

Energy Networks Innovation Process

Annual Project Progress Report Document



Date of Submission: 25/07/2025

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Notes on Completion: Please refer to the NIA Governance Document to assist in the completion of this form. Please use the default font (Calibri font size 10) in your submission. Please ensure all content is contained within the boundaries of the text areas.

Project Title (<i>This cannot be changed once registered</i>) Regional Energy System Optimisation Planning (RESOP)	Project Reference NIA_SSEN_0071
Funding Licensee(s) Scottish Hydro Electric Power Distribution Southern Electric Power Distribution Scotland and Southern Gas Networks Cadent Gas	Project Start Date October 2023
Project Duration 25 months	Year 2025
Nominated Project Contact(s) Tim Sammon, Innovation Programme Delivery Manager at SSEN	

1. Scope

- Further development of the LAEP+ platform and connected tools, building on work by the preceding Whole System Growth Scenario Modelling NIA projects, to provide LAEP and LHEES functionality that meets LA, DNO and GDN requirements i.e. Create Net Zero plans, and any emerging requirements resulting from the proposed creation of the Future System Operator.
- Integration of Gas and Electricity forecasts into LAEP / LHEES forecasting and DFES to improve forecast confidence.
- Onboarding of District Heating SME to assist with optimal location of District Heating projects within LAEP+.
- Further development of automated modelling by tools that feed in or connect to LAEP+ to reduce human resource requirements.
- Expand LAEP+ testing to a wider variety of Local Authorities to assist with development.

We expect the true savings of the project to be determined once LAEP+ is being utilised to determine optimum pathways to reach Net Zero. However, a high-level estimate of LAEP+ savings vs present day consultant costs to create LAEPs is estimated to be £3.17m per annum.

2. Objective(s)

The project aims to meet the following objectives:

1. Develop Power Flow Software so that it can perform low voltage (LV) to grid supply point (GSP) modelling for integration with LAEP+.
2. Develop LAEP+ so that it can improve the forecast accuracy of LAEP functionality developed by project CLEO.
3. Improve gas forecast accuracy of LAEP+ through further development led by Gas Distribution Network Operators.
4. Improve District Heating Forecast accuracy of LAEP+ through further development led by a District Heating SME(s).
5. Develop DFES methodology to include GDN, DNO and LA forecasts and integrate with LAEP+ to improve data flows.
6. Develop standardised reporting functionality on LAEP+/Power Flow Software to assist with investment planning and reporting.
7. Develop guidance methodology for creating digital LAEPs.

3. Success Criteria

The project will be a success if:

1. The Power Flow Software tool is able to perform LV to GSP load modelling studies to assist with self-serve connection functionality. The power flow outputs from Power Flow Software must be within sufficient error margins when tested against Power Factory, so that a decision can be made on what tool to use moving forward.
2. LAEP+ improves upon the current methodology of creating LAEPs through increased granularity and accuracy of forecasting, as well as stakeholder acceptance by all parties i.e. LAs, DNOs and GDNs.
3. GDNs must sign off on the methodology and accuracy of LAEP+ when determining where gas solutions are appropriate within digital LAEPs.
4. District Heating SME(s) must sign off on the methodology and accuracy of LAEP+ when determining where district heating solutions are appropriate within digital LAEPs.
4. DFES methodology needs to be expanded so that it considers the views of DNOs / GDNs / LAs and utilise LAEP+ to assist with obtaining baseline and forecast data. A new methodology needs to be created and signed off by all parties.
5. LAEP+ and Power Flow Software must have reporting functionality that meets DNO / GDN / LA requirements so they can report in a standardised way. The reporting functionality needs to be signed off by all parties.
6. Guidance documentation needs to be created on creating digital LAEPs.

4. Performance compared to the 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.*

So far we have achieved the following against each objective:

1. Develop Power Flow Software so that it can perform Low Voltage (LV) to Grid Supply Point (GSP) modelling for integration with LAEP+.

We have created an LV model within Power Factory and built an Application Protocol Interface (API) to connect it to LAEP+. Users are able to create LV projects within LAEP+ and test the impact of these projects on the electricity network via the power flow connection.

2. Develop LAEP+ so that it can improve the forecast accuracy of LAEP functionality developed by project CLEO.

The scenario functionality within LAEP+ is basic and challenging to interpret i.e. there are limited customisation options to create a scenario and the results are difficult to make sense of as assumptions are not shown and outputs are aggregated to such a high level that they have limited value for planning purposes. We have now rolled out a scenarios version 2.0 that builds on the work that project CLEO has done by addressing these issues with improved functionality for the purpose of creating Digital LAEPs.

3. Improve gas forecast accuracy of LAEP+ through further development led by Gas Distribution Network (GDN) Operators.

We have contracted iTower to perform a gap analysis on LAEP+ to better understand how to improve the gas use case functionality. The gap analysis is complete and iTower are now working with Advanced Infrastructure Technology Limited (AITL, the developer of LAEP+) to assist with the gas use case functionality for the work that is progressing on the Winchester Digital LAEP.

4. Improve District Heating Forecast accuracy of LAEP+ through further development led by a District Heating SME(s).

We are working closely with the Department of Energy Security and Net Zero (DESNZ) who have provided the heat network zone model for the digital LAEP that is taking place in Winchester. Centre for Sustainable Energy (CSE) is assisting with interpreting the data and identifying Heat Network connection points to the network, as well as demand impact. CSE are also replicating the DESNZ Heat Network zoning methodology for all of Scotland, which can then be used to assist Scottish Local Authorities (LAs) with their LHEES and LAEP work.

5. Develop Distribution Future Energy Scenarios (DFES) methodology to include GDN, DNO and LA forecasts and integrate with LAEP+ to improve data flows.

Regen, who produce SSEN's DFES and Advanced Infrastructure, who produce the LAEP+ tool, have completed work to determine how data within LAEP+ can be used to improve DFES forecasts. Some key outputs include aligning LAEP+ with DFES building blocks and making LAEP+ data available to Regen to inform DFES. A report is available upon request.

6. Develop standardised reporting functionality on LAEP+/Power Flow Software to assist with investment planning and reporting.

This workstream is ongoing.

7. Develop guidance methodology for creating digital LAEPs.

This workstream is ongoing alongside the Digital LAEP that is being carried out for Winchester.

5. Required modifications to the planned 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.

N/A

6. 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.

Not available at this time but will be disseminated during the closedown report.

7. The 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.

Not available at this time but will be included during the closedown report.

8. Data Access & 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.

For information how to request data gathered in the course of this project, see Network Innovation Competition (NIC) and Network Innovation Allowance (NIA) Data Sharing Procedure at <https://sen-innovation.co.uk/innovation-strategy/>.

9. Foreground IPR

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

All learnings from this project will be shared through reports and dissemination events. All methodologies will also be shared so they can be replicated by other DNOs or others in the industry.