Community DSO Consortium Brokerage Conference

Online Networking Event

20th July 2023

Welcome & housekeeping

- To help us make the most of the event today, we would like to ask you to:
  - Please switch on your cameras
  - Please change your Zoom name to following format:
    - **Your name, Your Competency, Your Organisation**
  - **Please use the Chat throughout the event – to ask questions, make comments, facilitate connections**
  - Questions asked today will be added to Project FAQs and shared with you
  - The session runs until 6pm

Agenda

Time	Activity	Presenter
16:00	Welcome & housekeeping	Explain
16:05	Community DSO - Purpose of the event today - Project scope and aims	Maurice Lynch, Northern Powergrid
16:10	Community DSO - The Energy Community Concept	Jeremy Harrison, LCP Delta
16:20	Community DSO - Trial 1 Timelines and Budget	Maurice Lynch, Northern Powergrid
16:30	Networking - Join breakout rooms of your choosing - Stay or switch every 15 minutes	Explain - All
17:55	Thanks and close	Explain

Scan QR to browse the organisations already wanting to network with you!
Go to latest edition @ Community DSO | Explain Market Research (explainresearch.co.uk)

Networking eDirectory

To be added to the directory you must complete the online registration form @ Northern Powergrid Stakeholder Community DSO Brokerage Event (alchemer.eu) and then also please email communitydso@northernpowergrid.com to let us know you have done so, and a colleague will create your page and upload you to the online version as soon as possible.

SCAN ME

Community DSO

Event purpose

Maurice Lynch
Head of System Flexibility

Event Purpose

- Provide short recap on the project goals and competencies sort from the essential pre-reading circulated in the invitation
- Facilitate consortium building through competency rooms to meet & mingle with peers

Introduction to the Partners

Northern Powergrid manages the electricity network that powers everyday life for 3.9 million homes and businesses in the North East, Yorkshire and northern Lincolnshire. More information on us later in the day

LCP Delta specialise in broad market, regulatory and business changes in the electricity system, with a specific expertise of smart local energy system commercial and business models

TNEI is a specialist in modelling and analysis of transmission and distribution networks across GB and internationally

Key Faces – Project Partners

Paul Glendinning
Director – Policy & Markets

Maurice Lynch
Head of System Flexibility

Laura Brown
Commercial Manager – Flexibility / – Interim Programme Manager

Nicole Butterworth
Analyst – Flexibility Services – Interim Project Manager

Jeremy Harrison
Principal Analyst & Senior Consultant

Sarah Freshwater
Consultant

Gordon McFadzean
Specialist Consultant, and Head of Data Science

Sarah Sheehy
Senior Consultant

Community DSO

Project Scope and Aims

Maurice Lynch
Head of System Flexibility, Northern Powergrid

Project Scope

Demonstration at Community Scale

- Four distinctive community level trials of the Energy Community concept
- Incorporating innovations in markets, regulation, network management, customer inclusion

Bridging the Gap

- Innovatively linking sector approaches
- Utilising the co-ordination and control of the network led approach
- Blending with agility of the market and consumer led opportunities

Unlocking local system flexibility

- Adapting the governance and operation of the low voltage network
- Allowing electricity system users to act as a community to provide a range of contribution and reward levels

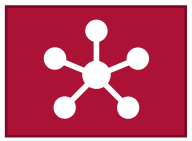
Project Aims

- **Trial the Energy Community concept in different areas of our network**

- Utilising Flexibility Services to incentivise and facilitate groups of physically connected Customers to produce and consume power locally to support the wider system

- Enable the integration of Smart Local Energy Systems (SLES) including low carbon technologies (LCTs) such as PV, EV charging and heat pumps

- Manage the introduction of SLES into our low voltage networks to release the maximum flexibility benefit from the solution while maintaining our high level of system reliability for our Customers

