Proposals for local net zero energy communities

Presentation from Electric Places (Electric Corby CIC) on behalf of the North Northamptonshire 2 Net Zero project to all Northamptonshire Local & Parish Councils

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Agenda

1. North Northamptonshire to Net Zero – background & objectives
2. Call for Ideas
3. Ideas, projects, initiatives and interventions assessed
4. Top 10 ideas for individuals
5. Draft gap closed for NN
6. Reality check: tech feasibility, local take-up
7. Engagement with local parish councils across NN
8. Energy, buildings and transport community proposals
9. Community funding
10. Pilots, testing & roll-out
11. Feedback on local appetite – questionnaire survey
12. Any questions & summary end goal big picture

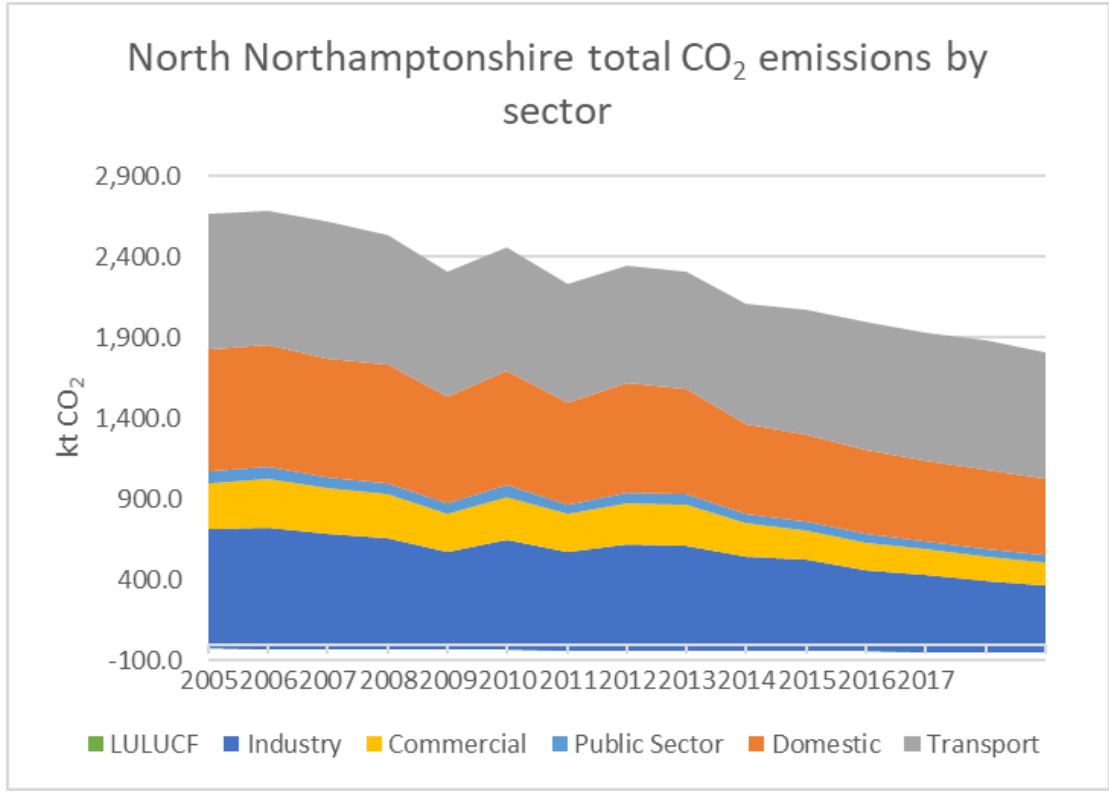
Project NN2NZ

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

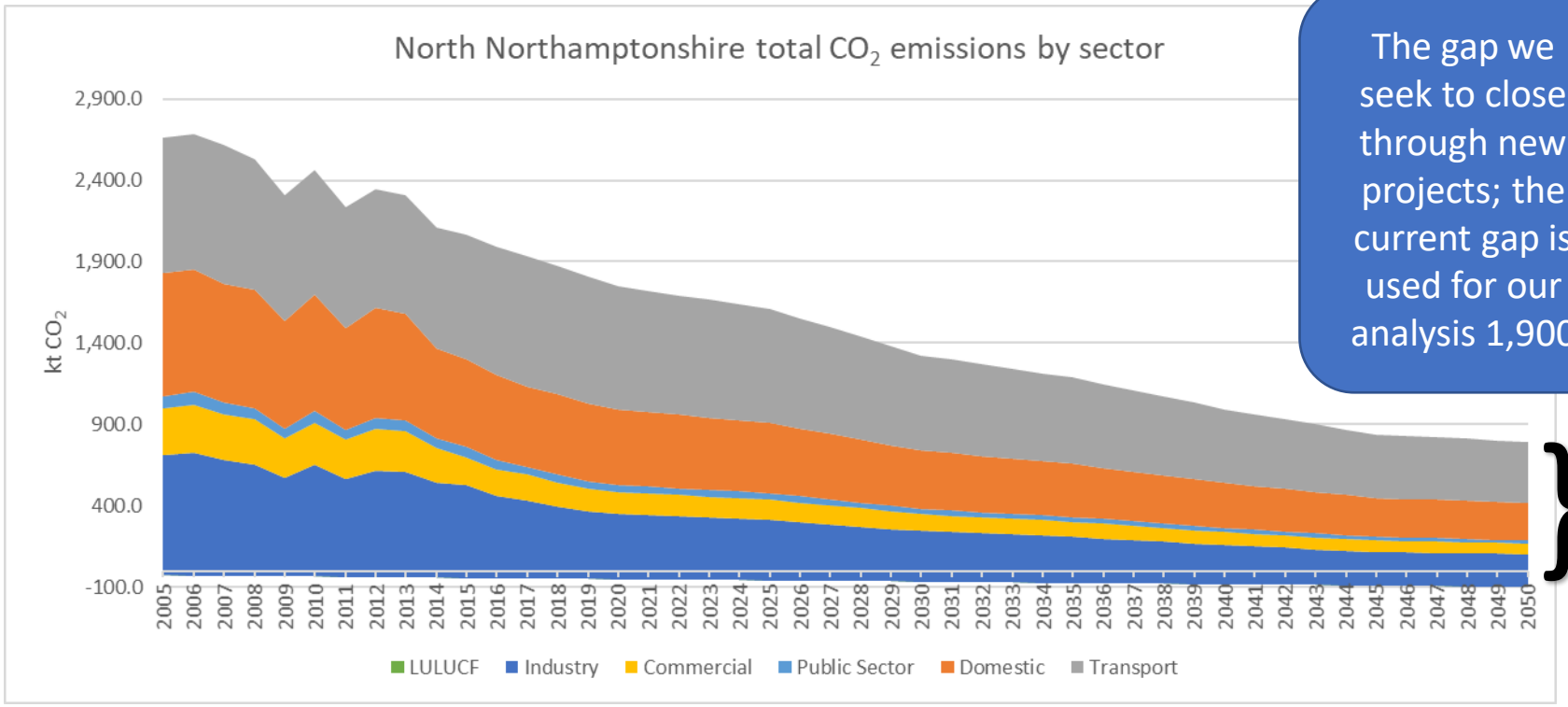
- Follow-on funding for trialling and roll-out of the key initiatives will be sought to enable success for NN



How 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 is being 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



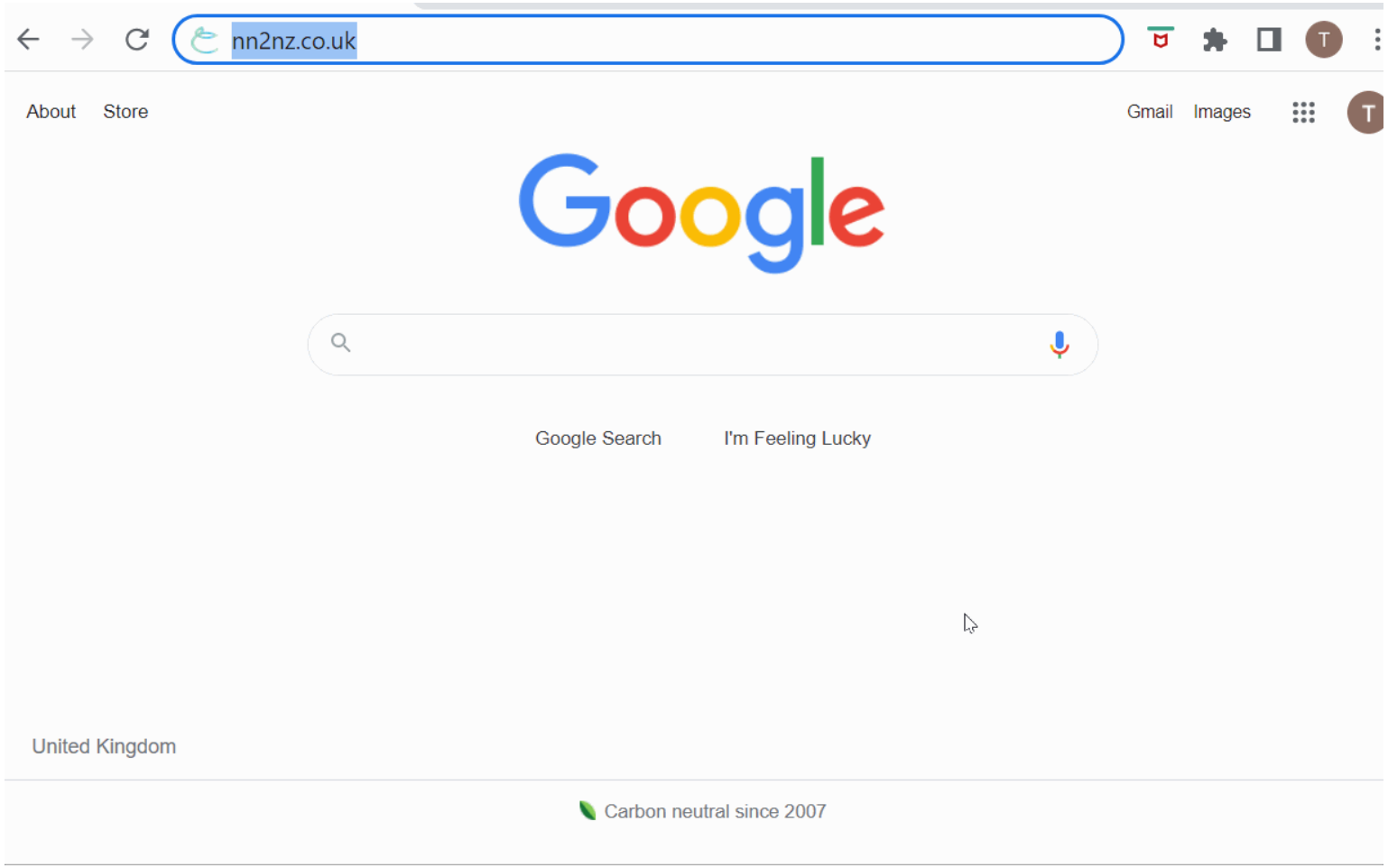
The gap we seek to close through new projects; the current gap is used for our analysis 1,900

