

NIA Project Registration and PEA Document

Date of Submission

Jun 2025

Project Reference Number

NIA2_NESO113

Project Registration

Project Title

Charging Methodology Review

Project Reference Number

NIA2_NESO113

Project Licensee(s)

National Energy System Operator

Project Start

June 2025

Project Duration

0 years and 8 months

Nominated Project Contact(s)

innovation@neso.energy

Project Budget

£200,000.00

Summary

Under the current network charging methodology, storage providers are classified as generator parties. However, storage assets exhibit characteristics of both generation and demand, and they account for approximately 40% of the current transmission network connections queue. Industry stakeholders claim that the existing system does not encourage investment. The proposal to NESO is to establish a group with industry experts to determine if, and how, storage assets might be charged in a way that reflects their benefit to the network.

A key challenge is the current lack of analysis needed to provide a robust view of how both existing and proposed storage assets will drive the need for transmission reinforcement.

Nominated Contact Email Address(es)

box.so.innovation@nationalgrid.com

Problem Being Solved

To date the impact of storage on the network has not been evaluated in a robust way. There has been some indicative analysis by NESO suggesting that operational behaviour has little impact on the needed network investment, as the self-dispatch times and duration did little to influence thermal export constraints. With the growth of co-located storage with renewables, the benefit in terms of reduced generation curtailment is easier to ascertain than the effects positive or negative on export constraints.

Industry operators of storage are seeking reduced network charges based on the principle that all demand is beneficial. However, as non-final demand, storage facilities act as energy arbiters, shifting generation load to different periods, and it remains unclear whether this provides the claimed benefit.

Method(s)

The project is commissioning external expertise to complete independent analysis of the impacts of different type, duration capability and locations of storage on the network. This will facilitate discussion within a group of industry subject matter experts on the most appropriate ways for storage developers/operators to be incentivised and rewarded within the current regulatory framework, to develop and operate in a way that is beneficial to the network in terms of system investment for reinforcement and maintenance. The outputs should support NESO in setting tariffs and charges for network use by storage operators that provide suitable predictability and investment signals for efficient investment and fair reward, with the intent to reduce the overall network investment in reinforcement and support and ultimately reduce the cost to consumers.

Scope

Given the increasing importance of storage, NESO proposed a project group focussed on discussing aspects of storage informed by robust analysis would be beneficial.

The aim of the project is to answer the general questions being raised around how storage is considered within the transmission network and specifically within the charging methodology to ensure as far as is practical with the current constraints a fair, transparent and reflective charging approach is in place.

The group will consider factors such as:

- Location
- Size
- Impacts and benefits in operation
- Utilisation / operational profiles
- Associated Investment needs
- Fair and transparent cost recovery methodology options.

The project will engage with a 3rd party provider with the intention of procuring analysis support to develop an impartial view of storage impacts to answer various industry questions such as but not limited to:

- Should storage of different durations have different charges?
- Does storage need its own specific tariff for charging purposes – encompassing charges/credits for elements of generation and for demand?
- What signals do Network charges currently send to storage?
- What charging signals for storage investment would drive beneficial investment/design/location placement?
- How should sites with standalone storage, and co-located primary generation with secondary electricity storage be treated for network charging purposes?

Subsequent discussion of the outputs by the industry expert group and raising of identified code modifications would be outside the innovation projects scope and follow the established BAU process.

Objective(s)

- To inform the development of modifications that support a robust, fair, transparent, and cost-reflective approach to storage charging for network utilisation.
- To minimise the risk of parallel or conflicting code modifications being raised by industry, reducing complexity and supporting a coordinated strategy for network charging that promotes beneficial investment.
- To deliver a report outlining the group's broader findings and recommendations, including potential measures outside the scope of industry code change—such as proposals for Ofgem's consideration

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

N/A

Success Criteria

The project will be successful if:

- The development of robust analysis provides a substantive baseline understanding of the affect's storage of different types and duration has on the network.
- Robust analysis informs the industry such that storage investment can be assessed more effectively for likely reductions/ increases in the need for infrastructure reinforcement.
- The analysis by answering some of the unknowns, enables the group of industry experts to make informed decisions on charging changes based on analysis rather than widely held assumptions.
- The analysis and findings facilitate strategic planners in NESO and wider industry to make more informed forecasts of network and storage needs for the benefit of the consumer.

Project Partners and External Funding

The project partner is AFRY. No external funding.

Potential for New Learning

The output from the Analysis will be shared by NESO’s established channels for use by other industry parties. A robust understanding of how electrical energy storage impacts the National Electricity Transmission System (NETS) will potentially inform the planning of wider strategic planning activity by NESO.

Any relevant supporting documents will be published on the Smarter Networks Portal.

Scale of Project

The project will be primarily desk based research over a planned analysis and baseline report production over period of 12 Weeks.

Technology Readiness at Start

TRL1 Basic Principles

Technology Readiness at End

TRL2 Invention and Research

Geographical Area

The project scope is to consider the electricity storage impacts on the UK Transmission Network.

