Net Zero Innovation Portfolio- Flexibility Innovation Programme:

Smart Metering enabled flexibility innovation engagement session

6th May 2022

Agenda

Item	
Housekeeping	**13:00**
Purpose of today	**13:05**
Background	**13:10**
Future Proposed Innovation Activity: Smart meter energy data repository	**13:20**
Short break	
Future Proposed Innovation Activity: Smart meter system Internet of Things	**14:00**

Housekeeping

- The event is **not** being recorded. This presentation will be published on the Flexibility Innovation Programme website
- Please type any comments and feedback into the Q&A function (top right of screen). The Q&A function will be kept open for 10 minutes after the event has finished to allow for any feedback.
- Feedback can also be submitted via email to flexibilityinnovation-DataRepository@beis.gov.uk and flexibilityinnovation-IoTApplications@beis.gov.uk until **14:00 13 May 2022.** Any comments and feedback received will not published.
- We will **not** be responding to questions at this event.
- Please note, the proposed innovation activity is under development and therefore proposals in these slides are **subject to change**.

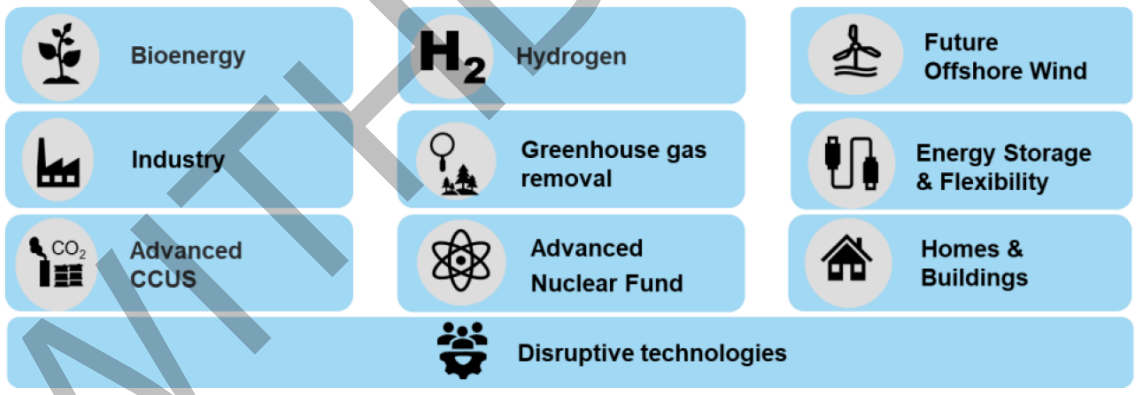
Purpose of Today

The outcome of today's market engagement is to provide an overview of proposed future innovation activity in the area of smart metering enabled flexibility and to give an opportunity to provide feedback

Net Zero Innovation Portfolio:
Background

NZIP Overview

- The Government has set out a commitment to reach net zero emissions by 2050
- The Prime Minister's Ten Point Plan for a Green Industrial Revolution announced a **£1 billion Net Zero Innovation Portfolio (NZIP)**
- NZIP will accelerate the commercialisation of innovative low-carbon technologies, systems and processes in the power, buildings and industrial sectors.
- The portfolio will focus on ten priority areas:



Flexibility Innovation Programme Overview

- Up to £65 million overarching programme
- Forms a substantial part of the at least £100m funding for energy storage and flexibility challenges as set out in the Prime Minister's ten point plan for a green industrial revolution
- Seeks to enable large-scale widespread electricity system flexibility through smart, flexible, secure, and accessible technologies and markets.
- To achieve this, the programme aims to fund innovation across a range of key smart energy applications.
- It is expected that the programme will run to the end of March 2025
- Updates to the Flexibility Innovation Programme will be provided on the Flexibility Innovation Programme Webpage

Smart Meter energy data repository

Net Zero Innovation Portfolio – Flexibility Innovation Programme

6th May 2022

Background to Smart Meter Energy Data Repository

- The smart metering system is a rich source of energy related data (consumption, price, demand, voltage etc.) and is distributed across the millions of meters that generate and store it.
- This distributed data is difficult and slow to access, requiring serial requests, via Data Communications Company.
- Limitations at the device level, HAN level, WAN level and DSP (Data Service Provider) may restrict use cases.
- These may be barriers to smart energy planning, innovation, and development of Demand Side Response (DSR) services.

