



Electric vehicle charging: unlocking the business models

OCTOBER 2021

For what comes next
tltsolicitors.com



CORNWALL INSIGHT
CREATING CLARITY

Contents

Acknowledgments	1	Chapter 3: Funding the rollout	15
Foreword	2	Unleashing debt funding	15
Executive summary	3	Equity investment	16
Chapter 1: Introducing the business models	5	Chapter 4: Future opportunities	17
Setting the scene	5	Unlocking value from chargers	17
Public rapid charging	7	Site-wide decarbonisation	18
Destination charging	9	Chapter 5: Concluding remarks	19
Fleet electrification	10	About Cornwall Insight	20
Home and on-street charging	12	About TLT	21
Chapter 2: Finding the value	13		
Utilisation rates	13		
Consumer behaviour	14		
‘Green’ charging	14		

Acknowledgments

For this report, we interviewed leading stakeholders in the EV charging space. We would like to thank all the individuals and companies who contributed to this report for sharing their insights.

Millie Pardoe, Business Development Associate at Pivot Power

Ian Johnston, CEO, Osprey Charging Network (formerly Engenie)

Nick Woolley, CEO and Co-Founder, ev.energy

Daniel Hayes, Project Manager, Zemo Partnership

Alec Thomson, Project Manager, Zemo Partnership

Niall Riddell, Co-Founder and Director, Paua Tech

Anna Wieckowska, Energy Commercial Lead, Intelligent Fleet Decarbonisation, Hitachi

James Stevenson, Intelligent Fleet Decarbonisation Lead, Hitachi

Simon Pickett, EV Project Development Manager, SSE Energy Solutions

James McKemey, Head of Insights, PodPoint

Arun Anand, Founder CEO, Electric Miles

Jose Contreras, Head of UK and Group Finance, Gamma Energy

Jacob Lloyd, Director - Energy Lead, NatWest

Reza Shaybani, Co-Founder and CEO, EV Network

Stephen Allen, Property Director, Punch Pubs

Edmund Ponsonby, Portfolio Commercial Manager, Zenobe

Maria Connolly, Head of Clean Energy & Real Estate, TLT

Kay Hobbs, Partner – Corporate Renewables, TLT

Gary Roscoe, Partner – Banking and Finance, TLT

Stuart Urquhart, Legal Director – Commercial, TLT

Nick Pincott, Partner – Projects, Infrastructure and Construction, TLT

Kevin Murphy, Partner – Real Estate, TLT

Andrew Ryan, Partner – Real Estate, TLT

Joanna Hamilton, Legal Director – Real Estate, TLT

Foreword

We have never been more aware of the global impact of climate change and the challenges we face on our journey to net zero. In August 2021, the Intergovernmental Panel on Climate Change (IPCC) published its latest report laying out what needs to be done to mitigate the damage and reach the ambitious target of net zero emissions. The transition to renewable energy and electric vehicles (EVs) is an essential part of that journey and, while we are making good progress, we need to see significant and rapid growth in the charging infrastructure market and the business models that support it.

Motorists are proving increasingly keen to go green - according to the [Society of Motor Manufacturers and Traders \(SMMT\)](#), sales of battery electric vehicles in September 2021 almost equalled total sales for the whole of 2019 - and recent fuel shortages across the UK have undoubtedly driven many more to consider switching to an EV. However, concerns remain over the charging infrastructure available and whether it will meet the needs of EV drivers as more people make the switch.

To date, much of the expectation has fallen on local authorities to deliver public electric charging points but we believe that it will take a collaborative effort to boost the charging infrastructure available across the UK. Organisations and individuals across the UK must commit to working together to drive key sustainability goals forward and partnerships between local authorities, businesses, investors and developers, alongside the development of new funding models, will be crucial to ensuring the right EV charging infrastructure is in place.



Organisations and individuals across the UK must commit to working together to drive key sustainability goals forward...

At TLT, we see it as our responsibility as one of the leading advisors in the clean energy sector to inspire positive and sustainable transformation in our business, including through the introduction of new sustainable employee benefits such as a Green Car Leasing scheme. Through collaboration with like-minded organisations working to reduce carbon emissions, including Forest Green Rovers, The Chancery Lane Project and Action Net Zero, we have seen first-hand the difference that collaboration and bold thinking can have on the planet.



Maria Connolly

Head of Real Estate & Clean Energy

T +44 (0)333 006 0109

E maria.connolly@TLTsolicitors.com

Executive summary

The UK's 2030 petrol and diesel car sales ban is igniting the charging infrastructure race. The transition from internal combustion engines (ICEs) to electric vehicles (EVs) is now well underway and the market is exploring the potential revenue streams of EV charging infrastructure. There are numerous business models which are opening up revenue streams for developers and investors and with technology set to enable the optimisation of charge points for flexibility, this market is gearing up for significant growth.

However, while innovative deals and partnerships such as Triodos-Pod Point, Abundance-Iduna, and EV Networks-bp pulse have helped to establish a way forward, there are still some challenges ahead related to technology, regulation, and consumer behaviour and the discussion on the market readiness of EV charging infrastructure is ongoing.

In this report we address some of those challenges, discuss how we can break down the funding barriers and examine the trends driving the market.

Key findings

Rapid charging is an essential and growing part of the market

- Location – and by default utilisation rates – are central to the business case
- Expected to reach a plateau in terms of charging speed and cost

Destination charging is two-fold, with daily use and recreation or holiday charging

- The growth in the development of charging infrastructure at supermarkets, gyms, shopping centres, is expected to continue apace
- Significantly more guaranteed revenue streams could unlock funding channels

Fleets need to make a substantial move to electrification

- Challenges remain for the separation of domestic and commercial loads
- Businesses can electrify their fleets through pay-on-use business models
- Multi-tariff charge points can support businesses net zero strategy and supply-chain decarbonisation
- Grid constraints, especially in Northern Ireland (NI), suggest an important role for [green] hydrogen in decarbonising the largest commercial vehicles

Home charging expected to become primary source of charging

- To ensure consumer confidence, access to rapid (e.g. electric forecourts) and slow (e.g. overnight) charging in and around the home is crucial
- There will be an equally important role for on-street/ community charging for urban residents with limited space and/or lower socio-economic groups

The charging infrastructure ecosystem is complex

- There has been a fragmentation of roles beyond the early movers who continue to provide an end-to-end solution
 - Land owners, developers, charge point operators (CPOs) and e-mobility service providers entering the market focus on one aspect of the supply-chain
- With over 70 CPOs in the market, the space lends itself to consolidation activity and to a more proactive role of financial players
- In the medium to long-term, we can forecast significant growth in the secondary market, with a shift from a developer-led to an investor-led EV charging ecosystem
- Once the market reaches scale and critical mass, EV charging will mature into an infrastructure asset class in its own right, therefore attracting institutional capital

However, relative to other clean energy technologies, charging infrastructure is still considered a high-risk investment

- Debt funding is challenging where there are no stable cashflows to support lending
- Grants (e.g. Innovate UK) play an important role, but are limited
- Options include match funding with public money, established offtakers and co-located assets

Expectations are that, once a pioneering project finance transaction able to satisfy lenders' risk appetite is sealed, investment will ramp up quickly.

