NIA Progress Report

Programme Summary

31 July 2020

VERSION HISTORY

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REVIEW

Name	Role	Date
Dan Randles	Head of Innovation	30.07.20

APPROVAL

Name	Role	Date
Steve Cox	Engineering & Technical Director	30.07.20

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1   EXECUTIVE SUMMARY

Electricity North West is delighted to present this fifth summary of activities and learning from the projects funded under Ofgem's Network Innovation Allowance (NIA).

This summary highlights some of the findings and important learning from projects currently in flight, of which full information can be found in the associated annual reports on the ENA Smarter Networks portal.

During this fifth year of NIA-funded projects, Electricity North West has closed one project and registered one new project. There are currently 10 projects in-flight, all of which reflect the aims of the innovation strategy, which was itself updated in August 2019.

Highlighted below is a brief synopsis of what Electricity North West considers to be important for dissemination to the electricity community.

2   INNOVATION STRATEGY

Electricity North West updated its innovation strategy in August 2019.

The challenges faced by electricity network operators such as Electricity North West from the UK's ongoing decarbonisation of heat and transport are significant. A key part of the UK's journey to zero carbon is the revolution of our electricity industry – the way electricity is generated, stored, transported and traded.

As the region's network operator, we consider it to be our responsibility to lead the way in this transformation. Through investment and innovation in energy infrastructure, we will help the North West to decarbonise and pave the way for the growth of renewable energy.
In our innovation strategy we further explain why we innovate, how we ensure we deliver value for our customers and how we will support our region to meet our zero carbon target by 2038.

The strategy is easily accessible to stakeholders and demonstrates a clear and logical link from high level objectives to individual projects. The innovation strategy, this summary, the NIA project reports and many other supporting documents are easily accessible on the innovation pages of Electricity North West's website.

Electricity North West was also involved in the formation and production of the National Innovation Strategy, which was completely updated and published by the ENA in March 2020.

3 PROGRAMME OVERVIEW AND PROGRESS APRIL 2015 TO MARCH 2020

The individual project progress and completion reports reflect the depth of work completed and can be found on the Portal and our website. The table below shows the percentage progress made on our portfolio of projects.

No	Description	Collaborative	Start Date	Completion Date	Status	Period	% completed
NIA PROJECTS							
NIA-ENWL001	Demand Scenarios with Electri Heat & Commercial Capacity Options	No	Apr-15	Oct-16	Closed	18 months	100%
NIA-ENWL002	Distribution Asset Thermal Modelling	No	Jul-15	Jan-17	Closed	18 months	100%
NIA-ENWL003	Review of Engineering Recommendation P2/6	Yes (ENW lead)	Jan-15	Mar-16	Closed	14 months	100%
NIA-ENWL004	Combined Online Transformer Monitoring	No	Sep-14	Sep-22	Live	8 years	75%
NIA-ENWL005	Asset Risk Optimisation	No	Jul-15	Jul-17	Closed	2 years	100%
NIA-ENWL006	Sentinel	No	Sep-15	Dec-22	Live	7 years 3 months	62%
NIA-ENWL007	Reliable Low Cost Earth Fault Detection for Radial OHL Systems	No	Oct-15	Oct-17	Closed	2 years	100%
NIA-ENWL008	ATLAS - Architecture of tools for load scenarios	No	Oct-15	Nov-17	Closed	2 years 1 month	100%
NIA-ENWL009	Cable Health Assessment - Low Voltage	No	Nov-15	Aug-21	Live	5 years 9 months	75%
NIA-ENWL0010	Value of Lost Load to Customers	No	Oct-15	Oct-18	Closed	3 years	100%
NIA-ENWL0011	Enhanced Voltage Control (CLASS 2)	No	Nov-15	Nov-18	Closed	3 years	100%
NIA-ENWL0012	Investgation of Switchgear Ratings	No	Dec-15	Dec-16	Closed	1 year	100%
NIA-ENWL0013	Detection & prevention of formation of Islands via SCADA	No	Dec-15	Jun-18	Closed	2 years 6 months	100%
NIA-ENWL0014	Optimising Oil Regeneration for Transformers	No	Feb-16	Feb-22	Live	6 years	68%
NIA-ENWL0015	Tap Changer Monitoring	No	Feb-16	May-22	Live	6 years 3 months	65%
NIA-ENWL0016	Future Network Modelling Functions	No	Mar-16	Sep-17	Closed	18 months	100%
NIA-ENW0017	Electricity & Heat (Futurebay)	No	Aug-16	Jun-19	Closed	2 years 10 months	100%
NIA-ENW0018	Project Avatar	No	Oct-16	Dec-21	Live	5 years 2 months	66%
NIA-ENW0019	Interface	No	Oct-18	Oct-21	Live	3 years	47%