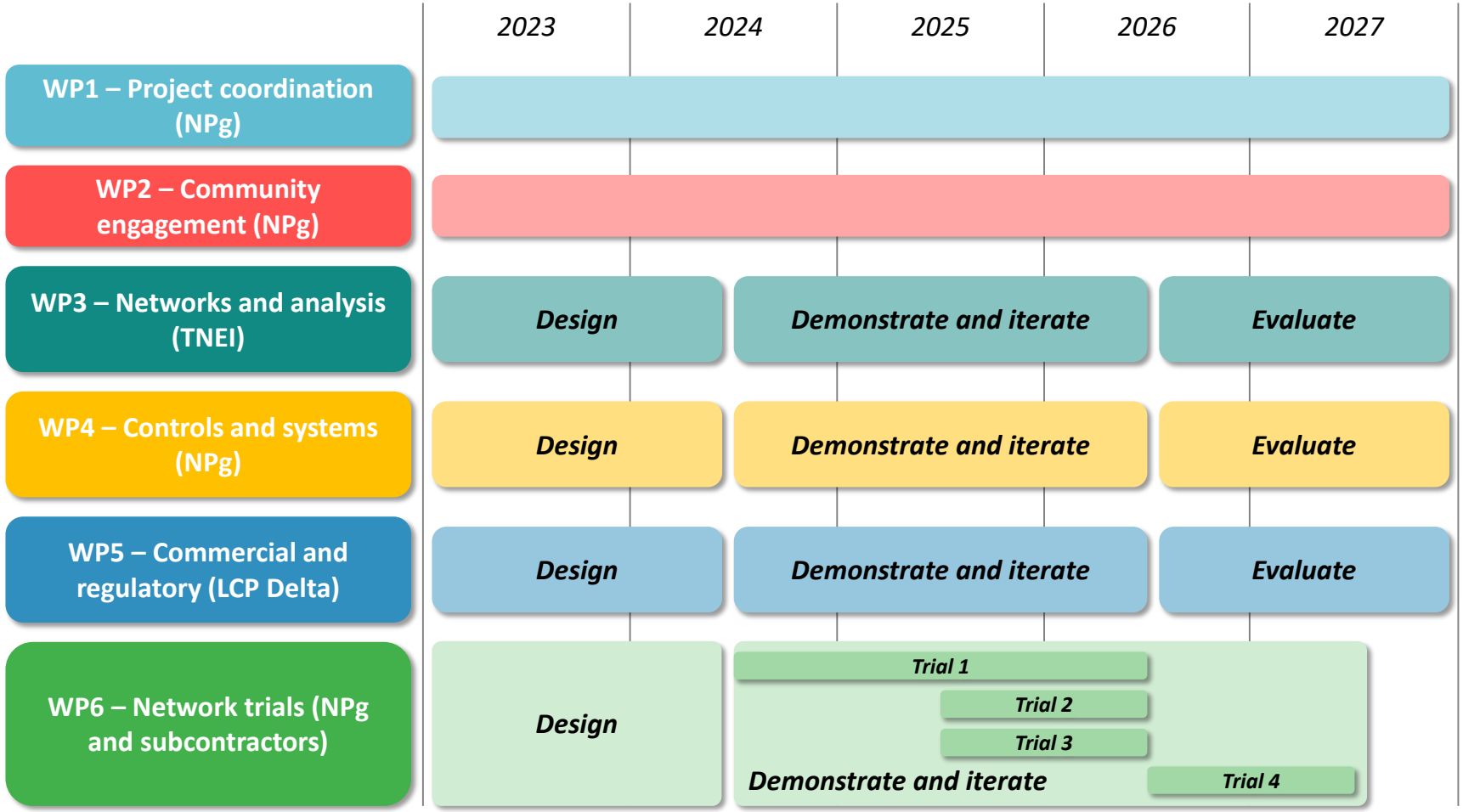


- Explore the technical enablers, commercial models, regulatory framework, market tools as well as the community co-ordination and management that will be required to make the concept viable as business-as-usual (BAU) proposition