Chapter 1: Introducing the business models

Setting the scene

EVs and the associated EV charging infrastructure needed to power them are still at an early stage of market development but both areas are growing and maturing rapidly. “The EV market is more buoyant than ever,” comments Maria Connolly, Head of Clean Energy and Real Estate at TLT. “Bringing forward the ban on the sale of new petrol and diesel cars and a supportive policy landscape is driving the electrification agenda. Over the past year we’ve seen more EVs on the road and that has increased demand for EV charging infrastructure.”

According to ZapMap, there has been an increase of 220% in the number of public chargers between the end of 2016 and 2020¹. This in part has been driven by sustained growth in the number of on-street charging options provided by local authorities who have been able to access schemes and grants to encourage EV take up in their areas and meet policy targets (Figure 1).



The EV market is more buoyant than ever.

Maria Connolly, Head of Clean Energy and Real Estate

Figure 1: EV charging schemes

- Earlier this year, the Transport Secretary **announced £20m funding** to increase the number of EV charge points in towns and cities. It confirmed that the **on-street residential charge point scheme (ORCS)** will run 2021–22, with support for a further circa 4,000 charge points to follow suit.
- **The Electric Vehicle Homecharge Scheme (EVHS)**, which provides up to £350 towards a charge point, is set to continue next year and be expanded to target people in rented and leasehold accommodation.
- **The Workplace Charging Scheme (WCS)** has been opened up to small to medium enterprises (SMEs) and the charity sector.



¹ How many charge points are there in the UK 2021 (zap-map.com)

What is more, the government has consulted on introducing a zero-emission vehicle (ZEV) mandate as recommended by the Climate Change Committee, alongside a CO₂ regulation². Under the plans, automakers would be required to sell a certain number of ZEVs including electric cars, with the exact number to be based on the automaker's overall sales. Vehicle mandates aim to stimulate EV adoption ahead of the 2030 ban on sales of new petrol and diesel vehicles and therefore demand and use of charging infrastructure. If this mandate comes into play, this could provide that much needed confidence and comfort for users and investors and further stimulate the market.



Charging hubs will also be an important part of the UK's EV infrastructure

In addition, Connolly points to an increase in the number of corporate organisations providing EV charging infrastructure as part of their wider sustainability strategies as a growth area alongside home charging, destination charging and wider fleet infrastructure. Indeed, fleet electrification could be a key driver for the Northern Ireland market where public funds could be more easily deployed into the development of infrastructure to support green transport.

Charging hubs will also be an important part of the UK's EV infrastructure. While some of these may be simple charge and go hubs, some will also incorporate retail outlets and be more aligned to the forecourts that we have at the moment. The more sophisticated of these are likely to feature on-site generation – solar and battery – to provide the renewable energy needed to charge green.

However, for charging infrastructure to be deployed at scale education and collaboration are key. “You need to have that balance between EV drivers and EV infrastructure and for that to happen there needs to be more education to debunk some of the myths around EV ownership,” comments Connolly. There also needs to be real collaboration across the sector and with businesses and communities to ensure that “the right infrastructure is being developed and that it's accessible.”

Northern Ireland

EV infrastructure in Northern Ireland is at a very different stage of development, with lower levels of deployment and uncertain policy making this a very nascent market. “We're subject to the same 2030 electrification target but a huge uptick in EV infrastructure is needed to drive consumer confidence,” comments Andrew Ryan, Real Estate Partner at TLT.



337

The number of public charge points has remained static at 337 with no new investment since 2012/2013

Northern Ireland started off with promising levels of public charging infrastructure but this early deployment stalled. According to Ryan, “the number of public charge points has remained static at 337 with no new investment since 2012/2013, and without new deployment you're not going to get EV uptake.” Kevin Murphy, Real Estate Partner at TLT, adds: “While there is some movement on public funding for EV infrastructure – including funding available to NI councils to cover 75% of the cost of installing public charge points for residents with no access to private parking – so far no councils in NI have applied for the scheme.”

One of the biggest blockers to large scale deployment of EV infrastructure is grid capacity. “Grid capacity has been an issue which isn't just restricted to EV infrastructure – on-shore wind went through similar challenges in terms of project location and grid capacity in those locations,” comments Kevin Murphy, Real Estate Partner at TLT. “While there was some investment in grid to make those projects feasible, the grid issues are still there and considerable additional investment is needed to enable EV infrastructure.”

Even with investment, grid constraint isn't something which will be completely overcome and the development of EV infrastructure needs to incorporate technical solutions which will help to manage this. Ryan comments: “Part of the solution is developing technology. For example, on a new development where you have people wanting to charge their vehicles overnight, the technology is there to split the timing so the grid isn't overloaded.”

Another question is who pays for the development of the infrastructure. At the moment the burden of cost for what can be expensive grid upgrades sits with the developer and it may be that new legislation is required so socialise those costs.

Lastly the split of population between rural and cities presents its own challenges: grid and access to charging infrastructure needs to be considered. This may be where other fuel sources such as green hydrogen could play an important role. “How electrification and green hydrogen dovetail will be an important consideration,” suggests Ryan.

The hope is that the new Northern Ireland Energy Strategy will focus the market with government investment in EV infrastructure outlined across NI – in remote areas and cities – which will then enable the journey to net zero and vehicle electrification. Murphy, explains: “We're relying on the new NI energy strategy to outline how government are going to invest in the infrastructure for EVs across the whole of NI”.

² Green Paper on a New Road Vehicle CO₂ Emissions Regulatory Framework for the United Kingdom (publishing.service.gov.uk)

Scotland

Driven by ambitious climate change targets, the Scottish Government has put its weight behind the development of EV infrastructure in Scotland. They've pushed investment into local authorities and, via Transport Scotland, have looked to develop a national network of public EV charge points ahead of consumer demand. "Through ChargePlace Scotland, private CPO's and giving national grants to local authorities, the Scottish Government has been able to roll out a national network," comments Joanna Hamilton, Real Estate Legal Director at TLT.



Encouraging deployment of private capital through partnerships with public sector will support further development of charging infrastructure.

Joanna Hamilton, Real Estate Legal Director at TLT

However, this has been achieved against a backdrop of regulation which is not devolved – it's still part of the wider UK government legislation. While this could be a limiting factor, innovation is happening. Hamilton points to some of the new innovative approaches including the partnership between the Scottish Government and SP Energy Networks

in relation to 'Project PACE' and Scottish and Southern Electricity Networks' 'Electric A9' project, which will create multiple EV charging hubs along the A9 motorway. Innovation needs to go beyond the grid: "It's now about looking at the next stage," suggests Hamilton.

In addition, while Scotland may be ahead of the curve in terms of the number of charge points per capita, it faces similar issues to Northern Ireland in terms of the rural nature of its population. At the moment most of the development of EV infrastructure and the associated innovations have been focused in the major cities such as Glasgow. To achieve the required measure of consumer confidence needed to increase EV ownership, Hamilton says that "the perception that you are going to run out of charge" needs to be addressed in the more rural areas. "How can we take those central innovations and push them out more widely?" asks Hamilton. "That is the next step."

