EIP046

Removing Network Barriers to V2G

# Problem Statement Details

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| During the basecamp challenge setting process, some energy Suppliers have reported that G99 high- voltage problems on the distribution network are inhibiting their roll out of V2G services. Homes that were particularly sensitive to this effect were homes that already had solar. It was explained that there were issues finding suitable locations for connection of V2G assets to be connected due to the effect of V2G of raising the local voltage profile.  By resolving this issue, there would be increased uptake for domestic providers of V2G services leading to greater availability of these services for DSO’s, TSO and Suppliers. The benefit of this may be measured in cheaper access to flexibility provision for industry stakeholders.  NGED’s project Electric Nation- Powered up provides some more commentary and observations on this effect. In this particular project, the trial mitigation was to limit the maximum V2G export, but this was to facilitate the trial. In the future it would be advantageous to avoid doing this. |

# Key Stakeholders

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| Operational teams within NGED. All other DNOs, V2G providers and Suppliers |

# Target Market

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| Operational teams within NGED. All other DNOs and potentially other utilities. |

# Enablers and Constraints

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| NGED’s project Silversmith provides a forecast of the number and type of voltage issues expected on the LV network and more detailed challenge statements for LV voltage regulation in general.  There have been approaches in Australia where Volt/Var and Volt/Watt characteristics have been installed on DER to mitigate local network voltage issues.  ENA’s ETR140 working group is considering the possibility of widening the tolerable voltage at the customer’s terminals to become +/-10%.  It should be observed that any approaches which seek to use reactive power have the effect of increasing the network load and potential for control system conflicts with upstream voltage regulating systems. Any propositions using these tools should fully address these factors. |

# Scalability and Target Implementation Date

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| Benefits will accrue as soon as the solution is rolled out, analysis in Silversmith suggests that a solution by the early 2030s may be too late. |

# Innovation Strategy Target Areas

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| Innovation Theme | Target Area | Primary or Secondary |
| Data and Digitalisation | The shift to data-driven, digitally-enabled networks is critical as we move towards Net Zero.  We need your help to drive standardisation, interoperability, security and digital skills whilst accelerating our transformation to data-driven networks by the mid 2030s. | Not applicable |
| Flexibility and Market Evolution | Energy networks must quickly and efficiently respond to the rapidly evolving needs of the energy system transition. We need your support to eliminate barriers to new market entrants, deploy novel commercial and network management solutions whilst ensuring fair participation and eliminating regulatory barriers within the RIIO-2 price control periods. | Secondary |
| Net zero and the energy system transition | In order to meet the UK net zero targets of 2050 we must start converting our networks to deliver low carbon fuels today. We want to work with you to develop the role of our gas networks into the future by investigating, trialling, implementing and delivering safe, low carbon alternatives to natural gas such as Hydrogen. | Secondary |
| Net Zero requires connection of more low and zero carbon sources of energy generation, storage and demand to both the transmission and distribution networks. We need your innovative methods for effective network management and accessing flexibility to improve visibility, forecasting and modelling of low carbon technologies. |
| Optimised assets and practices | Innovation has a key role to play in ensuring our networks continue to remain reliable, safe, secure and resilient to our changing climate. We are constantly looking to improve and welcome support to identify methods to prevent interruptions, ensure resilience, reduce climate impact and future-proof our networks. | Primary |
| Supporting Consumers in Vulnerable Situations | Equality and fairness are the foundations of a just transition to Net Zero. We hope you can provide insight into the transient and situational nature of vulnerability and how we can overcome the impact the energy system has on consumers, building strong relationships for the future. | Not applicable |
| Whole Energy System Transition | The energy system must consider the full range of opportunities, risks and interdependencies that exist across the energy networks to integrate and optimise them in a way that best serves the consumer. We are looking for ways to improve visibility of the networks and transitional options, co-ordinate approaches and collaborate across the UK. | Not applicable |