




‘The Big Energy Summit 2020 APSE Energy’

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



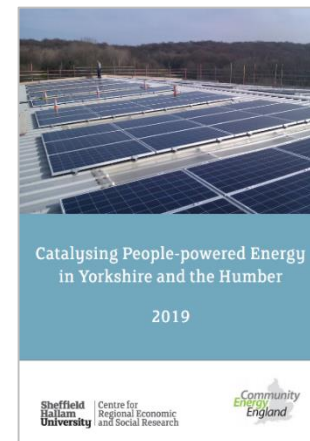
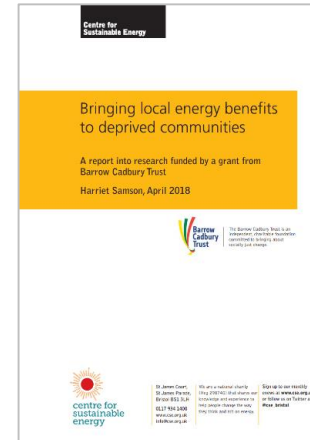
Energise Barnsley

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

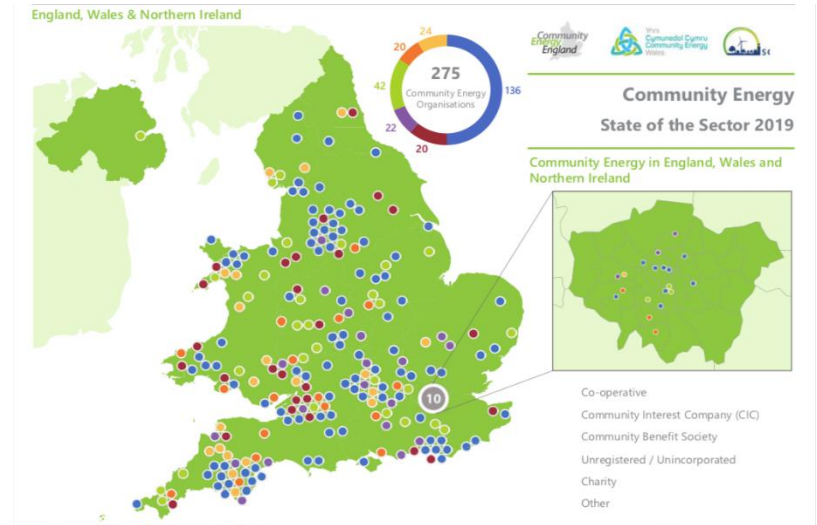
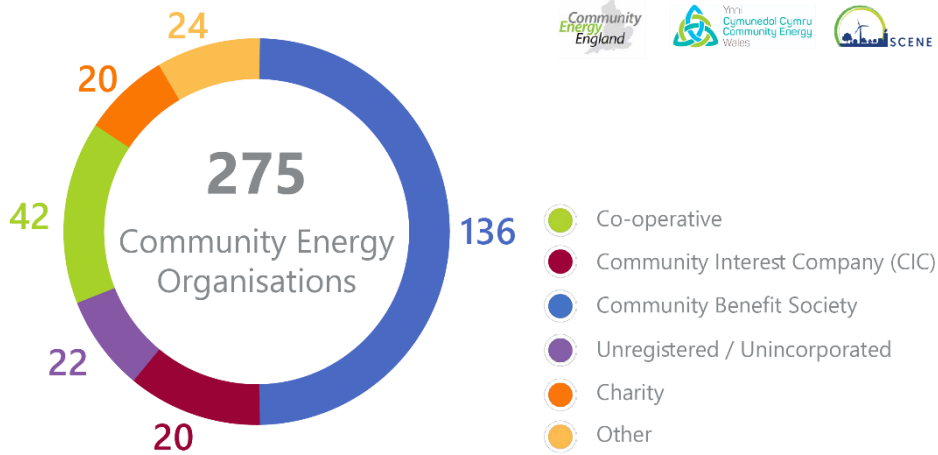
Environmental and Social Impact		
Energy Generated	Savings	CO ₂ Offset
		
Over 4,842 MWhs	£158,201 collective electricity savings by residential tenants* £160,470 in collective electricity savings by commercial tenants**	Over 2,566 tonnes reduced CO ₂ emissions
Data from 321 households and 16 commercial buildings	*Assuming 33% usage of total generation and 15 pence per unit **Assuming 75% usage of total generation and 13 pence per unit	Assuming 0.53kg per kWh for tonnes of CO ₂ saved

Publications

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



UK Size & distribution of community energy



Ofgem Solar & Storage Network Study

Ofgem NIA Project 'Solar & Storage Network Study'

