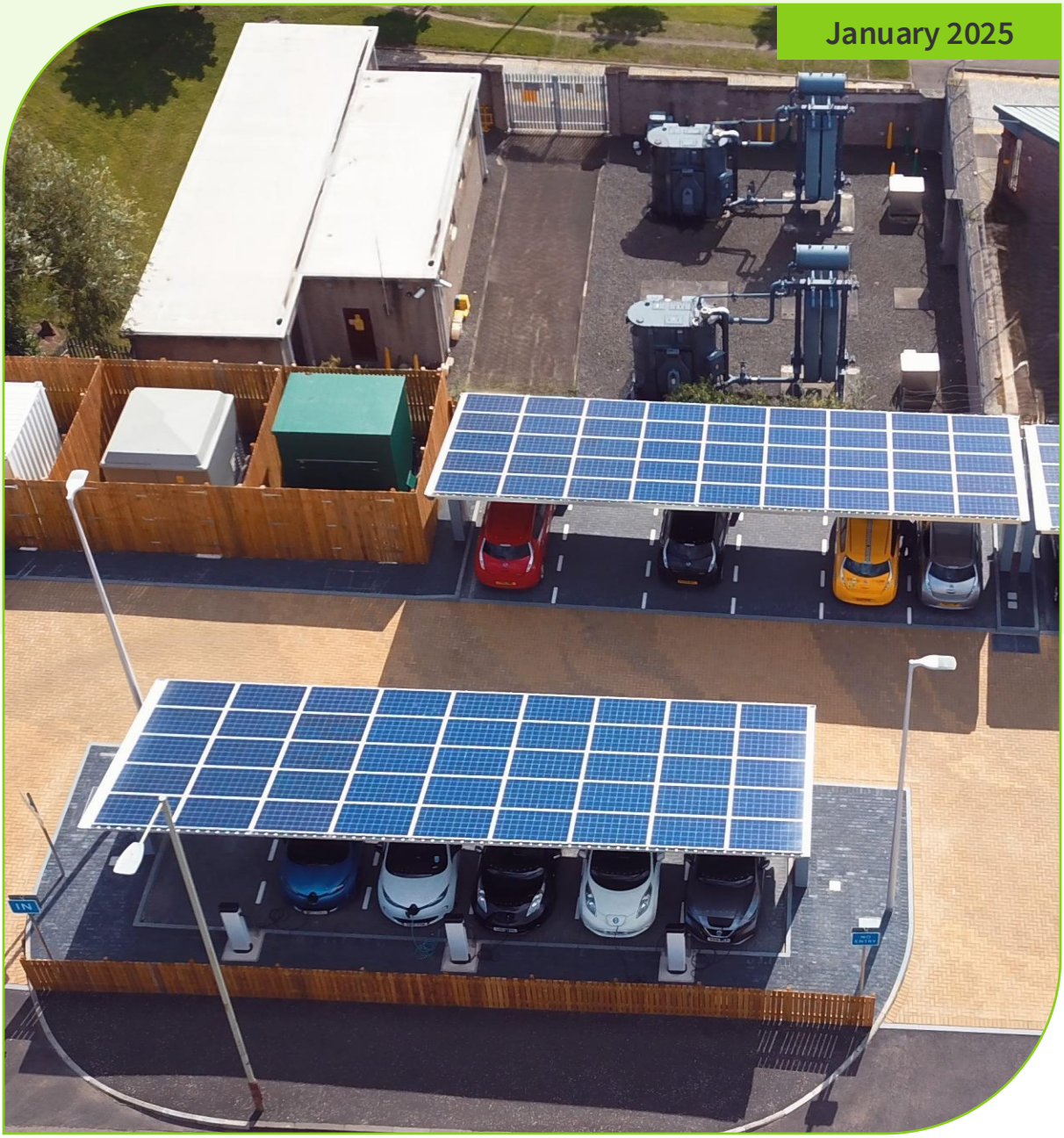
Future **perfect?**

How can the Charge Point Operators of tomorrow succeed in an increasingly competitive and regulated landscape?



January 2025

A white paper from Evolt Charging.

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Contents.

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Back to contents

Executive summary.

Since the very first Electric Vehicle (EV) charging point was installed in the UK more than 20 years ago, the landscape for EV charging has changed dramatically. It has given rise not only to its own language, but also a new classification of business – the Charge Point Operator (CPO) – with the role of setting up and managing the EV charging infrastructure.

But even the profile of the CPOs themselves is changing, and the e-mobility players of today look very different from the early adopters of a decade or so ago. And they are evolving still, which means the CPO of the future will be a very different kind of business again, placing different demands on the EV ecosystem providers, from the provision of land, through to the supply, installation, operation and maintenance of the systems installed.

New challenges.

The challenges they face are similarly evolving. Success is creating its own set of difficulties, not least ensuring the sufficient availability of power and the pace with which the hardware installed can be connected to the grid. Necessity, however, is proving to be the mother of invention, giving rise to new solutions such as Dynamic Load Management (DLM), to optimise the power available.

Image credit: Westmorland Family, Tebay Services.

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Back to contents

New regulations.

New regulations are also mandating services and product features that used to serve as a CPO's point of difference. This is changing the battle grounds on which future CPOs compete, shifting from system reliability and availability – which will become a 'given' – to one of 'brand experience', at the heart of which will need to be exceptional customer service.

