

Project OBELISC

**On-Boundary Enhanced LCT
Integrating Service Cabinet (OBELISC)**

Overview

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OBELISC - At a Glance

Project name: On-Boundary Enhanced LCT Integrating Service Cabinet (OBELISC)

Sponsor: National Grid Electricity Distribution (NGED)

Funding: Network Innovation Allowance (NIA)

Duration: January 2025 - July 2027

Budget: £996,000 (approx. £1 million)

What is OBELISC

NGED's OBELISC project is developing a new way of upgrading domestic electricity connections so that homes can boost their electricity capacity, and more easily adopt low carbon technologies (LCTs) like electric vehicle (EV) chargers and heat pumps.

It does this by creating a new three-phase service cabinet installed at the property boundary, upgrading existing single-phase supplies and avoiding the need to install three-phase wiring through a house and garden.

Why OBELISC Matters

OBELISC could enable electrification at pace as we transition towards a low carbon economy by helping to solve several different domestic supply problems:

1. Retrofitting existing properties to support the power demands of increased electrification
2. Removing 'looped' domestic supplies at scale
3. Making it easier and cheaper to connect new homes to the grid

Single-phase

Most UK homes currently have a single-phase electricity supply – this is like one lane of traffic bringing in electricity. It provides enough power for lights, kettles, ovens, washing machines and most standard EV chargers. But when you start adding greater electrical demand via heat pumps, fast EV chargers, batteries and electric heating, homes can quickly run out of capacity.

Three-phase

A three-phase supply provides three separate electrical lanes instead of one. It delivers more power, better balances electrical load, supports higher demand and reduces stress on the system. It is used in most commercial, farming and industrial settings, and increasingly in high-electrification homes.

1. Retrofitting existing properties

Most UK homes (particularly older homes) are connected to the electricity network on a single-phase supply. This means one cable delivering live electricity to a property. While this is fine for most households, in larger properties the system is not optimised to support the power demands of increased electrification and use of LCTs, including fast/rapid charging.

When household electricity demand exceeds around 18.4 kW - sometimes when both a heat pump and EV charger are installed - then a new system is needed to comply with safety policies. This is traditionally done by upgrading the supply to a three-phase connection. However, retrofitting a three-phase supply is:

- Expensive
- Disruptive (digging up gardens and driveways)
- Technically complex
 - meter cabinet resizing
 - routing cables across property
 - access issues, especially in older homes

The purpose of OBELISC is to make these upgrades simpler by installing a purpose-built, three-phase connection cabinet that sits at the boundary of a home. This would:

- Reduce disruption, intrusive works and timescales
- Cut costs for customers and networks
- Improve customer experience

It would also help unlock decarbonisation by supporting more widespread adoption of LCTs.

2. Removing looped domestic supplies at scale

A looped supply is where neighbouring homes share part of the same electricity cable before it splits into each property. This was a simple and cost-effective way to connect homes when electricity use was much lower.

Today, as more homes use low carbon technologies like electric vehicles and heat pumps, that shared cable can become a pinch point. It can overheat, cause voltage problems and make it harder to work out how much power each home needs.

To deal with this, electricity distribution companies remove looped supplies so that each home has its own

direct connection. This is known as unlooping. It helps free up capacity on the network, improves safety and makes it easier to support growing electricity demand.

Unlooping often means the connection at the property needs to be upgraded or changed. Using the same cabinet design each time can make this work quicker, simpler and more consistent, while reducing the need for one-off designs.

OBELISC provides a standard three-phase meter cabinet that could support unlooping by offering a modular, future-ready connection at the property. This could:

- make unlooping quicker and easier
- provide more flexibility for future low carbon technologies
- help avoid further visits and extra disruption later

3. Making it easier and cheaper to connect new homes to the grid

Larger new build properties are expected to have three-phase supply installed to allow for future electricity demand requirements. Today, three-phase cables are routed directly into the property terminating in an internal three-phase cabinet. However, this has several drawbacks:

- Connections to new LCT technologies are complex, disruptive and expensive, as cabling has to come from inside the property
- Future inspections and maintenance require access to the property
- Existing three phase supply cabinets and distribution boards are large, taking up space in properties that could be used for other purposes.
- Instead, installing a three-phase meter cabinet on the boundary of the property like OBELISC safeguards future electricity demand without creating upfront and ongoing disruption and cost for customers. The new approach allows:
 - Connection for the house from a more economical single-phase cabling, which is suitable for standard household loads
 - An external connection for LCT installation directly to the boundary cabinet, significantly reducing internal disruption and technical complexity
 - Routine inspections and servicing can be conducted without requiring access to the interior of the property, minimising disruption for residents
 - Predicted reduced overall cost

Visit the website for latest updates: <https://commercial.nationalgrid.co.uk/innovation/projects/on-boundary-enhanced-lct-integrating-service-cabinet-obelisc>

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