Proposed Innovation Activity

- A secure cloud-based repository of smart meter energy data would offer potential consumer benefits, including those relating to flexibility services and other energy data-related services that are currently unrealised.

- This proposed innovation activity would aim to determine the technical and commercial feasibility of a smart energy data repository.

Wider initiatives this proposed innovation activity is relevant to:
The Smart Systems and Flexibility Plan 2021
Market-Wide Half Hourly Settlement (MWHHS) Programme

Scope of Proposed Innovation Activity

- Establish the feasibility of a smart energy data repository Technical Solution, including a Cost Benefit Analysis (CBA) and associated use cases, taking into account privacy risks and mitigations and commercial feasibility.

- Develop and demonstrate a ‘proof of concept’ smart meter energy data repository

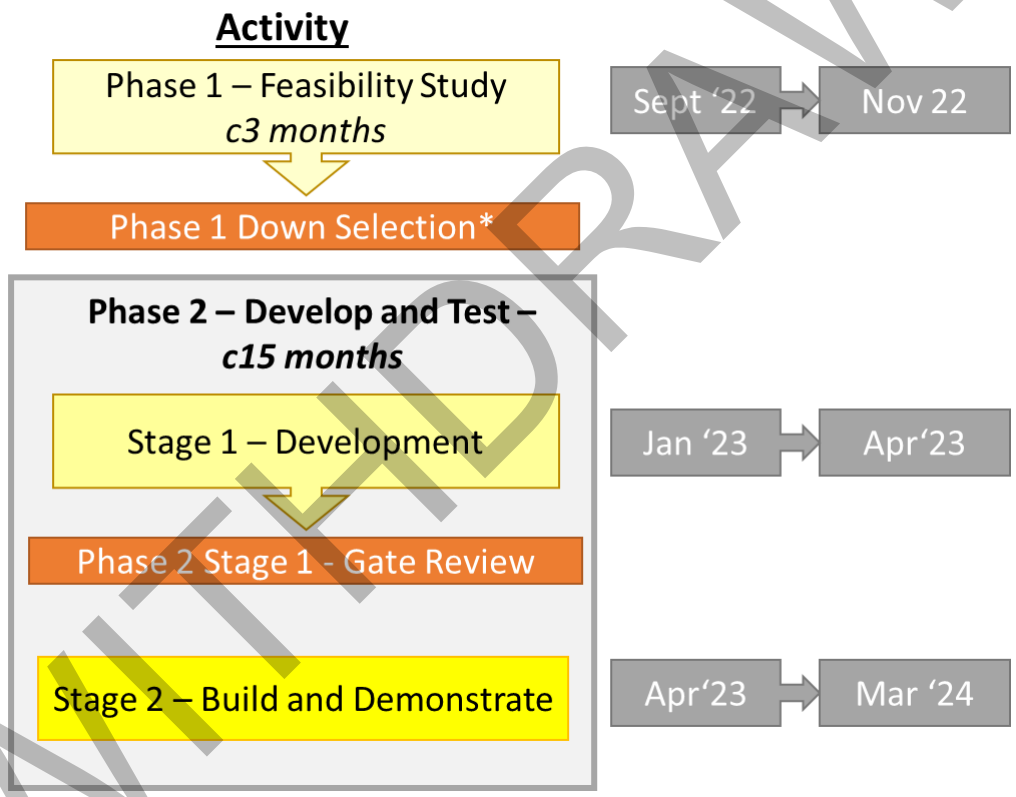
- This ‘proof of concept’ will demonstrate (e.g. through simulation, as required) key features of the proposed Technical Solution, such as user interfaces and data retrieval from the smart metering system.