Forcasted 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.

Open call for new ideas

www.nn2nz.co.uk

“Taking North Northamptonshire to net Zero”



Broad blue sky search for solutions

What if…..

every south-facing roof had solar

every car park had solar and wind

every building was fully insulated and converted to ASHP

people gave up their second cars

no-one drove to work

everyone in town walked everywhere

every verge was planted with trees

everyone turned vegetarian

people only used efficient slow cookers

everyone switched to LED bulbs

no-one boiled more than they needed in the kettle

Infrastructure

CO_2 reduction

Behaviour

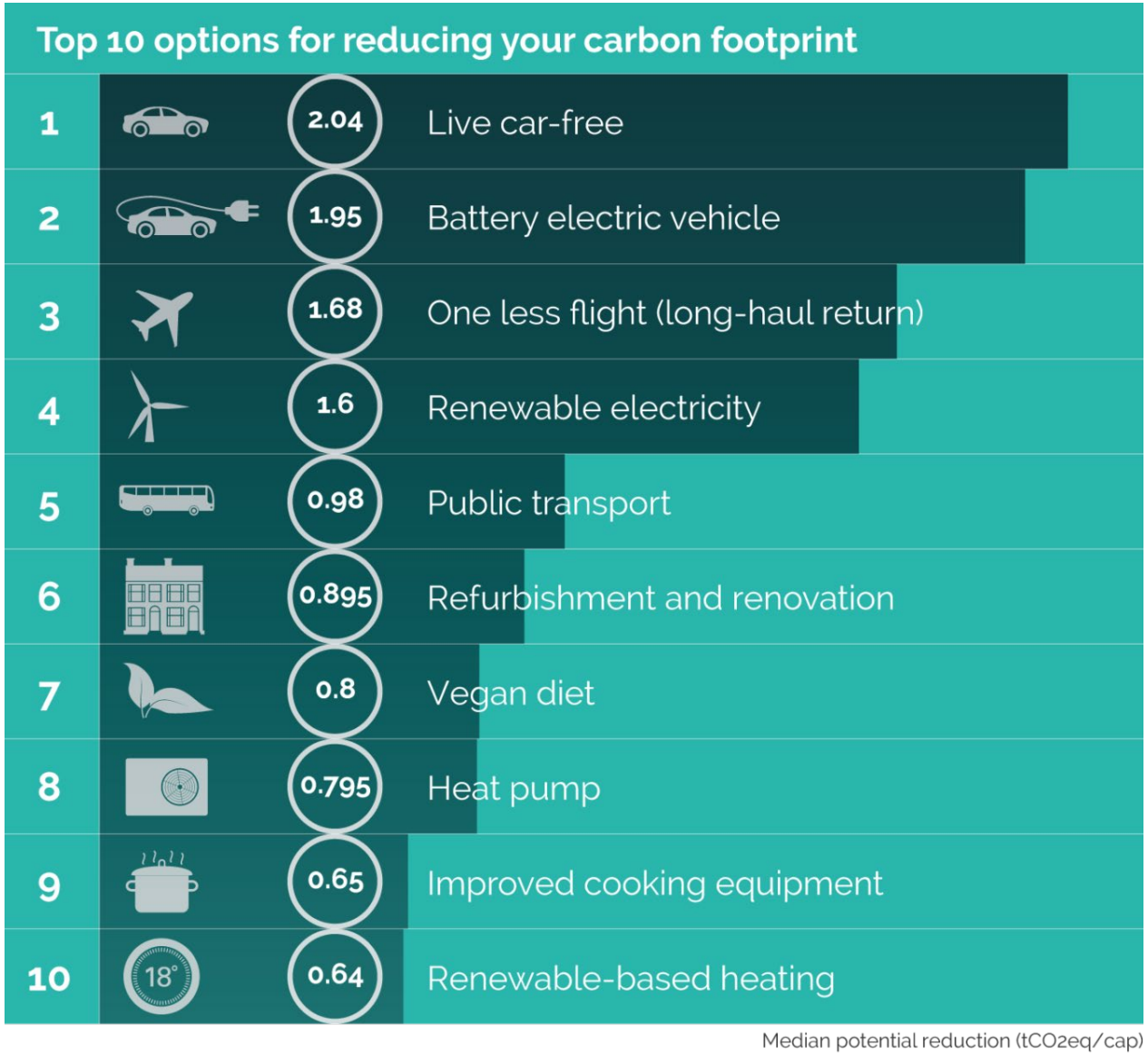
CO_2 offsetting

Small scale

Large scale

Past projects, ongoing initiatives and new project ideas

Top 10 for individuals



Diana Ivanova et al 2020 Environ. Res. Lett. 15 093001

Closing the Net Zero Carbon Gap - Summary Draft Gap Closed for NN2NZ

Rank	% impact		Mitigation (tCO2eq/ cap pa)	NN total impact (tCO2e pa)	% take-up
	35.2%	ENERGY			
17	2.1%	Solar PV on every roof	0.75	57,273	60%
53	7.5%	Solar PV car port canopies on every car park	0.03	200,152	60%
53	6.3%	Small scale 10m wind turbines on every park above the solar canopies	0.03	166,793	50%
19	0.4%	Earth bank thermal solar seasonal heat storage and heating for new housing	0.68	9,521	50%
3	11.0%	green the grid - homes buy 100% renewable energy from grid	7.38	293,654	30%
36	2.0%	Personal domestic home efficiencies - only heat/boil the water you need	0.30	52,158	50%
20	3.6%	Improved cooking equipment - more efficient cooking	0.55	96,332	50%
44	0.9%	Lower room temperature	0.14	24,337	50%
48	0.5%	Less energy use for washing clothes	0.07	12,794	50%
52	0.2%	Better use of appliances (only switch on when needed)	0.04	6,137	50%
46	0.7%	Shift to more efficient appliances	0.11	18,686	50%
	34.8%	TRANSPORT			
6	3.2%	20% of cars and vans are electric by 2030	2.01	86,465	
18	1.2%	20% are hybrids	0.73	31,374	
29	0.7%	20% have shifted to smaller vehicles	0.42	18,191	
15	0.7%	50% of households who own more than one car (36%) give up their second car	0.77	18,460	
5	2.1%	Those households with no cars/vans doubles from 20% to 40%	2.10	55,655	
33	2.0%	Those who keep their car share through lifts for school runs and regular commutes	0.32	52,361	
6	8.3%	90% of non-EVs switch to electric by 2040, as most vehicles replaced in 10 years	2.01	220,232	
9	0.7%	Leaving 10% as ICE cars, switch to green e-fuels	1.44	17,543	
4	0.7%	Other vehicles switch to green e-fuels	5.30	17,490	
2	0.6%	Remaining buses switch to green e-fuels	38.88	15,551	
1	14.6%	Remaining trucks switch to green e-fuels	138.91	388,942	
38	0.1%	and engage in more fuel efficient driving	0.28	2,768	
10	0.1%	Switch to public transport	0.99	2,426	
14	0.1%	Switch to walking & cycling	0.79	1,922	
		TOTAL FORECAST		2,664,194	
		CURRENT CO2		-1,900,000	
