

NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED
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London
WC2N 5EH

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Email: Marzia.Zafar@ofgem.gov.uk

Date: 4 April 2023

Dear National Grid Electricity System Operator Limited,

**SIF Project Direction ref: NGESO/Scenarios for Extreme
Events/SIFIESRR/Rd2 Discovery**

National Grid Electricity System Operator Limited submitted Scenarios for Extreme Events (the Project) to be considered for SIF Funding in the round 2 Discovery Phase of the Strategic Innovation Fund (SIF). In our¹ SIF funding decision issued on 4 April 2023, we selected the Project² for conditional funding and as a result we are now issuing this SIF Project Direction to implement that decision.

National Grid Electricity System Operator Limited must comply with the conditions contained in this SIF Project Direction as a condition of the Project receiving funding through the SIF. These conditions can be found in the Schedule to this document.

Progression through SIF Phases and rounds

The SIF consists of a multi-phase approach for Projects in order to mitigate the risk associated with innovations. The Discovery Phase focuses on feasibility, the Alpha Phase on experimental development, and the Beta Phase on deployment and demonstration. This Project Direction is for the round 2 Discovery Phase of the SIF.

Role of UK Research & Innovation (UKRI)

As per Chapter 1 of the SIF Governance Document³ the role of UKRI is to deliver the SIF in line with the SIF Governance Document - administering the funding programme, monitoring the delivery of Projects, collating data from Projects on benefits, making

¹ The terms 'we', 'us', 'our' refer to the Gas and Electricity Markets Authority. Ofgem is the office of the Authority.

² Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in Appendix 1 of the SIF Governance Document.

³ <https://www.ofgem.gov.uk/sites/default/files/2023-02/SIF%20Governance%20Document%20v2.1%20final%20clean.pdf>

recommendations to Ofgem on operational matters, supporting third-party innovators and, where possible, successful Projects to become 'business as usual' activities. To support the success of the Projects and the SIF programme, we expect that the Funding Party and Project Partners collaborate with Ofgem and UKRI.

SIF Project Direction

Paragraph 5.14 of the SIF Governance Document states that a SIF Project Direction will:

- Set out the Project-specific conditions, to which the Funding Party is committing in accepting SIF Funding.⁴
- Require the Funding Party to undertake the Project in accordance with the commitments made in the Application. Where appropriate, the SIF Project Direction may therefore include extracts from the Application or refer to specific sections of the SIF Application.⁵
- Where applicable, set out conditions (such as Project stage gates) linked to milestones and deliverables, which Projects must meet.⁶
- Set out the SIF Approved Amount for the Project, that will form part of the calculation contained in the SIF Funding Direction issued by the Authority under chapter 7 of the SIF Governance Document.⁷
- Set out the Project budget that the Funding Party must report against and how variations in the Project budget will be reported.⁸
- Where applicable, set out special information sharing requirements applicable to the Project.⁹
- Set out the mechanism for the Funding Party receiving the SIF Approved Amount as set out in the SIF Funding Direction.¹⁰

All SIF Project Direction requirements are detailed in the Schedule to this SIF Project Direction.

Decision

Provided the Funding Party complies with the SIF Governance Document and with the Schedule to this SIF Project Direction, the Project is deemed to be an Eligible SIF Project¹¹.

⁴ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁵ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁶ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁷ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

⁸ 'Annex 1 – Project Budget.

⁹ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

¹⁰ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

¹¹ The meaning 'Eligible SIF Project' is described in Chapter 2 of the SIF Governance Document.

This SIF Project Direction constitutes notice pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

Marzia Zafar

Deputy Director of Strategy & Decarbonisation

For and on behalf of the Authority

Schedule to SIF Project Direction

1. PROJECT DETAILS

SIF Project Direction reference: NGESO/Scenarios for Extreme

Events/SIFIESRR/Rd2_Discovery

Application number: 10060460

Project title: Scenarios for Extreme Events

Innovation Challenge/Project Phase: Improving energy system resilience and robustness
/ Discovery Phase round 2

Project start date: 3 April, 2023

Project end date: 30 June, 2023

SIF Approved Amount for SIF Funding: £149,999

Total Compulsory Contribution¹²: £32,950

2. PREAMBLE

This SIF Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to National Grid Electricity System Operator Limited (the "Funding Party") pursuant to the SIF Governance Document issued pursuant to Special Condition 3.4 of the Electricity Transmission Licence (the "Licence"). It sets out the conditions to be complied with in relation to Scenarios for Extreme Events (the "Project") as a condition of it being funded under the SIF Funding Mechanism.¹³

Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in the Licence or Appendix 1 of the SIF Governance Document.

