Local Authority Reimagining Transport - Early Interventions

Final Draft June 2022

CCMA
Cumann Lucht Bainistíochta Contae agus Cathrach
County and City Management Association

CARO

LGMA
Local Government Management Agency

Table of contents

List of figures

Executive summary

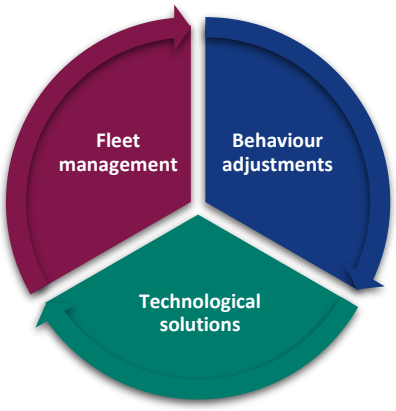
The Re-Imagining Transportation Working Group (RTWG) is established under the Climate Action and Transport Networks committee (CATN) of the County and City Management Association (CCMA). This interim report by the RTWG explores a number of potential intervention options and transition measures that are immediately available to local authorities, as part of broader requirements to decarbonise their fleet.

Decarbonising the local authority fleet as a response measure to delivering on national emission reduction targets of 51% by 2030 and net-zero by 2050, is a complex and challenging undertaking. There are many barriers to decarbonising the local authority fleet including: the efficient activation of efforts at local authority level, issues relating to cost and supply of vehicles and dependencies on emerging technologies.

It is acknowledged that a simplistic "one size fits all" approach will not be effective, and local authorities must anticipate and plan for a sustained progression of responses, to successfully confront the task of decarbonisation.

This report and the interventions identified are informed by the findings of a comprehensive survey that was undertaken in Q4 2021 of all fleet and fleet management practices from across the entire local authority network. Amongst the volume of data gathered, the survey identified that the current reliance on fossil fuels to drive the local authority fleet is significant.

Based on the survey findings and an exploration of the key challenges and opportunities presenting in relation to the task of fleet decarbonisation, the RTWG identified a number of early interventions that can be deployed by local authorities to support the decarbonisation of their fleet. These are categorised under three headings:



Fleet management: maximising governance and management protocols

Behaviour adjustments: modifying attitudes and familiarity with new technologies

Technological solutions: embracing advances in technology and fuel efficiencies.

Under these three categories, the report explores a catalogue of six early interventions, which are summarised as follows:

Decarbonising Local Authority Fleet Early Interventions

Fleet Management

Fleet management understanding the strategic responsibility, maximising governance and management protocols to enable and facilitate transition and decarbonisation processes.

Interventions

1. **Leadership & Governance**
   Building the conditions for success
2. **Fleet Management & Accounting**
   Monitoring and reviewing fuel use and efficiencies

Behaviour Adjustments

Behaviour adjustments modifying attitudes and familiarity with new technologies and maximising the efficiency of fuel use.

Interventions

3. **Fleet Management CPC Training**
   Potential to achieve 5% energy efficiency across the fleet
4. **Eco Driver & in-vehicle driver training**
   Potential to achieve 5% energy efficiency on driving techniques

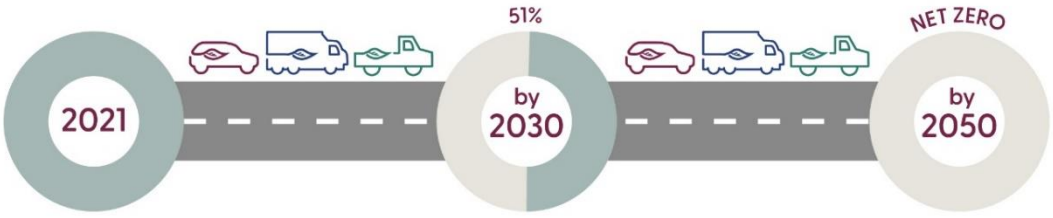
Technological Solutions

Technological solutions including advances in transport technology for greater efficiency, new or alternative fuel types, necessary supporting infrastructure required.

Interventions

5. **Light Commercial Electric Vehicle**
   Moving towards zero emission vehicles
6. **Alternative Fuels**
   Opportunity for efficiencies through developing capabilities of alternative fuels

Emission Reduction Targets



The RTWG examined other longer-term interventions, noting that these interventions require further technological advances or are subject to other dependencies that put them out of reach at this stage. However, it is important to keep well informed of emerging technologies and how they might suit the context of the transition of the local government fleet to net zero emissions over time. This is particularly important for the transition of the Heavy Commercial Vehicles, which form a significant amount of the fleet, given the nature of services provided by local authorities. Their transition is identified as being challenging and relies on vehicle manufacturers to work on technological advances and improve supply. Alternative fuel opportunities will also arise over time and fuels like hydrogen and compressed natural gas are possible options in the medium to longer term.

The early interventions outlined in this report will help to contribute to the process of decarbonisation in the immediate term. However, it cannot be emphasised enough that the decarbonisation process is a progressive one that requires flexible but sustained efforts in both planning and implementation, to evolve commensurately with the technological advances being made.

***

1. Introduction, Scope and Context

1.1 Introduction

Strengthened national climate policy responses to help tackle the global phenomenon of climate change call for a reduction in emissions of 51% by 2030, with a trajectory towards achieving net-zero emissions by the end of 2050[1]. These targets apply across all sectors of society including transport. There is no single pathway to achieving net-zero emissions, but the 2050 and the interim 2030 emission reduction targets mean local authorities (LAs) must now plan and work towards fully decarbonising their transport fleet. The purpose of this report is to inform and support the work of LAs in their responsibility to explore and pursue options and pathways to fleet decarbonisation.

Within the public sector, transport is responsible for up to 30% of GHG emissions[2]. Decarbonising the LA fleet is a complex and challenging undertaking. It is demanding of interventions that are informed by national climate policy requirements to deliver on the prescribed emission reduction targets.

To assist the local government sector in achieving the 2030 and 2050 targets, the County and City Management Association (CCMA) Climate Action and Transport Networks committee (CATN) established a working group with an overarching purpose to explore ways that the sector could assist and guide individual LAs to realise emission reductions and energy efficiency targets for their fleets. The group is called the Re-imagining Transport Working Group (RTWG)[3].

During the early work of this group, a number of potential intervention options and transition measures emerged that were immediately available to local government as part of broader requirements to decarbonise its fleet. This interim report has been prepared to outline those early intervention options to allow LAs to consider proceeding with these early options in advance of the overall working group report.

1.2 Scope of report

This interim report has been developed by the RTWG and aligns with the group's broader objectives, which can be summarised as follows:

- Collect and establish data on LA fleet and usage patterns
- Quantify existing carbon emissions from the LA fleet (estimate)
- Identify potential carbon emission reduction interventions through the use of alternative fuels, alternative technologies and introduction of efficiencies
- Identify opportunities and barriers associated with potential interventions
- Estimate potential scale of carbon emission reductions achievable from interventions.

The report and the interventions identified are informed by the findings of a comprehensive survey that was undertaken by the Eastern and Midlands Climate Action Regional Office (CARO) of all fleet and fleet management practices from across the LA network in Q4 2021.

---

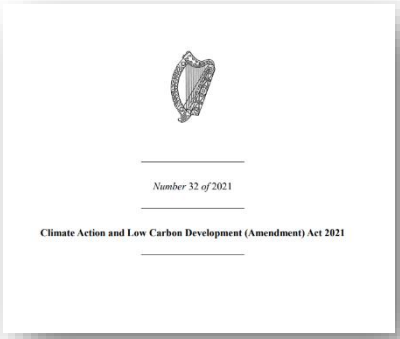
[1] Programme for Government - Our Shared Future (2020): Available at: gov.ie - Programme for Government: Our Shared Future (www.gov.ie). Oireachtas (2021) Climate Action and Low Carbon Development (Amendment) Act 2021, House of the Oireachtas: Available at: pdf (irishstatutebook.ie)

[2] Climate Action Plan 2021 – Securing our Future, Chapter 9, page 74

[3] Composition and membership of the Re-imagining Transport Working Group is included in Appendix A

1.3 Background context

Most recently, national climate policy has raised the bar on the responses required from across all sectors of society, to deliver effective and transformative emission reductions. How this relates to the local government sector and the re-imagining fleet project are elaborated upon below.



The Climate Action and Low Carbon Development (Amendment) Act, signed into law in July 2021 creates a legally binding framework, for an all of Government and societal responsibility, to achieve the National Climate Objective[4]. The Act frames Ireland's legally binding climate ambition to delivering a reduction in greenhouse gas emissions of 51% by 2030[5], thus placing the country on a trajectory to achieving climate neutrality by no later than the end of 2050.

The Act underpins a suite of measures and policy instruments to promote the delivery of the targets prescribed.

The **Climate Action Plan 2021 – *Securing our Future***, the first of a series of annual plans envisaged for the decade up to 2030, is one such instrument at national level. This plan highlights the dual role that local government must play on climate action namely:

1.Each local authority must strive to achieve **emission reduction targets of 51% by 2030** [6] and an **increase in energy efficiency target from 33% in 2020 to 50% in 2030**[7] across all **fleet**, buildings and assets owned and operated by them.

2.Each local authority must exert **influence** and a **leadership role** to enable and advance community activation on climate action through the range of services and functions provided at local and community levels.

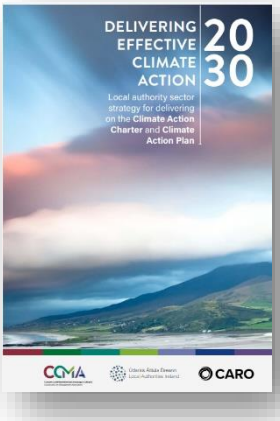
[4] National Climate Objective: *pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy*. Oireachtas (2021 s.3) Climate Action and Low Carbon Development (Amendment) Act 2021, House of the Oireachtas: Available at: pdf (irishstatutebook.ie)

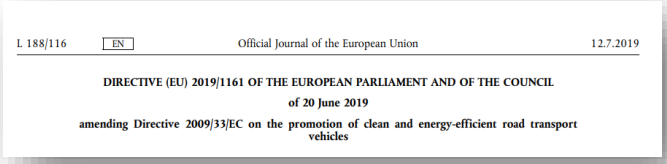
[5] Comparative to 2018 figures of the National Emissions Inventory.

