

Competition and Markets Authority: Electric Vehicle Charging Market Study

Fastned response to Invitation to Comment - 5th January 2021

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Fastned is a developer and operator of high-powered charging hubs where all electric vehicles can charge as quickly as possible using energy from the sun and wind. We bring over seven years of experience in this young but fast-growing market, and would welcome the opportunity to share our knowledge and learnings from the other European countries where we operate as part of this Market Study.

Theme one: developing competition while incentivising investment

1. How is the EV charging sector developing and how will technological or other developments (for example smart technologies) impact sector development and competition?

We believe the EV Charging sector is well on the road to technological maturity.

The charging sector does not exist in isolation and is actually in a continual feedback loop with the automotive industry. As more and more EVs hit the roads, we are seeing a number of key trends in the vehicles themselves:

- DC (direct current) charging capacity in vehicles is increasing well beyond the 50kW speed that was the standard for the last 7 years. Chargers at 300-350 kW are commonly installed today by us and other market players. With a few exceptions, all new passenger EVs are able to charge well above 50kW, with average peak rates above 100kW at present.
 - This trend will continue to grow rapidly
 - This is highly relevant for the kind of infrastructure installed in locations where a quick charge is necessary / desired
- AC (alternating current) charging capacity in vehicles is not changing; capping out at 22kW and only then as an optional extra for some vehicles. This is due to the added cost and weight to the vehicle of faster onboard chargers.
 - We see no reason for this to change
- As costs decrease and technology improves, battery sizes are growing larger to facilitate longer range; supporting increased charge speeds at the same time

A focus on “smart” charging is likely to become important for domestic, off-street charging and, potentially, for on-street slow charging, as ageing local low-voltage distribution grids will simply not be able to handle the power. Internet-connected chargers can ensure vehicles are

filled appropriately while balancing the instantaneous needs and capacity of the local grid, as well as help support uptake of further centralised and decentralised renewable energy generation.

At Fastned we are implementing a different kind of “smart”. We install our charging hubs on high voltage, (11,000+ volt) networks, hereby bypassing distribution grid constraints. Because our stations are centrally monitored and controlled, we have the ability to participate dynamically in the energy market; reducing demand if required by grid operators. Our stations are all battery-ready, enabling us to further help balance regional and local energy grids with stored power.

Additionally, while a home charger can only charge one car per day, and an on-street charger maybe two or three, our fast-charging hubs can charge hundreds of cars per day, thereby representing a highly efficient use of investment and space and creating efficiencies of scale in management and maintenance. Stations like ours are therefore highly valuable as they not only allow EV drivers to quickly recharge and continue on their way, but they also free up scarce public space in cities and towns that otherwise would have been blocked for hours for charging.

A major roadblock for the development of the sector, and for the transition to e-mobility more broadly, is the situation on the MSAs. High quality provision of EV chargers on MSAs is essential to further the transition to e-mobility in the UK, because it will dramatically reduce range anxiety (fear of not being able to reach a long distance destination due to lack of charging opportunities on the way), which is continually cited as a key barrier for consumers to switch to e-mobility. At the moment, both the availability and quality of EV charging on MSAs is very poor.

2. How well is competition between EV charging providers working at present in the different sector segments and what are the key risks to effective competition (including any emerging competition concerns)?

We see the following key risks:

- Lack of competition and resulting poor quality and availability of charging infrastructure on Motorway Service Areas (MSAs)
- Availability and distribution of location for building fast charging hubs.
- Selection criteria in government tenders often favour established businesses often from the fossil fuels industry.
- Existing contracts that no longer represent what the EV market requires are blocking new and innovative players from entering the market.

Having entered the UK market in 2019 with the launch of the first high-power charging hub in the country (the EV filling station at Sunderland), we are well-placed to comment on the high-power / DC charging market.

