

National Grid Gas PLC  
1-3 Strand, London  
WC2N 5EH

Direct Dial: 020 7901 7295

Email: [Marzia.Zafar@ofgem.gov.uk](mailto:Marzia.Zafar@ofgem.gov.uk)

Date: 4 April 2023

Dear National Grid Gas PLC,

**SIF Project Direction ref: NGG/Hybrid Storage System for site safety and efficiency/SIFPNZPS/Rd2 Discovery**

National Grid Gas PLC submitted Electrolyser Improvements driven by Waste Heat Recovery (the Project) to be considered for SIF Funding in the round 2 Discovery Phase of the Strategic Innovation Fund (SIF). In our<sup>1</sup> SIF funding decision issued on 4 April 2023, we selected the Project<sup>2</sup> for conditional funding and as a result we are now issuing this SIF Project Direction to implement that decision.

National Grid Gas 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 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 Document<sup>3</sup> 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

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

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

<sup>3</sup> <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.<sup>4</sup>
- 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.<sup>5</sup>
- Where applicable, set out conditions (such as Project stage gates) linked to milestones and deliverables, which Projects must meet.<sup>6</sup>
- 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.<sup>7</sup>
- Set out the Project budget that the Funding Party must report against and how variations in the Project budget will be reported.<sup>8</sup>
- Where applicable, set out special information sharing requirements applicable to the Project.<sup>9</sup>
- Set out the mechanism for the Funding Party receiving the SIF Approved Amount as set out in the SIF Funding Direction.<sup>10</sup>

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 Project<sup>11</sup>.

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

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

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

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

<sup>8</sup> 'Annex 1 – Project Budget.

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

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

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

This SIF Project Direction constitutes notice pursuant to section 38A (Reasons for decisions) of the Gas Act 1986.

**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: NGG/Hybrid Storage System for site safety and efficiency/SIFPNZPS/Rd2\_Discovery

Application number: 10052878

Project title: Electrolyser Improvements driven by Waste Heat Recovery

Innovation Challenge/Project Phase: Preparing for a net zero power system / Discovery Phase round 2

Project start date: 3 April, 2023

Project end date: 30 June, 2023

SIF Approved Amount for SIF Funding: £95,714

Total Compulsory Contribution<sup>12</sup>: £14,635

### 2. PREAMBLE

This SIF Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to National Grid Gas PLC (the "Funding Party") pursuant to the SIF Governance Document issued pursuant to Special Condition 5.7 of the Gas Transporter licence (the "Licence"). It sets out the conditions to be complied with in relation to Electrolyser Improvements driven by Waste Heat Recovery (the "Project") as a condition of it being funded under the SIF Funding Mechanism.<sup>13</sup>

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***

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<sup>12</sup> The Compulsory Contribution is defined in the SIF Governance Document.

<sup>13</sup> 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**

HYDROGENUS LTD
UK POWER NETWORKS (OPERATIONS) LIMITED
ALFA LAVAL AALBORG OY
CERES POWER LIMITED
CARDIFF UNIVERSITY
ANGLIAN WATER SERVICES LIMITED

### **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 Project 'NextGen Electrolysis – Wastewater to Green Hydrogens' to examine areas of commonality and potential overlap, and how the Projects could inform each other on their findings. Innovate UK can facilitate an introduction if necessary.

## **4. COMPLIANCE**

The Funding Party must comply with Special Condition 5.7 of the Gas Transporter licence (the "Licence") (National Grid Gas plc), the SIF Governance Document and with this SIF Project Direction.

## **5. SIF APPROVED AMOUNT**

The SIF Approved amount of £95,714 (as detailed under Section 1: Project details of this Project Direction) will be recovered by National Gas Transmission from GB customers and transferred to the Funding Party. The Funding Party is responsible for notifying National Gas Transmission 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 Gas Transmission, the reverse applies. The Funding Party must provide bank account details to National Gas Transmission 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)<sup>14</sup> and DPA (Data Protection Act) 2018<sup>15</sup>. 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 milestone<sup>16</sup>**

Reference	Project milestone	Deadline	Evidence	SIF Funding Request (100%) <sup>17</sup>
Milestone 1	Work package 1: Project Management	June 30, 2023	Overall work package objectives: This work package will ensure the project meets its projected timing, risk and cost through the Discovery period and will develop the plan for the Alpha phase project.  Key tasks: 1. Project Management & Coordination - GT&M 2. Alpha application evidence and content - GT&M	£12,474.00

<sup>14</sup> [https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu\\_en](https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu_en)

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

<sup>16</sup> As outlined in the Application or Project Plan appendix.