		NET POSITION		764,194	

Rank	% impact		Mitigation (tCO2eq/ cap pa)	NN total impact (tCO2e pa)	% take-up
	16.9%	FOOD FARMING & FORESTRY			
12	1.2%	If 10% of people become vegans (up from 1% today)	0.91	31,760	10%
22	1.4%	If a further 20% of people became vegetarians (up from 11% today)	0.52	36,119	20%
28	1.1%	If a further 20% of people shifted to fish and plant based diet (no red meat)	0.42	29,551	20%
24	1.3%	If a further 20% of people cut down on red meat by 50%	0.48	33,536	20%
35	0.4%	If a further 10% of people reduced their food intake, to just what they needed	0.30	10,555	10%
32	0.8%	Leaving 20% of people who will not change except from reducing wasted food to cut bills	0.32	22,347	20%
30	0.5%	If 10% of people grew their own vegetables	0.36	12,688	10%
27	1.2%	And 20% of people only bought locally grown food (requiring a supply chain shift)	0.44	30,945	20%
40	0.5%	And further 20% of people only ate seasonal fresh food and froze less	0.21	14,288	20%
25	6.1%	If fossil fuel fertilisers were banned so everyone ate organic food	0.47	164,028	100%
56	0.8%	Planting Rockingham forest	0.02	22,000	100%
56	1.6%	Planting every roadside verge with trees	0.02	43,482	90%
56	0.0%	Planting trees around every new development (@ 1 tree per home)	0.02	616	100%
	9.0%	BUILDINGS			
41	2.4%	Better insulation of existing roofs (homes)	0.20	63,433	90%
42	1.3%	Better insulation of existing walls (homes)	0.17	35,878	60%
45	0.7%	Full thermal insulation of houses (New sealings, ventilation, additional façade & roof insu	0.11	19,674	50%
21	0.6%	All new homes insulated to passive standards	0.54	15,052	100%
51	0.0%	Low carbon construction methods for all new buildings	0.05	1,306	100%
16	2.5%	All gas-heating switched to ASHPs.	0.75	66,881	80%
8	0.2%	All oil-fired heating switched to ASHPs	1.75	5,822	80%
49	0.1%	solar thermal heating of water	0.07	2,885	30%
31	1.1%	Co-housing. 95% of homes occupied and 50% of 51% spare space occupied	0.34	30,013	25%
	4.0%	INDUSTRY/COMMERCE			
37	0.2%	Material efficiencies	0.29	4,584	100%
39	0.1%	Energy Management systems driven efficiencies	0.23	3,636	100%
26	0.7%	All those who can work from home should – 1/3 people's jobs can be done from home.	0.44	18,729	80%
13	0.1%	Similarly, business travel should be discouraged – business travel should be cut in half	0.83	3,291	50%
23	1.3%	People should be encouraged to share, re-use and upcycle & commerce incentivised	0.52	35,993	20%
11	0.2%	Existing buildings refurbished rather than re-built where possible.	0.93	4,411	30%
47	0.3%	Plastics should be designed out of new goods, and always recycled from waste.	0.08	7,914	30%
43	0.6%	Less packaging should be used	0.16	16,724	30%
50	0.2%	Better council recycling of waste is recycled & carbon capture & methane to energy	0.06	6,012	30%
55	0.1%	The council needs to recycle organic waste, so as much as carbon is recycled as possible	0.03	2,823	30%

