

## EIP013

# Can we improve our cable-laying methods? (11kV and LV)

### Problem Statement Details

Achieving Net Zero will require significant upgrades to the capacity of electrical distribution networks. Overlaying underground cables using existing trench-digging techniques is likely to prove time-consuming, expensive and disruptive to customers, especially in urban areas.

We seek ways to upgrade our underground cable network quickly, cost-effectively, and with minimal disruption; this includes excavation, installation and backfilling.

### Key Stakeholders

Operational teams within NGED, all other DNOs and potentially other utilities.

### Target Market

Operational teams within NGED, all other DNOs and potentially other utilities.

### Enablers and Constraints

The existing requirements for laying underground cables safely will need to be met by this project. The dimensions for cable trenches vary based on the rating, location and type of cable, and there are specific requirements for depth within agricultural areas. The cable trench bedding needs to be free from water and pieces of rock, and crushed limestone dust or crushed granite dust should be laid above and below the cable or duct.

The [Alternative Cable Installation Methods \(ACIM\) – Phase 1 \(Feasibility Study\) | ENA Innovation Portal \(energynetworks.org\)](#) project tried to find new ways to have longer distribution cable lays, meaning fewer joints – they settled on floating the cables in water. However, they found that there was no business case at 11 kV or lower, and it was marginal at 33 kV. They also had no sites to test this, so ended up halting the project prematurely.

The objective of the [Mini-Mole | ENA Innovation Portal \(energynetworks.org\)](#) project was to identify a safer, less disruptive and more resource efficient way of repairing and replacing LV and Service cables, so as to provide an improved service to our customers. The gas networks often use ‘moles’ to dig between two pits and avoid the need for open trenches, however these pits typically need to be very large to enable an operator to situate the mole correctly. At the time of writing, we were unable to determine the outcomes of the Mini-Mole project, but will be looking to get in touch with SPEN to confirm the project outcomes and learning.

## Scalability and Target Implementation Date

This may be applicable for the entire underground cable network of NGED and all other DNOs. There may be value to other utilities too. Target implementation date of April 2024.

## Innovation Strategy Target Areas

| Innovation Theme                                     | Target Area  | Primary or Secondary |
|--|--|----------------------|
| <b>Data and Digitalisation</b>                       | <p>The shift to data-driven, digitally-enabled networks is critical as we move towards Net Zero.</p> <p>We need your help to drive standardisation, interoperability, security and digital skills whilst accelerating our transformation to data-driven networks by the mid 2030s.</p>   | Not applicable       |
| <b>Flexibility and Market Evolution</b>              | <p>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.</p>   | Not applicable       |
| <b>Net zero and the energy system transition</b>     | <p>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.</p> <p>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.</p> | Secondary            |
| <b>Optimised assets and practices</b>                | <p>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.</p>  | Primary              |
| <b>Supporting Consumers in Vulnerable Situations</b> | <p>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.</p>   | Not applicable       |
| <b>Whole Energy System Transition</b>                | <p>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.</p>   | Not applicable       |