

Net Zero Places Innovation Network

27th April 2022

www.ktn-uk.org



Innovate UK
KTN

Welcome!



Kezia Williamson
Head of Place

We will be starting shortly...

- Use the chat box if you have any problems or questions
- Please keep yourself muted during the presentation
- This webinar will be recorded
- We will be using Menti, please use the QR code or visit www.menti.com -2115 5759



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About Us

Innovate UK KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.





Our commitment to Place

We will connect national and regional innovation to encourage **distribution of economic and societal wellbeing** across the UK



Place at Innovate UK KTN

INSPIRE by showcasing innovation excellence from across the UK

INVOLVE and connect places together to meet UK aspirations such as Net Zero and Levelling Up

INVEST by informing government levers for place and support national decision making in areas like funding and procurement

Agenda

10:00 - 10:15	Kezia Williamson Innovate UK KTN	Welcome
10:15 - 10:20	Bob Burgoyne Connected Places Catapult	Introduction to the Connected Places Catapult's Net Zero Navigator tool
10:20 - 10:35	Alex Downes South Lakeland District Council	Working with Connected Places Catapult's Net Zero Navigator tool
10:35 - 10:50	Simon Briggs Energy Systems Catapult	Introduction to Net Zero Go and Smart Local Energy Systems
10:50 - 11:00	Break	
11:00 - 11:05	Nilam Banks Innovate UK KTN	Introduction to Net Zero Places Innovation Network
11:05 - 11:20	Peter Stevens Electric Corby - NN2NZ	Working with Innovate UK KTN
11:20 - 11:25	Peter Gudde Local Net Zero Hubs	Introduction to The Net Zero Hubs
11:25 - 11:45	Fiona Duhamel Babergh and Mid Suffolk District Councils	Working with The Net Zero Hub
11:45 - 11:55	Louise Jones Innovate UK KTN	Q&A
11:55 - 12:00	Kezia Williamson Innovate UK KTN	Close



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Getting to Net Zero Locally

Practical Tools for Local Authorities



OnePlanet.

Developed in
partnership with:



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83% of councils have a
Climate Action Plan – so
why are we here?

Execution is hard.

Balancing competing priorities

Identifying and bridging gaps

Building the necessary partnerships



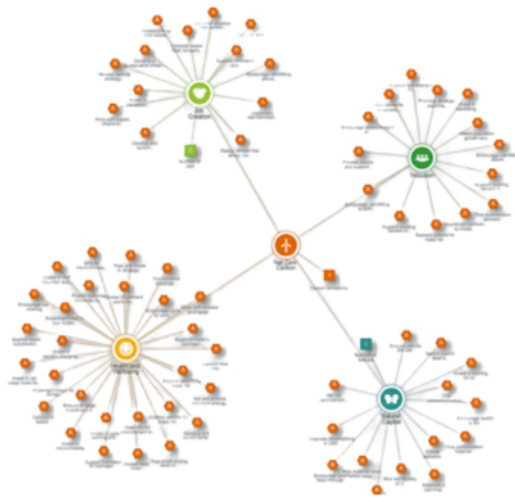
Net Zero Navigator

- Create or stress-test your strategy
- Identify councils with shared characteristics and challenges – learn from and support peers
- Consider the emissions profile and other characteristics of your area and the implications for priority actions
- Build your co-benefits story to get internal buy-in and momentum
- Find specialist resources to help you fill in the detail

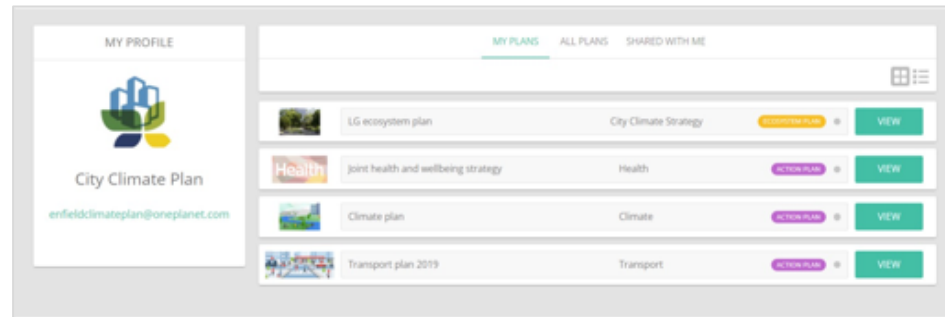


OnePlanet Integration

Map the co-benefits of climate action to **build the business case** and **drive cross-departmental collaboration**



Streamline implementation by connecting up strategic plans, sharing indicators, amalgamating actions and aligning reporting to **avoid duplication**.



Thursday, April 28, 2022

Thank you

<https://netzero-navigator.oneplanet.com/intro>

bob.burgoyne@cp.catapult.org.uk



Net Zero Navigator Tool findings

cATAPULT
Connected Places

OnePlanet.



South Lakeland
**CLIMATE
ACTION**

South Lakeland District Council





Why we tested Net Zero Navigator tool?

South Lakeland
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Area	Business	Results	How does this action contribute to 2030 climate goals?	How many jobs created?	How many jobs saved?	How many jobs lost?	How many jobs created?
To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	Businesses are encouraged to reduce their carbon footprint	Businesses are encouraged to reduce their carbon footprint	100	0	0	100
	To support and enable a transition to a net zero economy	Businesses are encouraged to reduce their carbon footprint	Businesses are encouraged to reduce their carbon footprint	100	0	0	100
	To support and enable a transition to a net zero economy	Businesses are encouraged to reduce their carbon footprint	Businesses are encouraged to reduce their carbon footprint	100	0	0	100
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	To support and enable a transition to a net zero economy	Businesses are encouraged to reduce their carbon footprint	Businesses are encouraged to reduce their carbon footprint	100	0	0	100



Health and Wellbeing: 5 ☒ ☒ ☒ ☒ ☒ ☒ ☐ 5

Inclusion: 5 ☒ ☒ ☒ ☒ ☐ ☐ 5

Job Creation: 5 ☒ ☒ ☒ ☒ ☒ ☐ 5

Natural Capital: 5 ☒ ☒ ☒ ☒ ☒ ☐ 5

Your Process Maturity Self Assessment



Design, Test and Deploy

all 5 questions answered



Implement and Monitor

all 4 questions answered



Review

all 3 questions answered



Reflect and Improve

all 3 questions answered



Communicate

all 3 questions answered



Measure and Report

both questions answered

Maturity level

The overall measured maturity level of SLDC is "Building Foundations".
"Your council has already made investments in building your capacity, knowledge, and resources to deliver low-carbon projects."





How the tool works

The tool uses publicly available information to provide baseline information to inform the development of programmes of work for a local authority. This is supplemented by a self-assessment questionnaire that evaluates your organisational zero carbon maturity.

The output of the tool includes:

- ▶ **Your Place Data** – it includes a summary of your carbon profile and organisational zero carbon maturity as well as detailed information on your area's key attributes.
- ▶ **Your Enablers** – these include the enabling mechanisms that will build your local authority's organisational capacity in delivering zero carbon programmes of work. They are the foundation for delivering zero carbon interventions.
- ▶ **Your Interventions** – these are specific, strategic programmes of work that deliver direct carbon savings and/or a range of associated co-benefits across various built environment systems.
- ▶ **Your Potential Impact** – this page summarises the comprehensive set of selected programmes and their potential impact if they were to be implemented.
- ▶ **What the tool does-** The tool assesses area-wide emissions and subsequently proposes area-wide programmes of work. It proposes actions that local authorities can implement on their own as well as in partnership with local communities and businesses.

The applicability of the Tool for SLDC

The tool is designed to create or stress test a strategy. I do not think we would use the tool to completely re-design our current strategy because:

- ▶ LGR means no time to overhaul our strategy
- ▶ It doesn't clearly separate council and district targets and actions
- ▶ I'm not convinced that the interventions are applicable to district councils
- ▶ We would have to train officers to use the tool to check and update their actions

Could this tool be considered after LGR?

- ▶ Would be optimised when starting 'from scratch'
- ▶ The enablers and inventions would be achievable with more resources
- ▶ Could serve as a springboard exercise or first draft of our Climate Action Plan
- ▶ The OnePlanet system which is integrated with the tool is an exciting system which has gained interest from our strategy and commissioning officers.

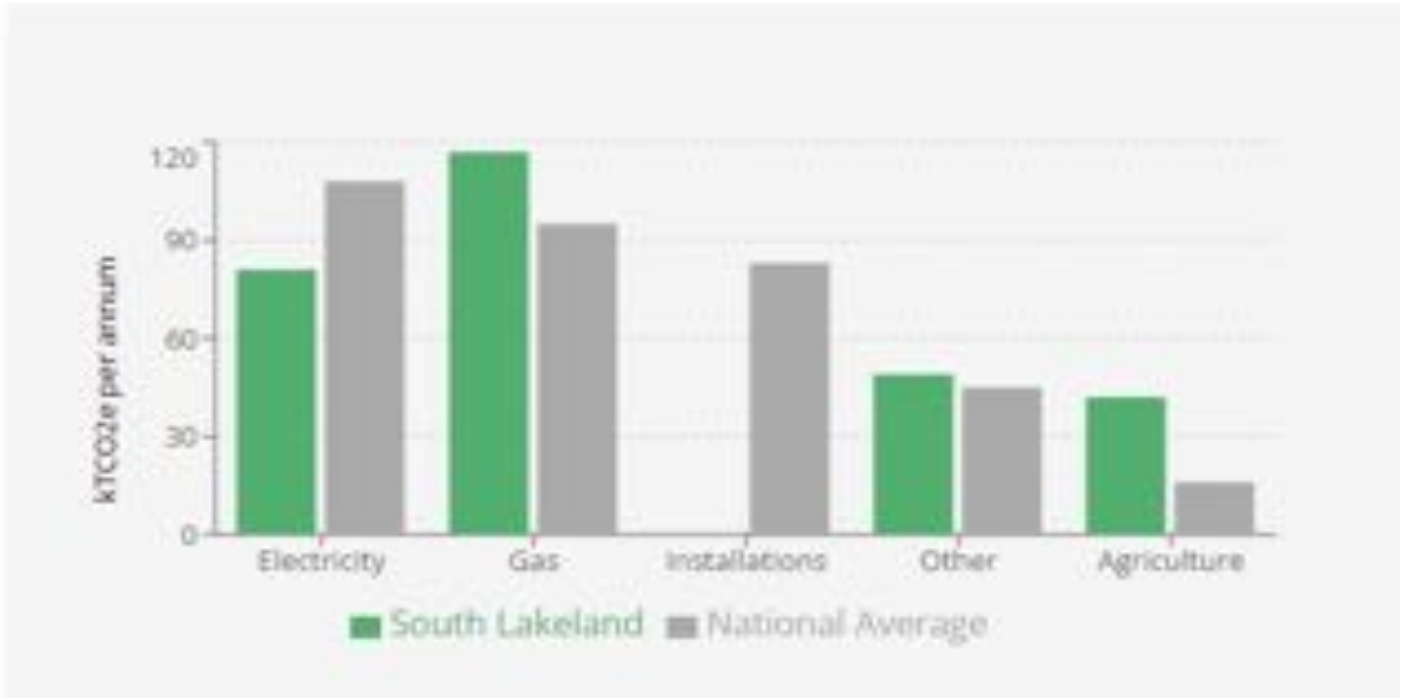
What we have gained?

- ▶ **The place data-** Catapult have put work into this tool which has been developed into a carbon profile for South Lakeland which has given us data in a easy to understand format to showcase
- ▶ **Enablers-**are improvements to processes and organisational attitudes that can help achieve carbon goals- we have adopted or explored some of these enablers to implement.
- ▶ **Interventions-** these are actions that councils are suggested to take and these have been helpful when reviewing our plan and has formed new actions in the plan.



Place Data 1

Section 1b: Detailed breakdown of local authority emissions



Your characteristics:

Transport:
Small Towns

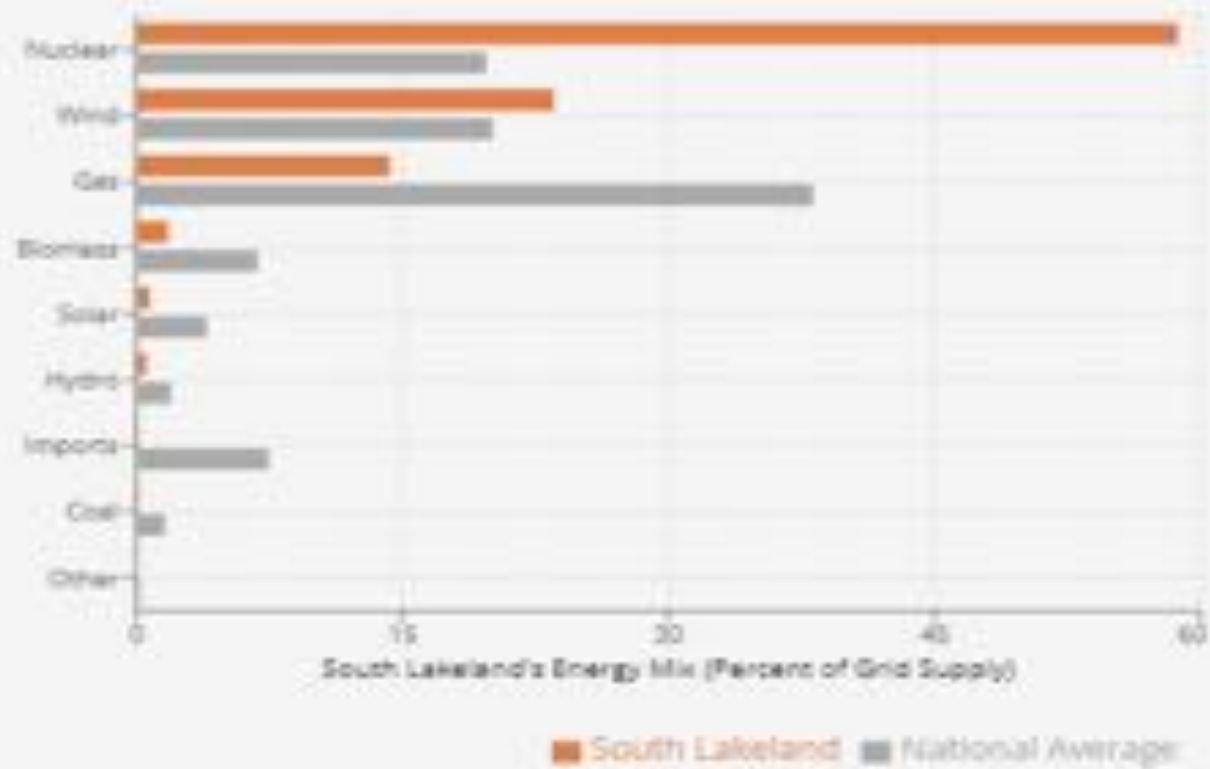
Renewable Energy:
Low Renewable Potential & Low Forecast Grid Carbon

Local Capacity Focus:
Existing Skills

Carbon Focus:
Industrial



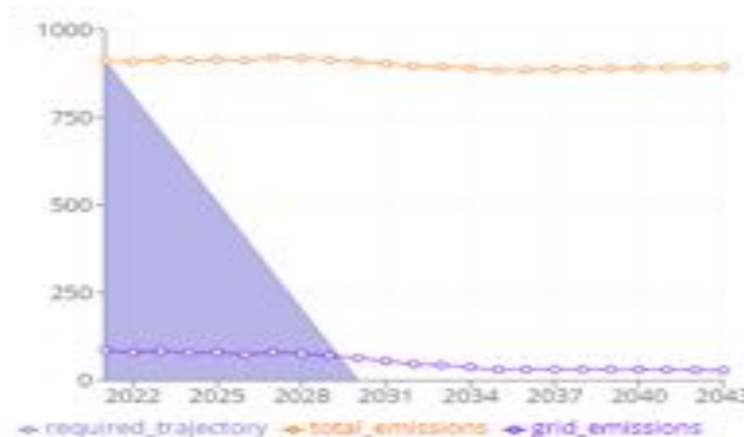
Place data 2





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Place Data 3-Scale of the Challenge



In order to meet these goals your local authority needs to select interventions that deliver in the order of **100000 tCO₂e each year in additional carbon reductions.**

This equates to an average required saving per person of **0.96 tCO₂e each year.**

Which is equivalent to

- ▶ Driving 5760km with an average diesel car
- ▶ or 4128 kWh of power consumption from burning fossil fuels



Enablers

Financial Capital - Whole life costing

To start considering whole-life costs of net-zero projects:

1. Organise a workshop sessions with relevant senior leaders and staff members to discuss benefits of whole-life costing.
2. Assess if sufficient expertise in-house to develop a bespoke methodology.
3. Produce/commission a whole-life costing toolkit with a simple scoring system to quantify CO2 reduction potential, cost and co-benefits.

Business Case

Resources



Impact



Additional Resources



Skills and Human Capital - Skills audits

To start auditing your organisation's current skills:

1. Consult with your HR department to enquire about launching a skills survey.
2. Use template provided to create carbon neutral skills audit (See Additional Resources).
3. Conduct skills audit.

Business Case

Resources



Impact



Additional Resources





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Enabler Example: Skills Audit

1	A	B	C	D	E	F
	CATEGORIES WITHIN SUSTAINABILITY ACTION PLAN	QUESTIONS	LEVEL OF EXPERTISE			
			None	Low (some knowledge but little or no practical experience applying it)	Intermediate (some knowledge and experience applying it)	Expert (detailed knowledge and extensive experience of applying it)
2	Organisation	Please rank your expertise in influencing politicians				
3		Please rank your expertise in carbon accounting and measurements				
4	Transport	Please rank your expertise in delivering low-car neighbourhoods				
5		Please rank your expertise in negotiating improved highways adoptable standards				
6	Housing Delivery	Please rank your expertise in delivering best practice projects beyond Part L building regulations				
7		Please rank your expertise in conducting post-occupancy evaluation processes (POE/Soft Landings)				
8		Please rank your expertise in retrofitting properties to reduce carbon emissions				



Interventions

Invest in cycle parking and storage.

Invest in micro-mobility.

Ensure micro-climate, navigation, wayfinding and overall design of streets encourage walking and cycling.

Encourage cycle to work schemes.

Launch bike hire.

Create walkable neighbourhoods.

Trial pedestrianisation schemes and car-free neighbourhoods.

Plan and invest in strategic cycle networks (off-road and on-road), integrated with other transport modes.

Trial smart driving tools in cars.

Encourage switch to EV through corporate leasing.

Switch council fleet to electric vehicles (EVs)

Encourage green taxis through licensing.

Encourage green taxis through licensing.

A transition to electric vehicles is enabled.

Implementation Guidance

You will need to develop design guidance for EV charging points and build delivery partnerships to encourage wider investment and roll out in electric charging infrastructure.

Risks and Limitations

You will need to consider investment in EV alongside investments in walking, cycling and public transport.

Co-benefits

- Health and Wellbeing: Neutral
- Inclusion: Neutral
- Job Creation: Indirect impact
- Natural Capital: Direct low impact

Considerations

Switching to EV reduces air pollution from cars which impacts air quality and therefore has positive implications for residents' health and well-being. However, wider considerations need to be given to metals required for the vehicles' batteries. Additionally, considerations need to be given to make sure the licensing process is inclusive.

Ease of Implementation

Normal business operations

Business Case

Cost

Very low, less than 1 million

ROI

Cost only

Abatement Cost

Weak negative/positive -100 to 100 £/tCO₂

Implementation Steps

1. Work with suppliers
2. Regulation

More Interventions

Intervention Status

To Complete



Encourage establishment of Power Purchase Agreements to stimulate investment in local renewable energy generation and supply.

The area contributes to the decarbonisation of the national power network through investment and deployment of local renewable and micro-grid solutions.

Implementation Guidance

Working in a collaborative way with supply chains and local suppliers will be required.

Risks and Limitations

A more robust option compared with Green Tariffs, can be used as an offset mechanism but must be for a minimum of 15 years.