While ChargePlace Scotland was important for early uptake, it mainly focused on city locations. To enable that wider deployment, private sector financing is needed. Hamilton comments: "Encouraging deployment of private capital through partnerships with public sector will support further development of charging infrastructure."

Scotland has a solid base from which to further build charging infrastructure. However, collaboration and knowledge sharing between private and public sector and capturing those lessons learnt are cited as key for future development alongside looking at some of the regulation such as planning to make sure it is fit for purpose.

"The next step is to take the ChargePlace Scotland model and build on it, make it more commercially viable, expand into rural areas in a truly consumer focus approach," says Hamilton".

Public rapid charging: "land grabbing in the short term"

Public rapid charging facilities are typically found across UK motorways and major A roads as well as dedicated hubs. A position paper from the government, published in May 2020, estimated that a driver is never more than 25 miles away from a rapid charge point located on the strategic road network. Still, as part of its consultation on ending the sale of new petrol, diesel and hybrid cars and vans³, the government acknowledged that public concerns about charger availability and reliability remain. As such, there has been a market and policy push to improve this. Last year the government noted in its Ten Point Plan that a £1.3bn fund has been allocated to the rollout of public electric vehicle charge points in homes, streets and on motorways across England⁴. However, at least £500m of this had been announced in the March Budget⁵.



25

A driver is never more than 25 miles away from a rapid charge point located on the strategic road network

3 Outcome and response to ending the sale of new petrol, diesel and hybrid cars and vans – GOV.UK (www.gov.uk)

4 The ten point plan for a green industrial revolution – GOV.UK (www.gov.uk)

5 Budget 2020 – GOV.UK (www.gov.uk)

Public rapid charging is referred to as “the most sustainable business model” by Niall Riddell, Co-Founder and Director at Paua Tech. Reza Shaybani, Co-Founder and CEO at EV Network agrees that “the rapid and the ultra-rapid chargers are the two most promising [business models].” Rapid charging infrastructure has seen notable investment and deployment over the past year with investments into companies like InstaVolt and commitments from strategic site owners such as motorway service area owner MFG driving growth in the sector. Looking at data from Zap Map, there has been an increase of 155% in rapid and ultra-rapid charge points installed since 2018, with these representing nearly one-fifth (circa 18%) of all public charge points.

Figure 2: ZapMap charging point data

- At 22 September 2021, there were 44,346 connectors spread over 16,282 locations – more than petrol stations
 - Rapid charges comprise 11,004 connectors spread over 3,078 locations
- 30.2% of charging stations are located in London
- Ubitricity has the largest market share of UK charging points (14.3%), followed by Pod Point (12.5%), bp pulse (11.0%) and ChargePlace Scotland (7.4%)

Interviewees view utilisation as “make or break”, especially for the rapid and ultra-rapid models. “At this moment I don’t see any Charge Point Operator (CPO) making a huge amount of money, but the future will be very different, explains Shaybani. Jacob Lloyd, Director, Energy Lead at NatWest agrees that the challenge for rapid charging is revenue generation. Lloyd observes the priority as “land-grabbing in the short-term to roll out the infrastructure as quickly as possible.” In fact the race to secure the best sites is so

competitive that Gary Roscoe, Banking and Finance Partner at TLT, compares the development of charging infrastructure to rooftop solar and makes comment that “you’re going to have multiple sites, so you need a degree of pragmatism when you’re doing any due diligence for that project.” This approach is expected to guarantee, and ultimately maximise, future income and profitability.



The rapid and the ultra-rapid chargers are the two most promising [business models].

Reza Shaybani, Co-Founder and CEO at EV Network

Interviewees support these sentiments, noting the criticality of location and reliability. Shaybani comments “the need is now for larger sites, more chargers, and more high-powered chargers in strategic locations... mimicking petrol stations.” Essentially, this “mass disruption” is necessary to “make a dent in the infrastructure delivery” and provide consumer confidence that a high-powered charger is within a similar reach of “where they used to go to fill up their cars with fuel.” Whereas Simon Pickett, EV Project Development Manager at SSE Energy Solutions comments that “rapid and ultra rapid charging hubs will be also increasingly essential to enable in particular decarbonisation of fleets who need quick and reliable charging not only at MSAs [motorway service areas] but also in more urban areas.”

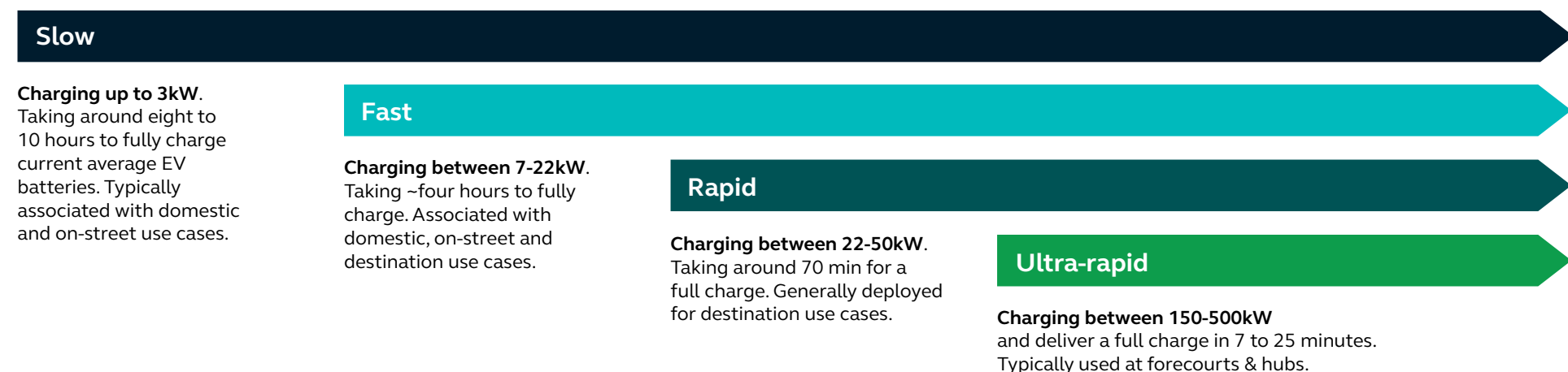


30.2%

30.2% of charging stations are located in London

While the rollout of rapid charge points continues to increase, James McKemey, Head of Insights at Pod Point explains that “faster isn’t always better, but it is more expensive.” What is more, Pickett foresees a “plateau in terms of the cost versus speed question”. Similarly, James Stevenson Intelligent Fleet Decarbonisation Lead at Hitachi explains that with rapid public charging “you lose the ability to leave your vehicle for an indeterminate amount of time. You have to vacate the space as soon as you unplug.” In the context of motorway charging, charging on main transport routes or even rapid turnaround hubs for certain types of fleet vehicles (such as delivery drivers optimising charging speed) may become such an important factor that, looking ahead, Stevenson expects incentives for good behaviour or even penalties to feature in this this charging model and explains “you need to move, there’s a queue of people.” However, where the objective is to increase dwell time, charging speed may not be such a determining factor.

