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Charge Collective Sandbox Evaluation Report (redacted)

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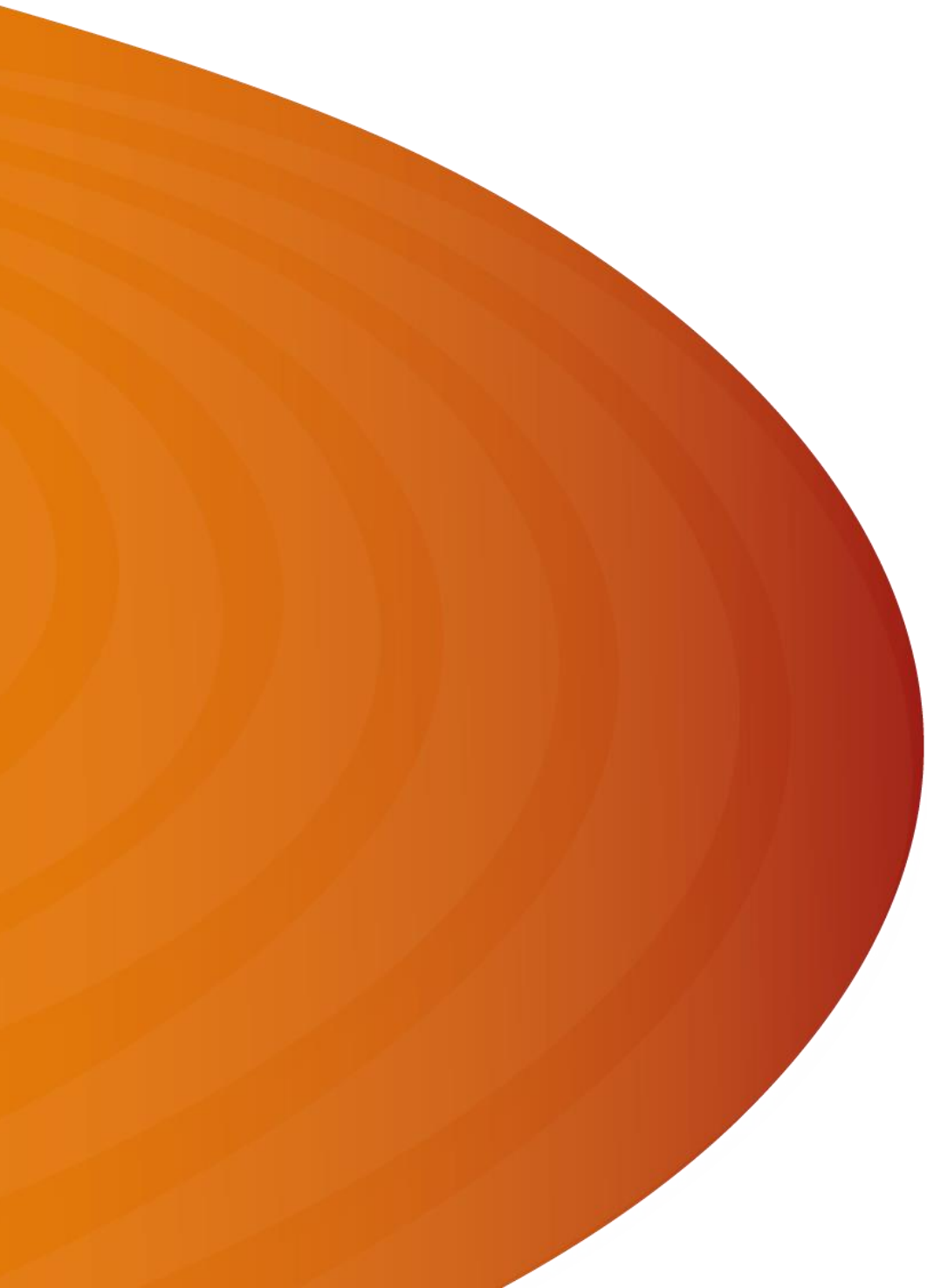

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1. Background to the project

Brief description of the innovation

EV chargepoint investors face barriers to investment related to high capital costs (driven by network connection costs) combined with a set of market, policy and regulatory barriers. These barriers reduce investment in public chargepoints to below optimal levels.