References to specific sections of the Funding Party's Application in this SIF Project Direction are, for ease of reference, made by referring to the section number in the Funding Party's Application.

3. PROJECT SPECIFIC CONDITIONS

In accepting funding for the Project, the Funding Party is subject to the following Project-specific condition(s):

Condition 1

¹² The Compulsory Contribution is defined in the SIF Governance Document.

¹³ The SIF Funding Return Mechanism is defined in the SIF Governance Document.

The Funding Party must not spend any SIF Funding until contracts are signed with the Project Partners named in Table 1 for the purpose of completing the Project.

Table 1. Project Partners

UNIVERSITY OF STRATHCLYDE
NATIONAL GRID ELECTRICITY DISTRIBUTION
CADENT GAS LIMITED
NATIONAL GRID GAS PLC
SOUTHERN ELECTRIC POWER DISTRIBUTION PLC
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC
CORPORATION OF LLOYD'S

Condition 2

The Funding Party must report on the financial contributions made to the Project as set out in its Application. Any financial contributions made over and above that stated in its Application should also be reported and included within the Project costs template.

Condition 3

The Funding Party must participate in all meetings related to the Project that they are invited to by Ofgem, UKRI and DESNZ (formerly BEIS) during the Project Phase.

Condition 4

Prior to the end of the Discovery Phase, the Funding Party must engage with the SIF Projects 'CReDo+ Climate Resilience Demonstrator', 'WARN (Weather Alerts and Risk analysis for Network Operators)', 'Whole Energy System Resilience Vulnerability Assessment' to examine areas of commonality and potential overlap, and how the two Projects could inform each other on their findings and potentially work together in future Project Phases. Innovate UK can facilitate an introduction if necessary.

4. COMPLIANCE

The Funding Party must comply with Special Condition 3.4 of the Electricity Transmission Licence (the "Licence"), the SIF Governance Document and with this SIF Project Direction.

5. SIF APPROVED AMOUNT

The SIF Approved amount of £149,999 (as detailed under Section 1: Project details of this Project Direction) will be recovered by National Grid Electricity System Operator

from GB customers and transferred to the Funding Party. The Funding Party is responsible for notifying National Grid Electricity System Operator of the bank account details to which transfers must be made, in addition to completing Annex 2 of this SIF Project Direction. If a Funding Party is required to return funding to National Grid Electricity System Operator, the reverse applies. The Funding Party must provide bank account details to National Grid Electricity System Operator within two weeks of accepting this SIF Project Direction.

6. PROJECT BUDGET

The Project Budget is set out in Annex 1 of this SIF Project Direction.

The Funding Party must report on expenditure against each line under the category total in the Project Budget and explain any projected variance against each line as part of its detailed report which will be provided, in accordance with Chapter 7 of the SIF Governance Document. The Funding Party must report variations in the Project budget as outlined in Chapter 6 of the SIF Governance Document.

7. PROJECT IMPLEMENTATION

The Funding Party must undertake the Project in accordance with the commitments it has made in the Application and with the conditions of this SIF Project Direction. These include (but are not limited to) the following:

- (i) undertake the Project in accordance with its Application,
- (ii) complete the Project on or before the Project completion date as detailed under section 1 of the schedule of this SIF Project Direction, and
- (iii) disseminate the learning from the Project at least to the level described in chapter 3 of the SIF Governance Document. Dissemination of learning must be carried out whether the Project was concluded successfully or otherwise.

8. REPORTING

Ofgem and UKRI may issue guidance (and amend it from time to time) about the structure and content of the Project reporting required by Chapter 6 of the SIF Governance Document. The Funding Party must follow this guidance in preparing the reports.

Each Project not intending to submit an Application to the next Project Phase must submit an end of Project Phase report to the monitoring officer. Projects which are not

successful at the next Project Phase must either retrospectively complete an end of Phase report and publish it on the Smarter Networks Portal, or publish their unsuccessful Application (redacted where necessary) and close out meeting slides for this Project Phase on the Smarter Networks Portal.

