

DELTA-EE



nationalgridESO



4D HEAT ENIC

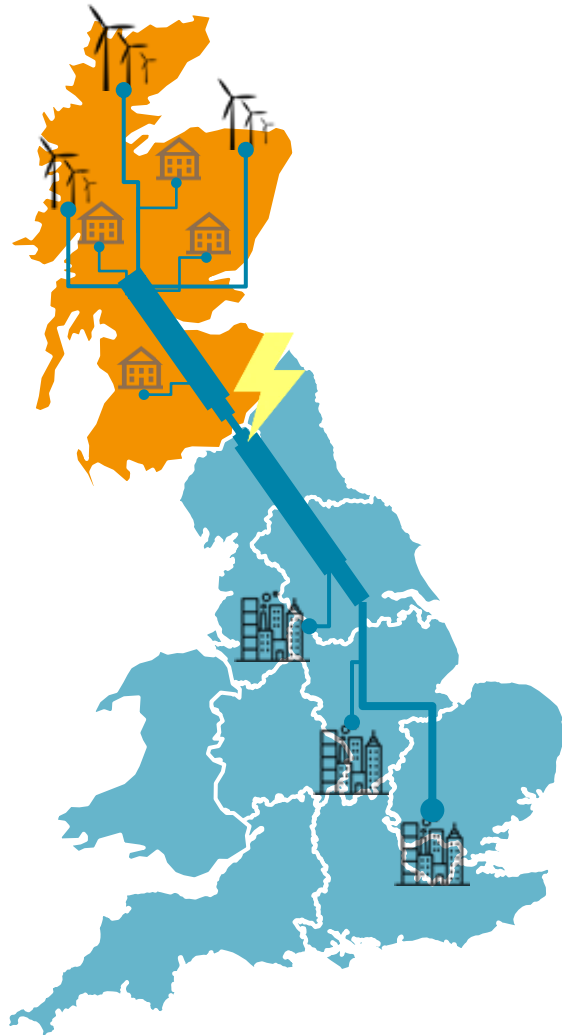
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4D Heat

Maximum volume of wind energy (MWh) that could avoid being constrained by controlling electric residential heating



Key considerations

- Need to do this without costing the ESO, DSO or end-consumer more
- Only considering off-gas grid electric heating in Scotland

Outputs:

- How much of a difference can we make
- CBA
- Route to market



Scenarios

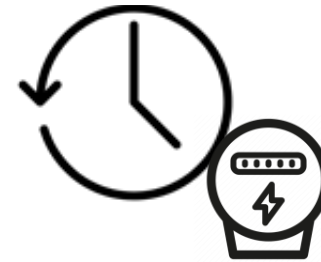
Smart controls, explicit wind incentivisation, dynamic tariffs