[6] Comparative to the 2018 figures of the National Emissions Inventory

[7] Note: Energy efficiency targets continue from 2009 to 2030 to provide for 50% improvement. This is inclusive of the 33% to 2020, which many local authorities achieved.

The CCMA strategy entitled ***Delivering Effective Climate Action 2030***[8] *(DECA),* represents an overarching sectoral commitment to ensuring a coherent approach to climate action across the administrative and political structures of all 31 local authorities. Objective 2.1, Strategic Goal 2 of the strategy seeks to: *Reduce greenhouse gas emissions from our housing, offices, infrastructure and* ***transport fleet*** *in line with national 2030 and 2050 targets.*




L 188/116 EN Official Journal of the European Union 12.7.2019

DIRECTIVE (EU) 2019/1161 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 20 June 2019
amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles

Commensurate with the publication of targets to 2030 and 2050 by the Climate (Amendment) Act 2021, the **European Clean Vehicles Directive** was transposed into Irish Law on the 2nd August 2021[9]. The Directive promotes the uptake of low and zero-emission vehicles by setting legally binding targets that public sector bodies must achieve through public procurement processes. These targets also apply to the purchase, lease, rent, hire-purchase and relevant services contracts also. The targets will become more stringent from 2026. The European Clean Vehicles Directive reinforces and gives impetus to the achievement of emission reductions targets under national climate policy.

[8] Published 14th April 2021: County and City Management Association [CCMA] (2021): Delivering Effective Climate Action 2030: Local authority sector strategy for delivering on the Climate Action Charter and Climate Action Plan. Dublin: Local Government Management Agency [LGMA]. Available online at: delivering-effective-climate-action-2030.pdf (lgma.ie)

[9] Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC), transposed into Irish Law through the European Communities (Clean and Energy-Efficient Road Transport Vehicles) (Amendment) Regulations 2021 (S.I. No. 381 of 2021), effective of 2 August 2021.

2. Nature of the challenge

2.1 The overarching decarbonisation challenge

It is well understood that the nature of the challenge for local authorities to deliver on the energy efficiency and emission reduction targets is significant. The challenge as presented, requires the sector to maintain full, if not enhanced, operations and service delivery whilst achieving an absolute reduction by 2030 of just over half[10] of all emissions accounted for in the baseline year of 2018. And the challenge does not stop there. The 2030 target is a mere stepping-stone to delivering net zero emissions by the end of 2050.

As the electricity network is planned to be 80% zero emissions renewable by 2030[11], the remaining key areas of emission reductions for LAs are from transport and thermal or heat. Figure 1 shows the pathway to 2030 for all public sector bodies, incorporating the electricity gains and the reductions required thereafter through other means.

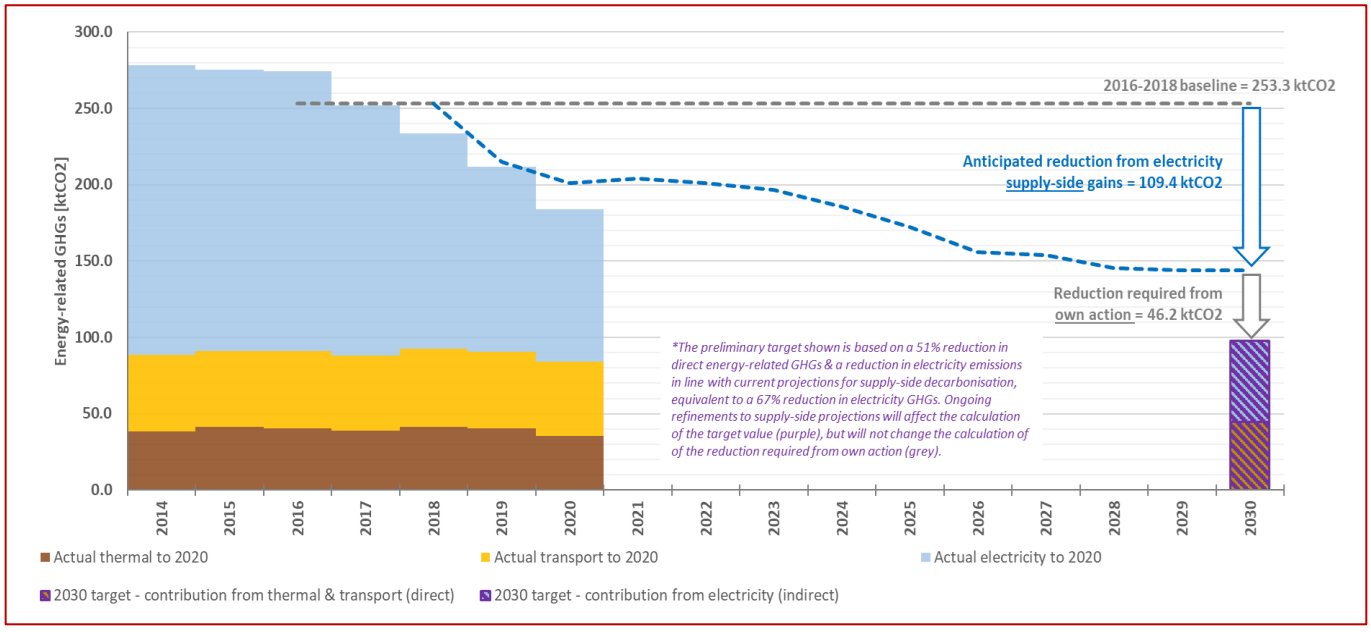


Figure 1: Progress by public sector in reducing emissions between 2014 and 2020, and what is needed to 2030 (*Source SEAI).*

2.2 Fleet Decarbonisation

Data of the average energy related emission reductions to 2020 from the Public Sector Monitoring and Reporting system (PSMR) reveals that fleet transport in LAs at just -3%. Transport is the lowest when comparing emission against electricity and thermal, from the average baseline figures from between 2016-2018.

[10] 51% emission reductions by 2030 comparative to 2018 figures.

[11] Having achieved 39.2% renewables in 2020 (target was 40%),

In the context of the overarching decarbonisation challenge to halve all emissions by 2030, this underscores the challenges ahead for the sector's fleet.

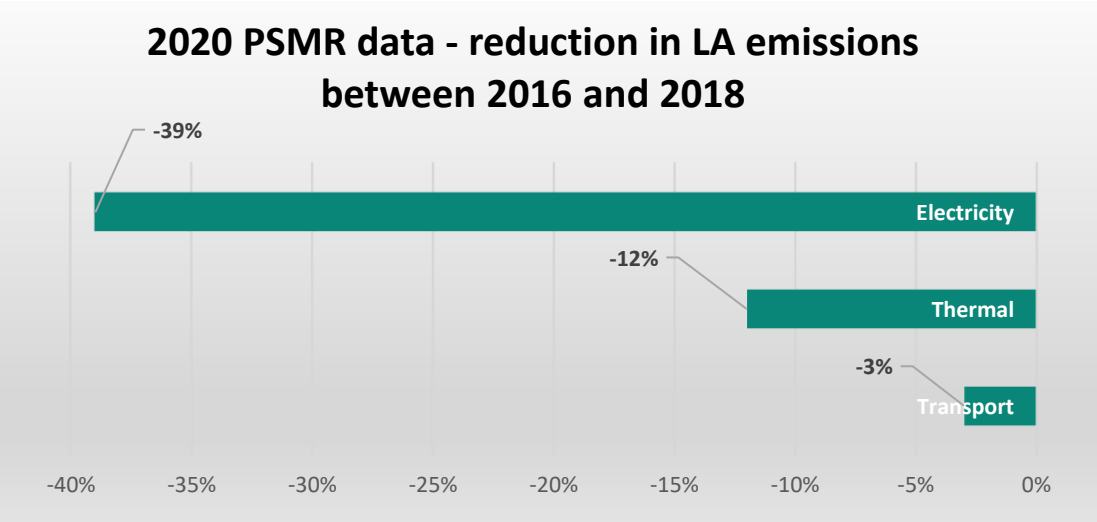


Figure 2: 2020 PSMR Data: Reduction in local authority emissions between 2016/18

2.2.1 Barriers to decarbonisation

The local authority fleet is amongst the most difficult and complex areas to decarbonise, whilst maintaining efficient and cost-effective operations. To put it in context, there is an array of issues and considerations, each very challenging in their own right, which together have a compounding impact for the delivery of the 2030 emission reduction targets. Examples of these issues and considerations include:

Costs:

- The financial cost of decarbonising the local authority fleet is significant, encompassing both the cost of the vehicles, as well as the necessary support and refuelling infrastructure.
- There are higher costs associated with procuring low/no emission vehicles. The price of vehicles powered by electric and other fuel sources remain comparatively high against the cost of diesel vehicles.
- While costs are expected to fall as low emission technology improves and take up increases, budget provision and external funding are not yet identified to meet decarbonisation targets.

Stock availability:

- Stronger decarbonisation policy responses are established in countries across the globe, driving a much increased demand for cleaner vehicles. This exacerbates an already challenging issue with impending bans on the sale of petrol and diesel vehicles, coupled with the impacts on supply chains from the Covid 19 pandemic.

Technology / specifications:

- The activities of LAs rely on fleet vehicles that are very specific in nature and in the purpose they perform . The nature of the sector's fleet does not lend itself to easy transition to the low/no emission vehicles that are available in the market.

- Some interventions or solutions to decarbonise the fleet can be deployed immediately, whilst others require technological advances and solutions that are for now, unclear and/or unknown. There are no clear, scalable technological solutions in place now that cater for the range, weight and payload factors needed by larger fleet vehicles.

What is clear now however, is that different LA needs and different use-cases will require a range of tailored solutions, to advance over time. A simplistic "one size fits all" approach will not be effective and local government must anticipate and plan for a sustained progression of responses, to successfully confront the task of decarbonisation.

2.2.2 Opportunities through decarbonisation

Conversely to the challenges set out above, there are compelling reasons and derived opportunities that come with the process of decarbonisation including:

- Demonstrable co-benefits for air quality - through reduced tailpipe emissions of nitrogen oxides (NOx) and particulate matter, which have a harmful impact on health.
- Cost effectiveness – across the operational life low/no emission fleet vehicles can still be highly cost effective, especially where the vehicles are travelling significant daily mileages and kept on fleet or leased for several years.
- Leadership - local authorities can show commitment to delivering on prescribed targets and help to achieve broader social, economic and environmental objectives at local and community levels.