Co-benefits

- Health and Wellbeing: Indirect impact
- Inclusion: Indirect impact
- Job Creation: Indirect impact
- Natural Capital: Indirect impact


Considerations

None.

More Interventions



Reducing CO2 emissions associated with buildings - New developments and buildings



Intervention Status

Already in Progress

Set net zero-carbon requirements through planning policy and net zero-carbon supplementary planning document.

Zero-carbon design, construction and delivery principles are embedded in planning policy, encouraging sustainable new developments.

Implementation Guidance

This should be complemented with enabling interventions that focus on reviewing planning policies.

Risks and Limitations

Definitions of zero carbon can vary. Use the UKGBC definition for clarity and cross reference the RIBA and LETI 2030 challenge targets. As a minimum, net zero operational or in use energy should be delivered. Developers will often seek to push back on grounds of viability however, growing knowledge and capacity in the supply chain and a number of case studies are emerging that demonstrate that Net Zero Operational Buildings can be delivered.

Co-benefits

- Health and Wellbeing: indirect impact
- Inclusion: indirect impact
- Job Creation: indirect impact
- Natural Capital: neutral

Ease of Implementation

Extensive investment/ change required (additional financial capital)

Considerations

Policies will have an indirect impact by ensuring new homes' carbon emissions are reduced which has a positive impact on the natural environment.

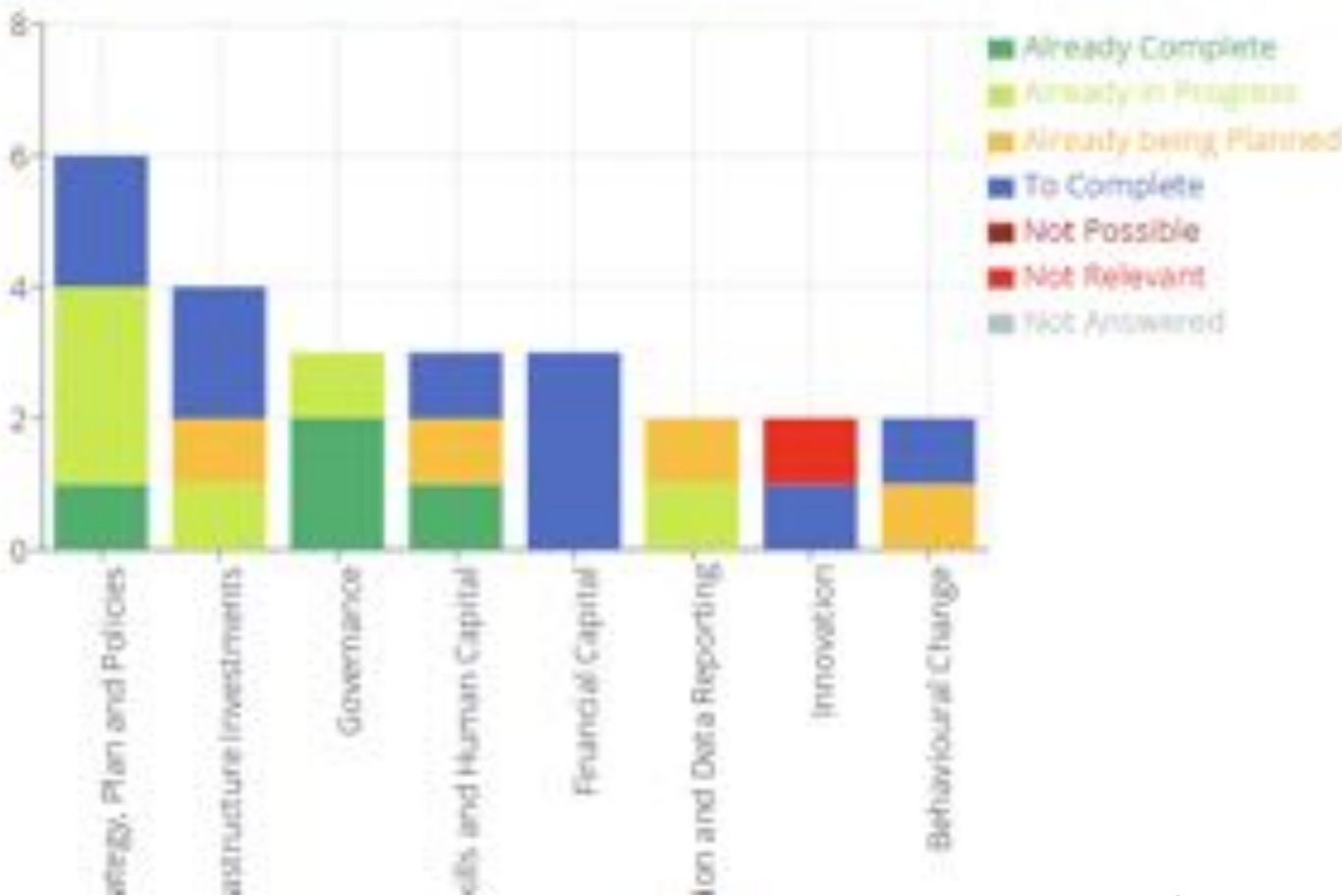


Potential Impact: Future Trends

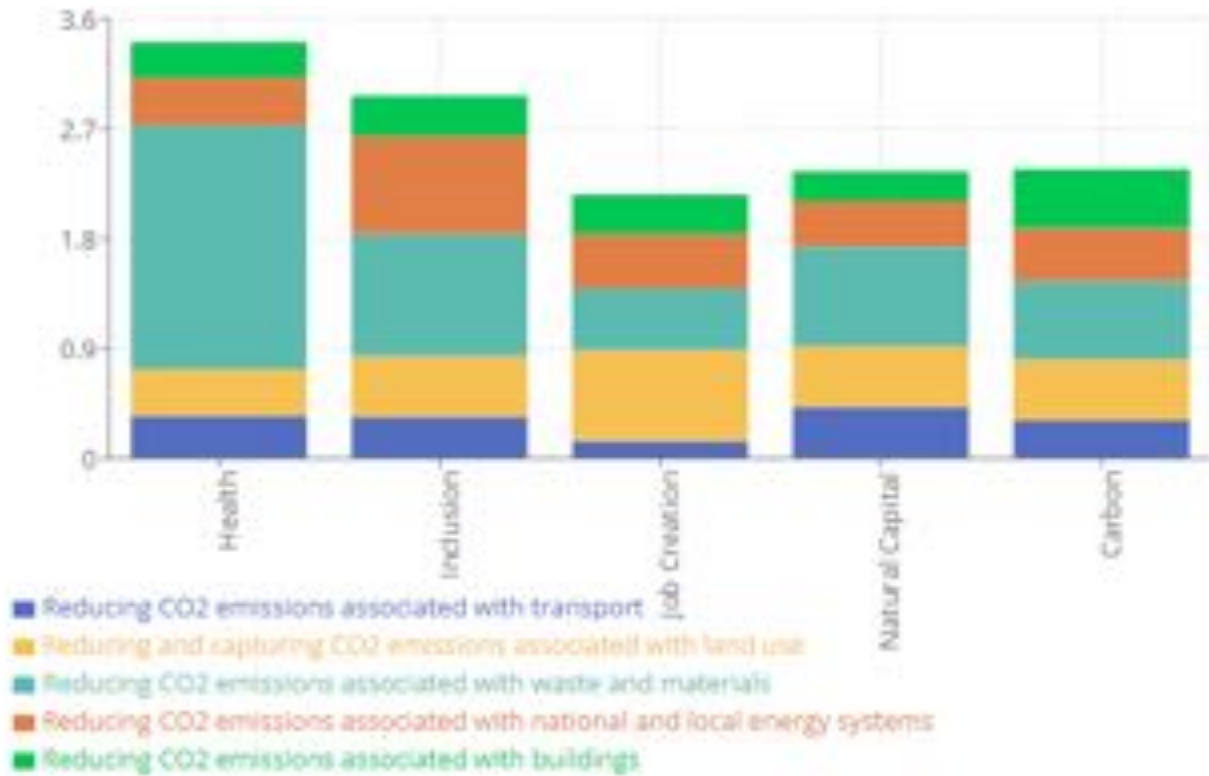
Section 1: Future Trends

The graph below summarises your selected enablers and their progress status. We recommend that you crisis and to delivering zero carbon interventions.

Please note, if an enabler was not presented due to 'I don't know' being entered in the maturity question



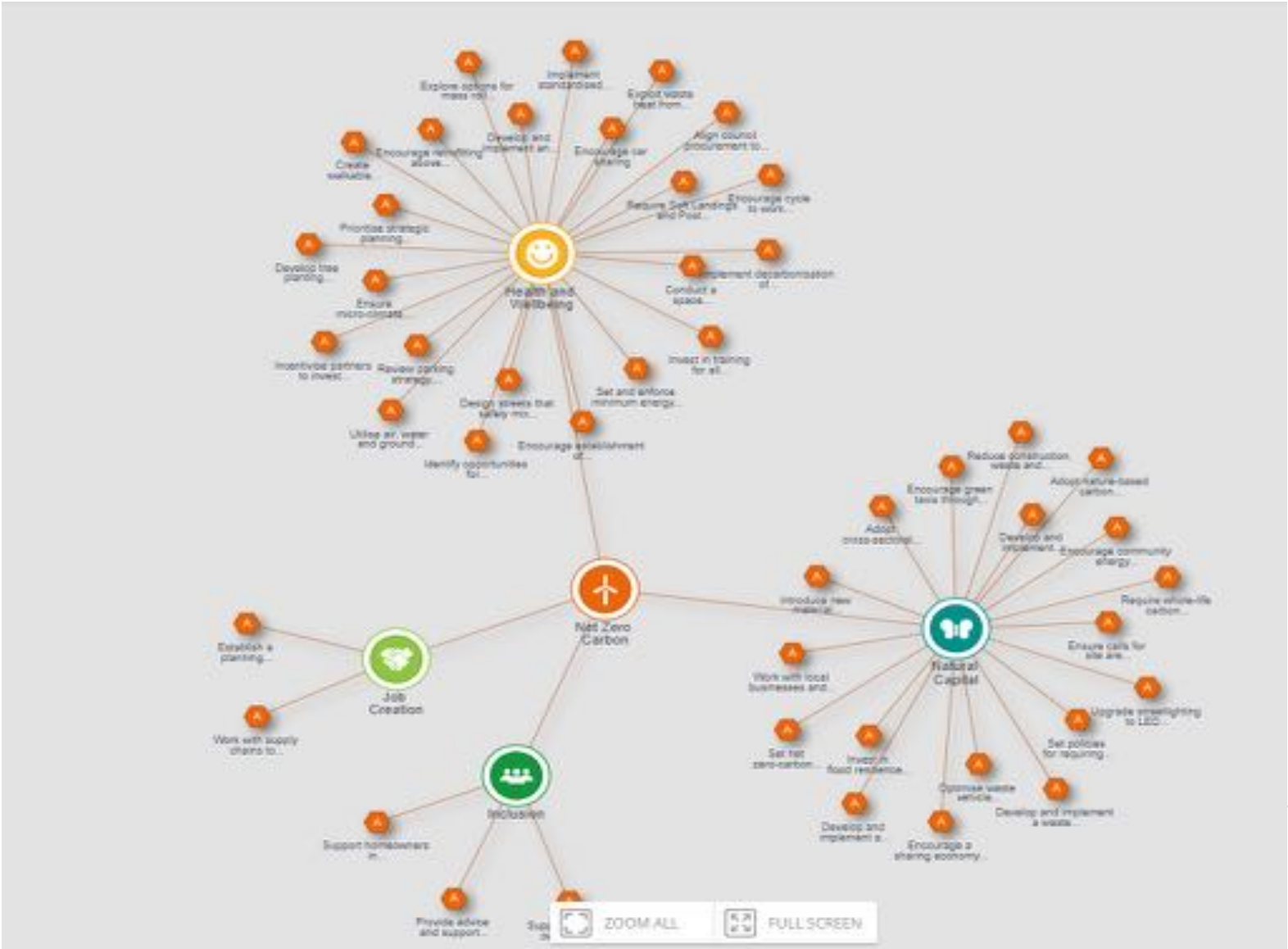
Carbon Savings and Co-Benefits





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Any Questions?



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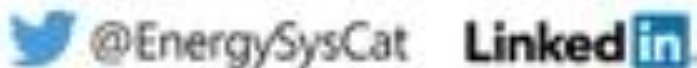
Smart Local Energy Systems

Insights into business models for local energy

Simon Briggs – Practice Manager Business Model
Innovation

April 2022

Energy Revolution Integration Service



The case for smart local energy systems

- Prospering from the Energy Revolution is a £102m programme trialling innovative approaches to developing Smart Local Energy Systems (SLES)
- Funded by the Industrial Strategy Clean Growth Fund and directed by UK Research & Innovation
- Involves 25 different projects and 216 organisation
- Projects are looking create investible business models, with success evaluated on whether they can:
 - Leverage 10 times' the investment
 - Reduce greenhouse gas emissions to meet the 5th carbon budget
 - Reduce end-consumer bills by up to 25%
 - Create world-class consumer experiences
- Energy Systems Catapult delivering an insight paper on emerging SLES business models from the programme
- Analysing opportunities and barriers identified by the projects, and how to make business models more investable, replicable and scalable



What defines a...

Smart Local Energy System?



What defines a...

Smart Local Energy System?



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Smart



By Design

Using data for Local Area Energy Plans to identify opportunities for the energy system

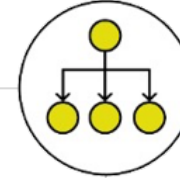
By Operation

Automated use of assets in the house and potentially automated trading of assets in energy markets

Learnt or Autonomous

How the operation of the assets is delivered

Local



Defined by region or boundary

Often linked to a specific area with a supporting Local Authority

Better outcomes for the community

Aim to engage the local community in developing the SLES to meet the needs of the local area

Enabling Net Zero in line with local strategies

Working with LAs to identify measures that meet local net zero strategies

Energy System



Optimised and more efficient

By taking a local, more granular approach, the end result should create a more efficient energy system

Multi-vector approach

Taking power, heat and transport energy requirements into account and how they integrate.

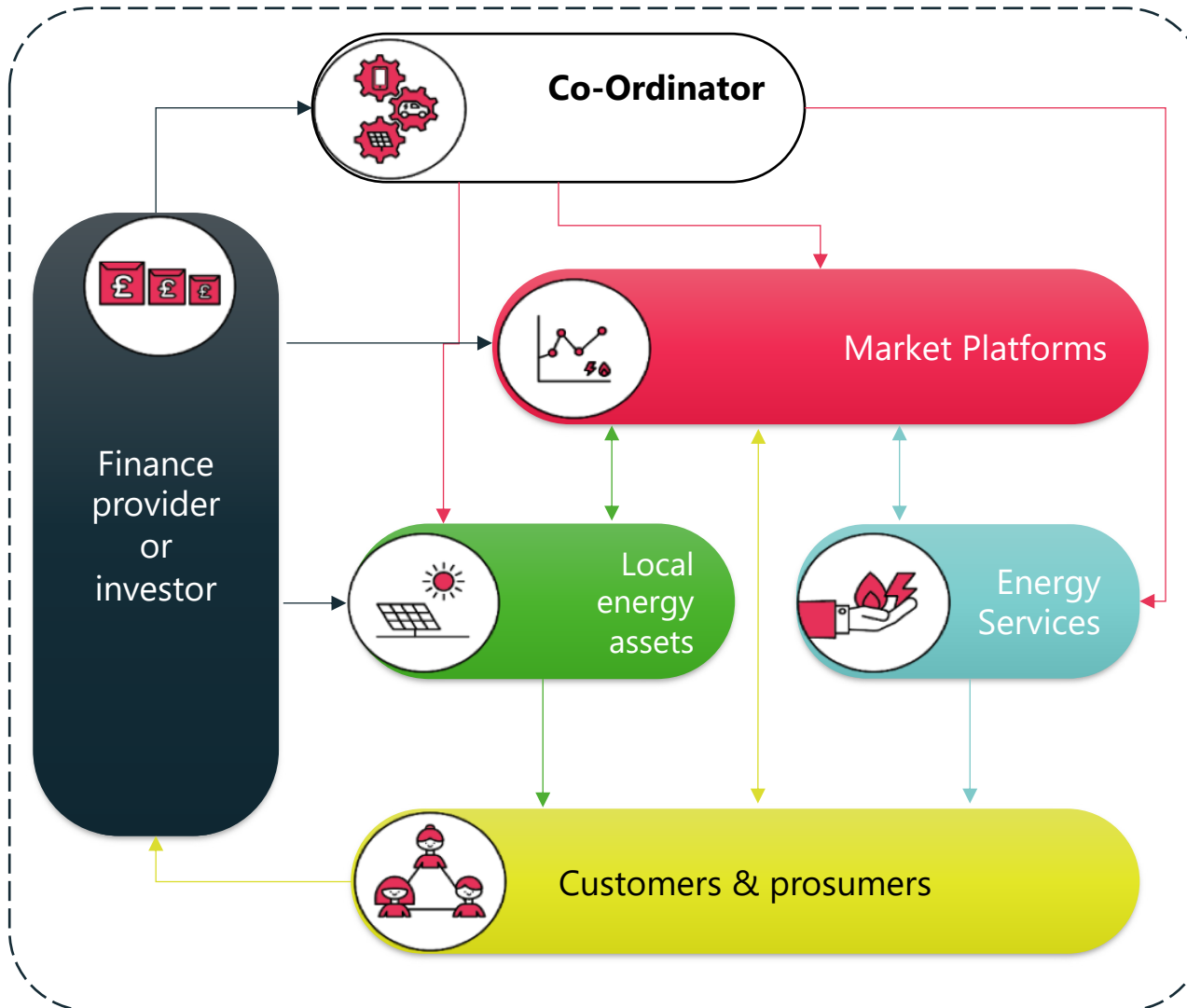
User-centred design

Ensuring the development of the energy system delivers desired outcomes for the consumer

What are the key components of a SLES?



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SLES Co-Ordinator

Examples: Project co-Ordinator, Local system operator, Local energy market designer

Finance and Investment

Examples: Private investment, Public finance, Grant funding and subsidies

Market Platforms

Examples: Data sharing platform, Flexibility platform, Peer-2-peer trading

Local Energy Assets

Examples: Grid connected solar PV, EV charging infrastructure, Heat networks

Energy Services

Examples: Energy Service Companies (ESCo), Heat contracts, Aggregation and Trading services

Customers and Prosumers

Examples: Homes, Small Business, Public Sector Estate, Commercial & Industrial, Customers with solar and storage, EV users

Meeting local needs and delivering local benefits



Financial

New opportunities to generate revenue, capture monetary value or reduce expenditure



Net Zero

Actions that help reduce carbon emissions quicker or most cost effectively



System Resilience

Actions that increase the ability of the local energy system to more effectively adapt to the Net zero transition



Health & Wellbeing

Actions that create more healthy buildings, spaces, services or environment



Economic opportunity

Actions that provide jobs, training and enterprise opportunities that increase capability to deliver Net zero and create growth in the local economy



Equity and Social


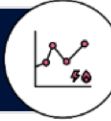



Actions that create a fairer society and ensure the energy transition is just and equitable

Emerging types of Smart Local Energy Systems



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Type of SLES	What is it?	Who's exploring it?
1 Project market place 	An organisation or digital platform that aggregates local energy projects up and links them to investors and delivery contractors	Projects: Rewire-NW (Warrington), Zero Carbon Rugby, RESO (West Midlands)
2 Local Flexibility Market 	A single buyer creates a market and better business case for local, flexible energy assets	Projects: LEO (Oxford), LMEX (Liverpool)
3 Local Energy Market 	Creates a market for local green energy from many local generators and many local buyers	Projects: GM-LEM (Manchester), MH:EK (Milford Haven)
4 Virtual Network Manager 	Service Provider helps virtually manage local constraints that allows faster roll out of low carbon technology	Projects: Re:flex (Orkney), Girona (Coleraine)
5 Anchor Asset 	Investment in assets and infrastructure that delivers low carbon services to locals	Projects: Superhub (Oxford), GreenSCIES (Islington), Remedy (Southend), PIRI (Peteborough)

Archetype Example – Local Energy Market

Overview

3

Local Energy Market



A marketplace that matches many local energy users with many local energy assets like solar, storage and EV charging. Local users have the potential to buy directly from a local generator or buy other energy services available in the market. The market is facilitated by a software platform which could be run by a number of different parties in the local area.

