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Piecing the Jigsaw Together for a Holistic Transition

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EnergyREV

Current research interests

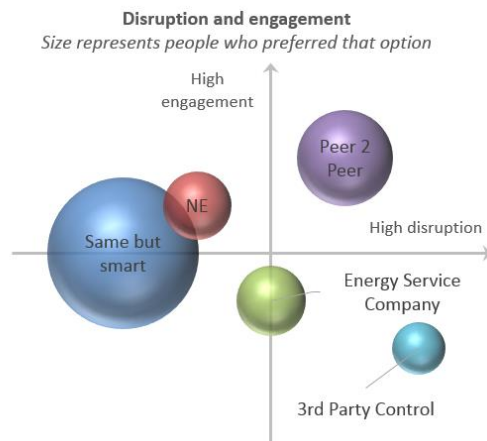


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Future energy business models



Utility 2050

Energy policy and regulation



Redesigning Regulation

People and energy



Energy Revolution Research Consortium



Thirty years of action required to meet UK net zero target



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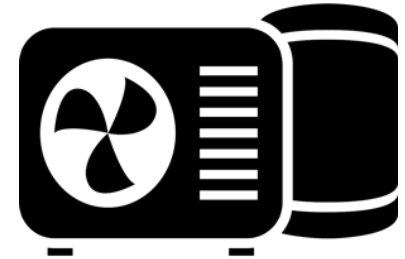
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~3.6 (6.1*) GW/year
(300 x 12MW turbines/year)
(current 4GW/year)



~1.2 million BEVs/year
(136 per hour)
(current 331 vehicles/hour)



~600k installations/year
(68 per hour)
(current 182 boilers/hour)

*including CCS and electricity storage

Technology can't do everything

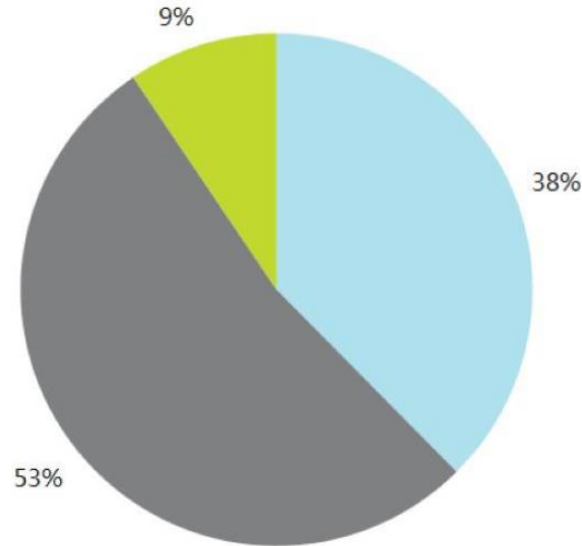


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Role of societal and behavioural changes



- Low-carbon technologies or fuels not societal / behavioural changes
- Measures with a combination of low-carbon technologies and societal / behavioural changes
- Largely societal or behavioural changes

Source: CCC analysis

Implications for end-users...



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Time of use pricing



New kit



Upfront costs

Massive opportunity for future UK utilities



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Plant efficiency
£75 – 1809 m



Service provision
£5 – 9 bn



Local LC generation
£42 – 4600 m



Large LC generation
£0.61 – 8 bn



Flexibility optimisation
£400 – 2000 m



CCS
£-0.14 – 1669 m

Up to £21bn
of new value
is available to
electricity
utilities per
year by 2050

Wegner, M.-S., Hall, S., Hardy, J., Workman, M., 2017. Valuing energy futures; a comparative analysis of value pools across UK energy system scenarios. Appl. Energy 206, 815–828. doi:10.1016/j.apenergy.2017.08.200

Disruption and engagement

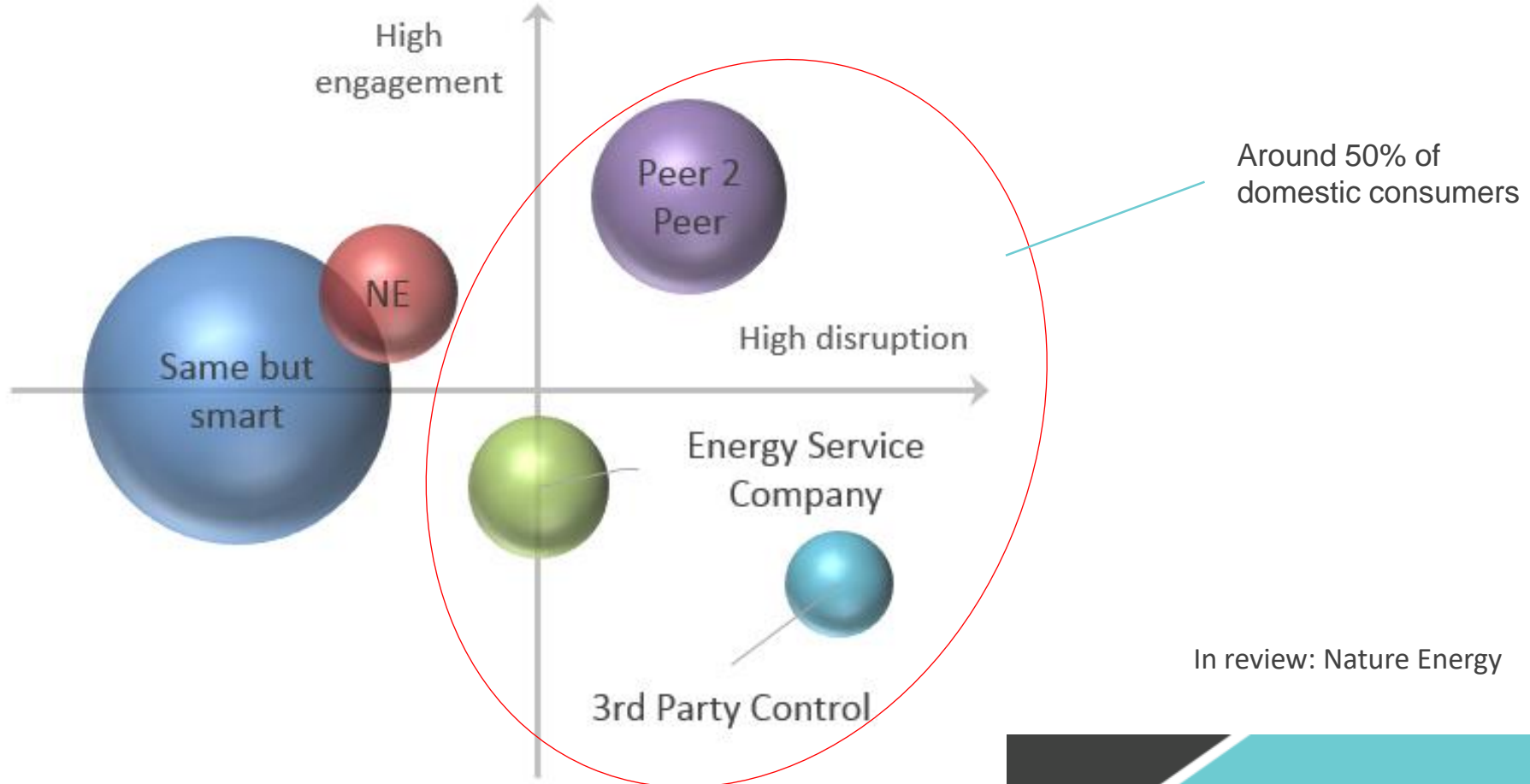
Size represents people who preferred that option



