



NIA ENWL039

LV Futures

Progress Report

July 2026

Version History

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Review

Name	Role	Signature
A Howard	Innovation Programme Manager	<i>A Howard</i>
G Paterson	Innovation PMO Manager	<i>G Paterson</i>

Approval

Name	Role	Signature & Date
R Moulton	Head of Innovation	<i>R Moulton – 28 July 2026</i>

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Project fundamentals

Project title	LV Futures
Project reference	NIA_ENWL039
Funding licensee(s)	Electricity North West Limited
Project start date	Feb 2025
Project duration	1 year and 7 months
Nominated project contact(s)	Rachel Stanley

1. Project background

The energy system transition will have the greatest impact on LV demand and capacity due to the mass adoption of electric vehicles and heat pumps. Understanding this impact on demand, available capacity and investment required requires granular long term forecasting on LV feeders. Access to this level of forecasting will then allow networks to procure flexible services or reinforce the network in a more proactive manner.

Due to the availability of data, previous innovation projects focused on granular long term demand forecasting on EHV / HV networks but a gap exists for the LV network.

The recent deployment of LV monitoring and the increased availability of smart meter data provides an opportunity to explore the development of more granular forecasting of demand and capacity on LV feeders.

The outputs of LV Futures will inform interventions such as reinforcement or flexible services requirements.

2. Project scope

This project will conduct detailed analysis on data from recently deployed LV monitoring and smart meters along with trends on Low Carbon Technology uptake. This analysis will produce forecasts of HV/LV substation and LV feeder demand for a 5 year time horizon which will be regularly refreshed.

The project will produce and publish all the relevant specifications and functional requirements for the forecasting tool as well as a demonstration of a limited area of LV network on a prototype tool.

Net Benefits for consumers

By reducing unplanned outages on LV networks, consumers will benefit from fewer disruptions, minimising financial losses and inconvenience to daily routines, work and leisure activities. Knowing that outages are less likely reduces stress and anxiety associated with the uncertainty of potential disruptions.

Financial benefits to network

Having a better understanding of the load and condition of LV cables, maintenance and replacement efforts can be implemented more effectively, maximising the lifespan of assets and optimising investment decisions. Unplanned outages require emergency repairs which are more expensive than planned work. By reducing these unplanned outages, it is anticipated the project will save £410,000 per annum.

3. Objectives

The objectives are:

- Establish a methodology to ingest analyse LV monitoring and smart meter data.
- Combine above analysis with trend data for Low Carbon Technologies to produce power flow and LV feeder load allocation for a 5-year horizon.
- Build a prototype tool to demonstrate the outputs of the forecasting for a limited area of LV network.

4. Success criteria

- A technical report detailing all the specifications and functional requirements of the forecasting tool.
- A demonstration of forecasting outputs for a limited area of LV network on a prototype tool.

5. Performance compared to the original project aims, objectives and success criteria

Since project commencement project partners have mobilised resources and project governance and administration has been established.

Early project deliverables are focussed on unbundling current business processes and establishing a sound foundation for building the new LV forecasting tool. This initial work has progressed well.

Forecasting counts and consumption

The data dictionaries and functional specifications have been agreed providing the basis for the remaining work relating to forecasting counts and consumption information (e.g. data relating to LCT technologies, their location and energy usage). The remaining work includes data pre-processing ready for use in the counts and consumption model, also under development.

Load Modelling

The data dictionaries and functional specifications were agreed for load modelling components (inc. min and max loadings, the treatment of diversity and the scaling of consumption). These activities demonstrated the feasibility of the proposed modelling approach and established a clear basis for subsequent testing, validation and refinement. An initial test of an early model tool has provided feedback for its continued ongoing development.

System Integration

We have completed documentation detailing how a LV Futures tool could integrate with SP ENW and partner systems. A draft design for a basic user interface has been outlined and is being reviewed.

Network Monitoring Data

A key innovation in this project is the utilisation of data collected from the increasing number of LV substation monitoring units as a basis for future forecasting. The initial stage of the project was to understand how this measured data from multiple locations can be processed and formatted, taking account of existing generation, to provide a suitable baseline to forecast forward from. This element of work has been found to be more challenging than envisaged with an initial approach identified but not yet confirmed.

6. Required modifications to the planned approach during the course of the project

As well as the additional challenges in handling monitoring data, the project has identified a potential issue in the adaptation of the existing network modelling into a format suitable for the prototype forecasting tool.

We are currently working with our partners to understand the complexities identified and how best to resolve them. It is currently expected a resolution can be identified and agreed

that will keep the project budget and deliverables unchanged but will need additional time to deliver

7. Lessons learned for future projects

Key learning to date is:

Some of the more innovative elements have been more challenging than originally estimated meaning we will need to extend the project timeline. Future projects should consider if there is a better way for dealing with uncertainty.

The work to date has also revealed several inconsistencies in assumptions between all parties which impacted the initial outputs and anticipated review cycles.

We then implemented iterative engagement workshops and regular cross partner meetings which worked well to validate assumptions, resolve misinterpretations and clarify areas of understanding.

8. Data access & quality details

There is no data available associated with this project at this stage.

Anonymised data can be made available in line with our [innovation data sharing policy](#), which can be found on our website.

9. Foreground IPR

There is no foreground IPR associated with this project at this stage.

10. Standards documents

Not applicable.