Why is it better for Net Zero?
Creates a market for local green energy from many local generators and many local buyers

What makes it a SLES?
Marketplace / platform for buying and trading energy

Main Low Carbon Interventions
Solar, Storage, EV Charging, heating

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Benefits and Considerations

3

Local Energy Market
Benefits and Considerations



Key Benefits	Considerations
Net Zero <ul style="list-style-type: none">Accelerate reduction of local carbon emissionsIncrease Local Participation in Net Zero	Policy & Regulatory <ul style="list-style-type: none">Complex to setup - new market rules requiredRelationship with system operators. Need to understand how DNO and National Grid will interact with the LEM.
Financial <ul style="list-style-type: none">Lower energy bills for customersImproved business case for generators	Creating Value <ul style="list-style-type: none">Creating value in the local marketIt is not yet clear who pays for the value a local energy market can generate.Market requires sufficient volume and liquidity to be viable
Economic Opportunity <ul style="list-style-type: none">Increases local economic growth and employment	Digital and Data <ul style="list-style-type: none">Safely handling user data in the local energy market
System Resilience <ul style="list-style-type: none">Increase flexibility in local networks	Fair Transition <ul style="list-style-type: none">Extra support will be required to support vulnerable customers and address fuel poverty concerns

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Role for Local Authorities

3

Local Energy Market
Benefits and Considerations



Investor Roles	Customer Roles	Support Roles
Join the Local Energy Market <ul style="list-style-type: none">Set market signals to incentivise climate strategy. Generate income for council and potential replication in other LA's.Invest in energy assets like solar, storage and EV charging infrastructure. LEM will improve business case by increasing value of local power.Become an Energy Service Provider - create local energy tariff and sell through the market. Could include locally owned generation	Buy from the Local Energy Market - local, renewable energy for public sector. Potentially at cheaper price through ToU and reduced use of system charges	Recruit for the LEM - Inform public and encourage local participation in the LEM
	Sell to the Local Energy Market (LEM) - existing community or publicly owned generation could sell to the LEM at increased price.	Planning - through planning can promote more use of land for more desirable social and environmental outcomes
	Lease buildings or land to have energy assets installed that can sell into the LEM	

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Case Studies

3

Local Energy Market
Greater Manchester Local Energy Market





Overview of Project

- Manchester LEM is aiming to increase local energy generation, adding at least 45 MW renewable generation capacity by 2024.
- It will support local authorities to assess potential of assets for renewable energy.
- The LEM will increase the diversity and flexibility of electricity supply by adding storage to help manage peak loads.
- Digital infrastructure will be developed to enable peer-to-peer trading and more flexible use of renewables.

Scale of Deployment

- 40 MW new renewable energy generation capacity - 22% of 2024 target for new capacity in GtM.

Future Ambitions

- Investigate innovative new business models.
- Provide options to improve business case.
- Develop detailed recommendations to support future investment.

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What are the SLES business model archetypes and how can they be used?

SLES business model archetypes can be used as a guide for those involved in local decarbonisation to start to think about:

1. An an overall vision for local decarbonisation that goes beyond technology and thinks about the whole system (e.g. finance, customers, data)
2. What role the local authority and community can play
3. The benefits and risks of different roles
4. Planning now so that resources, capability and partners are in place
5. Identifying key stakeholders in delivery and engaging with them early
6. Inform and increase the debate on market enablers required for local decarbonisation (e.g. policy and regulatory change)



Where to go for further information

Full report on SLES business model archetypes will be available from May and can be found on Net Zero Go or the ESC website. Please contact simon.briggs@es.catapult.org.uk for further information.

For further information on how Energy Systems Catapult can help local places build robust strategies to navigate to net zero visit <https://es.catapult.org.uk/work-with-us/local-places/>



UNLEASHING ACTION

NET ZERO GO – MAKING LOCAL ENERGY PROJECTS EASIER



**OVERCOMES COMMON
BARRIERS TO LOCAL ENERGY**



**DE-RISKS PROJECTS &
BUILDS CAPABILITY**



**ENABLES SCALABLE,
INVESTABLE INITIATIVES**

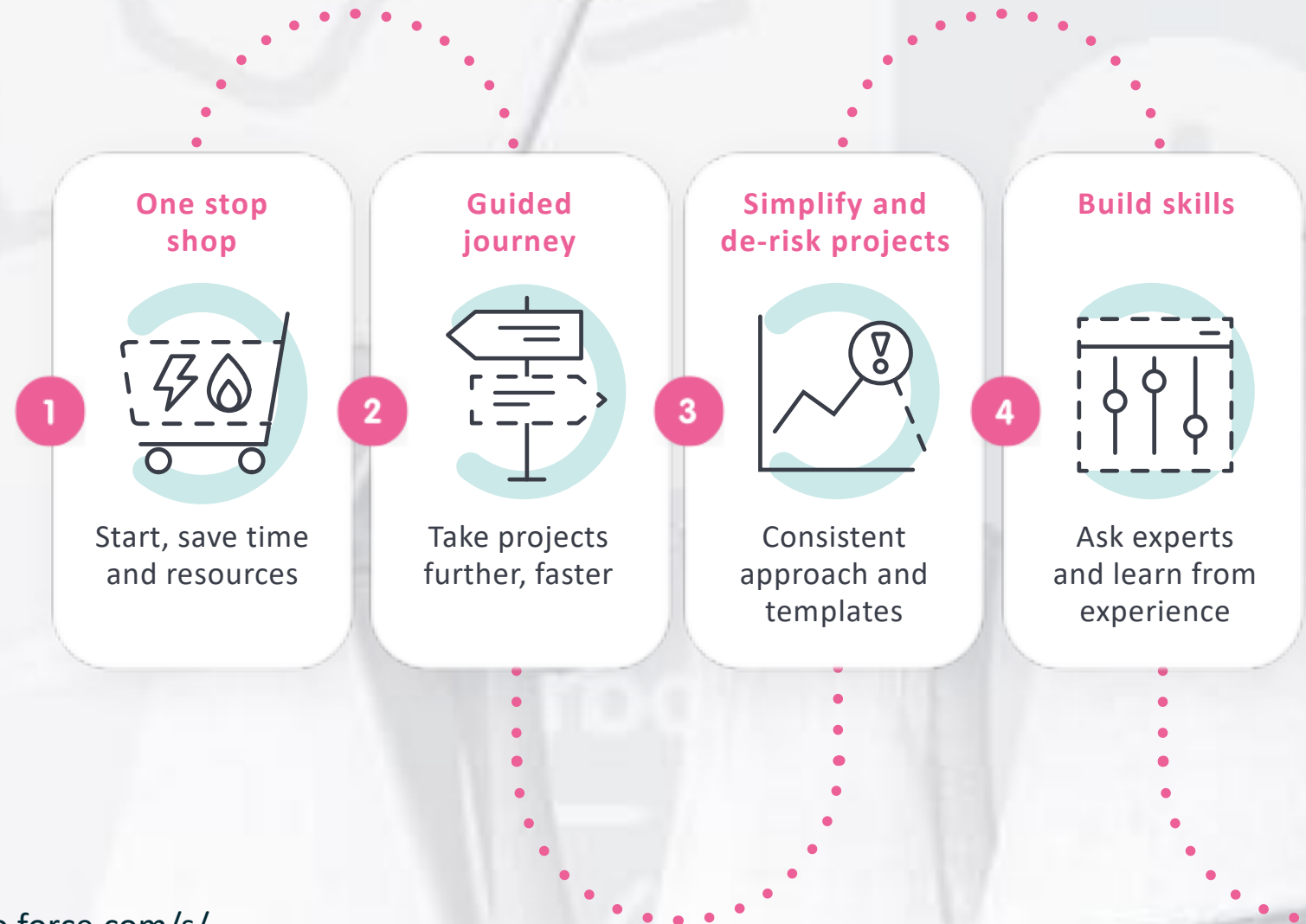


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Networking Tool:

<https://supportingnetzeroplaces.meeting-mojo.com>



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What is Net Zero Places?



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Net Zero Places Aim:

To help make Net Zero in the UK a reality, by working with local/regional authorities and agencies to connect, collaborate, inform, share experiences and lessons learned, adopt innovation and to level up across the UK.

STAKEHOLDERS



Local/ Regional Authorities/ Agencies

Have Net Zero targets, need to understand how technology can support and be able to procure innovative solutions.



Procurement Professionals

Can amend or create procurement frameworks that can be used by many Local Authorities, need to be brought in early in the process.



Ecosystem Partners

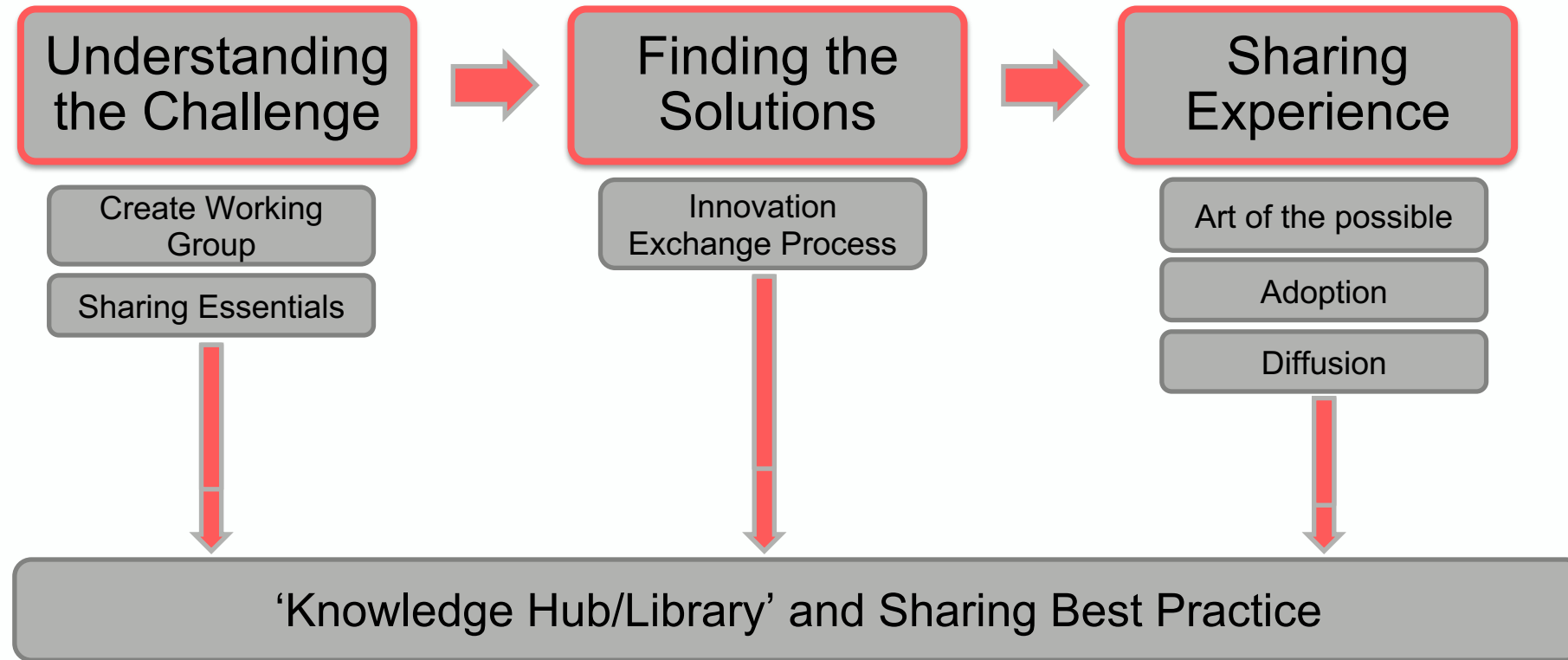
Have complementary activities, tools, funding, and opportunities to enable Net Zero in the UK.



Solution Providers

Have solutions, need to demonstrate market readiness and be public procurement ready.

What does this look like?



Get Involved

- Join the Network - www.ktn-uk.org/programme/net-zero-places/
- Tell us your challenges
- Let us know if you would like to share your story

[Email - Nilam.banks@ktn-uk.org](mailto:Nilam.banks@ktn-uk.org)

North Northamptonshire to Net zero

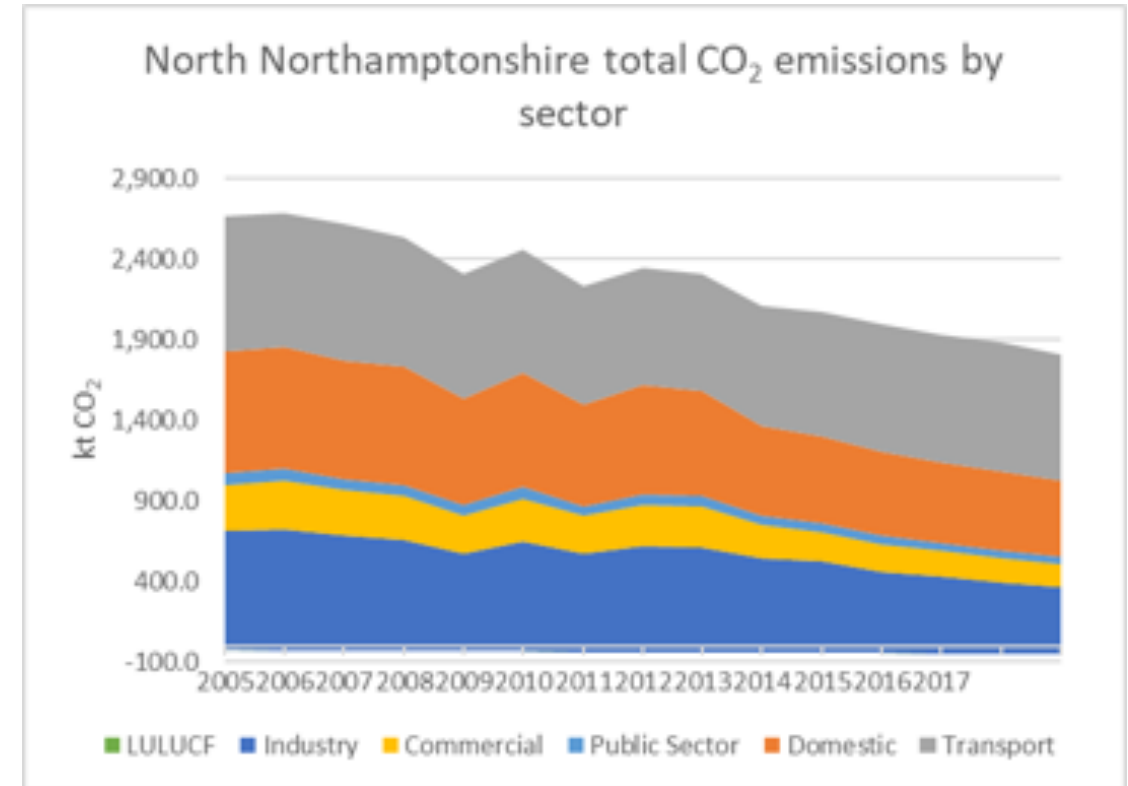
27th April 2022

Project NN2NZ



North Northamptonshire to Net Zero.

- UK Parliament declared a climate emergency in 2019, along with goal of being net zero by 2050. Many are trying to beat this. Emissions are coming down, but significantly more needs to be done to reach net zero.
- NN2NZ aims to develop and recommend a programme of initiatives that would enable NN to reach Net Zero ahead of 2050, along with a robust framework for assessing new ideas as they emerge
- Follow-on funding for trialling and roll-out of the key initiatives will be sought to enable success for NN



Project NN2NZ Milestones



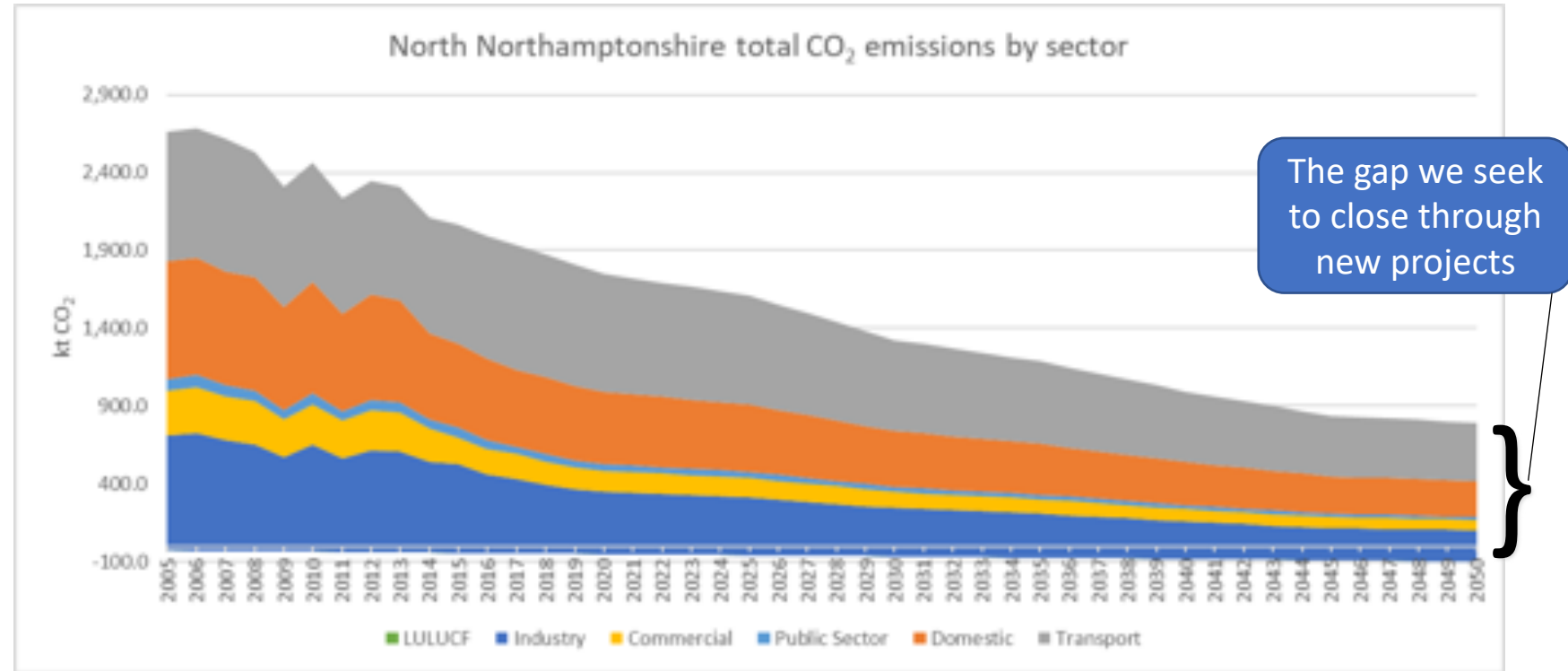
Milestone
Existing strategies and inputs reviewed and amalgamated into a holistic approach for the net zero project to follow
Search for projects and initiatives
Projects gathered into a draft options programme strawman
'No regret' feasibility studies started for strongest options
Forecast outputs by project, then combine them to show how close they get to net zero, and the resulting gap to fill
Beyond COP26 Virtual Event - "Taking North Northamptonshire to net Zero" – call for new projects, ideas and initiatives to fill the gap
Projects and innovations reviewed for feasibility (e.g. cost and take-up)
Further feasibility studies identified & initiated
Initial results from feasibility studies
Strategic options programme paper prepared showing the project options and their potential impact on the gap analysis
Stakeholder review of options and roadmaps
Project outputs & proposals presented to NNC and published

Roadmap to close the gap



8000 projects analysed and looking for more – no stone to be left unturned

- The forecast scale and impact of all viable projects will be added to this gap analysis to see out how far they go to net zero until we reach a roadmap to net zero that is considered feasible.
- We will recommend the resulting projects to be added to the roadmap and for their roll-out to be supported



Forecasted BAU emissions are based on National Grid Future Energy Scenario (FES) "Steady Progression", 2021). This represents a base case decarbonisation profile for North Northamptonshire. Under the Steady Progression scenario net GHG emissions fall from 500 MtCO₂e in 2020 and do not reach net zero by 2050 resulting in 243 MtCO₂e of annual emissions by 2050.

