages for charge point installers, particularly in underserved regional areas. This collaboration should also seek to grow planning and transport/energy system design expertise in local and combined authorities. Government should:

- **Improve the flexibility of the Apprenticeship Levy and work with and support national reskilling programmes to address the shortage of skilled electricians and charge point installers (BEIS, DfE).** Allow more flexibility in the Apprenticeship Levy to allow it to be directed towards adult training providers that are training and reskilling electricians as EV charge point installers. Programmes such as the National Electrification Skills Framework and Forum, and Centrica's Smart Energy Expert training can be expanded and replicated to fill this growing skills gap.

# Acronyms and abbreviations

Abbreviation	Definition
<b>BEIS</b>	Department for Business, Energy & Industrial Strategy
<b>BSIP</b>	Bus Service Improvement Plan
<b>DfE</b>	Department for Education
<b>DfT</b>	Department for Transport
<b>DLUHC</b>	Department for Levelling Up, Housing & Communities
<b>DNO</b>	Distribution Network Operator
<b>ECO</b>	Energy Company Obligation
<b>EPC</b>	Energy Performance Certificate
<b>EV</b>	Electric Vehicle
<b>HMT</b>	HM Treasury
<b>IZEV</b>	Infrastructure for Zero Emission Vehicles
<b>LAEP</b>	Local Area Energy Planning
<b>LCC</b>	Leeds City Council
<b>LGR</b>	Liverpool City Region
<b>LCRCA</b>	Liverpool City Region Combined Authority
<b>LEVI</b>	Local Electric Vehicle Infrastructure
<b>LLCA</b>	Local Low Carbon Accelerator
<b>UKIB</b>	UK Infrastructure Bank
<b>WMCA</b>	West Midlands Combined Authority
<b>ZEB</b>	Zero Emission Bus
<b>ZEBRA</b>	Zero Emission Bus Regional Areas

# Endnotes

No.	Sources
1	HM Government, <i>Heat and Buildings Strategy</i> , 2021
2	Department for Transport, <i>Decarbonising Transport: A Better, Greener Britain</i> , 2021
3	Estimated based on the additional capital cost to improve residential building fabric efficiency and install low carbon heating solutions by 2035. The cost to improve building efficiency is based on BEIS's published estimate of £35-65 bn to improve all homes to EPC rating of 'C' by 2035, and a projected £68 bn investment calculated from EEIG's estimate of an annual £5.2 bn investment required for fabric efficiency for 13 years. This range is consistent with the Climate Change Committee's estimate of £45 billion for building efficiency improvements by 2035. The additional capital investment for low carbon heating was taken from the Climate Change Committee's estimate of £67 bn by 2035. Fabric efficiency estimates from: <i>Government response to BEIS Select Committee's recommendations</i> , 2019; EEIG, <i>Making energy efficiency a public and private infrastructure investment</i> , 2019; Climate Change Committee, <i>The Sixth Carbon Budget: The UK's Path to Net Zero</i> , 2021. Low carbon heating estimates from Climate Change Committee, <i>The Sixth Carbon Budget – Dataset</i> , 2021
4	Based on the additional capital investment for cars, vans, HGVs, rail, and public transport required in the Climate Change Committee's Sixth Carbon Budget: Balanced Net Zero Pathway. Taken from Climate Change Committee, <i>The Sixth Carbon Budget - Dataset</i> , 2021
5	Calculated based on an estimated 120 MtCO <sub>2</sub> e abatement from surface transport (cars, vans, HGVs, rail, public transport) and residential buildings (existing home fabric efficiency and low carbon heat) projected in the Climate Change Committee's Sixth Carbon Budget: Balanced Net Zero Pathway in 2035, compared to the UK's 2020 greenhouse gas emissions of 405 MtCO <sub>2</sub> e. Carbon abatement taken from: Climate Change Committee, <i>The Sixth Carbon Budget - Dataset</i> , 2021. UK emissions taken from: BEIS, <i>2020 UK Greenhouse Gas Emissions, Final Figures</i> , 2022
6	BEIS, <i>£1.5 billion to improve energy efficiency and slash bills</i> , 2022
7	BEIS, <i>Energy Consumption in the UK (ECUK): Final Energy Consumption Tables</i> , 2021
8	Climate Change Committee, <i>The Sixth Carbon Budget: The UK's Path to Net Zero</i> , 2021
9	Liverpool City Region Combined Authority, <i>Liverpool City Region: Bus Service Improvement Plan</i> , 2021
10	Liverpool City Region, <i>Liverpool City Region Bus Strategy: Appendix One</i> , 2016
11	Black Country Transport, <i>Final Report: ULEV Strategy</i> , 2020
12	Department for Transport, <i>Electric Vehicle Charging Device Statistics: Table EVCD_01a (West Midlands (Met County))</i> , 2022
13	Data provided by West Midlands Combined Authority
14	HM Treasury, <i>Government Response to the National Infrastructure Commission report Infrastructure, Towns and Regeneration</i> , 2022
15	BEIS, <i>Energy efficiency: building towards net zero</i> , 2019
16	Calculated based on the cost of a new ZEB of £357,000 multiplied by a total of 21,140 new ZEBs in the UK by 2035. This only considers the cost of new vehicles and does not consider the cost of ZEB infrastructure or replacement costs. Bus cost estimates taken from Transport Scotland, <i>Zero Emission Bus Financing Ideas Pack</i> , 2021. ZEB Sales forecasts taken from BNEF, <i>Buses long-term outlook</i> , 2022
17	Data from interviews with subject matter experts on the financing of public transport buses from the United Kingdom Infrastructure Bank

# Endnotes

No.	Sources
18	Calculated by estimating the total potential finance available (the announced Government support of £525m (see end note 19) plus the estimated amount of private finance that could be made available for purchasing ZEBs) and subtracting that sum from the estimated £7.5bn required to purchase ZEBs between now and 2035 (see endnote 16). The amount of private finance available for purchasing new ZEBs was estimated by multiplying the capital cost of a diesel bus (£180,000, Transport Scotland, <i>Zero Emission Bus Financing Ideas Pack</i> , 2021) with total ZEB sales by 2035 (21,140) and assuming that private sector financing covers 70% of the cost (end note 17). This assumes levels of private finance for ZEBs will be similar to diesel bus fleets.
19	UK Parliament Committees, <i>Written evidence submitted by the Department for Transport (BUS0061)</i> , 2022
20	West Midlands Combined Authority, <i>WM2041: Five Year Plan 2021-2026</i> , 2021
21	EuropeOn Electrical Contractors Association, <i>Powering a New Value Chain in the Automotive Sector</i> , 2020
22	Excellence in Electrotechnical and Engineering Services, <i>Skills4Climate: Industry Survey Report</i> , 2020
23	Learning Lounge, <i>Nearly 70% of electricians feel under prepared for the Electric Vehicle revolution</i> , 2020