

PFCC Decision Report

Report reference number: PFCC/170/23

Classification: Official

Title of report: Zero Vehicle Emissions Delivery – Phase 1

Area of county / stakeholders affected: Whole county with a phase 1 focus on Dunmow, Chelmsford Police Station and Rayleigh.

Report by: Chris Wallace 42078327, Strategic Change

Chief Officer: ACC Kevin Baldwin

Date of report: 21/11/2023

Enquiries to: Chris Wallace 42078327, Strategic Change

1. Executive Summary

In line with government mandated targets, and the force's own commitments to achieve Net Zero by 2050, the Zero Emissions Delivery (ZED) Board was established, and has been developing a Zero Vehicle Emissions Delivery Plan, which proposes a phased transition of our fleet to electric vehicles, along with installation of required charging infrastructure across our estate, and all associated works, by 2035.

An outline of the force's strategy in relation to transitioning our vehicle fleet to zero emissions, and the guiding principles for the work of the Zero Emissions Delivery Board, is set out below:

We will...

- transition the Essex Police vehicle fleet from ICE (internal combustion engine) vehicles to electric and / or alternative greener fuel options in line with Government requirements.
- provide supporting charging infrastructure within the Essex Police estate to support transition and adaptation to future technological advancement.
- work with partners to organise collaborative infrastructure arrangements that meet organisational need.

- provide direction around driver behaviour, training and support that complements the transition and cultural change requirements.
- develop information technology that supports operational policing (fleet management).

This paper seeks PFCC approval of Phase 1 of the delivery plan, which would see the transition of vehicles across three pilot sites to electric vehicles, with installation of type 2 dual charging pedestals, along with the integration of the requisite technological infrastructure. The preliminary budgetary estimation for the Phase 1 recommendation stands at £430,500, which represents a conservative high-end projection. More detailed financials will be available should Phase 1 be approved, and we are able to commission detailed survey work.

2. Recommendations

The recommendation to the PFCC is to agree that Dunmow, Chelmsford Police Station, and Rayleigh are the pilot sites, and approve £430,500 of capital funding for the installation of 36 electric vehicle charging units and associated infrastructure.

3. Background to the Proposal

In 2020 the UK Government announced a two-stage plan to end the sale of new petrol and diesel cars in the UK by 2035. Stage 1 will see the phase-out of new petrol and diesel car and van sales by 2030. Stage 2 will see all new cars and vans be fully zero emission at the tailpipe from 2035, effectively ending the sale of hybrids and leaving electric vehicles (EVs) as the only viable option for purchase, barring any sudden advancements in green fuel technology. Whilst there have been some changes to the plan by the UK Government recently, given that vehicle manufacturers have already made their investment into electric vehicle production, and that the 2035 target still stands, we are continuing to work to the timelines set out when the project was initiated.

The Essex Police vehicle fleet currently consists of 777 vehicles, with a replacement rate of 75-150 vehicles per year. At present most of the fleet are petrol or diesel vehicles, and like-for-like replacement will no longer be possible beyond 2030. Transport Services have begun replacing vehicles with hybrids to extend the lifetime of the fleet to 2035, giving the force up to 12 years to complete the transition to EVs.

There are 33 sites across the county where vehicles are based, which are a mix of owned and leased properties. With a wide variety of building conditions, locations, yard sizes / layouts, electrical wiring quality and capacity, the installation of charging points on each site is set to be incredibly complex and requires a focussed, bespoke and phased approach.

Essex Police established the Zero Emissions Delivery (ZED) Board chaired by an Assistant Chief Constable lead. The board membership has been carefully considered to represent all stakeholders key to achieving the Net Zero target through working to the required Zero Vehicle Emissions Delivery Plan. The Heads of Estates and Head of Transport Services sit on the board along with representatives from operational

commands. In addition, collaborative colleagues are on the board membership, specifically Essex County Fire and Rescue Service (ECFRS).

In determining the most suitable sites for the first phase of the electric vehicle transition, an evaluation was undertaken by Estates, Transport Services and Strategic Change, based on the following parameters:

- Available electrical capacity in kVA (kilo Volt Amperes)
- Existing electrical infrastructure condition
- Ease of installation – electrical
- Ease of installation – car park
- Number of vehicles ready for transition
- Vehicle utilisation and associated mileage
- Operational dynamics of the building and resident teams
- Proximity and accessibility to collaborative, public and commercial charging facilities

The following exclusion criteria was agreed by the group to remove overly complex or inappropriate sites from consideration for phase 1:

- Sites due for major investment within the next five years.
- Sites due for disposal.
- Sites which are leased.
- Sites where no EP building is present.
- Sites with limited existing electrical capacity.

