

Net Zero Community Energy webinar with Northern Powergrid

Working together for a
low carbon future

Thursday 18 June
14.00-17.00



- 14.00 **Welcome and introductions from the chair**
Jodie Giles, senior project manager, Regen
- 14.10 **Introduction to Northern Powergrid's strategy and approach for community energy engagement**
Anda Baumerte, sustainability manager, Northern Powergrid
- 14.30 **Interactive question session on strategy and approach**
Jodie Giles, senior project manager, Regen
- 15.00 **Planning for Net Zero - Future Energy Scenarios, RIIO-ED2 and the Connection Process**
Helen Priestley, stakeholder manager, Northern Powergrid
Anda Baumerte, sustainability manager, Northern Powergrid
- 15.20 **Break**

- 15.30 **Update from Community Energy England**
Emma Bridge, chief executive, Community Energy England
- 15.40 **The role of community energy in net zero**
Andy Heald, Energise Barnsley
- 16.00 **Interactive breakout sessions**
- 16.30 **Feedback from groups**
- 16.40 **Update on the Rural Community Energy Fund**
Josh Sawyer, North East Local Enterprise Partnership
- 16.50 **Closing remarks**
Jodie Giles, senior project manager, Regen
- 17.00 **End**



Introduction to our community energy engagement strategy and approach

Net Zero Community Energy Webinar

Anda Baumerte
Sustainability Manager

18 June 2020

About Northern Powergrid

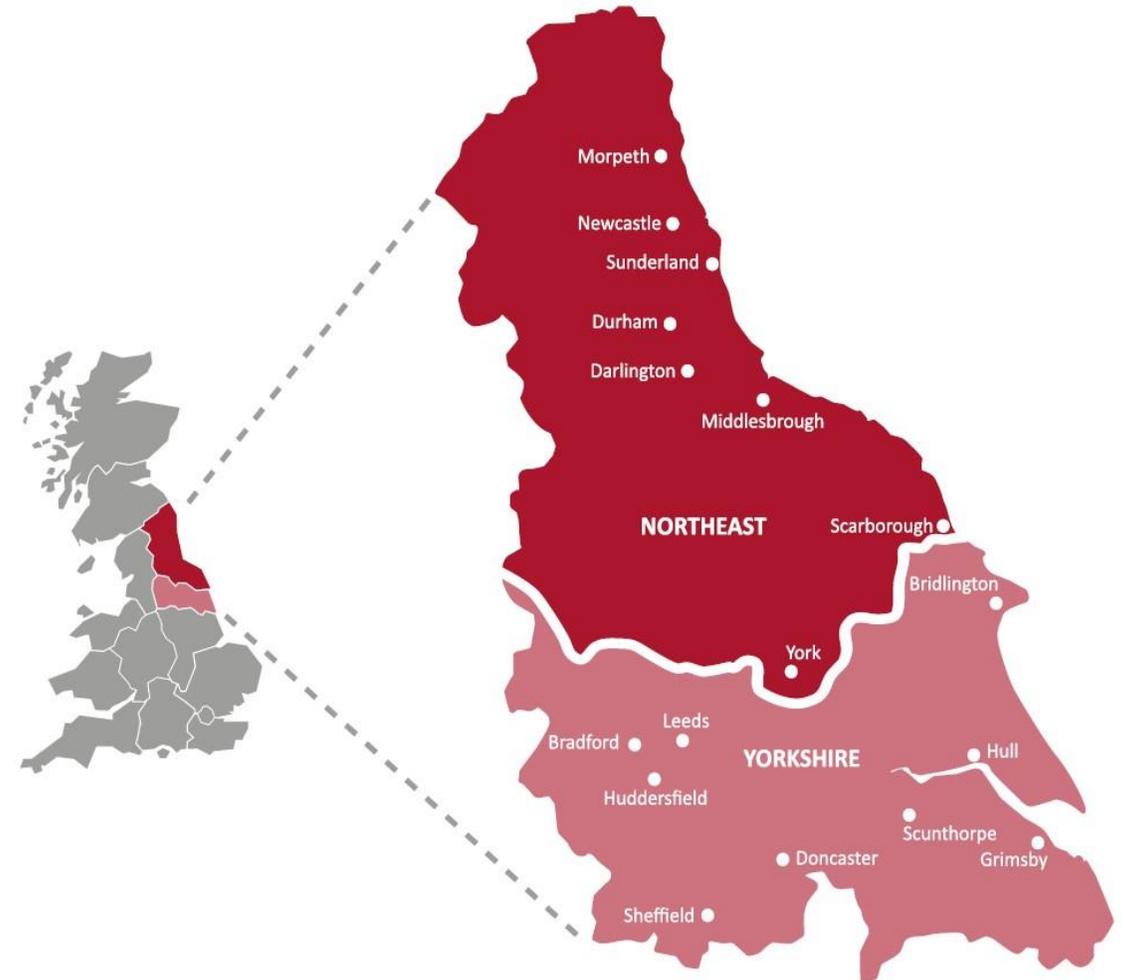
We are:

- Ofgem regulated 'wires-only' electricity distributor
- 96,000km of overhead lines
- 25,000km² of underground cables
- 63,000 substations

We serve:

- 3.9m homes & businesses – a population of 8m
- 2,700 employees
- 3 of the UK's 10 biggest cities
- 4 national parks and 5 AONB

£80 of typical annual domestic bill (23p per day)



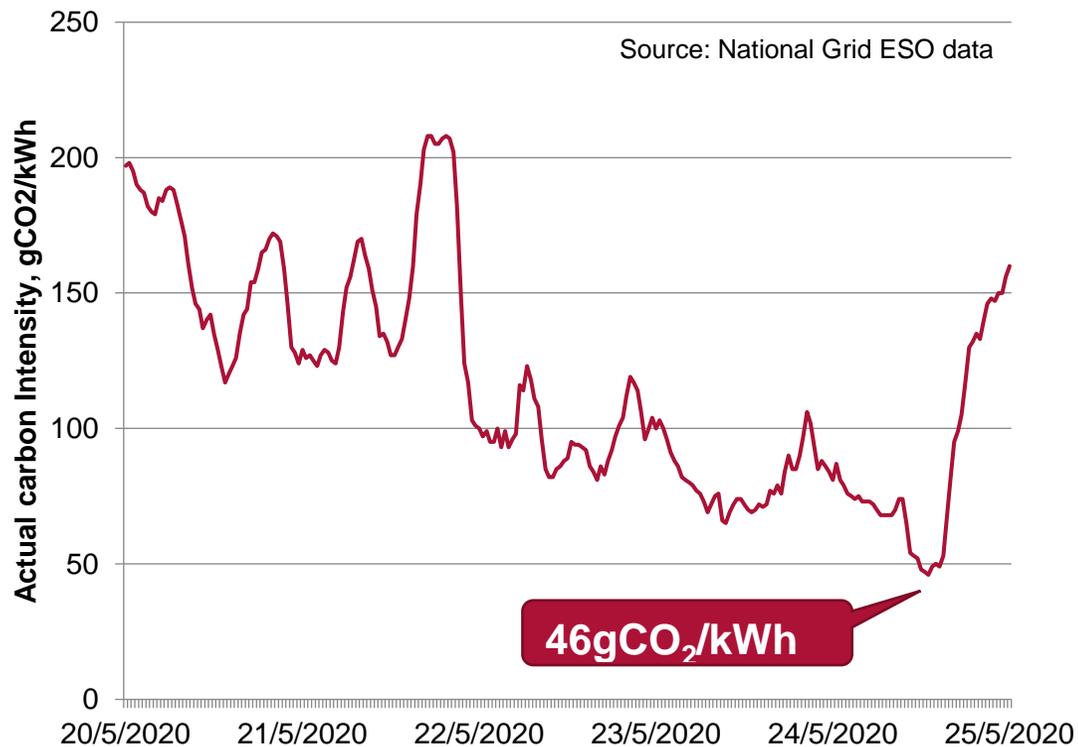
We are a key enabler for regional decarbonisation

- In July 2019, the UK Government announced a legally binding target of net zero emissions by 2050, compared to 1990 levels
 - This amended the Climate Change Act 2008, replacing a target of 80%
 - The target was further reinforced by local climate emergency announcements
- Since then, more aggressive local emissions' targets have been defined
 - Many local authorities in our area have set net zero targets ahead of 2050
 - We expect this will result in an increased uptake of low carbon technologies



The scale of change required is significant – but within reach

A record carbon intensity reached on 24 May



Coal - free first for electricity in Great Britain

Coronavirus slump and sunniest spring on record send green energy soaring in England, Wales and Scotland

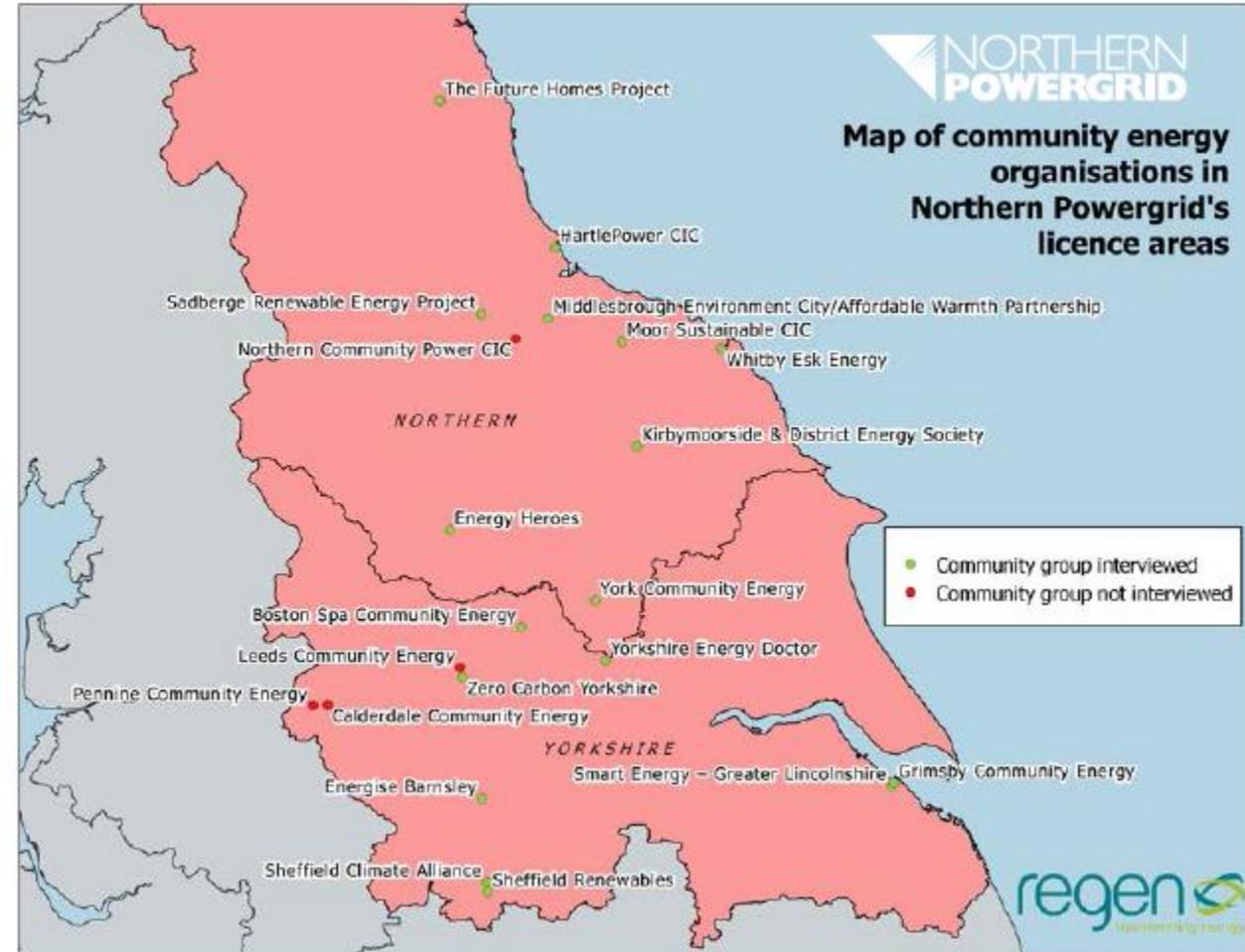
Lockdown sees electricity demand fall to lowest level since 1982