Revenue Allowed for the RII Settlement

N/A

Indicative Total NIA Project Expenditure

£200,000

Project Eligibility Assessment Part 1

There are slightly differing requirements for RII0-1 and RII0-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RII0-2 / RII0-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RII0-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

Electricity storage is a key enabler of a sustainable and flexible energy system. This project supports NESO's Clean Power 2030 goals by improving understanding of how storage can help manage network constraints, reduce reliance on alternative generation, and potentially defer the need for costly network reinforcement.

The project will provide greater visibility of the actual impacts of storage on the transmission network, enabling more informed and effective decision-making within NESO.

By assessing whether current network charging arrangements reflect the true role and value of storage, the project also aims to identify improvements to charging signals. This would help incentivise the adoption of flexible, low-carbon technologies, support the integration of renewables, lower system costs, and contribute to broader decarbonisation efforts.

How the Project has potential to benefit consumer in vulnerable situations:

N/A

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RII0-1 projects only)

N/A

Please provide a calculation of the expected benefits the Solution

This is a research project and will not have a direct cost benefit as a result.

Please provide an estimate of how replicable the Method is across GB

The approach is designed to address challenges in developing informed industry code changes in areas where there is significant ambiguity. By building an accurate baseline of a complex issue, it enables more informed discussion and decision-making.

While the method is not tied to a specific physical site or asset type, it is highly replicable across the GB energy system wherever similar complexity and uncertainty exist. The outcomes of this project could be used as a template for other areas of code reform, particularly where clarity and robust evidence are needed to support strategic industry change.

Please provide an outline of the costs of rolling out the Method across GB.

The only costs for rolling out this approach to code change building a view of the complex area to facilitate informed code change, is the cost of the analysis and the time of the Code change resources to manage it. The aim is to make the work holistically cost neutral to the consumer by reducing the need for NESO /Industry & Ofgem to administrate parallel change that is not aligned or based on a sound baseline analysis.

The subsequent development of any industry code change will follow the BAU process.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- ☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- ☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- ☐ A specific novel operational practice directly related to the operation of the Network Licensees system
- ☐ A specific novel commercial arrangement

RIIO-2 Projects

- ☐ A specific piece of new equipment (including monitoring, control and communications systems and software)
- ☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- ☒ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- ☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- ☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- ☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

The analysis being developed will form the baseline for discussion with Network Licensees as part of the projects work. The outcomes will identify potential improvements to the charging regimes for network charging of storage assets. The learning(s) will be captured in a final report, which NESO will publish on Smarter Network Portal.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

Is the default IPR position being applied?

- ☒ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

The need for this work arises from the absence of any comparable analysis to date. The closest example identified by the team is analysis carried out by individual industry participants to support specific change requests. However, these efforts lacked the broader focus of this project and were found to be too limited in both scope and findings.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

The project is innovative because, to date, no robust research has been undertaken to understand the true impact of storage assets on the transmission network. Any current or proposed improvements to network charging for storage are based on assumptions, opinion, or limited organisational analysis—despite the fact that industry has already invested in storage assets and submitted connection applications based on those assumptions.

This work will establish a foundational understanding of storage impacts and model how effective storage utilisation could mitigate, or at least defer, the need for transmission reinforcement. If future charging models can better signal the optimal type and location of storage, this insight will support NESO (e.g. in connection prioritisation) and guide industry investment toward areas that provide the greatest network benefit—ultimately helping reduce costs for consumers.

Relevant Foreground IPR

A final report will be produced at the end of this project and disseminated with the wider industry.

Data Access Details

Data for this project and all other projects funded under the Network Innovation Allowance (NIA), Network Innovation Competition (NIC) or the new Strategic Innovation Fund (SIF) can be found or requested in a number of ways:

1. A request for information via the Smarter Networks Portal at <https://smarter.energy/networks.org>, to contact select a project and click 'Contact Lead Network'. National Energy System Operator already publishes much of the data arising from our innovation projects here so you may wish to check this website before making an application.
2. Via our Innovation website at <https://www.neso.energy/about/innovation>
Via our managed mailbox innovation@neso.energy
Details on the terms on which such data will be made available by National Energy System Operator can be found in our publicly available "Data sharing policy relating to NIC/NIA projects" at <https://www.neso.energy/document/168191/download>.

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

The research proposed is designed to provide a robust analytical baseline to support the expert group, other NESO teams, and the wider industry. This type of work falls outside the scope of routine business-as-usual activities carried out by the Commercial Codes team.

While the outcomes will support the standard code modification process, the underlying analysis is a broader piece of work that extends beyond the remit of commercial code governance and cannot be delivered through standard BAU resource or funding.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The aim of this work is to deliver robust analysis and insights into how the operational behaviour of storage assets is shaped by current charging regimes—ultimately to inform better charging signals for the future.

Although the project addresses a complex and strategically important area of code governance, the benefits are largely intangible and do not lend themselves to traditional ROI-based assessments. The value lies in improved industry decision-making, more effective network investment, and potential long-term cost savings to consumers—rather than direct or immediate financial returns to NESO or individual market participants.

Given that the work is not within the remit of the Codes Change team, does not produce a direct ROI, and its benefits are widely distributed and not easily quantifiable, NIA funding is essential to enable this important work to proceed.

This project has been approved by a senior member of staff

☒ Yes