The Reality & The Problems

Getting to net zero requires lifestyle changes from everyone. Some will be willing, some will need nudging, some will need policing. Climate change, like the air we breathe, is a public concern, and public goods require open public benefit management through government to protect and benefit everyone, so net zero cannot be left to the private commercial sector.

The question is where should the public sector intervene, to what extent and in what capacity…

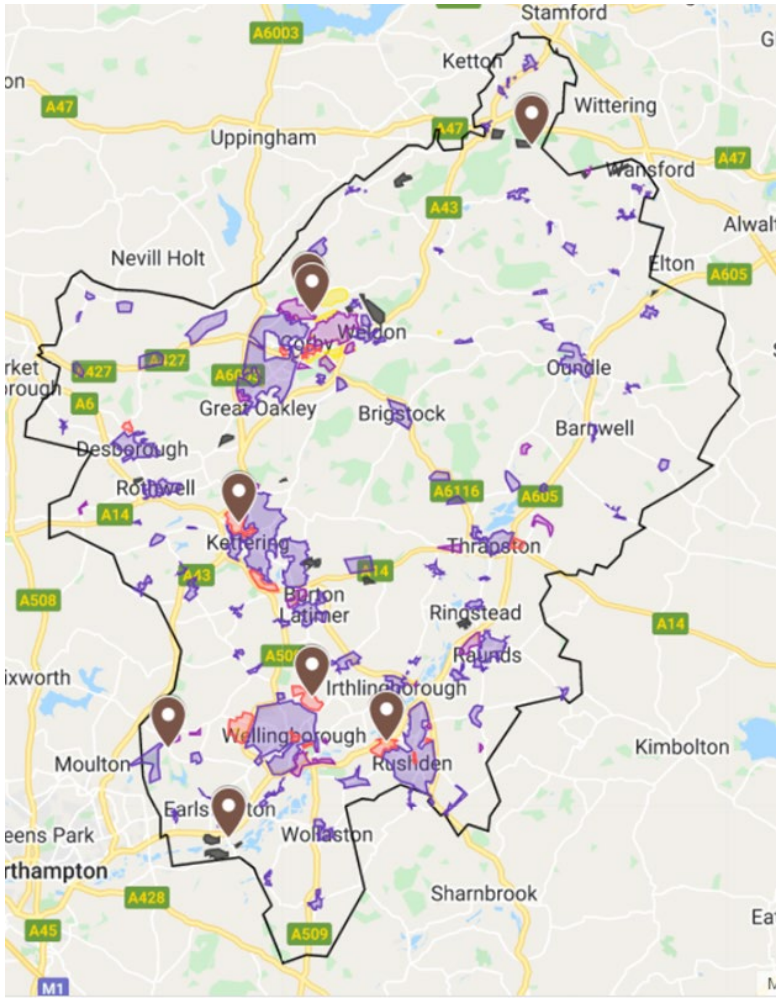
Linked to this are questions of technological feasibility for the different solutions, their cost and the likely take-up by different people and businesses across our area.

