



Ofgem Strategic Innovation Fund

Round 2 Challenges –briefing



Strategic Objectives of the SIF

Ofgem and Innovate UK are collaborating to:

- 1) Deliver a net zero energy system at lowest costs to consumers**
- 2) Position the UK as the 'Silicon Valley' of energy systems**

We are interested in big, bold, ambitious ideas which will significantly accelerate delivery of net zero in the UK and be rolled out internationally.

The 3 pillars of the Strategic Innovation Fund

Strategic Alignment

Bring in the best businesses and academics from across energy and other sectors

Aligning energy innovation funding across government, UKRI and Ofgem

Enabling responsive policy and regulatory change informed by innovation

Agile 'Challenges'

1. Supporting a just energy transition

2. Preparing for a net zero power system

3. Improving energy system resilience and robustness

4. Accelerating decarbonisation of major demands

Discovery Projects
2-3 months / £150k

Alpha Projects
6 months / £500k

Beta Projects
c.4 yrs / c. £10m+

Commercialisation

Network Roll Out

Investor Expert Panel

Utilities Expert Panel

International route to market
(networks, utilities, investors)

The current political, market and social context has been considered carefully for SIF round 2 challenges

Global energy price surge

Global gas prices have rallied to a record high the last 6 months leading to quadrupling of whole sale energy prices in the UK. This has driven the energy price cap for 22m consumers to increase by 54%

From 1 April consumers on default tariffs will see an increase of £693 from £1,277 to £1,971 per year

Geopolitics and energy security

The geopolitical tensions between Russia and Europe have generated concerns in the UK over reliance of Russian gas. This combined with high energy prices has promoted greater public and government focus on energy security and energy independence

The UK imports around 50% of its gas from the international market

Increased cost of living

Increasing energy prices and inflation have led to higher cost of living across the UK. Higher energy bills have been cited a cause for this increase in cost of living

Two thirds (66%) of adults in Britain reported their cost of living increased in the past month [Jan 22]

We have undertaken 130 engagements as part of the Challenge development process

How did we engage?

- ~30 1-2-1 discussions
- 6 Stakeholder specific workshops
 - 2 sessions with energy suppliers and developers via Energy UK
 - 1 session with aggregators, local govt, other network users and tech/service providers via ADE
 - 2 sessions with all energy networks
 - 1 session with tech/service



Stakeholder type	Number*
Academia	9
Aggregators	2
Consultants/ Think Tanks	7
Consumer representative groups	7
Devolved Administrations	4
Electricity Networks	17
Energy Developers	6
Gas Networks	9
Investors	1
Local Government	6
Non-energy technology providers	8
SIF Expert Panel Members	24
Suppliers	12
System Operator	5
Trade Associations	4
UKRI	9
Total	130

*Numbers represent total number of participants from each stakeholder type including multiple representatives from same organisation

We estimate that over 50% of these are organisations that could prospectively join partnerships as third party innovators (including technology providers, local authorities)

The resulting output is the four challenges and associated themes published on 9th March

Mission		Challenge	Themes
Whole System Integration	Data and digitalisation	Supporting a just energy transition	Novel and replicable approaches for better identification, support, and inclusion of vulnerable and disadvantaged consumers
			Supporting the decarbonisation of heat and mobility for rural, off gas grid, fuel poor and those consumer groups with reduced access to opportunities for decarbonisation
		Preparing for a net zero power system	Novel ways to reliably support low stability systems
			Accessing grid/system support from novel supply and demand side sources
Heat and Zero Emission Transport		Improving energy system resilience and robustness	Novel approaches to improving resilience using multi-energy systems
			Strengthening the UK’s energy system robustness to support efficient roll out of new infrastructure
		Accelerating decarbonisation of major demands	Approaches to effectively facilitate, manage, and integrate multiple demands and demand-side solutions – e.g., heat and transport; flexibility and/or energy demand reduction
			Integrating heat networks for wider energy network management
			Improving efficiency at different levels in the energy system – e.g. loss reduction across networks; assessing and realising value of demand reduction to the energy network

Scope of innovation within the SIF

SIF eligibility

- Projects must address the Innovation Challenge as set by Ofgem and Innovate UK [see round 2 challenge document for details]
- Projects must involve network innovation
- Projects must clearly identify potential to deliver a net benefit to gas or electricity consumers
- Projects must be innovative, novel and/or risky
- Projects must include participation from a range of stakeholders [see challenge document or specific partnership requirements against each challenge]
- Projects must provide value for money and be costed competitively
- Projects must be well thought through and have a robust methodology to progress in a timely manner

Who can lead SIF projects?