Partnership counts.

The market is not yet mature and new players – and new investors – are constantly emerging with their own financial models. For them to succeed, however, they will need to choose their stakeholder partners carefully, whether that's a partner to provide the technology, to install or maintain it, or deliver an end-to-end service to include a reliable back-office platform to manage all future administration. Partners must have the expertise to operate a network that ensures the CPO's compliance with regulations, factoring in accessibility and 24/7 driver support, so drivers are delighted with – and trust in – the reliability and performance of the equipment installed.

Back to contents

Introduction.

Early charge points were part of a well-meaning but fragmented strategy – not yet underpinned by standardisation or regulation.

The emerging sector faced a Catch 22 situation: too few EVs to attract large scale business investment in infrastructure and collaboration on standardisation; and too few charge points to incentivise private drivers to switch their next car purchase to an EV.

The UK Government's 'Plugged-in-Places' (PiP) initiative of 2008 was the catalyst for what might be considered the first renaissance, and the first sign of tangible progress, with several cities – notably London, Bristol and Milton Keynes – receiving funding to install EV charging stations.

With public sector money came private sector interest and investment, and the first of the CPOs began to emerge, characterised by their entrepreneurial nature: Chargemaster (founded in 2008), Pod Point (founded in 2009) and SWARCO Smart Charging (founded in 2010) were among the early front runners, joined soon after by the familiar names of ChargePoint Services, Engenie, Electric Blue, InstaVolt, and For:EV in Scotland.

New drivers.

The demand then was principally being driven by local authorities. In some ways, the early-adopter local authorities and the first CPOs were ahead of their time, waiting for the EV-buying public to catch up. This was perhaps the biggest challenge, alongside a lack of incentive for consumers to switch to electric. By 2013, five years after the Government launched PiP, there were still only 3,000 publicly available EV charging stations in the UK. But then there were only 3,586 plug-in electric vehicles registered and on the road[1] and the design of the cars, such as they were, failed to capture the public imagination.

The 'traditional' fuel providers such as BP and Shell gave space over on their forecourts expecting a spike in demand for a new generation of customer that didn't come. Nissan's decision to build its first production-EV, the Leaf, in Sunderland was perhaps the turning point, and the impetus the UK needed to take EVs seriously.[2]

1. SMMT data 2. Interview with Justin Meyer, September 2023.

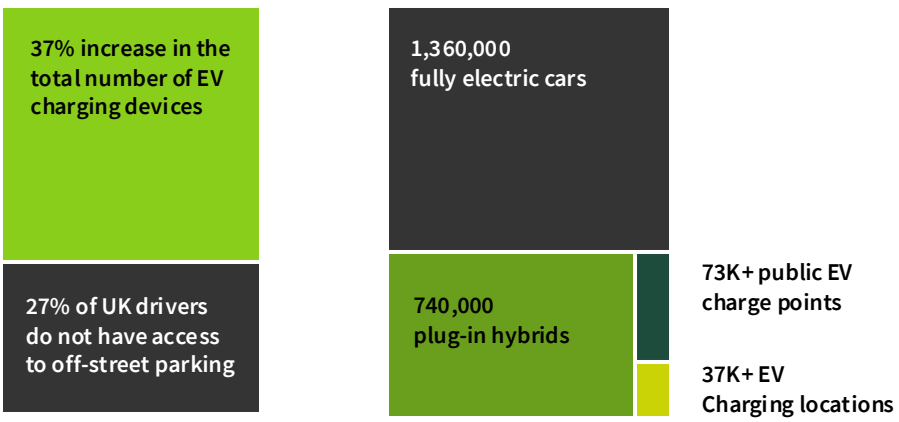
Back to contents

Growth of charging infrastructure.

Since those tentative beginnings, the industry has gone through a second renaissance. Single point installations on petrol forecourts, motorway service stations, car parks or shopping centres have been superseded by major charging hubs in easily accessible and convenient locations.

Small, entrepreneurial CPOs have been joined, or in some cases replaced, by larger operators with established manufacturer alliances. The number of public charge points in the UK grew from 20,964 at the end of 2020 to 53,865 by the end of 2023. Latest statistics from Zapmap suggest that as at the end of 2024, that figure has now reached a total of 73,699 electric vehicle charging points across the UK, across 37,011 charging locations and 108,410 connectors[3]. This represents a 37% increase in devices since December 2023. The need for public charging infrastructure remains critical. Estimates from the National Travel Survey suggest that 27% of UK drivers do not have access to off-street parking and are therefore reliant on public charging. It is also important to remember that even EV drivers with access to charging at home or work, (there are estimated to be 850,000 [4]), will also use the public network on longer journeys.[5]

Supply vs demand – December 2024.



