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# Barnsley BMBC and Renewable Energy

An overview.

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**BARNLSLEY**  
Metropolitan Borough Council

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# Climate Emergency

## IPCC Report 2018

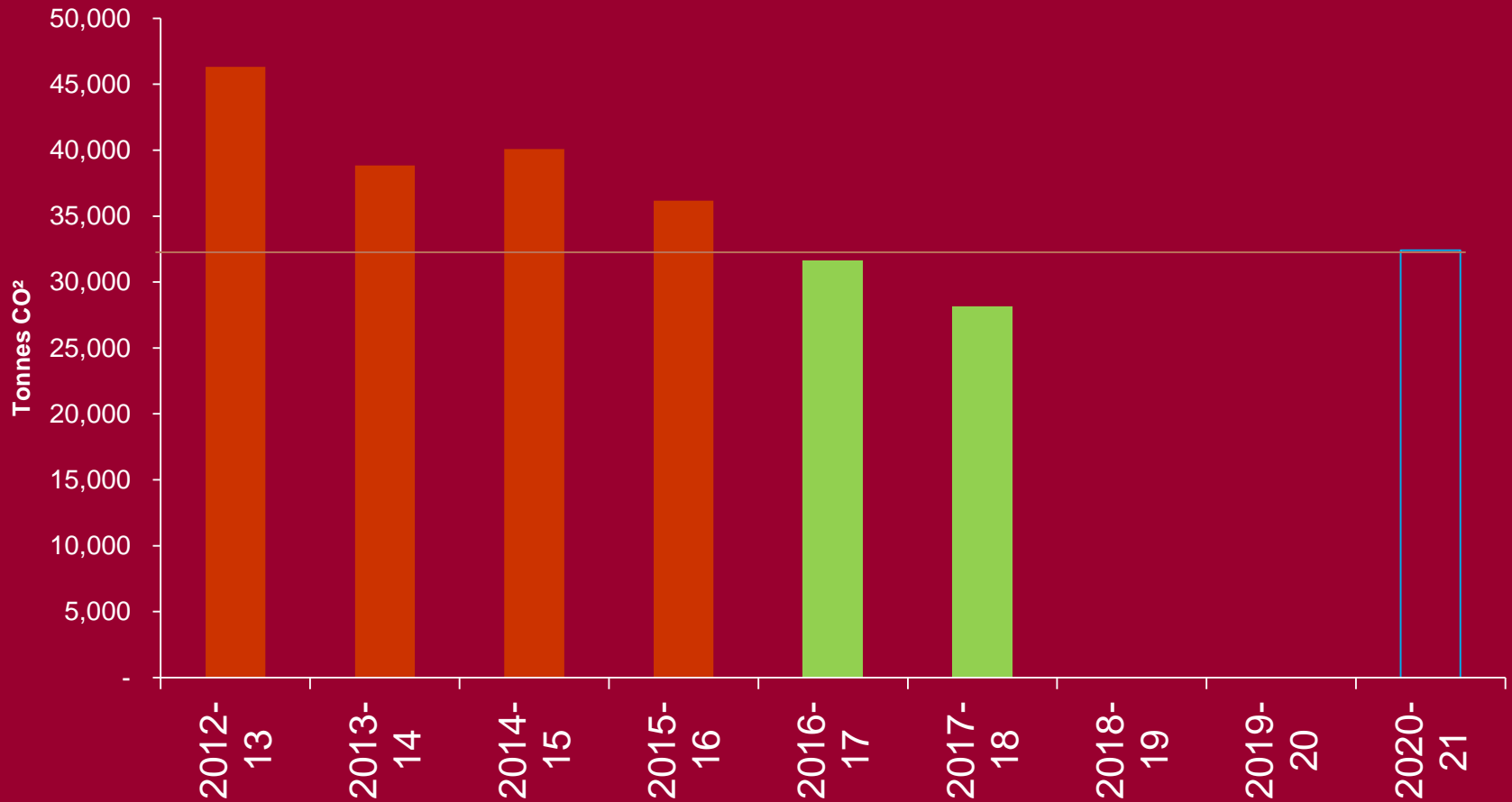
- Current efforts will not avoid catastrophic climate change
- 50% reduction by 2030 and net zero by 2050