- SIF is currently open to the Electricity System Operator, and the electricity transmission, gas transmission and gas distribution sectors. From April 2023 electricity distribution operators will enter the RIIO-ED2 network price control, so they will also be eligible to lead Projects under round 2 of the Strategic Innovation Fund.

What type of innovations does SIF support?

- The projects can be technical, social, commercial and/or market innovations to address the specific challenges

For more information, refer to the SIF governance document - <https://www.ofgem.gov.uk/publications/sif-governance-document>

Supporting a just energy transition

Delivering net zero technologies and services that works for all consumers whilst protecting the vulnerable



Key background to the problem

- The combination of Covid-19 pandemic and a 'cost of living crisis' has exacerbated consumer vulnerability recently, with potential long-term implications for driving a fair net zero transition
- We have to acknowledge that energy consumers are people with differing preferences, and who have varying levels of capability or resources to engage with reducing their energy related emissions



This challenge aims to

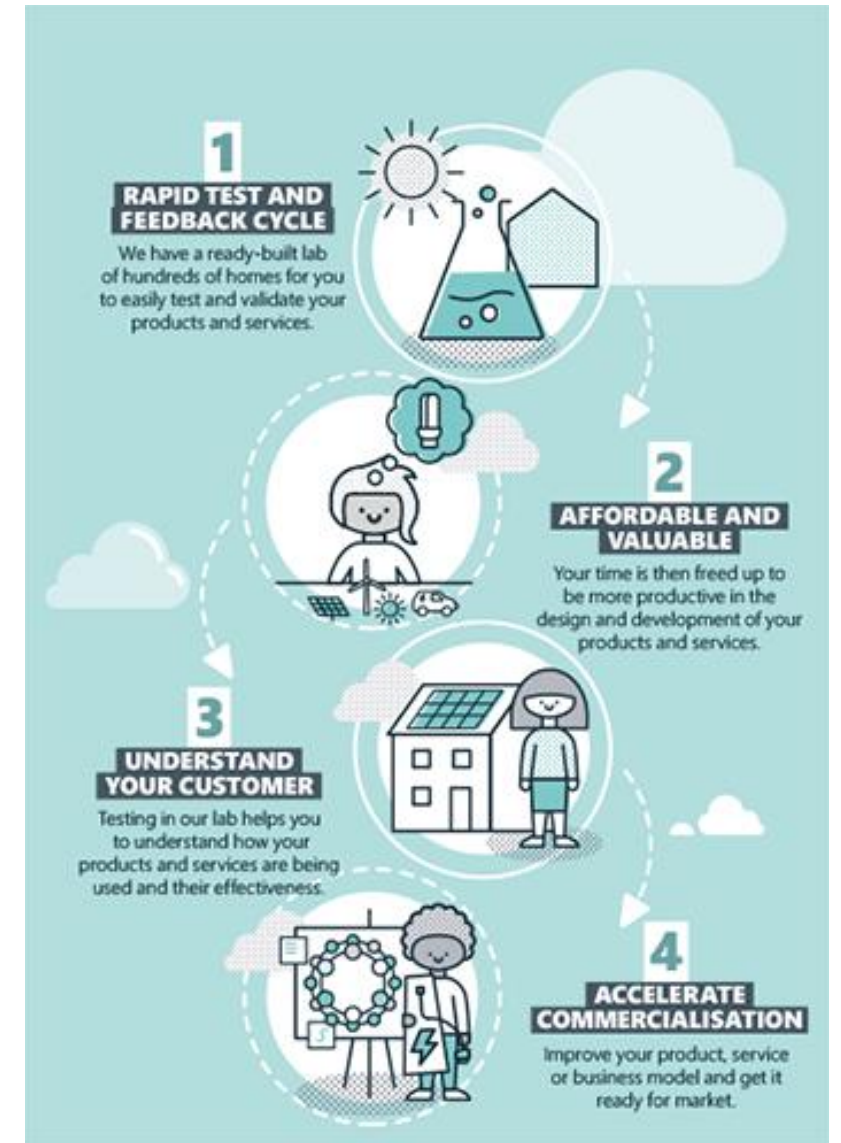
- Improve coordination between networks and other stakeholders with remit and responsibility for consumer service provision for more targeted and joined-up support
- Significantly progress the understanding of consumer vulnerability in the context of energy networks and net zero transition, and develop robust strategies to support these consumers
- Significantly narrow the gap between consumer segments in terms of ease, accessibility, and cost effectiveness of decarbonisation solutions relevant to energy networks
- Adapt and improve existing decarbonisation solutions and approaches to work better, considering different vulnerability factors.