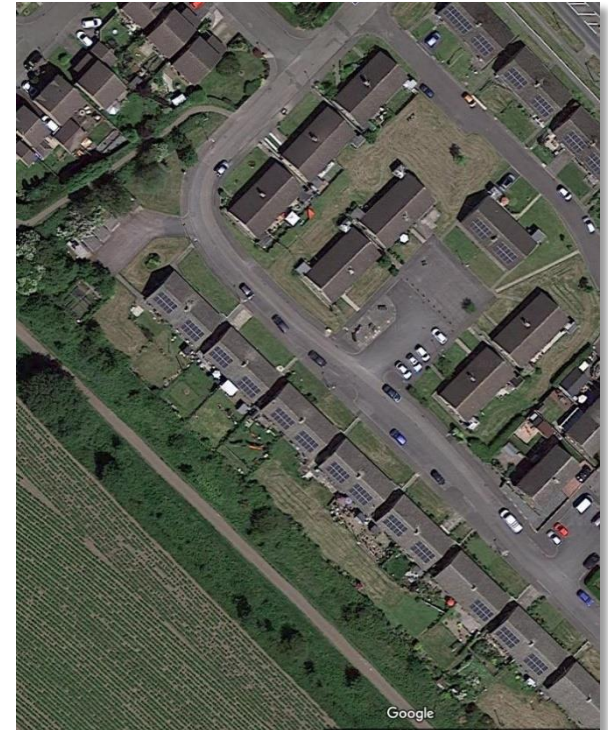
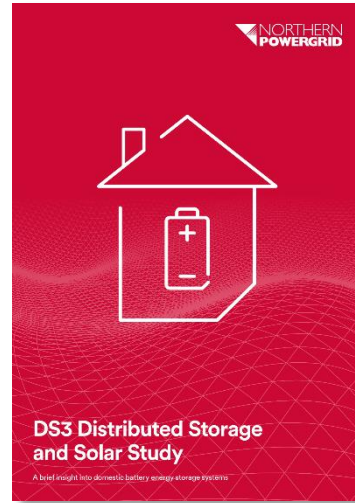
- 2 year NIA funded network distributed solar & storage study focusing on social housing
- £300k - batteries, monitoring & data analysis

Tenants

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

Northern Powergrid

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



Results

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



Project 'BREATHE' – Domestic Demand Side Response

Collaboration Partners

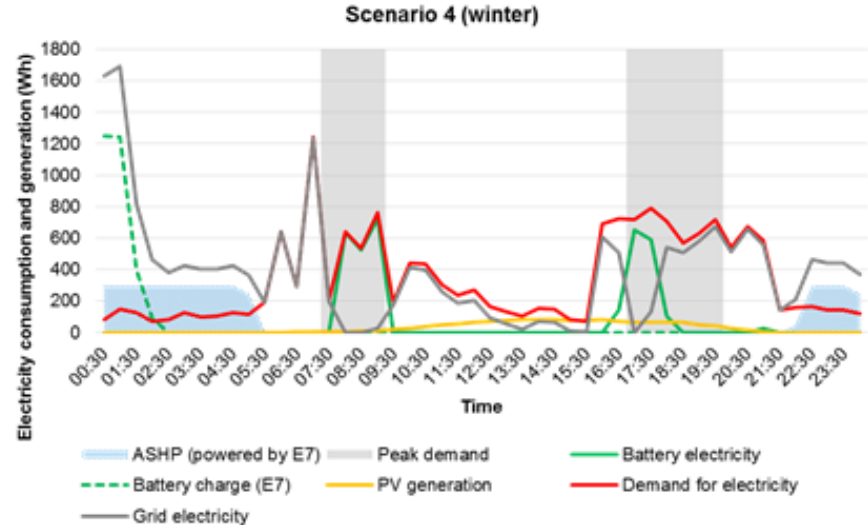
- **Energise Barnsley** – Lead partner community energy benefit society
- **Passiv Systems** – Smart controls, demand management and aggregation systems
- **Oxford Brookes University** – academic lead responsible for monitoring and evaluation of energy savings, resident experience and data analysis
-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