3. Zapmap data. 4. What Car? Research 2023 and Zapmap research 2024.
5. Department for Transport data.

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Back to contents

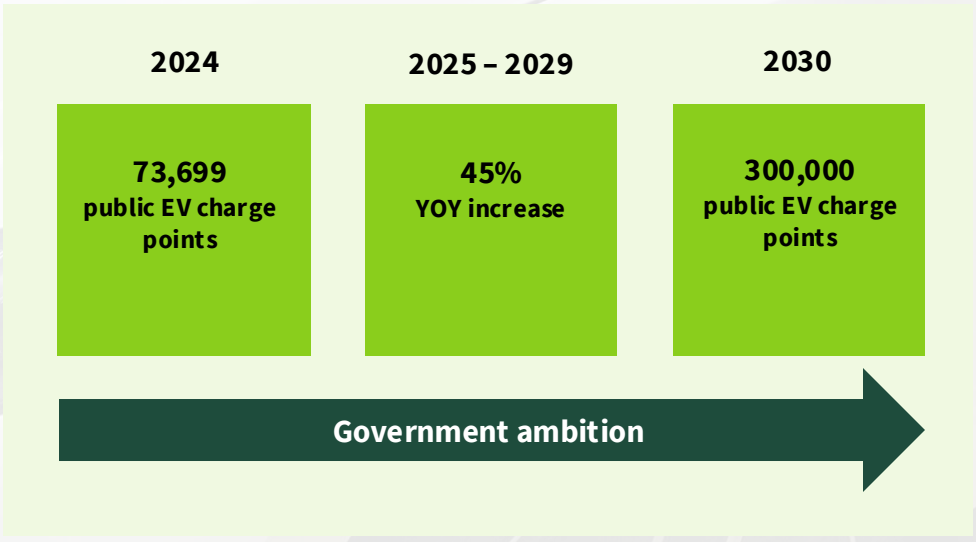
EV popularity.

As of the end of December 2024, there are over 1,360,000 fully electric cars in the UK. This means that around 4.01% of the c.34 million cars on UK roads are fully electric and a further 740,000 plug-in hybrids. To give some context to how the popularity of EVs has grown, in 2016, only 0.4% of all new vehicles registered were electric. By 2023 this had risen to 16.5% (and a total of 23.9% if new plug-in hybrid registrations were included.)[6] The number of all new light commercial vehicles increased from 3.6% in 2021 to 5.9% in 2023 and continues to rise, while there is also a rise in the volume of the second-hand EV market.

Public ambition.

The Government has an ambition for 300,000 publicly available charging points by 2030 which means very approximately, another 240,000 need to be installed within the next five years. Assuming the percentage increase in chargers remains at a steady 45% year-on-year (YOY) , this target will be reached with some months to spare.

The path to EV growth.



6. SMMT data.

Back to contents

Challenges for new entrants.

Challenges remain as to whether the pace of installing new charging infrastructure can match demand.

While current EV infrastructure is sufficient, sustained confidence in EVs is vital to drive continued investment and growth. The challenge that any new entrant CPO will discover is the number of moving parts, or rather the number of different stakeholders involved in creating an end-to-end charging solution. Hardware is, of course, one of the principal challenges – partnering or buying from a manufacturer with equipment that is reliable in the field, can be easily supported through ongoing maintenance, and has readily available spare or replacement parts when needed.

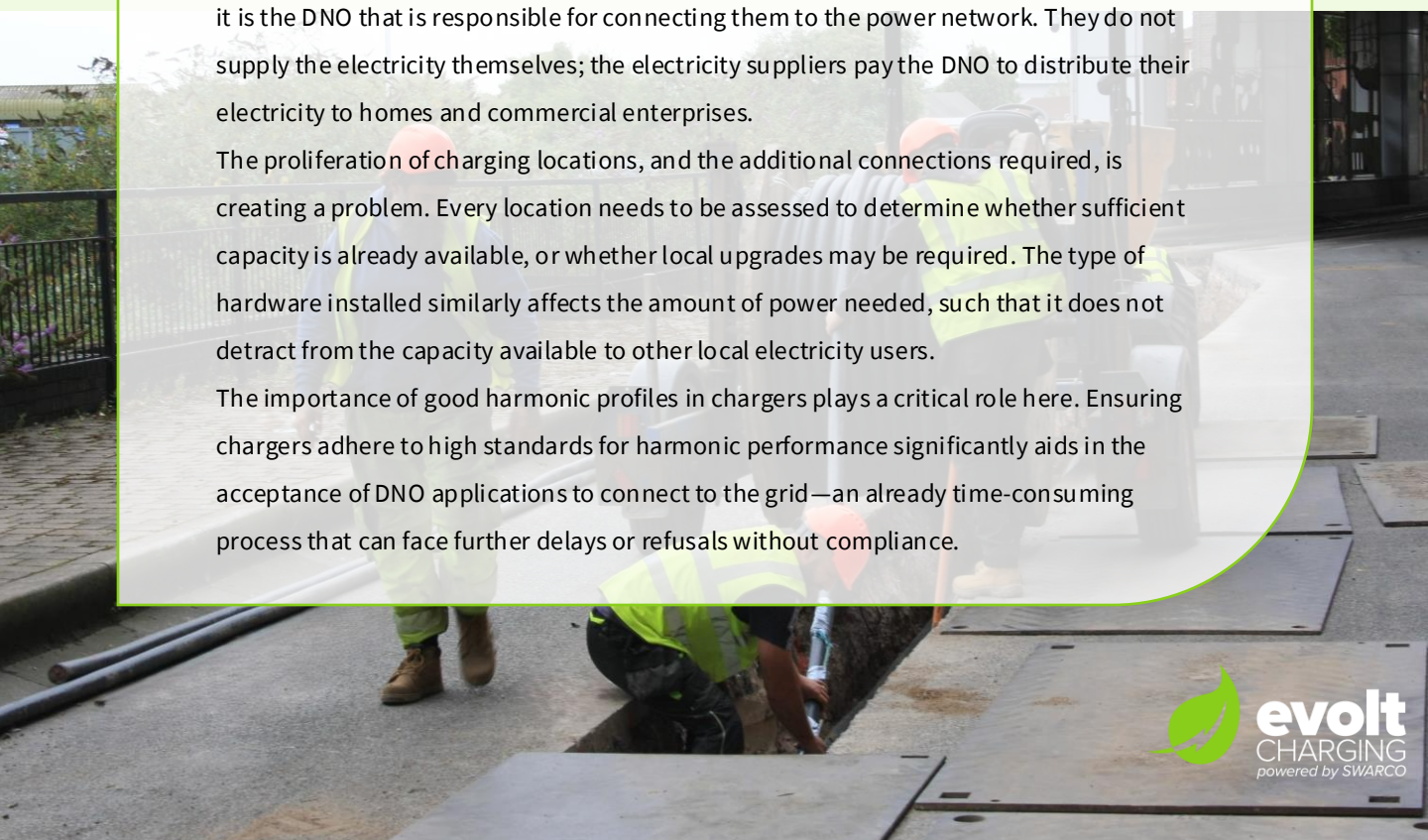
The physical installation and maintenance are also a challenge, requiring nationwide capability and support. But even assuming a CPO can secure the equipment, the installation team, and ongoing engineering expertise required, the one element they have little or no control over, is power. Power – and more specifically the distribution, availability, and stability of power – are the biggest barriers to progress not only for those new to the market, but even for some of the current, established players.