Supporting a just energy transition

Delivering net zero technologies and services that works for all consumers whilst protecting the vulnerable

Scope requirements : Proposal must directly address at least one as a primary focus

1. Novel and replicable approaches for better identification, support, and inclusion of vulnerable and disadvantaged consumers
2. Supporting the decarbonisation of heat and mobility for rural, off gas grid, fuel poor and those consumer groups with reduced access to opportunities for decarbonisation



Supporting a just energy transition

Delivering net zero technologies and services that works for all consumers whilst protecting the vulnerable

Scope	Partnership requirements	
	Discovery (at least one of each)	Alpha (at least one of each)
Novel and replicable approaches for better identification, support, and inclusion of vulnerable and disadvantaged consumers	<ol style="list-style-type: none">1. Consumer representative group or relevant charities2. Relevant local government entity	<ol style="list-style-type: none">1. Energy network licensee in addition to the project lead. The partner network must hold a gas transporter, electricity transmission or electricity distribution licence2. Energy supplier3. Alternative utility or organisation with experience in managing consumer data in other sectors – e.g., water, telecommunications, finance
Supporting the decarbonisation of heat and mobility for rural, off gas grid, fuel poor and those consumer groups with reduced access to opportunities for decarbonisation	<ol style="list-style-type: none">1. Consumer representative group or relevant charities2. Relevant local government entity	<ol style="list-style-type: none">1. Energy network licensee in addition to the project lead. The partner network must hold a gas transporter, electricity transmission or electricity distribution licence2. Energy supplier3. A heat technology, service, or infrastructure provider or transport refuelling or charging provider. For example, this could include, but is not limited to; • heat network providers • heat pump designers and installers • EV charging point developers • Hydrogen hubs developers

Preparing for a net zero power system

Supporting the safe and reliable operation of a net zero power system by 2035



Key background to the problem

- A key policy commitment within the UK government's net zero strategy is to fully decarbonise the power system by 2035. This has made Great Britain the fastest decarbonising power system in the world
- Operating a power system safely and securely with high levels of renewables will bring novel challenges and require new approaches