- Applications of interest for a smart meter energy data repository could include:
  - Access to individual consumer data (noting privacy controls)
  - Aggregated (anonymised and non-anonymised) data sets for DSR services and grid planning and operability

Out of scope: Regulatory changes, HHS use cases

Structure of Proposed Innovation Activity

c18 month programme, composed of 2 phases



Phase 1 – Feasibility

Funding mechanism: SBRI

Up to 3 projects conducting feasibility studies over 3 months; incorporating:

- User requirements and use cases
- Cost Benefit Analysis, including commercialisation potential
- Data retrieval model
- Technical needs/supporting requirements analysis
- A proposed Technical Solution for a system-wide Data Repository
- A proposal for the 'proof of concept' to be developed in Phase 2 based on the Technical Solution

A competitive down-selection of projects will take place at the end of Phase 1

Phase 2 – Develop and Demonstrate

One project over 15 months, completing 2 Stages:

Funding mechanism: SBRI

Stage 1: Develop

- Develop a specification for a ‘proof of concept’ based on the Phase 1 Feasibility Study
- Further develop Cost Benefit Analysis

A stage-gate review will take place between Phase 2, Stage 1 and Stage 2

Stage 2: Demonstrate

- Build and demonstrate a ‘proof of concept’
- Produce recommendations, including: next steps, required future technical development, delivery route etc
- Updated Cost Benefit Analysis
- Final reporting

Next steps and feedback

Anticipated launch of proposed innovation activity in summer 2022

We would appreciate feedback and comments in the following areas (via Q&A function or to the Programme's email address):

- Is the structure and phasing of the proposed innovation activity clear?
- What would you consider an appropriate budget and timeline for the innovation activity and phases proposed?
- Is there anything you think is missing in the proposed scope for this innovation activity?
- Would you anticipate submitting a bid for this innovation activity?
- *(response to this does not commit any applicant to the submission of an application or BEIS to the acceptance of an application)*

Comments & Feedback

- We welcome feedback on the proposed innovation activity. The feedback will not be published but BEIS may use it to inform future innovation competitions.
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Smart Meter system Internet of Things

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6th May 2022

Session will begin at 14:00

Background to Smart Meter System Internet of Things

- Increasing population of Internet of Things (IoT) devices
  - connecting to, exchanging data with other devices and systems over the internet or other communications networks
  - used in a wide range of domestic, business, industrial and infrastructure contexts
  - most often managed by a public-facing cloud solution; industrial devices usually connected to local platforms

- The **Smart Meter System** has **existing capability** to communicate energy-related and other types of data via the Data Communications Company (DCC) network

Proposed Innovation Activity

- Develop IoT sensor devices and supporting data management tools
  - using the Smart Meter System (SMS) as an alternative route for IoT monitoring
  - SMETS “PPMID/ HCALCS/SAPC” functionality to connect via the DCC network

- Increase options for control and monitoring of “smart building” systems, industrial processes and Distribution Network Operator (DNO) infrastructure assets
  - an alternative route for owners / operators for secure IoT monitoring with universal interoperability
  - minimal additional cost, or reduced costs of installation and operation compared with alternatives

Some current and recent innovation projects of relevance to this proposed innovation activity:

Smart meter enabled thermal efficiency ratings (SMETER) technologies project SMETER

“Green Lamp Post” environmental sensors project (DCC and Scotscape) Green Lamp Post

Scope of Proposed Innovation Activity

The following are the main areas of interest for this project:

Smart Building management

- SMS-connected IoT devices to monitor energy consumption and environmental factors related to energy consumption (e.g. temperature, humidity) in domestic, commercial, or public buildings