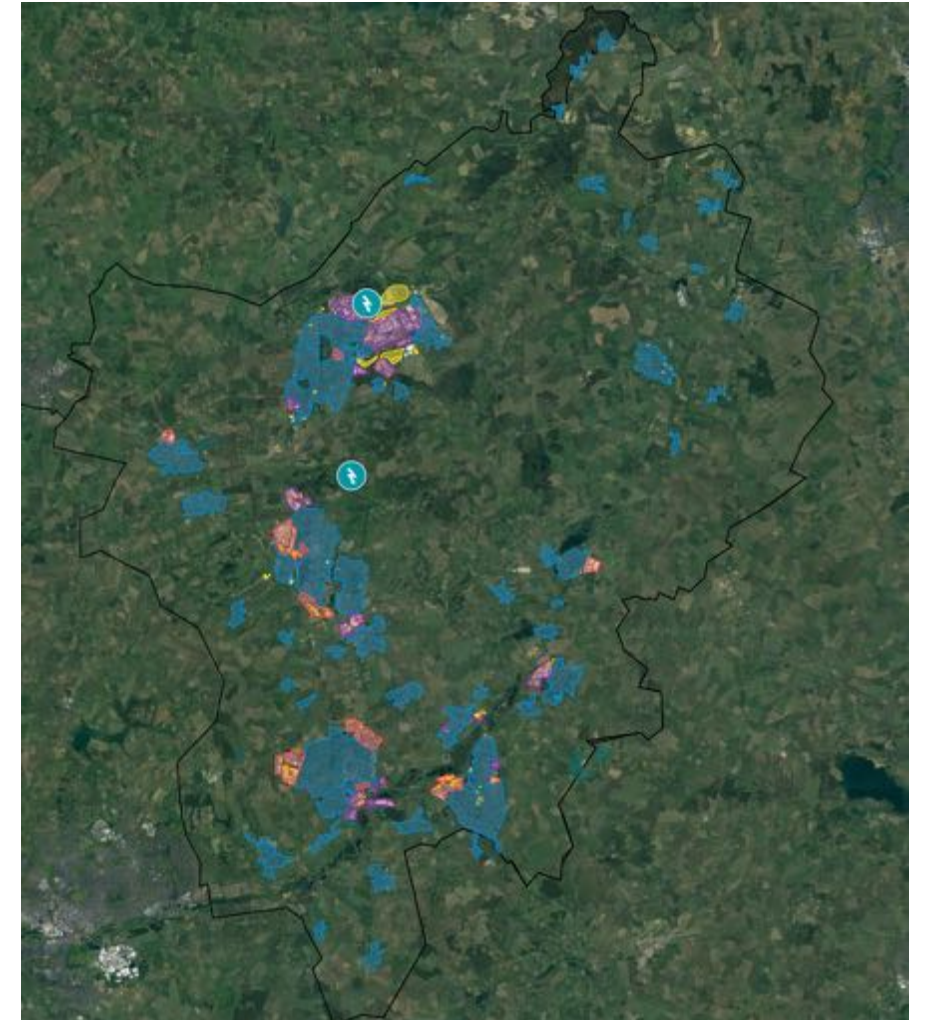
Net Zero Analysis for NN



Projects and initiatives analysed for:

1. Net zero impact of the idea:
 - How much CO₂e would it save?
 - How much energy would it save?
 - How much clean energy would it make?
2. What potential for scale does it have in NN?
 - Mapping the potential volume
 - Using published sources and government statistics (e.g. local no. households, registered vehicles, etc)
3. How many of these might take it up?
 - Now, by 2030, 2040, 2050
4. How much would it cost to implement?
 - How feasible is it – is more work needed?

*North Northants has:
Total solar sites: 4679
Residential area: 6610.388ha
Commercial area: 724.3ha
Industrial area: 978.71ha
Carpark: 1811.192ha*





What if...

every south-facing roof had solar

every car park had solar

everyone turned vegetarian

no-one drove to work

everyone living within a mile of town cycled to town

everyone in town walked everywhere

every post 1920's building insulated to Passive standards and converted to ASHP

no-one boiled more than they needed in the kettle

people only cooked in groups of 4 or more

every industrial building switched to infra-red heating

every old polluting (pre euro2) vehicle was banned

every classic car was limited to 1000 miles a year

every petrol station only sold clean e-fuels

people gave up their second cars

people only used efficient slow cookers

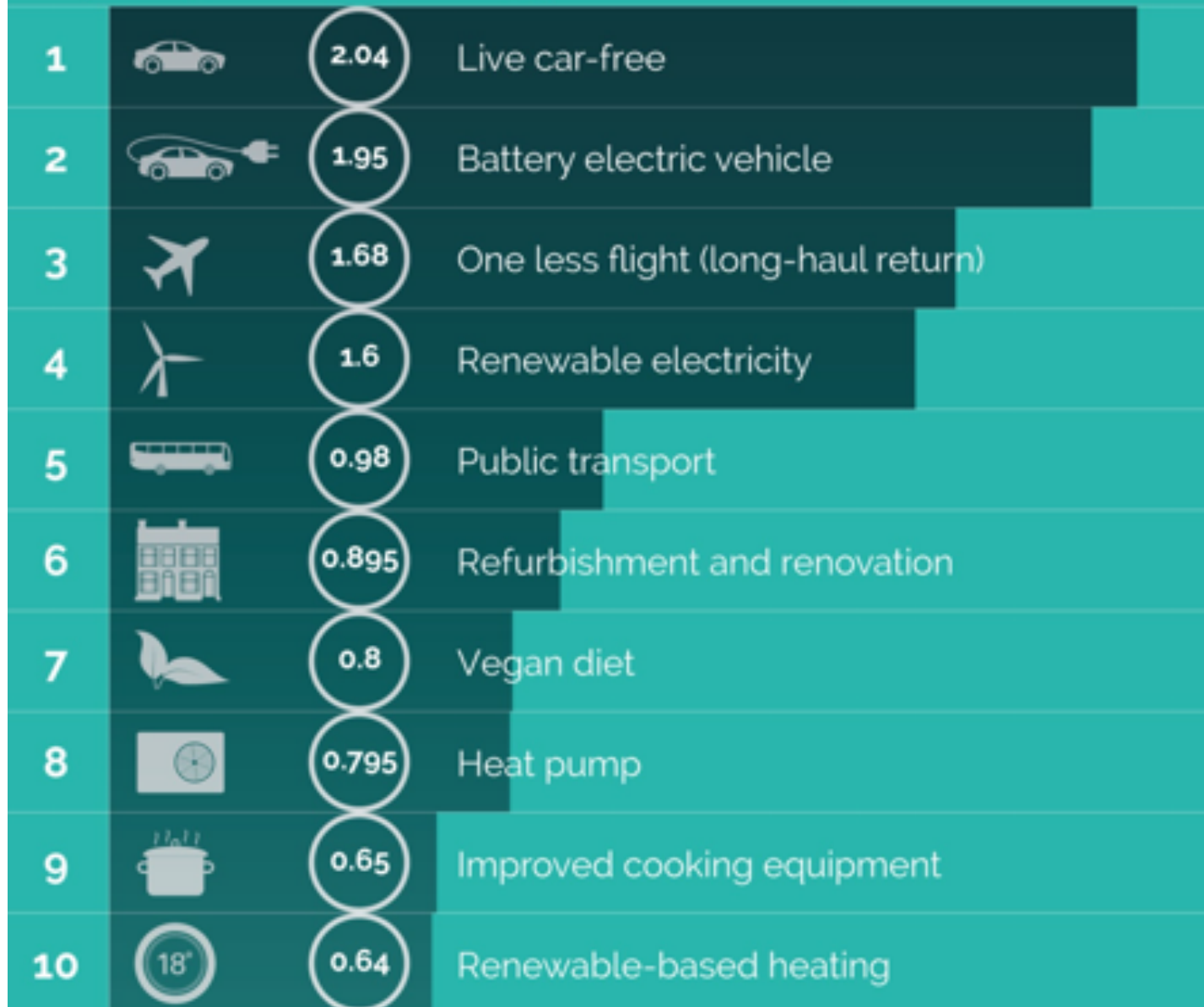
everyone switched to LED bulbs

everyone planted a tree in their garden

every verge was planted with trees



Top 10 options for reducing your carbon footprint



Median potential reduction (tCO₂eq/cap)





CO₂ reduction

Infrastructure



Behaviour



Small scale



Large scale



CO₂ offsetting



Past projects, ongoing initiatives and new project ideas

Smarter ways to use more of the renewable energy produced by homes and businesses within communities.

- Maximise the use of solar generation
- Encourage community members to be flexible with their use of energy
- Enable energy retailers to supply cheaper energy to community members
- Help electricity network operators make the grid more resilient



Renewable cogeneration and storage technologies integration for energy autonomous buildings.

- Small-scale vertical axis wind turbine
- Lightweight coloured solar PV
- Renewable energy optimisation software
- Move towards energy positive buildings



A digital platform for EV fleet management and shared mobility solutions

- Booking
- Charging
- Maintenance

Helping the transition to electric vehicles

Reducing dependence on cars

MyMobility



ZEB2: 47 Net Energy Positive Homes



Fabric First through MMC

PV and hybrid PV-T Solar generation

Earth Energy Bank for inter-seasonal heat storage

5.5kWh Battery

SHEMS to optimise energy use for a net positive outcome

BEIS “Building for 2050” project

Peer-2-Peer energy research platform

Currently achieving 7.3% price premium to local market average



- KTN on past projects
- Call for new projects
- Challenge for modelling support (digital twin)

www.nn2nz.co.uk
projects@nn2nz.co.uk



Go to www.menti.com and use the code 2115 5759

Instructions



Go to
www.menti.com
Enter the code
2115 5759



Or use QR code



InnovateUK
KTN

The Net Zero Hubs

Supporting Net Zero Places

27/04/2022

Go to www.menti.com and use the code 2115 5759

Instructions



Go to
www.menti.com
Enter the code
2115 5759



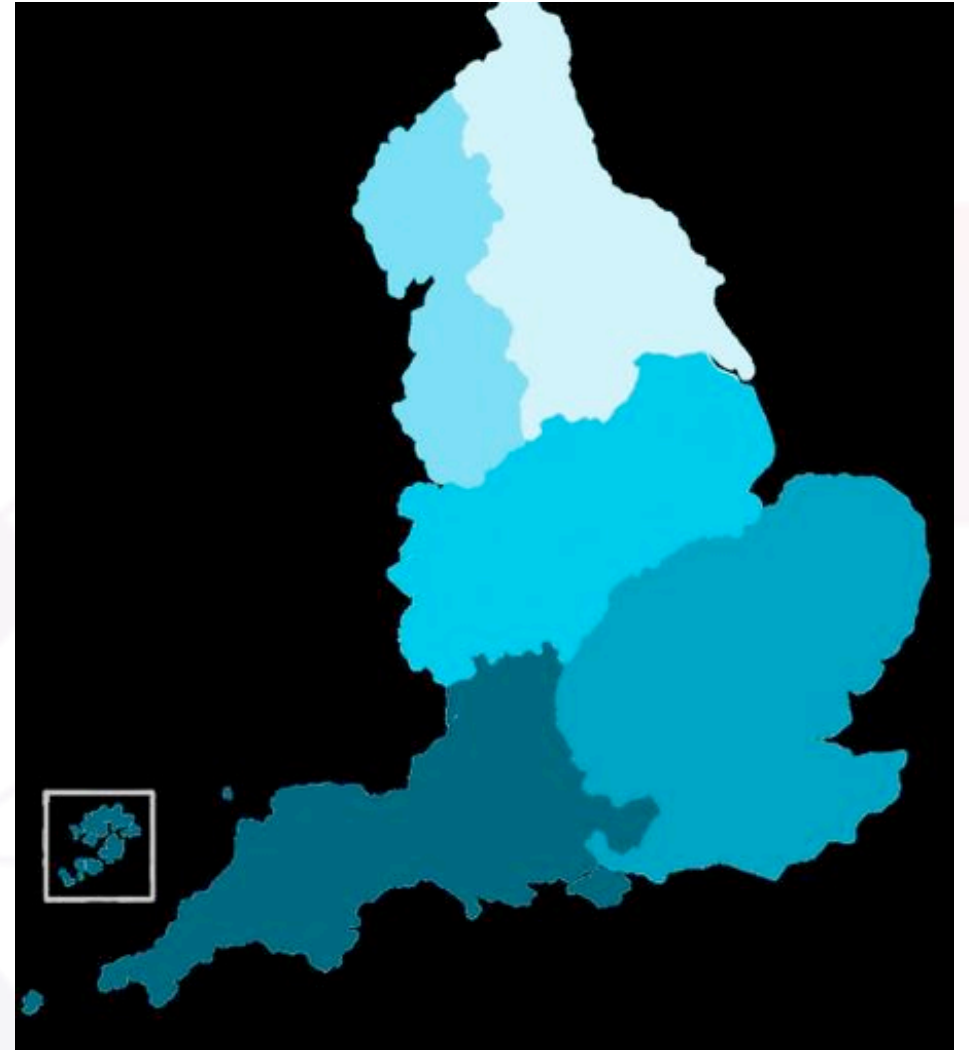
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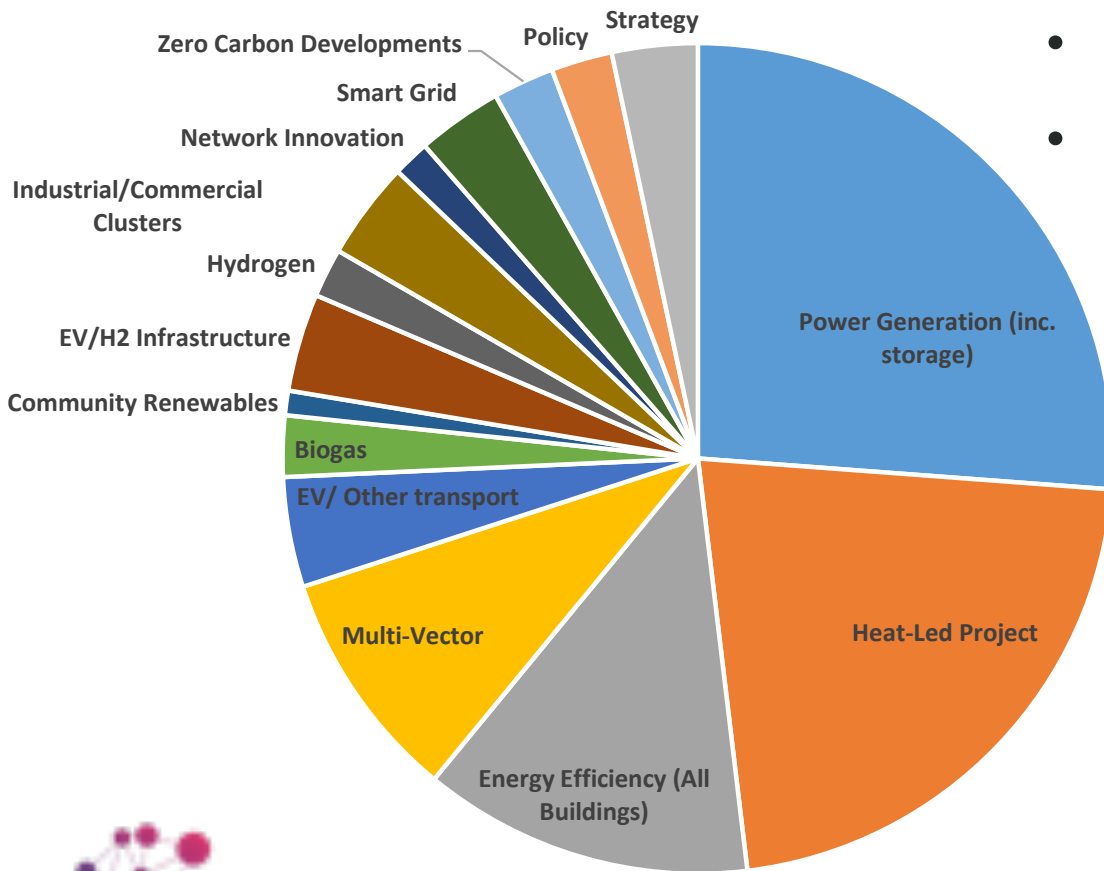
BEIS Net Zero (formerly Local Energy) Programme

- Five **Local Net Zero Hubs** across England
- Providing support and additional capacity to the public sector
- Driving clean growth through energy innovation
- Raising awareness of good practice, funding opportunities and new approaches to project finance
- Providing technical support to developing business cases and funding applications
- Promoting 'local zero carbon' schemes, partnerships and collaborations



The Net Zero Hubs project pipeline

Breakdown of Projects by Sector/Workstream (All Hubs)



- **Over £4Bn project value across +200 major projects**
- Types of projects we have supported include:
 - ✓ Large scale solar
 - ✓ Estate-wide energy opportunities assessments
 - ✓ Heat Networks
 - ✓ Smart Grids
 - ✓ Fleet and depot decarbonisation
 - ✓ Hydrogen development
 - ✓ Network constraint
 - ✓ Building decarbonisation
 - ✓ Research & development

Domestic retrofit

- **LAD1** – The Hubs supported LAs to access the first tranche
- **LAD2:** £300m delivered by the 5 Hubs across their local authorities. With works due to be completed by end of June 2022
- **Sustainable Warmth** - GSENZH leading Sustainable Warmth consortia of 66 local authorities
- **Social Housing Technical Assistance**



Public Sector Decarbonisation Scheme Funding

- The Hubs have supported the public sector to access all three rounds of PSDS funding
- The GSENZH has helped organisations access around 27% of the capital funding awarded across the South-East as well as over £145k of Low Carbon Skills Funding
- We have supported a further 153 projects with feasibility assessments

Total Projects Value (Supported by GSENZH)	£138,084,257
Total Awarded (Supported by GSENZH)	£104,855,772
Total Awarded in GSE Total	£387,291,365



Shared by
Greater South East Net
Zero Hub
Feb 2022



Location



[Inspired? Find out more](#)

Other stories



Helping to access other finance and funding



Community Energy

Rural Communities Energy Fund

The GSENZH received 59 applications and grant-funded **£1,906,078** across 52 projects



- Riding Sunbeams
- Ryse Hydrogen
- Swaffham Prior
- Cuckmere Community Solar



The Net Zero Hub role is changing

#1 Continue to increase the number, quality, and scale of local Net Zero projects being delivered across the Hub areas

#2 Attract commercial investment and help LAs to develop investment models which accelerate progress to net zero

#3 Enhance our technical support offer

#4 Support a knowledge transfer programme to improve information sharing, training creating a network of experience for the public sector to draw upon



Greater South East Net Zero Hub



Department for
Business, Energy
& Industrial Strategy

Buckinghamshire
LOCAL ENTERPRISE
PARTNERSHIP



CAMBRIDGESHIRE & PETERBOROUGH
COMBINED AUTHORITY

NEWANGLIA
Local Enterprise Partnership



Coast to
Capital

SEMLEP
Local Enterprise Partnership

enterprise**m3**
Sustaining prosperity through innovation



GREATER
LONDON
AUTHORITY



BABERGH MID SUFFOLK COUNCILS



Two District Councils working together

- Rural Districts with joint population circa 190,000
- Climate change Emergency declared by both Councils in July 2019 and also part of wider Suffolk Climate Change Partnership ambition to be net Zero by 2030
- Strong ambitions around climate change –
 - first rural council to adapt vehicles to bio fuels and third in UK,
 - first solar car ports on council car parks in the east and
 - first Local Energy Showcase held in the east to promote the use of local energy to businesses and local communities

+

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○

SUPPORT FROM THE NET ZERO HUB

In delivering our ambition it has been important to work with partners and stakeholders locally

The Net Zero Hub support and advice has been valuable in helping to build partnerships locally but also on a national basis with its wide overview of national interventions

Wealth of advice, other case studies, linked with good practice from other councils and public sector

Specific support on a number of projects; Solar car ports and public sector de-carbonization, large greenfield commercial development site and Local Energy Showcase event

+

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○

CASE STUDY 1 – GATEWAY 14



Challenge; to develop a 156 acre commercial site in an environmentally sustainable way

Supported by the Hub to;

- Better understand heat mapping and zero carbon opportunities across the whole site by match funding a consultants feasibility study
- Provided support in discussions with developer and consultants – met councillors and Board members
- Has helped to facilitate discussions with statutory utilities to unlock grid constraints
- Has led to changes being made to original scheme including air source heating in offices, a new skills and innovation centre which will be net zero and all industrial units will have infrastructure for solar panels
- Also identified future opportunities for onsite battery technology , wind turbines and possible future hydrogen plant

+

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○ CASE STUDY 2 – SOLAR CAR PORTS AND PUBLIC SECTOR DECARBONISATION



Challenge; to use solar car port technology as part of a wider solution to improve energy efficiency and lower costs at 2 main leisure centres across the Districts

Supported by the Hub to;

- Explore opportunities for solar car ports on 2 sites which led to a successful build Back Better bid with over £800k brought in as match funding. With 42 bays in Sudbury and 72 in Stowmarket the carbon savings over 25 years would fill the Royal Albert hall 13 times!
- Better understand the impact on bringing battery storage into the project to cope with peaks and troughs in energy demand
- Develop a successful Public sector decarbonization bid of £1.3m for new solar panels or air source heat pumps at a number of leisure centres - enabled a more holistic approach to energy management of our assets

+ CASE STUDY 3 – LOCAL ENERGY SHOWCASE



Challenge; how to engage better with local businesses and communities on the Councils ambitions around net zero and in particular around local energy production

Supported by the Hub to;

- Develop a comprehensive programme over 2 days with a range of local, regional and national speakers
- Share the work of the Net Zero Hub, particularly with local communities and the information and contacts which can be shared
- Promote the event to a range of businesses
- Secure sponsors to ensure the event kept at minimal cost to the Councils

Go to www.menti.com and use the code 2115 5759

Instructions



Go to
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2115 5759



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Q&A

Please use the chat function in Team or
raise your (virtual) hand

www.ktn-uk.org

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Enter the code
2115 5759



Or use QR code



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Thank you!