9. MONITORING

The Funding Party must comply with any reasonable request for information by its monitoring officer at UKRI and related deadlines. Ofgem, with the support of UKRI, will together monitor Project delivery, impacts and benefits. Throughout the term of the Project, progress is monitored by UKRI through a monitoring officer. The monitoring officer is the first point of contact for official notifications, queries and correspondence with UKRI and the Authority, unless otherwise required by this SIF Project Direction.

As detailed in Chapter 6 of the SIF Governance Document, meetings with the monitoring officer will take place at regular intervals, as advised by Ofgem or the monitoring officer during the delivery of the Project, and at the end of each Project Phase.

10. EVALUATION

The Funding Party has acknowledged when it submitted its Application for this Project, that reporting information and data gathered during the Project's timescales (as detailed in Section 1 of this SIF Project Direction) will be used to evaluate Project performance. In addition, the Funding Party may be required to provide requested information outside of the Project timescales and, in particular, for the period from the Project end date to the end of the SIF Programme. Further data and reporting information may be requested (frequency and method based on requirement) outside of standard monitoring and reporting requirements as deemed necessary. Further data and information requirements must be complied with by the Funding Party and Project Partners.

11. DATA SHARING

As set out in Chapter 3 of the SIF Governance Document, the Funding Party must follow Data Best Practice Guidance with regards to all data gathered or created in the course of a Project. We expect the Funding Party to document any reasons, such as commercial sensitivities, for desensitising data. As defined by, and in accordance with, Data Best Practice Guidance, Funding Parties must have a data triage process. Where multiple Project Partners are collaborating on a Project, the consortium must adopt a consistent Open Triage Process for the data related to the Project. Ofgem may require that Project information and data is also shared with other specified parties, such as parties working

on complementary innovation funding programmes (subject to redaction of sensitive data).

12. CYBER SECURITY

It is the responsibility of the Funding Party and all Project Partners to implement and maintain appropriate security measures to protect personal data in accordance with The GDPR (General Data Protection Regulation)¹⁴ and DPA (Data Protection Act) 2018¹⁵. Protection of computer systems from unauthorised access or being otherwise damaged or made inaccessible must be in place alongside effective working practices. These must be maintained in line with the Funding Party's IT Management Strategies and policies.

13. PROJECT MILESTONES

The Funding Party must verify in its end of Project Phase meeting with the monitoring officer whether the Project milestones have been achieved or explain why they have not been.

Project milestones are outlined below in Table 3, based upon details contained within Question 7 and Appendix Question 9 in the Funding Party's.

Table 3. Project milestone¹⁶

Reference	Project milestone	Deadline	Evidence	SIF Funding Request (100%) ¹⁷
Milestone 1	Work package 1: Categorise / Classify types of extreme events	June 30, 2023	Overall work package objectives: This workstream will establish a suitable approach for categorising and classifying types of extreme events. A review of existing publicly-available literature will identify potential causes, probabilities and impacts of individual events.	£23,694.00

¹⁴ https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu_en

¹⁵ <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>

¹⁶ As outlined in the Application or Project Plan appendix.

¹⁷ Where Project Applications were not explicit on milestone(s) as a percentage of total SIF Funding Request, milestone(s) as a percentage of total project costs were applied to the SIF Funding Request. In some circumstances where the information needed to complete this table was not available in an Application, Funding Parties were requested to provide this information separately.

			<p>Specific focus will be given to areas of known vulnerabilities within the energy system, and to the effects of multiple events combining to result in a greater system impact. Although an exhaustive analysis is not anticipated in the Discovery Phase, the project will establish reference hazard types to be further developed in subsequent activities.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Literature review into categorisation and classification of extreme events. 2. Development of register that consider causes and effects of events, identifying cross vector dependencies. <p>Milestone(s):</p> <ul style="list-style-type: none"> - FNC Contribution: Time, Quality. (£9,403.00). - Met Office Contribution: Time, Quality. (£6,300.00). - UoS Contribution: Time, Quality. (£7,991.00). 	
Milestone 2	Work package 2: Understand current "Best Practice" approaches across industry	June 30, 2023	<p>Overall work package objectives: WS2 will seek to understand the existing practices in managing risk associated with black swan events. Interviews will be held with individual network operators to canvass their views and approaches</p>	£66,927.00