Capacity for growth.

Power is in the gift of the Distributor Network Operator (DNO), the title given to those organisations licensed to distribute electricity in the UK. The DNO is responsible for the distribution of electricity downstream to the end-user. When charging points are installed, it is the DNO that is responsible for connecting them to the power network. They do not supply the electricity themselves; the electricity suppliers pay the DNO to distribute their electricity to homes and commercial enterprises.

The proliferation of charging locations, and the additional connections required, is creating a problem. Every location needs to be assessed to determine whether sufficient capacity is already available, or whether local upgrades may be required. The type of hardware installed similarly affects the amount of power needed, such that it does not detract from the capacity available to other local electricity users.

The importance of good harmonic profiles in chargers plays a critical role here. Ensuring chargers adhere to high standards for harmonic performance significantly aids in the acceptance of DNO applications to connect to the grid—an already time-consuming process that can face further delays or refusals without compliance.



Back to contents

Timely connections.

CPOs fully understand the technical aspects in relation to power. They understand too that there will be a lag from the point at which the hardware is installed, to the time that it is connected to the Grid. The challenge is that the delays appear to be lengthening, and this is not only frustrating, but also makes future deployment more difficult to plan. Charging points remain idle, consumer confidence is affected, and the CPO's reputation can be called into question when the equipment is installed but cannot be used.

Western Power Distribution, a DNO serving the Midlands, the southwest and Wales, published a Guide to EV charging and DNO engagement for local authorities (LA) which included an estimated timeline based on three scenarios:

- **Small** (up to 70kVA – i.e. up to three fast chargers)
- **Medium** (up to 1,000kVA – i.e. more than three fast chargers)
- **Large** (above 1,000kVA – i.e. multiple fast and/or rapid charge points).

For the first two, the estimated connection time was between **two to three months**. For the larger sites, it was a **six-month wait as a minimum**.
DNOs invite early engagement and advise allowing as much time as possible for information exchange and dialogue at the planning stage to avoid issues further down the line.

