Energy Innovation Basecamp 2026
Problem Statement EIP175

Cost Sharing Arrangements for Large Infrastructure

The following problem statement has been developed by the innovation teams within the UK's Gas and Electricity Networks for the 2026 Energy Innovation Basecamp.

Theme: Building Better Faster

Network Areas: Electricity Distribution

Context

Globally, the maritime sector is responsible for 3% of carbon emissions[1] and similarly in the UK, the shipping sector is responsible for one fifth of the UK's total greenhouse gas emissions[2]. As maritime and shipping are hard to decarbonise sectors, these percentage carbon emissions will increase as other areas decarbonise.

There are several port functions where electrification is anticipated to be the best method of decarbonisation. These include ships running generators when in port to provide energy for the ship and diesel ferries which conduct short frequent trips. Such practices could be decarbonised through electrification, known as shore power, and enabled by the installation of onshore power supply (OPS) systems. As a result, by 2035, 2TWh may be required to supply shore power to UK ports[3]. In addition to electrification of shore power and marine transport, ports are hubs for logistical and industrial development. Therefore, power demand at ports is expected to grow significantly between now and 2050.

What is the problem?

Both decarbonisation via electrification, and industrial development at Marine ports is limited by high electricity network connection costs. These costs are often 'lumpy', with high initial costs difficult to justify due to potentially low demand in early years of deployment. The first comer in these situations may receive cash back via the Electricity Connection Charges Regulation (ECCR) second comer payments, but this is uncertain and doesn't address high upfront costs falling to a single customer. Given the range of customers at some of these sites, a long-term solution could be to construct a 33kV cable. In comparison, piecemeal investment at 11KV is sub-optimal for customers and the DNO – but this is the approach driven by customer-led connections investment.

For example, a port may have an existing 11KV network connection of ~3MVA. This cable is at capacity and any new demand >1MVA would require a new additional 11kV cable running back to the nearest substation ~5km away – and would therefore cost ~£3M. There are several industrial customers at the site, with their total load increasing to 20MVA by the mid- 2030s with the most optimal solution therefore a new 33kV cable to the port (costing ~£8M). However, none of these customers would be able to risk fronting the £8M investment simply on the hope that others will connect and pay back via the ECCR.

What are we looking for?

We want to explore how innovative connection cost sharing arrangements could enable decarbonisation at ports and support the decarbonisation of shipping and maritime which are viewed as hard to decarbonise sectors. We also anticipate that these cost sharing arrangements would have other applications across different use cases. These include freeports and industrial and logistics hubs or clusters – all cases where there are a range of customers on site, all needing significant additional power to decarbonise and develop industrially. Often these sites have geographical limitations outside of the grid, for example, needing to be next to road and transport infrastructure, but where the electricity network nearby isn't sufficiently developed for their needs. . Any solution identified could also address for example Motorway Service Area sites – where there may be multiple charge point operators looking for additional power, but no one can justify the initial cost.

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What are the constraints?

The regulations governing investment are clear. They relate to:

- Strategic network investment, focussed on reinforcing network based on anticipated demand, or
- Reactionary investment based on an accepted offer from a customer.

This leaves an investment gap, where no one is incentivised or able to fund the new connections which are essential for decarbonisation and net zero. There is a potential precedent set by the Green Recovery Fund, which built network, funded by bill payers, to “nodes” based on customer consultation, during ED1.

Solutions may require us to go beyond our existing role to coordinate with stakeholders or seek the use of a regulatory sandbox to explore how regulated finance can be used in ways not currently allowed under existing network investment funding mechanisms.

Who are the key players?

DNOs, port stakeholders, industrial clusters, free-ports

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

Ofgem’s Access SCR made demand projects more viable by changing how the cost of reinforcement is distributed. The cost of reinforcement that is prompted by a new demand connection is now distributed via the Distribution Use of System Charges (DUoS). However, but the cost of sole use assets – the extension cable – is still chargeable to the connecting customer, and this varies significantly according to local circumstances, leaving a post code lottery for connecting customers.

SSEN’s SeaChange project is building a ‘Navigating Energy Transitions’ (NET) tool, which will help ports to plot their most viable pathways for decarbonisation. This tool will also give network operators like SSEN visibility of the predicted electrical load arising from ports, which is estimated to be as high as 4,000 GWh per year’.

What else do you need to know?

N/A

Innovator submissions to this problem statement will be open on the Smarter Networks Portal from 4th February to the 13th March, 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 on 4th February 2026. More information on last year’s Basecamp programme can be found on the Smarter Networks Portal.