Off-Highway:

- We see, in stark contrast to the highway network, reasonably active and healthy competition off-highway, with a number of players offering charging services, mostly with good overall quality. We consider at least 3 national CPOs to offer a service level in line with ours, but the number of companies operating rapid charging services points is higher than this.
 - We believe that flexibility in choosing locations off-highway is driving this competition, and highlights why the motorway (MSA) segment is unique. There is no flexibility in relation to location on the motorway, and in the absence of this pro-competitive force, intervention is required.
- Off-highway locations are important in the overall story of serving the e-mobility transition, but ultimately serve a different customer group from the MSAs.
- Rapid charging is a business that is underpinned by locations. Locations that offer a useful service and easy accessibility for drivers, and locations that are close to affordable grid connections.
- Fastned, the CPOs mentioned above, and a number of other operators compete in the first instance for locations (e.g. through portfolio deals with petrol stations or coffee shops, or development of greenfield/brownfield sites off highway junctions), and then for customers by offering the best possible service - either through price, reliability, convenience, ease of use, comfort, or other quality-related means. Locations are scarce (especially in the context of MSAs), underlining the importance of the need for a level playing field.

3. How can competition in the different sector segments be strengthened as the sector develops, either by building on current policies and/or through other approaches?

We would also like to emphasise the need for the CMA to ensure that potential entrants are not in effect penalised by the length of time that a market study/investigation can take. For example, the CMA will need to work with Government to ensure that the large amounts (£1bn+) of public funds that have been set aside for investment in EV charging infrastructure, particularly grid connections, are not simply provided to existing incumbents while the investigation is ongoing.

4. What are the main existing and potential barriers to entry and expansion for EV charging providers and how can these be addressed?

5. How can charge points be effectively deployed to ensure there is sufficient supply to meet future demand? What factors need to be taken into account?

Investigate and model the expected increase in charging demand in the respective areas (home, destination, motorway, etc), to get a proper understanding of the amount of infrastructure needed. Next, set targets based on this. Then put in place the procedures to allow for the achievement of these targets, where it's essential to look at tendering procedures, taking into account competition principles.

In all segments scalable solutions are key. We need to invest now to provide scalability and optionality in the future. For example, Fastned stations are built with a multi-megawatt grid connection from day one, with ducting laid to future charging positions even if the chargers themselves are not all installed from day 1. This means that additional capacity can be added literally overnight as soon as utilisation levels justify this (e.g. if regular queues start to form). This approach means exposure to stranded assets is limited, and the operation is financially sustainable as early as possible. The result is more infrastructure, operating earlier, and able to grow far more quickly.

6. What incentives are there for private investment in EV charging infrastructure including within the different sector segments? How might incentives need to change for the future growth of the sector and development of competition?

While there are limited publicly-funded incentives for high-power charging infrastructure, we do believe that there is already a good commercial incentive for private investment in DC charging investment at on-the-go locations.

By its nature, a high-power charger is able to deliver very high volumes of electricity and represents an efficient use of infrastructure. This drives a sustainable business case based on electricity sales to the public.

As such, there is a compelling business case to roll-out high power charging infrastructure at strategic locations that meet the needs of EV drivers on the go (and indeed those without off-street parking and home charging). Fastned is rolling out commercial, public charging stations across the United Kingdom, in absence of incentives other than the prospect of future electricity sales to a rapidly growing EV market.

In general, there is no clear business case for slow charging based on the sale of electricity due to the still relatively high costs of infrastructure, the low amount of energy sold per charger, and high per-charger maintenance costs that do not see significant economies of scale. As a result, we see this sector requiring on-going subsidy and incentivisation of some sort, whether from municipalities / government, or location owners.

The slow-charging story is also tied closely to land ownership; public highways and car parks are in local authority ownership meaning there is always a role for local government in controlling access to this land. The challenge here is that while competition can occur at the procurement stage, there is a tendency for local authorities to procure a single provider across their entire property portfolio.

This leads to the single, winning operator enjoying a non-competitive environment and the potential for negative consumer outcomes.

From a competition point of view, we believe strongly that the best form of any subsidy/incentive would be a subsidy per unit of energy delivered (e.g. kWh), so as not to disturb the level playing field, i.e. not promoting one type of charging over the other.

7. What impact does public subsidy have on private investment incentives; are there any areas/gaps where public support is most likely to be needed?

We see the following interesting areas for public support:

- Grid connection investment (connection costs are high and vary significantly between locations). A subsidy or support regime that results in a more standardised connection cost for operators (e.g. through subsidising connection costs of over £100,000 and lower than, say, £250,000) has the potential to greatly level the playing field and tackle regional rollout challenges
- Location provision for charging concessions
- (Higher) subsidies may be needed for chargers on locations with low-traffic volumes (e.g. rural areas), to ensure investments in these areas even without a compelling business case. This is likely needed to be able to achieve dense, cross-country coverage.

Funding schemes for independent charging companies are also desirable in the short term. Banks and conventional financiers are still hesitant to invest in charging due to the immaturity of the market and perceived high risk of the investment. Yet (fast) charging infrastructure is very capital intensive, meaning that the pace of roll-out is essentially dictated by the availability of capital (aside from the ability to get access to locations). Public financing (e.g. debt) programmes at rates lower than those demanded by the markets would therefore be beneficial to accelerate the roll-out of charging infrastructure.

8. What is required in order to ensure that rural / remote communities and those without off-street parking are well served by charging infrastructure?

For those without off-street parking, the two main valid models are on-street public chargers, and public high-speed, high-capacity hubs. We believe that high power charging hubs that can each serve hundreds of cars per day are an excellent option for serving those on the go. As mentioned above regarding “smart” solutions, high-speed charging is a very efficient use of infrastructure that does not require extensive street work to roll-out. Well-designed hubs served by an appropriate grid connection are also highly scalable, with more, faster chargers able to be added as soon as demand is there (i.e. when utilisation rises above a certain threshold).

As mentioned in the previous question response, we believe that some further support may be needed to balance business cases for connections in less trafficked / inhabited areas.

9. What role should local authorities play to help deliver EV charging in a way that promotes competition? What support would they need?

In relation to MSAs specifically, interventions such as those listed in the answer to question 3 are required and local authorities could play a key role in supporting some of these interventions, e.g. through the planning system.

We view the best role for local authorities as one of enabling the off-highway rapid charging market by acting as a landlord and location provider. In turn, local authorities should be expecting a new, growing income stream from their tenants / concessionaires.

10. What can be learned from the different policy approaches taken in the devolved administrations for the EV charging market's development?

We would note that Scotland's policy of heavily funding and subsidising charging infrastructure through the ChargePlace Scotland programme has had a somewhat negative effect on competition. Giving electricity away for free, even at rapid chargers, for many years, was a deterrent for new, commercial market entrants.

The impact of this policy is likely to reduce in future as CPS moves to a fee-paying model, and also as new, more expensive high-power chargers come on the market (Fastned is developing several high-power sites across Scotland).

We would actually like to add further perspective about what can be learned from policy approaches in different European countries, in particular with regards to the development of charging on motorway service areas. The below text includes concrete examples from Switzerland, the Netherlands, Belgium and France. We recognize that a key difference between the UK and virtually all other European countries is that motorway service areas are largely in private hands, which means that organizing concessions for fast charging is more complex. The principles outlined below still hold however when regarding this as the distribution of rights to operate a charging station on regulated locations, which includes the UK MSAs.

Principle: Open, dedicated fast charging tenders lead to high-quality service (Swiss example)

One of the key principles for building an open and competitive market is ensuring the separation of EV fast charging infrastructure from other concessions at locations. Unbundling concessions ensures the ability of independent market parties to compete on an open and fair basis, because it allows EV infrastructure companies to bid for a tender independently. This boosts competition and ultimately improves quality of service and price for consumers.

A good example of this in practice is the 2018 tender from The Swiss Federal Roads Office (FEDRO). FEDRO organised a tender for 100 fast (high-power) charging stations along Swiss highways. The sites for the charging stations will be contracted for a period of 30 years and come with a pre-installed grid connection, saving time in the realization process of the stations. The tender allocated 100 locations in 5 batches of 20 sites with locations directly along the motorway throughout Switzerland. The key locations were made available for charging infrastructure through a public tender procedure which is separated from the tender process for petrol stations and allocates an individual plot for fast charging on the service area. This allows new players to join the bid, increasing competition, and thereby investment in quality charging infrastructure on high traffic locations.

The separation of concessions is vital to:

- Increase the quality of the fast charging stations
- Allow companies to give a complete 'fast charging' experience to customers
- Open up the market to pure play fast charging operators.

Principle: Enable Open and competitive markets (Dutch example)

Highway service areas act as vital locations to ensure vehicles and drivers can recharge and refuel. A key principle is the distinction between services, including EV charging and fuels such as petrol. To deliver the widest choice and most competitive offers to drivers, all interested market parties should have the right to bid for and provide services in these areas, and the difference in services should be recognized and treated on an individual basis. To make this possible, public procurement processes for the right to provide fast charging should be open to new and existing parties. This has been made possible in the Netherlands, where, in 2012, the government introduced a policy opening the service areas for exploitation for EV charging by any interested party. It organized a lottery system where any market party could express interest to develop individual service areas of their choice. The selected party obtained the right to request a permit for a selected lot on the service area for 15 years. It allowed fast charging operators to set up their business on publicly owned service areas directly along the highway, next to existing petrol stations.

By treating the sale of electricity as a new market and opening it to new players, the result is that many parties, both incumbents and new players, can now compete in the public procurement process for the right to develop part of a service area for fast charging. Most recently (November 2020), the highest court of the Netherlands ruled, based on EU competition law, that the exclusive issuing of permits for chargers as an additional service to restaurants and petrol stations along the highway is not allowed. Instead, in line with EU law a public procedure open to all interested parties must take place when granting these permits. The Netherlands now has Europe's most comprehensive network of high-quality, high-power charging stations directly along the highway with cross-country coverage.

Principle: Avoid bundling (Belgian example)

In some countries, the tenders include the development of an entire service area, including all its services. The bundling of these services means that only market parties large enough to be able to execute all these services and deliver different forms of energy can participate. In practice, this means that only incumbents can participate in these tenders, while for independent EV infrastructure companies (the experts) or other interested parties, there is no chance to participate. Such a situation exists in Belgium, for example, where regional policy regulating highway service area concessions has led to a scenario where the concession holder is responsible for the overall service area quality of service, including the quality and speed of roll-out of charging infrastructure on their sites. As a result, there is less competition and no opportunity for the EV charging industry to build an independent business case in this new market for the sale of electricity at highway service areas.

Principle: Avoid conflicts of interest (French example)

Cases can also exist concessions for highway service areas on the public highway system are awarded to a consortium that must include petrol, fast-charging and food services. This can create a system where a consortium needs to consist of companies with competing business models, leading to a potential conflict of interest. Such a situation is seen in France on public (non-toll) highways. This favours large, established companies with more negotiation power who can potentially exclude high-quality EV charging partners who offer premium services. If EV charging companies are not able to find a consortium partner willing to accept the conditions needed for high-quality charging services, they are ultimately excluded from the market and successful consortiums can propose compromise solutions where not necessarily the best, or economically viable, EV charging solution is offered.

Theme two: effective consumer interaction with the sector

Unfortunately time constraints mean we have not been able to do sufficient justice to this theme yet, and we have had to prioritise our input.

Looking at rapid charging infrastructure on the motorways in particular, we emphasise that, to drive effective consumer interaction with the sector, it is critical to communicate “freedom” to new and existing drivers of electric vehicles, focussing on the following themes:

- Quality, reliable infrastructure
- Charging all cars on the road, regardless of manufacturer / charger subscription etc., as quickly as possible
- Potentially most importantly at this stage in the market: visibility. As others have said before us, “if it is not visible, it doesn’t exist”.
 - We are seeing growing reports in the press and online about a lack of charging infrastructure. This is despite the fact that technically there is at least one charger available on every motorway service area.
 - If people think the infrastructure to enable freedom / long distance driving does not exist, then they will think twice about committing their cash to an EV.

As demonstrated once again by Zap-Map’s [2020 customer satisfaction rankings](#), charging on the motorway network is decisively the worst customer experience of all charging networks in the UK. This is the clearest indicator of a significant market failure on the 130 or so locations that, it can easily be argued, are the most commercially attractive in the country.

If given the opportunity, we would love to have some further time to complete the questionnaire for Theme Two.