The connection process.*

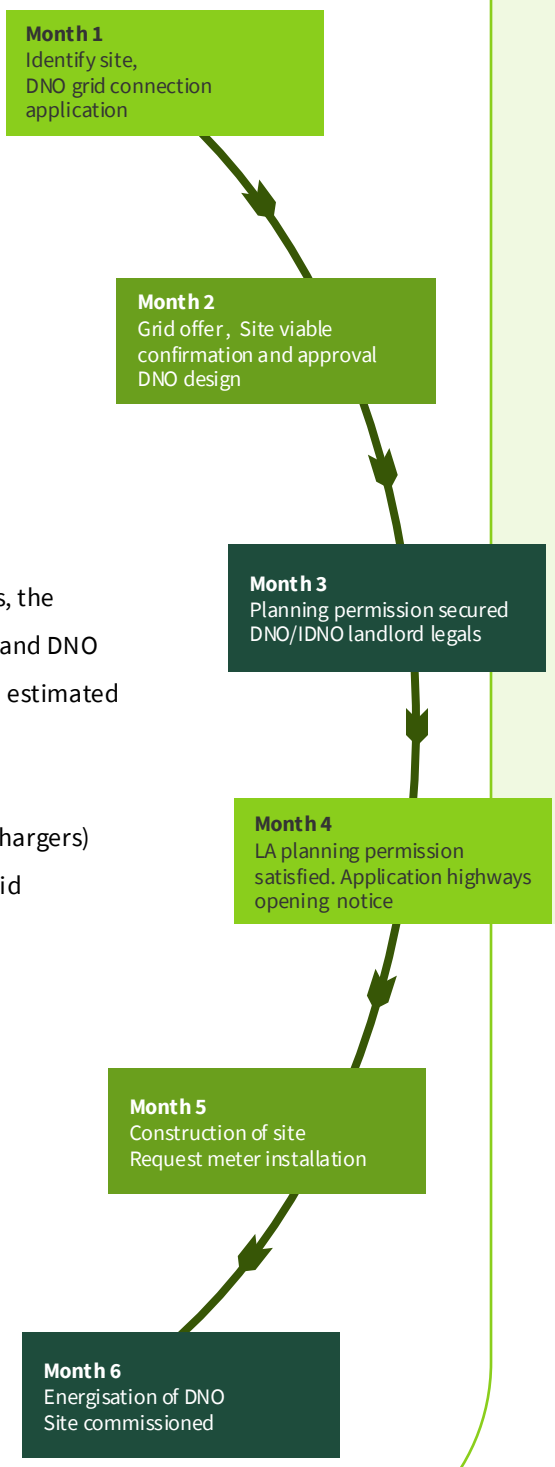


*Diagram for illustrative purposes only and represent some of the tasks involved in six-month large site connection and are not a true illustration of the length of time tasks may actually take.

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Back to contents

New regulatory requirements.

The majority of the new Regulations from the Department for Transport and the Office for Zero Emission Vehicles came into force in November 2024 placing new demands on a CPO's responsibilities. Engaging a third-party solutions provider can be invaluable in navigating these demands, offering expertise and resources often at a reduced cost, to ensure compliance without requiring the CPO to 'go it alone'.

Policy area	Requirements	Advice to meet compliance
Contactless	New public charge points of 8kW and above and existing charge points of 50kW and above must offer contactless to consumers. Proprietary networks that open their charge points for public use will have one year from the date that the charge point becomes public to offer contactless.	Review your charge point network and evaluate the payment methods you currently offer. Your EV charging supplier should provide guidance on retrofitting contactless payment solutions that are widely supported. For new charge points, ensure they comply with the new regulations.
Roaming	Charge Point Operators must enable consumers to pay through at least one roaming provider at their charge points.	This regulation is due November 2025. Research and employ proven providers of roaming platforms. Leveraging their experience can help enable seamless cross-network payments.
99% reliability	Rapid charge points must be 99% reliable, measured as an average across each charge point operator's rapid network. Information on reliability compliance must be published on the charge point operator's website. And they will be required to report reliability metrics to the Department for Transport annually starting in 2026 (for the 2025 calendar year).	Proactive maintenance programs and robust monitoring systems are the only way to minimise downtime. Regular analysis of performance data helps identify and address potential issues to ensure consistent reliability. Partner with suppliers who can transparently report on compliance metrics, helping you meet regulatory requirements effectively.

7. Accelerating the installation of public charging infrastructure - Charge UK policy paper – December 2023.

Back to contents

New regulatory requirements cont.

Policy area	Requirements	Advice to meet compliance
Helpline	A free to use 24/7 staffed telephone helpline must be available and advertised at all rapid charge points.	Getting this right is not just about opening hours. Ensure the helpline you use is staffed with trained knowledgeable agents to address customer concerns quickly. Consider outsourcing to specialised service providers to maintain high standards and scalability.
Open data	All data must be accurate, and charge point operators must use the Open Charge Point Interface (OCPI) to hold and open their data. Reference and availability data must be made publicly available and in a machine-readable format. Government bodies, DNOs, Transmission Owners and Electricity System Operators must have access to all data.	Use established data management platforms compliant with OCPI standards to ensure interoperability and accuracy. Ensure systems can securely share data with public bodies in the required format. Data management solutions can often be sourced as standalone packages to support your charge points.
Pricing metric	The maximum price of a charging session must be displayed clearly in pence per kilowatt hour. The price can be displayed either on the charge point or through a separate device.	Depending on your EV charge point setup, implement solutions through existing interfaces or digital tools. Researching a provider that can support on this and align to other related regulation requirements would help you implement real-time changes efficiently.

The purpose of these Regulation is to 'boost confidence' in EVs, just at a time when there is something of a heightened negative backlash appearing against making the switch away from fossil-fuelled vehicles. It is also intended to give drivers a more 'consistent experience' by addressing the common challenges faced by consumers including unreliable charge points, a confusing variety of payment metrics, and similarly confusing payment methods.

Back to contents

The critical importance of customer service.

Perhaps the stand-out requirement of the new regulation, however, does not relate to the technology or payments but rather the service. It requires all CPOs in the future to deliver a free-to-use 24/7 helpline. The helpline has to be permanently staffed and actively advertised at all rapid charge points.

CPOs used to compete on reliability, addressing the drivers' key concern of range anxiety, and arriving at a charging point to find that it didn't work. Reliability will still be an issue, but how the CPOs manage the customer interaction will be an essential part of the user 'experience', and that will be largely determined by the skills of the customer service centre team.

By way of example, Charge Place Scotland's (CPS) helpline currently receives c200,000 calls each year, and has done for three years in a row. On average, one out of every 10 charging sessions leads to a phone call, but less than one percent of these involve an actual complaint. These calls are invariably about how a particular charging point works, and these are often from drivers who are not only new to the network, but also new to electric vehicle driving.