After applying this exclusion criteria, the following sites remained in consideration:

Fig. 1 Site Selection Criteria Matrix.

Home Station	Available Capacity (KVA)	Electrical Inf. Grading (RAG)	Easte of Installation - Electrical (RAG)	Ease of Installation - Car Park (RAG)	Transition Now Vehicles	Vehicle Score	Vehicle Utilisation Score	Mileage Score	TOTAL FLEET SCORE
BASILDON	92	A	A	R	21	52	7	11	70
BRAINTREE	45	G	G	A	7	40	8	5	53
CHELMSFORD	168	G	G	R	25	56	4	14	74
CHIGWELL (DR Site for FCR)	217	R	A	G	0	24	5	2	31
CLACTON	39	A	G	G	7	42	15	7	64
COLCHESTER	81	A	A	A	32	60	1	10	71
DUNMOW	243	G	G	G	25	48	9	15	72
HARLOW	33	R	R	R	14	44	16	18	78
LAINDON WORKSHOP	33	R	A	G	2	16	6	32	54
LOUGHTON	6	R	R	A	6	38	14	6	58
RAYLEIGH	65	G	G	A	19	46	23	16	85

Upon a review of the 11 sites, the Zero Emissions Delivery Board endorsed the recommendation to initiate the electric vehicle transition at the Dunmow, Chelmsford Police Station and Rayleigh sites as Phase One of the delivery phase. Spanning these locations, a total of 69 vehicles are primed for immediate transition.

We are confident that the insights gleaned from this initial phase will significantly improve the successive rollout strategies across our broader fleet and infrastructure. As well as gaining insight into the installation process, the unique nature of each of the three proposed sites in terms of external charging opportunities gives us a chance to trial three different approaches to charging strategy, with Dunmow being more rural with fewer external charging opportunities (albeit with Gridserve’s large electric forecourt available in Braintree), Chelmsford being urban but with rural areas within the district, and Rayleigh being an urban area with abundant external charging opportunities.

Fig. 2 Summary of rationale for recommended Phase One sites.

	Dunmow	Rayleigh	Chelmsford
Overview	With a high infrastructure and fleet score, Dunmow came out as an obvious first choice for phase one.	With a high infrastructure and the highest fleet score, and interdependent teams with Dunmow, Rayleigh came out as a clear second choice.	With a medium-high infrastructure score, and a high fleet score, along with existing electric vehicles already being present, Chelmsford presented as a solid third choice.
Infrastructure	Existing electrical infrastructure quality and ease of installation both RAG'd green. High KVA capacity. Fewer external charging opportunities in the area.	Existing electrical infrastructure quality and ease of installation both RAG'd green. Medium KVA capacity. Abundant external charging opportunities in the area.	Existing electrical infrastructure quality RAG'd green. Ease of installation RAG'd amber. High KVA capacity. Significant external charging opportunities in the urban area.
Vehicle availability	25 vehicles ready to transition now. 3 rd highest fleet score.	19 vehicles ready to transition now. Highest fleet score.	25 vehicles ready to transition now. 4 th highest fleet score.

Governance: The Zero Emissions Delivery Plan was endorsed and recommended by the Zero Emissions Delivery Board on 19th September 2023 and presented at the Chief Officer Group on 18th October 2023 where it was endorsed and approved for presentation at the Strategic Estates Board on 6th November 2023 and ultimately the Strategic Board on 18th December 2023. Upon successful endorsement through this governance framework, and the completion of subsequent detailed survey work, we project the commencement of infrastructure work at the three designated Phase One

sites in mid-2024. This will enable the commencement of the pilot phase to better understand the future risks, issues and benefits of the electrification of the vehicle fleet.

4. Proposal and Associated Benefits

It is proposed to install type 2 dual charging pedestals across the three proposed Phase 1 sites: 13 at Dunmow, 13 at Chelmsford Police Station, and 10 at Rayleigh. These charging pedestals would support the transition of 69 vehicles across the three sites which, in combination with vehicles already converted to electric, represents 10% of the fleet transitioned to electric, allowing us to develop best practice learning and successfully deliver future phases of the project with increased efficiency.

An outline of the anticipated benefits of the project is as follows:

Operational cost savings: Over their lifetimes, electric vehicles tend to have lower operating costs than traditional combustion engine vehicles. This is due to fewer moving parts, reduced maintenance needs, and the general lower cost of electricity compared to fossil fuels. Once the investment has been made into converting our full fleet to EVs, the estimated annual saving on revenue vehicle costs is £1.1m.

