

SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC
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Date: 07 October 2024

Dear Scottish Hydro Electric Transmission Plc,

SIF Project Direction ref: SHET/REVISE/SIFWSPFAR/Rd3 Alpha

Scottish Hydro Electric Transmission Plc submitted REVISE (the Project) to be considered for funding through the Alpha Phase of round 3 of the Strategic Innovation Fund (SIF). As explained in greater detail below, this Project previously received SIF Funding and completed a Discovery Phase for round 3 of the SIF. In our¹ SIF Funding Decision issued on 07 October 2024, we selected the Project² for conditional funding for the round 3 Alpha Phase and as a result we are now issuing this SIF Project Direction to implement that decision.

Scottish Hydro Electric Transmission Plc 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

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.

The Project previously received SIF Funding for the round 3 Discovery Phase³ and submitted an Application for the Project to be considered for SIF Funding for the round 3 Alpha Phase of the SIF. As stated above, the Project has been selected by Ofgem to receive SIF Funding for the Alpha Phase of round 3.

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 The Project Directions for round 3 of the Discovery Phase are available at:
<https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-3-discovery-projects-approved-funding>

Role of UK Research & Innovation (UKRI)

As per Chapter 1 of the SIF Governance Document⁴ 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 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.⁵
- 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.⁶
- Where applicable, set out conditions (such as Project stage gates) linked to milestones and deliverables, which Projects must meet.⁷
- 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.⁸
- Set out the Project budget that the Funding Party must report against and how variations in the Project budget will be reported.⁹
- Where applicable, set out special information sharing requirements applicable to the Project.¹⁰
- Set out the mechanism for the Funding Party receiving the SIF Approved Amount as set out in the SIF Funding Direction.¹¹

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

⁴ <https://www.ofgem.gov.uk/decision/updated-sif-governance-document>

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

⁸ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

⁹ Annex 1 – Project Budget.

¹⁰ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

¹¹ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of 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 Project¹².

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

Marzia Zafar

Deputy Director, Decentralisation & Digitalisation

For and on behalf of the Authority

¹² The meaning 'Eligible SIF Project' is described in Chapter 2 of the SIF Governance Document.

Schedule to SIF Project Direction

1. PROJECT DETAILS

SIF Project Direction reference: SHET/REVISE/SIFWSPFAR/Rd3 Alpha

Application number: 10130442

Project title: REVISE

Innovation Challenge/Project Phase: Whole System Planning for Faster Asset Rollout /
Alpha Phase round 3

Project start date: 07 October 2024

Project end date: 30 May 2025

SIF Approved Amount for SIF Funding: £389,725

2. PREAMBLE

This SIF Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to Scottish Hydro Electric Transmission Plc (the "Funding Party") pursuant to the SIF Governance Document issued pursuant to Special Condition 9.19 of the Electricity Transmission Licence (the "Licence"). It sets out the conditions to be complied with in relation to REVISE (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

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.

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

Table 1. Project Partners

University of Strathclyde
National Grid Electricity Transmission PLC
National Grid Electricity System Operator Ltd
Met Office
Energyline Ltd

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 make reasonable endeavours to participate in all meetings related to the Project that they are invited to by Ofgem, UKRI and DESNZ during the Alpha Phase.

Condition 4

Alpha phase will last for a period of 8 months from the date the Project Direction is issued, the Project will be allowed a flexible start date within the 8-month period. The Project must provide the monitoring officer with the start date and must complete within 6 months of the start date and cannot be completed after the 8-month period has ended.

Condition 5

For the end of phase meeting, the Project should present a comprehensive stakeholder engagement plan to indicate how the solution will be disseminated and implemented. This plan should specifically address the needs and expectations of transmission-connected generators and off-takers. In line with Ofgem's Data Best Practice Guidance, the final report should be made public, with full transparency regarding the methodologies employed to enhance modelling and industry standards. This could involve the publication of the report on a recognised platform, such as a professional forum such as CIGRE.

4. COMPLIANCE

The Funding Party must comply with Special Condition 9.19 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 £389,725 (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.

As set out in chapter 6 of the SIF Governance Document, the Funding Party may be required to submit an end of Phase report to the UKRI monitoring officer for the round 3 Alpha Phase. An end of Phase report is required for the round 3 Alpha Phase if the Project is not planning on submitting an Application to the round 3 Beta Phase and, if the Funding Party submits an Application for the Project for the round 3 Beta Phase but is not successful. Within this report, the Funding Party must submit information related to questions on Project delivery as detailed in chapter 6, table 6 of the SIF Governance Document.

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 provide an outline in its end of Project Phase meeting with its UKRI monitoring officer that verifies the Project milestones have been achieved or explains why they have not.

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

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>

Table 3. Project milestone¹⁶

Reference	Project milestone	Deadline	Overall objectives and key tasks	SIF Funding Request
Milestone 1	Work package 1:	30 May 2025	<p>Overall objective: The successful delivery of the REVISE Alpha project to budget, time, and quality, in compliance with the SIF governing documentation.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Maintain and track project schedule, action register, deliverables & actual expenditure against forecast. 2. Monitor and manage the project risk register with regular reviews to track & maintain their mitigation. 3. Organise regular (at least fortnightly) review meetings with all partners. 4. Presentation of REVISE as required by Ofgem/UKRI. 5. Produce a conclusion report for the UKRI monitoring officer and any other specific documentation required or requested. 	£97,498.83

¹⁶ As outlined in in the Application or Project Plan appendix.

Milestone 2	Work package 2:	30 May 2025	<p>Overall objective:</p> <ul style="list-style-type: none"> • Develop an understanding of conductor heating and cooling rates. • Explore the limits of the heat balance input parameters. • Ensure that the developing REVISE methodology is pragmatic and can be practically deployed by OHL designers and system planners. <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Conductor reaction time <ol style="list-style-type: none"> a. Undertake literature review of state of the art in transient conductor temperature calculation b. Calculation of rate of change due to increasing/ decreasing key parameters with other key parameters remaining stable i.e. current increase/ decrease with incremental ambient temperatures c. Calculations to understand impacts of different conductor sizes/ bundle configurations. d. Use site observation data and work with partners to understand whether sub-hourly data is important (Met Office collab) 2. Understand the impact of key input parameters (Work Package 4 dependency) <ol style="list-style-type: none"> a. Calculate expected ratings changes as a result of changing key parameters or combinations. 	£46,660.18
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			<p>3. Ensure designability</p> <p>a. Engagement in meetings/ review of documentation and relevant stakeholder events</p>	
Milestone 3	Work package 3:	30 May 2025	<p>Overall objective: To identify historical exceedances of existing overhead line ratings, and evaluate the magnitude and frequency of this on existing circuits across the GB transmission system.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Identify a list of circuits to target for the work package. 2. Gather historical data on power flows across circuits on SSEN Transmission network, and GB network. 3. Calculate exceedance against seasonal pre and post fault circuit ratings. 4. Identify times of network faults on the circuits over historical periods, to inform the analysis of pre and post fault ratings. 5. Review the results to identify magnitude and frequency of exceedances. 6. Review the results to identify trends or differences across time periods and seasons. 	£28,172.92
Milestone 4	Work package 4:	30 May 2025	<p>Overall objective: Understand worst-case weather events required for the calculation of static line ratings.</p> <p>Key tasks:</p>	£58,396.10

			<p>1. Work with the University of Strathclyde to develop possible worst-case weather scenarios which provide the least amount of cooling to the overhead lines.</p> <p>2.Data exploration at a small number of observation sites to:</p> <ul style="list-style-type: none"> a. Understand the frequency of occurrence and severity of worse-case weather scenarios and their properties. b. Understand how these scenarios vary spatially by looking at observation sites with different geography and climatology. c. Understand how these scenarios vary seasonality and during the daytime compared to the nighttime. <p>3.Provide data to Energyline for WP2.</p>	
Milestone 5	Work package 5:	30 May 2025	<p>Overall objective: Ensure gridded weather datasets are of the required quality to use in the Beta phase of the project.</p> <p>Key tasks:</p> <ul style="list-style-type: none"> 1. Understand how well the worst-case scenarios identified in work package 4 are represented in gridded datasets of modelled data. 2. Understand if any further corrections are needed to the gridded datasets to improve the data quality. If further corrections are required then produce a plan for how to improve the data quality. This may require a 	£50,969.84

			literature review and an exploration of potential processing methods to improve the data quality.	
Milestone 6	Work package 6:	30 May 2025	<p>Overall objective: To determine a methodology for translating weather data into revised static line ratings.</p> <p>Produce prototype line ratings for a small number of sites or lines.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Develop alternative statistical models for fault rating/exceedance conditions. 2. Combined methodology of statistical weather and fault rating - (output - methodology weather to line ratings). 3. Determine the strength of correlations over time between measured parameters in each zone and static line rating to understand better the impact and sensitivity of each measured parameter on line rating. 4. Quantify line rating variations for typical daytime and nighttime including statistical exceedance levels. 5. Wind farm-specific static line rating methodology - revising wind speed assumptions. 	£75,087.72

Milestone 7	Work package 7:	30 May 2025	<p>Overall objective:</p> <ul style="list-style-type: none"> • Establish a network working group to discuss and develop the CBA. • Maturing of the CBA through the phase based on the working group's activities such that there is greater confidence in the data by the project end. • An updated version of the CBA that was submitted as part of the Alpha Application. • Initial scoping of the Beta Phase by project partners. <p>Key tasks:</p> <ol style="list-style-type: none"> 1. Network working group meetings to review the existing current CBA, identify where refinement is possible, and agree on the necessary action steps. 2. Provision of tailored data from all working group members in support of a robust CBA. 3. Working group to revise the CBA based on the knowledge gained within the Alpha Phase to date. 4. Validation of updated CBA by key stakeholders. 5. Lead the planning of the Beta phase & secure agreement on whether to proceed with the application. 	£32,940.83
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14. USE OF LOGO

The Funding Party and the Project Partners, External Funders and Project Supporters or subcontractors¹⁷ 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."

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 As detailed in the Application.

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 9.19 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 9.19 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

Cost Category	Total Project costs (£)
Labour	£411,216
Materials	£2,000
Subcontracting	£0
Travel and subsistence	£3,936
Other costs	£15,997
Total	£433,149

Project Partner	Total project costs (£)	Project contribution (£)	Total SIF Funding requested (£)	Project contribution (%)
Scottish Hydro Electric Transmission PLC	£66,983	£6,699	£60,284	
University of Strathclyde	£90,622	£9,062	£81,560	
National Grid Electricity Transmission PLC	£28,229	£2,823	£25,406	
National Grid Electricity System Operator Ltd	£27,734	£2,774	£24,960	
Met Office	£166,181	£16,726	£149,455	
Energyline Ltd	£53,400	£5,340	£48,060	
Total	£433,149	£43,424	£389,725	10%

ANNEX 2 TO SCHEDULE: TEMPLATE OF BANK ACCOUNT DETAILS TO BE PROVIDED TO EITHER NGT (BOX.GSOSETTLEMENTS@NATIONALGRID.COM) OR 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)