Smart controls



Explicit wind
consumption
incentive

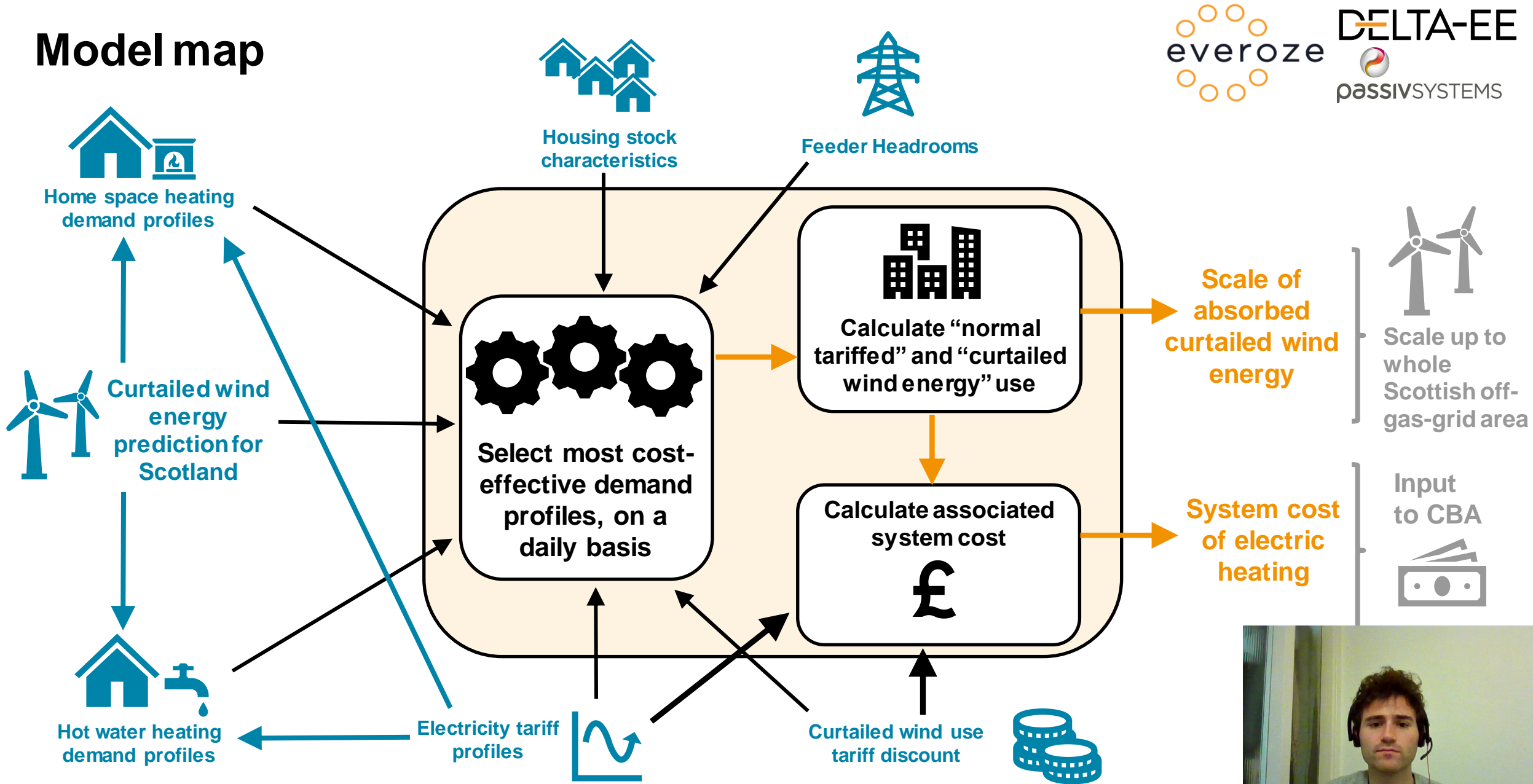


Dynamic ToU
tariffs

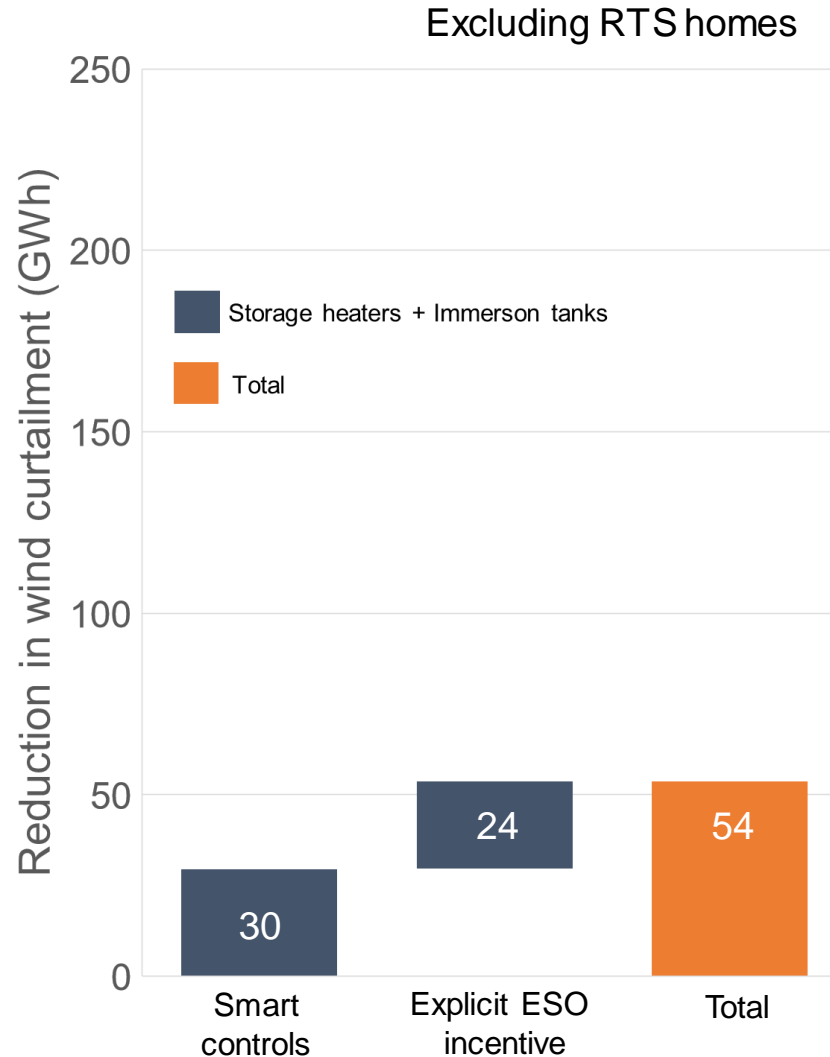