Information added following the event, taken from the FSP

Project plan

- 6 work packages, in including the physical trials, over 5 years



Community DSO

The Energy Community Concept

Jeremy Harrison
Local Energy System, LCP Delta

Energy Communities

Energy Communities in Europe

EU initiative to accelerate the energy transition through energy communities

- Citizen Energy Communities (CEC)
- Renewable Energy Communities (REC)

Intended to:

- Increase consumer acceptance of renewable energy
- Increase distributed system flexibility
- Provide a new funding stream for renewables

Features

- Legal framework facilitates implementation
- Reduced use of system charges to reflect lower impact
- Allows for local markets

Benefits to community

- Allow consumers to take control of their energy
- Reduced energy costs
- Value retained within community
- Transparency
- Long term stability

Challenges

- “Just Transition” need to ensure some consumers do not benefit at the expense of others
- CDSO aims to create mutual value not simply accommodate or subsidise

Community DSO – the role of energy communities in the DSO transition

Energy communities (EC) can support the transition from DNO to DSO and vice versa, providing economic, technical and societal benefits

Connecting new DER generation

- As we move to a low carbon generation system, there is an increasing need to accommodate renewable generation
- Renewable energy resources are often in rural areas with smaller networks
- High demand for network capacity can slow the development of e.g. wind farms
- Network capacity at both distribution and transmission levels can result in curtailed generation

Connecting new electrical demands

- Increasing dependence on electricity for decarbonising heat and mobility
- Additional demand from home working
- Some of these applications are critical, increasing the need for resilient supplies
- Although local balancing is not inherently more resilient, it does open opportunities for participants to implement resiliency technologies such as energy storage

