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.

NIA Project Registration and PEA Document

Date of Submission

Feb 2026

Project Reference Number

NIA2_NESO117

Project Registration

Project Title

Centre for Advanced Power related Innovation and Technology Opportunity (CAPITO)

Project Reference Number

NIA2_NESO117

Project Licensee(s)

National Energy System Operator

Project Start

May 2026

Project Duration

0 years and 6 months

Nominated Project Contact(s)

innovation@neso.energy

Project Budget

£100,000.00

Summary

Discovery stage research to explore a Centre of Excellence for Power System Innovation. It is designed to steer and guide the research projects aligned with the urgent needs in the energy system, develop a research-based workforce with strong problem-solving capability for the industry. The project will involve workshops and surveying of academic institutions, network operators and wider industry players to explore how a centre of excellence could be set up, funded and governed and create a proposal for its development.

Nominated Contact Email Address(es)

Innovation@neso.energy

Problem Being Solved

Post doctorate research projects are typically developed through ad hoc, individual recruitments within universities seeking funding via public routes like EPRSC or industry sponsorships like NIA. The selection of research topics often lacks alignment between academia's hypotheses and the energy industry's reality. With Britain's energy system transitioning to Net Zero, the knowledge and skills required are changing dynamically, posing challenges to both the existing workforce and future PhD cohorts. The evolving technologies in the Zero Carbon energy system necessitate innovative practices, upskilling of the current workforce, and cutting-edge innovation from PhD graduates with strong industry awareness

Method(s)

The project will take place in 4 months to set the foundations for establishing a Centre of Excellence (CoE) for power systems research.
Stage 1 (1 months) - Research current power system engineer capability within industry and come up with skill gap analysis and programme of taught classes to provide upskilling. Survey and interviews will be used to establish key skills gaps in the existing population of graduate-level engineers and analysts in the industry
Stage 2 (1 months) - Explore different ways of steering innovative ideas in the academic partner institutions to find the most effective way of developing PhD cohorts and their research topics, and upskill industry workforce in power system engineering area.
Stage 3 (2 months) - Design the operational model for a Centre of Excellence and its funding mechanism,. Workshops and consultations with key stakeholders will inform this stage.
Stage 4 (2 months) - Develop a detailed implementation proposal for the Centre of Excellence
In line with the ENA's ENIP document, the risk rating is scored Low.
Technology Readiness Level (TRL) change = [1]
Cost = [1]
Suppliers = [1]
Data assumptions = [1]
Total = 4

Scope

The foundation of CAPITO will address the need to align industry and academia to ensure research project hypotheses are tackling the key challenges the industry faces during the energy system transition. The project will also address how a CoE approach could support the development of a highly skilled research workforce, address the current skills gap and ensure that industry partners have better access to the expertise needed to innovate successfully to enable net zero targets across the electricity sector.

The project will:

- Demonstrate the value and build a business case for a CoE
- Build stakeholder buy-in and develop senior sponsorship
- Design a programme with realistic phases and clear view of priorities for building a CoE
- Deliver a framework for industry and academic partnerships

Objective(s)

- Re-engage with supporters of the most recent previous EPSRC Centre for Doctoral Training (CDT) proposal led by University of Strathclyde (UoS) on the future electricity system to confirm the needs of the electricity industry and key public sector bodies
- Develop a training programme addressing both doctoral studies and continuous professional development
- Define options for an enduring funding model for an upskilling programme and Centre through which it is delivered, and consult with partners on those options.
- Propose a final training curriculum and business and governance models.
- Develop a proposal for further funding to enable establishment of the Centre

Consumer Vulnerability Impact Assessment

No specific impact on vulnerable consumers.

Success Criteria

This project will be a success if the following is achieved:

- Positive feedback and engagement from key stakeholders on the development of an CoE.
- Demonstration of how investment in an CoE would shape the future energy system.
- A clear recommendation based on the foundation work to inform next steps for scaling up the CoE in future phases.

