Energy Innovation Basecamp 2024
Problem Statement EIP107

Understanding Operational Challenges Associated with a Fully Electric Fleet

The following problem statement has been developed by the innovation teams within the UK's Gas and Electricity Networks for the 2024 Energy Innovation Basecamp.

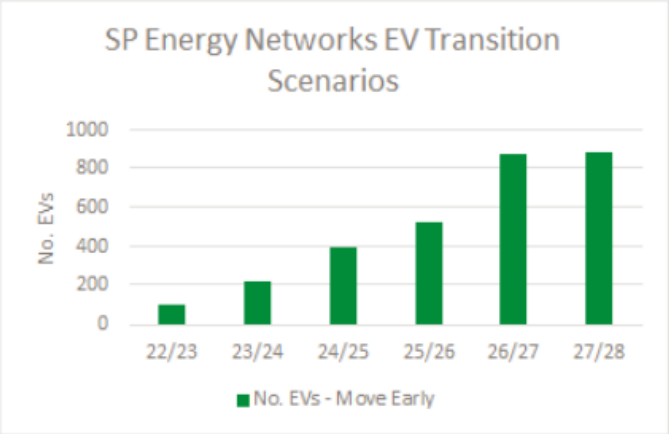
Theme: Decarbonising Network Operations

Network Areas: Electricity Distribution, Electricity Transmission, Electricity System Operator, Gas Distribution, Gas Transmission

What is the problem?

SP Energy Networks, as a Distribution and Transmission Network Operator, keeps electricity flowing to homes and businesses throughout Central and Southern Scotland, North Wales, Merseyside, Cheshire and North Shropshire. Our number one priority is to keep the lights on for our customers and our critical operational service must be maintained and operated 24 hours a day, 365 days a year.

As a Distribution and Transmission Network Operator, we are central to the net zero transition, facilitating the decarbonisation of electricity, heat and transport. We have also set our own net zero target – and as part of this, we are decarbonising our vehicle fleet, transitioning between 800 and 900 cars, vans and utility vehicles from combustion engines to electric. The scale of the transition is shown below (*note: likely to be updated early 2024*).



Fleet Makeup (#)	27/ 28
EV4x4	277
EV 4x4 MEWP	26
EV Car	52
EV Large Van	384
EV Medium Van	50
EV Small Van	97

Any transition to electric vehicles must not compromise on our number one priority of 'keeping the lights on for our customers'. This is true under normal operational scenarios, but especially true in an event where we have catastrophic failures to the network (e.g. during a storm event). We must therefore ensure that we can safely undertake business as usual operations without significant disruptions and that we are agile enough to respond to catastrophic fault events as quickly as possible.

There have been internal concerns that we do not fully understand the risks of having a fully electric fleet and we are therefore looking to partner with suitable organisations who can help us understand:

- What are the risks to operations under business-as-usual scenarios?
- What are the risks to operations under catastrophic failures of the network? (e.g. extreme storm events, flooding, etc.)
- What measures can we implement to ensure that risks are mitigated?

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What are we looking for?

Identification of Risks: We must be able to understand the risks associated with having a fully electric fleet under a business-as-usual scenario and multiple scenarios where there is a catastrophic failure of the network. Risks must be specific to Networks operators and developed by analysis of fleet operations, supported where possible from other companies who have similar operations. Risks should consider the type of work we do and the loads we transport. Risks should consider the vulnerability of the network and model scenarios where parts of the network are down, and vehicles are unable to charge.

Action Plan and Roadmap: We must be able to understand the practical actions we need to take to eliminate the risks identified above. Actions must be SMART and practical and should not include high level advice which cannot be actioned. Intangible actions will not be accepted as a satisfactory outcome of this project. Where internal action alone cannot fully alleviate the risk, we will need to understand specific external factors which need to change in order to support a fully electric fleet.

> *Example of SMART action: We have identified a lack of fast chargers in XXX region. SP Energy Networks must ensure that fast charges are installed in this region by 2025 so that staff can charge under BAU.*
>
> *Example of an intangible action: SP Energy Networks should ensure that they work with Governments and car manufactures to drive wider change in the industry.*

For this project, SP Energy Networks can provide:

- Telematics Data (See Appendix A for example)
- Details on Network vulnerability
- Resource from different departments / specialisms in SP Energy Networks for workshops / bilateral discussions and to feedback on questions as they arise.

What are the constraints?

N/A

Who are the key players?

Utilities, predominantly Electricity Distribution Network Operators would be the main stakeholders in this project and receive the most benefit.

Does this problem statement build on existing or anticipated infrastructure, policy decisions, or previous innovation projects?

N/A

What else do you need to know?

Please provide a summary proposal of how you intend to fulfil the minimum requirements above. Proposals should outline the approach to tackling the questions above and give examples how this problem has been approached in other cases (giving examples of the final outcome where possible).

Please indicate costs as part of the proposal. Cost should be broken down where possible into core deliverables; and ‘optional extras’ if these can be added if these are fully costed.

Within the proposal, where possible, please identify requirements from SP Energy Networks (e.g., data required, need for SP Energy Networks to resource workshops, etc.)

Please also include an approximate timescale indicating availability for starting the project and timescales for completion.

Innovator submissions to this problem statement will be open here during March and April, but we encourage you to submit your response as early as possible, as networks will be able to review submissions as soon as they come in.

You can also use the virtual Q&A on the Smarter Networks Portal to ask for more information about this problem statement. Questions may be answered online or at the ENA Problem Statement Launch in March 2024. More information on last year's Basecamp programme can be found here.