## BMBC Energy Strategy

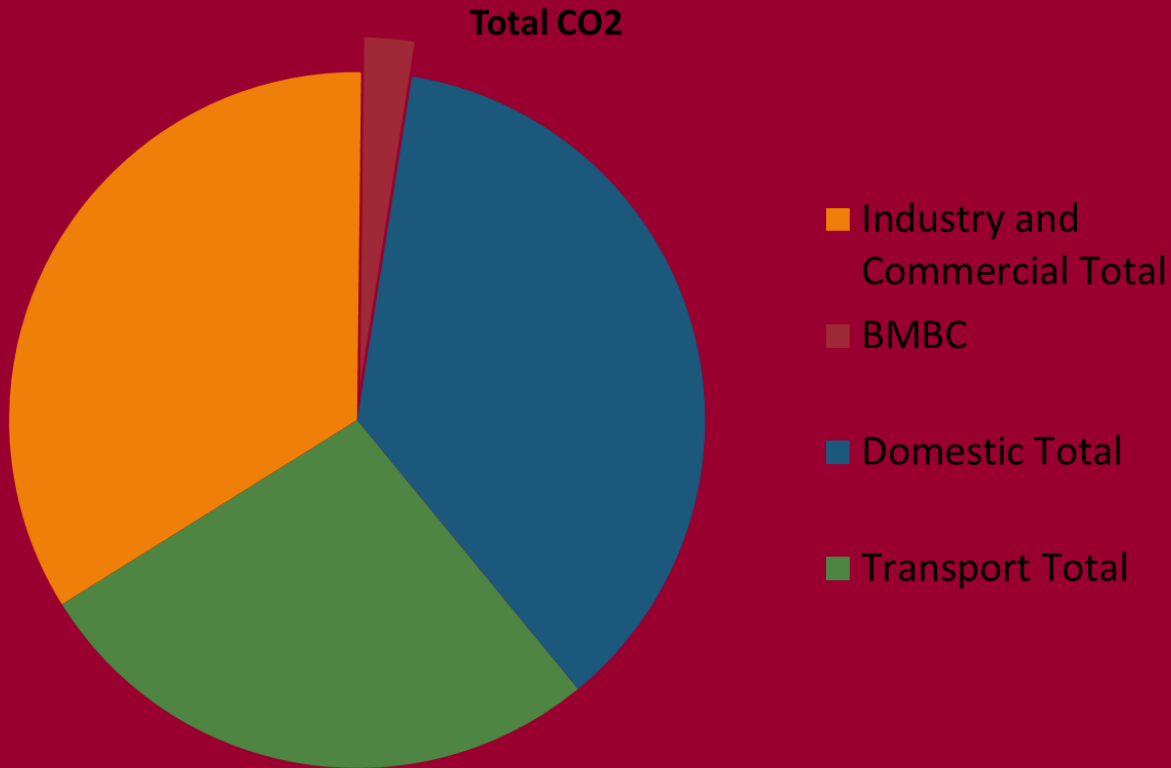
- Net Zero by 2040
- 30% reduction by 2020/21
- 20% of energy from renewables