Record power prices and carbon lows over the bank holiday keep National Grid ESO on its toes

Community Energy in North East & Yorkshire

- There are more than 20 community energy projects in our area
- Our latest research illustrates the economic, social, and environmental benefits of community energy brings to the region, such as:
 - supporting 18.5 jobs;
 - bringing £250k worth of local economic benefits;
 - reducing nearly 500 tCO₂e.
- It is critical that our journey to decarbonisation takes a socially inclusive approach
 - supporting the growth of community energy will help us reach the most vulnerable in our society
 - energy transition should not leave anyone behind

We will be sharing more about this during the [Community Energy Fortnight \(13-28 June 2020\)](#).



We want to build positive relationships with local energy organisations that can benefit us all

We have been supportive of community energy since 2014:

- ✓ We held first two regional community energy events in 2014
- ✓ We set up a Community Energy Seed Fund in 2015. In 2018, we merged our fund with Northern Gas Networks to maximise the benefits available to the communities in our region
- ✓ We published first connections' guide for community energy projects in 2016
- ✓ Number of research projects have been supported to date
- ✓ We are a principal supporter of Community Energy England
- ✓ This year, we published our Community Energy Engagement Strategy for 2020-2023

We have developed our strategy based on feedback from community energy representatives in our region

17 community energy groups interviewed



26 commitments to listen, inform, engage, empower, and advocate for community energy groups during 2020-2023, e.g.:

- regular newsletters
- local events
- clarity on how to engage with Northern Powergrid
- knowledge building



Our Community Energy Engagement Strategy

Our goal is to support communities and community energy organisations in our region to:

- ✓ engage with us effectively to develop and connect more low carbon generation technologies that improve reliability;
- ✓ supply energy locally using our network;
- ✓ reduce energy bills through energy efficiency and education;
- ✓ alleviate fuel poverty through our Priority Services Register (PSR) and support;
- ✓ get involved in innovation projects to bring a grass roots perspective, fresh ideas, and a social and environmental conscience to a complex energy system; and
- ✓ amplify their voice with the Department of Business, Energy and Industrial Strategy (BEIS) and Ofgem.

The strategy is available from our [community energy page](#) which also contains a number of useful resources and details on how to contact us.





We are interested in your feedback



Planning for *net zero*

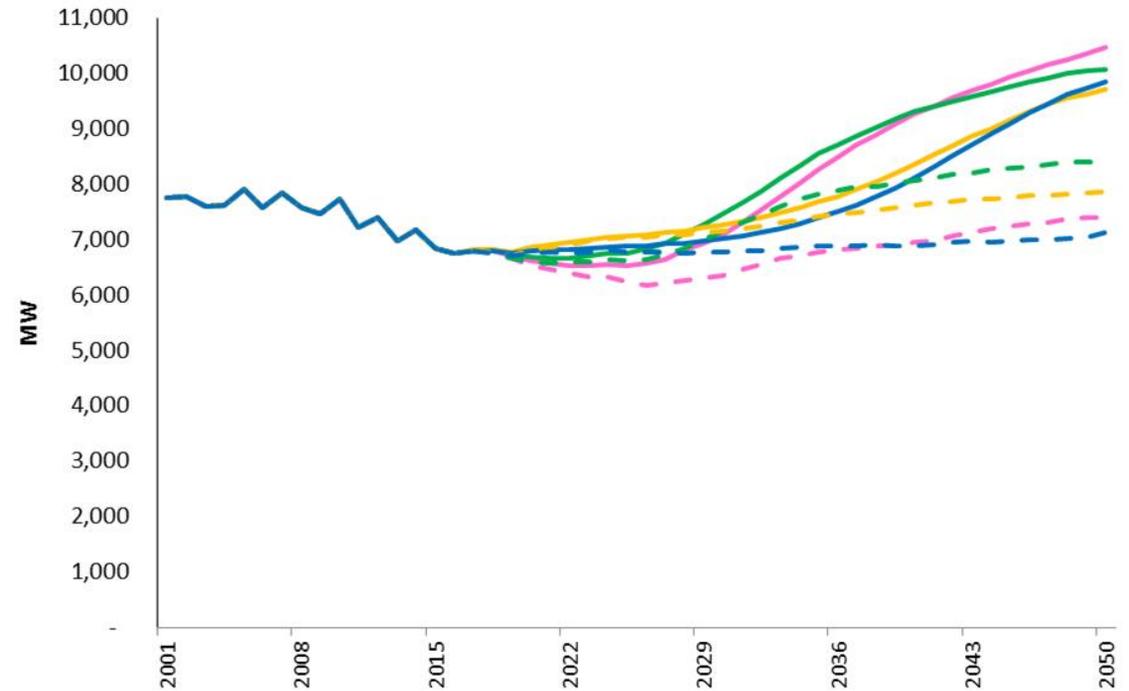
Enabling the transition to a low-carbon future for our region

Anda Baumerte
Sustainability Manager

We take a scenario-based approach to inform our network planning

- Electricity demand has been steadily reducing over the last decade, however...
- ...we expect it to reverse in the next 10 years.
- It could follow a number of pathways.
 - We are modelling a number of scenarios to manage the associated uncertainty.
 - We expect that:
 - all future scenarios will result in increased electrical demand.
 - the actual impact will be influenced by national, regional, and local policies.

We are seeking to continuously improve our scenario-based approach.



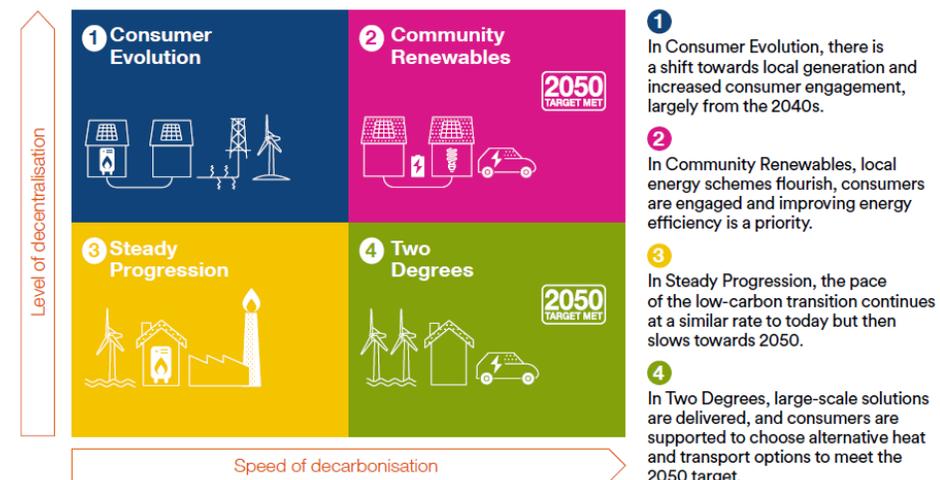
Gross peak demand projections for Northern Powergrid under different scenarios

Future Energy Scenarios (FES) for Great Britain

National Grid (Electricity System Operator), in conjunction with the Distribution Network Operators (DNOs), produces the Future Energy Scenarios for the whole of Great Britain from a transmission network perspective:

- Positions energy networks as having a central role in the decarbonisation of the economy
- the scenarios have been modelled to achieve the 80% emissions' reduction by 2050 under four possible pathways
- These are not in themselves forecasts or expected pathways. The actual pathway could be a combination of these four scenarios but they do allow an exploration of different future options and pathways and provide a vehicle for discussion

There are four scenarios:

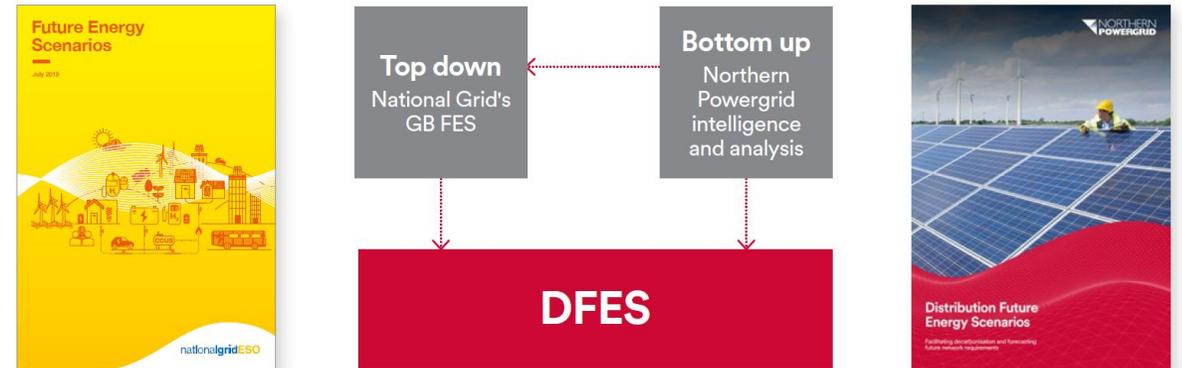


Note: it is the previous legislated target of 80% reduction in emission on 1990 levels that is met by 2050 – not Net Zero