Join the Community -
www.ktn-uk.org/programme/net-zero-places/

Email -
Nilam.banks@ktn-uk.org

www.ktn-uk.org



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Getting to Net Zero Locally

Practical Tools for Local Authorities



OnePlanet.

Developed in
partnership with:



Space Syntax

usefulprojects

83% of councils have a
Climate Action Plan – so
why are we here?

Execution is hard.

Balancing competing priorities

Identifying and bridging gaps

Building the necessary partnerships



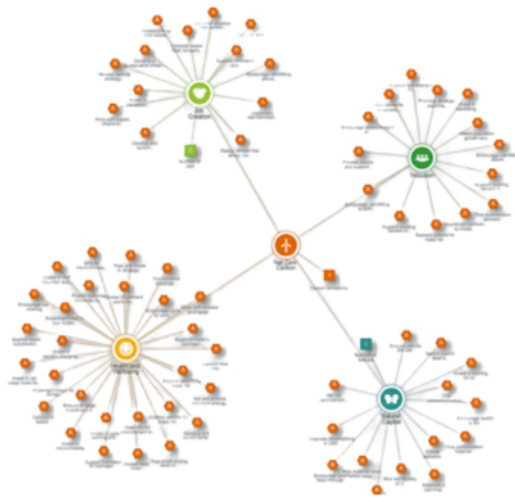
Net Zero Navigator

- Create or stress-test your strategy
- Identify councils with shared characteristics and challenges – learn from and support peers
- Consider the emissions profile and other characteristics of your area and the implications for priority actions
- Build your co-benefits story to get internal buy-in and momentum
- Find specialist resources to help you fill in the detail

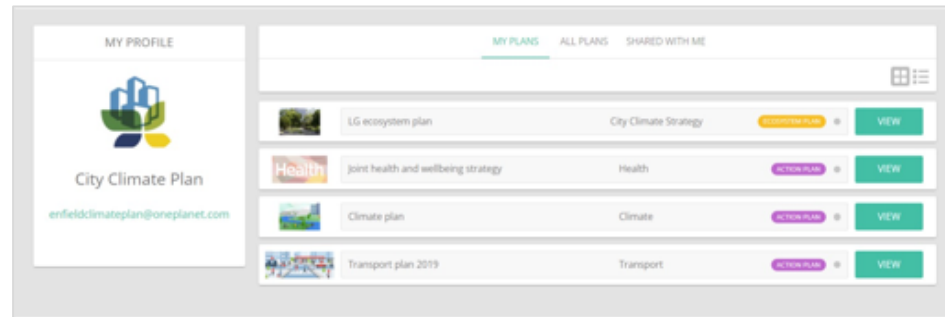


OnePlanet Integration

Map the co-benefits of climate action to **build the business case** and **drive cross-departmental collaboration**



Streamline implementation by connecting up strategic plans, sharing indicators, amalgamating actions and aligning reporting to **avoid duplication**.



Thursday, April 28, 2022

Thank you

<https://netzero-navigator.oneplanet.com/intro>

bob.burgoyne@cp.catapult.org.uk



Net Zero Navigator Tool findings

cATAPULT
Connected Places

OnePlanet.



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South Lakeland District Council





Why we tested Net Zero Navigator tool?

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Area	Business	Results	How does this action contribute to 2030 climate goals?	How does this action contribute to 2030 climate goals?	How does this action contribute to 2030 climate goals?	How does this action contribute to 2030 climate goals?
To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy
	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy	To support and enable a transition to a net zero economy
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Health and Wellbeing: 1 2 3 4 5 6 7 8 9 10

Inclusion: 1 2 3 4 5 6 7 8 9 10

Job Creation: 1 2 3 4 5 6 7 8 9 10

Natural Capital: 1 2 3 4 5 6 7 8 9 10

Your Process Maturity Self Assessment



Design Your Net Future

all 6 questions answered



Design Your Net Future

all 4 questions answered



Design Your Net Future

all 3 questions answered



Design Your Net Future

all 3 questions answered



Design Your Net Future

all 3 questions answered



Design Your Net Future

all 2 questions answered



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Maturity level

The overall measured maturity level of SLDC is "Building Foundations".
"Your council has already made investments in building your capacity, knowledge, and resources to deliver low-carbon projects."





How the tool works

The tool uses publicly available information to provide baseline information to inform the development of programmes of work for a local authority. This is supplemented by a self-assessment questionnaire that evaluates your organisational zero carbon maturity.

The output of the tool includes:

- ▶ **Your Place Data** – it includes a summary of your carbon profile and organisational zero carbon maturity as well as detailed information on your area's key attributes.
- ▶ **Your Enablers** – these include the enabling mechanisms that will build your local authority's organisational capacity in delivering zero carbon programmes of work. They are the foundation for delivering zero carbon interventions.
- ▶ **Your Interventions** – these are specific, strategic programmes of work that deliver direct carbon savings and/or a range of associated co-benefits across various built environment systems.
- ▶ **Your Potential Impact** – this page summarises the comprehensive set of selected programmes and their potential impact if they were to be implemented.
- ▶ **What the tool does-** The tool assesses area-wide emissions and subsequently proposes area-wide programmes of work. It proposes actions that local authorities can implement on their own as well as in partnership with local communities and businesses.

The applicability of the Tool for SLDC

The tool is designed to create or stress test a strategy. I do not think we would use the tool to completely re-design our current strategy because:

- ▶ LGR means no time to overhaul our strategy
- ▶ It doesn't clearly separate council and district targets and actions
- ▶ I'm not convinced that the interventions are applicable to district councils
- ▶ We would have to train officers to use the tool to check and update their actions

Could this tool be considered after LGR?

- ▶ Would be optimised when starting 'from scratch'
- ▶ The enablers and inventions would be achievable with more resources
- ▶ Could serve as a springboard exercise or first draft of our Climate Action Plan
- ▶ The OnePlanet system which is integrated with the tool is an exciting system which has gained interest from our strategy and commissioning officers.

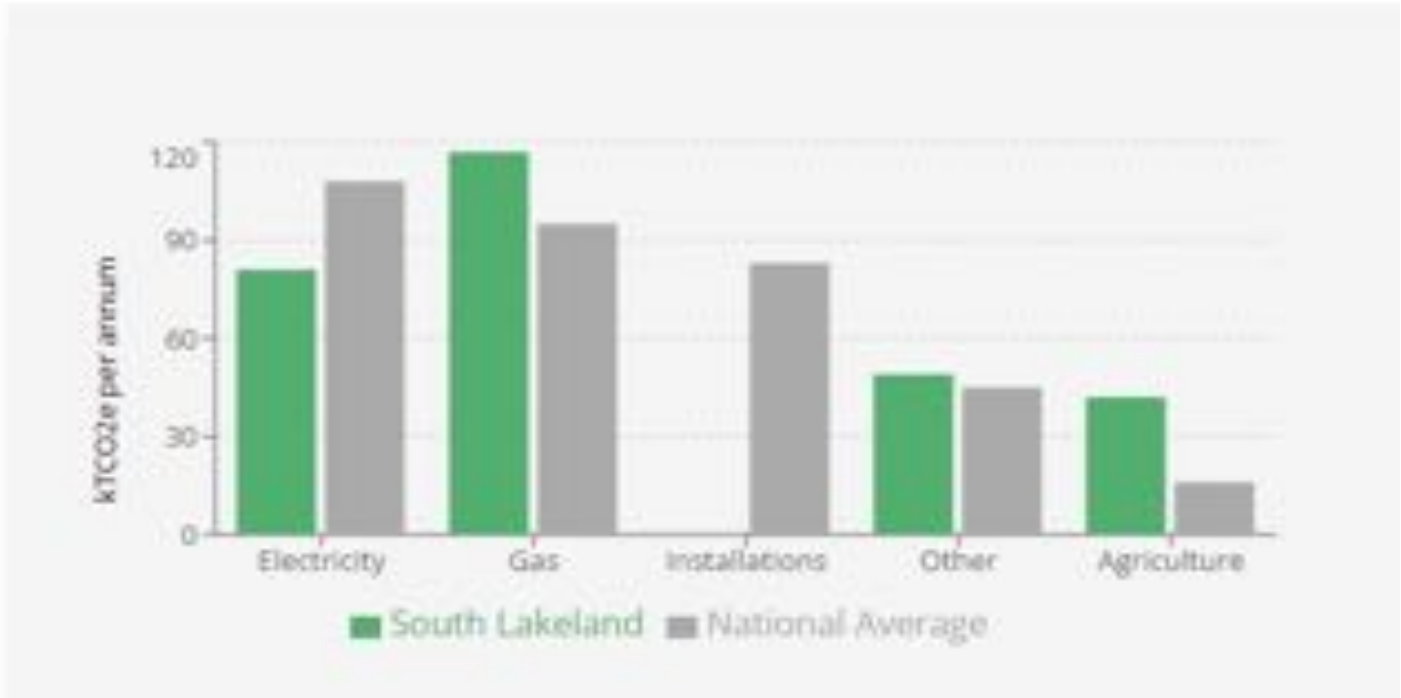
What we have gained?

- ▶ **The place data-** Catapult have put work into this tool which has been developed into a carbon profile for South Lakeland which has given us data in a easy to understand format to showcase
- ▶ **Enablers-**are improvements to processes and organisational attitudes that can help achieve carbon goals- we have adopted or explored some of these enablers to implement.
- ▶ **Interventions-** these are actions that councils are suggested to take and these have been helpful when reviewing our plan and has formed new actions in the plan.



Place Data 1

Section 1b: Detailed breakdown of local authority emissions



Your characteristics:

Transport:
Small Towns

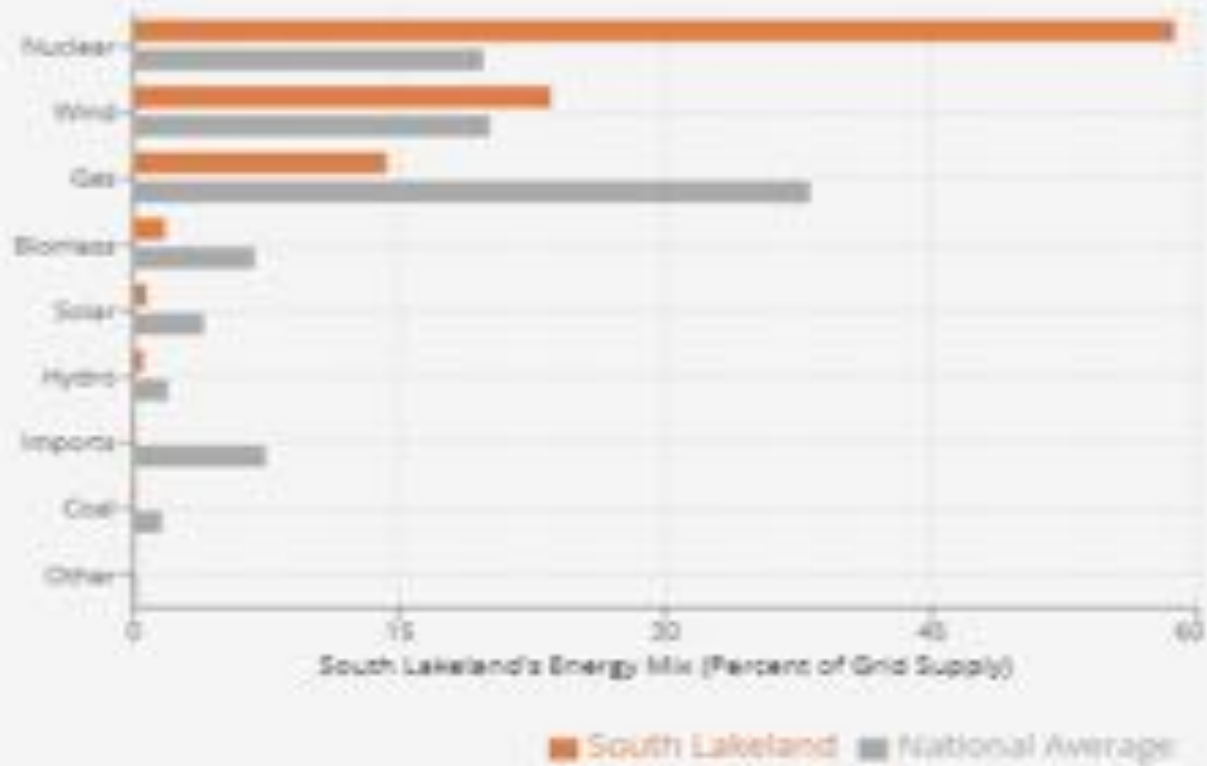
Renewable Energy:
Low Renewable Potential & Low Forecast Grid Carbon

Local Capacity Focus:
Existing Skills

Carbon Focus:
Industrial



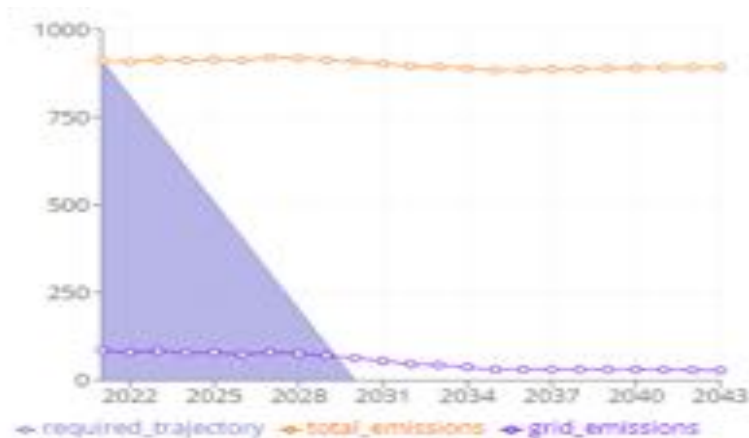
Place data 2





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Place Data 3-Scale of the Challenge



In order to meet these goals your local authority needs to select interventions that deliver in the order of **100000 tCO2e each year in additional carbon reductions.**

This equates to an average required saving per person of **0.96 tCO2e each year.**

Which is equivalent to

- ▶ Driving 5760km with an average diesel car
- ▶ or 4128 kWh of power consumption from burning fossil fuels



Enablers

Financial Capital - Whole life costing

To start considering whole-life costs of net-zero projects:

1. Organise a workshop sessions with relevant senior leaders and staff members to discuss benefits of whole-life costing.
2. Assess if sufficient expertise in-house to develop a bespoke methodology.
3. Produce/commission a whole-life costing toolkit with a simple scoring system to quantify CO2 reduction potential, cost and co-benefits.

Business Case

Resources



Impact



Additional Resources



Skills and Human Capital - Skills audits

To start auditing your organisation's current skills:

1. Consult with your HR department to enquire about launching a skills survey.
2. Use template provided to create carbon neutral skills audit (See Additional Resources).
3. Conduct skills audit.

Business Case

Resources



Impact



Additional Resources





Enabler Example: Skills Audit

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1	A	B	LEVEL OF EXPERTISE			
	CATEGORIES WITHIN SUSTAINABILITY ACTION PLAN	QUESTIONS	None	Low (some knowledge but little or no practical experience applying it)	Intermediate (some knowledge and experience applying it)	Expert (detailed knowledge and extensive experience of applying it)
2	Organisation	Please rank your expertise in influencing politicians				
3		Please rank your expertise in carbon accounting and measurements				
4	Transport	Please rank your expertise in delivering low-car neighbourhoods				
5		Please rank your expertise in negotiating improved highways adoptable standards				
6	Housing Delivery	Please rank your expertise in delivering best practice projects beyond Part L building regulations				
7		Please rank your expertise in conducting post-occupancy evaluation processes (POE/Soft Landings)				
8		Please rank your expertise in retrofitting properties to reduce carbon emissions				



Interventions

Invest in cycle parking and storage.

Invest in micro-mobility.

Ensure micro-climate, navigation, wayfinding and overall design of streets encourage walking and cycling.

Encourage cycle to work schemes.

Launch bike hire.

Create walkable neighbourhoods.

Trial pedestrianisation schemes and car-free neighbourhoods.

Plan and invest in strategic cycle networks (off-road and on-road), integrated with other transport modes.

Trial smart driving tools in cars.

Encourage switch to EV through corporate leasing.

Switch council fleet to electric vehicles (EVs)

Encourage green taxis through licensing.

Encourage green taxis through licensing.

A transition to electric vehicles is enabled.

Implementation Guidance

You will need to develop design guidance for EV charging points and build delivery partnerships to encourage wider investment and roll out in electric charging infrastructure.

Risks and Limitations

You will need to consider investment in EV alongside investments in walking, cycling and public transport.

Co-benefits

- Health and Wellbeing: Neutral
- Inclusion: Neutral
- Job Creation: Indirect impact
- Natural Capital: Direct low impact

Considerations

Switching to EV reduces air pollution from cars which impacts air quality and therefore has positive implications for residents' health and well-being. However, wider considerations need to be given to metals required for the vehicles' batteries. Additionally, considerations need to be given to make sure the licensing process is inclusive.

Ease of Implementation

Normal business operations

Business Case

Cost

Very low, less than 1 million

ROI

Cost only

Abatement Cost

Weak negative/positive -100 to 100 £/tCO₂

Implementation Steps

1. Work with suppliers
2. Regulation

More Interventions

Intervention Status

To Complete



Encourage establishment of Power Purchase Agreements to stimulate investment in local renewable energy generation and supply.

The area contributes to the decarbonisation of the national power network through investment and deployment of local renewable and micro-grid solutions.

Implementation Guidance

Working in a collaborative way with supply chains and local suppliers will be required.

Risks and Limitations

A more robust option compared with Green Tariffs, can be used as an offset mechanism but must be for a minimum of 15 years.