For CPS, that's 200,000 customer interactions, and an opportunity to promote the brand. CPOs who take a similar approach, will quickly separate the opportunity from the cost, and realise the real 'value' that comes from engaging an outsourced, professional customer service team.

Back to contents

Differentiating services in a changing landscape.

Another key battleground is accessibility. To this end, some players are already pinning their colours to the mast and positioning themselves as the champions of the less physically able, designing bays with more physical space, and equipment with screens that are easier to read, or sited at a more appropriate level.

Others such as Osprey are taking the concept of accessibility beyond the comparatively narrow lens of the 'Blue Badge' and bringing accessibility for all. It is taking 'accessibility' to mean not just the physical space, or the ergonomic design of the equipment, but also the compatibility with multiple payment options.

Much as Q-Park and others have done in the parking industry, CPOs who focus on the quality of the customer experience, with charging points that are well-lit, well-designed, and in prime locations that are not only safe and convenient to use, but are also attended, will have a key point of difference and may be able to charge a premium for it.

Back to contents

Queue busting.

Alongside accessibility is the challenge of queuing. CPOs who recognise the need for an effective solution to managing queues in the future may also gain some competitive advantage over their rivals.

'Icing' – where traditional Internal Combustion Engine (ICE) vehicles occupy an EV charging space – is a growing problem, and so too the issue of commercial vehicles (CV) 'hogging' what are perceived as 'public' charging points (i.e. for use by only non-commercial vehicles). At least one well-known delivery business has been written to formally by a CPO to encourage more consideration from its drivers.

Early site planning and the incorporation where the sites permits, of CV sized bays mitigates the potential problem of CV 'hogging'. Adopting traffic flow management techniques used in the parking industry, for example, a simple ANPR barrier system can be deployed. This can check registrations against the DVLA and only open the barrier for EVs, using this system if needed can also exclude commercial EVs from the site. More complex versions of this system can link vehicle registrations to the CPO network and provide the ability to pre-book a charging bay.

Connected thinking.

Enhancing the customer experience will also require addressing various practical issues. Much of the reliability and the speed of roll-out has been determined by external factors such as access to the Grid; connectivity in relation to Wi-Fi and broadband upon which so many systems depend is also a challenge, and one that is not entirely in a CPO's control. Many of the demands of the new Regulation will fall at the first hurdle if the charging point cannot access the internet.

Dynamic tariffs.

Price per kilowatt hour will also become a battleground of the future, especially when there are multiple CPOs in a particular area with charging hubs all competing for the same purse. This is where Tariff Engines capable of dynamic pricing will be important, and the ability for CPOs to adjust their prices based on different times of the day or week.

Back to contents

The CPO of the future.

The first, entrepreneurial CPOs were indeed ahead of the curve in many ways, and while usually it is the early movers who gain competitive advantage, that has not necessarily been the case in EV charging.

It might even be argued that those who came first are now at a disadvantage, especially those with legacy technology that needs to be updated to comply with the latest Open Charge Point Interface (OCPI) regulations.

Replace and comply.

Sustainable product design is essential, as is working with technology partners who can upgrade or retrofit legacy systems without full replacements. If replacement is necessary, Evolt Charging offers contactless models or 25kW DC eVolve chargers that fit into existing civil works with minimal changes. The 25kW DC eVolve only requires a 27Kva power supply, allowing a seamless swap for 22kW dual outlet AC chargers. Transitioning to contactless aligns chargers with regulations requiring all public chargers above 8kW to be contactless-enabled.

Powershift.

CPOs need to be careful not to be caught up in a race to have the highest power output chargers on the market. Rather than focusing solely on ultra-high-output units they should prioritise installing a greater number of adequately powered chargers. This approach maximises site efficiency and serves more vehicles. Education is vital to shift focus from peak charger output to **average power draw**, which reflects real-world usage. Current EV charging curves often peak briefly before declining as the battery's state of charge increases. Encouraging vehicle OEMs to flatten these curves allows for sustained high-power draw throughout the charge, optimising infrastructure use. With current battery technology, chargers delivering 150-200kW are financially sound and future-proof for most passenger cars.

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Back to contents

The CPO of the future cont.

The challenge of getting power to rural communities where the supply is already stretched to meet current demand has not yet been adequately addressed, neither has the issue of capacity when more chargers are added to the Grid. Lack of capacity, however, and the availability of power will still determine both the pace of the future roll-out and where charging points will be sited.

Dynamic Load Management.

This is where the smart CPOs of the future will be looking at the role of Dynamic Load Management (DLM) to optimise the distribution of energy used between chargers and enable them to install additional rapid and ultra-rapid charging units at existing sites without the need to secure additional energy capacity. It isn't always about 'bigger is better' – it's about intelligent analysis and management of available load through DLM, on-site generation, and storage to meet demand.

DLM will also support a better customer experience: charging speeds will be maximised, waiting times will be reduced, and the overall customer experience improved. CPOs will want to avoid drivers having to wait, or worse driving off to a competitor site. DLM, which is available on both AC and DC chargers, will support CPOs in unlocking the potential of existing sites without the pain and cost of securing additional power from the Grid.

DLM in action.