In 2020-2022, UK Power Networks undertook a Network Innovation Allowance (NIA) project, known as Charge Collective, to design and trial an intervention to enable investment in on-street chargepoint infrastructure in a way that is fair to customers and addresses the high connection costs currently faced by chargepoint developers. This small-scale trial was delivered in three diverse areas (Cambridge, Norwich and Redbridge), working with five local authorities (LAs): Cambridge City Council, Cambridgeshire County Council, Norwich City Council, Norfolk County Council and the London Borough of Redbridge. UK Power Networks identified market failures in these three areas and where investment would enable higher EV take-up. The Charge Collective project aimed to develop a new commercial model for incentivising investments in these areas of market failure.

The project delivered learnings in relation to developing processes and practical tools to help distribution network operators (DNOs) and LAs to cost-effectively enable chargepoint investment in areas of market failure. This included discovering the minimum level of discount on the upfront connection costs needed to incentivise investment in charging infrastructure in different circumstances.

The Green Recovery programme allowed UK Power Networks to strategically invest ahead of need in certain locations and socialise the full reinforcement costs required to connect green energy infrastructure projects, including chargepoints. Under the Green Recovery programme, investors paid the minimum sole-use costs (covering joint to the mains, service cable and cut out installation), as any reinforcement costs were fully discounted and socialised. UK Power Networks had to utilise the Green Recovery Programme at speed to demonstrate the value of this approach for RIIO-ED2 business planning purposes. It was used in two of Cambridge's trial areas, which, as a result, did not form part of the Sandbox application.

However, the project hypothesised that investors may be willing to invest in chargepoints with a lower discount on their reinforcement cost (i.e. paying a higher proportion of the total connection charges) thus reducing the amount that was socialised. The Regulatory Sandbox was required for testing this hypothesis.

UK Power Networks wanted to trial an alternative to the Green Recovery programme in Norfolk, Norwich and Redbridge LAs as well as one of Cambridge's trial areas. Under this innovation:

- the level of the discount on the upfront connection costs provided to chargepoint investors would be determined by competitive tender. This would reflect the minimum discount amount investors required to invest in chargepoints;
- only the minimum discount amount required by investors would be socialised; this was hypothesised to be lower than the full socialisation of reinforcement costs under the Green Recovery approach; and
- in both Green Recovery and Charge Collective approaches, the minimum investors would need to pay were the sole use costs covering joint to the mains, service cable and cut out installation.

The trial would allow UK Power Networks to test the scale of discount required by investors (price discovery learnings) without full socialisation and, as such, would act as a pathfinder for future Green Recovery type programmes.

Reason for the Sandbox

While network reinforcement can be fully socialised, as under the Green Recovery programme or paid for using Cost Apportionment Factors (CAF), as per the Common Connection Charging Methodology (CCCM), the existing rules do not allow DNOs to offer discounts on connection charges. We therefore required a Regulatory Sandbox to replace CAF with a competitively determined discount on connections to test the hypothesis that investors may be willing to invest in chargepoints with a lower discount on reinforcement costs.

Under the Green Recovery approach, UK Power Networks could socialise specific low-regret investment required for reinforcing the network and increasing network capacity to allow for connecting public charging infrastructure to the

network. This had the effect of lowering the connection costs for investors by providing a discount equal to the reinforcement cost element of the connection charge.

However, the existing methodology for determining connection charges, as approved by Ofgem, did not provide enough flexibility to offer lower discounts on connection charges (i.e. less than the full cost of reinforcement works), which was required to determine the minimum discount required for chargepoint investment via a competitive tender.

The Electricity Distribution Licence standard licence condition (SLC) 13.1, requires licensees to comply with the Common Charging Methodology. Specifically, it states that *"*[t]*he licensee must at all times have in force … a Connection Charging Methodology (which, if the licensee is a Distribution Services Provider, must include the Common Connection Charging Methodology ("the CCCM") as set out in the Distribution Connection and Use of System Agreement" which the licensee must comply with".*

The CCCM requires that reinforcement costs (up to one voltage level above at the Point of Connection) are apportioned using CAF. The calculation of CAF is tightly defined in the CCCM. Therefore, it was not possible under the CAF rules at the time of our trial to minimise the level of socialisation of reinforcement costs through a competitive process involving LAs and chargepoint investors.