Project Partners and External Funding

University of Strathclyde will lead the stakeholder engagement activities and will develop the concept documentation, no external funding required.

Potential for New Learning

This project has the potential to create a new Centre of Excellence model with a clear framework for power systems learning, innovation and stakeholder collaboration. Overall, it will deliver better alignment between industry and academia, more focused innovation, increased workforce capability, and stakeholder collaboration.

Scale of Project

The project spans 6 months with one project partner. The scale of the project is already the minimum viable envelope to engage with relevant stakeholders and develop the concept of a Centre of Excellence for power systems research.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

Applicable across GB.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£100,000

Project Eligibility Assessment Part 1

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

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

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

This project is an opportunity to create a central hub for power systems research and innovation, increasing collaboration and focused work across the industry. It will also create potential opportunities for training and upskilling, ensuring academic learning is delivering the key skills required of power system engineers in the future energy system and therefore the ability to undertake more power systems engineering innovation projects to facilitate the net zero transition.

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

N/A

Please provide a calculation and/or description of the expected benefits of the solution

Not Applicable as this is a research project to explore the concept of a Centre of Excellence

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

The Centre of Excellence proposal will be developed to be applicable to academic organisations invited to join the Centre and to industry and public partner organisations across GB that choose to join

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

The cost of setting up the Centre and an estimation of the funding requirements for its ongoing running costs will be assessed as part of this discovery phase work

Requirement 3 / 1

Involve Research, Development or Demonstration

Projects 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

Involve Research, Development or Demonstration - Please select all that apply

☐ 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

This project will explore if a CoE model is the optimal route for building increased power systems engineering capability and driving innovation in collaboration with external partners. The developed framework and best practice information will be disseminated within the energy industry to establish the partnerships required for the delivery of the centre.

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. Networks must explicitly mention similar projects that they have considered and how these differ.

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

A Centre of Excellence for Power System Innovation does not exist within the energy industry, NESO has previously investigated how a centre of excellence framework could be created to deliver AI expertise into the energy industry (NIA2_NGESO0021). This project will utilise the learnings from that piece of work to explore how a similar Centre of Excellence framework could be applied to power systems innovation across the industry.

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

N/A

Additional Governance And Document Upload

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

This project will define a framework and use cases for creating a Centre of Excellence for Power System Innovation which will steer and guide the research projects aligned with the urgent needs in the energy system, develop a research-based workforce with strong problem-solving capability for the industry. Working with potential partners across academia, industry, other networks and the broader energy industry, the project will validate the CoE vision and help shape the partnership framework, kick-starting focus on engineering capabilities in the energy industry. Without an innovation project to develop this framework foundation, we would not know what the optimal solution is to deliver this capability.
A Centre addressing upskilling of the industry workforce to enable better informed innovation has never existed before. The operational efficiency and improved mutual learning enabled by combining continuing professional development for industry and public sector employees with doctoral training for full-time university students is also highly innovative.

Relevant Foreground IPR

- Documentation to be used in stakeholder engagement including example brochure of offered taught modules, their main content and delivery mode, and proposed course regulations.

- Final project report outlining the findings from the survey of prospective Centre partners, proposed Centre governance model and expected Centre costs and revenues.

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

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

Due to the nature of the project and that it is researching potential frameworks and stakeholder engagements for a novel future Centre of Excellence, this does not fall into current business as usual (BAU).

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 TRL of the overall framework is relatively low – nothing like it has ever existed before. Therefore, innovation funding is more suitable for exploring the project's potential and increasing the TRL before transferring into subsequent development.
Conducting this project with NIA funding will ensure that the project findings can be shared more widely with other interested Network Licenses.
Collaboration with external organisations is required to identify key stakeholders making it more suitable for NIA funding.
A similar CoE within the industry does not exist and there is no pre-defined framework or use cases which can be implemented, therefore there are risks associated with building a central hub where interaction with other industry partners and programmes is required.

This project has been approved by a senior member of staff

☑ Yes