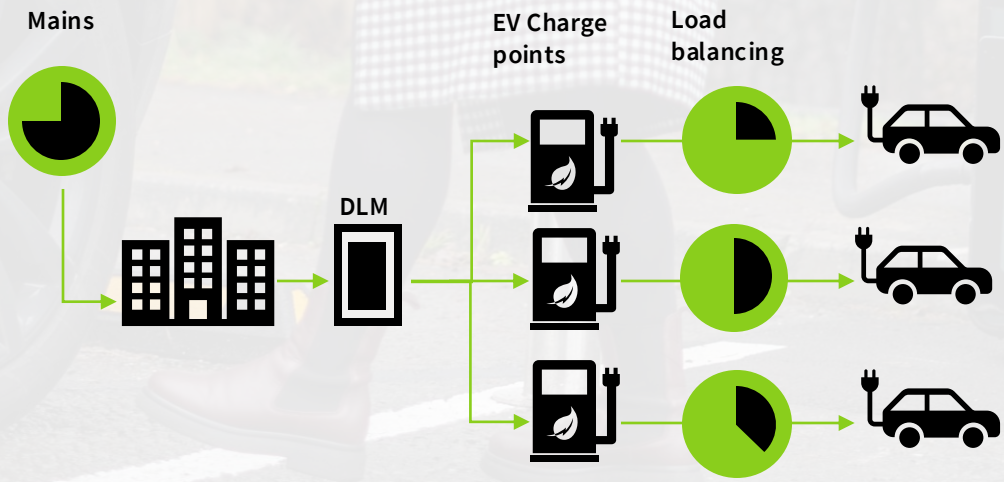


Image credit: Westmorland Family, Cairn Lodge Services.

Back to contents

The CPO of the future cont.

DLM is certainly one way of future CPOs overcoming the DNO impasse and/or capacity issues. Other technologies will also help. Battery storage, and the use of hydrogen and flywheel technology are all helping to resolve the capacity issue, albeit they are possibly seen as short-term fixes to a longer-term challenge. National Highways announced plans three years ago to invest in what were essentially giant battery packs at service stations where Grid supply was not enough for rapid charging infrastructure. The idea is to store energy in quiet periods, so it is readily available at busy times. Around 20 of these Energy Storage Systems (ESS) are planned to an investment of £11m.

Bridge the Grid 'gap'.

Cairn Lodge Services, part of the Westmorland family, was one of the first examples of a site using a hydrogen-powered generator connected to the EV chargers to bridge the energy Grid 'gap' and supplement the existing supply. The introduction of hydrogen power is one of a series of novel solutions to accelerate the roll-out of EV charging infrastructure until the distribution of electricity can catch up with the demand from new EV charging sites.

Perhaps not surprisingly, there has been a surge in installations at service stations and petrol forecourts. The 'traditional' fossil-fuel providers – Shell, BP, Total etc – have, in many ways, returned to their roots of acquiring businesses through a strategy of Mergers and Acquisitions and building hubs on sites that are well-known to motorists and have shops, cafes and other facilities already built. BP Pulse (previously BP Chargemaster) and Shell Recharge have been especially active in this space, and so too have businesses like Rontec and Motor Fuel Group (MFG EV Power) which own and operate hundreds of forecourts nationwide.

Image credit: Westmorland Family, Cairn Lodge Services.

Back to contents

The CPO of the future cont.

Market trends.

Other CPOs whose brands now feature on the UK major roads network include Applegreen, GRIDSERVE (previously The Electric Highway and the firm that claimed the first dedicated 'electric forecourt'), IONITY, and Westmorland Charging. EG Group, which partnered with Tesla at the end of 2023, is intending to roll out its EV Point brand across dozens of ASDA Express sites, and many other retailers are executing similar plans.[8] Further consolidation in the market is likely and follows a current trend. Many more names will disappear, go out of business, or be swallowed up by their larger competitors.

Shaping CPOs.

That does not mean, however, that there won't be a number of new entrants to the market. There will, only some of them are likely to look very different from our current view of what a CPO should look like. Investment-only models are already coming into play; overseas institutions and family offices with money to invest see the opportunity of partnering with turnkey solutions providers to install, operate and maintain the equipment required, while they bank the revenues generated. They operate as a brand but little else. It is realistic to think that within the next five years, we may also see the first franchise models appearing, much as we have seen with fast food restaurants, cleaning franchises and gyms.

Size, influence and/or financial muscle will all play an important part in shaping the CPO landscape of the future along with the speed with which land or planning can be acquired and legal matters finalised. Planning laws vary across the country and regulations can be further complicated by the age, heritage and access rights across the property or land, adding further complexity to an already challenging path for the CPOs to navigate.

8. Public Charge Point Regulations 2023 – published 24 November 2023

Back to contents

The CPO of the future cont.

Stay ahead.