Figure 3. Electric vehicle charging infrastructure overview



Source: Cornwall Insight

Destination charging: “a nascent industry”

Destination charging can be categorised as daily use charging or recreational and holiday charging and can have benefits for both the host business and for the people accessing the charge point. Currently, most of the activity has been in the development of daily use charging (Figure 4) and while considerable growth is still expected in this area we are also likely to see a steep uptick in recreational and holiday charging in coming months.

As with public rapid charging, site selection and site configuration are an important consideration for land owners/hosts, developers and/or operators seeking to identify sites with the greatest demand, especially as given the range of potential destination use cases under this segment, utilisation and business cases are likely to dramatically vary. Indeed, there were differing views from interviewees on the role and future of destination charging, ranging from necessarily ubiquitous and nascent to outdated – these views differed according to the destination location activity.

When considering destination charging, it is important to note that expected utilisation may not be the primary contributor to the business model or commercial decision to provide charging infrastructure for the host business. For example, a hotel site may look to provide access to destination charging capabilities for its clientele to deliver an added value service in the near-term and meet an anticipated hygiene factor longer term.



[Destination charging is] a bit like Wi-Fi. At some point if your business doesn't have it people will go somewhere else.

Niall Riddell, Co-Founder and Director at Paua Tech

Whereas for some supermarkets it may be “more about capturing people for several hours and accepting that a slower [fast] charge point is sufficient which obviously costs a lot less money to install, so you don't need to make as much money from it in order to make it a viable business model,” explains Stuart Urquhart, Commercial Legal Director at TLT. On this type of destination charging model, it is more about larger corporates using their balance sheet and using their capex to roll out those transition programmes.

However, it is very based a location-based business case. Stephen Allen, Property Director at Punch Pubs, observes that “the model that we're seeing developers wanting to roll out for EV is about having lots of locations right across the country.” Conversely, due to the nature and frequency of travel to come for some destination locations, Jacob Lloyd (NatWest) notes that smaller single owned business hotels and other less frequent destinations are “less incentivised than some of the other subsets of charging.”

On attracting customers, Riddell considers destination charging as “a bit like Wi-Fi. At some point if your business doesn’t have it people will go somewhere else.” Likewise, Allen views a role for EVs to “make the pub really relevant.” Allen also observed that Punch Pubs’ customers and guests are paying greater attention to how companies are providing services to support environmental, social and governance (ESG) considerations. Whereas Lloyd notes the intention to incentivise footfall, and therefore customer spend, at destination retailers, in the near-term this could mean that retail parks and supermarkets offer customers free usage of charge points.

Still, Pickett considers “we should see less funding barriers [for destination charge points] as they will provide notable revenue at scale” in his view. He adds that “the installation of AC charging will continue to boom across supermarkets, gyms, shopping centre and high street locations.” Likewise, McKemey believes “destination is all to play for in terms of business models.”

Fleet electrification: “driving transport decarbonisation”

The opportunity in charge points for fleets is their high and relatively more certain rate of utilisation. Government tax schemes and corporate ESG goals are increasing the interest in corporate EV investments, with fleet sales representing circa 70% of all new EV sales in 2020. As Ian Johnston, CEO at Osprey Charging Network, notes “tax incentives that are there for the company car driver are significant.”

While tax incentives may support the take-up of EVs in the context of fleet, Pickett believes that fleets “should be supported [more]” as there is data indicating that fleets are driving the transport decarbonisation. The need for further incentives for fleets can be related to the perceived lack of business opportunities for CPOs in this segment.

Figure 4: Supermarket charging partnerships

- As part of its national rollout of charge points, Tesco **partnered with PodPoint and Volkswagen.**
- Last year, Aldi and NewMotion agreed a three-year partnership to install circa 140 EV charge points at the supermarket’s sites.
- Morrisons partnered with company EQUANS (an autonomous business within ENGIE Group) and its GeniePoint network to install over 200 charge points at its stores across the UK.

Commercial drivers have very different needs from private consumers and, like destination charging, fleet charging is not a homogenous category. Several interviewees expect workplace charging to continue to play a role for operational and grey fleets. Anna Wieckowska, Energy Commercial Lead, Intelligent Fleet Decarbonisation explains that “for fleets who use home charging there is a need to be able to separate the commercial loads from domestic loads to enable drivers to claim on expenses.” A Balancing and Settlement Code (BSC) modification that would have enabled this was withdrawn earlier this year⁶. However, as Shaybani explains “if the public infrastructure for ultra-fast charging is available and accessible, anybody [fleets included] can charge their vehicle.”



Fleets using public charging networks do not yet have the certainty of charge needed and can suffer damage to brand reputation if they are deemed to be hogging charge points.

James Stevenson Intelligent Fleet Decarbonisation Lead at Hitachi.

Figure 5: Pay on use model for fleets

Several businesses have utilised ‘pay-on-use’ funding models as a means to electrify their fleets.

Octopus Investments **launched a pay-on-use product** with Heathrow Airport in October 2018.

- An end-of-contract ownership model, but other models could involve a traditional leasing structure where the vehicle is handed back at the end of term.
- Typical pence-per-mile contract terms will be five or six years for cars and vans, rising to 15 for buses.

According to Stevenson, business models for fleet that are proving successful include multi-use charge points. What is more, “providing points for your supply chain is all part of your net zero strategy”. Alternatively, Lloyd discusses the potential of “pay per mile” usage models for fleets where corporates are reluctant, or unable, to afford an outright solution. Daniel Hayes, Project Manager at Zemo Partnership views some of the most promising business models as “those that encompass all of the infrastructure or upgrade costs, and the energy costs all in one package.” Hayes explains that it allows fleets to guarantee “100% daily charging” if needed, while providing “lots of certainty” and simplicity for the operator for the duration of the contract or project.

⁶ P379 Enabling Consumers to Buy and Sell Electricity From/To Multiple Providers Through Meter Splitting aimed to enable individual consumers to be supplied by multiple trading parties through a , wsingle boundary point settlement meter.

On the electrification of heavy goods vehicles (HGVs), Lloyd raised the issue around the suitability of electricity for haulage compared to alternative transport decarbonisation options, notably green hydrogen. Given the energy density of hydrogen at a molecular level, there is a better pay off with weight compared to an EV battery, particularly for vehicles in the HGV category⁷. Ryan, offers his perspective on hydrogen in Northern Ireland (NI). He explains “it [hydrogen]