The Sandbox was granted from July 2021 until June 2023, with competitive tenders scheduled to take place in 2022.

Scale of the project

Due to procurement challenges that led to project delays and Ofgem's decision to remove the contribution to reinforcement for demand customers from April 2023 (as part of the Access and Forward-Looking Charges Significant Code Review), the Sandbox trial was only run in Norwich.

In Norwich, the tender process led to an award for the installation of 46 chargepoints across the city. The winning bidder did not require a discount on the reinforcement costs for connecting these chargepoints and so the Sandbox did not need to be used. We therefore found that, in the current market, chargepoints can be delivered with no additional subsidy on connection costs in some locations. This finding demonstrated the benefit (in terms of value for money) of using a competitive approach to bid for subsidy, rather than allocating subsidies for every investment.

2. Insights and lessons learned

Taking part in an Ofgem Sandbox

This was the first time we had applied to the Sandbox. We found the process straightforward and collaborative.
We began engagement with the Ofgem team very early in the project, as we knew that some form of regulatory derogation or consent would be required to undertake the trial innovation required. This early engagement and the formal Sandbox application were useful in clarifying what relief would be required and how the trial would run; it helped us articulate the reasons for and potential benefits from the trial earlier than in the project planning stage and made us consider the wider system and distributional impacts fully.

The insights and lessons learned here for future trials would be to engage with the Innovation Link team early, as collaboration from the pre-application phase was very useful in ensuring we were applying for the right consent and filling in the application form correctly. Communicating and collaborating on reporting requirements was also useful, to make sure both parties got the most out of this.

In terms of project execution, the Sandbox was very useful for internal conversations with colleagues, especially in our Connections team, as it demonstrated that we had the support and approval for the trial from Ofgem. It helped us engage with colleagues to implement the trial within the boundaries of the consent. This would not have been possible without the Sandbox consent letter, as our colleagues would have rightly refused to trial a novel approach without assurance that we are compliant with our licence obligations.

Similarly, the Sandbox consent letter demonstrated to project partners and potential investors that we were serious about the trial and would follow through on our commitments; this helped the LAs to get proposed procurement through their internal processes.

The project

There are many learnings from the project. These can be found in detail in the project handbooks published on the project website.

The most relevant project learnings relate to price discovery, working with the LAs, and the regulatory changes over the course of the project.

Price discovery

In terms of the price schedule, Charge Collective found that including the discount mechanism in the tender in a manner which is (i) clear to the bidders, ii) does not distort their incentives, iii) is clearly comparable across bids, and iv) minimises the overall impact on public funding was difficult.

The LAs in Charge Collective took different approaches to their tender design: Cambridgeshire County Council asked the tender participants to submit their bids under two scenarios (a specified revenue sharing option and no revenue sharing; the participants were not required to bid for both options), and Norfolk County Council allowed the participants to submit a revenue sharing option as part of their bid but accorded a small share of the scoring to this.

Both approaches required a decision rule for determining the relative importance of these offers compared to the size of subsidy required. The LAs considered this to be an important aspect for future implementations and suggested that the trade-off between obtaining a lower price for delivering the chargepoints and receiving a greater share of profit is considered carefully.

The LAs should consider the risk of local monopolies being established if one chargepoint operator dominates in a local area when designing the tender. This can be done for example by ensuring that the barriers for new entrants in the areas are low or by specifying a cap on the price at which the winning chargepoint operator can sell energy to their customers. In Charge Collective, one of the LAs chose to apply a price cap in their tender.

One of the goals of the procurement design was to elicit from the investors their willingness to pay for connection charges. On the one hand, this was expected to ensure that the subsidy is allocated efficiently. On the other, the results were expected to indicate whether market failures, policy uncertainty or regulatory choices were leading to underinvestment in chargepoints in the selected areas.

The tender results showed that there is a large diversity in the connection discount required to make the investors' business case positive. As expected, there was some correlation between the quality and price offered – a higher quality scoring was associated with a higher cost. The variation could have also been driven by the difference in the perceived attractiveness of the sites and expected utilisation although this has not been tested directly.

Ultimately though, Charge Collective found that in the current market, chargepoints can be delivered with no additional subsidy on connection costs in some locations. While this meant that the Sandbox was not used, this finding demonstrates the benefit (in terms of value for money) of using a competitive approach to bid for subsidy, rather than allocating subsidies for every investment. We would not have been able to discover this finding without having the Sandbox and therefore the option of offering a subsidy if required.