2.3 Gap to Target

Faced with the range of variables to consider, each LA can benefit significantly from reviewing their fleets and developing a roadmap of the optimal pathways to decarbonisation, to assist in meeting the targets required. The process is iterative requiring a combination of different interventions that are explored in detail to establish their merit and potential for scaling up as necessary.

Each LA is responsible for its own carbon budget, reporting and achieving its targets. The Sustainable Energy Authority of Ireland (SEAI) **Gap to Target tool** (GTT), regularly updated and published in each local authority's Public Sector Monitoring and Reporting (PSMR) account, can and must be used to **plan the optimal steps to decarbonisation each year** to 2030. To assist in the development of the GTT the SEAI provide a Project Support Manager (PSM) to support LAs in this work.

For transport managers who want to switch from diesel to electric powertrains the cost-benefit analysis can be complicated, particularly as the **conversion factors vary each year** subject to advances in data, research and development. The SEAI GTT is the mechanism that provides inbuilt data and conversion factors to support output data relating to emission calculations. The SEAI PSM role is to mentor and guide LAs through this process. This support enables LAs to focus on their calculations and improve efficiencies where possible.

Note: It is important to note that data and conversion factors are subject to change on a regular basis on foot of new data. Accordingly, the contents of the GTT will also update regularly. It is crucially important for LAs to check and ensure that the latest version is being used. This can be checked through the PSMR account.

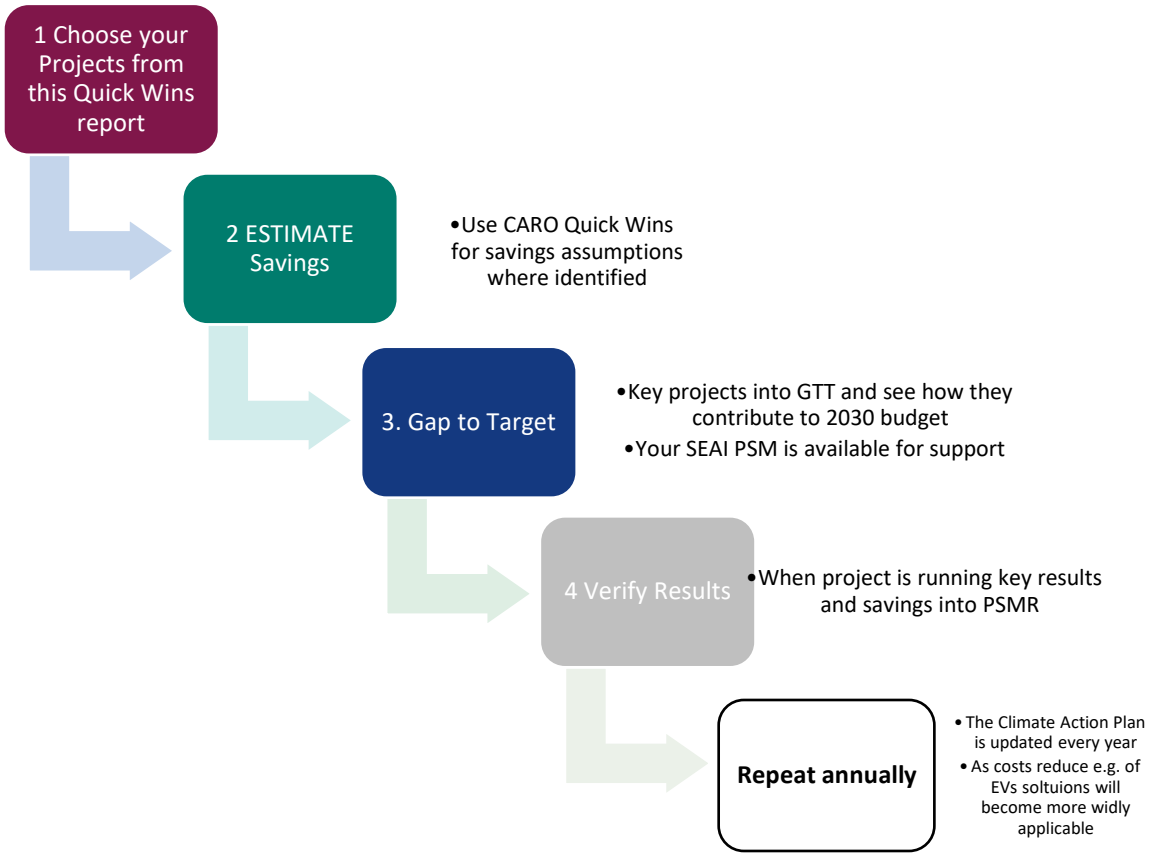


Figure 3: Workflow for Gap to Target

3. Fleet Survey Findings

3.1 Local authority fleet survey

The early interventions identified in this report are informed by the findings of a survey completed by all LAs in Q4 2021. Under the guidance of the CATN Committee of the CCMA, the RTWG devised the survey targeting LA personnel with responsibility for the management of fleet. The survey was designed to obtain a snapshot of both the composition and usage patterns of the sector's fleet, in order to help identify possible interventions. The survey comprised two parts namely:

1. **Fleet inventory**: Seeking information to help understand the size, nature and general profile of LA fleet.

2. **Fleet management:** Exploring four key areas such as Behaviour and Knowledge, Fleet Management Practices, Replacement and Transition Policies and Fleet Manager Views (opinion based).

The survey was administered online through Microsoft Forms, an online survey tool and distributed to all 31 LAs[12]. Findings from the survey are elaborated upon further below.

3.2 Responses to local authority fleet survey

All 31 LAs completed the survey, with the majority responding to a very high standard [13].

The survey response has shown that a large number of LAs have already begun to transition their fleet away from traditional fossil fuels to more sustainable and greener methods. They have also started to utilise the benefits of more efficient fuel management procedures through use of new technologies and training for their staff.

3.3 Survey findings

The survey presented both lead and subsequent questions under two key areas i.e. Fleet Inventory and Fleet Management. For the purposes of this report the findings of the survey will be presented under these themes.

3.3.1 Profile of Local Authority Fleet

Building a profile or inventory of the overall fleet and the type of vehicles in use by LAs is a critical first step to help inform and prioritise the type of interventions required, in developing the optimal path to decarbonisation. Given the expansive nature of services provided by local government it is to be

[12] Refer to Appendix B for list of Survey questions.

[13] It is noted that some local authorities failed to submit some information as part of the survey responses. Accordingly, the information presented in this report is representative and cannot be assumed to be an accurate representation of data on the fleet profile of local government.

expected that there is a significant number and diversity in the type of vehicles that comprise the local authority fleet.

Vehicle categorisation

In broad terms the sector's fleet can be divided into three main categories of vehicles:

1. **Heavy Commercial Vehicles (HCV)** are heavy duty vehicles for example *26/18ton trucks, pavers, road sweepers, etc.*
2. **Light Commercial Vehicles (LCV)** are light duty vehicles for example *vans under 3ton, cars, jeeps etc.*
3. **Plant & Other Vehicles** for examples *tractors, diggers, excavators, etc.*

The survey findings disclosed a sum of 6,435 vehicles across the LA fleet. In total, 248 electric vehicles (EV) were recorded within the LCV category, accounting for 6.7% of all LCVs [14].

The inventory of vehicles in the fleet, expressed under the three vehicle categories is summarised in Figure 3.

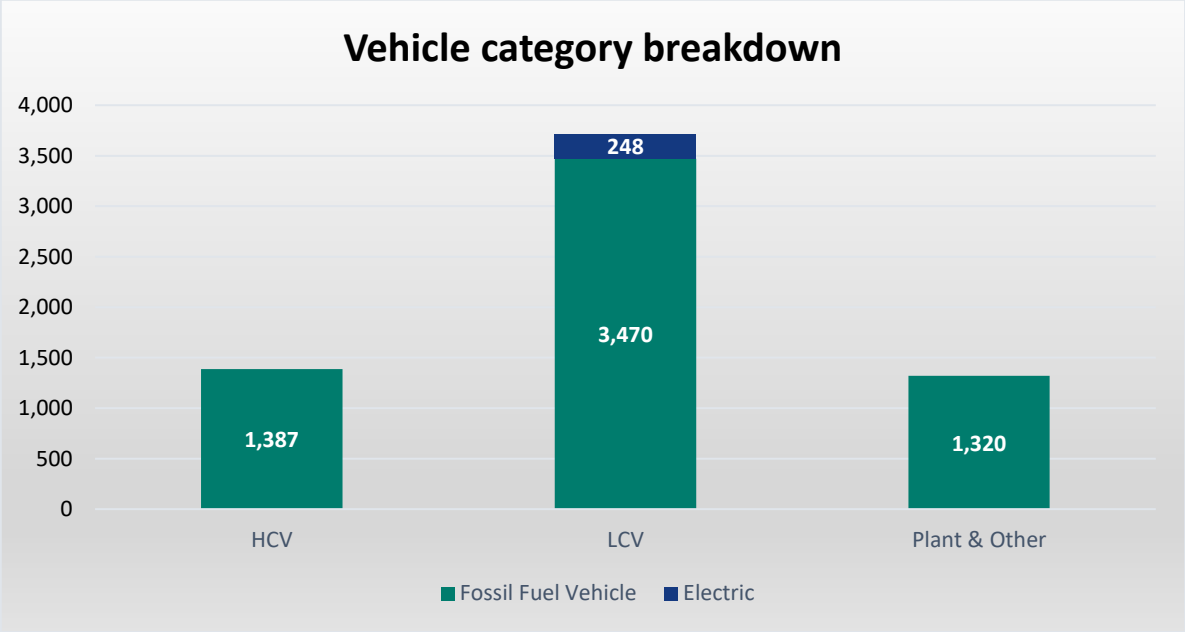


Figure 4: Breakdown of vehicle Categories

Diversity of vehicle type

The survey revealed a significant range and diversity in vehicle type. Figure 4 shows the breakdown of vehicle type broken into 24 categories, defined by the RTWG. The breakdown categorises the vehicles in order of energy usage starting with the most significant energy users.

[14] EVs include all variants of plug-in cars and vans including pure battery electric vehicles (BEVs) and plug-in hybrid (PHEV) versions.