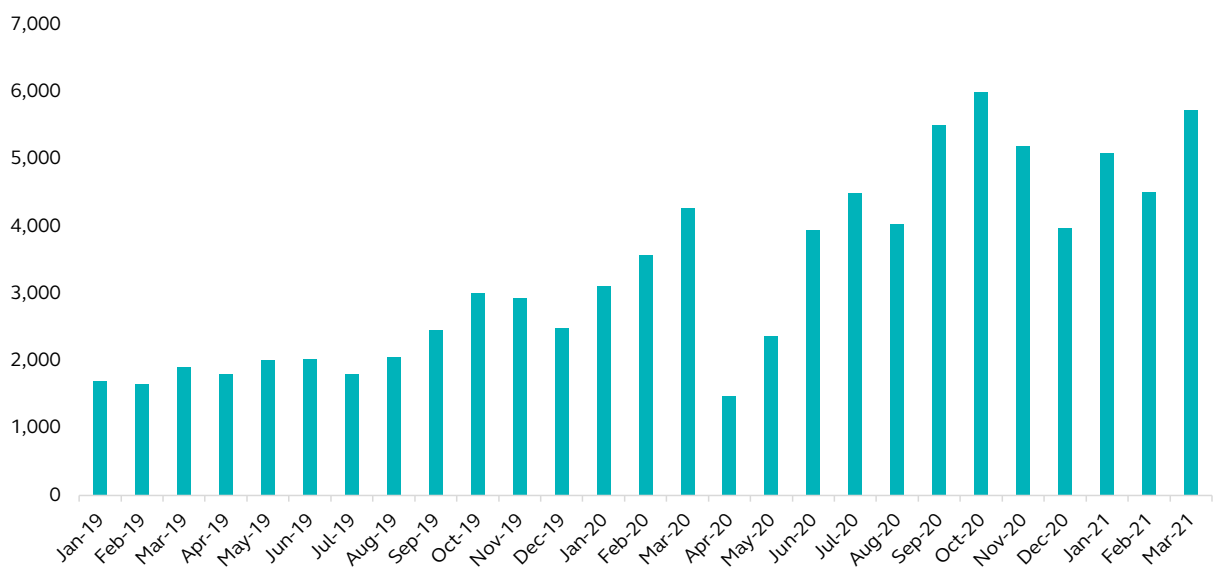
has to be part of the solution because those large-scale grid issues are not going to get hugely solved in the next 10 years”. Ryan foresees “a split between the private vehicles and the commercial fleet where larger parts of the commercial fleet are ultimately powered by hydrogen rather than electricity”.

In its latest Energy Strategy bulletin, the NI Department for the Economy (DfE) notes a pilot programme that funded three hydrogen fuel cell electric buses which entered service

in December 2020. Similarly, the role of green hydrogen in starting the decarbonisation of heavier, longer distance vehicles is illustrated as part of a world leading project to deploy electrolysis at waste water treatment sites⁸. Further details are expected in the DfE’s final Energy Strategy due to be published in November 2021.

7 Hydrogen fuel cells contain a higher energy per unit mass compared to lithium batteries.
8 Energy Strategy e-bulletin 15 | Department for the Economy (economy-ni.gov.uk)

Figure 6: Home charging installations funded through the EVHS



Source: Adapted from the [Department for Transport](#)

Home and on-street charging: “the primary source of charging”

At 1 July 2021 the Electric Vehicle Homecharge Scheme (EVHS) had funded the installation of 157,652 domestic charging devices since 2013. Figure 6 shows that the EVHS has continued to support the increasing rollout of charging devices across homes notably over the past year or so. It is no surprise then that home charging segment considered as the most reliable and therefore principal way to charge.



157,652

At 1 July 2021 the Electric Vehicle Homecharge Scheme (EVHS) had funded the installation of 157,652 domestic charging devices since 2013

Stevenson views home charging as “the primary source of charging” for many with workplace or public charge points coming second. Nick Woolley, CEO and Co-Founder at ev.energy, agrees noting that “on our platform we see 80–90% of charging happening [at or around the home]. I don’t actually see that changing because home charging is incredibly convenient. It’s the place where you can always plug in, and because most vehicles are often left to charge overnight they have plenty of time to fully re-charge, and access the cheapest and greenest energy on the grid.”. On

accessing home chargers, Woolley presented an interesting model. He explains “we’re looking at opportunities where, when you buy your first charger at home you can also install a charger at your relatives’ house...I see that kind of model becoming more important”. Having access to home charging at multiple locations enables drivers to overcome range anxiety, by ensuring they are able to charge at their most popular destinations.



...we see 80–90% of charging happening [at or around the home].

Nick Woolley, CEO and Co-Founder, ev.energy

Still, there is a notable disparity between home charging for those living outside of city centres and those residing in densely populated urban areas where there is limited space. For people without their own driveway, there is a need for charge points located adjacent to these properties. Pickett considers it possible for a proportion of home chargers to be “shared access”. He explains that this could be “either through apps or local groups.” Pickett also refers to the recent changes to the EVHS (Figure 1), noting an opportunity for people in rented and leasehold accommodation to access EVs. On a related note, Stevenson describes community charging business models as “embryonic”, noting that “reservations are key if you don’t want to keep driving around until there’s a spot free, so you need to be able to reserve.”

The challenges faced by local authorities in procuring and rolling out charging infrastructure were raised by interviewees. Nick Pincott, Projects, Infrastructure and Construction Partner at TLT, explains how conflicting transport policies can lead to ineffective decision-making. Pincott also raised the need for “greater clarity, certainty as to the consents that you require for digging up the streets [and] ownership rights...which are very important if you’re looking to fund these projects at scale”. Johnston explains that because local authorities are not a private business, “they have to do the right thing for the residents rather than focusing on the solution that is the most viable to deliver.” He notes that “in a world where everyone is so much more aware of the climate issue it’s such a hot topic to debate and that just slows the council down even more.”

At the same time, Stevenson observes “some local authorities have installed a significant number of charge points that are now really underutilised because they’ve not had the tools to forecast charging demand or support second party charging.” He notes an opportunity for increasing utilisation and for fleets to minimise their dependency on public charge points “fleets using public charging networks do not yet have the certainty of charge needed and can suffer damage to brand reputation if they are deemed to be hogging charge points. Shared commercial charging networks mitigate both these risks.”

Chapter 2: Finding the value

Utilisation rates: “the lifeblood of the ongoing EV landscape”

The measure of utilisation of charging infrastructure is driven by payments for use of the asset and are reflected in p/kWh terms. Utilisation rates are a key factor when it comes to investment with each business model being dependent on utilisation to some degree, whether that is revenue led or non-revenue generating utilisation in the case of fleets, for example. As Jose Contreras, Head of UK and Group Finance at Gamma Energy points out “we’ve reached the inflection point where people believe that EVs will become the norm in transport, so it is now a question of time rather than if.”

While utilisation rates have a critical role in decisions to fund charging infrastructure, they are a problematic element in the business model as they are simply forecasts. Gary Roscoe, Banking and Finance Partner at TLT lists several challenges, saying: “There’s a lot of guesswork. Historic data isn’t there, projections are difficult and it’s hard to know what the uptake for remote charging will be.” All of this, and more, can deter certain investment.

The often versed ‘chicken and egg’ dilemma can be evidenced in situations where low and uncertain current utilisation rates are at odds with forward-focused utilisation rate focussed business models.

James Stevenson, Intelligent Fleet Decarbonisation Lead at Hitachi points to ways in which the utilisation hurdle can be overcome. He explains that “a shared infrastructure model

maximises utilisation, generates revenue and minimises waste; the tools required to build shared infrastructure programs an exciting area of development and we expect the first of these to be available early next year”. Such an approach can ensure sustained demand at throughout day, for example. Similarly, Simon Pickett, EV Project Development Manager at SSE Energy Solutions views strategic relationships as being “increasingly important for both the infrastructure providers/investors and the fleets themselves...and will help to accelerate the transition for all parties.”

