Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.
Network Licensees must publish the required Project Progress information on the Smarter Networks Portal by 31st July 2014 and each year thereafter. The Network Licensee(s) must publish Project Progress information for each NIA Project that has developed new learning in the preceding relevant year.

NIA Project Close Down Report Document

Date of Submission

Jul 2025

Project Reference Number

NIA2_NGESO024

Project Progress

Project Title

REVEAL

Project Reference Number

NIA2_NGESO024

Funding Licensee(s)

NESO - National Energy System Operator

Project Start Date

September 2022

Project Duration

0 years and 5 months

Nominated Project Contact(s)

Caroline Rose-Newport

Scope

The purpose of this project is to investigate the feasibility of, and develop, a proof of concept (POC) for an ESO hosted, digitally ringfenced, balancing and constraint market which enables the ESO (supported by groups of energy sector service providers) to act autonomously in building innovative concepts, services and solutions to accelerate the ESO's Markets Roadmap and drive to net zero.

Throughout the project we will engage key SMEs internally and externally to gather their views on the development of such a system. Activities will include:

- Conduct markets scan and review of Future Market Reform
- Run a "future vision" event with Industry Innovators on user requirements
- Event output/documentation review and brainstorming session, validate hypothesis
- Review tie-in with the ESO's Single Markets Platform and the Digital Engagement Platform
- Development and delivery of a high-level business case, risk/barrier assessment and scoping document
- Development and delivery of a pilot fit/gap analysis and estimated costs and feasibility study

Objectives

1. Deliver a vision statement, agreed ESO and market stakeholder purposes and a regulatory position statement
2. Through engagement with internal and external stakeholders identify, and answer, key questions

3. Produce a high-level POC design
4. Map requirements to business capabilities and present a fit/gap analysis
5. Propose how the system could be piloted and funded

Success Criteria

The project will be deemed a success with delivery of a:

- High-level business case and risk barrier assessment
- PoC and scoping document
- Pilot fit/gap analysis and estimated costs and feasibility study

Performance Compared to the Original Project Aims, Objectives and Success Criteria

National Energy System Operator ("NESO") has endeavoured to prepare the published report ("Report") in respect of REVEAL, NIA2_NGESO024 ("Project") in a manner which is, as far as possible, objective, using information collected and compiled by NESO and its Project partners ("Publishers"). Any intellectual property rights developed in the course of the Project and used in the Report shall be owned by the Publishers (as agreed between NESO and the Project partners).

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Phase 4 of the REVEAL project followed a structured, deliverable-led approach to develop and validate a proof of concept for future energy balancing capabilities. The team adopted a clear "Definition of Done" framework, ensuring that all features were completed, tested (with 70%+ unit test coverage), documented, and approved by the NESO Product Owner or SME. Any unmet requirements were logged as technical debt for future prioritisation.

The phase began with the creation of foundational design and planning documents. These included low-level designs for the unstructured database, EDL/EDT and MQTT interfaces, and network architecture. Alongside these, the team produced a risk management plan, communications plan, and recruitment requirements for the trials team. These documents ensured alignment across stakeholders and laid the groundwork for technical implementation.

Next, the team built and configured the technical infrastructure. This included setting up Azure environments, configuring virtual networks and firewalls, and deploying unstructured database and data interfaces. Each build was stored in Azure DevOps and demonstrated to stakeholders for validation. Dependencies such as SME appointments and IT approvals were managed in parallel to maintain momentum.

Testing and validation followed, covering unit, integration, and system testing for each interface. A penetration test was conducted, and a remediation report was produced to address any vulnerabilities. The team also completed a SIT and acceptance test report to confirm readiness for release. These steps ensured the solution met (N)ESO's security and operational standards.

Finally, the team compiled a suite of outputs to close the phase. These included a user interface design, a change impact assessment with ENCC, and a comprehensive innovation project report. The release was documented with a test exit report, capturing lessons learned and benefits to industry. This structured and transparent approach provides a replicable model for other networks aiming to deliver similar innovation initiatives.

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

Phase 4 of the Reveal project required only minimal modifications to its planned approach, with the majority of its core components—such as the site-to-site VPN and customer integration—executed as originally scoped. However, the team remained consistently open to change and demonstrated a strong commitment to continuous improvement throughout the project lifecycle. This mindset enabled them to respond effectively to stakeholder feedback, refine deliverables where necessary, and enhance collaboration across NESO teams. Their adaptive approach ensured that even minor adjustments were made proactively and

constructively, reinforcing the project's alignment with strategic goals while maintaining delivery momentum.