Engagement with local parish councils

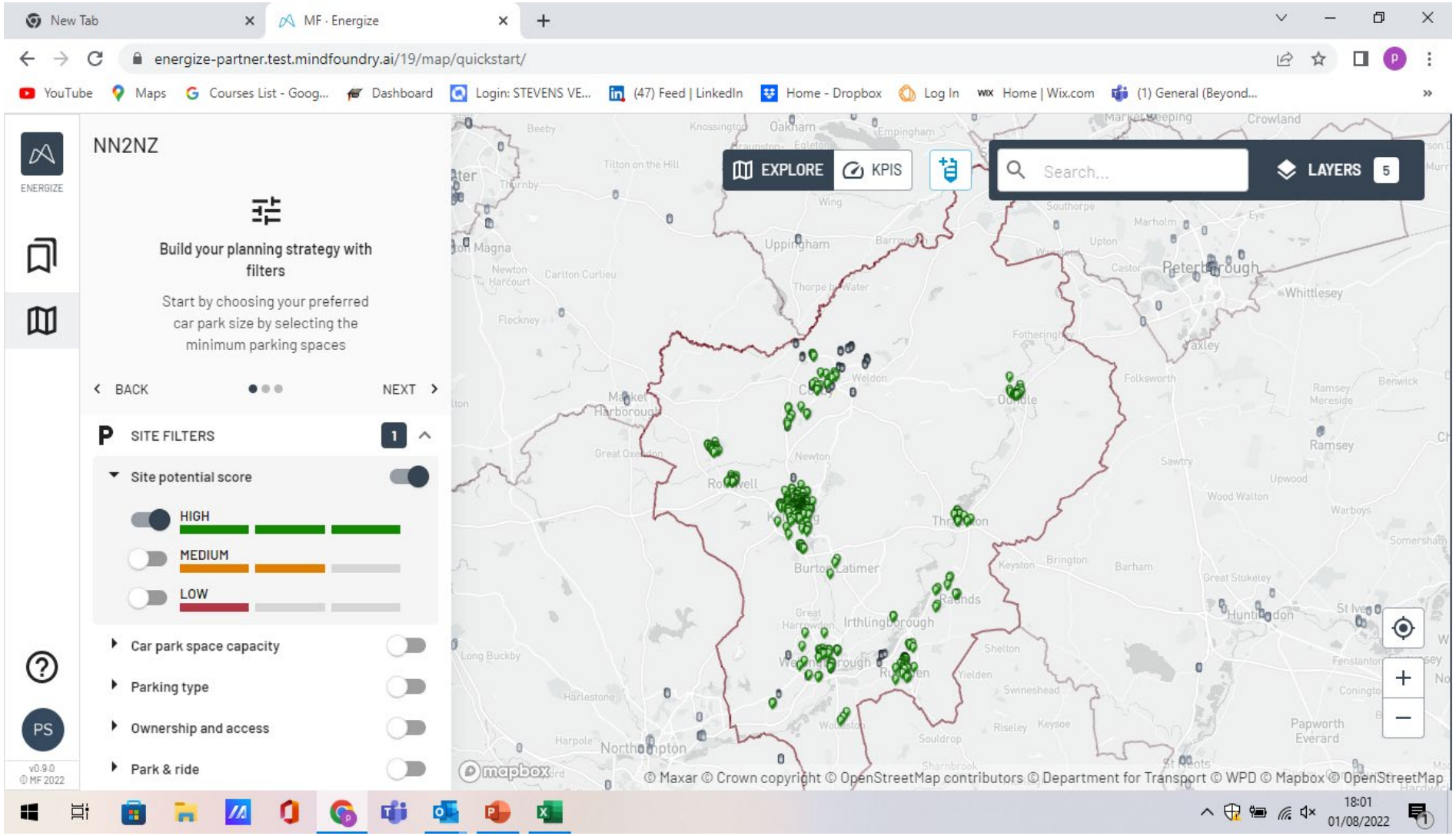
Getting to net zero requires strong engagement with local communities, supported by positive leadership from local parish councils.

Net zero requires blanketing the area with clean renewable, affordable energy, insulating buildings to net zero loss levels, cleaning up agriculture and commerce, eliminating waste and fly-tipping, re-using, recycling, and all linked with zero carbon transport requiring local charge-points within walking distance of home or work, or shared, pooled community vehicles, open to all.

Even assuming finding solutions that enable complete local clean energy generation, we will need more local community cooperation. Here are some proposals for the types of things we believe we will need:



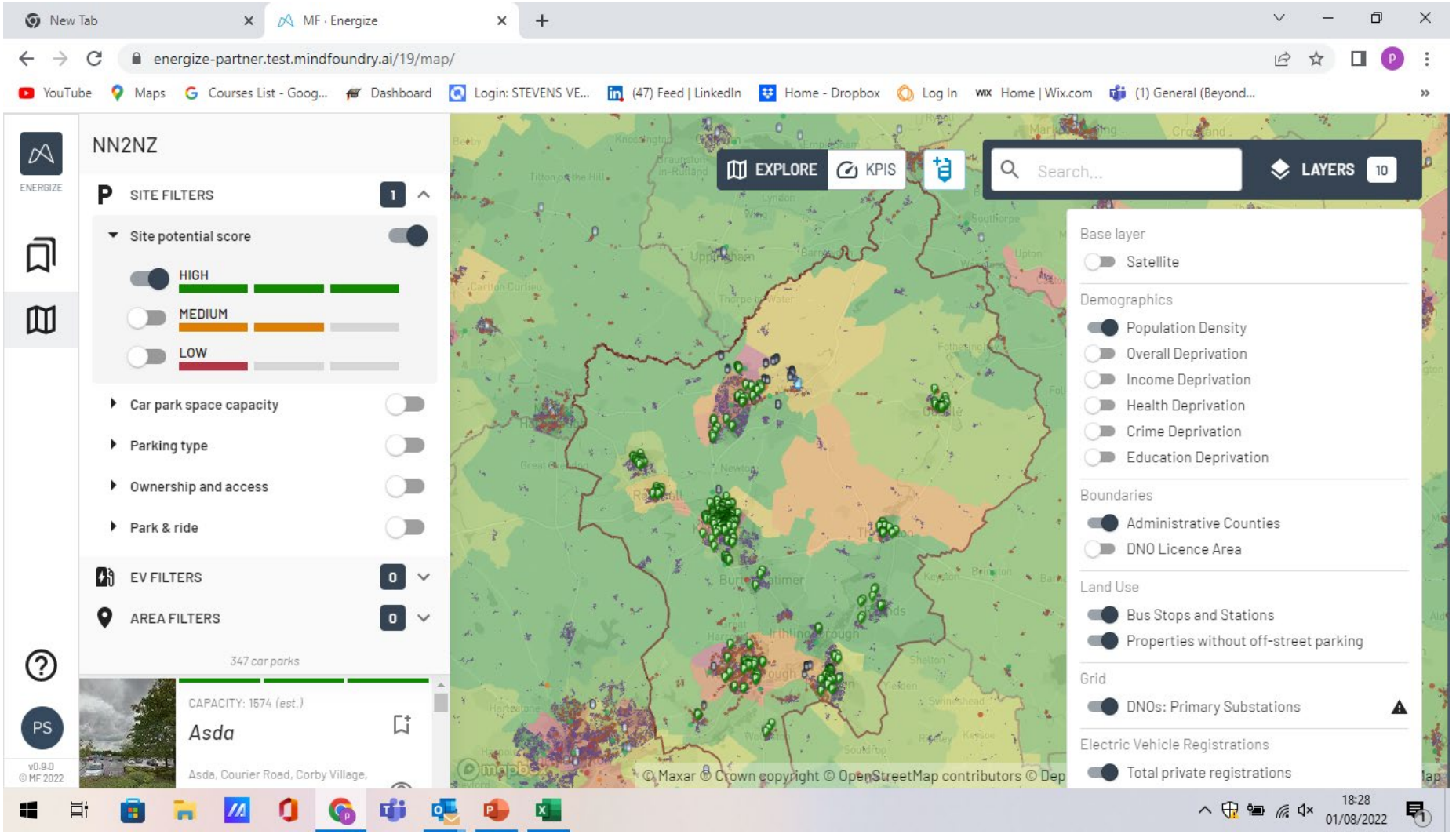
Commercial Reality



High potential sites limited to the most built up areas.

If left to commerce alone, blanket coverage with easy open access to net zero enabling tech would never happen

