SIF Discovery Round 2 Close Down Report Document

Date of Submission

Dec 2023

Project Reference Number

10060474

Project Progress

Project Title

Powering Wales Renewably

Project Reference Number

10060474

Lead Funding Licensee

NG ESO - National Grid ESO

Project Start Date

April 2023

Project Duration

3 Months

Nominated Project Contact(s)

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Project Summary

In 2019, the Welsh Government set ambitious targets to meet 70% of its electricity requirements from Welsh renewable energy sources by 2030 and has set binding climate targets that align with UK Government's commitments to a 78% reduction in carbon emissions by 2035.

Despite Wales' significant renewable energy opportunities, considerable planning and co-ordination challenges across multiple stakeholders is preventing the acceleration of renewable energy adoption in a sustainable way.

To resolve these challenges, the project will take a whole electricity system approach to deliver an innovative digital twin of the network (the first to include both transmission and distribution in Wales). The Welsh Government and network operators will work together and identify priorities for progressing Wales' world-leading decarbonisation plans, increasing renewable electricity hosting capacity and delivering net benefits to Wales' citizens and communities.

ESO and Welsh Government will partner to ensure an adequate and accelerated response to Net-zero goals/ challenges. Network partners (NGET, NGED) will provide subject matter expertise, ensuring a whole electricity system approach. CGI will be responsible for developing intelligent modelling solutions.

The Digital twin will utilise detailed electricity system models to:

- Provide complete visibility of current network status, enabling transmission and distribution coordination opportunities for Wales
- Deliver a connections and capacity management tool, enabling a better understanding of the bi-directional whole system relationship between reinforcement options and type of low carbon technology solutions.
- Deliver flexibility markets coordination interface, optimising network operators' flexibility requirements across multiple trading platforms and response providers, thereby reducing consumers' costs.
- Facilitate new distributed energy resource site identification and connection, and enable constraint coordination across networks, allowing Welsh Government to set priorities, support net zero progress and enable network change through stakeholder collaboration.
- Address local needs by enabling home-produced, low-cost renewable electricity generation.

Powering Wales Renewably addresses Innovation Challenge 2: Preparing for a net zero power system:

- Establishing Wales' first whole electricity system model, enabling Wales to reach its full Renewable Energy (RE) potential and reduce carbon emissions.
- Accessing novel system support by enabling flexibility coordination across the whole electricity system, reducing RE curtailment and facilitating constraint management.
- Enabling electricity system integration through additional connections, increased outputs, and access for flexibility services.

Currently, only separate pieces of the jigsaw are available; this common representation of the whole electricity network will complete the puzzle to enable local and regional policy makers, investors and community leaders to work with network operators to deliver net zero.

Project Description

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Summary Key Findings

Project submitted to Alpha, information on this submission can be found on the Application attached to this portal. please contact project lead for any additional information

User needs

Project submitted to Alpha, information on this submission can be found on the Application attached to this portal. please contact project lead for any additional information

Impacts and benefits

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Risks, Issues and Constraints

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Working in the open

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Costs and value for money

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Special conditions

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Documents uploaded where applicable

Yes