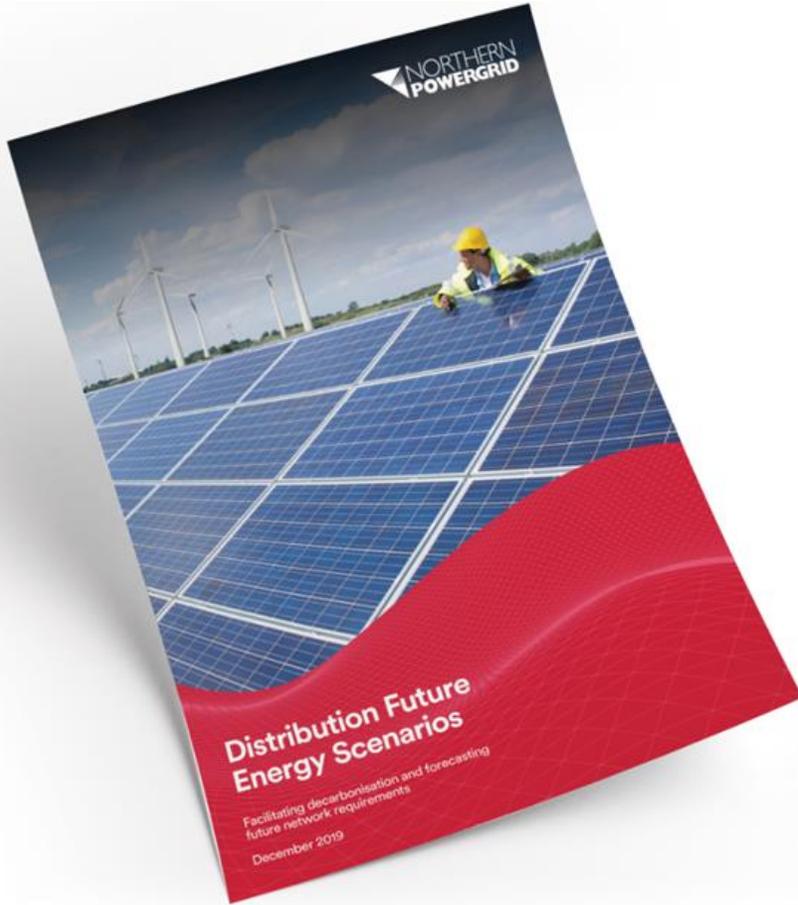
A key output from FES is the regionalised data that is used as an input to the distribution level analysis

The output is a regional interpretation of FES, i.e. *Distribution Future Energy Scenarios (DFES)*,

- ✓ uses the same scenario names to ensure common language for transmission & distribution
- ✓ presents a number of pathways for the decarbonisation of generation, transport and heat, and the potential network impacts
- ✓ gives a local perspective



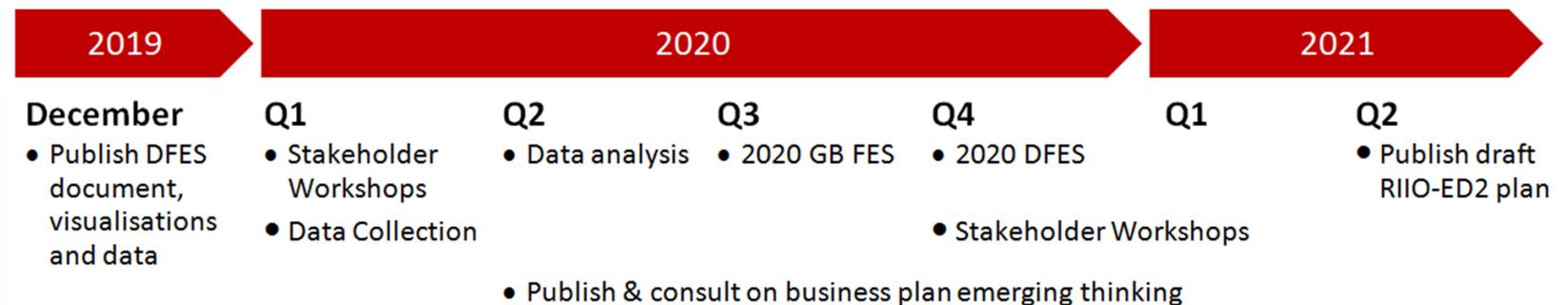
We have published DFES to facilitate discussion on future energy pathways to net zero



We have partnered with **Open Data Institute in Leeds** to maximise access to this information and to enable regional collaboration.

The publication consists of:

- [DFES summary document](#)
- [DFES visualisation tool \(map\)](#)
- [Downloadable data files](#)
- Feedback templates



What is the Distribution Future Energy Scenarios (DFES 2019)

We now are focusing on questions:

- How could this change for *net zero*?
- What could be the network cost if nearly all vehicles are to be electric by 2035?
- Are our assumptions correct?
- How should we invest efficiently to ensure the local electricity network is there when it is needed?

Northern Powergrid's potential future scenarios as interpreted from the 2019 [National Grid Future Energy Scenarios](#).

Choose a scenario:

Community renewables

- Achieves 80% decarbonisation by 2050.
- Local energy schemes flourish.

Choose a parameter:

Electric Vehicles (number)

Number of registered plug in electric vehicles (pure and hybrid)

View by:

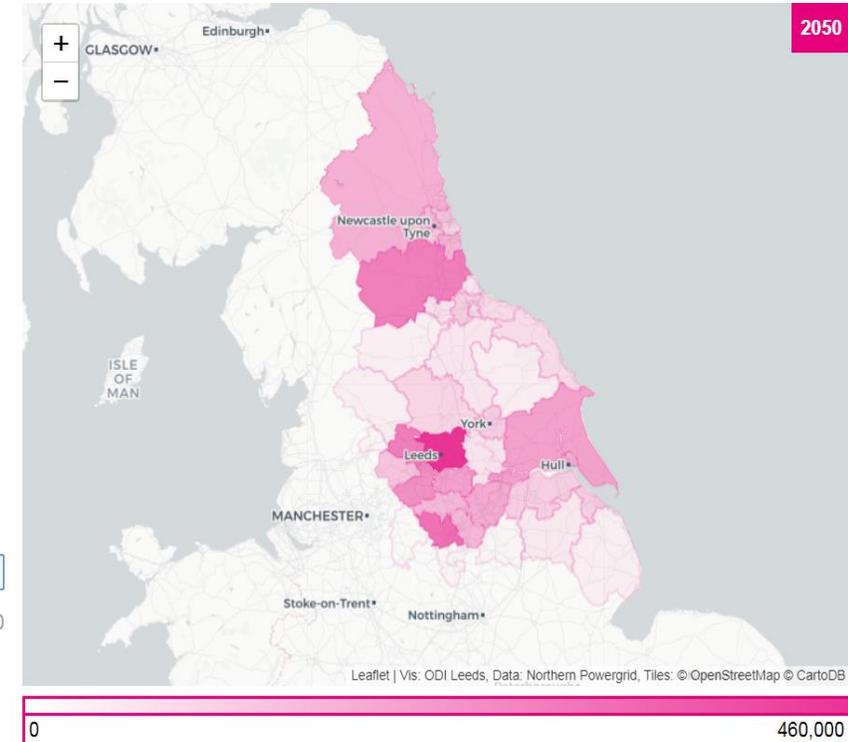
Local Authorities

Select year (2050):



Colour scale:

In year By 2050



Please [report any issues you find](#) with our tool | [Get the data](#)

Other useful tools and resources

- ✓ Our free [AutoDesign tool](#) can help you to identify the most viable and cost-effective LV (low voltage) connections options and provide an indicative cost in minutes.
- ✓ Our [generation availability](#) and [demand availability](#) heat maps provide a high level indication of our HV and EHV network's capacity to connect additional generation and demand
- ✓ Accelerated Loss of Mains Change Programme – next ENA funding window closes in August 2020
- ✓ Access free technical support and advice via our connections surgeries





Future engagement opportunities

We will be seeking more feedback as we are developing our Business Plan

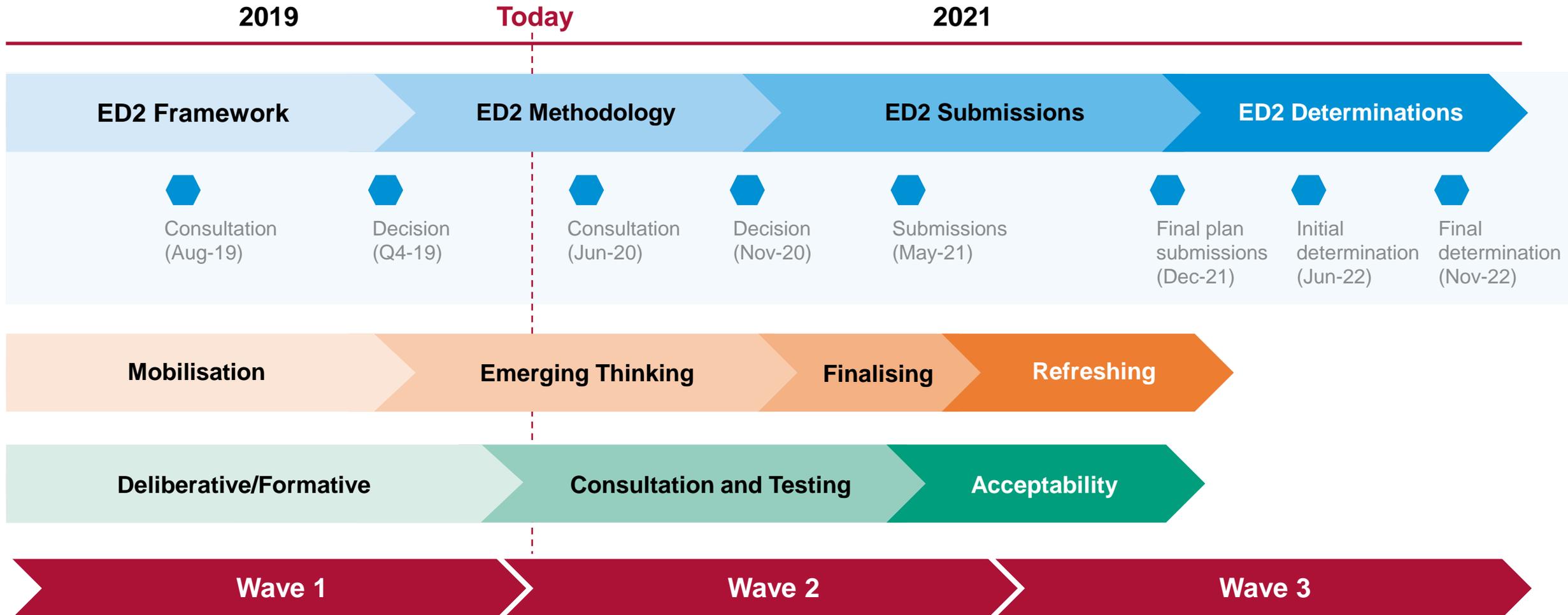
Helen Priestley
Stakeholder Manager

Business Plan Context

We are a regulated utility business:

- We plan ahead of time (in specific time intervals of 5 years)
 - We are preparing for our next business plan **2023 – 2028** supporting the transition to a low-carbon future across our region
 - We want to make sure everyone's feedback is taken into account as we develop our future plan
- ✓ **Now is a key time for engagement, challenge and feedback.**

Business plan timeline



To help you navigate our Business plan thinking, we have broken it down into 11 areas

These are:

Delivering an environmentally sustainable network

1. Decarbonisation
2. Business carbon footprint
3. Environmental protection

Maintaining a safe and reliable network

4. Safety
5. Physical and cyber security
6. Climate change adaptation
7. Reliability
8. Long term network performance and condition

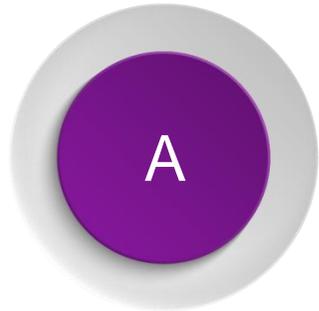
Meeting the needs of consumers and network users

9. Customer Service
10. Connections
11. Communities

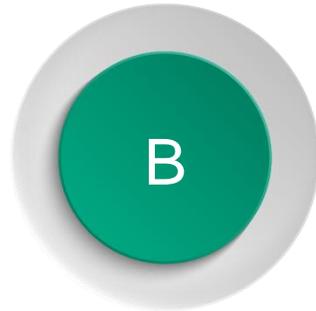
What would you be most interested in discussing with us?



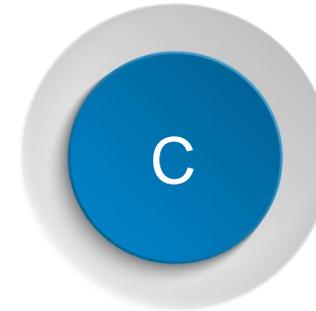
Our future Business Plan



**Maintain a safe
and resilient
network**



**Meet the needs of
consumers
and network users**



**Maintain an
environmentally
sustainable network**

By working together, we can deliver better outcomes for all of our customers

We would love to hear from you!

E-mail us on communityenergy@northernpowergrid.com to:

- Sign up to a new quarterly newsletter
- Express your interest in joining our Community Energy Stakeholder Panel
- Join our engagement events
- Email us with any questions or thoughts
- Engage with us early, and tell us about new developments and large scale projects
- ..or all of the above.

Break

See you back soon



Update from Community Energy England

Emma Bridge, Chief Executive



Community Energy England

Putting people at the heart of the energy system

Mission: To support and accelerate the transition to a fair, low carbon and community-led energy system

- Advocate & influence
- Connect & collaborate
- Gather data & inform
- 250 member organisations from across community, public and private sectors