Sub Contractors

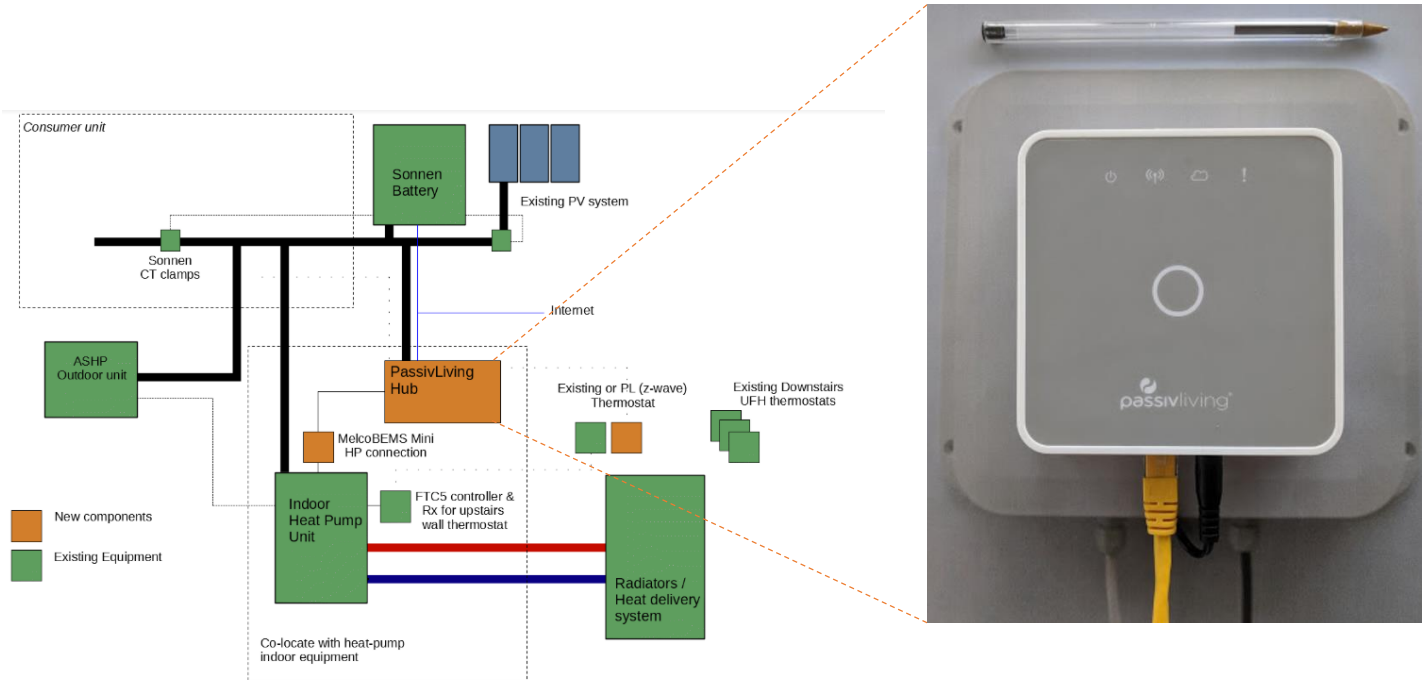
- Berneslai Homes – tenant liaison & installer
- Sonnen GmbH – battery storage manufacturer
- Mitsubishi – integration of ASHP with smart controls

Innovation

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



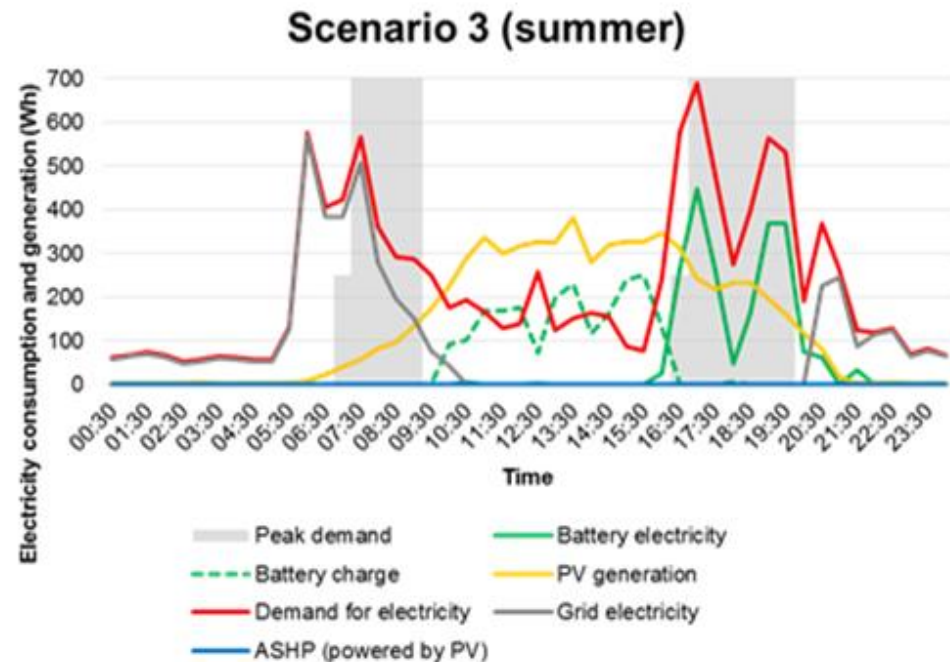
PassivSystems Hub



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

Oxford Brookes – Monitoring, evaluation and learning

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



Project Stages

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

Next Steps for EB

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