			<p>to resilience planning in the context of black swan events. Interviews will also be held with Lloyd's to understand forecasting approaches adopted within the insurance sector.</p> <p>Findings of these interviews will be collated and form the basis of a combined partner workshop to establish best practices, synergies across industries and gaps where further forecasting / predictive approaches would be of benefit.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Undertake a literature review into current state of the art approaches to resilience planning. 2. Develop an interview format to engage with project participants 3. Conduct interviews with project participants 4. Facilitate a workshop to share findings/ best practice approaches 5. Identify and report gaps / opportunities for developments. <p>Milestone(s):</p> <ul style="list-style-type: none"> - ESO - Interview and workshop contribution: Time quality. (£10,085.00) - UoS - Literature review, Interview design and workshop facilitation: Time quality. (£15,982.00) 	
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			<ul style="list-style-type: none"> - SSEN T - Interview and workshop contribution: Time quality. (£1.00). - SSEN D - Interview and workshop contribution: Time quality. (£3,150.00). - NG GT - Interview and workshop contribution: Time quality. (£2,590.00). - Cadent Gas - Interview and workshop contribution: Time quality. (£2,995.00). - NGED - Interview and workshop contribution: Time quality. (£5,299.00). - Lloyd's - Interview and workshop contribution: Time quality. (£1.00). - FNC - Interview design and workshop facilitation: Time quality. (£20,524.00). - Met Office - Interview and workshop contribution: Time quality. (£6,300.00). 	
Milestone 3	Work package 3: Defining modelling requirements	June 30, 2023	Overall work package objectives: Building on the outputs of WS1 & WS2, an outline modelling approach will be developed to: 1) Identify suitable modelling approaches to meet the needs of the sector, 2) Summarise required input data, considering sources, format, and availability, 3) Provide indicative output information and how this could be used to support whole system resilience planning,	£31,901.00

			<p>and 4) Illustrate an ownership and implementation plan for developing this modelling capability.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Building on the findings of the WS1 and WS2, the project will identify high-level requirements for the modelling approach 2. A proposed modelling architecture will be outlined for further development in a subsequent Alpha phase 3. Finding will be captured within a modelling requirements report <p>Milestone(s):</p> <ul style="list-style-type: none"> - Contribution of user info: Time, quality. (£3,247.00) - Insight into best practice: Time, quality. (£15,982.00). - Production of report: : Time, quality. (£12,672.00). 	
Milestone 4	Work package 4: Appraisal of benefits in adopting this approach	June 30, 2023	<p>Overall work package objectives: WS4 will provide a high level appraisal of the anticipated benefits in developing this modelling approach; to better understand the impact of black swan events, and how to inform and shape future whole-system resilience planning.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Identify route for adoption of proposed toolset. 	£12,835.00

			<p>2. Consider the benefits that could be realised in adopting the proposed approach</p> <p>3. Produce a short technical report that presents the anticipated benefit in an accessible format.</p> <p>Milestone(s):</p> <ul style="list-style-type: none"> - Contribution of user info: time, quality. (£3,247.00). - Production of report: time, quality. (£9,588.00). 	
Milestone 5	Work package 5: Project Management	June 30, 2023	<p>Overall work package objectives: Project management for discovery phase.</p> <p>Key tasks: 1. Provide management and coordination to ensure successful delivery.</p> <p>Milestone(s):</p> <ul style="list-style-type: none"> - Project completion: cost, time, quality. (£3,129.00) - Project completion: : cost, time, quality. (£11,513.00). 	£14,642.00

14. USE OF LOGO

The Funding Party and the Project Partners, External Funders and Project Supporters or subcontractors¹⁸ must not use the Innovate UK/UKRI and/or Ofgem logo for purposes associated with the Project in any circumstances.

As an alternative for use of both Ofgem and UKRI logos, all external Project communications must include the following standard form of wording:

- (i) "this project is funded by network users and consumers under the Strategic Innovation Fund, an Ofgem programme managed in partnership with UKRI."

¹⁸ As detailed in the Application.

For additional guidance, refer to the communications and media guidelines for competition winners, detailed as part of your delivery pack. These guidelines are designed to help with some suggestions and encourage you to take a proactive approach to communicating about your Project.

15. SHARING OF LESSONS LEARNED

The Funding Party is required to ensure that the sharing of lessons learned and the facilitation of knowledge transfer is conducted as effectively as possible, to ensure that all parties, and therefore all consumers including future consumers, can benefit from Projects.