Catalysing People-powered Energy in Yorkshire and the Humber

2019

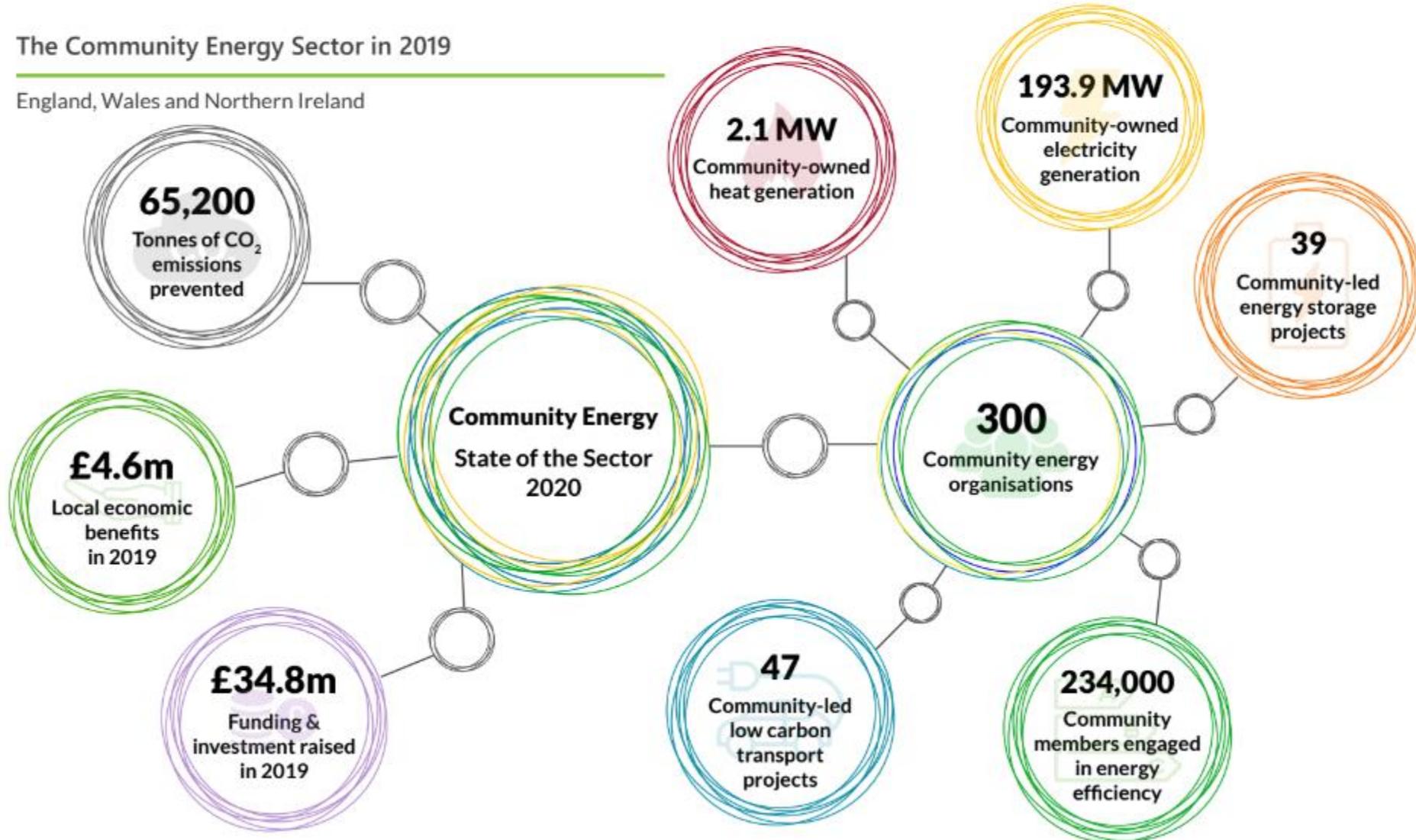
Community Energy

State of the Sector 2020



The Community Energy Sector in 2019

England, Wales and Northern Ireland





Community Energy

State of the Sector 2020



Community Energy England

Yr Iŷ Cymunedol Cymru
Community Energy Wales

SCENE

Electricity Generation in 2019

England, Wales and Northern Ireland



Total Capacity

193.9 MW



Solar PV

155.4 MW



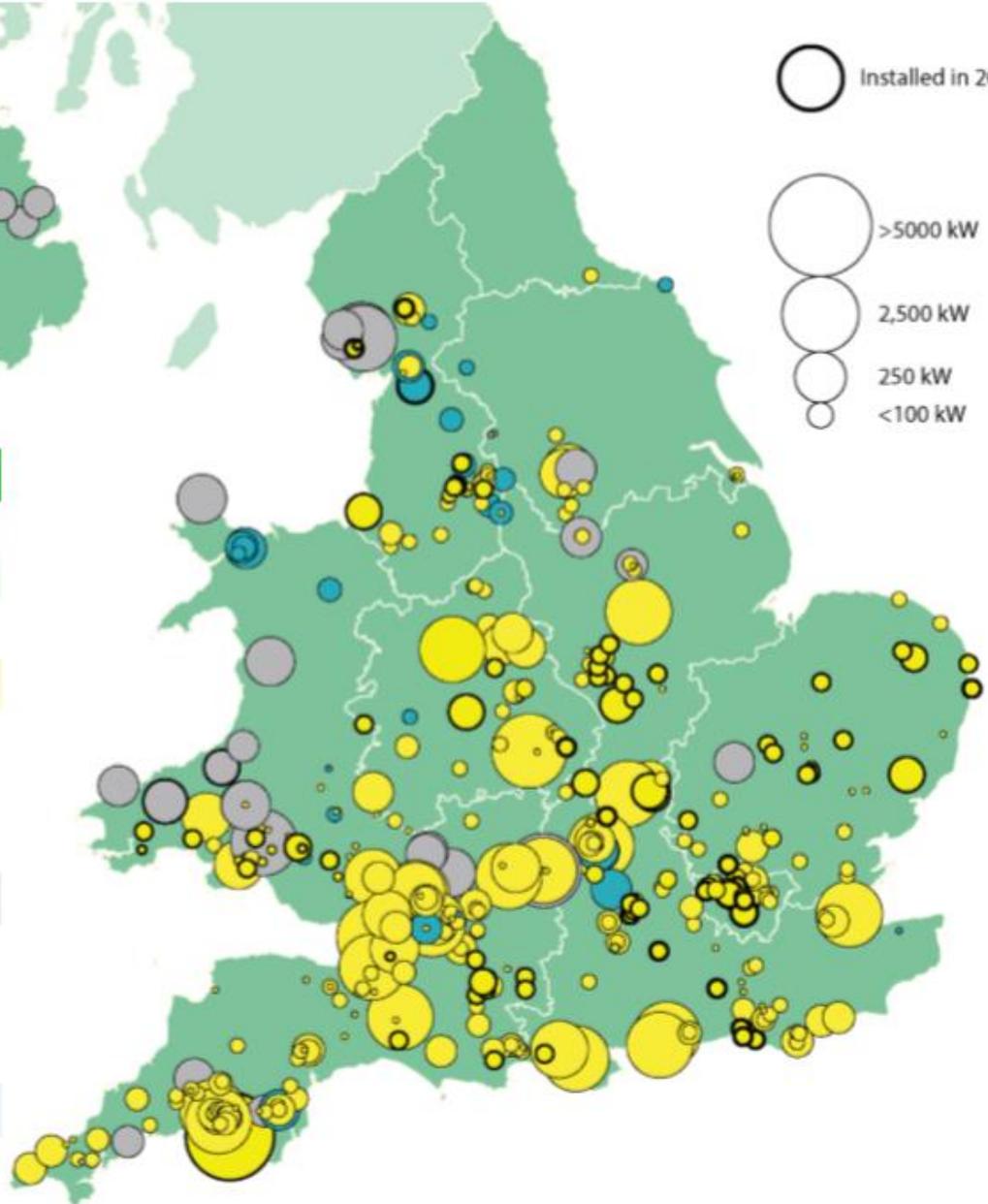
Wind

33.6 MW



Hydro

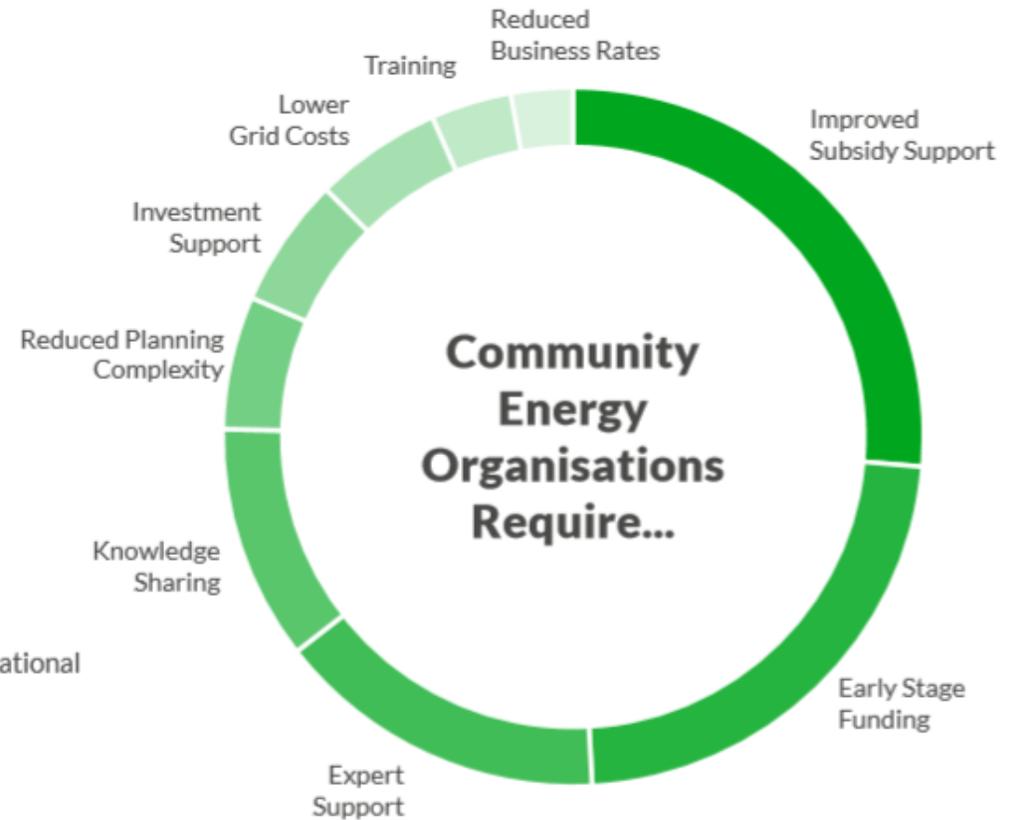
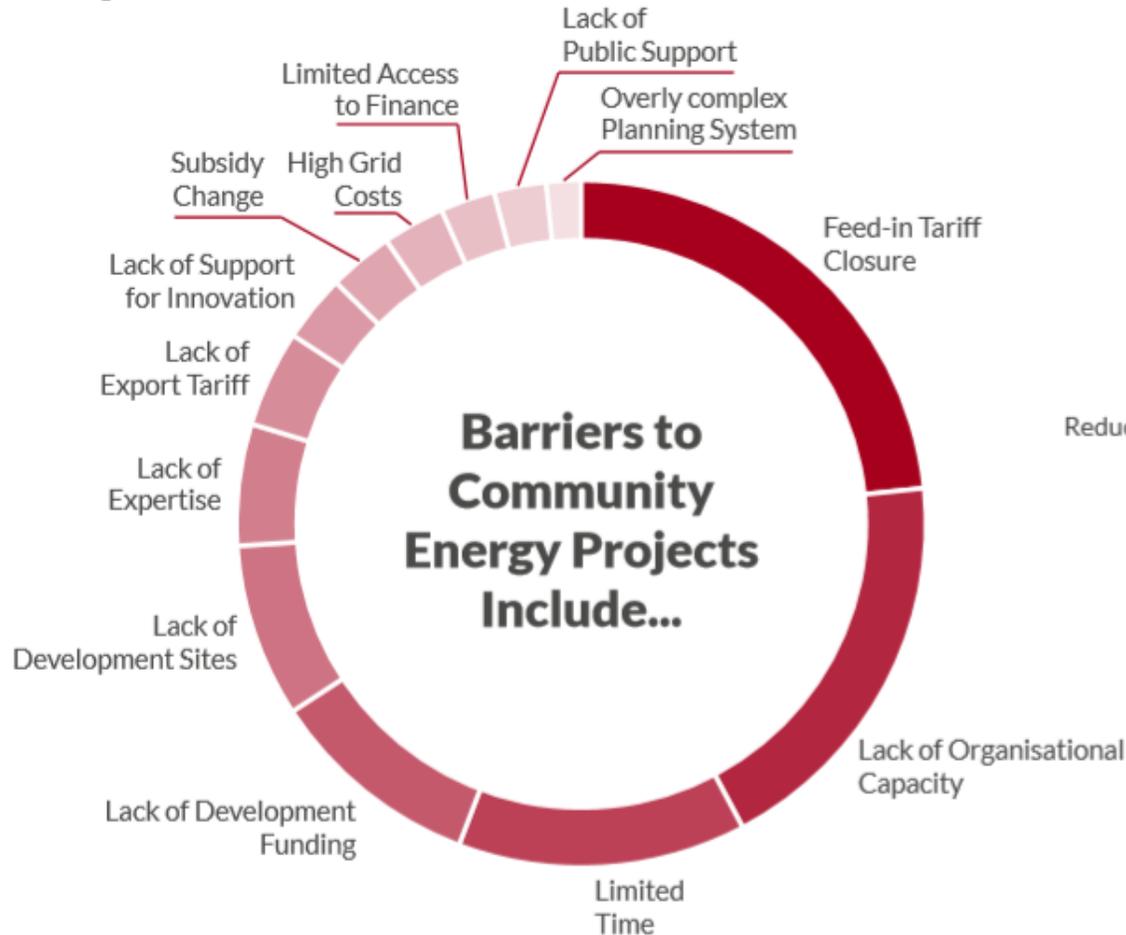
4.9 MW

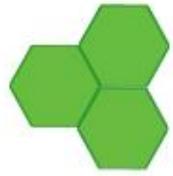




Barriers & Support for Community Energy

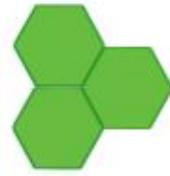
England, Wales and Northern Ireland





Community Energy

State of the Sector 2020



Community Energy Innovation

England, Wales and Northern Ireland

In 2019, community energy organisations were found to be developing innovative new technologies, business models and partnership approaches, including:

Technology

-  Flexibility Services
-  Peer-to-Peer Trading (P2P)
-  Direct supply of energy
-  Heat from Sewage
-  Demand Side Response (DSR)
-  Vehicle-to-Grid Services (V2G)
-  Battery Storage

Business Models

-  Solar Schools
-  Renewable Asset Purchase
-  Local Energy Markets
-  Grid Services
-  Generation Aggregation
-  Grassroots Retrofit
-  Joint venture projects

Partnerships

-  Local Authorities
-  Educational Institutions
-  Cross-community Collaboration
-  Industry & Commercial
-  Network Operators (DNO)
-  Faith Organisations
-  SMEs



Community Energy

State of the Sector 2020

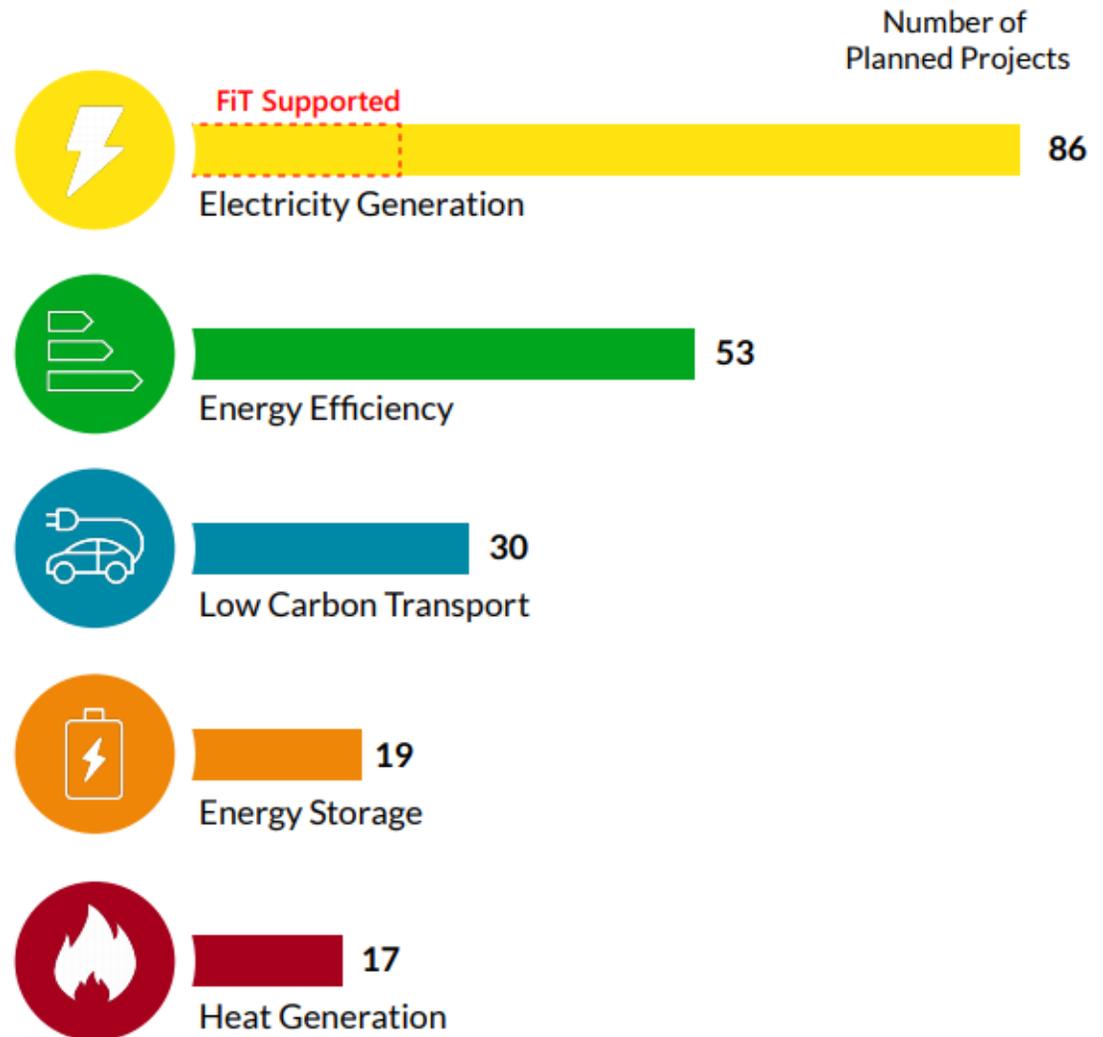


Community Energy in 2020

England, Wales and Northern Ireland

89
Communities
planning low
carbon projects
in 2020

Including...