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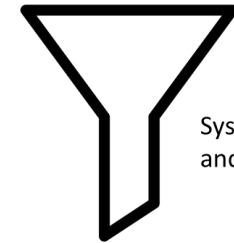
Energy policy & regulation



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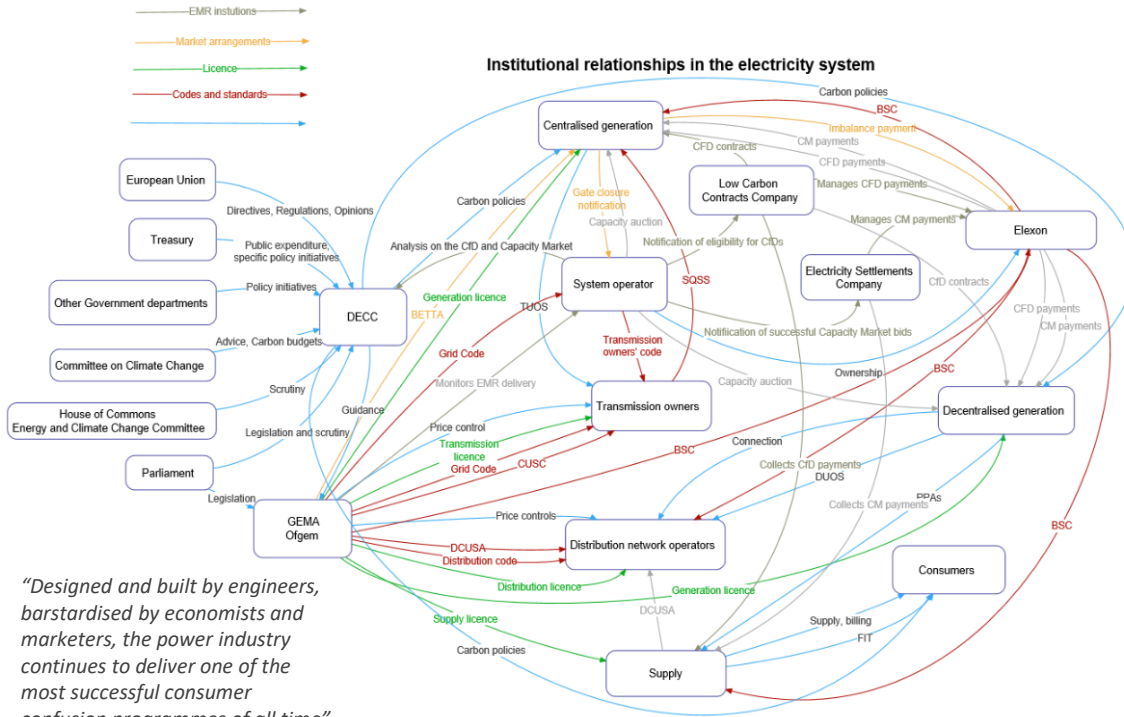
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System rules
and regulation



Institutional relationships in the electricity system



*“Designed and built by engineers,
barstardised by economists and
marketers, the power industry
continues to deliver one of the
most successful consumer
confusion programmes of all time”*

Ari Sargent

Credit: Exeter Energy Policy Group - <https://blogs.exeter.ac.uk/energy/2014/11/12/mapping-the-power-in-the-electricity-system/>

Working Paper 2: Digital Energy Platforms

Madeleine Morris &
Jeff Hardy

Elena Gaura, Matthew
Hannon, Thomas Morstyn

May 2020

EnergyREV



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- Energy Sector lags other sectors – opportunity
- Market structures mean it is hard to realise the value of energy resources
- Goldilocks dilemma on policy and regulation – when is just right?
- Platforms could change roles and responsibilities of actors
- Creating space for innovation crucial
- Upskilling across the sector
- Need to **learn** from other sectors, **try things** and earn **trust**