This challenge aims to

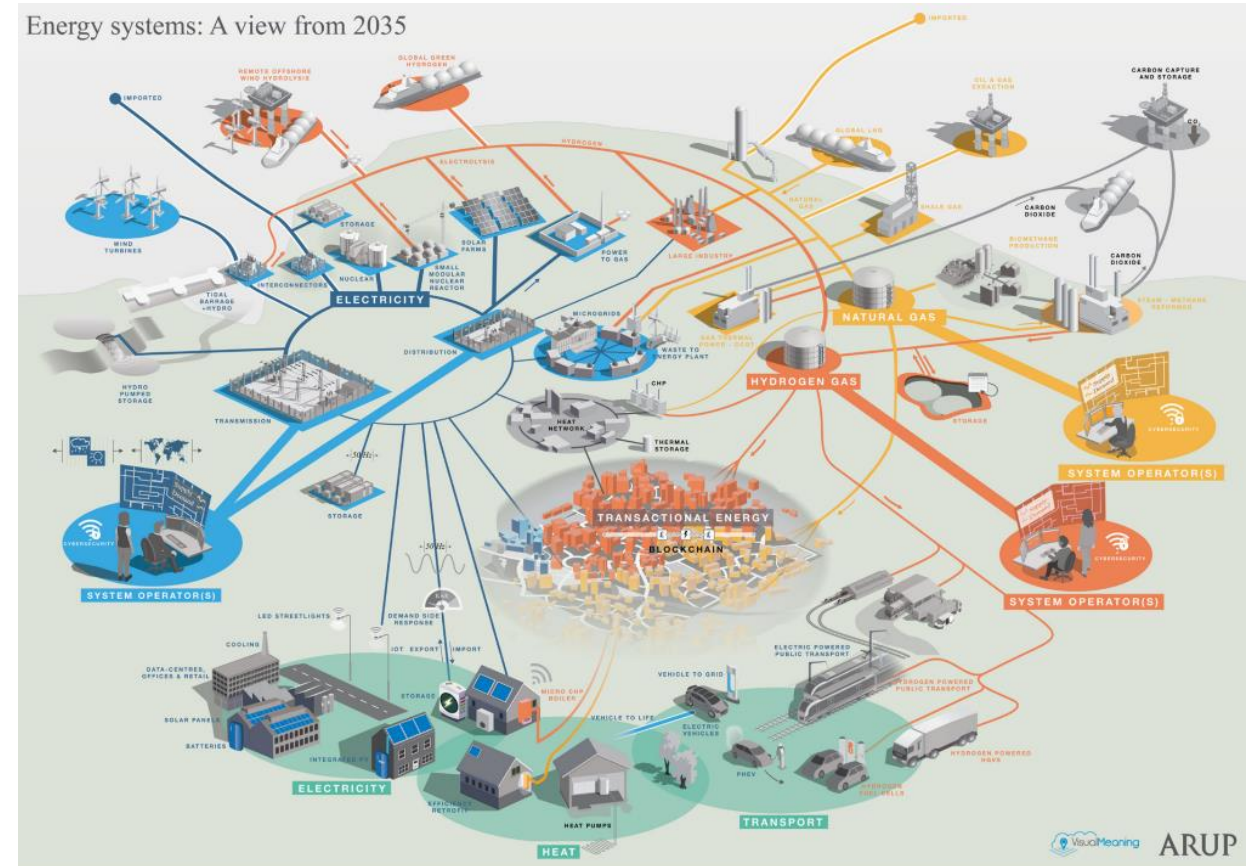
- Develop innovations in technology, markets and standards that help the power system be ready for net zero by 2035
- Develop evidence on the technical and commercial capability of new assets to provide power stability services
- Support the system integration of novel assets including the necessary digital interfaces and their market accessibility to help increase the pool of resources providing system stability services ahead of 2035

Preparing for a net zero power system

Supporting the safe and reliable operation of a net zero power system by 2035

Scope requirements : Proposal must directly address at least one as a primary focus

1. Novel ways to reliably support low stability systems
2. Accessing grid/system support from novel supply and demand side sources



Preparing for a net zero power system

Supporting the safe and reliable operation of a net zero power system by 2035

Scope	Partnership requirements	
	Discovery (at least one of each)	Alpha (at least one of each)
Novel ways to reliably support low stability systems	<ol style="list-style-type: none">1. Organisation with expertise focused on data and digitalisation approaches2. An electricity transmission, electricity distribution or electricity system operator network licensee in addition to the project lead.	<ol style="list-style-type: none">1. Operator of assets connected to the energy networks. Such as, but not limited to; a. renewable generators b. nuclear plants, c. hydrogen electrolyzers d. energy storage or e. aggregators with a portfolio of demand side resources including electric vehicles (including charging points), or demand side response
Accessing grid/system support from novel supply and demand side sources	Same partner requirements as above.	Same partner requirements as above.

Improving energy system resilience and robustness

Strengthening whole system resilience and robustness to achieve net zero securely



Key background to the problem

- As the energy system becomes more complex, distributed, and interdependent between vectors, it creates new challenges and opportunities to deal with increasing risks from natural and other hazards
- In addition to operational resilience, securing and strengthening aspects of the energy system including the supply chains for energy networks (hardware and digital) is also critical to ensure a robust energy transition towards net zero



This challenge aims to

- Incorporate resilience and robustness as key and measurable considerations into future multi-energy system design
- Develop technical, organisational and commercial innovation including using novel multi-energy system configurations for increasing system resilience 3
- Improve understanding of trade-offs between increasing resilience, robustness and the cost implications and consumer trust & acceptability in the context of a net zero transition
- 4. Improve understanding of robustness in future energy system configurations and develop solutions to improve and strengthen it.