2030 Vision

Community energy will create an energy system that is democratic, decentralised, and decarbonised, where people are at the heart of the transition

12-20 times larger

contribute 5,270MW

power 2.2 million homes

support 8700 jobs

save 2.5 million tonnes of CO2 emissions

add £1.8 billion to the economy

YOU can get involved to help deliver this impact



- Input from a wide range of sector practitioners
- Defines and explains community energy
- Showcases the sector's ambitions to 2030
- Highlights diverse and meaningful benefits of community energy
- Articulates how community energy can shape a decentralised, decarbonised and democratic future energy system
- Accessible and free to use, with many companion graphics and slides



COMMUNITY
ENERGY
FORTNIGHT

#CEF2020

#HarnessourPower

BUILDING STRENGTH AND
RESILIENCE

13 - 28 June



Putting People at the heart of the energy system

Catalysing People-powered energy in Y&H:

https://communityenergyengland.org/files/document/352/1575564382_CatalysingPeople-poweredEnergyinYorkshireandtheHumberReport2019.pdf

State of the Sector 2020 Report, Executive Summary and Infographics:

<https://communityenergyengland.org/pages/state-of-the-sector>

Community Energy 2030 Vision: <https://communityenergyengland.org/pages/2030-vision>

Find out how you can take part in Community Energy Fortnight at:

<https://communityenergyengland.org/pages/community-energy-fortnight>

[Join us](#) to make our collective voice stronger



Contact us:

www.communityenergyengland.org

[@Comm1NRG](https://twitter.com/Comm1NRG)

033 3303 4126

info@communityenergyengland.org



'The Role of Community Energy in Net Zero'

Andy Heald – Energise Barnsley
www.energisebarnsley.co.uk





Energise Barnsley

- Largest rooftop solar community energy & local authority project in U.K. (321 homes & 16 commercial buildings) registered with FCA no.7180
- Independent CBS with custodian trustee – Barnsley MBC & Chair
- 12 months planning before launch - assets, legal, leader, housing & energy, & ‘anchor man/woman’
- £800/- Barnsley Community Solar Bond paying 5% per annum for 5 year term & Long term £1.2m loan facility from ethical bank 'Charity Bank' for Energise Barnsley
- Berneslai homes tenants have benefitted from over £150,000 reduced electricity bills & over 1,600 tonnes of reduced CO₂ to date
- 2yr solar & storage (40 batteries) 2017 Ofgem network study with Northern Powergrid
- 3yr BEIS Domestic DSR Project ‘Breathe’ 2018 – 2021
- Positive Climate Action Seminar with BMBC 02/20
- Social Impact:
<http://www.energisebarnsley.co.uk/social-impact-reports/>

Environmental and Social Impact

Energy Generated

Savings

CO₂ Offset



Over **4,842 MWhs**

£158,201 collective electricity savings by residential tenants*

Over **2,566 tonnes** reduced CO₂ emissions

£160,470 in collective electricity savings by commercial tenants**

Data from 321 households and 16 commercial buildings

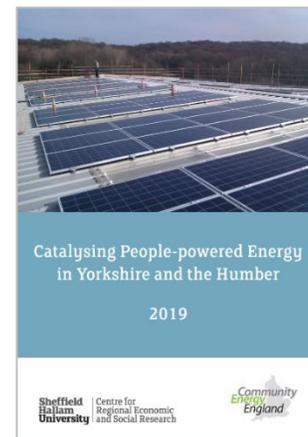
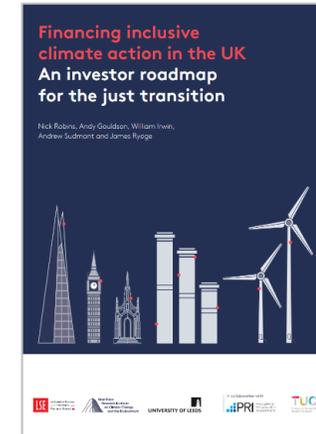
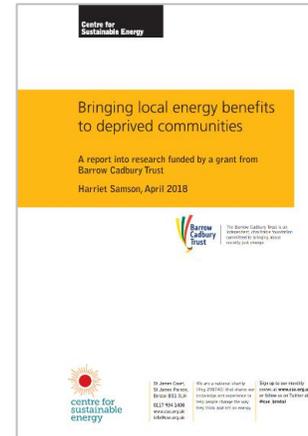
*Assuming 33% usage of total generation and 15 pence per unit

Assuming 0.53kg per kWh for tonnes of CO₂ saved

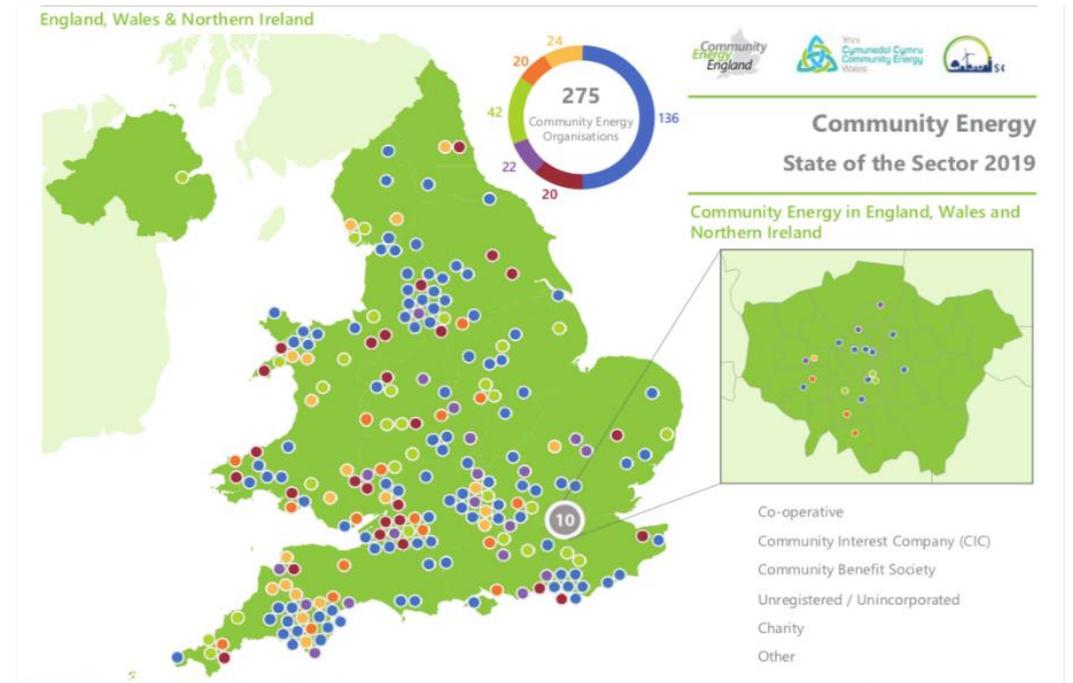
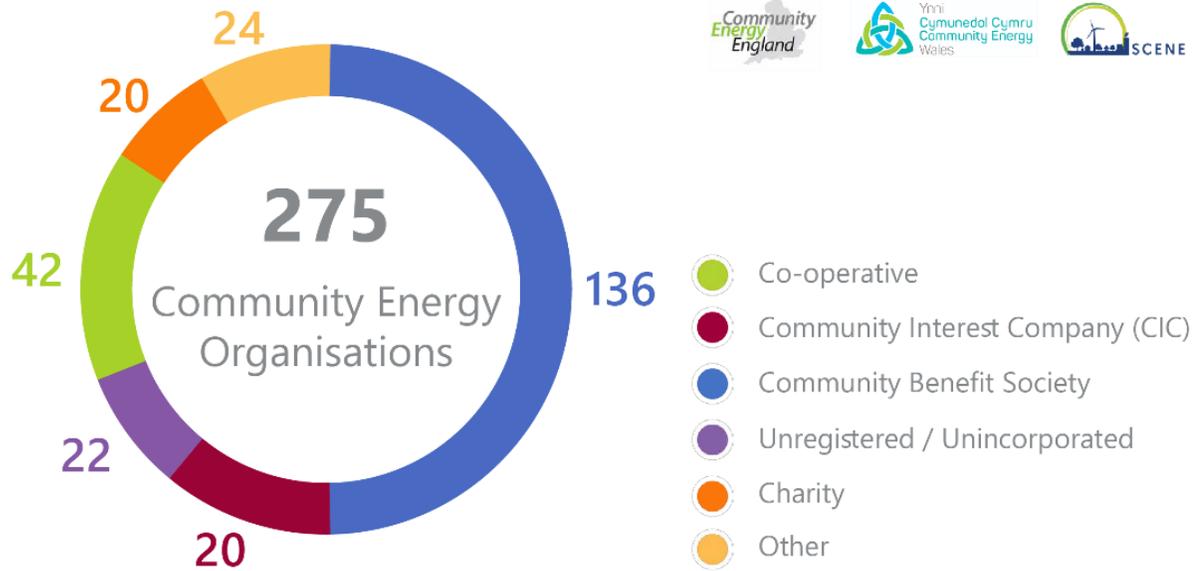
**Assuming 75% usage of total generation and 13 pence per unit