Certainty and stability in utilisation can also be achieved through variable pricing models, according to Nick Woolley, CEO and Co-Founder at ev.energy. He explains, “you can have variable pricing that encourages customers to charge at the best times, enabling [charge point operators] to increase utilization overall...certainly there is optionality for variable pricing to help drive utilization and increase ROI.”



A shared infrastructure model maximises utilisation, generates revenue and minimises waste.

**James Stevenson, Intelligent Fleet
Decarbonisation Lead at Hitachi**



Consumer behaviour: “we’re trying to change 100 years of motoring habits”

Interviewees agreed that the ‘demand risk’ is still a high risk for investors. As Reza Shayabni, Co-Founder and CEO at EV Network notes that “we’re trying to change 100 years of motoring habits.” What is more, Stephen Allen, Property Director at Punch Pubs, views “a dichotomy in wanting to put faster and faster charging in” and the resulting shorter dwell times. “Actually, one of the attractions for us is that people would come and plug in, go and use the pub, have a meal, meet somebody, and then come back and their vehicle is done.” As there is limited understanding of “how people’s behaviour with charging will play out”, Allen sees opportunities in “tailoring [pub/retail] services to the charging model”. Similarly, Ian Johnston, CEO at Osprey Charging Network explains that “very large grid connections” can establish a site that includes different environments and products for fleet customers, HGVs and buses, as well as the general public.

Arun Anand, Founder and CEO at Electric Miles explains that “consumers [that own EVs] will be more sensitive towards whether they are on the right tariff or not,” especially as the “demand has doubled up.” Third party switching services such as price comparison websites are intended to help consumers navigate the energy market and select an ‘appropriate’ deal. Similarly, smart charging provider Electric Miles engages with suppliers to ensure it can “dish out the right tariff” to customers.



Electric Miles engages with suppliers to ensure it can “dish out the right tariff” to customers

Figure 7: Charging types

- **Smart charging.** The practice of managing EV charging in response to electricity system capacity requirements and/or price signals.
- **V2X charging.** Bi-directional charging whereby end-users can realise benefits from discharging the EV battery at certain times to provide power to the home or deliver system services.
- **V2G charging.** The process whereby EV owners can provide balancing services back to the network to help manage the real-time operation of the electricity system.
- **V2H charging.** The process whereby electricity that has been stored within the battery of an EV can be used towards meeting the demand of the owner’s domestic properties.

While long-term risk management has great utility, Bush is concerned that for larger organisations there is currently too much emphasis on risk and not enough on opportunity. “We need to move away from risk management to opportunity management. And we need policy to support it meaningfully, whether it’s through blended finance, public private partnerships or other forms of incentive (subsidy or tax incentives) for innovation.” Companies should consider how they can generate opportunities to foster growth, how and where they can potentially innovate, and how they can mobilise capital to support those innovations.

‘Green’ charging

Ensuring that EVs are charged by low carbon energy is key to the decarbonisation of the transportation sector and deployment of charging infrastructure. Indeed, all domestic EV tariffs in the market today deliver ‘green’ electricity. However, while Stuart Urquhart, Commercial Legal Director, TLT observes that “the green angle to charging might be an added incentive for certain types of customer to adopt certain behaviours in charging,” he considers price will continue to be “by far the biggest driver.”



Ensuring that EVs are charged by low carbon energy is key to the decarbonisation of the transportation sector and deployment of charging infrastructure.

Contreras notes that “incorporating a PPA [power purchase agreement] will help with funding”. What is more, several interviewees recognise the UK as a market leader in the corporate PPA (CPPA) space, noting that it “continues to innovate products to meet the changing needs of consumers”. However, Pickett observes the need for further innovation “to create CPPA products offering price stability and clean energy to charge points...while addressing the challenges created by the volatility in charging load”. Pickett notes that “energy prices are a battle ground, and any longer-term investment will need a clear view on their financial input and outputs.”

Chapter 3: Funding the rollout

Unleashing debt funding: “...data and positive cashflows”

Debt funding for the rollout of charging infrastructure will enable the industry to grow, driven by “clear and mandated conversion to EVs” says Gary Roscoe, Banking & Finance Partner at TLT. Reza Shaybani, Co-Founder and CEO at EV Network agrees that debt providers such as banks require “historical data and positive cashflow” for companies operating in this space. Jacob Lloyd Director, Energy Lead at NatWest confirms that banks want to see “stable cashflows or an asset that can be well recovered”. Lloyd notes, however, that on-street is becoming more relevant for debt finance, “particularly in projects where you’re rolling out a load of on-street charging for a load of vehicles.”

As a long-term investor, Shaybani explains that “our [CPO] partners are all top end blue chip investable grade utilities or oil and gas companies, and companies who can stand behind a 20-year contract.” As a developer looking to invest in charging infrastructure, Stuart Urquhart, Commercial Legal Director at TLT notes that the main risk being taken is “on people actually using your stuff, and that will be a big commercial judgement call wherever it is you’re looking to locate”. What is more, Simon Pickett, EV Project Development Manager at SSE Energy Solutions observes that “as we now have big oil and with OEMs⁹ throwing cash

into the development of charging infrastructure” there may not be a larger funding requirement. Instead, he views the challenge as “funding the best parts of the sector to avoid stranded assets or parallel charging locations.”



...there is a “nervousness”
around fleet funding
infrastructure...

However, Lloyd explains “no one has seen a large refurbishment of vehicle batteries...because it’s still quite a new sector”. Hence, Lloyd acknowledges that there is a “nervousness” around fleet funding infrastructure without certainty of the battery asset value in several years’ time. Yet factoring in future asset value to avoid stranded assets is a model which some businesses are already looking at. Unlike traditional funding providers, Ned Ponsonby at Zenobe explains that the battery storage owner operator is able to take a view on the residual value of bus batteries as the batteries have second life applications in other parts of its business.

⁹ Original equipment manufacturer.



This may be one piece of the puzzle, but Lloyd views a need for “a sizeable benchmark deal” that sets a financing structure for others to see for there to be “a snowball effect in the market”. Kay Hobbs, Corporate Renewables Partner at TLT, also notes that because debt is “easily carried by asset-based organisations... the infrastructure funds might see it as something that’s more attractive than some of the other funds”.

There is little doubt that as the demand for EVs increases and the supply of ICE vehicles decreases investment activity will ramp up. Lloyd expects there to be “a lot more investor and angel capital activity, and a lot more bank activity as well.” Hobbs agrees, noting that “over the coming years it will be a play for everybody.” In particular, Lloyd expects funding to “accelerate quite quickly over the next two to five years.”



[Banks want to see] stable cashflows or an asset that can be well recovered.

Jacob Lloyd, Director, Energy Lead at NatWest

Equity investment: “build and sell”

Discussing equity investment in charging infrastructure, Hobbs observes “there is definitely a move in the right direction, and some of our equity investment clients are looking at electric vehicle charging infrastructure and various models far more than they would have done 12–18 months ago.” Similarly, Jose Contreras, Head of UK and Group Finance at Gamma Energy views equity in this space as “further down the curve than debt, although still small in size.” While this suggests that there is a growing appetite among equity investors at least, Hobbs questions whether this trend is growing fast enough.