Lessons Learnt for Future Projects

One of the key lessons learnt from the Reveal project is the value of maintaining a flexible and responsive delivery approach, even when the core plan remains largely unchanged. The team's openness to feedback and commitment to continuous improvement enabled them to refine deliverables, enhance stakeholder engagement, and adapt to evolving operational insights without deviating significantly from the original scope. This experience highlights the importance of embedding agility into project governance structures, ensuring that future projects can accommodate iterative learning, stakeholder collaboration, and emerging opportunities—ultimately leading to more resilient and impactful outcomes.

Note: The following sections are only required for those projects which have been completed since 1st April 2013, or since the previous Project Progress information was reported.

The Outcomes of the Project

The Reveal project successfully delivered on its core objectives. Key technical outcomes included the implementation of a secure site-to-site VPN and a seamless integration with the testing partner, both of which were foundational to enabling secure and efficient data exchange. These achievements validated the project's architectural design and
demonstrated its readiness for operational deployment. The project also maintained strong alignment with its original scope, requiring only minimal adjustments, and was delivered on time with stakeholder confidence intact. Beyond the technical milestones, the project fostered a culture of collaboration and continuous improvement. The team remained open to feedback throughout, refining deliverables and enhancing engagement with NESO's operational teams. This approach not only strengthened the quality of the final outputs but also surfaced valuable insights for future innovation initiatives. The Reveal project stands as a strong example of how structured delivery, adaptive thinking, and stakeholder alignment can combine to produce impactful and scalable outcomes.

This is addition to the previous outcomes as documented in the previous 2024 REVEAL progress report.

Summary of earlier outcomes:

- Key problem statements were identified which REVEAL can address, linked to wider energy sector challenges, which positions the project as an impactful initiative.
- Key vision and purpose statements were synthesized with stakeholders to ensure the project is grounded in the collective input and aspirations of those involved, enhancing its credibility.
- Additional 'Trials Conditions and Scenarios' module designed as part of the Live Trial Environment to bring further value in later development iterations.
- NESO and industry stakeholders bought in to core solutions and understand the benefits of REVEAL, further enabling proposed developments to go forward.

Data Access

Details on how network or consumption data arising in the course of NIA funded projects can be requested by interested parties, and the terms on which such data will be made available by NESO can be found in our publicly available "Data sharing policy related to NIA projects (and formerly NIC)" and Innovation | National Energy System Operator.

National Energy System Operator already publishes much of the data arising from our NIA projects at www.smarternetworks.org. You may wish to check this website before making an application under this policy, in case the data which you are seeking has already been published.

Foreground IPR

The following Foreground IPR will be generated from the project:

- High-level business case and risk barrier assessment
- PoC and scoping document
- Pilot fit/gap analysis and estimated costs and feasibility study

Planned Implementation

Following the outcomes of REVEAL we are now moving to design and build a production-ready environment to be
able to realise a wider vision of REVEAL as a one-stop shop for trials.

The REVEAL team will further engage with industry to develop the trial pipeline and recruit additional trial participants, as well as

further developing further iterations of the Live Trial Environment with additional capabilities to enable the integration of more market participants.

Net Benefit Statement

Phase 4 of the REVEAL programme marked a pivotal milestone in NESO's innovation journey, culminating in the successful delivery of a Live Trial Environment Proof of Concept (POC). This secure, cloud-hosted platform—built in Microsoft Azure—will enable NESO and industry participants to simulate and test new balancing capabilities, services,and processes outside of Critical National Infrastructure (CNI). A key technical achievement was the integration with our testing partner via a site-to-site VPN, validating the feasibility of exchanging operational data (EDL, EDT, and MQTT) securely and efficiently. This integration not only demonstrated the robustness of the REVEAL architecture but also laid the groundwork for future scalability and broader market participation.

The net benefits of this phase are multifaceted. Technically, it delivered a resilient and scalable environment that supports agile experimentation, reducing the need for manual intervention and enabling faster handover to live systems. Operationally, it addressed NESO's core challenges—such as the lack of a dedicated trial space and barriers to entry for smaller market participants—by offering a ringfenced, collaborative platform. Strategically, it aligned with NESO's Clean Power 2030 goals by fostering innovation, enhancing system resilience, and supporting decarbonisation through more inclusive and transparent trial processes. The project also strengthened NESO's internal capabilities, embedding a culture of continuous improvement and stakeholder engagement that will underpin future phases,
including the development of a Trial Management Platform and expanded trial capabilities.

Other Comments

The Project outcomes and results contain confidential information and intellectual property rights that cannot be disclosed in this Report due to their proprietary nature. Should the viewer of this Report ("Viewer") require further details this may be provided on a case by case basis following consultation of all Publishers. In the event such further information is provided each and any Publisher that owns such confidential information or intellectual property rights shall be entitled to request the Viewer enter into terms that govern the sharing of such confidential information and/ or intellectual property rights including where appropriate formal licence terms or confidentiality provisions. Dependent upon the nature of such request the Publishers may be entitled to request a fee from the Viewer in respect of such confidential information or intellectual property rights.

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N/A