Environmental responsibility: Transitioning to EVs will significantly reduce the force's carbon footprint, aligning with global sustainability goals and local environmental initiatives. This step helps combat climate change and air pollution, fostering a healthier environment.

Public perception and trust: Adopting EVs may improve the public image of the force, positioning it as forward-thinking and environmentally conscious. This can strengthen community trust and support, especially among eco-aware demographics.

Operational efficiency: Modern EVs come equipped with advanced technological integrations, which can offer better fleet management, real-time tracking, and improved communications, enhancing operational efficiency.

Health and well-being of officers: Electric vehicles produce no tailpipe emissions, leading to improved air quality. This can have positive health implications for officers, especially those stationed in urban settings with already high pollution levels.

Noise reduction: EVs are quieter than traditional vehicles, which can be an asset in certain tactical situations where discretion is essential. Furthermore, reduced noise pollution benefits both officers and the general public in urban areas.

Future-proofing the fleet: Given the global shift towards EVs and government targets for ending the sale of ICE vehicles, transitioning now prepares the force for a future where combustion engines will become obsolete.

Safety enhancements: Many new electric vehicles come with advanced safety features and assistive driving technologies, which can reduce the risk of accidents and ensure the safety of both officers and civilians on the road.

5. Options Analysis

In addition to the recommended investment level option within this paper (option 2), a further three options were explored. They are outlined as follows:

Option 1 – Do Nothing

We do not invest in on-site charging infrastructure and do not transition any additional vehicles to electric at this time. This option comes with a number of risks which are outlined in more detail under section 13 of this paper, but the key risk with this approach is a reduction in operational capability. As the 2030 and 2035 target dates set by the government to end the sale of internal combustion engine vehicles approach, it will become progressively more difficult to continue to replace and repair our vehicles, culminating in a complete cut-off of any new vehicles post 2035. Without access to electric vehicles, our fleet will gradually decrease in size as vehicles are written off or reach the end of their lifespan, and replacements cannot be sourced. This reduction in the fleet would lead to a decrease in operational capability as officers become restricted in their movements. Whilst this approach has the lowest cost, it carries the highest risk to the force.

Option 2 – Medium Investment, Medium Public Charging (preferred option)

We invest in enough on-site charging to slow charge vehicles during their downtime but rely on public / commercial charging locations for faster top-up charging throughout the day as needed. Fast chargers are a significant investment and, to install DC charging, would require a complete overhaul of our electrical infrastructure and connections to the grid. Investing in slow chargers to keep the fleet powered and operational but also developing public and commercial partnerships for fast charging, allows us to invest smaller capital expenditure, but maintain an effective fleet. We believe that this mix of on-site resilience and off-site opportunity maximisation delivers the best of both worlds and sets us up for success as we make this transition. With phase 1 being the first substantial transition to EVs in the force, the principle of one slow charger per vehicle allows for resilience where needed, but we are also able to switch off individual chargers to test a greater reliance on collaborative / public charging in those locations with good access to such facilities, such as Rayleigh and Chelmsford.

Option 3 – Maximum Investment, Minimum Public Charging

We fully invest in on-site charging, with a mix of slow chargers for vehicles with sufficient downtime, and fast DC chargers for rapid charging of response vehicles, with additional investment in upgrades to our estate's electrical infrastructure and updated grid connections to accept direct current. Whilst this option would give us the greatest resilience due to minimal reliance on external charging, and the greatest fuel savings with on-site electricity being cheaper than charging commercially, it would require significantly more capital expenditure to facilitate, and we believe that the risk mitigation of increasing reliance on our own charging facilities does not outweigh the increased cost of installation and maintenance.

Option 4 – Minimum Investment, Maximum Public Charging

We make the minimum investment, with a few slow chargers per site for resilience purposes only, and otherwise rely fully on partner, public, and commercial charging. Whilst this does minimise the cost to the force upfront, it would counter any potential fuel savings as charging off-site is more expensive than charging from our own supply. It also introduces increased risk to our operational capacity with our fleet competing with the public for charging and being left sitting at a charging point for anywhere from 20 minutes to several hours depending on the level of charger available, meaning a loss of staff and officer time. Electric vehicle charging is not yet at a point where it is as fast as fuelling an internal combustion engine vehicle and so a like for like replacement of fuelling / charging approach will introduce a number of inefficiencies which we believe do not outweigh the reduced capital cost to the force.