Improving energy system resilience and robustness

Strengthening whole system resilience and robustness to achieve net zero securely

Scope requirements : Proposal must directly address at least one as a primary focus

1. Novel approaches to improving resilience using multi-energy systems
2. Strengthening the UK's energy system robustness to support efficient roll out of new infrastructure



Improving energy system resilience and robustness

Strengthening whole system resilience and robustness to achieve net zero securely

Scope	Partnership requirements	
	Discovery (at least one of each)	Alpha (at least one of each)
Novel approaches to improving resilience using multienergy systems.	<ol style="list-style-type: none">1. Academic partner or Research and Technology Organisation (RTO) with experience in system resilience and risk analysis.	<ol style="list-style-type: none">1. Consumer representative group2. Energy network licensee in addition to the project lead. The partner network must hold a different category of network licence than the licensee leading the project (i.e., gas transporter licence, electricity transmission licence, electricity distribution licence etc.).
Strengthening UK's energy system robustness to support efficient roll out of new infrastructure	<ol style="list-style-type: none">1. Academic or Research and Technology Organisation (RTO) organisation or industrial partner with capability in supply chains.	<ol style="list-style-type: none">1. Energy network licensee in addition to the project lead. The partner network must hold a gas transporter licence, electricity transmission licence or electricity distribution licence.

Accelerating decarbonisation of major demands

Enable cost-effective integration of heat and transport decarbonisation solutions aligned to net zero timescales



Key background to the problem

- The effective connection, integration, and energy system operational aspects of heat and transport energy demands cost effectively and at the pace required by the net zero commitment and sixth carbon budget is a significant challenge
- A coordinated and consumer focussed approach across smart, flexible systems, local area energy planning, digitalised demand planning, behavioural change and zoning is critical for cost effective decarbonisation and integration of these major energy demands



This challenge aims to

- Develop technical, social, economic and/or political approaches to integrated planning and connecting decarbonised heat and transport demand that reduces overall costs and reduces timescales
- Integrate energy efficiency together with flexibility to reduce costs of connecting and operating decarbonised heat and transport demands
- Demonstrate coordination between flexibility, energy efficiency and regional/local energy planning activities that reduce costs and improves consumer experience for decarbonisation.

Accelerating decarbonisation of major demands

Enable cost-effective integration of heat and transport decarbonisation solutions aligned to net zero timescales

Scope requirements : Proposal must directly address at least one as a primary focus

1. Approaches to effectively facilitate, manage, and integrate multiple demands and demand-side solutions – e.g., heat and transport; flexibility and/or energy demand reduction
2. Integrating heat networks for wider energy network management
3. Improving efficiency at different levels in the energy system – e.g. loss reduction across networks; assessing and realising value of demand reduction to the energy network