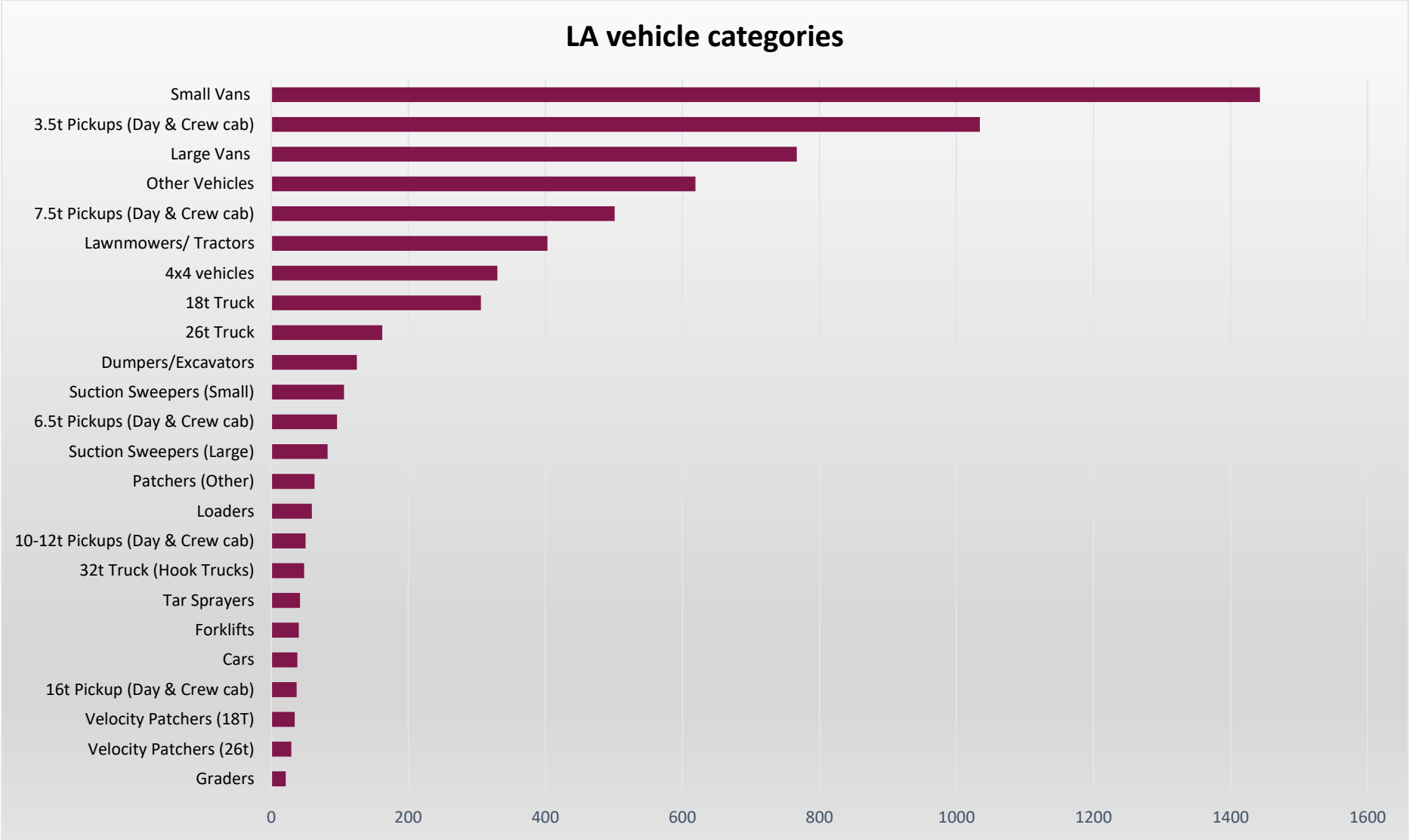


Figure 5: Breakdown by vehicle type (24 types) sorted by largest energy user first

Fuel Type of Vehicle

Across the LA fleet surveyed, the most prevalent fuel used is diesel at 95%. Figure 5 shows fuel use comparatively across the sector across the four fuel types. Other fuel types listed by the sector include electric, petrol & petrol hybrid; a breakdown is illustrated in Figure 6.

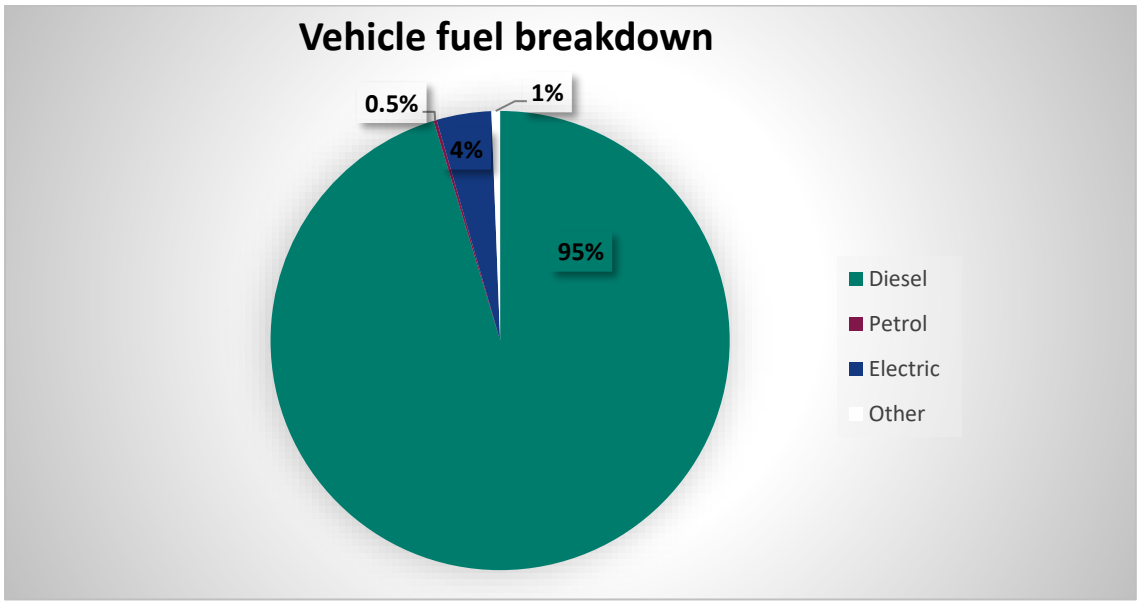


Figure 6: Breakdown of vehicle fuel types

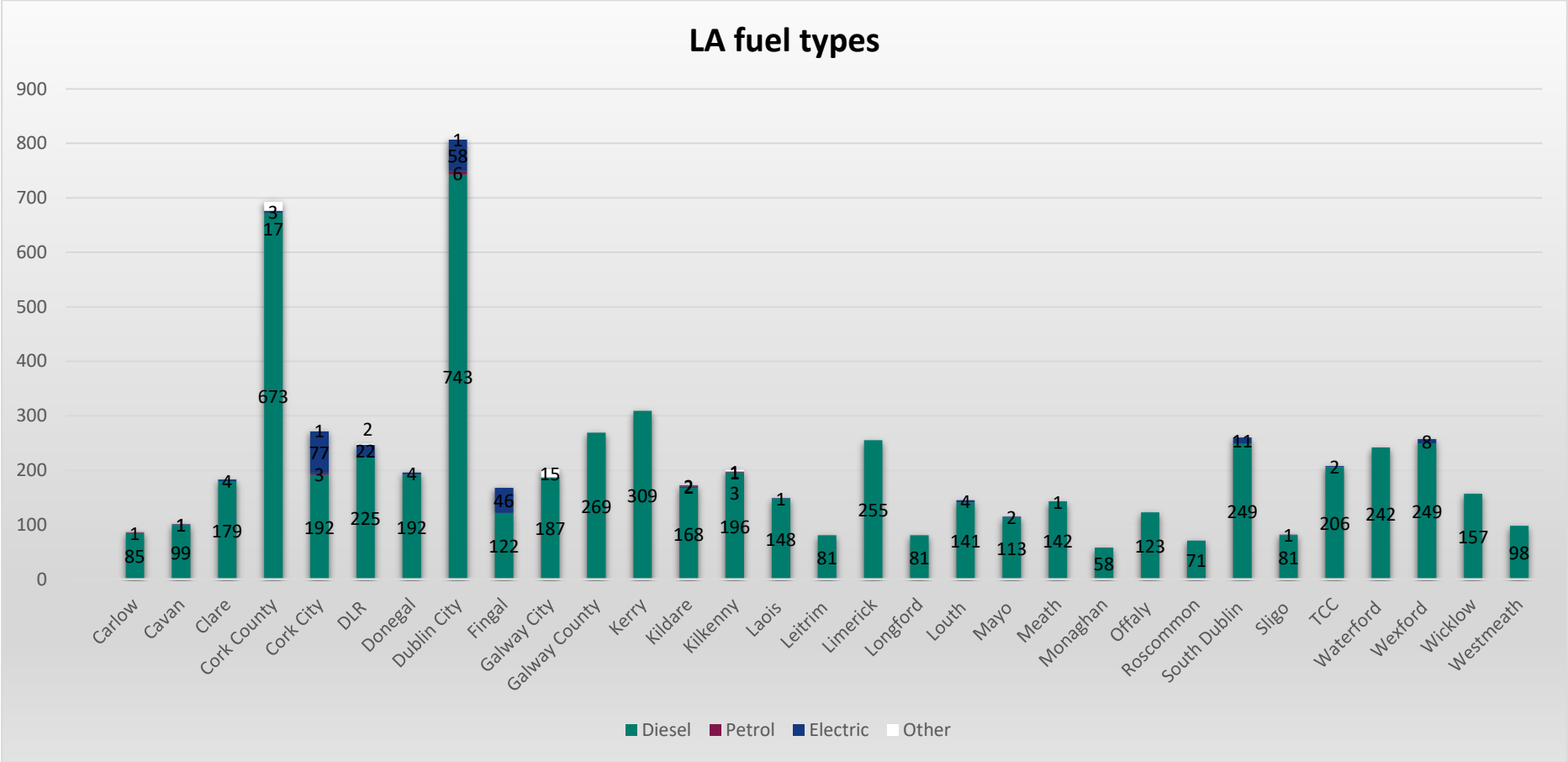


Figure 7: Breakdown by Local Authority & Fuel Type

Fleet Ownership and procurement

63% of the fleet is currently owned by LAs. 22% of the fleet is leased, with a further 15% on short term hire.