Co-benefits

- Health and Wellbeing: Indirect impact
- Inclusion: Indirect impact
- Job Creation: Indirect impact
- Natural Capital: Indirect impact


Considerations

None.

More Interventions



Reducing CO2 emissions associated with buildings - New developments and buildings



Intervention Status

Already in Progress

Set net zero-carbon requirements through planning policy and net zero-carbon supplementary planning document.

Zero-carbon design, construction and delivery principles are embedded in planning policy, encouraging sustainable new developments.

Implementation Guidance

This should be complemented with enabling interventions that focus on reviewing planning policies.

Risks and Limitations

Definitions of zero carbon can vary. Use the UKGBC definition for clarity and cross reference the RIBA and LETI 2030 challenge targets. As a minimum, net zero operational or in use energy should be delivered. Developers will often seek to push back on grounds of viability however, growing knowledge and capacity in the supply chain and a number of case studies are emerging that demonstrate that Net Zero Operational Buildings can be delivered.

Co-benefits

- Health and Wellbeing: indirect impact
- Inclusion: indirect impact
- Job Creation: indirect impact
- Natural Capital: neutral

Ease of Implementation

Extensive investment/ change required (additional financial capital)

Considerations

Policies will have an indirect impact by ensuring new homes' carbon emissions are reduced which has a positive impact on the natural environment.

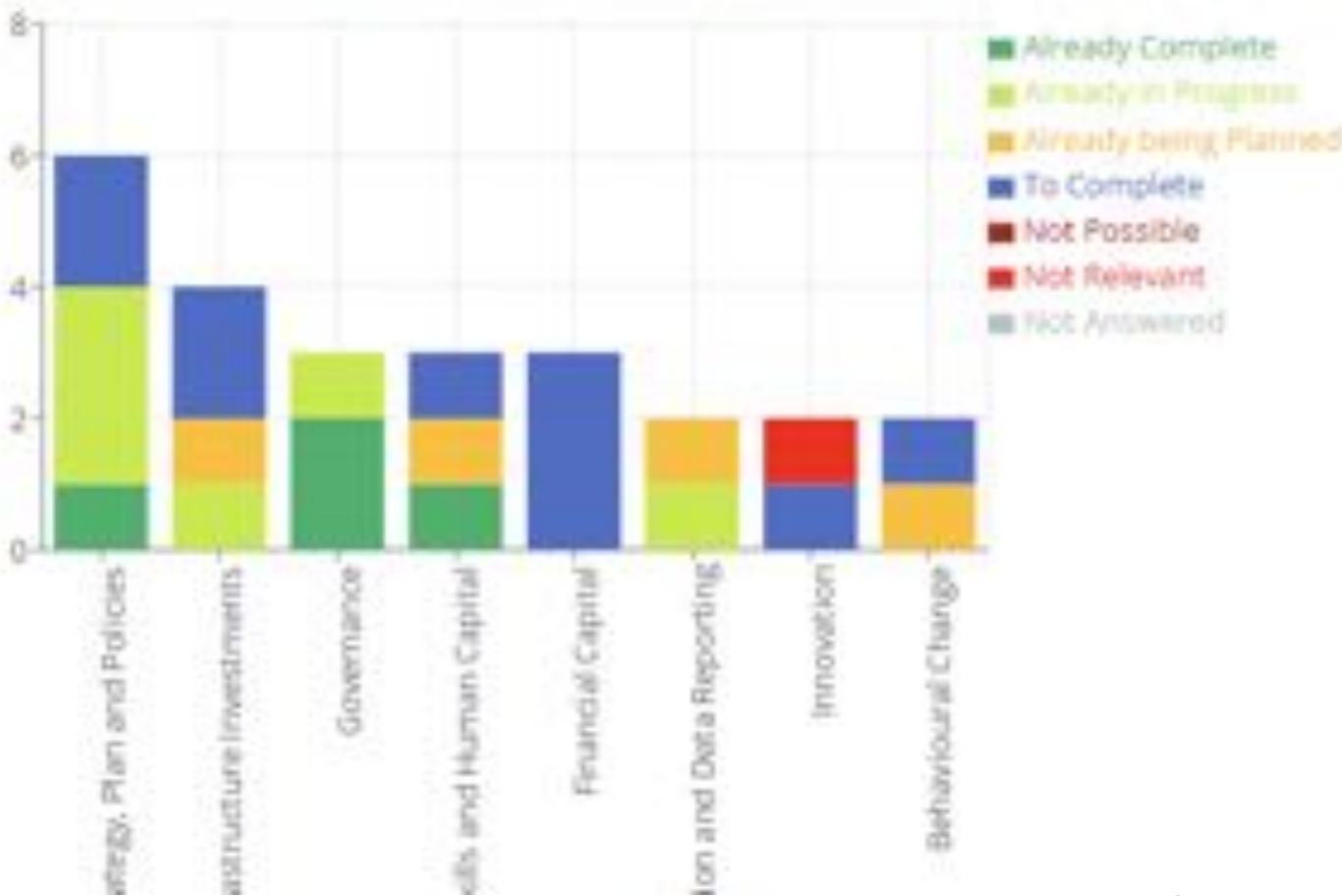


Potential Impact: Future Trends

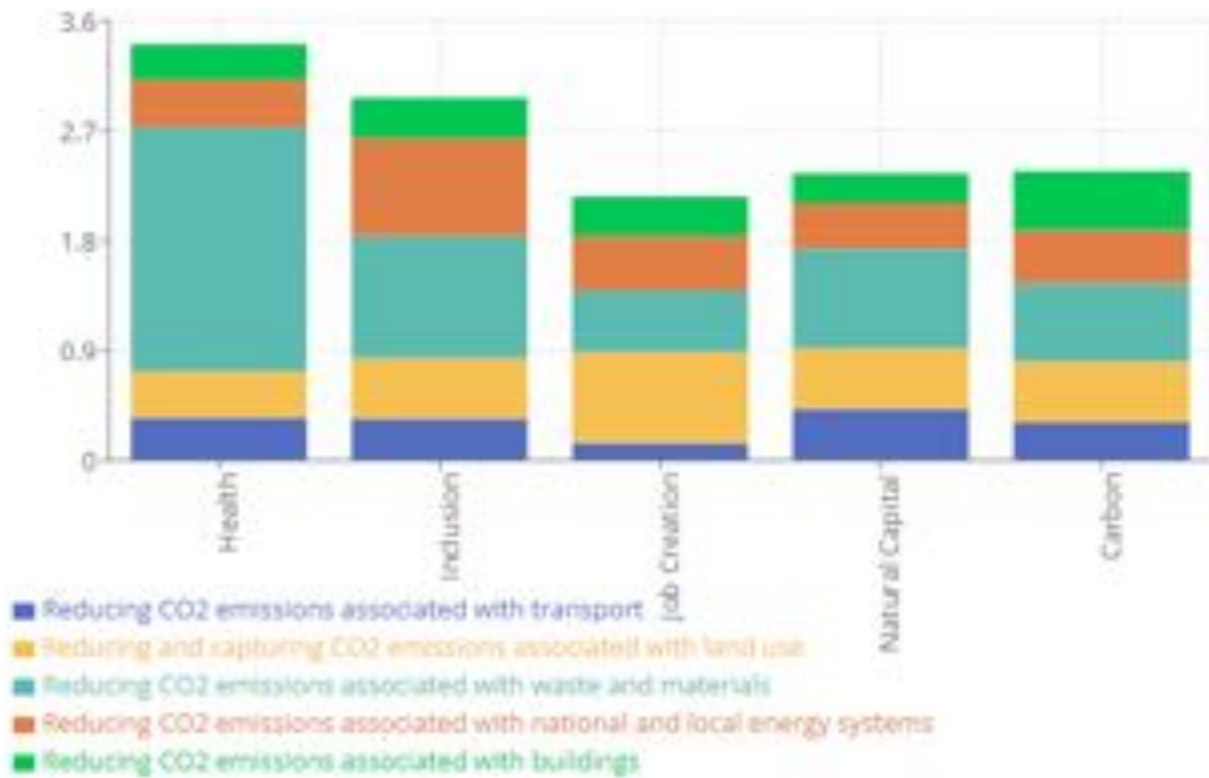
Section 1: Future Trends

The graph below summarises your selected enablers and their progress status. We recommend that you crisis and to delivering zero carbon interventions.

Please note, if an enabler was not presented due to 'I don't know' being entered in the maturity question



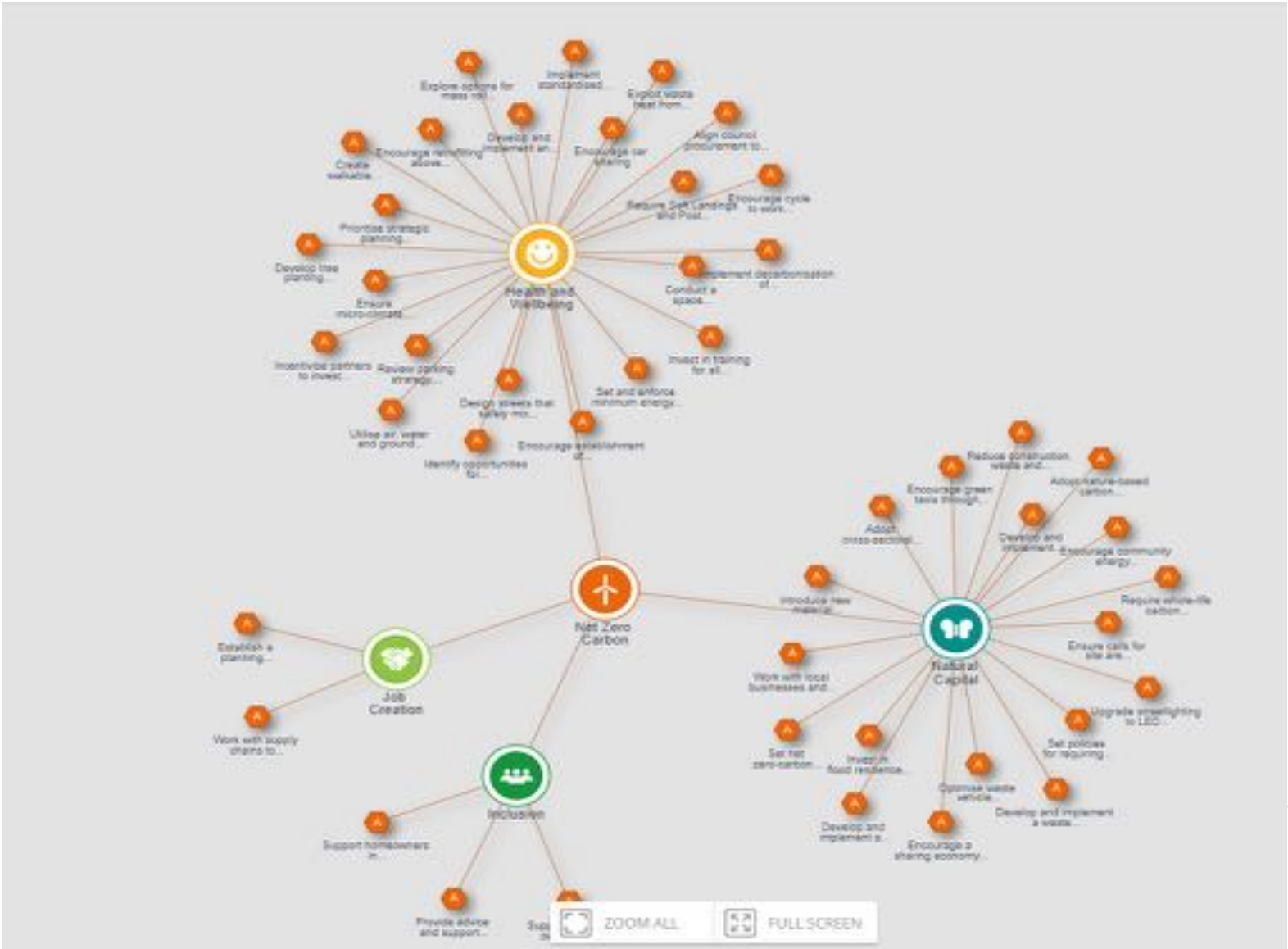
Carbon Savings and Co-Benefits





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Oneplanet





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ACTION**

Any Questions?




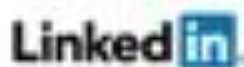
Smart Local Energy Systems

Insights into business models for local energy

Simon Briggs – Practice Manager Business Model
Innovation

April 2022

Energy Revolution Integration Service

 @EnergySysCat 



The case for smart local energy systems

- Prospering from the Energy Revolution is a £102m programme trialling innovative approaches to developing Smart Local Energy Systems (SLES)
- Funded by the Industrial Strategy Clean Growth Fund and directed by UK Research & Innovation
- Involves 25 different projects and 216 organisation
- Projects are looking create investible business models, with success evaluated on whether they can:
 - Leverage 10 times' the investment
 - Reduce greenhouse gas emissions to meet the 5th carbon budget
 - Reduce end-consumer bills by up to 25%
 - Create world-class consumer experiences
- Energy Systems Catapult delivering an insight paper on emerging SLES business models from the programme
- Analysing opportunities and barriers identified by the projects, and how to make business models more investable, replicable and scalable



What defines a...

Smart Local Energy System?



What defines a...

Smart Local Energy System?



UK Research
and Innovation

CATAPULT
Energy Systems

Smart



By Design

Using data for Local Area Energy Plans to identify opportunities for the energy system

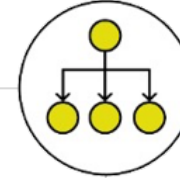
By Operation

Automated use of assets in the house and potentially automated trading of assets in energy markets

Learnt or Autonomous

How the operation of the assets is delivered

Local



Defined by region or boundary

Often linked to a specific area with a supporting Local Authority

Better outcomes for the community

Aim to engage the local community in developing the SLES to meet the needs of the local area

Enabling Net Zero in line with local strategies

Working with LAs to identify measures that meet local net zero strategies

Energy System



Optimised and more efficient

By taking a local, more granular approach, the end result should create a more efficient energy system

Multi-vector approach

Taking power, heat and transport energy requirements into account and how they integrate.

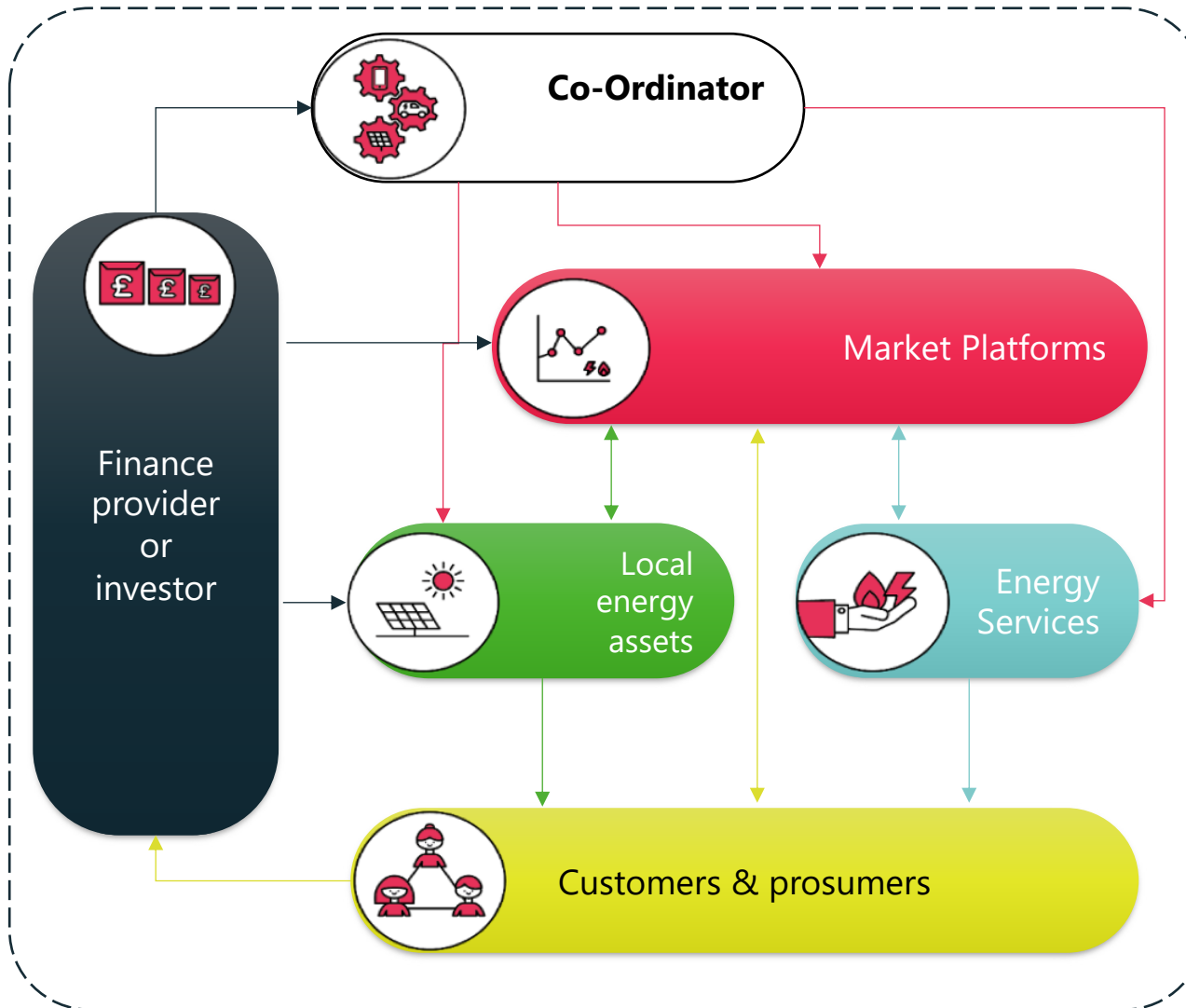
User-centred design

Ensuring the development of the energy system delivers desired outcomes for the consumer

What are the key components of a SLES?



UK Research
and Innovation



SLES Co-Ordinator

Examples: Project co-Ordinator, Local system operator, Local energy market designer

Finance and Investment

Examples: Private investment, Public finance, Grant funding and subsidies

Market Platforms

Examples: Data sharing platform, Flexibility platform, Peer-2-peer trading

Local Energy Assets

Examples: Grid connected solar PV, EV charging infrastructure, Heat networks

Energy Services

Examples: Energy Service Companies (ESCo), Heat contracts, Aggregation and Trading services

Customers and Prosumers

Examples: Homes, Small Business, Public Sector Estate, Commercial & Industrial, Customers with solar and storage, EV users

Meeting local needs and delivering local benefits



Financial

New opportunities to generate revenue, capture monetary value or reduce expenditure



Net Zero

Actions that help reduce carbon emissions quicker or most cost effectively



System Resilience

Actions that increase the ability of the local energy system to more effectively adapt to the Net zero transition



Health & Wellbeing

Actions that create more healthy buildings, spaces, services or environment



Economic opportunity

Actions that provide jobs, training and enterprise opportunities that increase capability to deliver Net zero and create growth in the local economy



Equity and Social






Actions that create a fairer society and ensure the energy transition is just and equitable

Emerging types of Smart Local Energy Systems



UK Research
and Innovation



Type of SLES	What is it?	Who's exploring it?
1 Project market place 	An organisation or digital platform that aggregates local energy projects up and links them to investors and delivery contractors	Projects: Rewire-NW (Warrington), Zero Carbon Rugby, RESO (West Midlands)
2 Local Flexibility Market 	A single buyer creates a market and better business case for local, flexible energy assets	Projects: LEO (Oxford), LMEX (Liverpool)
3 Local Energy Market 	Creates a market for local green energy from many local generators and many local buyers	Projects: GM-LEM (Manchester), MH:EK (Milford Haven)
4 Virtual Network Manager 	Service Provider helps virtually manage local constraints that allows faster roll out of low carbon technology	Projects: Re:flex (Orkney), Girona (Coleraine)
5 Anchor Asset 	Investment in assets and infrastructure that delivers low carbon services to locals	Projects: Superhub (Oxford), GreenSCIES (Islington), Remedy (Southend), PIRI (Peteborough)

Archetype Example – Local Energy Market

Overview

3

Local Energy Market



A marketplace that matches many local energy users with many local energy assets like solar, storage and EV charging. Local users have the potential to buy directly from a local generator or buy other energy services available in the market. The market is facilitated by a software platform which could be run by a number of different parties in the local area.

