

# Energy Networks Innovation Process Annual Project Progress Form



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Notes on Completion: Please refer to the NIA Governance Document to assist in the completion of this form.  
Do not use tables

## Step 1 - Initial Project Details

Project Title

On Boundary Enhanced LTC Integrating Service Cabinet (OBELISC)

Project Reference

NGED\_NIA\_078\_OBELSIC

Nominated Project Contact(s)

Laurence Hunter

Project Start Date

01/25

Project End Date

07/27

Scope (15000 Characters max)

This project aims to demonstrate how an on-boundary three phase service cabinet can serve as an alternative method for upgrading domestic customers to a three-phase supply, overcoming barriers in the customer journey to net zero by:

- A reduction in disruption to customers by avoiding laying new three-phase service cable across properties, protecting the integrity of frontages and improving the customer journey to decarbonisation
- Enabling the decarbonisation of domestic energy consumption by allowing the connection of LCTs
- Simplifying the installation process of connecting LCT supply cables behind the meter

It is anticipated that developing an on-boundary three phase service cabinet will enable NGED to lower the costs of both providing three-phase upgrade to customers and the cost of domestic reconfiguration, delivering measurable reductions in customer bills.

Key activities that will be carried out during the project include:

- Stakeholder engagement to:
  - Obtain end-user buy in to the project concept, ensuring the customers wants and will accept devices on their properties
  - Capture stakeholder requirements including: Use cases, consumer connection technical requirements, amenity and cosmetic requirements and installation requirements
  - Test stakeholder acceptance at key milestones
- DNO internal engagement to capture standards compliance, operational requirements, distribution system integration
- Production of requirements and functional specification documents which describe in detail the OBELISC system functions
- Design of two potential solutions against the functional, working through multiple design variations (e.g. through rapid prototyping or other processes)
- Functionality and compliance testing on the finalised prototypes of each solution
- Test installation of the prototypes in NGED Training School
- Cost-benefit analysis to assess the validity of the new solution across the network

Stages

The project will be delivered in four stages, with stage gates in-between to sign off on proceeding to the next stage.

**Stage zero: Initiation and buy-in**

This stage will focus on obtaining end-user buy in to the project concept. It will ensure that the project is designing a product customer's want and will accept on their properties. It will achieve this by engaging customers through representative groups and presentations at customer events.

At the end of this phase, it is expected the OBELISC solution will be confirmed at **TRL 2**.

**Stage one: Requirements of the solution**

This stage will focus on capturing the internal and external stakeholder requirements for the solution, including: use cases, standards compliance, regulatory compliance, operational requirements, distribution system integration, consumer connection technical requirements, amenity and cosmetic requirements and installation requirements.

It will also assemble a stakeholder review panel that will provide feedback and review throughout the course of the project and define the requirements of the OBELISC solution. The review panel is aimed to be at least 15 key persons from a wider stakeholder pool of around 400 invitees and will be empowered via dedicated stakeholder engagement partner to be a voice ensuring value for customers is embedded in the solution design.

This stage will develop a functional specification for partners to use to develop technical designs.

At the end of this phase, it is expected the OBELISC solution will have achieved **TRL 3**.

**Stage two: Solution design**

A design process will be agreed separately between Frazer-Nash, Cubis, Proteus and Lucy for development of the solution against the functional specification. The solution design will be delivered as per the agreed process.

This stage will also define the functionality and compliance test regime for the solution. This will include estimating the number of prototypes of the final design that will be required to be manufactured to deliver this test regime.

At the end of this phase, it is expected the OBELISC solution will have achieved **TRL 4**.

**Stage three: Validating the designed solution**

This stage will produce prototypes of the final design and carry out functionality and compliance testing as defined in the previous stage to ensure the solution meets all requirements defined in stage one.

Assuming testing is passed, a trial installation of the prototype will be carried out at an NGED training school site to develop the techniques for installation on the network.

This stage will also perform a cost-benefit analysis for all stakeholders of the deployment of the solution on NGED / DNO networks.

These activities will inform a final review to evaluate the project's success and decide whether to accept into the new product into NGED business as usual procurement and operations.

At the end of this phase, it is expected the OBELISC solution will have achieved **TRL 6**. The expectation is that the OBELISC device will be functional and meet all necessary compliance standards to be installed in homes – however, as this project does not include an installation live on the distribution network it does not meet TRL 7 or 8 by the strictest interpretation of their definitions.

Workstreams

Following the approval of a functional specification for the project solution, two solutions will be designed and tested in separate Workstreams. The aim of having dual Workstreams is not to draw a comparison between the two designs, but to increase market options for customers after the project. The ideal scenario is that both Workstreams are successful.

Workstream Alpha will be delivered by Proteus Switchgear and Cubis Systems

Workstream Beta will be delivered by Lucy Electric

Objective (15000 Characters max)

- Develop a novel solution for upgrading customers to a three-phase supply, so they can adopt LCTs to achieve net zero
- Develop a new three phase connection point which can be installed at the boundary edge of domestic properties
- Deliver a solution which key stakeholders and end users will accept to be installed at the boundary edge of domestic properties
- Design a cost-effective solution which reduces the cost and disruption of upgrading customers to a three-phase supply
- Increase the capacity of LV networks to connect large volumes of low carbon technologies by balancing load across all three phases

Success Criteria (15000 Characters max)

- A new type of service cabinet will be designed to serve as the three-phase connection point near the boundary edge of properties
- The new solution will integrate the existing single phase service cable into its architecture and comply with domestic wiring regulations
- The new solution will have an outward appearance and construction that a majority of stakeholders will accept on the boundaries of their properties
- The new solution will allow low carbon technologies to be connected directly to it instead of via the existing consumer unit attached to the domestic property to reduce domestic disruption.
- The new solution will allow the load from low carbon technologies to be balanced across the three phases of the LV network in retrofit situations
- The new solution will be cost-effective benchmarked against the existing process for three-phase upgrade in enough use cases to justify scale up to business as usual

Step 2 - Performance Outcomes

Performance Compared to Original Project Aims, Objectives and Success Criteria

Details of how the Project is investigating/solving the issue described in the NIA Project Registration Pro-forma. Details of how the Project is performing/performed relative to its aims, objectives and success criteria. (15000 Characters max)

At the time of authoring, the project has completed **Stage zero: Initiation and buy-in**. As such, the performance against aims, objectives and success criteria shall be assessed against our current position.

**Objectives:**

- Develop a novel solution for upgrading customers to a three-phase supply, so they can adopt LCTs to achieve net zero
  - Not started, on track to deliver Q1 2027
- Develop a new three phase connection point which can be installed at the boundary edge of domestic properties
  - Not started, on track to deliver Q1 2027
- Deliver a solution which key stakeholders and end users will accept to be installed at the boundary edge of domestic properties
  - Not started, on track to deliver Q1 2027
- Design a cost-effective solution which reduces the cost and disruption of upgrading customers to a three-phase supply
  - Not started, on track to deliver Q1 2027
- Increase the capacity of LV networks to connect large volumes of low carbon technologies by balancing load across all three phases
  - Not started, on track to deliver Q1 2027

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- The new solution will be cost-effective benchmarked against the existing process for three-phase upgrade in enough use cases to justify scale up to business as usual
  - Not started, on track to deliver Q1 2027

Required Modifications to the Planned Project Approach During the Course of the Project

The Network Licensee should state any changes to its planned methodology and describe why the planned approach proved to be inappropriate. Please confirm if no changes are required. (15000 Characters max)

Not applicable – no changes

Lessons Learnt For Future Projects

Recommendations on how the learning from the Project could be exploited further. This may include recommendations on what form of trialling will be required to move the Method to the next TRL. The Network Licensee should also state if the Project discovered significant problems with the trialled Methods. The Network Licensee should comment on the likelihood that the Method will be deployed on a large scale in future. The Network Licensee should discuss the effectiveness of any Research, Development or Demonstration undertaken. (15000 Characters max)

Outcomes of the project will be reported in subsequent annual progress reports.

Outcomes of the Project

When available, comprehensive details of the Project's outcomes are to be reported. Where quantitative data is available to describe these outcomes it should be included in the report. Wherever possible, the performance improvement attributable to the Project should be described. If the TRL of the Method has changed as a result of the Project this should be reported. The Network Licensee should highlight any opportunities for future Projects to develop learning further. (15000 Characters max)

Outputs from Stage 0 of the project are available on the project webpage. This includes:

- Stage 1 Network Modelling report: Produced by EA Technology Ltd, this report details the network modelling work undertaken in Stage 1. EA Technology's Transform tool was used to study the LV to 33kV networks, and NGED's Simple Curtailment Tool which was used to evaluate 4 Grid Supply Points' 132kV networks. <https://www.nationalgrid.co.uk/downloads-view-reciteme/660492>.
- End of Stage 1 report: Produced by Baringa, this report explains the methodology and results from the Power Market Modelling aspect of the work. <https://www.nationalgrid.co.uk/downloads-view-reciteme/660492>.

Outcomes of Stage 2 and 3 of the project will be reported in subsequent annual progress reports.

Step 3 - Outputs And Implementation

Data Access Level & Quality Details

A description of how any network or consumption data (anonymised where necessary) gathered in the course of the Project can be requested by interested parties. This requirement may be met by including a link to the publicly available data sharing policy. (15000 Characters max)

All reports and supporting work are published on the National Grid – OBELISC project page. Additional data can be requested by contacting us directly.  
NGED data can be requested via the National Grid Connected Data Portal (<https://connecteddata.nationalgrid.co.uk/>).

#### Foreground IPR

A description of any foreground IPR that have been developed by the project and how this will be owned. (15000 Characters max)

This IPR will be made available to other GB DNOs on request or as part of the project Closedown Report:

- The NGED engineering equipment specification for the device (WP2 D2. EE specification)
- Briefing to stakeholder review panel on the identified requirements of the project OBELISC solution (WP1 D1. Requirements stakeholder briefing)
- Briefing to stakeholder review panel on the functional specification of the project OBELISC solution (WP1 D2. Functional specification stakeholder briefing)
- Briefing to stakeholder review panel on the design of the project OBELISC solution (WP1 D3. Design stakeholder briefing)
- Briefing to stakeholder review panel on the final prototype review of the project OBELISC solution (WP1 D4. Prototype review stakeholder briefing)
- Requirements documentation for the OBELISC solution (WP2 D1. Requirements document)
- Planning documentation for the implementation of the OBELISC design stage (WP3 D1. Design process plan)
- Functional specification for the OBELISC solution (WP3 D2. Functional specification document)
- Plan for functionality and compliance testing of the OBELISC solution (WP4 D1. Functionality and compliance test book template)
- Documentation for method and results of functionality and compliance tests carried out on prototypes of the Workstream Alpha solution (WP4 D3A. Completed functionality and compliance test book)
- Documentation for method and results of functionality and compliance tests carried out on prototypes of the Workstream Beta solution (WP4 D3B. Completed functionality and compliance test book)
- Cost-benefit analysis of the OBELISC project solution (WP4 D4. Cost-benefit analysis)
- Final review of the OBELISC prototype testing, trial installation and cost-benefit analysis (WP4 D5. Prototype technical review document)