Industrial process monitoring

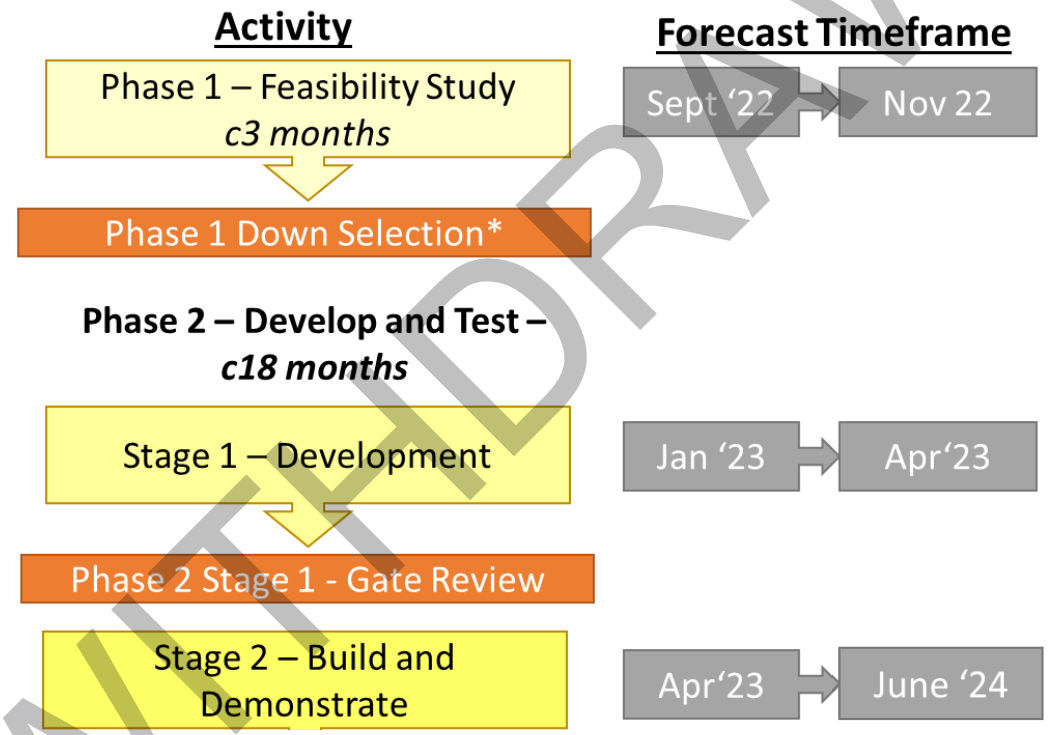
- SMS-connected IoT devices to monitor energy consumption and physical variables related to energy consumption, for smart manufacturing process control and manufacturing asset management

DNO network asset monitoring

- SMS-connected IoT devices to monitor critical asset status and performance in LV electricity distribution infrastructure (e.g. substations); to support network and operational efficiency, incident response

Structure of Proposed Innovation Activity

c21 month programme, composed of 2 phases



*After Phase 1 a Down Selection process will take place to identify projects to advance to Phase 2 – subject to meeting relevant eligibility and quality thresholds

Phase 1 – Feasibility

Funding mechanism: SBRI

Up to five projects conducting feasibility studies over 3 months; incorporating:

- Cost Benefit Analysis (CBA) for the chosen applications
- Proposed solution comprising SMETS “PPMID/ HCALCS/SAPC” IoT sensor devices and as required, data management tools to support these applications

A competitive down-selection of projects will take place at the end of Phase 1

Phase 2 – Develop and Trial

Funding mechanism: SBRI

Around 2 projects over 18 months, completing 2 Stages:

Stage 1: Develop

- Develop specification(s) for “PPMID/HCALCS/SAPC” IoT sensor devices and applications
- Build prototype devices and data management tools
- Conduct lab tests
- Prepare Stage 2 proposals

A stage-gate review will take place between Phase 2, Stage 1 and Stage 2

Stage 2: Trial

- Build and fit sensors in chosen scenarios
- Conduct small-scale real world trials
- Final reporting

Next steps and feedback

Anticipated launch of proposed innovation activity in summer 2022

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Thank you for listening!