This also demonstrates the value of market engagement, especially in such a fast-developing market. The market that Norfolk County Council went out to with their procurement in December 2022 was very different to that at the start of the project in 2020 and this was reflected in the findings. Continuous engagement helped them to ensure the tender was still fit for purpose.

Working with LAs and procurement

Working with LAs was vital to the success of the project, and we built strong working relationships will all the LAs we worked with. However, for the LAs, procuring their first EV chargepoints was a large task that required sign off from multiple parties within their governance structure. This led to delays in the project timelines. For future projects, it is important to scope out these governance processes, along with key political events such as local elections, in detail to gather more accurate timelines.

The LAs have commented that working on this project has shown them that complexities and nuances that can be involved in installing and connecting on-street chargepoints in certain locations. Spare capacity in the distribution network is constrained in some locations which can make the projects extremely costly or time consuming and therefore not attractive to investors. In some cases, considerations such as the layout of existing infrastructure may require difficult and impractical workarounds which can cause delays or even deem a project infeasible. In Cambridge, for example, cobbled streets and existing utilities required hand-digging in some sites that led to longer installation timelines.

There are, nonetheless, ways for the LAs to gain an understanding of these complexities and nuances. For example, UK Power Networks has newly established a Local Net Zero team within the Distribution System Operator (DSO). This team will work with LAs to help them with their wider climate plans and Local Area Energy Plans (LAEPs) throughout RIIO-ED2, offering a three-tiered support service utilising a framework to assess and develop action plans and deliver investments where a prescribed level of certainty is achieved. As part of this, a self-service digital tool is being developed that will help LAs to make the best choices for their communities and build investment plans to meet transport decarbonisation targets. The tool will be most relevant to the site selection work for public chargepoints but will also help with coordinated reinforcement plans and investment ahead of need to facilitate chargepoints in socially optimal locations. Findings from Charge Collective are feeding into the development of a Local Net Zero team and self-service digital tool, to ensure they provide the best possible service.

The LAs also need internal cooperation for the project to be delivered as quickly and easily as possible. Selecting and procuring chargepoints requires input from a range of individuals from different departments and often, from both the city and county authorities. On the one hand, they bring different valuable expertise to the table, but they may also have different decision-making powers and priorities which can affect the progress of the project.

An example of this, which arose in Charge Collective, was the ability of the LAs and contractors to obtain the necessary planning permissions and other traffic management permits to install chargepoints from different departments of the relevant highway authority. Indeed, this has been identified as a barrier to chargepoint deployment in the Government Infrastructure Strategy which proposed some remedy actions, including streamlining the planning system, developing guidance on Section 50 licences and simplifying Traffic Regulation Orders.

Internal arrangements vary by LA but the learning from Charge Collective is that establishing a clear leader for the project, understanding and assigning the roles that different individuals play in the project, and regular communication are important elements for ensuring that the chargepoints can be delivered with minimum delays.

Regulation and policy

In June 2021, in the midst of our trials, Ofgem published its minded-to position to move to a shallow connection charging boundary (i.e. to remove from the upfront connection charge the contribution to reinforcement for demand customers). In May 2022, following a consultation, Ofgem published a final decision to remove the contribution to reinforcement for demand connections by introducing a 'fully shallow' connection charging boundary from 1 April 2023, the start of the RIIO-ED2 price control period.

As a result of this change, the reinforcement costs for on-street chargepoint connections, such as those trialled as part of Charge Collective, were fully funded.

Many of the reasons for this change align with the reasons for undertaking the trial in the first place, which we had discussed with Ofgem from the outset. This demonstrates the importance of continuous engagement with regulatory and policy making bodies, as evidence from real world experience in these markets was likely to have influenced this regulatory change. It also demonstrates the importance of horizon scanning to ensure that such changes are well anticipated and built into future plans.

2. Closing remarks

Overall, despite the fact the Sandbox was not used in the end, it has been a good experience for UK Power Networks. It crystallised our thinking early on in the project and provided a valuable arena for collaboration with Ofgem. We have appreciated the collaborative and practical nature of the Sandbox and its requirements.