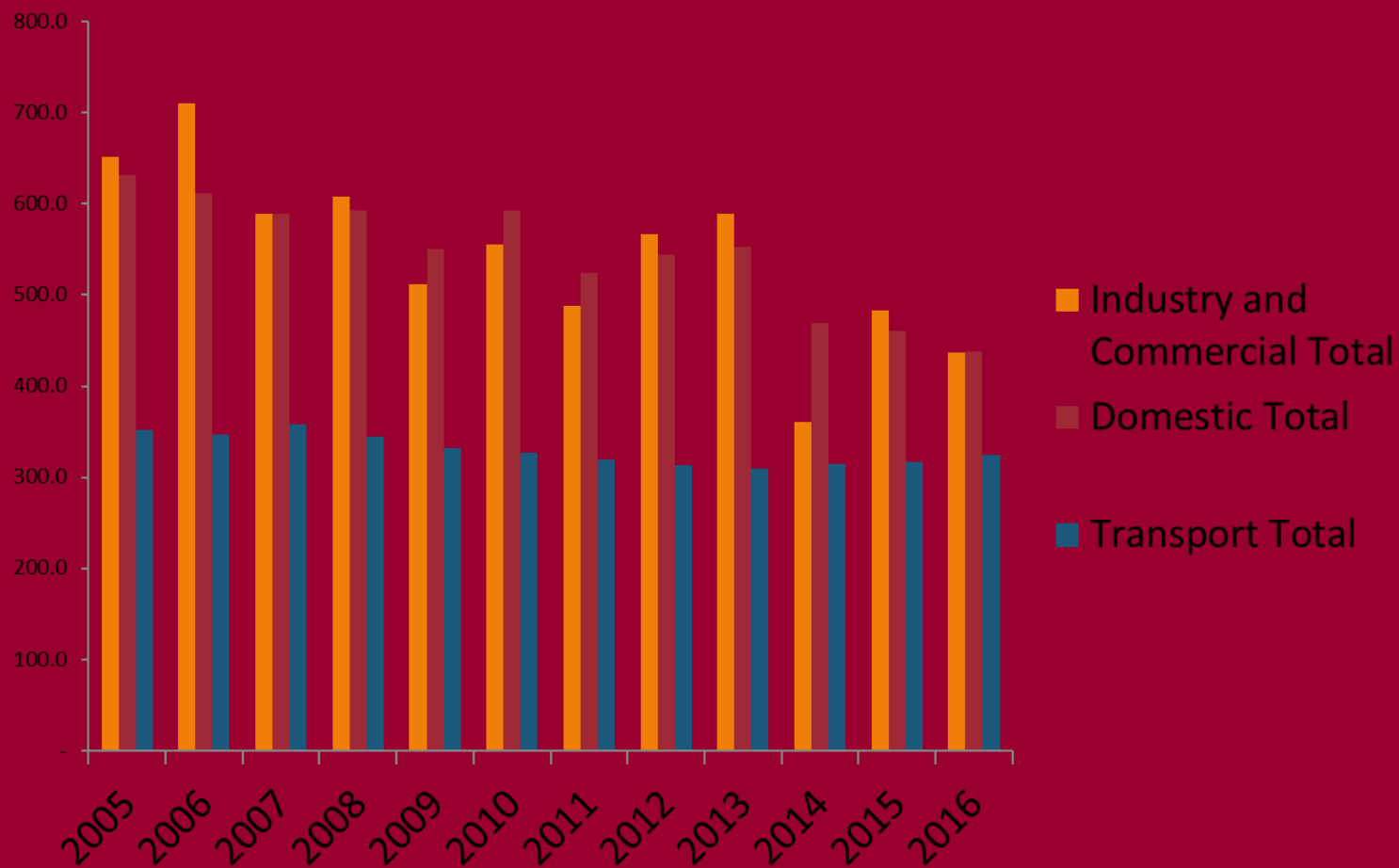
# Our Operations



# Our Borough



# Our Borough



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# The Energy Challenge

- Reducing Cost
- Increasing Security – local control
- Reducing Carbon Emissions
- Improving Air Quality

## Energy Strategy 2015-2025

- Berneslai Homes
- Energise Barnsley
- BEIS-HNDU
- Sheffield and Leeds City Region
- SME support



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# The Legacy of the Mines

## Peak Coal in UK

- Production – 287 million tonnes 1913
- Employment – 1.2m 1920
- Mines – 1,334 deep-mines 1952

<https://www.youtube.com/watch?v=2BjdaMGaVLs>

Job Density below average

Unemployment well above average

Business activity well below average

Ill-health double the level of SE England

“The State of the Coalfields”

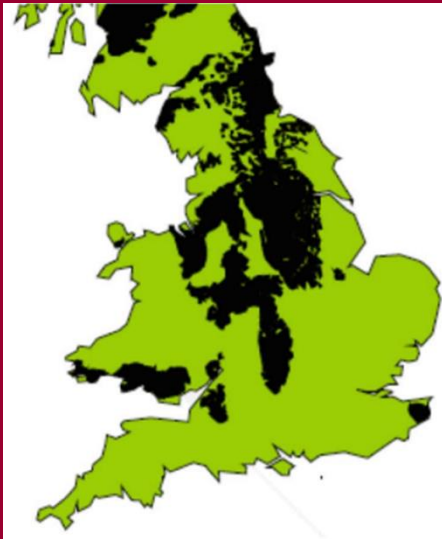
Foden, Forthergill and Gore – 2014 – Sheffield Hallam University