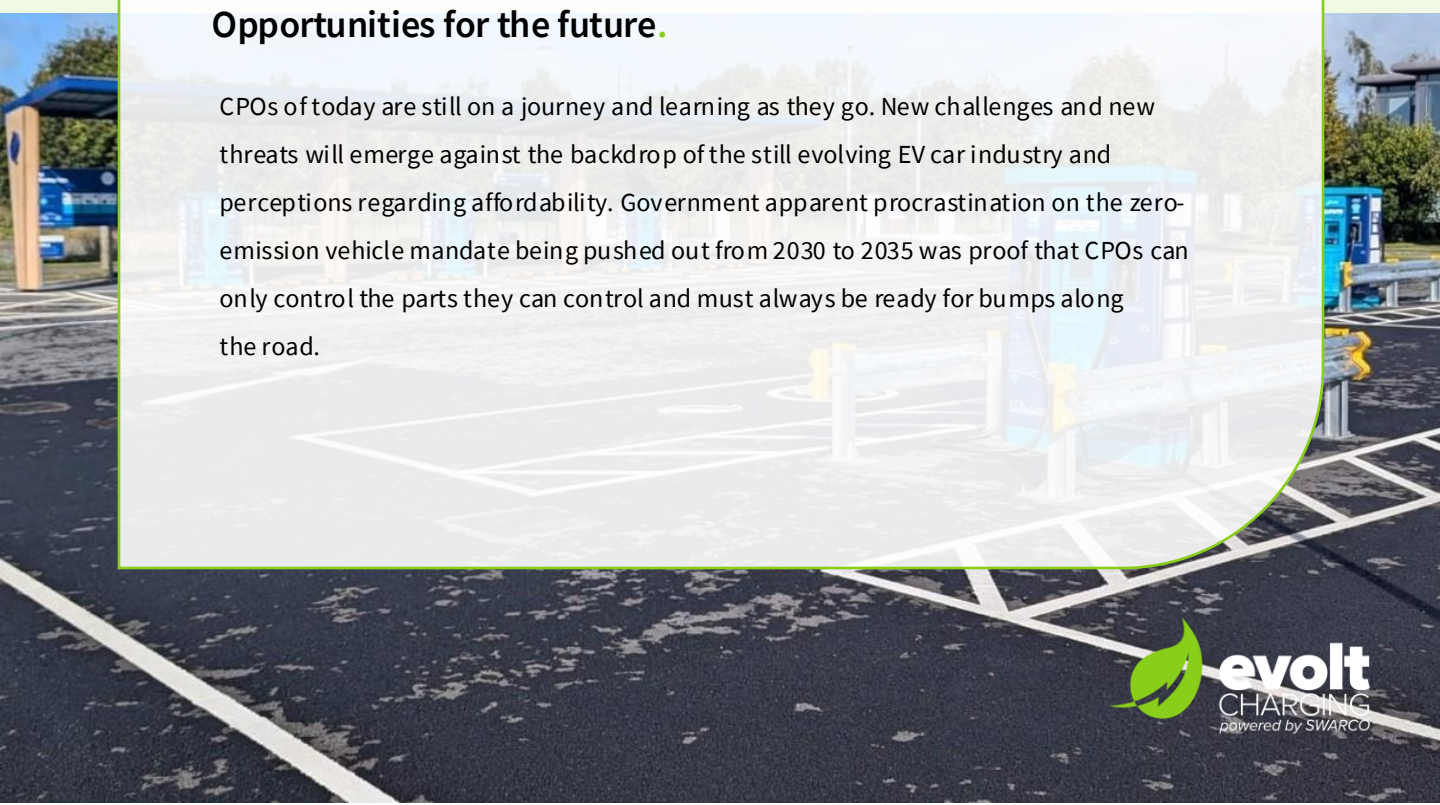
Buying the hardware is not the challenge; there is plenty of choice, and plenty of new and complementary technologies being developed such as Dynamic Load Management systems to optimise the energy available. But this relies on getting the hardware installed and connected to the Grid in the first place, and that can be a headache. There are already examples of certain CPOs leapfrogging others in their applications to get online and their meters installed, to the frustration of others who are waiting patiently in line.

Your return on investment.

The point is a simple one: once the equipment is installed and the electricity is flowing, then so too is the cash and a return on investment. The equation is also straightforward. More electric vehicles on the road demanding more power means utilisation rates of 80% or more, especially for those sites in prime locations. Building a quality brand, and one that is known for giving drivers a better charging experience and looking after its customers, will also determine which CPOs will be successful in the future. CPOs will similarly need to choose their stakeholder partners carefully, whether that's a partner to provide the technology, to install or maintain it, or deliver an end-to-end service to include a reliable back-office platform to manage all future administration.

Opportunities for the future.

CPOs of today are still on a journey and learning as they go. New challenges and new threats will emerge against the backdrop of the still evolving EV car industry and perceptions regarding affordability. Government apparent procrastination on the zero-emission vehicle mandate being pushed out from 2030 to 2035 was proof that CPOs can only control the parts they can control and must always be ready for bumps along the road.



Back to contents

About Evolt Charging.

Evolt Charging provides electric vehicle (EV) charging infrastructure along with supporting systems and services to multiple markets, including Charge Point Operators, Local Authorities, fleet, eBus and eTruck, and the private sector. The business offers full turnkey solutions, spanning consulting, design, project management, hardware, installation, software, ongoing maintenance & service and customer service. Evolt Charging currently has more than 13,000+ commercial charging points installed across the UK, ranging from AC to ultra-rapid DC chargers, and its own back-office platform, Evolt Network.

Evolt Charging is a brand of SWARCO Smart Charging Ltd, which is part of SWARCO – an international group providing the complete range of products, systems, services and solutions for road safety and intelligent traffic management to support the mobility needs of society and lower transport-related emissions. SWARCO Smart Charging was itself the brand tasked with operating ChargePlace Scotland on behalf of the Scottish Government. For further information please visit our website: www.evoltcharging.co.uk

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