2020 & 2030



Model map



Main findings – modelling for 2020 scenarios



A reduction of 54 GWh is 4% of the total wind curtailment forecast for 2020

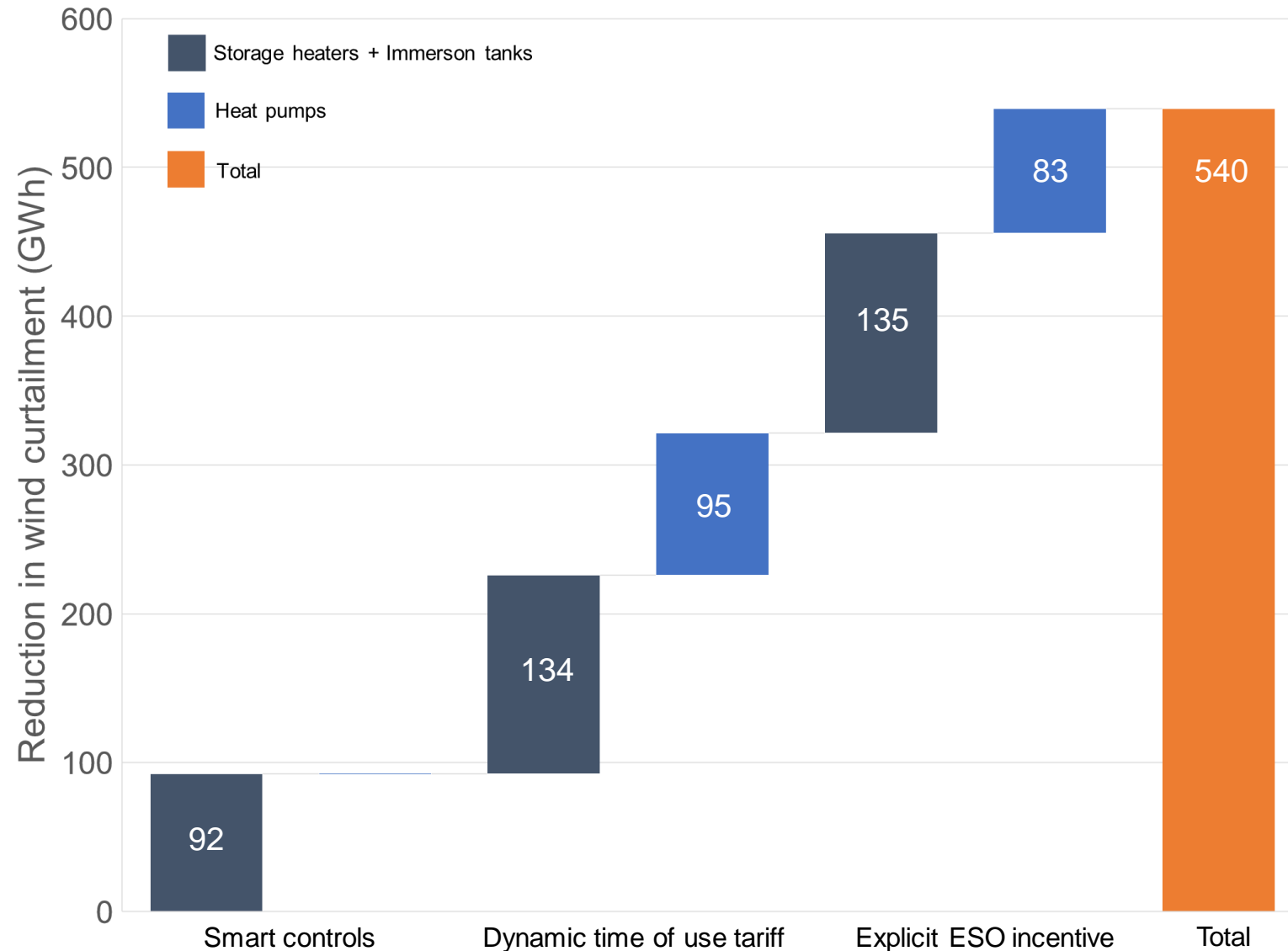
A reduction of 222 GWh is 17% of the total wind curtailment forecast for 2020