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## Problem or opportunity

- Making the most of what we have
- Substantial network of mine workings and mine shafts
- Potential to extract and tWh of heat energy
- Close to population centres and heat loads



UK former coal mining areas  
Source: The Coal Authority

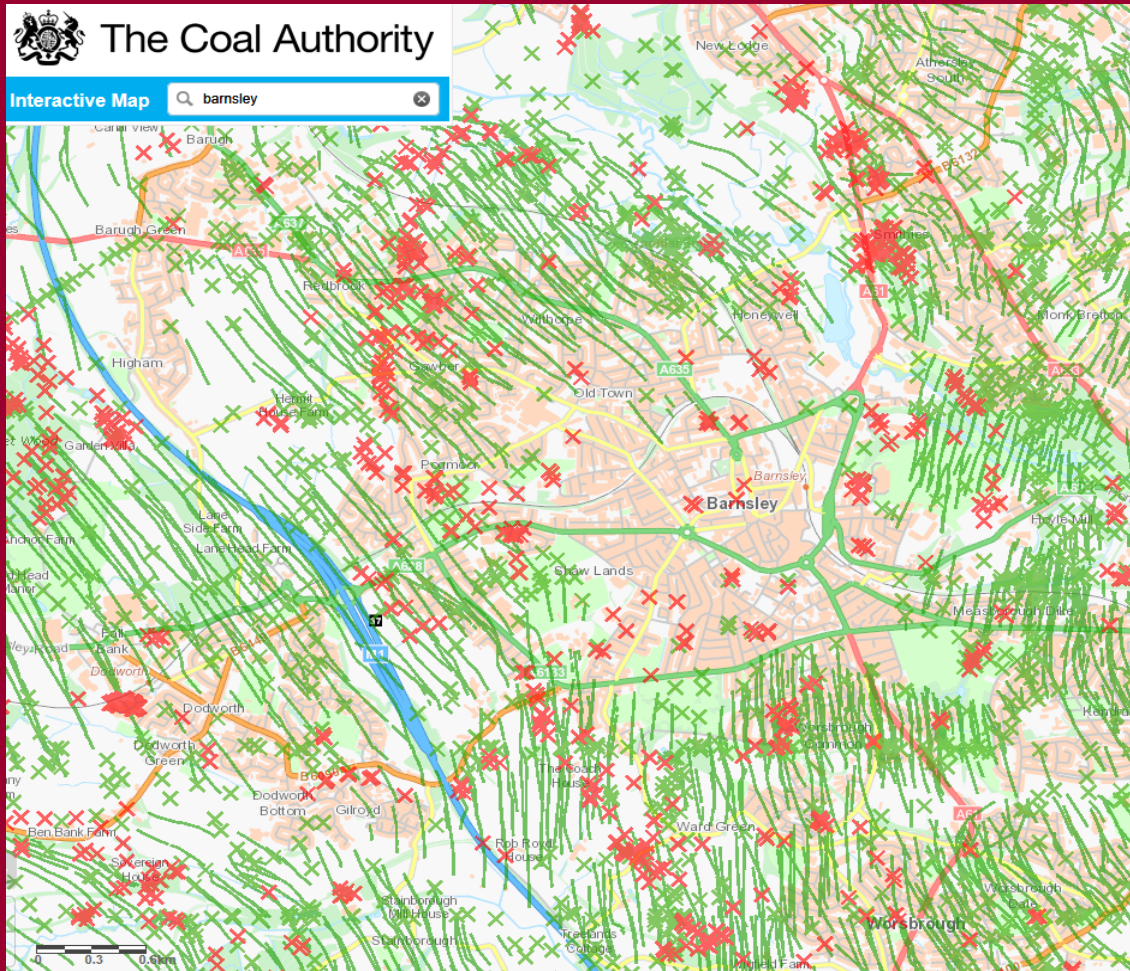


England heat demand  
Source: National Heat Map





# The Opportunity in Barnsley



Mine openings,  
and main galleries

Treatment Lagoons