Why is it better for Net Zero?
Creates a market for local green energy from many local generators and many local buyers

What makes it a SLES?
Marketplace / platform for buying and trading energy

Main Low Carbon Interventions
Solar, Storage, EV Charging, heating

This document is marked as confidential

Benefits and Considerations

3

Local Energy Market
Benefits and Considerations



Key Benefits	Considerations
Net Zero <ul style="list-style-type: none">Accelerate reduction of local carbon emissionsIncrease Local Participation in Net Zero	Policy & Regulatory <ul style="list-style-type: none">Complex to setup - new market rules requiredRelationship with system operators. Need to understand how DNO and National Grid will interact with the LEM.
Financial <ul style="list-style-type: none">Lower energy bills for customersImproved business case for generators	Creating Value <ul style="list-style-type: none">Creating value in the local marketIt is not yet clear who pays for the value a local energy market can generate.Market requires sufficient volume and liquidity to be viable
Economic Opportunity <ul style="list-style-type: none">Increases local economic growth and employment	Digital and Data <ul style="list-style-type: none">Safely handling user data in the local energy market
System Resilience <ul style="list-style-type: none">Increase flexibility in local networks	Fair Transition <ul style="list-style-type: none">Extra support will be required to support vulnerable customers and address fuel poverty concerns

This document is marked as confidential

Role for Local Authorities

3

Local Energy Market
Benefits and Considerations



Investor Roles	Customer Roles	Support Roles
Join the Local Energy Market <ul style="list-style-type: none">Set market signals to incentivise climate strategy. Generate income for council and potential replication in other LA's. Invest in energy assets like solar, storage and EV charging infrastructure. LEM will improve business case by increasing value of local power.	Buy from the Local Energy Market - local, renewable energy for public sector. Potentially at cheaper price through ToU and reduced use of system charges	Recruit for the LEM - Inform public and encourage local participation in the LEM
Become an Energy Service Provider - create local energy tariff and sell through the market. Could include locally owned generation	Sell to the Local Energy Market (LEM) - existing community or publicly owned generation could sell to the LEM at increased price.	Planning - through planning can promote more use of land for more desirable social and environmental outcomes
Lease buildings or land to have energy assets installed that can sell into the LEM		

This document is marked as confidential

Case Studies

3

Local Energy Market
Greater Manchester Local Energy Market





Overview of Project

- Manchester LEM is aiming to increase local energy generation, adding at least 45 MW renewable generation capacity by 2024.
- It will support local authorities to assess potential of assets for renewable energy.
- The LEM will increase the diversity and flexibility of electricity supply by adding storage to help manage peak loads.
- Digital infrastructure will be developed to enable peer-to-peer trading and more flexible use of renewables.

Scale of Deployment

- 40 MW new renewable energy generation capacity - 22% of 2024 target for new capacity in GtM.

Future Ambitions

- Investigate innovative new business models.
- Provide options to improve business case.
- Develop detailed recommendations to support future investment.

This document is marked as confidential

What are the SLES business model archetypes and how can they be used?

SLES business model archetypes can be used as a guide for those involved in local decarbonisation to start to think about:

1. An an overall vision for local decarbonisation that goes beyond technology and thinks about the whole system (e.g. finance, customers, data)
2. What role the local authority and community can play
3. The benefits and risks of different roles
4. Planning now so that resources, capability and partners are in place
5. Identifying key stakeholders in delivery and engaging with them early
6. Inform and increase the debate on market enablers required for local decarbonisation (e.g. policy and regulatory change)



Where to go for further information

Full report on SLES business model archetypes will be available from May and can be found on Net Zero Go or the ESC website. Please contact simon.briggs@es.catapult.org.uk for further information.

For further information on how Energy Systems Catapult can help local places build robust strategies to navigate to net zero visit <https://es.catapult.org.uk/work-with-us/local-places/>



UNLEASHING ACTION

NET ZERO GO – MAKING LOCAL ENERGY PROJECTS EASIER



**OVERCOMES COMMON
BARRIERS TO LOCAL ENERGY**



**DE-RISKS PROJECTS &
BUILDS CAPABILITY**



**ENABLES SCALABLE,
INVESTABLE INITIATIVES**

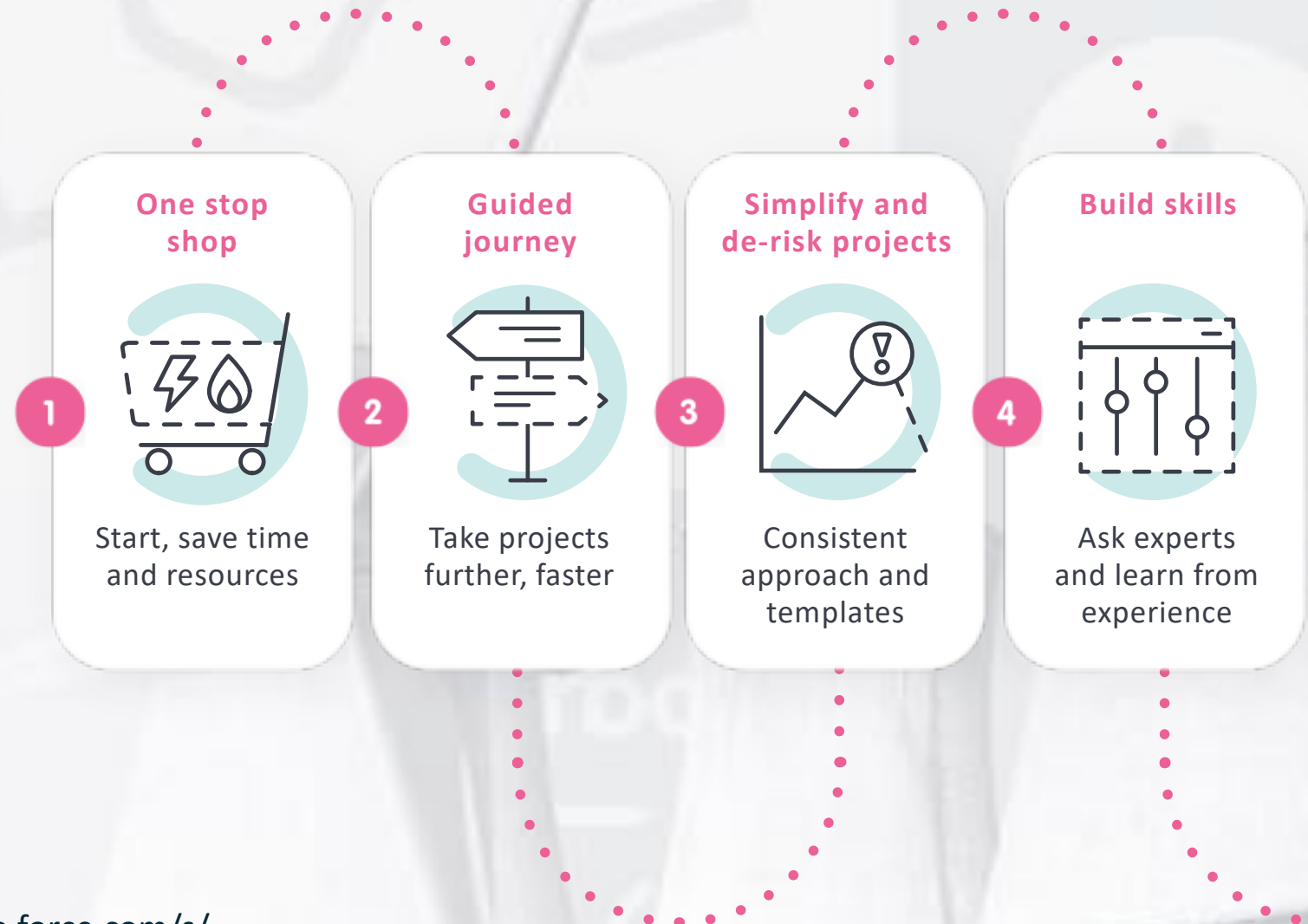


**MAXIMISES VALUE OF ENERGY
TRANSITION FOR LOCAL PEOPLE**

What

One place to do it all,
and a step-by-step
journey to get you there.

Powerful, **secure**, and
feature-packed.



Net Zero Places Innovation Network

27th April 2022

Nilam Banks - KTM Places

www.ktn-uk.org



Innovate UK
KTN



About Us

Innovate UK KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.



Our commitment to Place

We will connect national and regional innovation to encourage **distribution of economic and societal wellbeing** across the UK



Place at Innovate UK KTN

INSPIRE by showcasing innovation excellence from across the UK

INVOLVE and connect places together to meet UK aspirations such as Net Zero and Levelling Up

INVEST by informing government levers for place and support national decision making in areas like funding and procurement



What is Net Zero Places?



Innovate UK
KTN



Net Zero Places Aim:

To help make Net Zero in the UK a reality, by working with local/regional authorities and agencies to connect, collaborate, inform, share experiences and lessons learned, adopt innovation and to level up across the UK.

STAKEHOLDERS



Local/ Regional Authorities/ Agencies

Have Net Zero targets, need to understand how technology can support and be able to procure innovative solutions.



Procurement Professionals

Can amend or create procurement frameworks that can be used by many Local Authorities, need to be brought in early in the process.



Ecosystem Partners

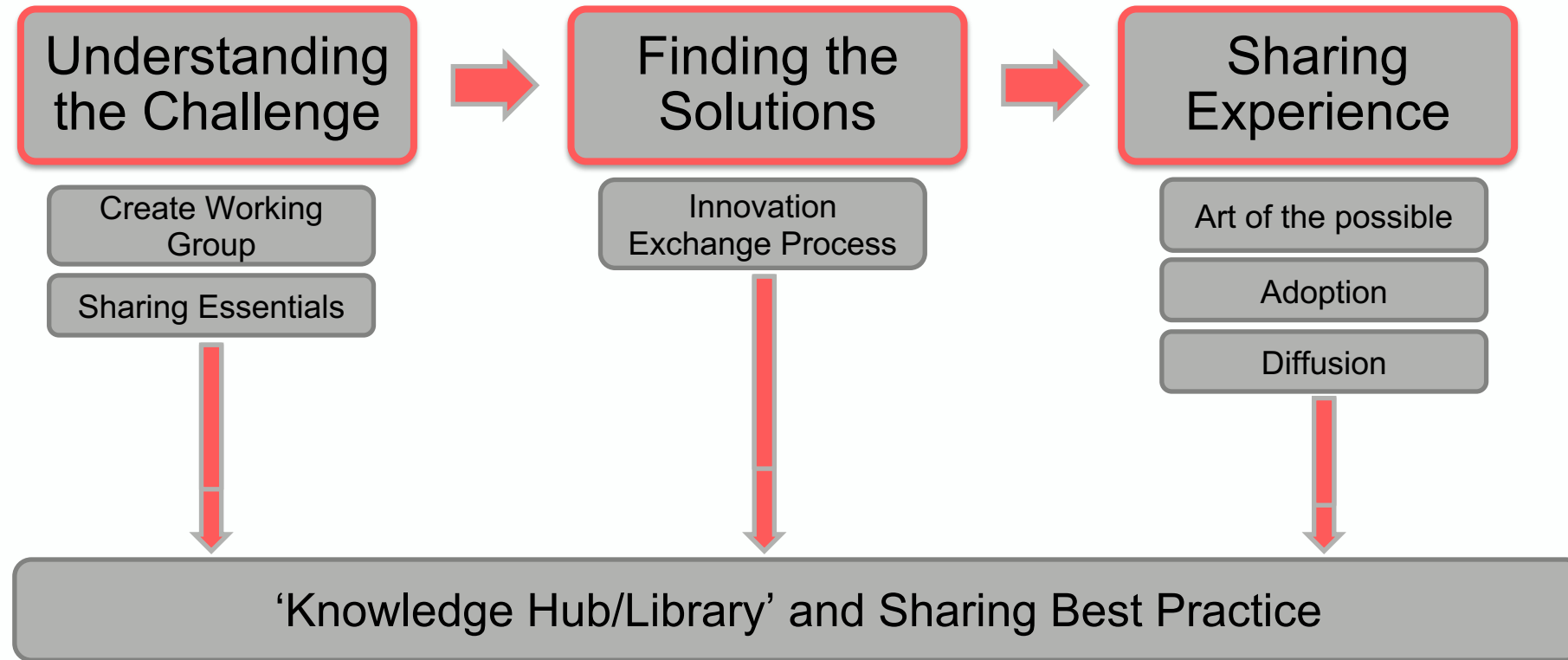
Have complementary activities, tools, funding, and opportunities to enable Net Zero in the UK.



Solution Providers

Have solutions, need to demonstrate market readiness and be public procurement ready.

What does this look like?



Get Involved

- Join the Network - www.ktn-uk.org/programme/net-zero-places/
- Tell us your challenges
- Let us know if you would like to share your story

[Email - Nilam.banks@ktn-uk.org](mailto:Nilam.banks@ktn-uk.org)

North Northamptonshire to Net zero

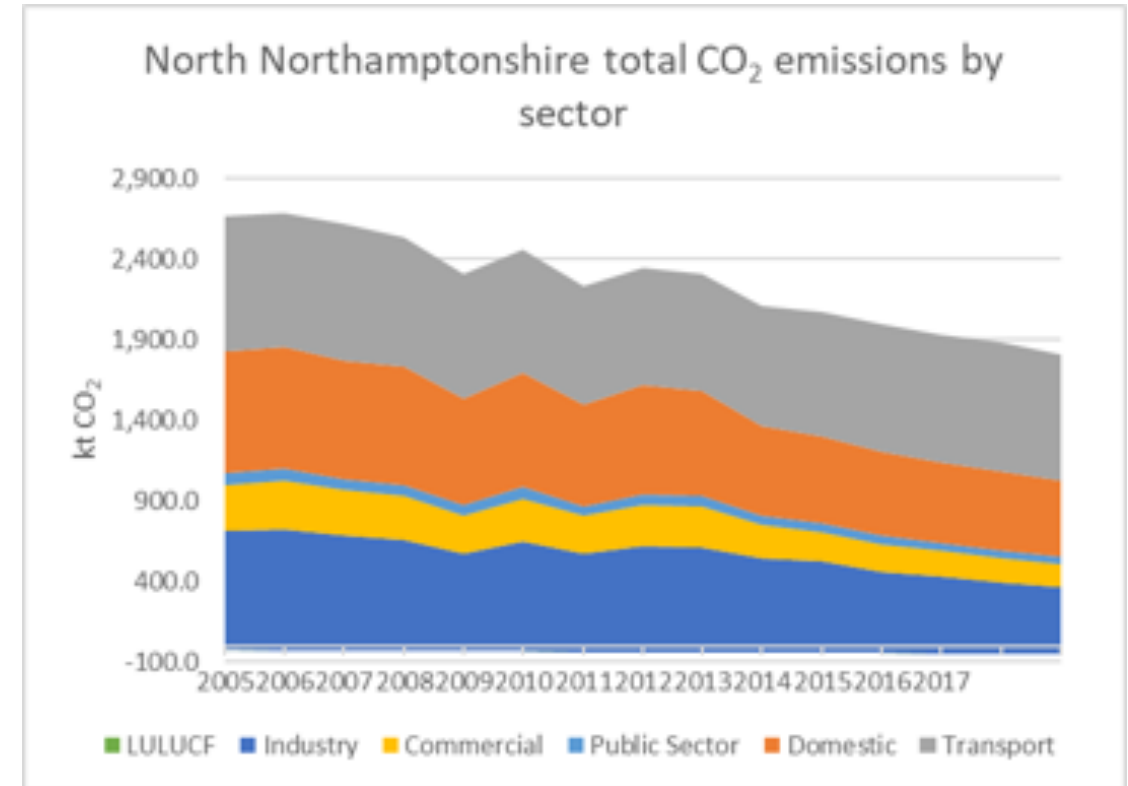
27th April 2022

Project NN2NZ



North Northamptonshire to Net Zero.

- UK Parliament declared a climate emergency in 2019, along with goal of being net zero by 2050. Many are trying to beat this. Emissions are coming down, but significantly more needs to be done to reach net zero.
- NN2NZ aims to develop and recommend a programme of initiatives that would enable NN to reach Net Zero ahead of 2050, along with a robust framework for assessing new ideas as they emerge
- Follow-on funding for trialling and roll-out of the key initiatives will be sought to enable success for NN



Project NN2NZ Milestones



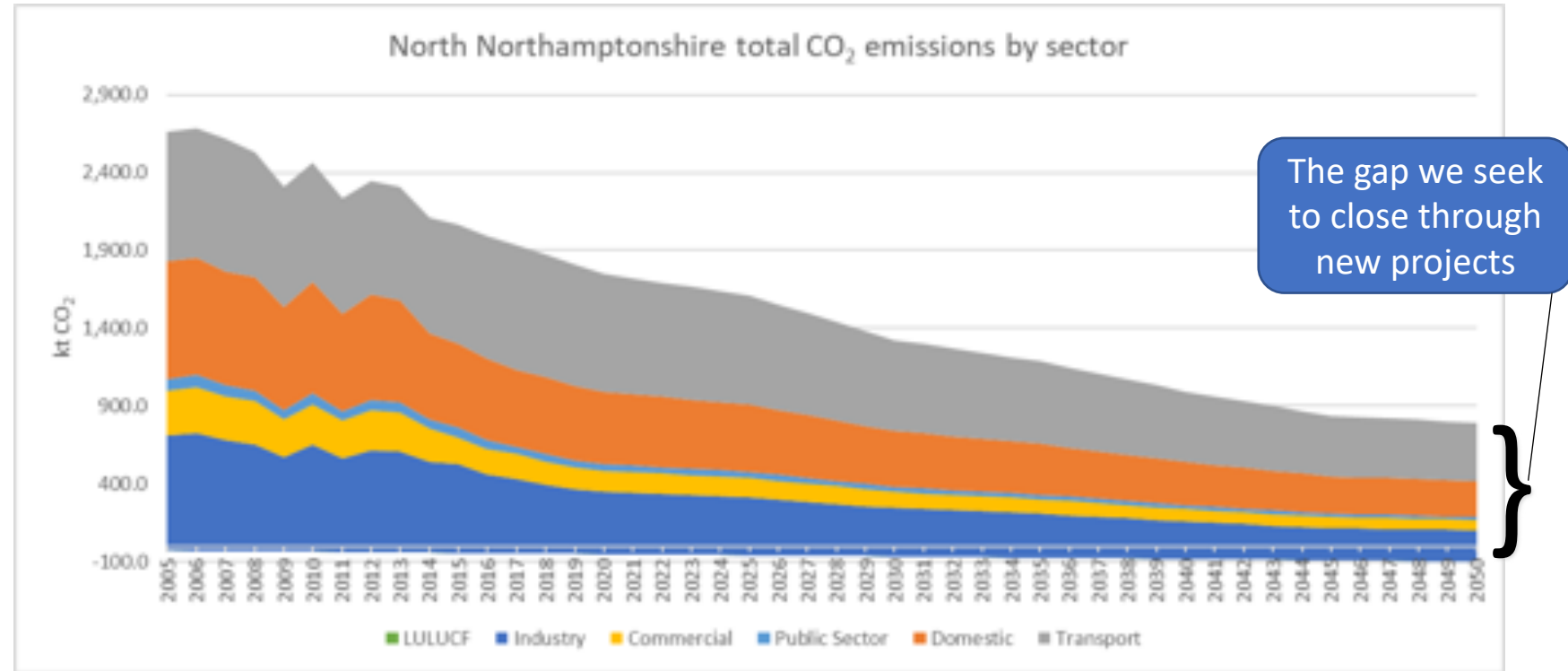
Milestone
Existing strategies and inputs reviewed and amalgamated into a holistic approach for the net zero project to follow
Search for projects and initiatives
Projects gathered into a draft options programme strawman
'No regret' feasibility studies started for strongest options
Forecast outputs by project, then combine them to show how close they get to net zero, and the resulting gap to fill
Beyond COP26 Virtual Event - "Taking North Northamptonshire to net Zero" – call for new projects, ideas and initiatives to fill the gap
Projects and innovations reviewed for feasibility (e.g. cost and take-up)
Further feasibility studies identified & initiated
Initial results from feasibility studies
Strategic options programme paper prepared showing the project options and their potential impact on the gap analysis
Stakeholder review of options and roadmaps
Project outputs & proposals presented to NNC and published

Roadmap to close the gap



8000 projects analysed and looking for more – no stone to be left unturned

- The forecast scale and impact of all viable projects will be added to this gap analysis to see out how far they go to net zero until we reach a roadmap to net zero that is considered feasible.
- We will recommend the resulting projects to be added to the roadmap and for their roll-out to be supported



Forecasted BAU emissions are based on National Grid Future Energy Scenario (FES) "Steady Progression", 2021). This represents a base case decarbonisation profile for North Northamptonshire. Under the Steady Progression scenario net GHG emissions fall from 500 MtCO₂e in 2020 and do not reach net zero by 2050 resulting in 243 MtCO₂e of annual emissions by 2050.