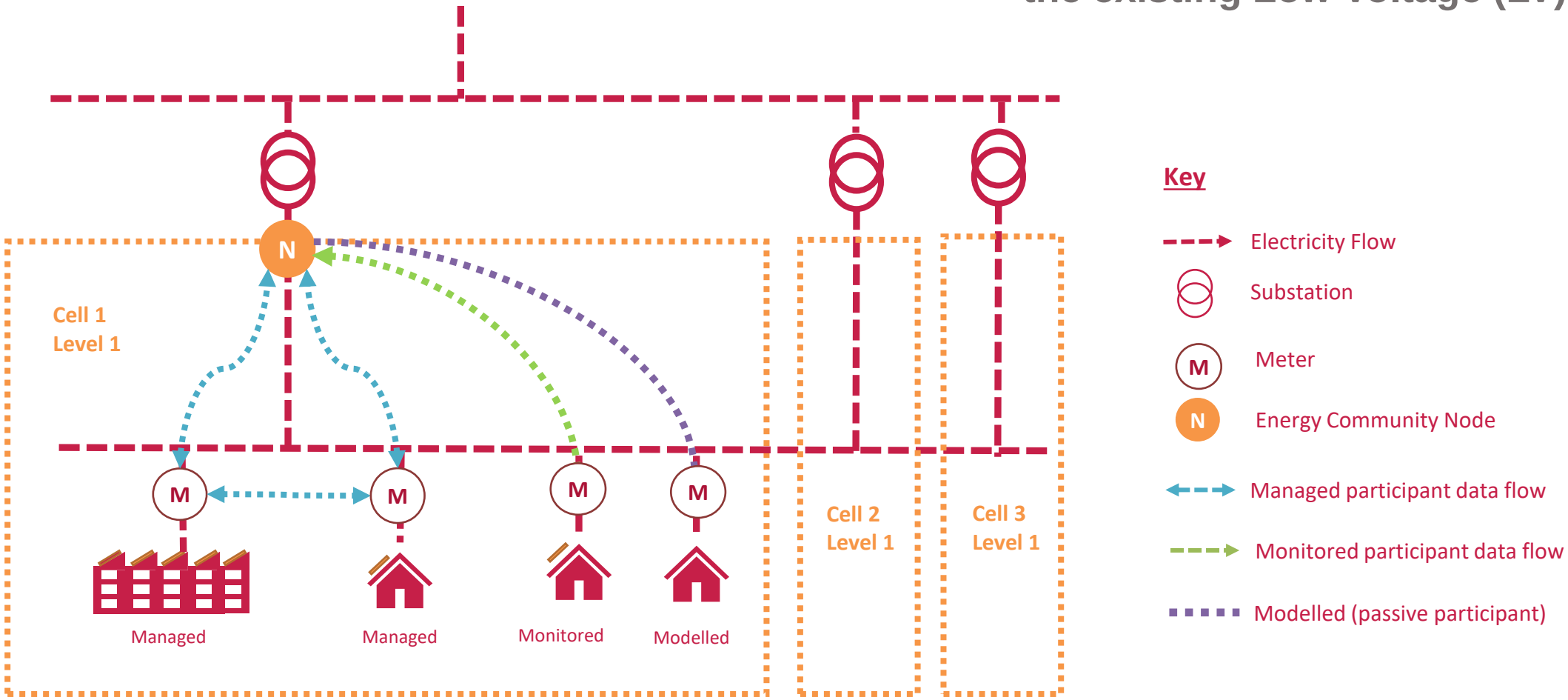
Facilitating energy communities

- Historically many EC projects impose a burden on existing infrastructure
- EU focus on accommodating EC rather than mutual value creation
- Community DSO balances at local level to overcome many of the structural challenges of system-wide interventions
- Local or district balancing can be more efficient and responsive than centralised approaches

Please note:
DSO: Distribution System Operation
DER: Distributed Energy Resource

Community DSO Concept

Communities formed in cells structured around the existing Low Voltage (LV) network



An **Energy Community** in Community DSO is a group of consumers and generators connected by a common energy system – **the cell**

Community DSO – Proposed project configurations

- Three types of participants
- Mange, Monitor and Model