6. Consultation and Engagement

In order to capture the specific operational requirements, engagement with teams across the force has taken place through the gold group being led by a Chief Superintendent. Work has also taken place with the Estates Services teams to review our sites' suitability for electrification of vehicles, as well as work with Transport Services to review our current fleet. The information recorded was used to run decision making processes and to produce Phase One of the delivery plan. This plan has been presented to the Zero Emissions Delivery Board and was endorsed by a meeting of the Chief Officer Group.

More specific engagement with officers and staff at the pilot sites will commence should Phase 1 be approved.

7. Strategic Links

The Zero Vehicle Emissions Project promotes several areas of the Force Plan:

We learn and develop: The ongoing cultural change and training work will support officers and staff as they transition to electric vehicles, with additional driver training and support being provided throughout.

We are skilled, equipped, and enabled: The transition to electric vehicles will equip the force to continue to be effective, as well as introducing new technology to support efficient officer deployment through improvements to the fleet management information provided to FCR and supervisors.

We are collaborative: Through this project we are working closely with a number of partners including ECFRS, Essex County Council, the East of England Ambulance Trust, and the 7 Forces of the eastern region. As well as working with these close partners, we are establishing links with businesses and communities to develop a comprehensive charging strategy that will enable officer visibility in communities whilst expanding access to vehicle charging points across the county.

In line with the PFCC's Police and Crime Plan, the Zero Vehicle Emissions Project will support the priorities of:

Supporting officers and staff: Transitioning our fleet to electric vehicles not only underscores our commitment to environmental responsibility, but it also ensures that our officers and staff have access to modern, efficient, and reliable transport options. This shift promotes a healthier work environment by reducing exposure to exhaust emissions and reflects our dedication to equipping our personnel with the best tools to perform their duties.

Increasing collaboration: Through this project we are working closely with a number of partners including ECFRS, Essex County Council, the East of England Ambulance Trust, and the 7 Forces of the eastern region. As well as working with these close partners, we are establishing links with businesses and communities to develop a comprehensive charging strategy that will enable officer visibility in communities whilst expanding access to vehicle charging points across the county.

Improving safety on our roads: This objective is supported by utilising vehicles with advanced safety features, reduced noise pollution, and consistent performance attributes. Additionally, electric vehicles, with their quieter operations, diminish the risks associated with auditory distractions, thereby ensuring safer road conditions for all users.

Protecting rural and isolated areas: Through our work identifying partners for charging in the community, we have begun conversations with rural communities and owners of solar farms, who are so far supportive of the idea of providing vehicle charging points for emergency services vehicles, in exchange for the benefit of increased police presence in rural communities.

In line with the Essex Police Estates Strategy, the Zero Vehicle Emissions Project will adhere to the Essex Police Estate vision by "...ensuring our officers, staff and volunteers are ... equipped and enabled in their mission to prevent and detect crime, keeping the people of Essex safe...". The transition of vehicles and introduction of on-site charging infrastructure will ensure that our fleet remains fully operational and deployable, empowering officers, staff, and volunteers to continue keeping the people of Essex safe.

8. Police operational implications

During phase 1 of delivery there would be minimal police operational implications as the vehicles being transitioned are non-response. The infrastructure work may cause some disruption to car parks, but mitigations will be put in place to ensure this does not impact our fleet operational capability.

9. Financial implications

A Stage B business case has been submitted by Estates Services for 2024-25 budget setting which seeks to re-baseline the existing £1.88m earmarked funding to spend £430,500 in 2024-25 on Phase 1, with the remaining £1.45m set against 2025/26 to 2026/27 for Phase 2.

This paper forms part of the Stage C business case process where we seek capital funding approval of £430,500 against Phase 1 of the Zero Vehicle Emissions Delivery Plan.

Please note that all figures are currently estimates pending full survey and procurement processes. Once Phase 1 has been completed, the project team will be in a position to provide more accurate and detailed estimates of the full transition to EVs across all phases.