NIA-ENW0020	Machine Learning	No	Oct-18	Oct-21	Live	3 years	47%
NIA-ENW0021	VOLL 2	No	Nov-18	May-20	Live	18 months	100%
NIA-ENW0022	Reflect Uncertainties around E-Vehicle Charging to Optimise Network Forecasting	No	Mar-19	Mar-21	Live	2 years	50%
NIA-ENW0023	Intelligent Network Meshing Switch	No	Apr-19	Apr-20	Live	1 year	100%
NIA-NGET0100	Reative Power Exchange Application Capability Transfer (REACT)	Yes (NGC lead)	May-15	May-17	Closed	2 years	100%
NIA-NGET0154	Smart Grid Forun workstream 7 DS2030	Yes (NGC lead)	Jul-14	Sep-15	Closed	14 months	100%
WPD-NIA-008	Improved Satistical Ratings for Distribution Overhead Lines	Yes (WPD lead)	Jul-15	Jan-18	Closed	2.5 years	100%
NIA_SPEN0008	Environmentally Acceptable Wood Pole Pre-treatment Alternatives to Creosote (APPEAL)	Yes (SP Energy Networks lead)	Mar-16	Sep-18	Closed	2.5 years	100%
NIA_SSEPD0026	Management of plug in vehicle uptake on distribution networks	YES (SSE lead)	Mar-16	Jan-18	Closed	22 months	100%

4   AREAS OF SIGNIFICANT NEW LEARNING

Further areas of new learning have been observed during 2019/20.

The learning gained is shared at dissemination events and on our website and includes all projects that Electricity North West is involved in.

The main key learning we have identified this financial year relate to the VOLL2 project and a summary of the findings are as below.

4.1   Value of Lost Load 2

The VoLL2 project expands on the learning from Electricity North West's original NIA study (ENWL010) and comprised two distinct pieces of research: firstly, strategic analysis to further develop a variable VoLL model and evaluate a route for practical implementation and secondly, additional customer research to clarify some earlier findings and address unanswered questions arising from the original study. The outcomes of VoLL2 are summarised below and fully documented in the closedown report.

The Strategic element of VoLL2 was delivered in collaboration with Frazer-Nash Consultancy, appointed as project partner via a competitive tender process. The research culminated in recommendations for a disaggregated VoLL model, details of which are set out in the [Modelling Approach Report](#) which can be found on [the VoLL2 webpage](#). This phase of research concluded with an assessment of how a disaggregated VoLL model could translate practically into current regulatory mechanisms, and how it might be implemented in a nationally applicable approach within frameworks for RIIO-ED2 and beyond. The analysis demonstrated that there are benefits to be gained from the implementation of a disaggregated VoLL model into RIIO-ED2 mechanisms, specifically the Common Network Asset Indices Methodology and Cost Benefit Analysis model, which should deliver significant improvements in accuracy. However, the study also concluded that a disaggregated approach may not be appropriate within the Interruptions Incentive Scheme (IIS) mechanism. Therefore, an updated single macro value, along with a flexible disaggregated model may both have roles to play. The research recommended a cautionary approach in the implementation of any solution, to ensure there is a thorough understanding of the statistical uncertainties associated with model predictions. The project presents an argument for various approaches but recognises that a balance must ultimately be struck between the accuracy of a variable VoLL model, the complexity of methodology and how it can be practicably implemented to existing regulatory frameworks in a timely manner for RIIO-ED2. The study therefore suggests that a short-term position and long-term solution for the integration of a variable methodology is appropriate.

The customer research element of the project was delivered in collaboration with Impact Research and established the existence of a 'multiplier' effect on VoLL, relative to the geographic scale, duration and frequency of outages; assessed on the basis of the entire community, rather than the individual. The study demonstrated that a variable model, which incorporates a dimension reflecting the needs of a different customer groups, is generally considered to be fairer by customers, than the existing single value approach. However, acceptability is rooted within the context that DNOs should adequately invest to meet the needs of all customers and prioritisation should not be at the expense and detriment of others.

5   SUMMARY

Our continuous improvement journey is led by the needs of our customers. Our approach to innovation is underpinned by the aim to understand and respond to the changing needs of our customers. Collaboration with partner organisations is vital in this arena and we have found it invaluable to work with our project partners within the NIA to ensure that potential innovation solutions deliver customer benefits.

We recognise that significant learning can be gained from these NIA projects and aim to disseminate this information and any lessons learned to the DNO community and the wider electricity industry.