- Each cell will include one or more of the following, but the aim is to *manage* as far as possible

Manage

Control of generation, storage and demand to align demand with available generation

Monitor

Full visibility (but no explicit control) of demand and generation within each property

Model

No visibility of generation or consumption but using AI to understand impact on remainder of cell

- Example of the types of cells that could be trialled, based on existing and emerging cell archetypes

Minimising impact

- Will involve an existing community
- Identified network constraints on additional renewable generation

Substantially balanced

- As microgrid but without the ability to operate in island mode
- Aim to substantially balance local demand with generation annually

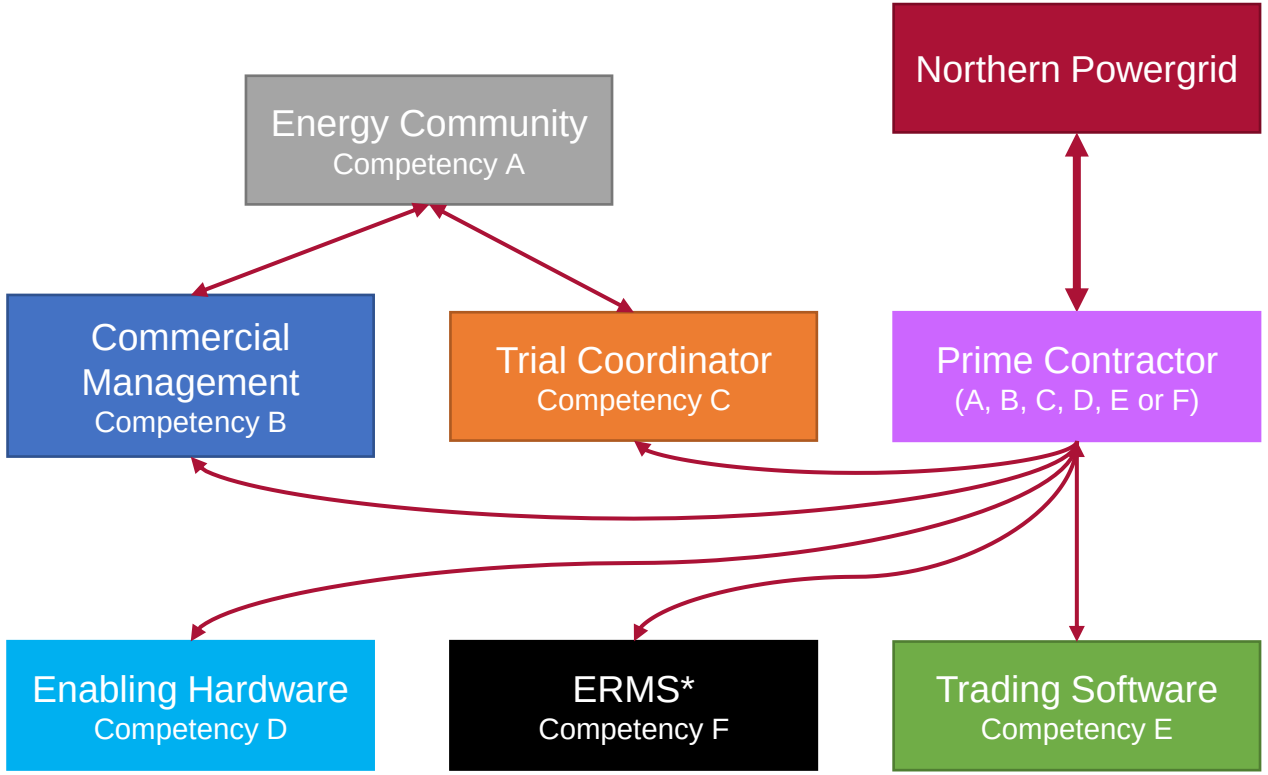
Fully balanced system (microgrid)

