

A smarter way to electrify heat – The Balanced Energy Network (BEN) approach to demand side response in the UK

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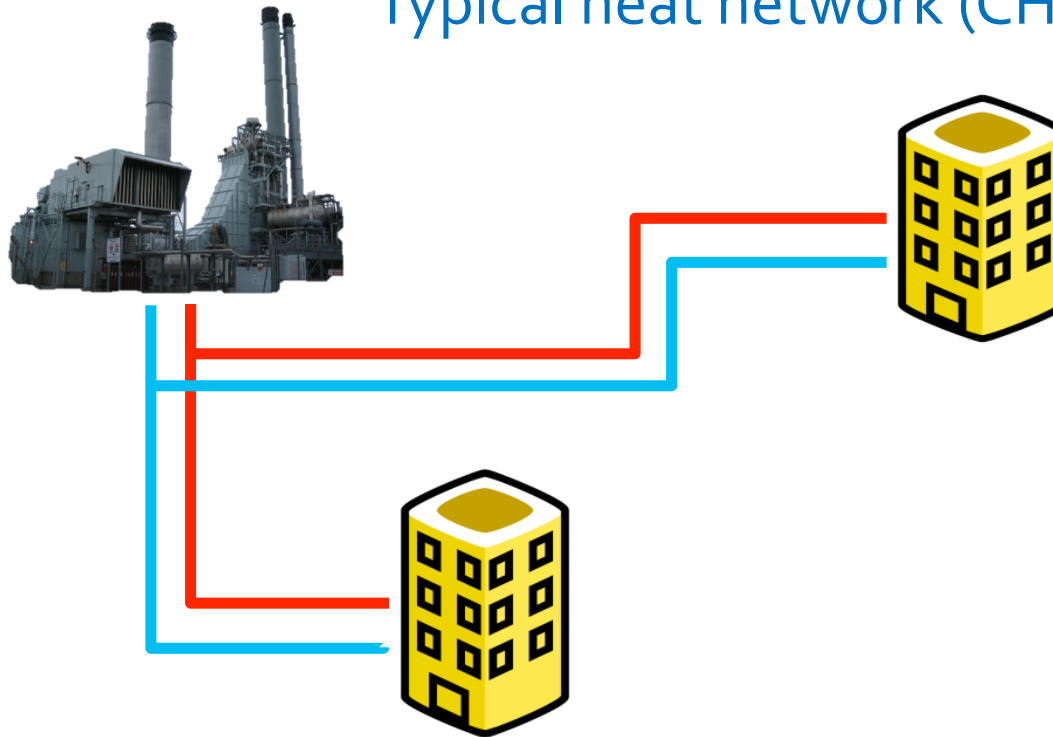
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Balanced Energy Networks