Notes

- Results scaled up for whole of off gas-grid Scotland
- Results in relation to the 2020 base case (BAU)



Main findings – modelling for 2030 scenarios



A reduction of 540 GWh is 9.2% of the total wind curtailment forecast for 2030

Notes

- Results scaled up for whole of off gas-grid Scotland
- Results in relation to the 2030 base case

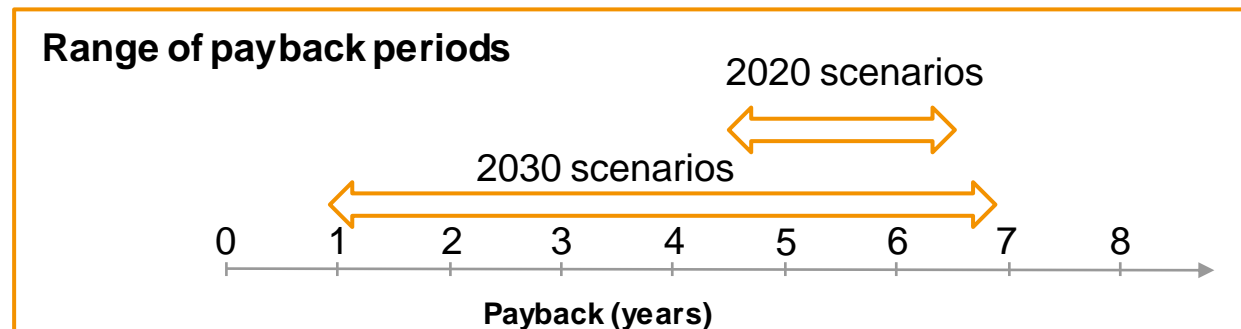
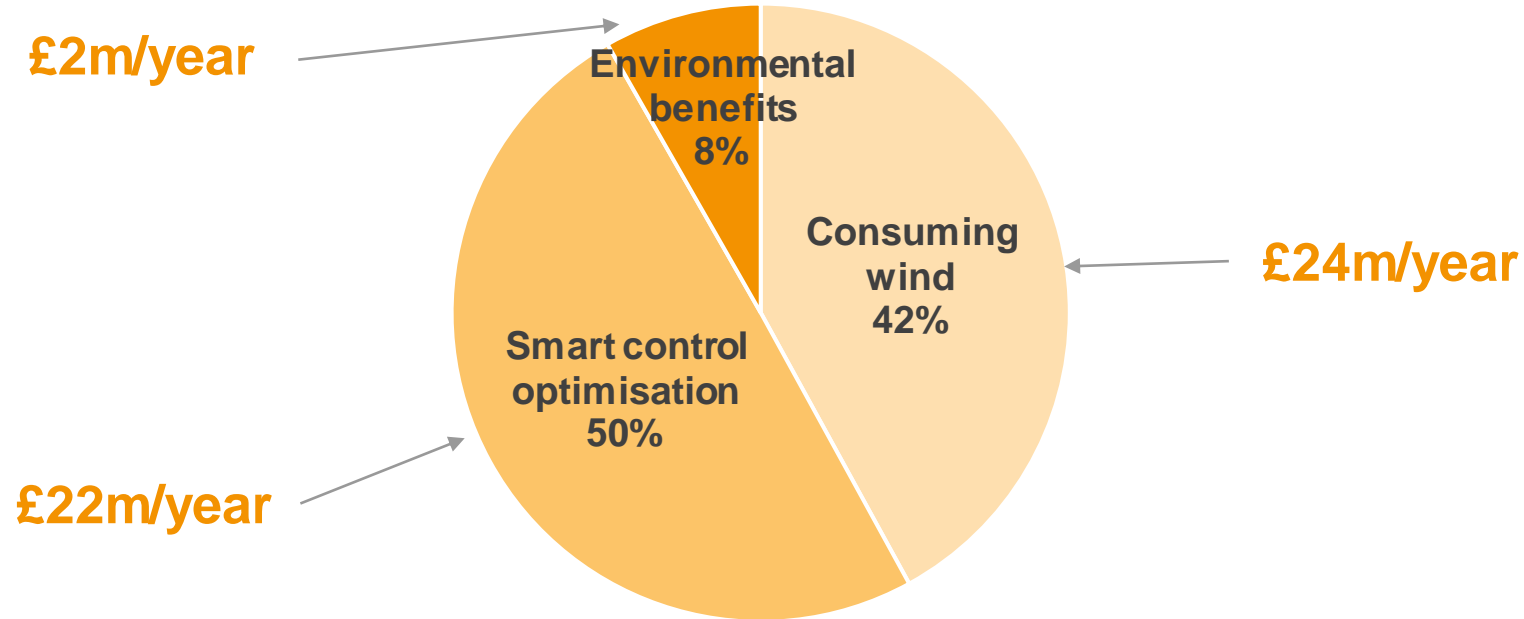


CBA main findings

£11m - £304m 10 year NPV

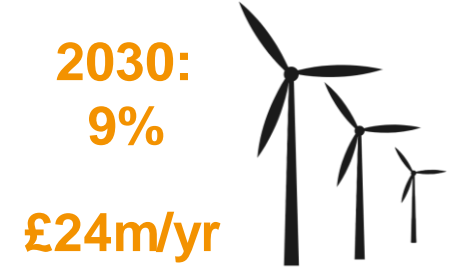


The average split of benefits across the scenarios



Conclusions

Smart electric heating can deliver value and reduce wind curtailment

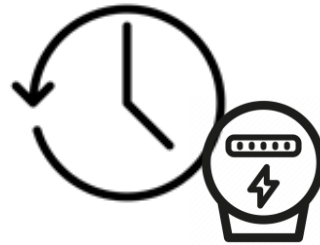


2030 wind curtailment = 3x greater than all off-gas grid electric heating demand

Smart controls are the key mechanisms to access all values:



Smart controls



Time of Use tariffs



Explicit wind consumption incentivisation payments



Recommendations

Our journey



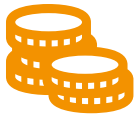
1. Continue to reform ESO and DSO services