<sup>17</sup> 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>3. Contracts - GT&amp;M</p> <p>4. Financial Reporting - All</p> <p>5. Risk Management - All</p> <p>6. Reporting - All</p> <p>7. Peer Review - Cardiff University</p> <p>Milestones:</p> <ul style="list-style-type: none"> <li>- Alpha application: The final report or/and application the Alpha is complete and submitted for assessment.</li> </ul> <p>(£12,474.00)</p>	
Milestone 2	Work package 2: Business Case & Requirements Development	June 30, 2023	<p>Overall work package objectives: This work package will develop the key requirements for the system and develop the business case and CBA for the system to be deployed.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Develop the functional requirements for the system</li> <li>2. Develop the demonstration requirements and opportunities</li> <li>3. Develop the Business case and CBA</li> <li>4. Determine the Implementation plan post demonstration</li> <li>5. Determine key UK projects that could benefits from the approach</li> <li>6. Benchmark other systems and determine impact of approach</li> </ol> <p>Milestones:</p> <ul style="list-style-type: none"> <li>▪ Requirements defined and shared with all partners:</li> </ul>	£11,739.00

			<p>Requirements defined and shared with all partners to enable continued project development. (£11,739.00)</p> <ul style="list-style-type: none"> <li>Alpha application: The final report or/and application the Alpha is complete and submitted for assessment.</li> </ul>	
Milestone 3	Work package 3: Waste Heat Recovery	June 30, 2023	<p>Overall work package objectives: This work package reviews the feasibility of waste heat recovery on NTS compression systems and determines cost and approach.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Review waste heat recovery system compatibility with NTS compression systems</li> <li>2. Determine design and package requirements</li> <li>3. Determine compressor running periods throughout the year and estimate output</li> <li>4. Determine how the waste heat will be managed to make it useful for the electrolyser</li> <li>5. Benchmark other waste heat recovery systems to ensure suitability and optimisation</li> </ol> <p>Milestones:</p> <ul style="list-style-type: none"> <li>Waste heat recovery system proposal and outputs: Concept design and proposed capability</li> </ul>	£24,695.00

			provided to Ceres and wider team. (£24,695.00)	
Milestone 4	Work package 4: Solid Oxide Electrolyser	June 30, 2023	<p>Overall work package objectives: This work package determines the feasibility of utilising SOE alongside waste heat recovery on compression facilities.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Review solid oxide electrolyser options against requirements and inputs</li> <li>2. Determine if compressors can produce enough energy to run SOE</li> <li>3. Review link to electricity and water network</li> <li>4. Determine the likely output from the electrolyser</li> <li>5. Demonstrate interactions with the UKPN SIF project to identify optimum running conditions</li> </ol> <p>Milestones:</p> <ul style="list-style-type: none"> <li>▪ SOE system proposal: Concept design for the electrolyser system provided to MottMac and project partners. (£23,512.00).</li> </ul>	£23,512.00
Milestone 5	Work package 5: Emissions Capture	June 30, 2023	<p>Overall work package objectives: This work package reviews the waste heat recovery system and looks to integrate waste heat recovery whilst considering</p>	£16,145.00

			<p>methods for carbon transportation, storage and use.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Review integration of emissions capture with the heat recovery system</li> <li>2. Determine method for storing and moving emissions</li> <li>3. Determine any required cleaning steps</li> <li>4. Consider impact of blends vs 100% Hydrogen</li> </ol> <p>Milestones:</p> <ul style="list-style-type: none"> <li>▪ Emissions management system proposal: Concept design for the emissions management process. (£16,145.00)</li> </ul>	
Milestone 6	Work package 6: System Demonstration	June 30, 2023	<p>Overall work package objectives: This work package determines the concept system design bringing together the key elements from each work package into a concept for the alpha phase to develop further.</p> <p>Key tasks:</p> <ol style="list-style-type: none"> <li>1. Determine the optimum system structure and layout for the site</li> <li>2. Review commercial elements of the proposed deployment</li> <li>3. Review testing plan and approach for demonstration</li> <li>4. Review alternative sites where required</li> </ol>	£7,149.00

			<p>Milestones:</p> <ul style="list-style-type: none"> <li>▪ Delivery of the concept design for site integration of the system: Concept design for system and interactions with site facilities. (£7,149.00).</li> </ul>	
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#### 14. USE OF LOGO

The Funding Party and the Project Partners, External Funders and Project Supporters or subcontractors<sup>18</sup> 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.

<sup>18</sup> As detailed in the Application.

## **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 5.7 of the Gas Transporter 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, 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 5.7 of the Gas Transporter 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 38A (Reasons for decisions) of the Gas Act 1986.

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	92,606
Materials	0
Subcontracting	0
Travel and subsistence	1,950
Other costs	15,793
<b>Total</b>	<b>110,349</b>

Project finances				
Project Partner	Total project costs (£)	Project Compulsory Contribution (%) <sup>19</sup>	Project Compulsory Contribution (£)	Total SIF Funding requested (£)
NATIONAL GRID GAS PLC	16,317	187%	10,635	5,682
HYDROGENUS LTD	6,750	0%	0	6,750
UK POWER NETWORKS (OPERATIONS) LIMITED	2,001	99.99%	2,000	1
ALFA LAVAL AALBORG OY	28,500	0%	0	28,500
CERES POWER LIMITED	26,125	0%	0	26,125
CARDIFF UNIVERSITY	28,655	0%	0	28,655
ANGLIAN WATER SERVICES LIMITED	2,001	99.99%	2,000	1
<b>Total</b>	<b>110,349</b>	<b>15%</b>	<b>14,635</b>	<b>95,714</b>

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



**ANNEX 2 TO SCHEDULE: TEMPLATE OF BANK ACCOUNT DETAILS TO BE PROVIDED TO NGT ([BOX.GSOSETTLEMENTS@NATIONALGRID.COM](mailto:BOX.GSOSETTLEMENTS@NATIONALGRID.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)