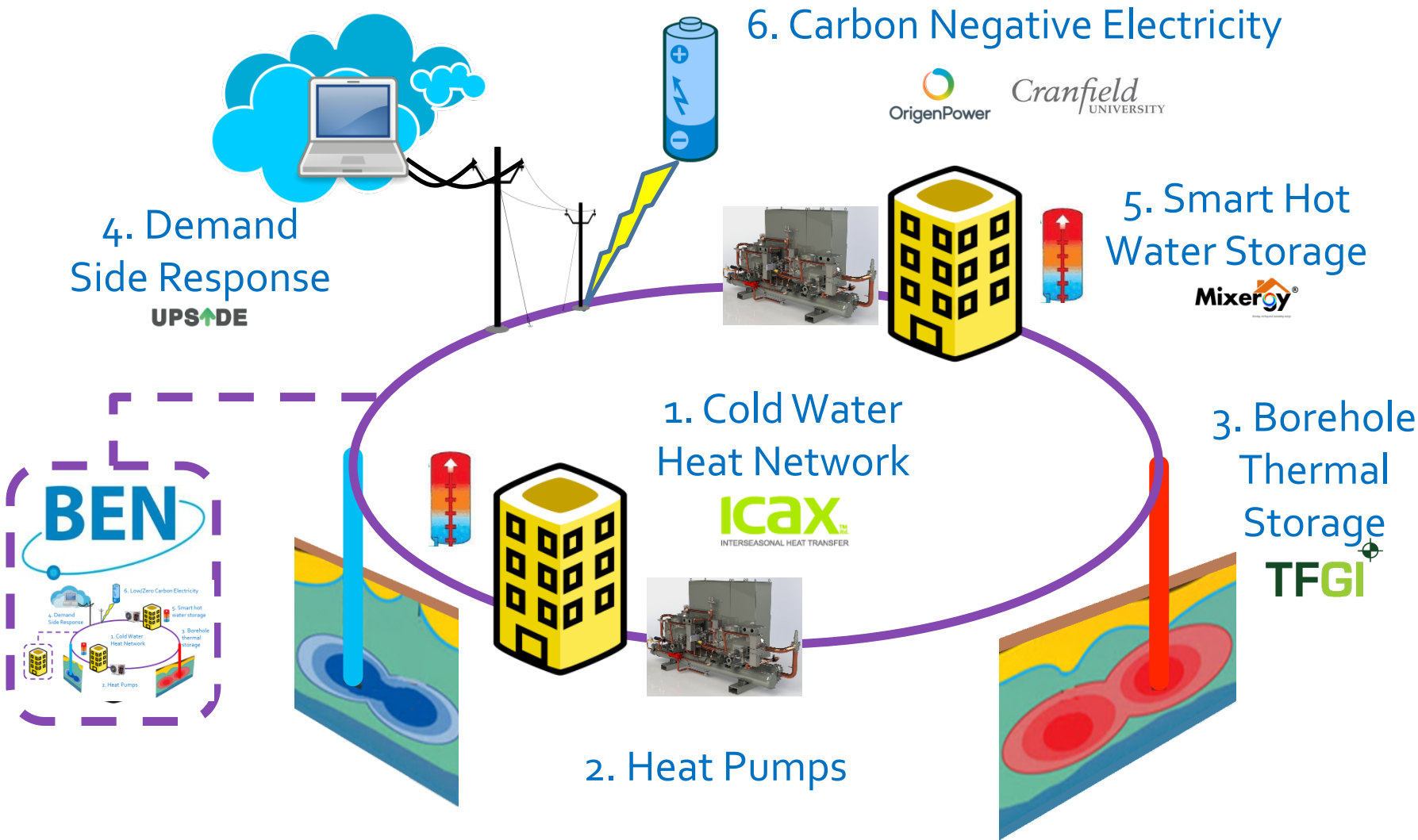


Typical heat network (CHP)

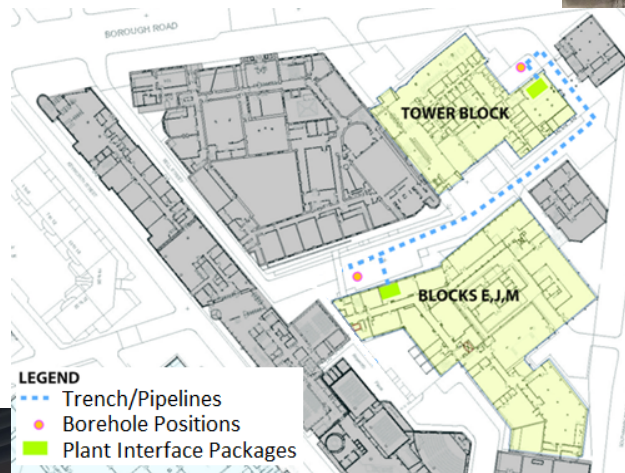


Balanced Energy Networks

London South Bank
University



LSBU Campus



Demand Side Response Revenue Streams



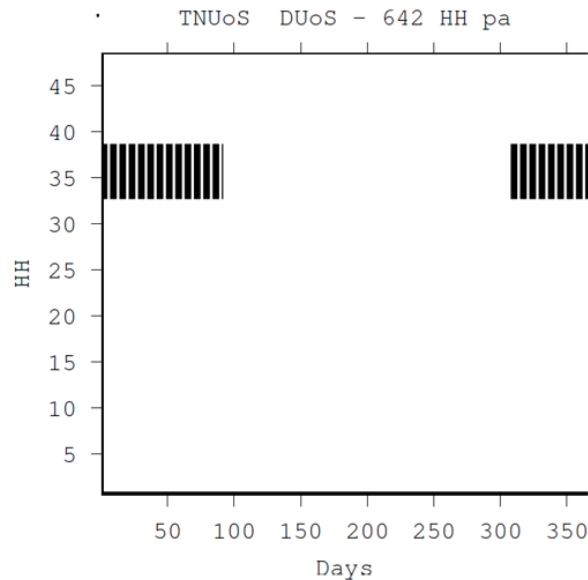
Estimated Levels of Contracted DSR in the UK 2015/2016 (Ofgem, 2016)

DSR Revenue Streams	Definition	MW
Transmission Network Use of System (TNUoS)	Avoiding peak events (triad)	1,200
Short Term Operating Reserve (STOR)	When actual demand exceeds anticipated demand	237
Firm Frequency Response (FFR)	Keeping grid frequency at 50 ± 0.3 Hz	25
Total		1,462