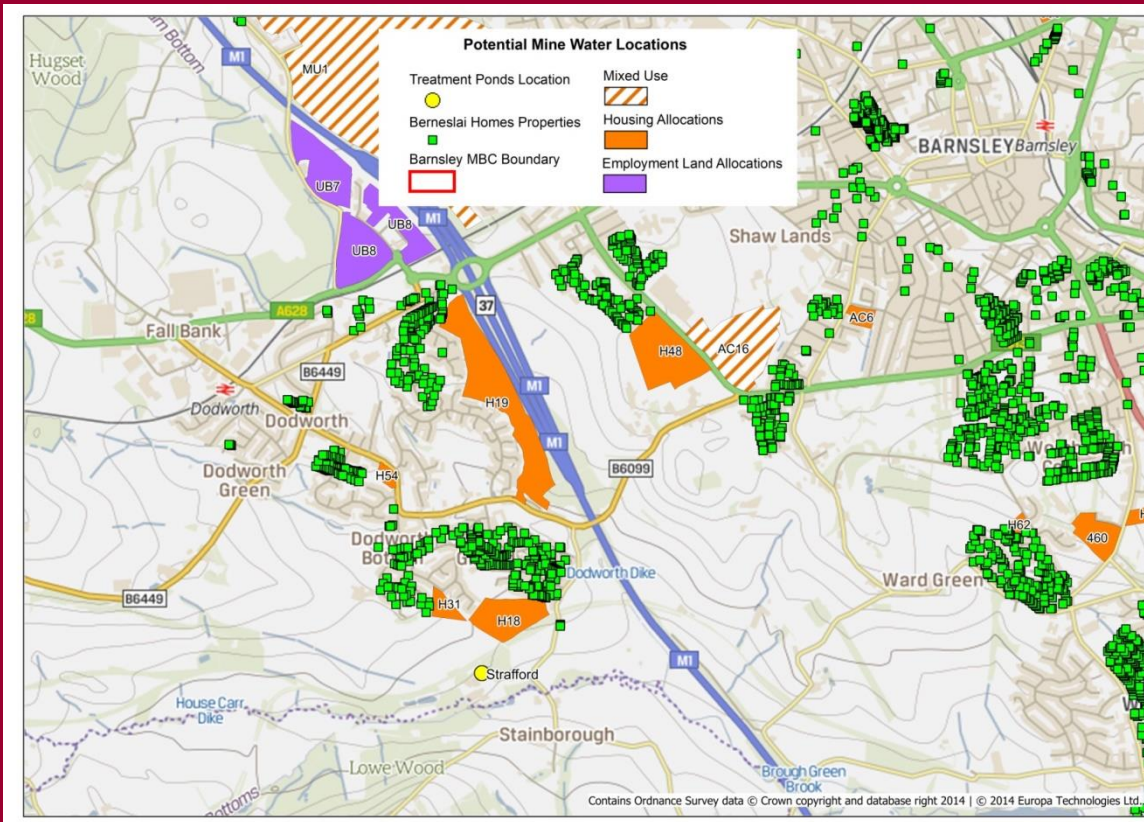
Deeper Geothermal

Successful funding bid  
to HNDU to complete  
masterplan and  
feasibility studies



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# Minewater Treatment Lagoons



All 4 treatment lagoons in South Yorkshire in Barnsley

Former mine Strafford Colliery- its lagoon marked in yellow





# Strafford



# The Opportunity

	Wooley	Strafford
Water pumped	130 l/s	35l/s
Heat	720kW	732kW
No. of homes	1650	300
COP	5.00	4.8
Water temp	15	16