For clarity:

- **Owned:** Vehicle is owned by the respective LA.
- **Short Term Hired:** Short-term car lease is an agreement with the lessor with set terms of two years or less.
- **Leased:** Vehicle leasing is the leasing of a vehicle for a fixed period of time at an agreed amount of money.

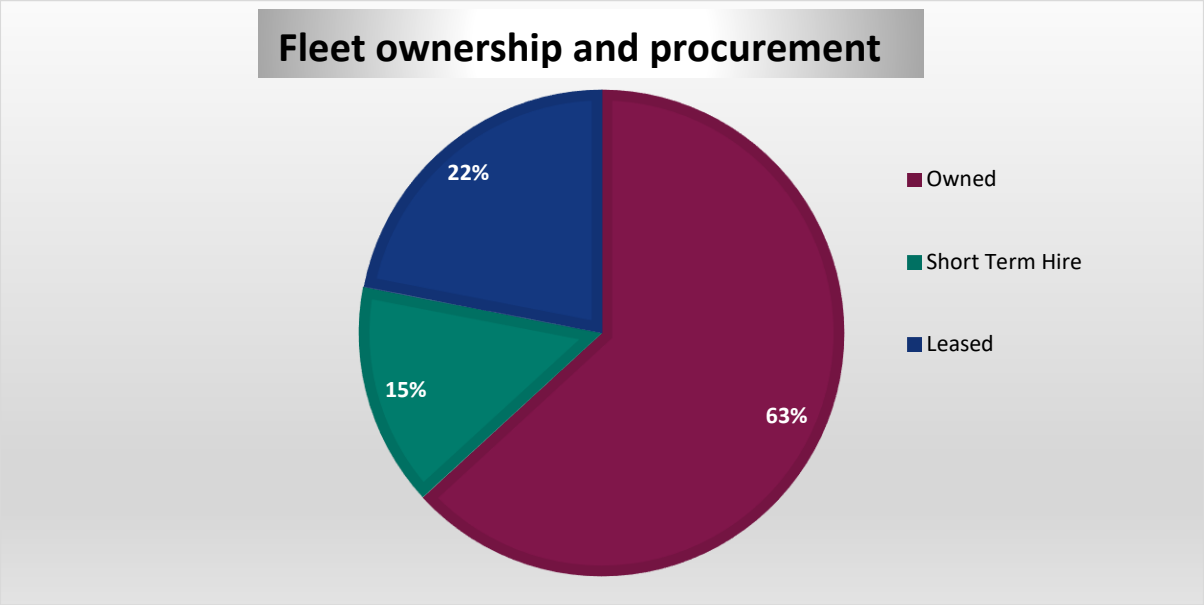


Figure 8: Fleet ownership and procurement

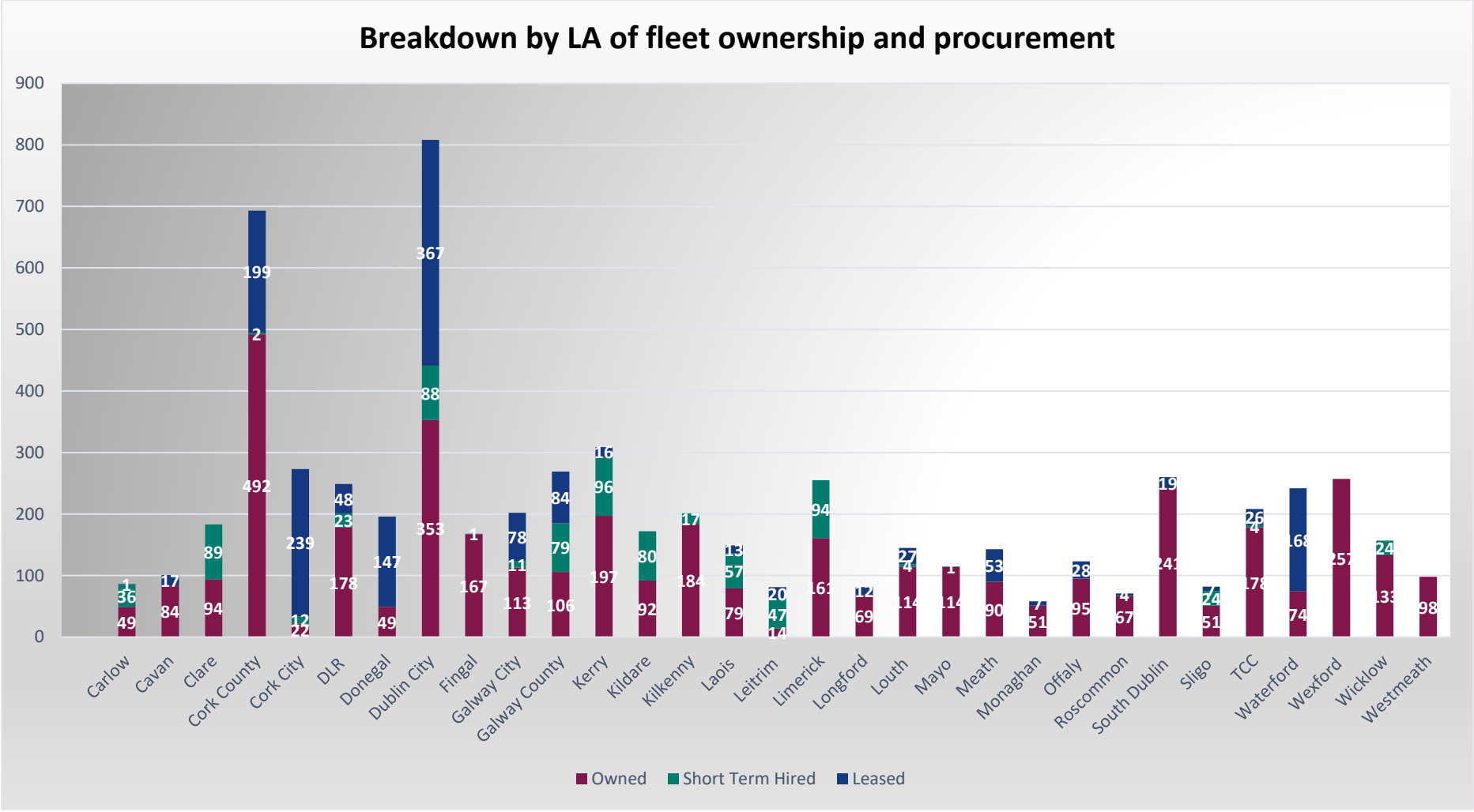


Figure 9: Breakdown by local authority of Fleet ownership and procurement

3.3.2 Local authority fleet management

The survey explored a number of key areas relating to the management of the LA fleet. Under the heading of Fleet Management, the survey questions explored current practices and policies deployed, as well as seeking the views and opinions of LAs on future management practices:

- Behaviour and Knowledge
- Fleet Management Practices
- Fleet Replacement and Transition Policies

Fleet Manager Views (opinion based)

Key findings of the survey relating to fleet management are highlighted below.

Training

- **Six LA fleet managers completed the training course: CPC in Road Transport Operations Management.**
- **12 LAs provide Eco-driver training.**
- **14 LAs provided by in vehicle driver training at some level.**

Fuel Efficiency

- **12 LAs consider fuel efficiency when planning daily work schedules.**
- **Fuel Efficiency is considered difficult to measure and equate to emissions savings.**
- **Key barrier to achieving improved fuel efficiency is driver behaviour and performance management.**
- **12 LAs have access to alternative fuel supply sources.**
- **21 LAs consider fuel efficiency when purchasing new fleet.**

Transitioning Fleet

- **Seven LAs have a strategy for transitioning heavyweight fleet away from fossil fuel use.**
- **Two of these (2/7) have identified the suitable heavyweight vehicles to be replaced by alternative fuels. No estimation of costs undertaken.**
- **16 LAs have a strategy for transitioning lightweight fleet away from fossil fuel use.**
- **12 of these (12/16) have identified the suitable lightweight vehicles to be replaced by alternative fuels. One has estimated the costs involved.**
- **Key barrier to achieving improved fuel efficiency is driver behaviour and performance management.**

Management Practices

- **20 LAs have fleet management or telematic systems on vehicles. 16 of which have agreement with employee unions.**
- **12 of these (12/20) have management/telematic systems in over 90% of their vehicles.**

Critical Conce

- **Lack of availability of zero emission vehicles on the market.**
- **Nature of the vehicles in the fleet.**
- **Advancement in alternative HGV/EV not an option.**
- **Restrictive procurement framework for larger vehicles.**
- **Lack of engagement with employee union relating to improving fleet efficiency**

3.4 Discussion

The survey responses highlight the great efforts and learnings being achieved by LAs relating to fleet efficiencies. The data collected from the survey shows the significant challenge ahead as fossil fuel vehicles account for 95% of the sector's fleet. This further emphasises the need for each of the LAs to develop a strategy to decarbonise their fleet over the coming years and to identify early interventions that can support local government in achieving the emissions and carbon reduction targets.

The data collected showed that approximately 50% of total fuel reported by the sector for their fleet is accurately recorded and assigned to individual vehicles. This is a very positive start and a testament to the hard work carried out by those of whom completed the survey. Commercially 45%-60% is considered a good starting point. That said, it also points to an area LAs might considerably improve through the use of management systems such as ISO 50001 along with fuel management technologies like telematic systems. The vast majority of LAs are using fleet management systems to some degree within their fleet but only three LAs have GPS on all their vehicles. For local government to achieve its 2030 & 2050 energy and emission targets, fuel management and the use of GPS will need to be increased to maximise their efficiencies.

The information gathered from the survey provided a specific snapshot of vehicle inventory and procurement arrangements that LAs use to acquire their fleet. The data shows 63% of the LA fleet is directly owned, this leaves 37% which is hired or leased. It also highlights the broad range of vehicle types in use within the LA fleet. This inventory can be used to identify targeted supports to assist the sector in financing the transition of their fleet in line with the availability of new technologies becoming more feasible. It can also be used as a comparative baseline to learn and examine how the transitioning processes over the coming years will help reach the prescribed local authority emission reduction targets.

The scale of training being carried out by LAs in relation to the management of the fleet and the driving behaviour of their operators is also captured in the survey. Eco driver training has only been provided to in 12 of the 31 LAs. Fleet manager CPC training has been carried out by 6 of the 31 LAs. Given the industry recognised potential energy saving of 5% for both eco driver training and fleet manager CPC training there is scope for LAs to improve their efficiencies through training programs.