Publications

- Energise Barnsley also plays an important role in helping to develop solutions to major challenges facing the energy system
[The Future of Community Energy – WPI Economics report for SP Energy Networks Jan 2020](#)
- Community-owned energy developments offer a way of expanding renewable generation with significant co-benefits for society, notably by targeting installations towards those suffering from fuel poverty and channelling a share of the profits towards social projects. Community ownership and crowdfunding have potential as tools to build a more decentralised energy system.
[Financing inclusive climate action in the UK. An investor roadmap for the just transition – London School of Economics & Grantham Research Institute on Climate Change & the Environment Summer 2019](#)
- Recommendation to BEIS for more support in low-income communities for models like Energise Barnsley where community energy assets are developed by professional bodies, and then passed to communities with autonomy as to how the asset will then be managed by the community.
[Bringing local energy benefits to deprived communities – Centre for Sustainable Energy for Barrow Cadbury Trust Apr 2018](#)



UK Size & distribution of community energy



Ofgem Solar & Storage Network Study

Ofgem NIA Project 'Solar & Storage Network Study'

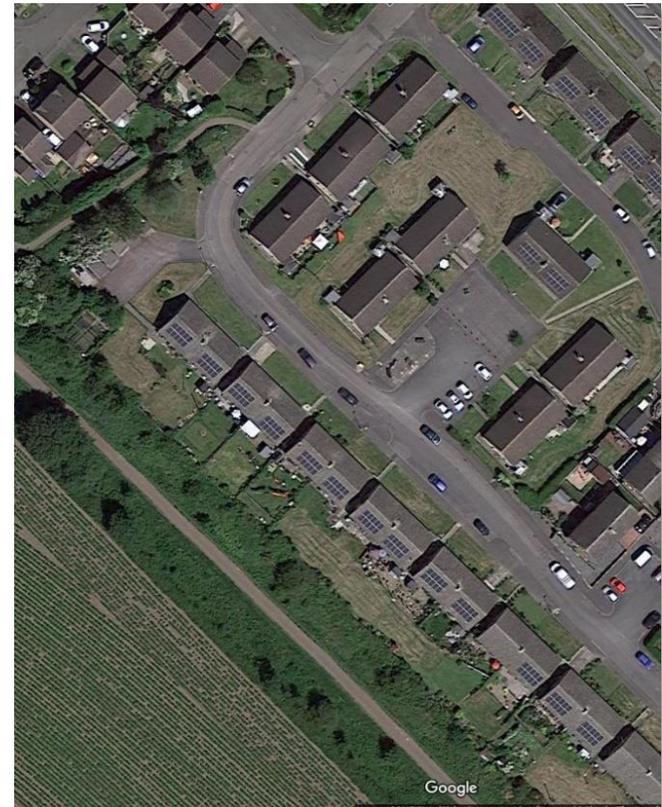
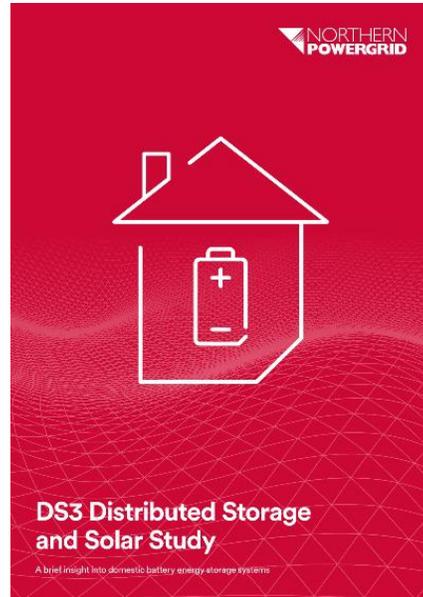
- 2 year NIA funded network distributed solar & storage study focusing on social housing
- £300k - batteries, monitoring & data analysis

Tenants

- Aims to reduce electricity bills
- Increase energy awareness
- Reduce reinforcement works & financial model

Northern Powergrid

- 2030: 70-80% of rooftop PV installed with storage
- Understand impact of PV & Storage on network design
- Absorb excess generation & supply peak load



Results

- 'Every solar system should have a battery'
- Tenant battery savings £30 - £60 per annum (2.9kWp solar & 2kW battery)
- 100% participation in the trial – aesthetics fine
- 38% reduction in peak export – more PV possible
- 65% reduction in peak demand – more PV possible
- Reverse power flow reduced by 10kW (20/36 homes 1 feeder)
- Annual compensation £x /kW/year if reinforcement avoided
£<x/kW/year if deferred
- <http://www.energisebarnsley.co.uk/wp-content/uploads/2020/03/EB-Forward-Residential-Battery-Network-Study.pdf>



Project 'BREATHE' – Domestic Demand Side Response

Collaboration Partners

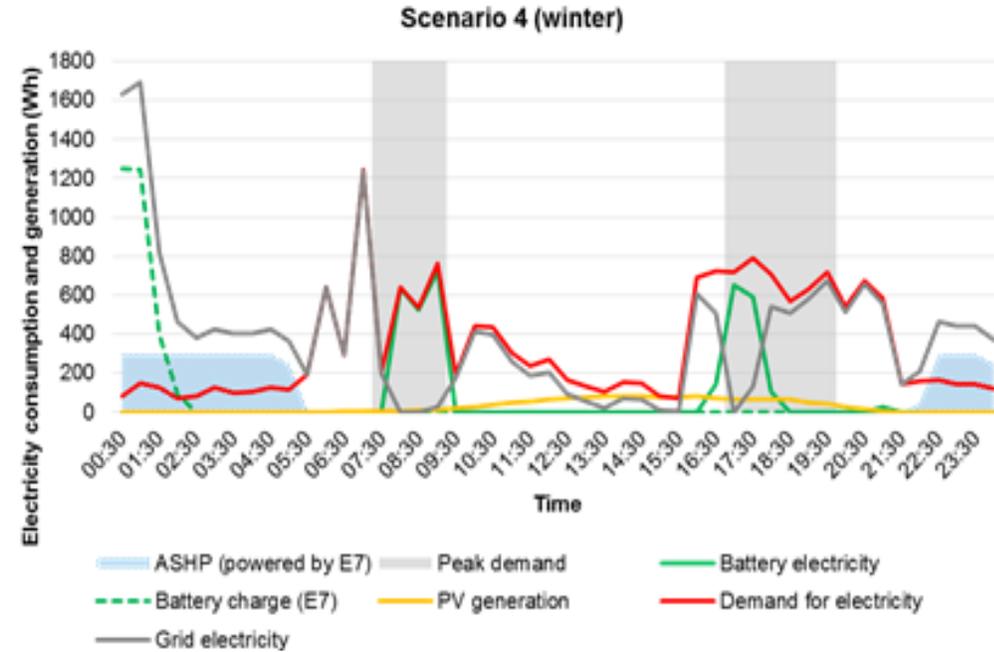
- **Energise Barnsley** – Lead partner community energy benefit society
- **Passiv Systems** – Smart controls, demand management and aggregation systems
- **Oxford Brookes University** – academic lead responsible for monitoring and evaluation of energy savings, resident expedience and data analysis
- **Northern Powergrid** – substation data monitoring and network analysis

Sub Contractors

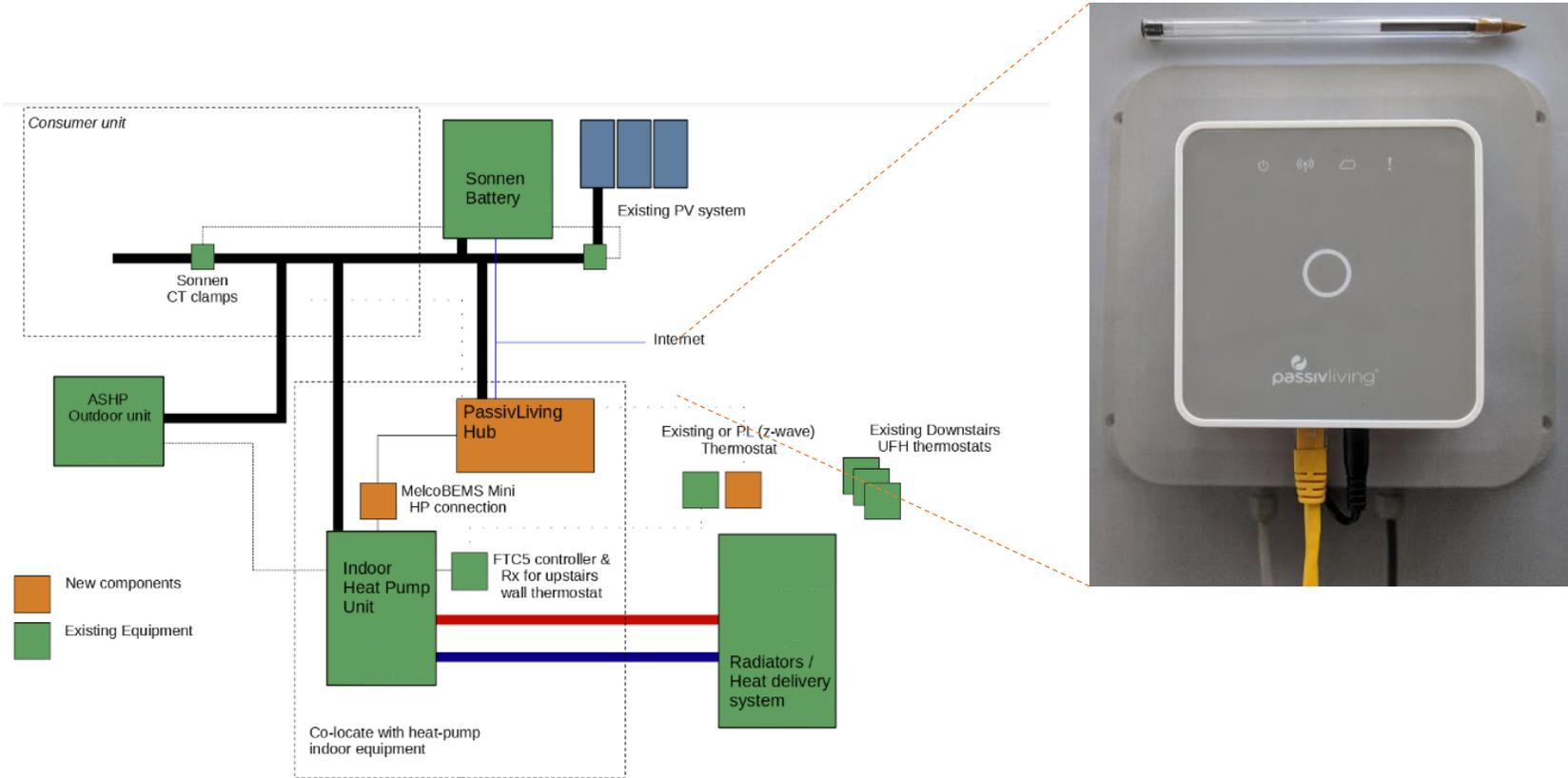
- Berneslai Homes – tenant liaison & installer
- Sonnen GmbH – battery storage manufacturer
- Mitsubishi – integration of ASHP with smart controls