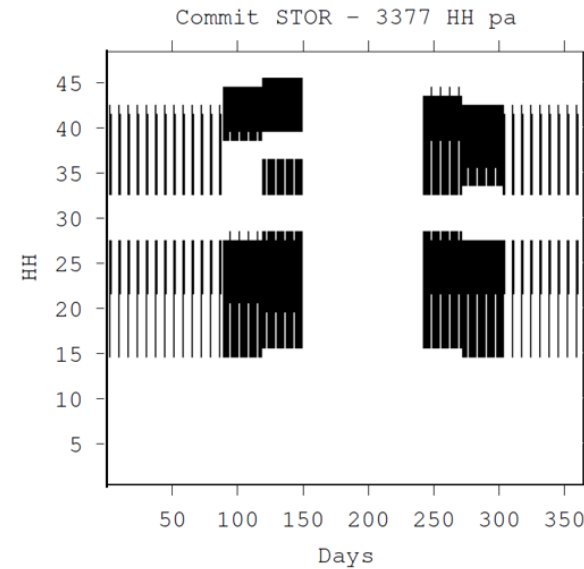
Stacking DSR Revenue Streams



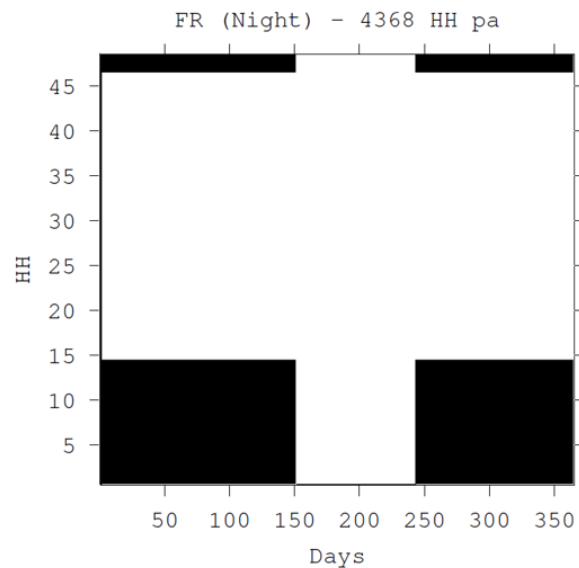
(Black means DSR is provided, white means not provided)



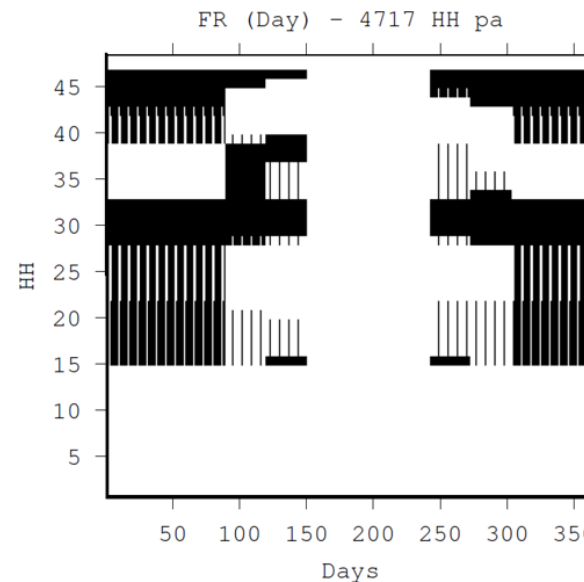
Use of
Service –
Avoiding
Peaks/Triad
£7,386



STOR –
Turn off at
times of high
demand
£1,600



Frequency
Response
(Night)
£788

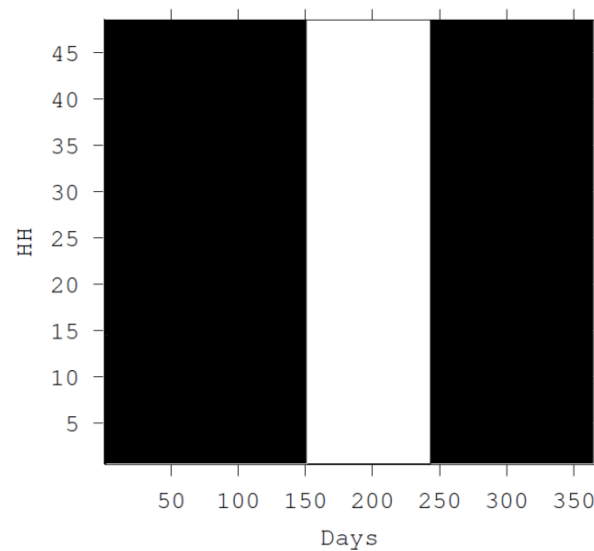


Frequency
Response
(Day)
£1,170



Stacking DSR Revenue Streams

(Black means DSR is provided, white means not provided)



Stacked Services –
FFR, STOR, UoS

£10,945

Summary / Ongoing Work



- Lower temperature heat networks offer numerous benefits over gas CHP.
- Electrified heat and transport will challenge constrained DNOs.
- DSR can offer a smarter way to electrify heat, particularly with diverse storage options.
- Further work will test dynamic variations in temperature, comfort over time.



Thank You
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Innovate UK