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There's more to district heating than gas-based CHP

GSHP Innovations and initiatives

Edward Thompson

Interseasonal Heat Transfer



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Combustion of carbon compounds emits CO₂
including gas-based Combined Heat and Power.

There is a carbon-free alternative for heating:

Heat transfer

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Cooling is key requirement of modern buildings.

for carbon free heating
and cooling:

Use Ground Source Energy.

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A Heat Sharing Network

Zero carbon Heating & Cooling
yields a heat sharing dividend.

Joined-up Heating & Cooling

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Paris Climate Agreement
strives for low carbon heating.

Ground source heat pumps provide zero carbon
emissions.

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Air Pollution

leads to 40,000 premature deaths a year
in UK cities.

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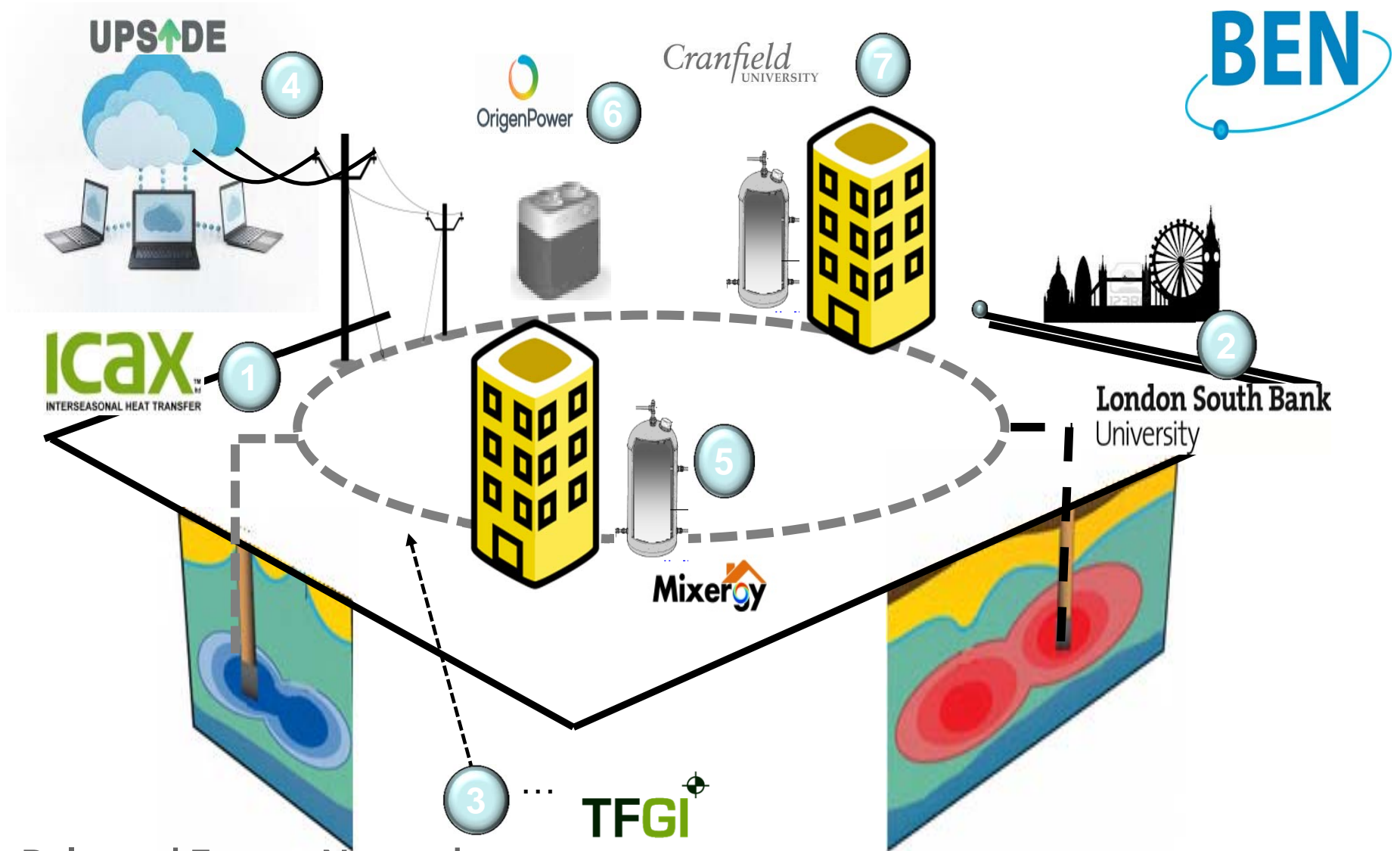
Demand Side Management

shifting demand to match supply

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Balanced Energy Networks
 £4m budget

BEN - flexible infrastructure



From large insulated metal pipes



To small flexible plastic pipes



Balanced Energy Network London South Bank University



High temp heat pump replaces gas boilers.
No need to refurbish heat distribution in existing buildings.

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Ground Source Heat Pump advantages:

Low running costs

Reliable

No safety issues

Very long life

No “intermittency” issues

Contributes to energy security

No planning permission issues

Provides heating & cooling

Provides Thermal Energy Storage.



Ground Source Heat Pump disadvantage:

Up-front capital cost, but 20 year RHI

But remember:
design is critical
installation is critical

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GSHP Innovations

solar recharge of the ground in summer

Control systems:

- tuned for the fluctuating price of electricity over 24 hour cycle
- tuned for weather compensation

High temperature heat pumps

- for retrofit installations



GSHP Initiatives

Funding for GSHP investments can be repaid out of annual savings on running costs, maintenance costs and RHI.

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- But do go for help to an
- experienced designer
 - experienced installer
 - members of the GSHPA

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There's more to district heating than gas-based
CHP:

Ground Source Energy
Heat Sharing Networks
Joined-up Heating and Cooling
Recycled Heat
Interseasonal Heat Transfer

Interseasonal Heat Transfer

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“For forest-dwellers, there’s wood. For everyone else, there’s heat pumps.”

“A useful technology will surely be long-term thermal storage.”

“I believe we should leapfrog over gas-powered combined heat and power and go directly for heat pumps.”

Sir David MacKay, Chief Scientific Advisor to DECC.

ThermalBanks

Renewable Heat

Renewable Cooling

www.gshp.org.uk

www.icax.co.uk

Interseasonal Heat Transfer