Accelerating decarbonisation of major demands

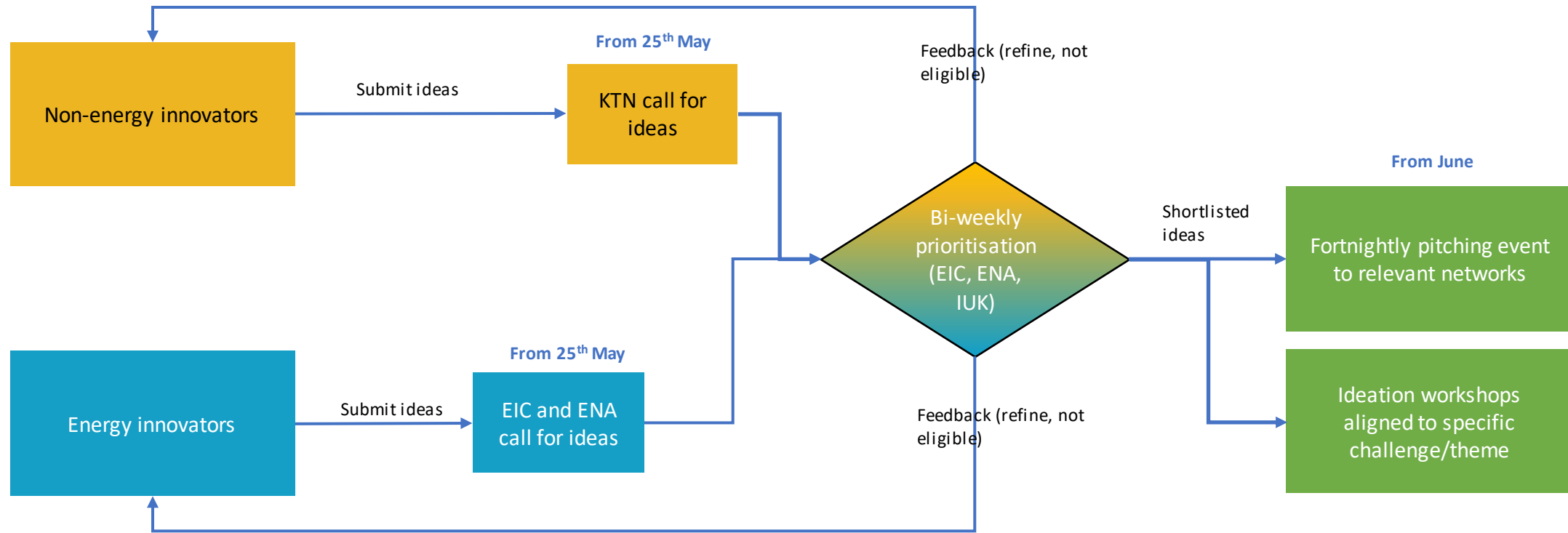
Enable cost-effective integration of heat and transport decarbonisation solutions aligned to net zero timescales

Scope	Partnership requirements	
	Discovery (at least one of each)	Alpha (at least one of each)
Approaches to effectively facilitate, manage, and integrate multiple demands and demand-side solutions – e.g., heat and transport; flexibility and/or energy	<ol style="list-style-type: none">1. A heat technology, service, or infrastructure provider or transport refuelling or charging provider. For example, this could include, but is not limited to: a) heat network providers b) heat pump designers and installers c) EV charging point developers d) Hydrogen hubs developers	<ol style="list-style-type: none">1. Organisations with responsibility for constructing and maintaining buildings. For example, this could include, but not limited to: a) Property developer (for projects focussing on new builds) b) Housing associations or public sector property managers or private landlords or property management companies (for projects focussing on existing buildings) c) Energy network licensee in addition to the project lead. The partner network must hold a gas transporter, electricity transmission or electricity distribution licence d) Flexibility and, or energy efficiency aggregator
Integrating heat networks for wider energy network management	<ol style="list-style-type: none">1. Heat network developer2. Relevant local government entity.	<ol style="list-style-type: none">1. Electricity distribution network (must be a partner if not leading the project)2. Flexibility aggregator3. Thermal storage developer.
Improving energy efficiency at all levels in the system – e.g. loss reduction across networks; realising value of demand reduction to the energy network.	<ol style="list-style-type: none">1. Relevant local government entity	<ol style="list-style-type: none">1. Organisations who constructing or maintain buildings2. Energy efficiency (networks or demand side) installation or supply chain company