Planning

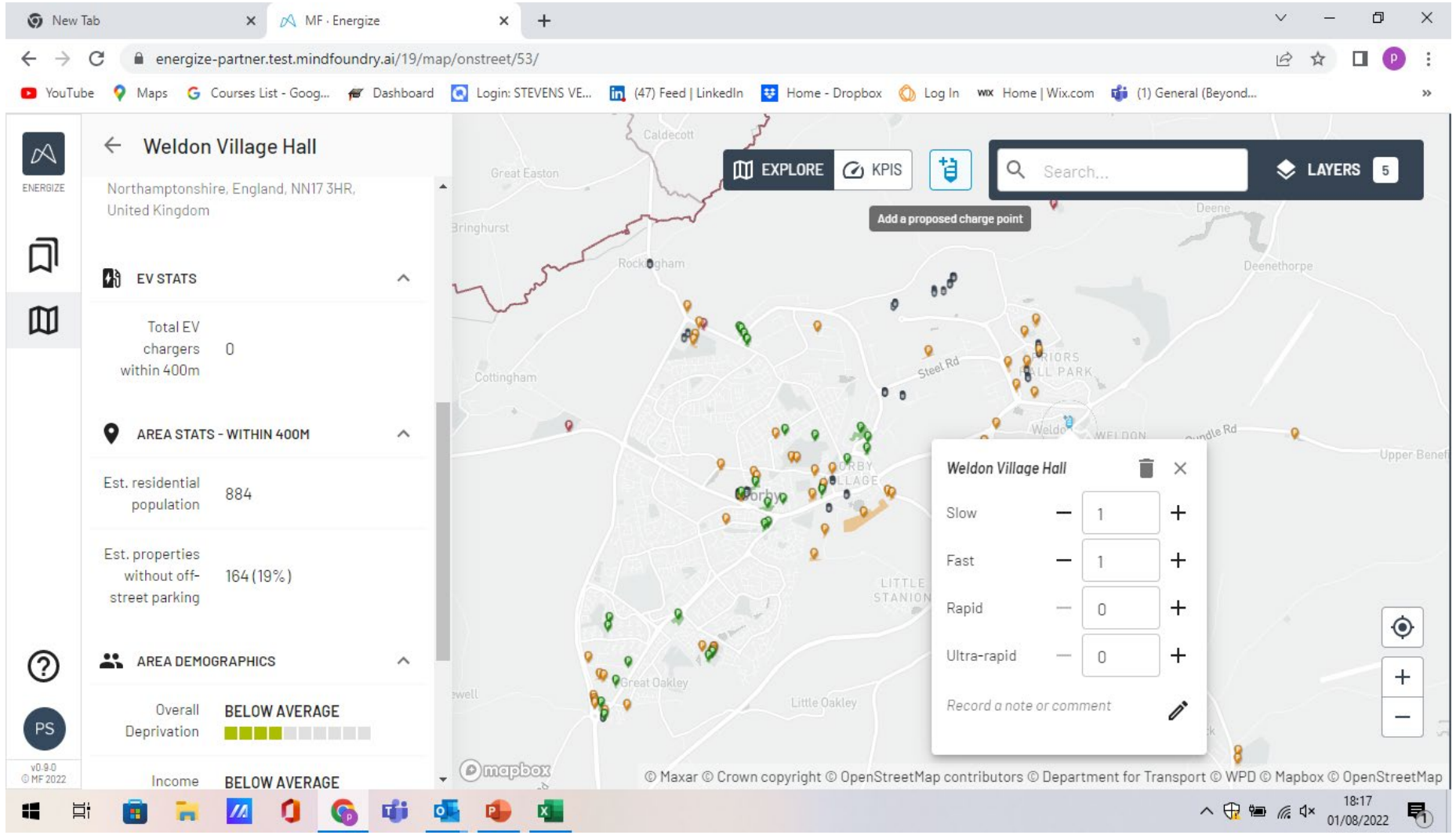


Where?
How many?
When?

Goal is to ensure everyone is within 10 minutes walk of a charge-point for affordable slow charging

But this has a high investment cost, therefore only where private sector will not provide solutions

Local / rural EV charge-points



We are exploring the potential of providing open access charge-points at local community centre car-parks, ideally for every community

Community Mobility Hubs

We have researched the establishment of mobility hubs across the region, which suggests 20-30 hubs are recommended to enable modal shift from ICE cars to EV's and other forms of transport. We propose to pilot with 4 hubs (Corby and Kettering town centres and their respective train stations).

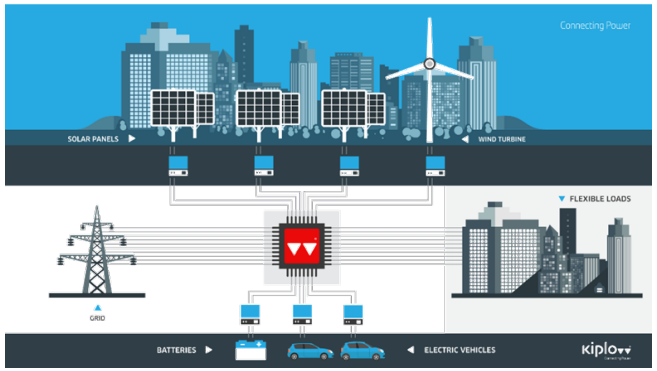
Beyond this, we would like to investigate local community mobility across all local parish councils. These hubs would typically be in the local carpark of the local community centre / village hall, and would include:

- 2 EV dual chargers with 4 charge-points
- Solar car port canopy over the chargers
- Solar over the roofs of the village asset
- Community car club shared electric vehicle

One charger would be for the shared car, which provides mobility to those who cannot otherwise afford an EV, and to encourage people with multiple cars to use this in place of their second car. The other charger is for locals who cannot charge their EV at home (maybe no off-street parking) at local rates, and for visitors at commercial rates. The solar helps to make the investment viable, and also promotes local energy communities…

Local Energy Communities

- Energy self-sufficiency at community level
- Clean and green micro-grids
- Leverage community assets and anchor off-takers
- Encourage more locals to generate energy
- ‘Peer to peer’ balancing generation and consumption across the community – maximising use of local clean energy
- Reduced energy bills for all
- Flexibility services for the grid
- Heat loss analysis – outreach programmes
- Encourage improvements in building insulation &greater energy efficiencies
- Set up and run by a professional Community Interest Company for the best interests of the community



Local Community Funding

We would like to set up a local community energy fund to support these initiatives, ideally kick-started by locals investing in their own communities through crowd-funding, and under-pinned by government grant funding, and boosted with commercial investment where feasible.

We are investigating different funding routes, including:

- LEVI government fund to support the roll-out of 350,000 new EV charge-points required across UK
- Shared Prosperity & Levelling Up government fund
- Community crowd-funding
- Private investment funds specialising in renewables
- Partnerships with EV charge-point network operators
- Equity and asset finance

What next: Questionnaire Survey

We would like to understand your feedback and how you could work with us on this:

1. Your parish details, name, location, size, number of residents, number of homes
2. Your contact details and anyone else you think might want to participate
3. Your views on the subjects covered today
4. Your support in getting balanced feedback from across your local residents:
    a) Level of interest
    b) When to start
    c) Type of engagement (tick all that apply):
        i. active participant in pilot trials,
        ii. creation of new local energy communities,
        iii. establishment of local mobility hubs,
        iv. participation in research,
        v. recipient of regular information,
        vi. ambassador for recruiting people,
        vii. champion for mobilising action,
        viii. Leadership for support planning applications,
        ix. project management coordination,
        x. point of reference

The end goal big vision

is net zero and to

ensure that it brings...

Lower energy bills

Better living standards

More community spirit

Energy self-sufficiency for communities

Better transport options at lower costs

More inclusive community cooperation

Clean & green legacy for future generations