As contained within Chapter 3 of the SIF Governance Document, we require the Funding Party to work collaboratively to maintain the ENA Smarter Networks Portal so that all reporting and dissemination of learnings on Projects (as required by chapter 6 of the SIF Governance Document) is available via the ENA Smarter Networks Portal.

16. COLLABORATION

The Funding Party must collaborate with third-party innovators as Project Partners, as well as work closely with other parties in the energy supply chain, as set out in Chapter 3 of the SIF Governance Document.

The Funding Party must collaborate with other parties and with UKRI to organise an annual conference in a format appropriate to enabling the building of consortiums and disseminating learning widely. The conference may be a single event for gas and electricity, or more than one event, as appropriate.

17. AMENDMENT OR REVOCATION

As set out in Chapter 7 of the SIF Governance Document, this SIF Project Direction may be amended or revoked under the following circumstances:

- (i) if the Funding Party considers that there has been a material change in circumstance that requires a change to the SIF Project Direction, and the Authority agrees; or
- (ii) to reflect amendments made to the Licence.

18. HALTING OF PROJECTS

This SIF Project Direction is subject to the provisions contained in Chapter 7 of the

SIF Governance Document relating to the halting of Projects. By extension, this SIF Project Direction is subject to any decision by the Authority to halt the Project to which this SIF Project Direction relates and to any subsequent relevant SIF Funding Direction issued by the Authority pursuant to Special Condition 3.4 of the Electricity Transmission Licence (the "Licence").

Further to the requirements in Chapter 7 of the SIF Governance Document, in the event the Authority decides to halt the Project, to which this SIF Project Direction relates, the Authority may issue a statement to the Funding Party clarifying the effect of that halting decision as regards to the status and legal force of the conditions contained in this SIF Project Direction.

NOW THEREFORE:

In accordance with the SIF Governance Document issued pursuant to Special Condition 3.4 of the Electricity Transmission Licence (the "Licence") of the Licence the Authority hereby issues this SIF Project Direction to the Funding Party in relation to the Project.

This constitutes notice of reasons for the Authority's decision pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

Failure to comply with the conditions of this SIF Project Direction means that Ofgem may treat all or part of the SIF Approved Amount received by the Funding Party as SIF Disallowed Expenditure.

ANNEX 1: PROJECT BUDGET

SIF Project Direction costs	
Cost Category	Total Project costs (£)
Labour	93,331
Materials	0
Subcontracting	88,417
Travel and subsistence	1,200
Other costs	3,391
Total	182,949

Project finances				
Project Partner	Total project costs (£)	Project Compulsory Contribution (%) ¹⁹	Project Compulsory Contribution (£)	Total SIF Funding requested (£)
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	114,859	20%	18,852	96,007
UNIVERSITY OF STRATHCLYDE	41,576	4%	1,620	39,956
NATIONAL GRID ELECTRICITY DISTRIBUTION	5,888	11%	589	5,299
CADENT GAS LIMITED	3,495	17%	500	2,995
NATIONAL GRID GAS PLC	2,590	0%	0	2,590
SOUTHERN ELECTRIC POWER DISTRIBUTION PLC	3,150		0	3,150

¹⁹ The Project contribution is calculated as percentage of the SIF Funding requested per Project Partner and for the Project.

SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	3,391	100%	3,390	1
CORPORATION OF LLOYD'S	8,000	100%	7,999	1
Total	182,949	22%	32,950	149,999

**ANNEX 2 TO SCHEDULE: TEMPLATE OF BANK ACCOUNT DETAILS TO BE
PROVIDED TO NG ESO (revenue.invoice@nationalgrideso.com)**

Company name:

Primary Contact Details (only one contact permitted)

First Name:

Last Name:

Email address:

Mobile phone number:

Work phone number:

Address details

Address name:

Street address:

City:

State / region:

Post code:

PO box: (if applicable)

PO box post code: (if applicable)

Banking details

These should be evidenced in non-editable format. The evidence provided must show company name and bank details and it should be dated within the last 6 months.

Any of the below documents will suffice:

- Bank statement (scanned document)
- Void cheque
- Paying in slip
- Screenshot of online banking (showing a logged in account with bank account and sort code, with browser visible)