- System capable of islanding must be able to balance load with available generation in real time
- Remains connected to grid for majority of time facilitating the transfer of (balancing) energy and energy services to the grid
- Economic incentives within the microgrid minimize impact on grid
- No conflict between TSO (ESO) flexibility services and DSO requirements

Competencies

- **Anticipate that six competencies needed for each of the four trials**

- Organisations could meet one or several required competencies
- We expect organisations to group together to deliver a trial
- This is a mix of hardware, software, and management skills needs, alongside an Energy Community and its corresponding low voltage network to host the trial
- One organisation needs to be the prime contractor for NPg to contract with



***Energy Resource Management System**

Competencies

A. **Energy community:** The formation of an energy community with the right assets is essential to the trials. Consumers within the community will have to be as engaged as possible.

B. **Commercial Management:** Manage commercial arrangement and deliver business model to share value generated, (e.g., customer contracts, specificities, billing).

C. **Trial Coordinator:** Day-to-day management of the trials, signing up participants, etc.

D. **Enabling hardware:** Activating/installing the necessary components, software, or settings so that hardware can perform the intended function. This might include hardware within the community / cell, as well as possibly hardware within individual customer premises.

A single organisation within a consortium can provide multiple competencies.

E. **Trading software:** To dynamically balance supply and demand, members of a community need to be able to trade excess generation or share the output of a communal generation asset. Trading must align economic incentives with the physical management of the local energy system to realise benefits for the wider energy system

F. **Energy Resources Management System:** Power flows within a cell must be coordinated to align the trading platform with the realities of the electrical network. Need a software platform to manage DERs within a cell and to ensure a robust integration with the wider network. HEMS may also be required within individual premises .

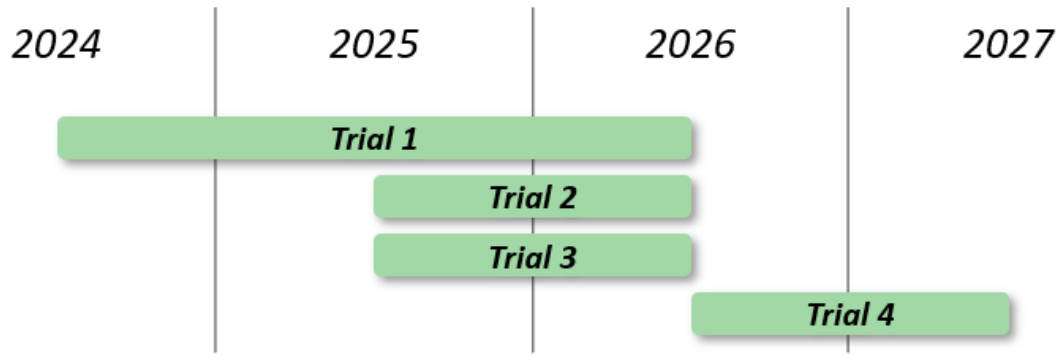
- **Prime Contractor:** All competencies are required in a consortium, but NPg will only contract with a single commercial entity as the prime contractor. We expect this to be one of the organisations providing other competencies within the trials who will then subcontract with the other organisations. Other options (e.g., joint ventures) could be considered.