The survey provided an opportunity for each LA to raise their concerns on challenges they face or experience in relation to fleet management and decarbonisation requirements. Several concerns were repeatedly reported, such as the lack of alternative fuel sources to diesel for HCVs, the nature of the fleet making transitioning unfeasible and lack of procurement support. This document can be used to help support government agencies in the delivery of supports to help the decarbonisation of our fleet.

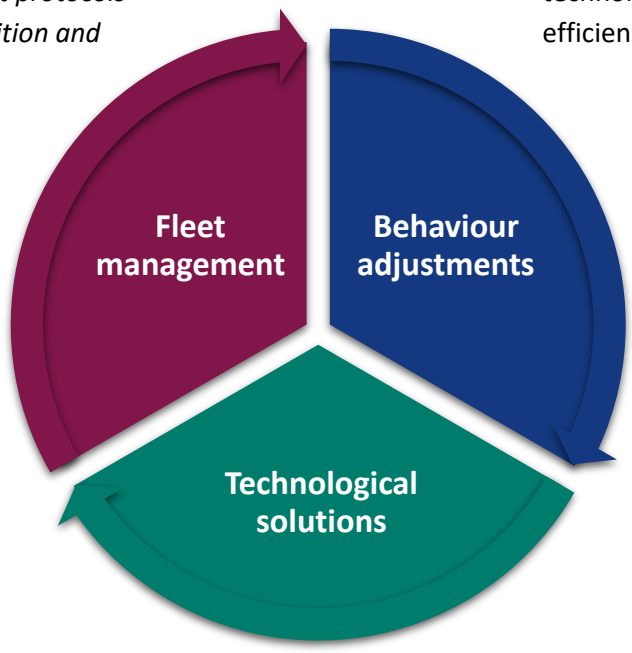
4. Recommended early interventions

Based on the findings of the surveys completed by all LAs and an exploration of the key challenges and best practice in relation to fleet decarbonisation, there are a number of early interventions that can be deployed by the sector to support the decarbonisation of its fleet.

There are significant considerations to be accounted for by local government in devising a pathway to fleet decarbonisation, including the timeframe to deliver on emission reduction targets prescribed, the nature of the existing fleet, the dependency on the decarbonisation of electricity sectors as well as cost and choice availability for the purchase of low/zero emission fleet vehicles etc. When considering approaches to the process of fleet decarbonisation, ideally they will be cost effective, improve energy efficiencies, reduce emissions and safeguard business operations of the LA. Combining and working through a range of potential interventions from across the three categories identified below can help support a robust response.

Fleet management understanding the strategic responsibility, maximis*ing governance and management protocols to enable and facilitate transition and decarbonisation processes.*

Behaviour adjustments *m*odifying attitudes and familiarity with new technologies and maximising the efficiency of fuel use.



Technological solutions including advances in transport technology for greater efficiency, new or alternative fuel types, necessary supporting

Figure 10: Intervention Categories

4.1 Summary of early interventions

Highlighted below is a summary of the early interventions catalogued into six solutions that can be deployed by LAs imminently to advance the process of fleet decarbonisation. These are elaborated upon further below.

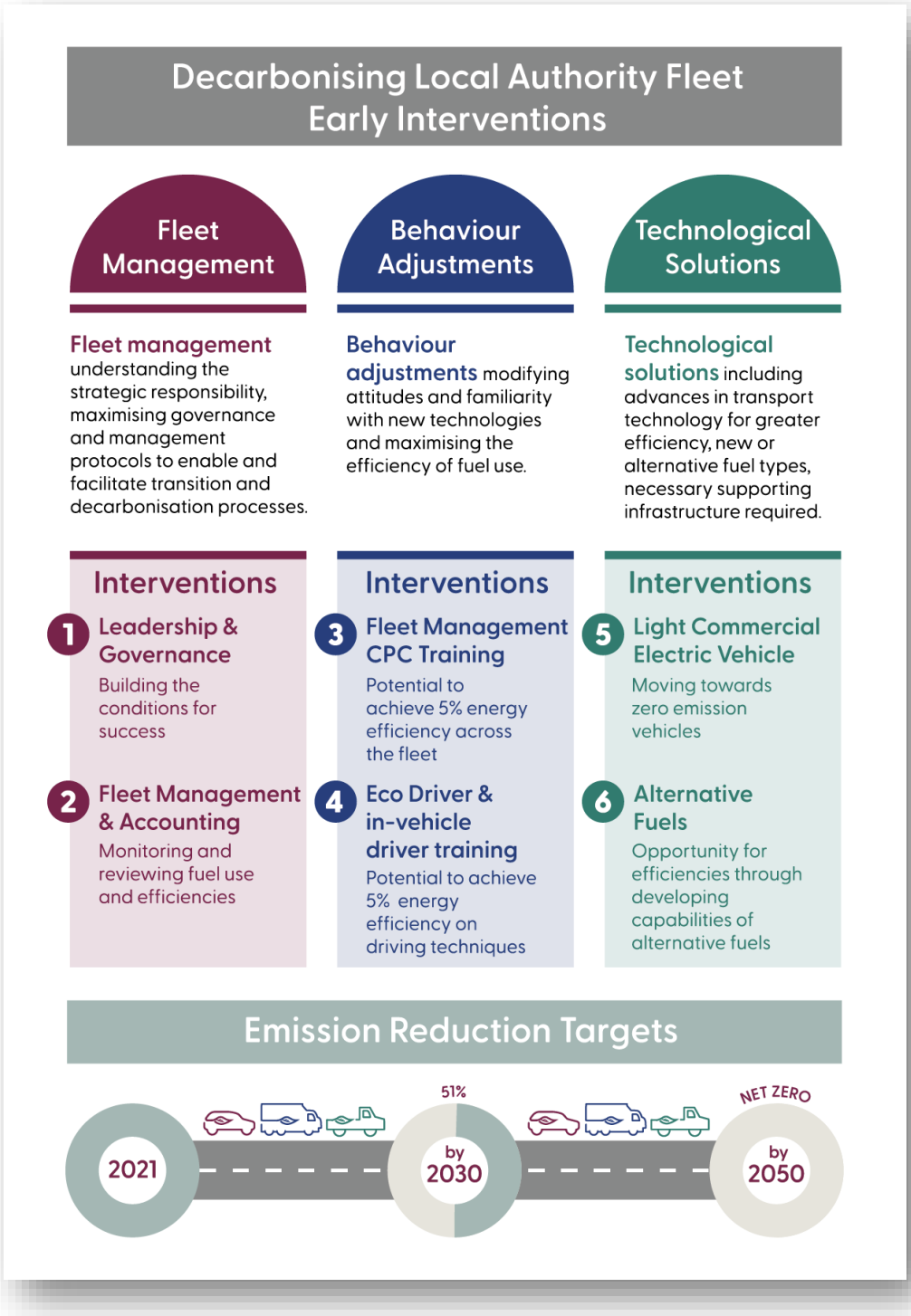


Figure 11:
Early intervention categories

4.2 Fleet management

Effective management of fleet is critical to the delivery and performance of local authority services. What gets measured gets managed. But also, effective management is essential to the delivery of the steps required to successfully decarbonise the LA fleet in line with the prescribed emission reduction targets to 2030 and 2050, whilst maintaining sound business operations.

Bringing it all together requires a good understanding of what needs to be done, which can be achieved by effective collaboration and learning, making evidenced based decisions, planning the detail and developing a clear strategy for successful implementation. Effective management is about building the conditions for success through establishing early leadership and supporting governance structures to facilitate the decarbonisation process, as it is about deploying operational methods and techniques.

4.2.1 *Leadership & Governance*

As discussed in section 2 of this report, decarbonising the LA fleet is a challenging and complex undertaking.

LA Leadership and Governance in this pursuit is essential. It is important that each LA puts in place a dedicated team of resources at various levels of the project that will maintain responsibility, accountability and oversight of the decarbonisation process.

*There is no 'one size fits all' suggested remedy to the challenge of fleet decarbonisation. It remains the responsibility of **each and every** local authority to review their own fleet management practices and deploy interventions that are appropriate to their own circumstances in order to deliver on the prescribed emission reduction targets.*

This requires a multifaceted team who have the capacity and ability to:

- Plan and devise optimal pathways to decarbonisation to 2030 and 2050 for the LA fleet -
  - Review fleet in respect of operational requirements
  - Identify suitable vehicles for replacement with low/no emission vehicles
  - Review/examine mileage and usage patterns
  - Devise appropriate early interventions for decarbonisation
  - Devise/update procurement strategy
  - Explore fuelling/charging infrastructure required
  - Source funding available
- Explore opportunities for innovation with new or emerging technologies
- Evaluate financial impacts and cost effectiveness measures
- Monitor progress and evaluate outcomes of varying intervention types
- Report on progress through PSMR system.

4.2.2 *Fleet Management and Accounting*

Fuel Management and Accounting is the implementation of a system for monitoring fuel, and closely tracking the specific fuel consumption and costs for each vehicle. An effective fuel management

system will use telematic technology to monitor a wide range of information relating to an individual vehicle or entire fleet. To properly account for fuel use, two key inputs are needed – namely litres dispensed at pump and kilometres travelled. A history of seasonal fuel use allows year on year comparisons, unusually high L/100km can be quickly identified and explained with weekly reviews. This also allows for easier identification/ accounting of savings made.

Fleet management and accounting also provides for the benchmarking of vehicles whereby fuel usage is examined against other vehicles in their class. This can be done through the telematics system and provides that inefficient vehicles can be identified and removed from service in the context of their fuel usage.

Since 2016 the Public Sector Ethics, Excellence and Accountability Programme requires all publicly owned vehicles travelling more than 5,000km per annum to be fitted with a telematics system.

Potential	Dependencies
An effective fuel management system will feature a transport manager to do the technical and compliance work and an operative to gather and present performance data. A review of this data should be carried out weekly to ensure efficiencies are maintained. This process has the potential to improve efficiencies drastically in the respective LA. In a well-run system, drivers will know their L/100km and be able to account for discrepancies, managers will have easy access to summary data and unexplained exceptions are highlighted.	• Time and funding allocated by the LA for the staff member to implement fuel management systems. • Cost to supply, install, manage, and maintain telematics system.
Cost • Supply of telematic technology for each vehicle is approximately €10 per vehicle per calendar month. (excl. vat}. Installation and back-office support is included for this price.	