As there are different risk appetites among investor types, there are varying expectations of the timing and scale of financial reward. Venture capital will want a shorter return period – typically a five- to seven-year cycle/exit – and therefore it will drive a “build and sell” aspect to some parts of the EV market. According to Hobbs, although this provides both a benefit in that people are “pumping money into the green agenda”, it comes with risks as “ventures look to capitalise and pull out profits.” These factors must be considered by entities when selecting their primary partners for infrastructure.

According to Ian Johnston, CEO at Osprey Charging Network, there is no shortage of private investment. Rather, the challenge is the “delay in the awarding of the contracts to get that money invested in the ground.” Nick Woolley CEO and Co-Founder at ev.energy also observes that in the UK and internationally “the funding environment is buoyant, and there are deals happening all over the place”. Woolley calls out the large role of “public equity”, noting that this option was only available until very recently in the clean tech space. While recent activity shows that there is some confidence in these business models, “real numbers” to back up these business models are unlikely to be proven for several years.

Additionally, several interviewees highlighted the role of grant funding that has been used to stimulate the market. Millie Pardoe Business Development Associate at Pivot Power cites Pivot Power’s multi-stakeholder venture, Energy Superhub Oxford, which has secured nearly a quarter of its funding from Innovate UK. Contreras agrees that “grant funding is most active” relative to other types of capital.

Chapter 4: Future opportunities

There is a growing pool of parties involved and moving into the wider EV space across manufacturing, charging and financial support, and interviewees cited the need for collaboration. Simon Pickett EV Project Development Manager at SSE Energy Solutions believes that operators must form strong relationships with end users as well as the organisations developing the wider solutions. According to Pickett, “those that react and adapt will likely win.”

Unlocking value from chargers: “EVs as a power plant”

The optimisation of charge points through technology was discussed by interviewees. Ian Johnston CEO at Osprey Charging Network refers to the role of “load balancing technology” which allows the power available within a site to be shared across different charge points¹⁰. In view of the risk that chargers become commoditised, Arun Anand, Founder CEO at Electric Miles explains that the business is “looking to unlock value from the chargers around grid flexibility [notably through demand side response or DSR], around being able to act as a power plant...instead of just being able to drive from A to B.”



If you control home charging of work vehicles to align with domestic energy storage and generation technology, you create a virtuous cycle of lower cost and carbon power for both the fleet vehicle and the residents.

James Stevenson, Intelligent Fleet Decarbonisation Lead at Hitachi

This approach is most promising in the home charging segment as “for destination charging, rapid charging or on-street, it’s very hard to smart charge unless you have a battery asset because the use case is very much on demand”. Likewise, Simon Pickett, EV Project Development Manager at SSE Energy Solutions expects an uptick in smart solutions connecting distributed home energy solutions, reducing demand on the grid and in turn creating new energy service markets. However, Pickett also comments that “DSR is still a developing market and aggregated values need thousands of EVs to be of any real merit.”

¹⁰ <https://fullycharged.show/blog/dynamic-load-sharing-a-rapid-charging-gamechanger/>



The potential for EVs as a form of DSR is considered in National Grid's Future Energy Scenarios 2021. For example, vehicle-to-grid (V2G) technologies could offer up to 38GW of battery capacity from 5.5m vehicles in 2050¹¹. The customer interface for delivering these services is and will continue to be key. On the role of apps, James Stevenson, Intelligent Fleet Decarbonisation Lead at Hitachi notes further opportunities in supporting home charging of fleet vehicles by incentivising domestic generation and storage. He explains: "If you control home charging of work vehicles to align with domestic energy storage and generation technology, you create a virtuous cycle of lower cost and carbon power for both the fleet vehicle and the residents. Apps provide that control integration and the necessary reporting and reimbursement functions." Such services are important in pulling together the multiple assets that could be involved in domestic flexibility and managed charging services.

Site-wide decarbonisation: "bringing in a battery asset"

Owners and operators of large sites are using solar and storage alongside EV charging, whether public or commercial fleet use cases. James Stevenson views "EV infrastructure programs and business models that look at decarbonization of the site" as likely to be more successful. This is echoed by Millie Pardoe, Business Development Associate at Pivot Power. Speaking of Pivot Power's Energy Superhub Oxford, Pardoe explains that the focus is on "decarbonising transport, electricity and heat" simultaneously. Anand agrees that the value of charging

infrastructure can be optimised through integrating and co-locating assets. He discusses "bringing in a battery asset in order to store cheap energy" which can be used during peak demand on the grid. Anand explains, however, that "you need significant investment and government support in order to do that."

While Johnston sees potential in partnerships with those who have [renewable] energy generation onsite [solar and battery integrated], he notes "the level of power you need available at all times for a DC rapid charging site goes so much further beyond what you could generate or store viably onsite." In the years ahead, Johnston considers there may be "closer integration between generation assets and the charging networks" but does not view this as a means to further accelerate the deployment of charging, "at the moment."



The level of power you need available at all times for a DC rapid charging site goes so much further beyond what you could generate or store viably onsite.

Ian Johnston, CEO at Osprey Charging Network

Another interviewee explains that, while battery may have more in-situ value, it can be used to potentially generate different revenue streams through trading in the capacity market or trading in the merchant revenue market. It is noted that this is "certainly a space that we're seeing more competition and more customers come into the market for."



The value of charging infrastructure can be optimised through integrating and co-locating assets.

¹¹ Future Energy Scenarios 2021 | National Grid ESO

Chapter 5: Concluding remarks

Unlocking the business models to accelerate the deployment of EV charging infrastructure is crucial to reach net zero. Challenges to the rollout of charge points include anticipated technological advances, the related issue of standard assets, the uncertainty around consumer behaviour and lack of utilisation data. However, as we have seen there are opportunities and propositions being developed and tested across all market segments.

Rapid charging is an essential and growing part of the market but requires careful site selection and site configuration to ensure utilisation rates. While rapid and ultra-rapid charge points are envisaged to be a necessary element in the charging infrastructure landscape, not all locations require this level of charging speed. Conversely, slower charging is suited to dwell times of circa four hours with opportunities for hospitality and retailers to commercialise visitor spend. Indeed, hubs and sites where a large grid connection has been established would do well to provide offerings for all market segments.

While views on destination charging are mixed, this is likely a result of the nascent and diverse nature of this market. Most expect to see continued growth in charging infrastructure across supermarkets and shopping centres, with more guaranteed revenue streams potentially unlocking funding channels.

Similarly, the growth in fleet charging is viewed as promising. This is especially the case where corporates seek to implement ambitious ESG strategies. For instance, multi-tariff charge points were cited as a way to support a business's net zero strategy and supply-chain decarbonisation. Whereas the electrification of fleets through pay-on-use models, with asset management and ownership remaining with the provider, could be another viable alternative. Despite calls for change within energy sector, challenges remain for the separation of domestic and

commercial loads for users that need to charge a company vehicle at home.

Unsurprisingly, home charging is set to become universal and is viewed as the primary source of charging. And while there are several established business models across destination, rapid and fleet charging with others in the making, compared to home charging, these segments require larger capital investments because of the need for greater power (grid connection) to service multiple vehicles at a single site.