Community DSO

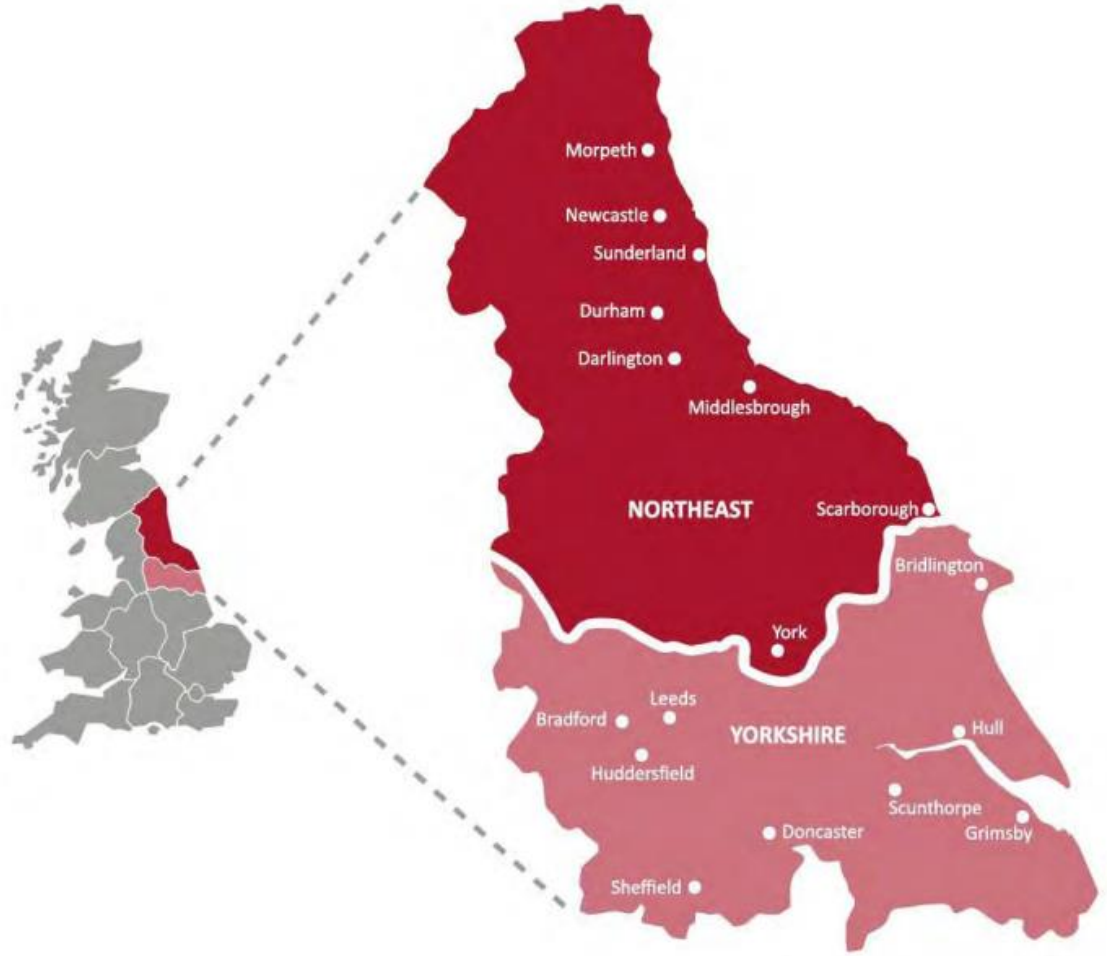
Trial 1 Timelines and Budget

Maurice Lynch
Head of System Flexibility, Northern Powergrid

Project Trials



Our aim is for each trial to be slightly different**:**	Demographics, types of premises, technologies, business models, mix of energy resources etc
Every trial **must be** centred around a specific area within the low voltage network**:**	One secondary substation (or possible, one cable feeder)
Trial 1 is unique because of its timescales**:**	Needs to mobilise very quickly



Aims of the first procurement stage

- **Focus on trial one, getting ready to start Autumn 2024**

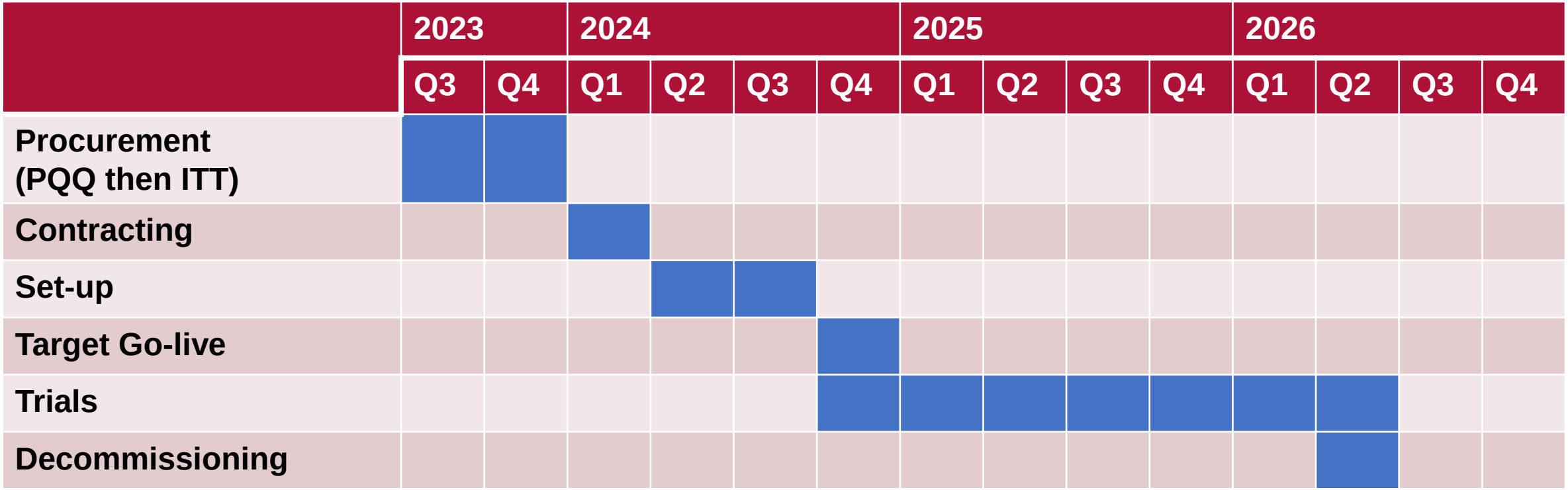
- Appoint partners to deliver the 1st (and only the 1st) of 4 trials

- Contract with a single organisation, who will subcontract if necessary.
  - This organisation will be ultimately responsible for delivering all aspects of the trial, managing all the interfaces, and managing delivery risks
  - This contracting approach aligns with the commercial relationship that we expect DNOs to have with Community DSOs in BAU, providing opportunities for learning

- Trial communities must demonstrate an ability to shift or reduce their energy consumption, to support the secure operation of their existing local low voltage network

- Trial communities must be based within Northern Powergrid's Licence areas (North East, Yorkshire and North Lincolnshire)