Centralised vs Decentralised system

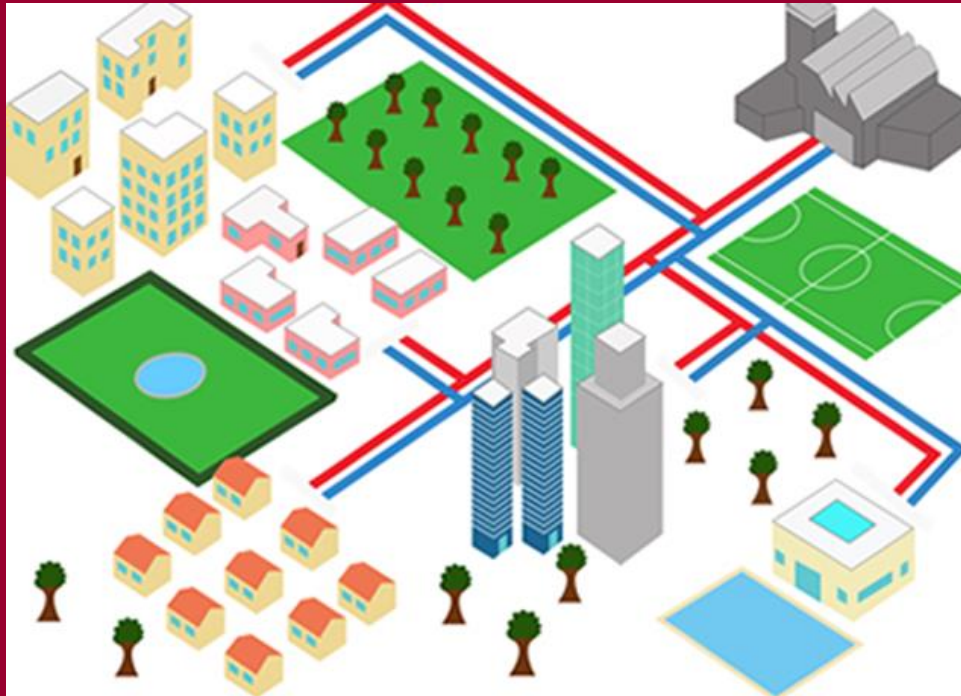
Output temps

Delivery systems and existing energy efficiency

Planning with regard to new build



# Town Centre



Mineworkings beneath Glasgow  
Source: British Geological Survey

- Barnsley Main
- Heat Network with town centre
- Transitional nature of gas



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# How would it work

Boreholes drilled to intercept workings

Water removed

Heat removed and then reinjected

Reverse to provide cooling

Other heat sources could be included for storage

Issues with

Water table

Heat replenishment

Expensive if the flooded galleries are missed



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# Other uses

- As a store for energy and carbon
- Generate electricity via pendulums in mineshafts
- Even medicinal cannabis !!!!!!!!



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# Solar Developments

Mixed bag

- Solar Farm development-APSE
- Positive
- Barnsley blessed with its landholdings
- Good results through Energise Barnsley

BUT

- No offtaker –no development
- We need an alternative delivery method





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# Energise Barnsley

- Energise Barnsley has been setup with Barnsley Metropolitan Borough Council to deliver community owned renewable energy and heating projects across the borough
- Social Benefit –affordable warmth
- Community Benefit –Profit share for good causes



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# Solar PV

- A community energy record number '321' council owned homes have received free solar PV assets.
- 16 non-domestic properties have been installed on, consisting of schools, sheltered housing blocks and community buildings.
- The combined size of the portfolio is the largest UK community energy project by the number of roofs installed on



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# Community bond

- Raised £800,000 in investment in under three months
- Stakeholders and partners in the project.
  - Ignite
  - BG Solar
  - Barnsley Metropolitan Borough Council and Berneslai Homes.
- £7000 distributed to good causes including fuel poverty



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# Battery Storage Project

- The project which aims to look at whether battery storage technology, with and without solar PV at household level
- The chosen houses are all powered from the same substation. Retirees in bungalows dominate the project demographics.
- Evidence of increased electricity bill savings for the tenants, and provide evidence of whether a solar PV and battery storage project can be financed and deployed at scale, with no cost to the tenants



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# Energise Barnsley – P2P Trading

- Can the local distribution network to become a local trading platform for our low carbon generated solar PV electricity
- Ofgem Sandbox
- Is possible to develop a tariff or trading system to offer non-solar PV residents the ability to be able to purchase the exported energy from their neighbours systems.
- Currently 800MW of electricity is exported to the Grid, can we trade it locally for shared benefit.
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# Barnsley Domestic Demand Side Response

- Targets new build properties (Code 4 Sustainable Homes) with already installed dual purpose air source heat pumps (ASHP's) and solar PV and add
- a smart battery and control system, to generate analytical household energy demand data
- This project aims to use the smart battery, thermal store and thermal value of the homes with ASHP's to shift peak demand of the homes away from peak national electricity demand.



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# In Summary

- Our journey is familiar to most other LA's
- Aspire to gold standards of Nottingham
- Doing things differently-we are not there yet and need the help of key partners
- Thank you
- David Malsom