Relative to other clean energy technologies, charging infrastructure is still considered a relatively high-risk investment. While there is no shortage of private capital for projects, a lot of this investment is awaiting deployment. Public equity in the form of grants, for example, also play an important role but are limited. One of the challenges to further deployment is securing debt funding where there are no stable cashflows to support lending. Opportunities to co-locate renewable assets and charging infrastructure have potential, but are still limited in size, and therefore, charging potential.

In particular, there are a growing number of CPOs which could lead to consolidation activity and to a more proactive role of financial players. In the medium to long term, we would expect significant growth in the secondary market, with a shift from a developer-led to an investor-led EV charging ecosystem. Once the market reaches scale and critical mass, EV charging will mature into an infrastructure asset class in its own right, therefore attracting institutional capital. Expectations are that, once a pioneering project finance transaction able to satisfy lenders' risk appetite is sealed, investment will ramp up quickly.



About Cornwall Insight

Getting to grips with the intricacies embedded in energy and water markets can be a daunting task. There is a wealth of information online to help you keep up-to-date with the latest developments, but finding what you are looking for and understanding the impact for your business can be tough. That's where Cornwall Insight comes in, providing independent and objective expertise.

You can ensure your business stays ahead of the game by taking advantage of our:

- **Publications** – Covering the full breadth of the GB energy industry, our reports and publications will help you keep pace with the fast moving, complex and multi-faceted markets by collating all the “must-know” developments and breaking-down complex topics
- **Market research and insight** – Providing you with comprehensive appraisals of the energy landscape helping you track, understand and respond to industry developments; effectively budget for fluctuating costs and charges; and understand the best route to market for your power

- **Training, events and forums** – From new starters to industry veterans, our training courses will ensure your team has the right knowledge and skills to support your business growth ambitions
- **Consultancy** – Energy market knowledge and expertise utilised to provide you with a deep insight to help you prove your business strategies are viable

For more information about us and our services contact us on enquiries@cornwall-insight.com or contact us on 01603 604400.

Disclaimer

While Cornwall Insight considers the information and opinions given in this report and all other documentation are sound, all parties must rely upon their own skill and judgement when making use of it. Cornwall Insight will not assume any liability to anyone for any loss or damage arising out of the provision of this report howsoever caused.

The report makes use of information gathered from a variety of sources in the public domain and from confidential research that has not been subject to independent verification. No representation or warranty is given by Cornwall Insight as to the accuracy or completeness of the information contained in this report.

Cornwall Insight makes no warranties, whether express, implied, or statutory regarding or relating to the contents of this report and specifically disclaims all implied warranties, including, but not limited to, the implied warranties of merchantable quality and fitness for a particular purpose. Numbers may not add up due to rounding.

Contact information



Emma Bill
Lead Research Analyst
T +44 (0) 1603 542127
E e.bill@cornwall-insight.com



Dan Atzori, PhD
Research Partner
T +44 (0) 1603 604400
E d.atzori@cornwall-insight.com



Jacob Briggs
Senior Consulting Analyst
T +44 (0) 1603 604400
E j.briggs@cornwall-insight.com

About TLT

For what comes next

TLT is a UK law firm delivering strategic and day-to-day legal support across the green finance market.

As a full service commercial law firm with regional, national and global reach, we support clients with their ESG strategies, including the UK's major banks, building societies, fintechs, investment funds, asset managers, private equity and venture capital firms, pension funds and corporates.

We specialise in the clean energy; digital; financial services; leisure, food & drink; real estate; retail & consumer goods; and public sectors, offering tailored, commercial advice rooted in experience.

We advise on EU and UK green finance policy and regulation through our involvement with organisations such as the Green Finance Institute, Aldersgate Group and UK Finance.

Able to advise across the three UK legal jurisdictions of England & Wales, Northern Ireland and Scotland, TLT has six UK offices in Bristol, London, Manchester, Glasgow, Edinburgh and Belfast.

tltsolicitors.com

Contacts



Maria Connolly
Head of Real Estate & Clean Energy
T +44 (0)333 006 0109
E maria.connolly@TLTsolicitors.com



Gary Roscoe
Partner | Banking and Finance
T +44 (0)333 006 0466
E gary.roscoe@TLTsolicitors.com



Nick Pincott
Partner | Projects, Infrastructure and Construction
T +44 (0)333 006 1224
E nick.pincott@TLTsolicitors.com



Andrew Ryan
Partner | Real Estate (Northern Ireland)
T +44 (0)333 006 0967
E andrew.ryan@TLTsolicitors.com



Matthew Grimwood
Partner | Real Estate
T +44 (0)333 006 0393
E matthew.grimwood@TLTsolicitors.com



Joanna Hamilton
Legal Director | Real Estate (Scotland)
T +44 (0)333 006 1257
E joanna.hamilton@TLTsolicitors.com



Antonia Silvestri
Partner | Corporate
T +44 (0)333 006 0189
E antonia.silvestri@TLTsolicitors.com



Kay Hobbs
Partner | Corporate Renewables
T +44 (0)333 006 0977
E kay.hobbs@TLTsolicitors.com



Stuart Urquhart
Legal Director | Commercial
T +44 (0)333 006 0230
E stuart.urquhart@TLTsolicitors.co



Kevin Murphy
Partner | Real Estate (Northern Ireland)
T +44 (0)333 006 0361
E kevin.murphy@TLTsolicitors.com



Katherine Evans
Head of Planning
T +44 (0)333 006 0098
E katherine.evans@TLTsolicitors.com



Kerri Ashworth
Legal Director | Commercial
T +44 (0)333 006 0423
E kerri.ashworth@TLTsolicitors.com



Nick Shenken
Partner | Clean Energy (Scotland)
T +44 (0)333 006 1643
E nick.shenken@TLTsolicitors.com



Simon Courie
Partner | Clean Energy (Banking)
T +44 (0)333 006 1552
E simon.courie@TLTsolicitors.com

tltsolicitors.com/contact

Belfast | **Bristol** | **Edinburgh** | **Glasgow** | **London** | **Manchester** | **Piraeus**

TLT LLP and TLT NI LLP (a separate practice in Northern Ireland) operate under the TLT brand and are together known as 'TLT'.

Any reference in this communication or its attachments to 'TLT' is to be construed as a reference to the TLT entity based in the jurisdiction where the advice is being given. TLT LLP is a limited liability partnership registered in England & Wales number OC308658 whose registered office is at One Redcliff Street, Bristol, BS1 6TP. TLT LLP is authorised and regulated by the Solicitors Regulation Authority under ID 406297.

In Scotland TLT LLP is a multinational practice regulated by the Law Society of Scotland.

TLT (NI) LLP is a limited liability partnership registered in Northern Ireland under ref NC000856 whose registered office is at River House, 48-60 High Street, Belfast, BT1 2BE

TLT (NI) LLP is regulated by the Law Society of Northern Ireland under ref 9330.

TLT LLP is authorised and regulated by the Financial Conduct Authority under reference number FRN 780419. TLT (NI) LLP is authorised and regulated by the Financial Conduct Authority under reference number 807372. Details of our FCA permissions can be found on the Financial Services Register at <https://register.fca.org.uk>