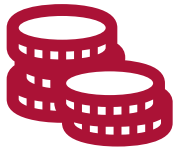
Indicative timescales



- We want the first trial to cover two winter seasons (2024/25 and 2025/26)
- Note compressed timescales for contracting and trial set-up
- The successful consortium must present a convincing plan for how this will be achieved
- Could potentially adopt a phased approach when rolling out trial functionality

Budgets

- **Details of the project funding**



- We anticipate the project will fund approximately ~£2.8 million for the first trial
  - This is around 40% of the project's total budget for running trials (£7m)
  - This reflects the longer trial duration and compressed timescales for project set-up

- The project will fund:
  - Hardware and software **required to implement the concept** (e.g., controls and comms)
  - Incentives for customers
  - Labour costs for running the trials

- The project will **not** fund other customer equipment such as low-carbon technologies

- Match funding, or funding for other costs not covered by NIC, is encouraged but not essential

How the trials might work (1)

- **Demonstrate and test the extent to which Energy Communities can be collectively flexible**

- Data and analysis will **establish baseline levels** of capacity for the trial community

- Challenge the community to **sustain reductions in capacity** below this baseline
  - Expect these reductions to get progressively more difficult
  - Up to the consortium to decide how this is achieved, but we currently expect some form of transactive energy using energy resources within the community
  - Prove that communities can manage assets within existing network limits

- Extensive monitoring throughout the community's electrical network.
  - Some LV monitoring from NPg
  - Access to customer monitoring from the trial provider where possible
  - Data provided to the project team for analysis

How the trials might work (2)

- **Test the extent to which Energy Communities can be collectively flexible**

  - The Community DSO approach creates values for the distribution network. Retention of some of this value will provide an incentive for communities to take part.
    - However, we are not explicitly trialling these incentive mechanisms (e.g., DUoS changes) within the project. This will be studied within other work packages in the project.
    - In the absence of incentives for communities to retain this value, trials should include sufficient budget for direct incentives to ensure participation. This has been accounted for in the funding request.

  - Extensive monitoring throughout the community's electrical network.
    - Some LV monitoring from NPg
    - Access to customer monitoring from the trial provider where possible
    - Data provided to the project team for analysis

  - Analysis of trial data will be completed by NPg and project partners
    - No deliverables expected – and no funding available – for trial providers to carry out this analysis

Subsequent trials

- **Plans for trials 2-4, feedback from each trial informs the next**

- Hope to explore multiple technology solutions within each trial
- So, organisations that are not successful now may still get involved later, and vice versa – if a consortium feels they may not be ready for Q4 2024, there is still an opportunity for the later trials

- Deliverability within compressed timescales is a big focus of Trial 1
- Honest feedback about your ability to achieve this is very welcome

- Later trials may be more technically complex or explore a wider range of technical solutions

Email the Team communitydso@northernpowergrid.com

Maurice Lynch
Head of System Flexibility

Laura Brown
Commercial Manager – Flexibility Services – Interim Programme Manager

Nicole Butterworth
Analyst – Flexibility Services – Interim Project Manager

Procurement Questions only

If you have any questions regarding procurement, please contact:-

Ian Hulbert – Procurement Compliance Manager – ian.hulbert@northernpowergrid.com

Tracy Precious – Senior Buyer – tracy.precious@northernpowergrid.com

Once procurement opens in Autumn 2023, bidders must submit any queries via the E-Tendering Portal messaging service only. No other means of contact is allowed, **including contacting project partners.**

Community DSO

Networking

Networking

There will be six breakout rooms, according to core competencies:

- Energy Community – with Jeremy Harrison LCP Delta
- Commercial Management – with Chris Goodhand NPg
- Trial Coordinator – with Maurice Lynch NPg
- Hardware – with Jane Watson NPg
- Trading software – with Laura Brown NPg
- ERMS – with Nicole Butterworth NPg

You can join any breakout room. Every 15 minutes, there will be an opportunity to stay or switch your breakout room.

Community DSO

Thank you

Community DSO Project Site Pages

Bookmark to your favourites & keep checking out updates
@ www.northernpowergrid.com/community-dso