

## HV Phase Connectivity

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: Maximising Use of Existing Infrastructure**

**Network Areas: Electricity Distribution**

### **What is the problem?**

To understand the capacity of the existing network and the impact of future load growth we model the network. The accuracy of the results from power flow analysis will reflect the accuracy of the underlying network model. One of the areas where network models lack data is phase connectivity.

LV networks are at risk of network unbalance as neither service cable or phase connectivity was captured at the time of installation for large areas of network. The connection of increasing volumes of low carbon technologies such as heat pumps, EV chargers and domestic PV has the potential to worsen the unbalance between phases increasing losses and reducing the effective capacity of the network. The SMITN project has proposed mechanisms to identify the phase connectivity for LV connected customers, however missing phase information is also an issue with our HV network model where the connectivity for single phase transformers is not always known.

Recently there have been improvements to network visibility with monitoring equipment being installed at distribution transformers and additional information being available from smart meters. At the same time there has been an increase in imagery available from satellites, aerial photography and other sources.

Are there new methods that can be used to backfill missing information about HV network connectivity?

### **What are we looking for?**

We are looking for solutions that can be applied without the need for on-site surveys. Ideally these can operate with low levels of monitoring coverage on the HV network.

### **What are the constraints?**

The solution must be cost effective to operate, and thus needs to be able to process existing data at a lower cost than sending staff to site to establish phase data.

### **Who are the key players?**

The key stakeholders are electricity Distribution Network Operators and in particular teams associated with data and mapping. The main beneficiaries will be customers applying for new or altered connections, but the broader customer base will benefit from lower network costs that would result from making better use of existing network capacity by reducing phase unbalance.

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

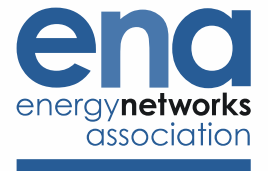
This builds on the work carried out for LV phase connectivity for SMITN.  
[https://smarter.energynetworks.org/projects/nia\\_wpd\\_066/](https://smarter.energynetworks.org/projects/nia_wpd_066/)

### **What else do you need to know?**

N/A

# Energy Innovation Basecamp 2024

## Problem Statement EIP120



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](#).