SUMMARY OF COSTS, INCOME & BENEFITS						
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
	2024/25	2025/26	2026/27	2027/28	2028/29	
	£'000	£'000	£'000	£'000	£'000	£'000
	Essex	Essex	Essex	Essex	Essex	Essex
Costs						
Capital cost	430.50	724.75	724.75	0.00	0.00	1880.00
Revenue set up cost	0.00	0.00	0.00	0.00	0.00	0.00
Revenue recurring cost	0.00	0.00	0.00	0.00	0.00	0.00
Total Costs	430.50	724.75	724.75	0.00	0.00	1880.00
Income						
Capital income	0.00	0.00	0.00	0.00	0.00	0.00
Revenue set up income	0.00	0.00	0.00	0.00	0.00	0.00
Revenue recurring income	0.00	0.00	0.00	0.00	0.00	0.00
Total Income	0.00	0.00	0.00	0.00	0.00	0.00
Benefits						
Cashable	0.00	0.00	0.00	0.00	0.00	0.00
Non Cashable	0.00	0.00	0.00	0.00	0.00	0.00
Cost Avoidance	0.00	0.00	0.00	0.00	0.00	0.00
Total Benefits	0.00	0.00	0.00	0.00	0.00	0.00

Net Investment	430.50	724.75	724.75	0.00	0.00	1880.00
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10. Legal implications

There are no identified legal implications relating to this project, award of contracts or increase in budget associated with this recommendation report. The planned infrastructure work will not require planning permission.

11. Staffing implications

There are no staff implications currently identified.

12. Equality, Diversity and Inclusion implications

Engagement with Support Networks is currently taking place and preliminary feedback is that there are no concerns raised.

13. Risks and Mitigations

Risks associated with not approving the delivery plan:

Operational risk: As the UK government has set a clear directive to end the sale of new petrol and diesel cars by 2030, police forces that do not proactively transition to electric vehicles face significant operational risks in the coming decade. Post-2030, with the discontinuation of combustion engine vehicles, the force may experience challenges in fleet replenishment, potentially leading to operational inefficiencies, increased maintenance costs of ageing petrol and diesel vehicles, and diminishing availability of parts.

Increased operational costs: As the infrastructure and support for petrol and diesel vehicles wanes, maintenance costs may rise due to the reduced availability of parts and specialised services. Fuel prices may also increase as demand for petrol and diesel decreases or as taxes on fossil fuels increase.

Reputational damage: As public awareness and commitment to environmental issues grow, police forces that do not adopt sustainable practices risk being perceived as out-of-touch or indifferent to global ecological concerns.

Reduced public funding or support: Future governmental funding or grants might prioritise eco-friendly initiatives. A police force lagging in this transition may miss out on these financial opportunities.

Loss of competitive edge in recruitment: As electric vehicles and sustainability become more mainstream, new recruits may prioritise joining forces that reflect these values. A force not adopting EVs might struggle to attract environmentally conscious talent.

Reduced synergy with other services: As other emergency services (fire and rescue, ambulance) and police forces transition to EVs or other sustainable options, Essex Police might find itself out of sync in joint operations or initiatives.

14. Governance Boards

- Zero Emissions Delivery Board – 19/09/2023 (Endorsed)
- Estates Change Board – 02/10/2023 (Presented)
- Chief Officer Group – 18/10/2023 (Endorsed)
- Strategic Estate Board – 06/11/2023
- PFCC Strategic Board – 18/12/2023

15. Links to Future Plans

As noted elsewhere in this paper, this is Phase 1 of the Zero Vehicle Emissions Delivery Plan, with further phases continuing the rollout of electric vehicles and

requisite charging infrastructure across the county. Learning from Phase 1 will be key to informing the development of detailed plans for further phases.

16. Background Papers and Appendices


[REDACTED]



[REDACTED]

Report Approval

The report will be signed off by the PFCC's Chief Executive and Chief Finance Officer prior to review and sign off by the PFCC / DPFCC.

Chief Executive / M.O. Sign: 

Print: P. Brent-Isherwood

Date: 30 November 2023

Chief Finance Officer Sign: 

Print: Janet Perry

Date: 09 December 2023

Publication

Is the report for publication? YES NO

If 'NO', please give reasons for non-publication (Where relevant, cite the security classification of the document(s). State 'None' if applicable)

Subject to redaction, as set out below

If the report is not for publication, the Chief Executive will decide if and how the public can be informed of the decision.

Redaction

If the report is for publication, is redaction required:

1. Of Decision Sheet? YES NO 2. Of Appendix? YES NO

If 'YES', please provide details of required redaction:

The appendix has been protectively marked Official-Sensitive, so is not for publication.

Date redaction carried out:

Chief Finance Officer / Chief Executive Sign Off – for Redactions only

If redaction is required, the Treasurer or Chief Executive is to sign off that redaction has been completed.

Sign:

Print:

Chief Executive / Chief Finance Officer

Decision and Final Sign Off

I agree the recommendations to this report:

Sign: 

Print: Roger Hirst

PFCC

Date signed: 21/12/2023

I do not agree the recommendations to this report because:

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Sign:

Print:

PFCC/Deputy PFCC

Date signed: