SCOTTISH FUTURES TRUST

PUBLIC EV CHARGING IN SCOTLAND:
INSIGHT REPORT ON TARIFFS

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Contents

Summary

Whilst the provision of free or below cost Electric Vehicle (EV) charging by local authorities was a beneficial (and relatively low cost) approach to encourage the early adoption of EVs, it is now counter-productive as we enter the mass adoption phase.

A market rate[1] should now be levied to maintain and expand a high-quality customer focussed network across all of Scotland. To deliver the thousands of additional EV chargepoints necessary over the next five to ten years, it is estimated that £300m to £400m of new investment will be required, most of which will need to come from the private sector.

Free or below cost EV charging by local authorities is currently deterring some of this investment.

The legacy of substantial investment by Scottish Government in the public EV charging network over the past decade means that the size of the network in Scotland is still ahead of most of the rest of the UK – however, the public sector now needs to enable private sector provision in order that Scotland supports the next wave of EV drivers.

The paper also suggests how to support the principle of a just transition by targeting any discounted or subsidised tariffs to those who would benefit the most.

SFT is a public sector centre of infrastructure expertise and we have been working closely with Transport Scotland in developing alternative financing and delivery of charging infrastructure in Scotland.

1 Market Rate means a rate broadly comparable with the average rate charged by commercial chargepoint operators across the UK for similar services (with lower prices expected for AC compared to DC facilities). It is noted that the Market Rate may change over time (up and down) in response to the changing cost of electricity.

Background & Context

Public EV charging in Scotland has been largely driven by the 100% publicly funded ChargePlace Scotland (CPS) EV charging network since the early 2010s.

Grants were provided to local authorities, public bodies and in some cases private organisations, to deploy a mix of AC and DC charging facilities for the public.

The public CPS network has now grown to over 2,300 chargepoints, thanks largely to the substantial efforts made by Local Authorities to find suitable locations and procure hardware, installation, and maintenance services.

Historically, grant offers from Transport Scotland included a condition that all new public EV chargepoints were to be made free at point-of-use for a period of 12 months from installation. This was done to encourage early uptake of EVs. By the late 2010s, this policy was removed as adoption of EVs continued to grow significantly. Scotland now needs to move towards a largely commercialised model for EV charging in which drivers are charged in full (including by local authorities). Competition between Chargepoint Operators (CPOs) is also required to ensure consumers get a fair deal.

The EV charging network in Scotland interacts with a number of regulated sectors including energy. The Office of Gas and Electricity Markets (Ofgem) has limited Distribution Network Operators' (DNOs) involvement in public EV charging to being "providers of last resort" through a yet to be tested and fully defined mechanism.[2]

The Competition and Markets Authority (CMA) which covers activity across the UK, published their report into the EV charging market in July 2021. The recommendations are broadly consistent with the *Draft Vision for EV Infrastructure* published by Transport Scotland in 2022, namely, creating a competitive EV charging sector, delivering good outcomes to consumers and unlocking competition and incentivising investment.[3]

Scottish Ministers have never owned the chargepoint infrastructure itself therefore do not own the assets which would be subject to tariffs. Direct interventions by Scottish Ministers to set tariffs – even if there was a legal basis for doing so – would likely distort competition further in the Scottish market.

In July 2021, Scottish Futures Trust and Transport Scotland *published a joint report* which highlighted that chargepoint owners needed to review current pricing policies and EV charging tariffs to reduce public subsidy and, more importantly, increase commercial viability of new charging investment, whilst maintaining inclusive access.[4]

2 OFGEM permits DNOs to act as the Provider of Last Resort (PoLR) and operate EV chargepoints, "where the Authority is satisfied that no person other than the licensee is able to own, develop, manage or operate an Electric Vehicle (EV) charging point or could not do so at a reasonable cost and in a timely manner" - *RIIO-ED2 Draft Determinations - Overview Document* (June 2022)

3 *Building a comprehensive and competitive electric vehicle charging sector that works for all drivers* (CMA, July 2021)

4 *Report on Public Electric Vehicle (EV) infrastructure in Scotland - Opportunities for Growth* (Scottish Futures Trust / Transport Scotland, July 2021)

In the time since publishing our report last year, there have been several macroeconomic factors that have had a significant impact on the EV charging market, particularly with rapidly rising electricity prices.

> Approximately 45% of the CPS network does not yet have a tariff applied and according to many private CPOs, this is distorting the attractiveness of the EV charging investment market in Scotland.

The cost pressures placed on both local authorities and CPOs is recognised, as is the effort underway by owners in starting to levy tariffs, or moving to a more sustainable pricing model.

Growing the EV Charging Network in Scotland and the Impact of Tariffs

Since CPS was established and EVs have become more mainstream, private CPOs have begun to invest in the sector and roll out their own chargepoints in Scotland. Whilst Scotland currently has more public chargepoints per head than any other region in the UK outside London, the private sector have allocated far less investment in Scotland (pro rata) relative to the rest of the UK. This has now resulted in an overall network of about 3,000 chargepoints with just over a third of the total provision provided by the private sector.[5]

Across local authority areas of Scotland, private sector chargepoint provision ranges from none to roughly half of all chargepoints, indicative that the private sector has to date only invested in areas where it is commercially viable (i.e. where there are expected to be lots of EVs requiring a charge and where they are not competing against chargepoints with a zero or low tariff).

> In SFT's engagement with private sector CPOs, competing against free or sub-commercial tariffs was one of the main barriers identified in their willingness to invest in Scotland.

5 Source: Zap-Map Q3 2022.

Key Challenges & Opportunities

Supporting a Just Transition

We recognise that the great majority of EV drivers currently earn above average incomes[6] given the relatively higher cost of an EV versus an equivalent petrol or diesel vehicle. However, this situation is expected to change over the next few years as the price of new EVs is expected fall, a second-hand market in EVs emerges and more EVs are deployed by public and private sector fleets.

Even in the current economic climate and higher energy costs, the marginal cost of running an EV is still less than that of a petrol or diesel car.[7] Therefore, there is little social value in setting a universal zero or low tariff – instead much needed income is being forgone. Local authorities could, in time, choose to protect targeted groups of EV drivers (such as those on lower incomes) by providing access to a subsidised tariff, as this paper explains.

In addition, it should be noted the impact of those that can charge at home, with off-peak tariffs and 5% VAT, compared with those that cannot and are therefore reliant on the public network with 20% VAT applied.

This generally means that charging at home can often be a lot more economical than on the public network. There is, therefore, a role for more flexible tariffs on the public network to reduce this disparity.

Current Challenges

In March 2022, Transport Scotland published its *draft Vision for public EV charging*.[8] In relation to a just transition and tariffs, the Vision sets out the desire to:

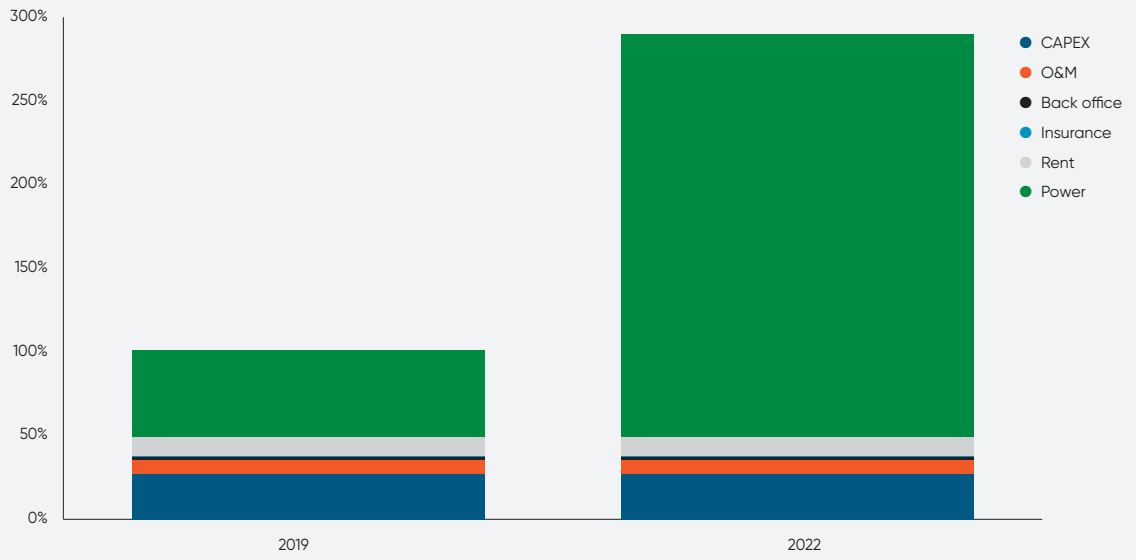
> "enable investment in public electric vehicle chargepoints to support communities that don't have access to home charging; *ensuring convenient access and at a fair cost.*"

Those on lower incomes are more likely to live in flats or have a house without a driveway and therefore are less able to take advantage of lower domestic tariffs and are more likely to be exposed to the current high energy/fuel prices. Transport Scotland's Vision is clear on the need to ensure no-one is priced out of the switch to zero emission.

The volatility in energy prices, as has already been identified, is illustrated by Cornwall Insight in Figure 1.[9] It demonstrates the change in cost build up ('stack') between 2019 and 2022, and the impact that energy prices has had for CPOs. This shows that total costs have increased by about 180% since 2019, with most of this increase driven by energy costs. At the time of publication, several CPOs had responded to the UK Government's Energy Bill Relief Scheme (EBRF) by revising their tariffs in line with the 6-month initiative.[10]

6 *RAC Charge Watch: The cost of charging an electric car at a public rapid charger* (RAC, September 2022)
7 *Electric Vehicle Charging Research: Survey with electric vehicle drivers* (Department for Transport, April 2022)
8 *A Network Fit For The Future: Draft Vision For Scotland's Public Electric Vehicle Charging Network* (Transport Scotland, March 2022)
9 *Welcome Break: Public EV charging prices and energy bill relief* (Cornwall Insight, 19 October 2022)
10 *Energy Bill Relief Scheme: help for businesses and other non-domestic customers* (BEIS, 10 October 2022)

Figure 1.
Illustrative public chargepoint cost stack. 2019 vs 2022



Source: Cornwall Insight

SFT's own analysis, shown in **Table 1**, signals the main price difference between local authorities (excluding those authorities with a zero tariff) and private sector CPOs. Pay-as-you-Go tariffs only. Includes VAT. Excludes free tariffs and small-scale networks or owners.

Table 1.
Analysis of tariffs, categorised by owner type and charging segment

Desination Charging (7-22kW AC)

	Min (£kWh)	Max (£kWh)	Average (£kWh)	Average cost for 30 kWh
Local Authorities	£0.15	£0.30	£0.22	£6.94
Private CPOs	£0.28	£0.75	£0.45	£13.95

Journey Charging (50kW+ DC)

	Min (£kWh)	Max (£kWh)	Average (£kWh)	Average cost for 30 kWh
Local Authorities	£0.15	£0.50	£0.29	£8.91
Private CPOs	£0.35	£0.85	£0.65	£19.55

Source: Various, compiled by SFT. Current as of 1 November 2022.

As of 1 November 2022, the average cost to an EV user for 30 kWh from a local authority owned public chargepoints was in the region of £6.94 (AC) / £8.91 (DC), whilst the average for private CPOs was in the region of £13.95 (AC) / £19.55 (DC).

This indicates that local authorities that have levied a tariff are doing so at approximately half the market average for both AC and DC charging.

Two in five local authorities do not as yet have a tariff in place at all for their public chargepoints. Therefore anyone with access to the CPS network may use these EVCPs free of charge. **For those authorities that have not yet levied a tariff, analysis by SFT estimates that revenue in the region of £2.5M was forgone in 2021, by servicing around 370,000 EV charging sessions free of charge.**[11] Whilst this is significant, we recognise that this was the cost of encouraging increase EV uptake.

Evidence suggests that zero and low-cost tariffs may also be encouraging those who are able to charge at home to travel unnecessary miles to low cost or free alternatives on the public network, thereby sometimes preventing use by those who rely on the public network (and who would be willing to pay). Data from local authorities that have implemented a commercial tariff indicates that utilisation decreases initially and the usage patterns and behaviours from users change significantly, such as charging at home (if available).

Future Opportunities

The shift to a more commercial funding model reflects the growth in demand for EVs, the emergence of a number of well-capitalised commercial providers looking for investment opportunities as well as recognition of the potential long-term costs and risks associated with running a publicly-funded network. To support the transition to a more commercial model, Scottish Ministers launched the EV Infrastructure Fund (EVIF) in 2022, which aims to deliver £60m of public/private investment in the public charging network over the next four years.

Whilst EVIF is expected to help to enable direct investment into the EV charging network through local authorities and encourage private investment into areas that would be unlikely to see investment without support, there's still a key role that tariffs have to play to support a level playing field and to encourage competition.

Local authorities have various statutory powers that they can reference when setting a tariff that broadly align with a market rate.[12]

11 Estimate is based on utilisation data provided by CPS and an illustrative tariff of £0.40 per kWh.

12 SFT hosted a tariff workshop for local authorities in October 2022. *A recording of this session and associated materials is available on SFT's website*

Local authorities could use discounted tariffs for targeted groups to ensure fair pricing, if the benefit is focused on those that are unable to charge at home (no driveway) and / or those with low incomes. There could also be an opportunity to capitalise on localised trials of off-peak and flexible tariffs on public chargepoints. Rolling this out more widely could bring significant benefits by spreading demand throughout the day, encourage optimum use of the network and reducing the impact on those who rely on public chargers because they cannot charge at home.[13]

A targeted approach would require administration by the local authority but could potentially be administered by a private sector operator on their behalf. A database of qualifying individuals could be maintained with the network operator who can then make a different tariff available to these parties. It's likely that this discount may need to be funded by the local authority, not the CPO - thus enabling the CPO to invest at risk in an expanded network without loss of revenue.

13 *Agile Streets – the future of flexible charging* (15 November 2022)

Recommendations

Three recommendations have emerged from the insights gathered by SFT. The recommendations are aimed at enabling sustained investment in Scotland's EV charging network as we move towards the mass adoption phase. They are as follows:

RECOMMENDATION 1:

CPS chargepoint owners (including local authorities) should levy tariffs that cover all direct and indirect costs (including asset replacement) which broadly align with the market rate tariff charged by private sector CPOs. They should also communicate clearly:

- to the CPO market their intended timetable for a transition to market rate tariffs in order to kickstart investment
- to EV drivers and local residents about the benefits of such a tariff to improve reliability and extend the network.

RECOMMENDATION 2:

Local authorities should recognise the benefits of delivering flexible and off-peak tariff structures in partnership with the private sector, thereby reducing inequality and the impact of increased tariffs on those that cannot charge at home.

RECOMMENDATION 3:

Local authority chargepoint owners should consider governance structures (such as delegated powers) that would allow a rapid response in chargepoint tariffs to changing costs (especially energy costs) of running the service.

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