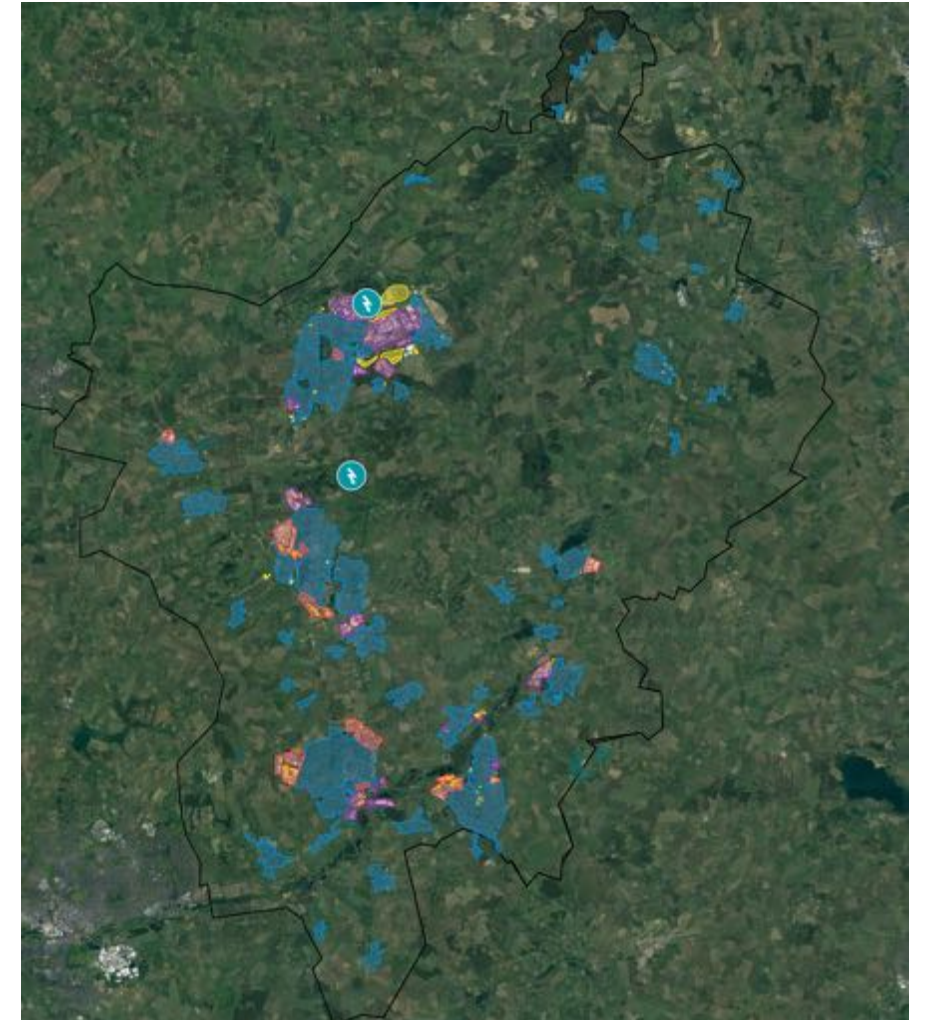
Net Zero Analysis for NN



Projects and initiatives analysed for:

1. Net zero impact of the idea:
 - How much CO₂e would it save?
 - How much energy would it save?
 - How much clean energy would it make?
2. What potential for scale does it have in NN?
 - Mapping the potential volume
 - Using published sources and government statistics (e.g. local no. households, registered vehicles, etc)
3. How many of these might take it up?
 - Now, by 2030, 2040, 2050
4. How much would it cost to implement?
 - How feasible is it – is more work needed?

*North Northants has:
Total solar sites: 4679
Residential area: 6610.388ha
Commercial area: 724.3ha
Industrial area: 978.71ha
Carpark: 1811.192ha*





What if...

every south-facing roof had solar

every car park had solar

everyone turned vegetarian

no-one drove to work

everyone living within a mile of town cycled to town

everyone in town walked everywhere

every post 1920's building insulated to Passive standards and converted to ASHP

no-one boiled more than they needed in the kettle

people only cooked in groups of 4 or more

every industrial building switched to infra-red heating

every old polluting (pre euro2) vehicle was banned

every classic car was limited to 1000 miles a year

every petrol station only sold clean e-fuels

people gave up their second cars

people only used efficient slow cookers

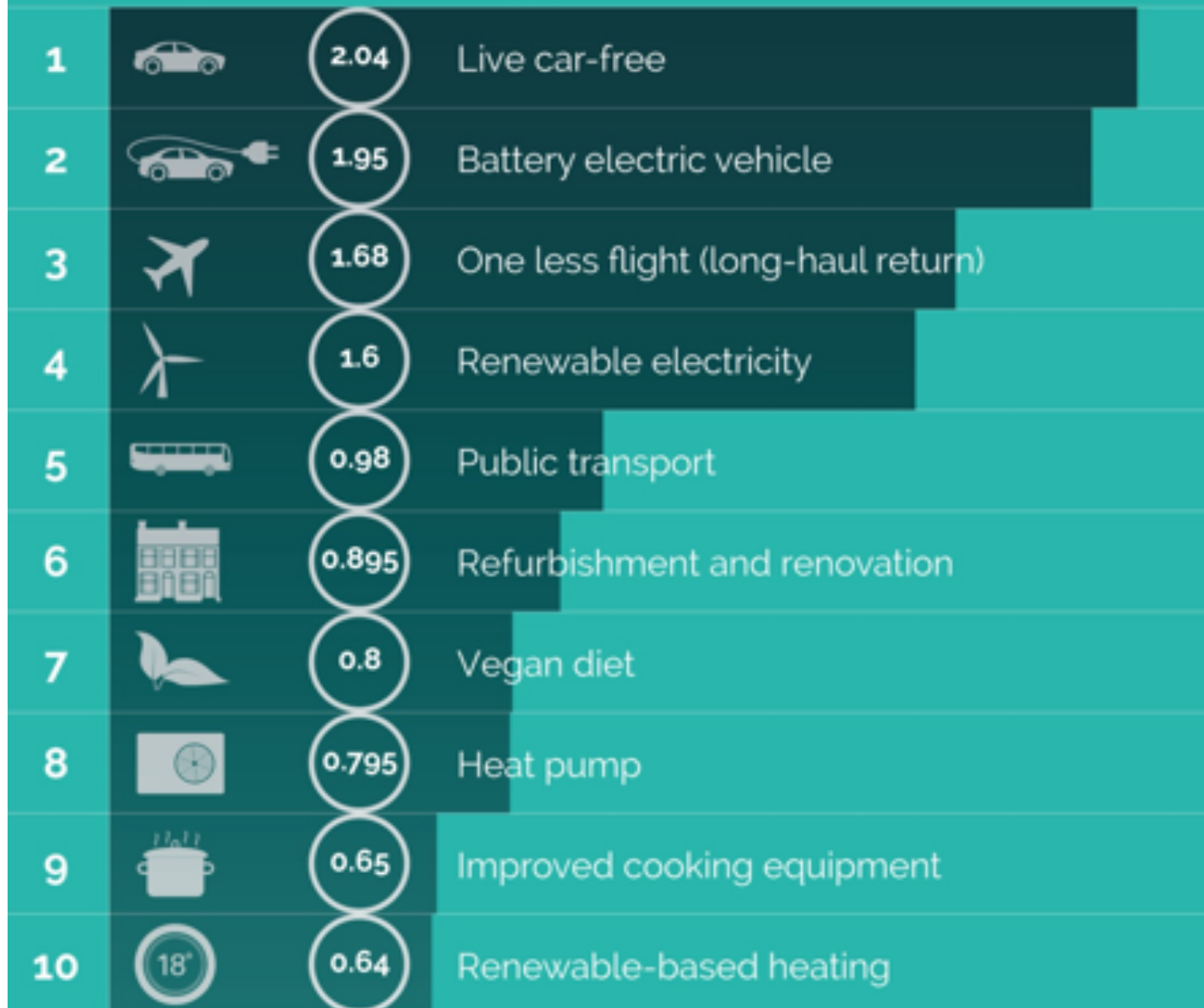
everyone switched to LED bulbs

everyone planted a tree in their garden

every verge was planted with trees



Top 10 options for reducing your carbon footprint



Median potential reduction (tCO₂eq/cap)





CO₂ reduction

Infrastructure



Behaviour



Small scale



Large scale



CO₂ offsetting



Past projects, ongoing initiatives and new project ideas

Smarter ways to use more of the renewable energy produced by homes and businesses within communities.

- Maximise the use of solar generation
- Encourage community members to be flexible with their use of energy
- Enable energy retailers to supply cheaper energy to community members
- Help electricity network operators make the grid more resilient



Renewable cogeneration and storage technologies integration for energy autonomous buildings.

- Small-scale vertical axis wind turbine
- Lightweight coloured solar PV
- Renewable energy optimisation software
- Move towards energy positive buildings



A digital platform for EV fleet management and shared mobility solutions

- Booking
- Charging
- Maintenance

Helping the transition to electric vehicles

Reducing dependence on cars

MyMobility



ZEB2: 47 Net Energy Positive Homes



Fabric First through MMC

PV and hybrid PV-T Solar generation

Earth Energy Bank for inter-seasonal heat storage

5.5kWh Battery

SHEMS to optimise energy use for a net positive outcome

BEIS “Building for 2050” project

Peer-2-Peer energy research platform

Currently achieving 7.3% price premium to local market average



- KTN on past projects
- Call for new projects
- Challenge for modelling support (digital twin)

www.nn2nz.co.uk
projects@nn2nz.co.uk



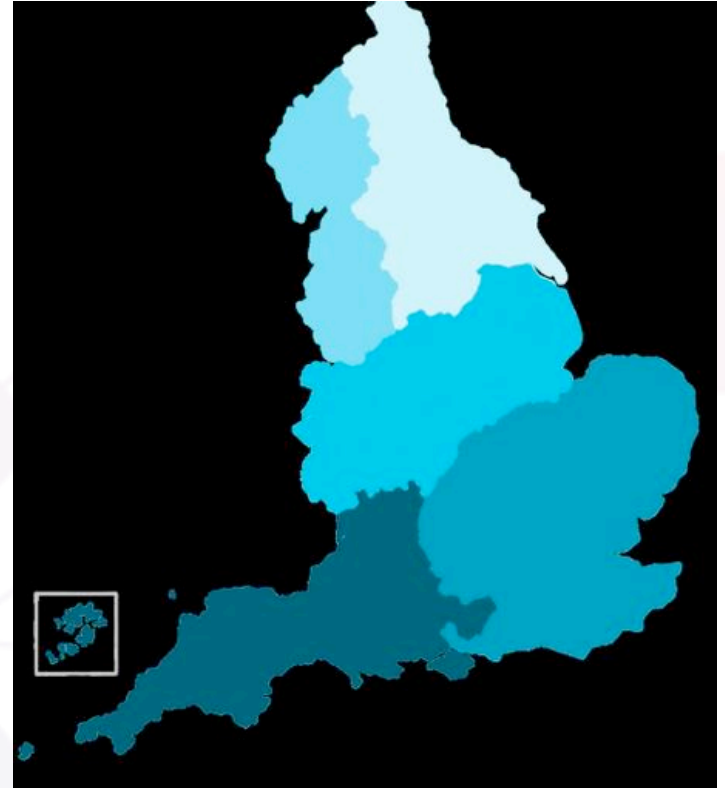
The Net Zero Hubs

Supporting Net Zero Places

27/04/2022

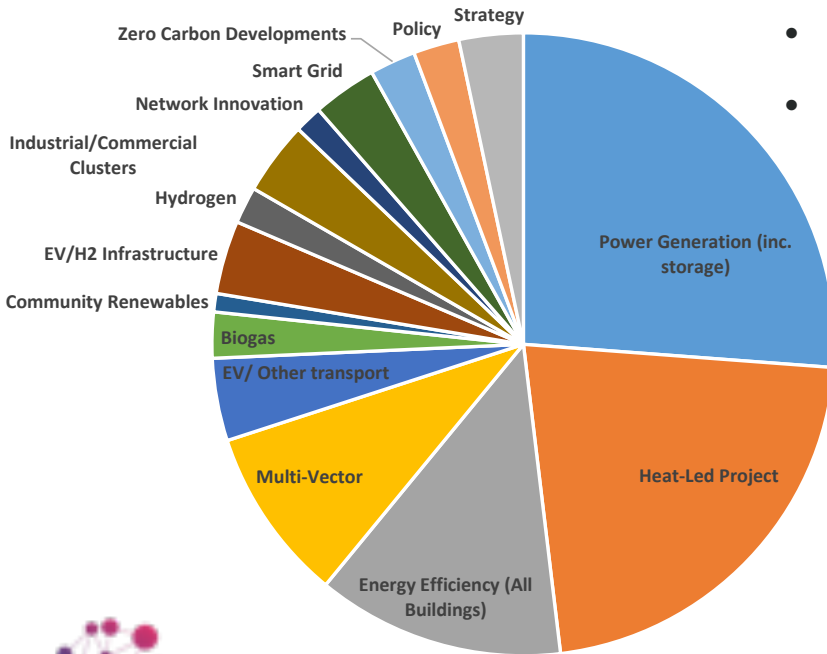
BEIS Net Zero (formerly Local Energy) Programme

- Five **Local Net Zero Hubs** across England
- Providing support and additional capacity to the public sector
- Driving clean growth through energy innovation
- Raising awareness of good practice, funding opportunities and new approaches to project finance
- Providing technical support to developing business cases and funding applications
- Promoting 'local zero carbon' schemes, partnerships and collaborations



The Net Zero Hubs project pipeline

Breakdown of Projects by Sector/Workstream (All Hubs)



- **Over £4Bn project value across +200 major projects**
- Types of projects we have supported include:
 - ✓ Large scale solar
 - ✓ Estate-wide energy opportunities assessments
 - ✓ Heat Networks
 - ✓ Smart Grids
 - ✓ Fleet and depot decarbonisation
 - ✓ Hydrogen development
 - ✓ Network constraint
 - ✓ Building decarbonisation
 - ✓ Research & development

Domestic retrofit

- **LAD1** – The Hubs supported LAs to access the first tranche
- **LAD2:** £300m delivered by the 5 Hubs across their local authorities. With works due to be completed by end of June 2022
- **Sustainable Warmth** - GSENZH leading Sustainable Warmth consortia of 66 local authorities
- **Social Housing Technical Assistance**



Public Sector Decarbonisation Scheme Funding

- The Hubs have supported the public sector to access all three rounds of PSDS funding
- The GSENZH has helped organisations access around 27% of the capital funding awarded across the South-East as well as over £145k of Low Carbon Skills Funding
- We have supported a further 153 projects with feasibility assessments

Total Projects Value (Supported by GSENZH)	£138,084,257
Total Awarded (Supported by GSENZH)	£104,855,772
Total Awarded in GSE Total	£387,291,365



Shared by
Greater South East Net
Zero Hub
Feb 2022



Location



[Inspired? Find out more](#)

Other stories



Helping to access other finance and funding



Community Energy

Rural Communities Energy Fund

The GSENZH received 59 applications and grant-funded **£1,906,078** across 52 projects



- Riding Sunbeams
- Ryse Hydrogen
- Swaffham Prior
- Cuckmere Community Solar



The Net Zero Hub role is changing

#1 Continue to increase the number, quality, and scale of local Net Zero projects being delivered across the Hub areas

#2 Attract commercial investment and help LAs to develop investment models which accelerate progress to net zero

#3 Enhance our technical support offer

#4 Support a knowledge transfer programme to improve information sharing, training creating a network of experience for the public sector to draw upon



Greater South East Net Zero Hub



Department for
Business, Energy
& Industrial Strategy

Buckinghamshire
LOCAL ENTERPRISE
PARTNERSHIP
Local Enterprise Partnership



CAMBRIDGESHIRE & PETERBOROUGH
COMBINED AUTHORITY

NEWANGLIA
Local Enterprise Partnership



Coast to
Capital

SEMLEP
Local Enterprise Partnership

enterprise**m3**
Delivering prosperity through innovation



GREATER
LONDON
AUTHORITY



BABERGH MID SUFFOLK COUNCILS



Two District Councils working together

- Rural Districts with joint population circa 190,000
- Climate change Emergency declared by both Councils in July 2019 and also part of wider Suffolk Climate Change Partnership ambition to be net Zero by 2030
- Strong ambitions around climate change –
 - first rural council to adapt vehicles to bio fuels and third in UK,
 - first solar car ports on council car parks in the east and
 - first Local Energy Showcase held in the east to promote the use of local energy to businesses and local communities

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○

SUPPORT FROM THE NET ZERO HUB

In delivering our ambition it has been important to work with partners and stakeholders locally

The Net Zero Hub support and advice has been valuable in helping to build partnerships locally but also on a national basis with its wide overview of national interventions

Wealth of advice, other case studies, linked with good practice from other councils and public sector

Specific support on a number of projects; Solar car ports and public sector de-carbonization, large greenfield commercial development site and Local Energy Showcase event

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CASE STUDY 1 – GATEWAY 14



Challenge; to develop a 156 acre commercial site in an environmentally sustainable way

Supported by the Hub to;

- Better understand heat mapping and zero carbon opportunities across the whole site by match funding a consultants feasibility study
- Provided support in discussions with developer and consultants – met councillors and Board members
- Has helped to facilitate discussions with statutory utilities to unlock grid constraints
- Has led to changes being made to original scheme including air source heating in offices, a new skills and innovation centre which will be net zero and all industrial units will have infrastructure for solar panels
- Also identified future opportunities for onsite battery technology , wind turbines and possible future hydrogen plant

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○ CASE STUDY 2 – SOLAR CAR PORTS AND PUBLIC SECTOR DECARBONISATION



Challenge; to use solar car port technology as part of a wider solution to improve energy efficiency and lower costs at 2 main leisure centres across the Districts

Supported by the Hub to;

- Explore opportunities for solar car ports on 2 sites which led to a successful build Back Better bid with over £800k brought in as match funding. With 42 bays in Sudbury and 72 in Stowmarket the carbon savings over 25 years would fill the Royal Albert hall 13 times!
- Better understand the impact on bringing battery storage into the project to cope with peaks and troughs in energy demand
- Develop a successful Public sector decarbonization bid of £1.3m for new solar panels or air source heat pumps at a number of leisure centres - enabled a more holistic approach to energy management of our assets

+ CASE STUDY 3 – LOCAL ENERGY SHOWCASE



Challenge; how to engage better with local businesses and communities on the Councils ambitions around net zero and in particular around local energy production

Supported by the Hub to;

- Develop a comprehensive programme over 2 days with a range of local, regional and national speakers
- Share the work of the Net Zero Hub, particularly with local communities and the information and contacts which can be shared
- Promote the event to a range of businesses
- Secure sponsors to ensure the event kept at minimal cost to the Councils