Innovation

- Mitsubishi Eco Dan (5kW & 8kW) dual purpose air source heat pump & Solar PV installed Retrofit - 5kWh Sonnen Smart Battery, Passiv Control System & App
- Horizontal integration and control of devices in homes to respond to DSR signals
- Berneslai Homes tenants with >10,000kWh electricity usage per annum
- Capture 100% solar generation, shift peak time ASHP's usage, explore ideal ToU tariff



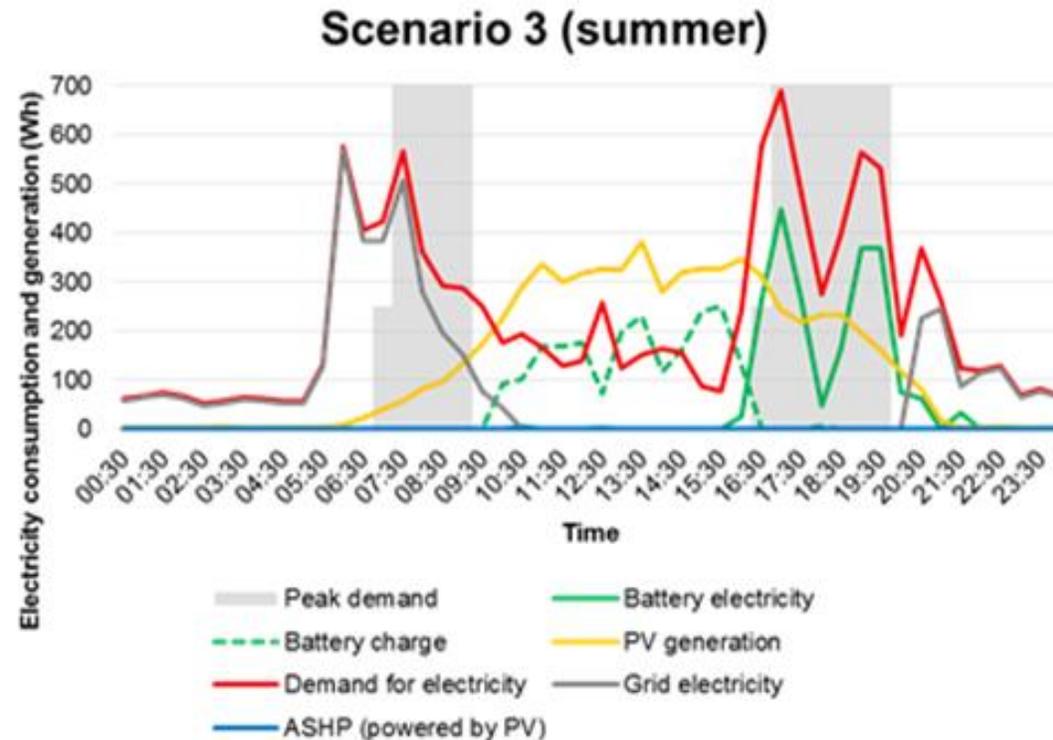
PassivSystems Hub



- 175mm square
- Simple install
- Installed in heatpump cupboard (typically upstairs in front bedroom)

Oxford Brookes – Monitoring, evaluation and learning

- *Before and after* deployment of demand response solution:
- Energy monitoring
- Environmental monitoring (indoor/outdoor temperature)
- Resident experiences and acceptance of the solutions (surveys and interviews)
- Data analysis
- Savings from demand response



Project Stages

Technology	Metering & monitoring, 49 smart battery installation, in home smart device installation, sub station monitoring, data analysis & tenant satisfaction
Policy / Regulation	In line with BEIS Smart Systems & Flexibility Plan, whilst proving evidence for Ofgem Network Access and Forward Charging Review
Business / Commercialisation	Homes with high electricity demand best suited for domestic DSR. Control of home device, with tenant consent, for white label DSR platform run by the community or aggregation model for flexibility services

Next Steps for EB

- Additional solar projects with heavier weighting on carbon emissions reduction v electricity bill savings
- Refinance our solar bond 2021 & increase local ownership
- Collaboration projects based on experience so far with legal, financial, asset management and governance
- Wider remit to tackle climate change from a community perspective
- **Contact – andy.energisebarnsley@gmail.com**



Breakout Workshops

1. What support to community energy and local energy stakeholders need from Northern Powergrid next?
2. What do you think of Northern Powergrid's approach to planning for net zero?
3. What should Northern Powergrid's number one business planning priority be?
4. What do participants want to see in future Northern Powergrid events/webinars?



The Rural Community Energy Fund

Scope

A renewable energy project providing a benefit to a local community

Community led

Joint ventures reviewed case-by-case

Size of project

Requires planning permission

Generates energy for multiple buildings

Single buildings reviewed case-by-case

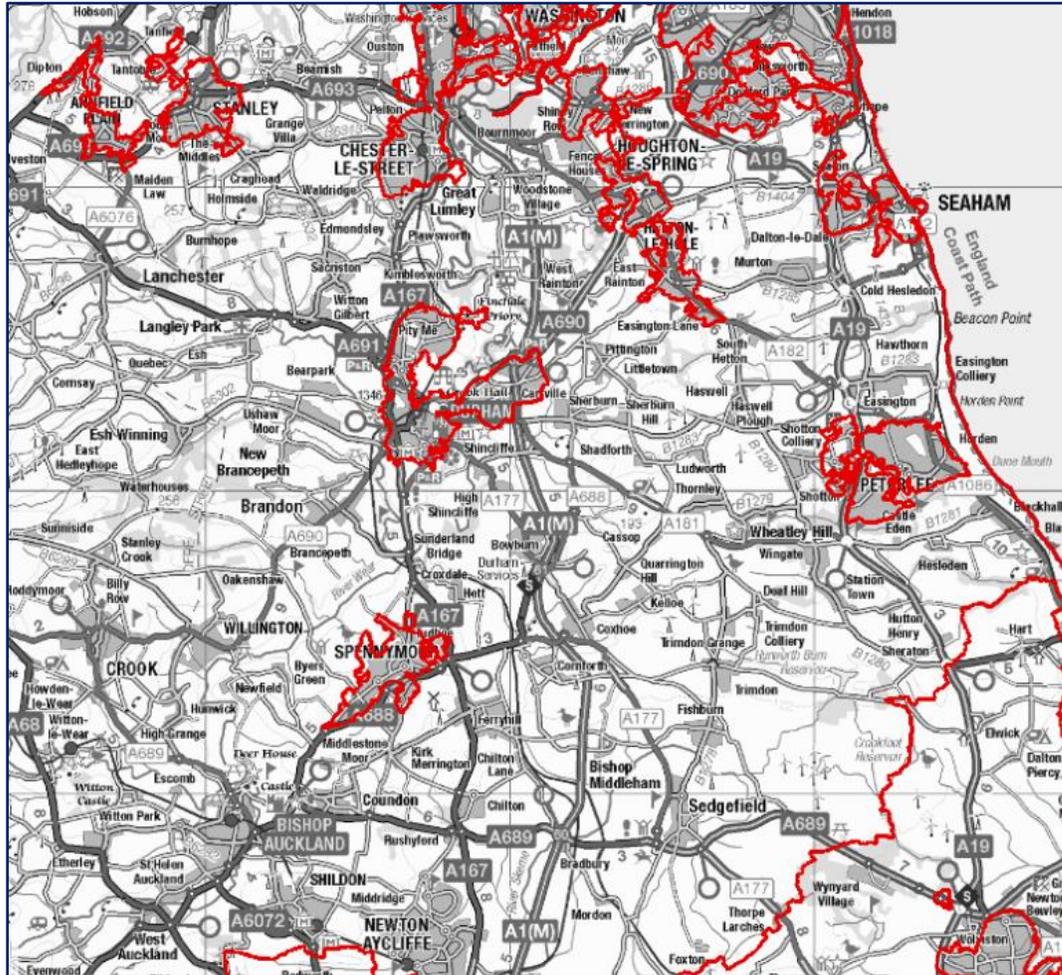
Funding

Stage 1 – £40,000 for feasibility work

Stage 2 – £100,000 for project development

£1.45 million for NEYH Energy Hub

Magic Map



<https://magic.defra.gov.uk/MagicMap.aspx>

Eligible groups

A formed legal entity

- Community Interest Company (CIC)
- Co-operative
- Community Benefit Society (Bencom)
- Local Community Groups in partnership with a Local Authority
- Registered Social Landlord
- Charitable Incorporated Organisation (CIO)
- Registered Charities
- Amateur Sports Associations
- Development Trust
- Registered society (pre 2014 IPS)
- Town or Parish Councils
- Faith Group

Technologies

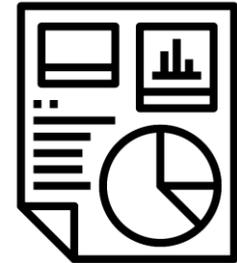
Renewable energy generation

- Anaerobic digestion (AD)
 - Bioliquids/gas/fuels
 - Heat networks
 - Heat pumps
 - Hydropower
 - Solar (photovoltaic)
 - Solar (thermal)
 - Wind turbines
 - Multi-technology approaches
- Energy efficiency, storage, grid services and demand management can be considered as part of multi-technology approaches on a case-by-case basis.

Stage 1 grants

Stage 1 grants are intended to be used to secure the provision of professional services to undertake a feasibility study.

- Technical or planning consultancy fees
- Project management costs
- Community engagement activities



Projects supported so far...

So far **7** projects have been supported at a value of over **£220,000**

2 mine water heating projects

3 parish councils involved in bids

1st feasibility study is expected end of June

In the latest round we had **15** applications

Deadlines

Next submission deadline is - **1st August 2020**

And then...

- **1st November 2020**
- **1st February 2021**

Next steps

To discuss any ideas or to learn more about the
Rural Community Energy Fund please contact:

Josh Sawyer (North East and Tees Valley) - josh.sawyer@nelep.co.uk |
07584154510

Alan Millar (Yorkshire and Humber) - alan.millar@teesvalley-ca.gov.uk |
07826 901230

Thank you for listening

Contact details:

Northern Powergrid – Anda Baumerte: Anda.Baumerte@Northernpowergrid.com

Regen – Jodie Giles: jgiles@regen.co.uk