Three local authorities have telematics installed in 100% of their fleet. Save for six, all local authorities have telematics installed in some of their fleet.

4.3 Behaviour adjustments

Adjustments in behavior and behavioral change play an equal or greater role than technology in the pathway to fleet decarbonisation. Understanding driver behavior and how it impacts fuel consumption and emissions provides an avenue of opportunity to make an impact in the short term. Training for both fleet managers and fleet users can help to achieve significant reductions in emissions over time.

4.3.1 Fleet Manager CPC Training

Energy efficiency improvements of 5% can be achieved through exercising consideration of the use and condition of vehicles. The Certificate of Professional Competence in road haulage (Road Transport Operations Management) demonstrates that the holder of the qualification is qualified to perform effective and continuous management of undertakings engaged in road transport operations. This training is specifically designed for transport managers. Key areas covered to help address the emission reduction potential includes: Transport Operations, Route Optimisation and Planning, Road Safety and Transport Technical Standards[15].

CPC in Road Transport Operations Management (road haulage) has been completed by staff in 6 of the 31 local authorities surveyed. These include the local authorities of Tipperary, Limerick, Wexford, Donegal, Fingal and Westmeath.

Potential	Dependencies
Transport equates to 19% of the total LA energy consumption. The transport sections of LAs produce over 56,500 tons of carbon and rising. It is widely accepted across the industry that Fleet Manager Training has the potential to improve energy efficiency of 5% across the transport fleet[16].	Funding and time allocated by the sector for the staff member to attend training.
Cost	
There is a requirement to complete a minimum of 100 hours tuition over 15 days prior to sitting the examination. Along with attending classes, students are also advised to spend a further 100 hours in home study, to read and widen their knowledge, to revise and prepare for examinations. Cost for the 100 hours is approx. €1250 (price quoted from FTAI).	

[15] More information on the training course can be found at: https://www.ftai.ie/event/certificate-of-professional-competence-cpc-in-road-transport-operations-management-june-exam-343-467?occurrence=2022-05-04

[16] Industry standard

"The transport managers course which I completed brought me up to speed with transport developments evolving in Ireland in areas such as mobility technology and most importantly brought me up to speed with our legislative obligations. The pace of change in relation to the fleet today is so rapid that any stakeholder involved will benefit greatly from the course. For example, if policies or procedures are not updated to reflect change in the legislation then a fleet manager may unknowingly be breaking the law. The course provides an opportunity for fleet managers do learn how to take advantage of technologies such as telematics or vehicle safety systems. The benefit for the Council has been seen in improved health and safety, maintenance cost reductions and has been of great benefit in achieving our ISO50001 accreditation".

Donegal County Council Transport Manager

4.3.2 Eco driver & in vehicle driver training

Eco driving is defined as a new driving style per the EU funded eco-driven and eco-will programs 2005-2012. This style of driving will help reduce the energy consumption of the vehicle. The training is 1.5 to 2.5 hours of one-on-one training in the driver's regular vehicle with measured results before and after, this can be done preferably via the telematics system on the vehicle. Key areas covered in this training to help address the emission reduction potential includes: principles of fuel consumption and driver safety, fuel efficient driving competencies and practices, vehicle checks and risks and review of key improvement areas[17].

Potential	Dependencies
Whilst significant savings of 20% or more can be seen under controlled conditions compared to normal driving, a realistic sustained saving is a 5% improvement in L/100km by the same driver in the same vehicle doing the same work. The industry calculates eco-driving can deliver roughly 5% saving in L/100km.	• Time and funding allocated by the LA for the staff member to attend training. • An existing fuel management system in the operative's vehicle is advantageous as it could provide an accurate assessment of pre and post-training efficiency.
Cost • LCVs typically range € 150-€250 per driver • HCVs range € 250-350 per driver. • Train-the-trainer program costs approximately € 5,000.	

[17] Course content and more details can be found at: https://www.ftai.ie/ecodrive-training

"25 HGV drivers in Tipperary County Council carried out eco driver training in December 2020. The main objective of running the course was to reduce fuel costs and reduce maintenance costs by reducing brake and clutch wear their fleet.

Feedback from the drivers having completed the course was very positive, as most of them could see that by applying the same techniques while driving their own cars and they could achieve savings in fuel consumption and maintenance cost accreditation".

Tipperary County Council Transport Manager

4.4 Technological solutions

This section highlights the potential technological solutions that can be more readily deployed by LAs in the short term. Other, longer-term solutions are also highlighted, but it is important to note that further technological and infrastructural advances are required to establish a mainstream effect to solutions for Heavy Commercial Electric Vehicles, or the use of Hydrogen or compressed natural gas as alternative fuel supplies.

4.4.1 Light Commercial Electric Vehicle

A light commercial electric vehicle is essentially an automatic vehicle with an electric motor powering it with a gross vehicle weight no more than 3.5metric tons. When the accelerator is pressed, power is transferred from the battery to the electric motor. The motor is powered resulting in the drive shafts turning the wheels. When the vehicle brakes, the car begins to decelerate and the motor becomes an alternator, generating power. This power is then sent back into the battery.

There are several types of electric vehicle (EV) available. Some run purely just on electricity, these are known as battery electric vehicles (BEVs). With new technologies there are now some electric powered engines that can also be run on petrol or diesel, these are called Plug in Hybrid (PHEV).

There are currently over 3,700 LCVs in the local authority fleet, with approximately 250 powered by electric motors. Whilst not every vehicle is suitable to be powered by electricity, there are significant opportunities for LAs to move toward zero emissions.

LAs should seek out demonstrations of EVs and avail of opportunities to test drive before they procure or lease vehicles.

The survey identified seven local authorities that have developed a strategy for transitioning their LCVs from fossil fuels to electric. In planning for the transition of the LCVs, particularly given their quantity as part of the overall fleet, it would be good practice for local authorities to design their own strategy for replacement of diesel. This would help local authorities to identify and target the appropriate vehicles, provide for the costs involved and the necessary infrastructure required.

Potential	Dependencies
At present 6% of LA LGV fleet are electric vehicles. An in-depth analysis of the sector's fleet management systems can identify where internal combustible engine (ICE) van can be upgraded to EVs. It is envisaged with technology advancement over the next number of years EVs will become more economically efficient than Internal Combustion Engines.	• **Geographical location:** EVs are most suited to journeys of shorter distances with lighter payloads. This would make their use more aligned with the work pattern of urban local Authorities. However, EV vans in many cases have a range of over 200km. Their use in real world experience can derive a range of upto 150km. • **Increased investment:** The upfront costs for EVs is greater than that of ICEs. Along with the increased vehicle cost, the LA may also have to invest in charging infrastructure and additional training for drivers. However, taking the whole life cost the EV can become a more cost-effective option. As a fallout of the current energy crisis fossil fuel price are very volatile and could result significant savings in running costs for EV vehicles. • **Range & weight**: The range of electric vehicles is seriously affected by weight, which has an impact on the suitability of electric for certain types of work.
Cost The upfront purchase of an EV van compared to a similar specified Internal Combustion Engine (ICE) van is more expensive. The running and maintenance costs of an EV van is less than that of an ICE van. Taking the whole life cost it is expected EV vans would be pay for themselves.	

The fleet survey has identified 248 EV vehicles nationally. 18 of the 31 local authorities have EVs within their fleet. Several urban local authorities such as Cork City Council, Dublin City Council and Fingal County Council have heavily invested in the EV fleet. Wexford County Council is a predominately rural local that has recently increased the number of EVs in their fleet.

4.4.2 Alternative Fuels

Hydrotreated Vegetable Oil (HVO) / B100 trial

HVO is a readily available premium fossil free diesel product made of 100% renewable waste raw materials i.e. used cooking oil, which does not release any new carbon dioxide into the atmosphere. It is both sustainable and biodegradable. HVO is produced by hydrotreatment of vegetable oils and/or animal fats, and the result is a top quality fuel with a chemical structure almost identical to regular diesel and can therefore fully replace fossil diesel. Fossil free diesel HVO is significantly better for the environment than fossil diesel, while keeping up with equal performance. In general, HVO can be used in diesel engines without modification and is approved for use in the majority of heavy-duty vehicles from market leading engine manufacturers.

Note: Prior to changing the fuel of a vehicle from diesel to HVO, LAs should get approval from the manufacturer in addition to planning for and undertaking the necessary infrastructural amendments, to facilitate the storage of fuel.

Key advantages of HVO include:

- Eliminates up to 90% net Co_2 emissions and reduces Nitrogen oxide and particulate matter
- Can be stored for 10 years compared to 1 year for diesel
- Consistent, quality and paraffinic product
- Higher flashpoint than diesel making it a safer fuel
- Higher Cetane number at 71 compared to diesel at 51
- Provides for quicker starting, improved efficiency, more complete combustion of fuel and less wear.

HVO is available in Ireland but it is not as plentiful as diesel. It is therefore important to plan deliveries with suppliers in advance of ordering.

Potential	Dependencies
Moving from diesel to HVO B100 would reduce emissions per litre by 90%. HVO is an immediate option for LAs to reduce the emission of their HGVs without the requirement of major investment in new fleet. This makes HVO an ideal solution as an interim fuel until electric HGVs are a feasible option. HVO is free from aromatics, sulphur and metals making it an extremely clean burning fuel.	• **Funding** allocated by the LA to support the additional cost incurred by the use of HVO. • **Availability**: the availability of HVO is less than traditional diesel, therefore strategic planning for the delivery of HVO is essential and early and sustained engagement with suppliers is advisable.
Cost • Industry standards advise that currently HVO costs approx. 40c extra per litre compared to diesel. This price difference is volatile due to the current energy crisis. • Storage and pumping cost would also be incurred by the LA, however the use of existing decommissioned diesel infrastructure could be utilised.	