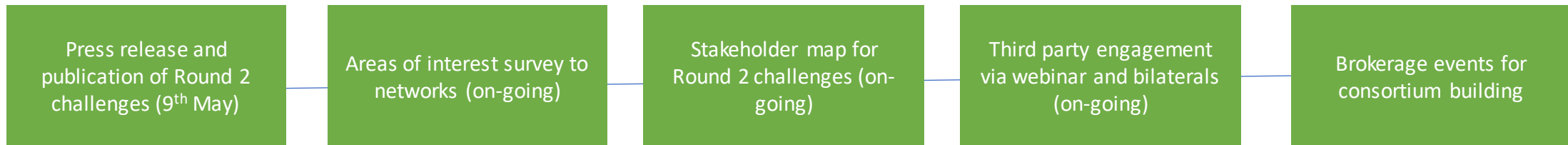


Ideation and incubation process

Process



Supporting activities



Funding alignment models: Innovation programmes working together

High performing past projects with energy network interfaces



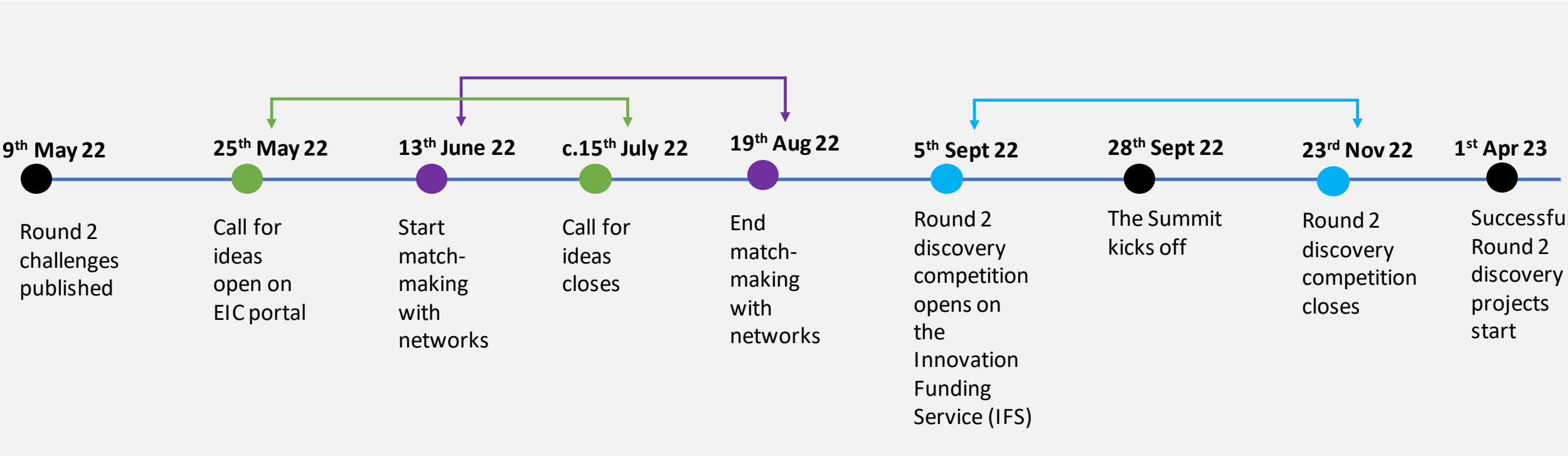
Collaborative knowledge sharing and interaction between programmes



Projects with shared partners and work packages across multiple programmes



Overview of SIF timelines for round 2



Summary of key information



Where do I submit my idea?

Submit your idea into the [Energy Innovation Centre's portal](#), which is live from 25th May. The [ENA Smarter Networks](#) portal is also always open for energy network innovation proposals, both SIF and more widely.



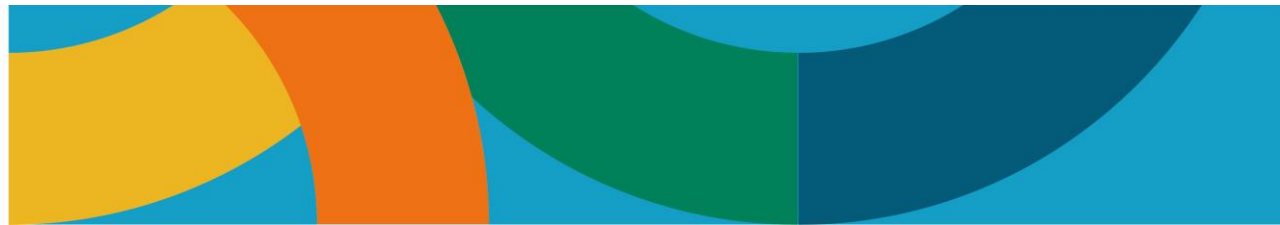
How do I engage with the energy networks?

Submit your idea via the EIC portal against specific SIF challenges. These will be reviewed, feedback provided, and where suitable you will be invited to an engagement event. These may be multi-lateral meetings, pitching events, or brokerage/ideation workshops.



When and how do I submit a project application?

Only the energy network companies can submit an application. They will finalise their proposals with partners in September, and submit via Innovate UK's Innovation Funding Service (IFS)



Watch this space...

New Energy Innovation Summit to be announced soon



**Partners from across the
energy system**

Joint Dissemination

**Wider Energy Systems
Audience**

**Problem Solving
Workshops**

**Aligned Innovation
Programmes**

To find out the latest
sign up to our newsletter
[here](#).