2. Refine analysis through further work



3. Be a proactive voice on energy supply market reform



4. Support the evidence base for smart controls



5. Adopt 'market enabling' role for industry innovation



6. Consider links with Vulnerable Customer strategy

**WHOLE
SYSTEM**

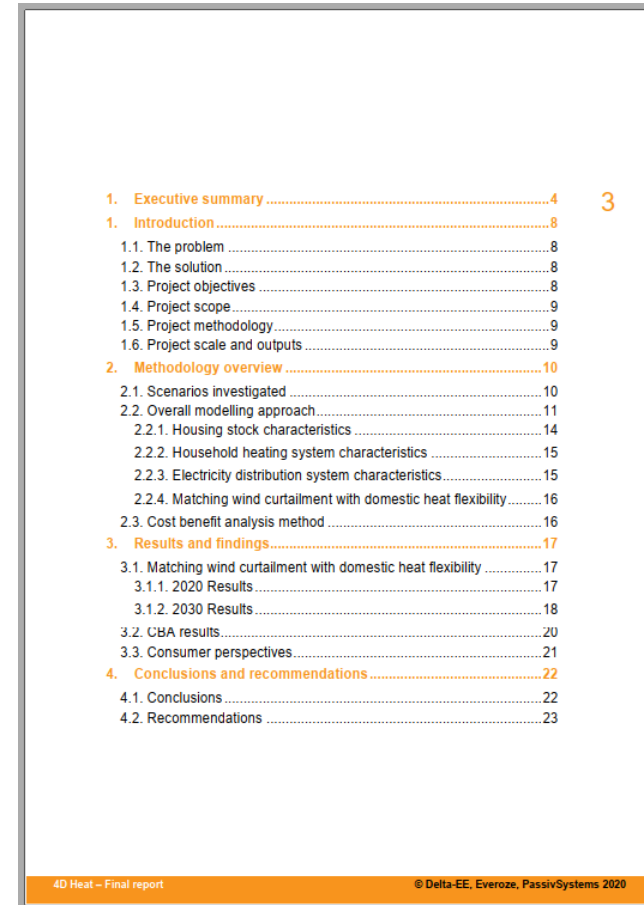
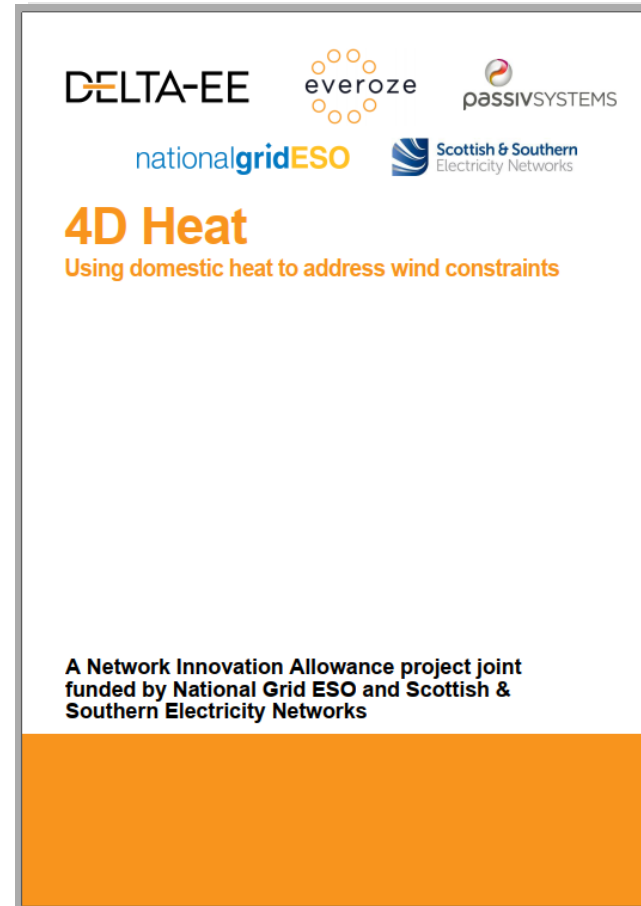
REAL WORLD



Report

Report link: <https://www.ssen.co.uk/WorkArea/DownloadAsset.aspx?id=19929>

Find the report online, follow link or search: “SSEN ESO 4D Heat report”



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