An Post Galway trial summary

To test the performance and suitability of HVO on the An Post fleet, a trial was completed on the Galway DSU fleet:

- ***The trial commenced on the 8th September 2021***
- ***Roll out to the entire Galway fleet began on 15th September 2021; fleet is made up of 4 artics and 1 rigid truck***
- ***Galway fleet uses approximately 2,300 litres per week***
- ***5 trucks will use approximately 120,000 litres of diesel in a full year***

Fuel Efficiency of HVO

The fuel efficiencies below are from the five heavy good vehicles (HGVs) that were fuelled with 100% HVO. These efficiencies are compared to the diesel efficiency of the same 5 trucks running on diesel from January to April in 2021

		HVO			Diesel		
Fleet		**Litres HVO**	**KM**	**Lts/100Km**	**Test Period for diesel**	**Lts/100Km**	**Difference**
LR288B	Rigid 28ft	9,405	42,304	22.23	Jan-Apr 21	22.48	-0.25
LT418B	Artic 40ft	5,265	20,763	25.36	Jan-Jun 21	26.13	-0.77
LT428D	Artic 40ft	7,508	28,709	26.15	Jan-Jun 21	26.15	0.00
LT412B	Artic 40ft	4,614	17,688	26.09	Jan-Jun 21	27.15	-1.06
LT429D	Artic 40ft	8,946	36,837	24.29	Mar- Aug 21	24.67	-0.38
Average				24.82		25.31	-0.50

Table 12 – Efficiency of HVO vs diesel on the Galway An Post fleet

B20 Fuel

B20 is a common Biofuel blend which consists of up to 20% biodiesel and 80% mineral diesel. B20 contains 20% renewable biofuel, so changing to B20 could reduce your transport greenhouse gas emissions by up to 15%. The published climate action plan 2021 commits to raising the blend proportion from the current rate of 7% of biofuels to at least 20%) by 2030.

4.5 Longer Term Interventions

One of the key barriers of the decarbonisation challenge identified in section 2 of this report, is that some promising interventions require further technological advancement or work to mainstream their use. Outlined below are three longer term potential interventions that LAs may pursue to assist in decarbonising their fleet in the future. These have been considered by the working group but are unlikely to be an immediate option. It is unknown and unclear as to when such interventions will

become more readily available. But for now it is important to work with what is available and continue to plan for, and be flexible and open to progression to new and emerging interventions.

4.5.1 Heavy Commercial Electric Vehicle

Heavy Commercial Electric vehicles (HCEV) are vehicle propelled from a rechargeable electric motor. HCEVs are not an effective option at present due to excessive costs and limited supply. Extensive research is being undertaken by vehicle manufacturers to improve vehicle driving range and lower upfront cost for the vehicle. Opportunities for HCEVs will be available in the medium to long term.

4.5.2 Hydrogen

Hydrogen-powered vehicles use fuel cells to convert hydrogen and oxygen into electricity and water. The electricity drives electric motors to propel the vehicle. Like electric, extensive research is being undertaken by manufacturers on the development of hydrogen fueled vehicles. However, these are not an effective option at present due to excessive costs and absence of refueling infrastructure. Interventions for these vehicles will be available in the medium to longer term.

4.5.3 Compressed Natural Gas

Natural gas is considered a very important transitionary fossil fuel. Compressed Natural Gas (CNG) offers a viable option to reducing air pollution of fossil diesel engines, but it does produce 80% of the carbon of its diesel counterpart, for this reason CNG is deemed an interim solution. Natural gas is stored under high pressure as CNG. It can be used to fuel vehicles and is commonly used as an alternative to diesel for HGVs. CNG vehicles are available with currently lead in times for delivery of vehicles of up to 2 years. Public refueling infrastructure is only available in a number of locations nationally, so additional costs for installing refueling infrastructure should be considered.

5. Conclusion

The findings on the responses to the LA fleet survey demonstrates the need for a progressive approach by LAs to the challenging journey ahead, in both the requirement and their ambition to decarbonise their fleet. The current reliance on fossil fuels to drive the LAs is significant and the first national emissions target marker has been set for eight years' time, 2030. Making that timeframe even shorter is the more stringent requirements to be complied with from the European Clean Vehicles Directive in 2026.

There are options available to the sector to continue to advance the decarbonisation process. The early interventions outlined in this report will help inform and support LAs in that process. There needs to be a strong understanding however, that the process is a progressive one, which requires sustained efforts that need to be very flexible in both planning and implementation, to evolve commensurately with the technological advances being made.

The supporting tool available to local government for this decarbonisation process is the Gap to Target tool by SEAI. This tool assists LAs in making informed decisions around the intervention types proposed to be deployed and how these interventions make an impact in meeting the emission reduction targets required.

Approximately 50% of LAs have a strategy for transiting their LCV fleet from fossil fuels, with even less having a strategy for the transition of their HCVs. With the assistance of the above mentioned GTT, LAs are in a position to develop a much needed strategy to transition their fleet away from fossil fuels.

******

Appendix A

Composition and membership of the Re-imagining Transport Working Group

- Cork County Council
- Donegal County Council
- Dublin City Council
- Eastern and Midlands Climate Action Regional Office (CARO)
- Department of Transport
- Kerry County Council
- Kilkenny County Council
- LGMA
- Office of Government Procurement
- Sustainable Energy Authority of Ireland

Appendix B

Local Authority Fleet Survey Questions

Q 1	What Local Authority do you represent?
Q 2	Is your Local Authority predominantly urban or rural?
Q 3	What is the Fleet Managers current grade in your local authority?
Q 4	Has the local authority fleet manager completed the training course "CPC in Road Transport Operations Management (road haulage)"?
Q 5	Has the fleet manager received any other fleet management training? If so what is it?
Q 6	Does your local authority get audited by the RSA?
Q 7	How often has your local authority been audited in the past 5 years?
Q 8	Is vehicle fuel efficiency considered by management when planning the daily works schedule for vehicles?
Q 9	What considerations are made?
Q 10	What % level of efficiency has been achieved since implementing these considerations?
Q 11	Have your local authority professional drivers had Eco-Driver training? (HGV, LGV, Vans, etc.)
Q 12	How many and what % of local authority drivers have had Eco-Driver training?
Q 13	Is this training provided on a planned basis and how often is it provided?
Q 14	Has this resulted in improved fuel efficiency?
Q 15	What % level of fuel efficiency has been achieved since providing this training?
Q 16	Have your local authority drivers had in-vehicle driver training? (Practical training within the vehicle)
Q 17	How many and what % of your local authority professional drivers have had in-vehicle driver training?
Q 18	Is this training provided on a planned basis and how often is it provided?2
Q 19	Has this training resulted in improved fuel efficiencies?
Q 20	What % level of fuel efficiency has been achieved since providing this training?2
Q 21	How many and what % of professional drivers in your local authority have had driver CPC training?
Q 22	Is fuel efficiency considered by management when purchasing new vehicles?
Q 23	What specific considerations are made?
Q 24	What % level of fuel efficiency has been achieved since implementing these considerations?
Q 25	Does your local authority use a fleet management / telematics system?
Q 26	What is the name / names of the telematics system being used?
Q 27	What % of the fleet is telematics/gps installed in?
Q 28	Give a brief description of the type and level of data obtained by the telematics system that is used by the LA? (Road Safety, Maintenance, Fuel efficiency, allocate cost to various sections, etc.)
Q 29	Has an agreement been reached with the relevant employee unions relating to use of fleet management data?
Q 30	Under this agreement what data can be utilised? (Road Safety, Maintenance, Fuel Efficiency, Allocating of Costs, etc.)
Q 31	Under this agreement what data can NOT be utilised? (Road Safety, Maintenance, Fuel Efficiency, Allocating of Costs, etc.)

Q 32	What was your LA's capital expenditure on fleet in 2018, 2019, & 2020?
Q 33	What was your LA's leasing expenditure on fleet in 2018, 2019, & 2020?
Q 34	What was the operational cost of your LA's fleet, not including fuel in 2018, 2019 & 2020? (Operational costs relate to the operation and maintenance costs associated with the LA Fleet)
Q 35	What was the fuel cost for your LA's fleet in 2018, 2019 & 2020?
Q 36	Does your LA set fuel efficiency goals at present?
Q 37	What are the goals? (l/100km)
Q 38	Is there a fuel budget in place?
Q 39	What is the budget?
Q 40	Does your Local Authority have a strategy for transitioning the heavy fleet away from fossil fuels?
Q 41	Have suitable vehicles been identified to be replaced by alternative fuels?
Q 42	How many can be replaced by electric powered vehicles?
Q 43	How many can be replaced by bio-gas powered vehicles?
Q 44	How many can be replaced by hydrogen powered vehicles?
Q 45	How many can be replaced by HVO or Bio-Fuel powered vehicles?
Q 46	Has the cost of transitioning the heavy fleet to non-Co2 emitting fuels been estimated? If so how much?
Q 47	Does your LA have a strategy for transitioning the lightweight fleet away from fossil fuels? (Van, Bikes, Quads, Public Realm Vehicles, Construction Plant, etc)
Q 48	Has your LA identified suitable lightweight vehicles to be replaced by alternative fuels?
Q 49	How many can be replaced by electric power vehicles?
Q 50	How many can be replaced by bio-gas powered vehicles?
Q 51	How many can be replaced by hydrogen powered vehicles?
Q 52	How many can be replaced by Bio-Fuel or HVO powered vehicles?
Q 53	Has the cost of transitioning lightweight fleet to non-Co2 emitting fuels be estimated? If so what is the estimate?
Q 54	Is there refuelling facilities in your county for alternative sources of energy compressed natural gas / LPG, Bio-Diesel, HVO etc?
Q 55	What alternative sources of energy are provided at these refuelling facilities?
Q 56	Is there a policy document or strategy in your Local Authority to install electric vehicle charging points for use by LA owned vehicles?
Q 57	How many chargers have been installed by your LA to date?
Q 58	How many chargers are planned to be installed in 2021, 2022 & 2023?
Q 59	Does your LA have a policy relating to the location of vehicle storage overnight?
Q 60	Is this implemented across the LA?
Q 61	In your opinion could your LA maintain current service levels with a smaller fleet?
Q 62	In your opinion approximately what % reduction in your LA fleet is achievable?
Q 63	What actions in your opinion would be required to maintain these service levels?
Q 64	What in your opinion are the top 3 barriers to achieving improved fuel efficiency in your LA's fleet? (If you would like to be credited with these suggestions, please provide your name & email)
Q 65	What, in your opinion, are the top three barriers to achieving improved fuel efficiencies in your local authorities' fleet? (If you would like to be credited with these suggestions, please provide your details).

Q 66	Has there been any innovative measure implement by your local authority in past 5 years that had a positive impact on energy efficiency?
Q 67	Please provide any further comment you deemed relevant to this survey?
Q 68	Please provide contact details should we require to c+B12:B69ontact your local authority to clarify any information provided in this survey?