THE ELECTRICITY STORAGE NETWORK™

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Session 3 - The next chapter of flexibility provision

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Anesco™ AMAZING ENERGY

FLUENCE A Siemens and AES Company

Highview Power

Swanbarton SMART ENERGY STORAGE

What do we **actually** mean by flexibility?

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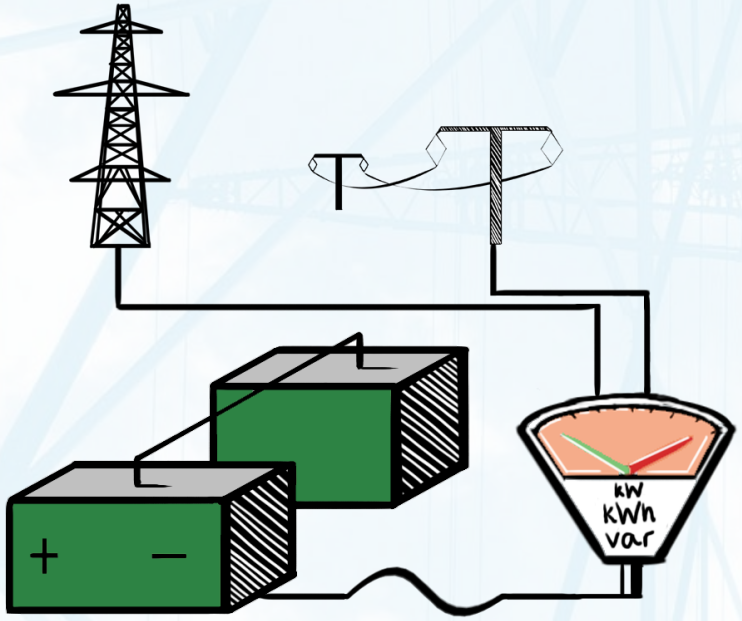
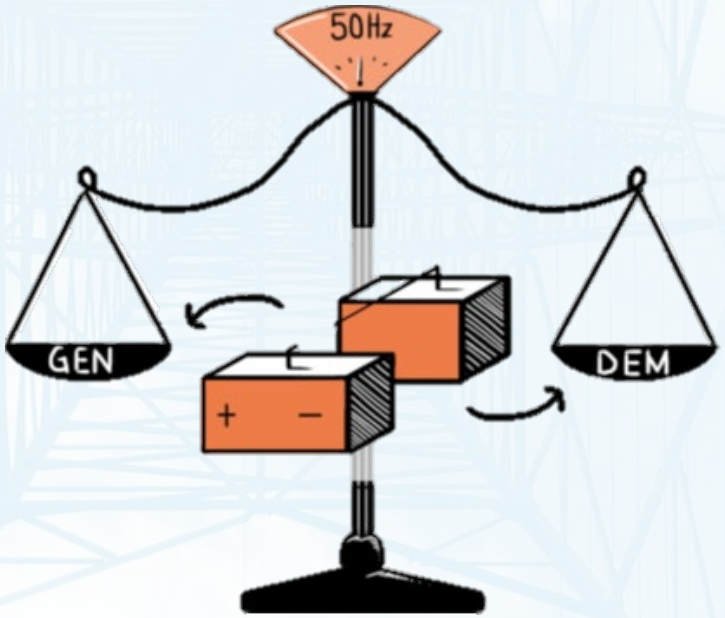
Flexibility for the energy system:

"The modification of generation injection and/or consumption patterns in reaction to an external signal (price signal or activation) in order to provide a service within the energy system." eurelectric





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What do we **actually** mean by flexibility?

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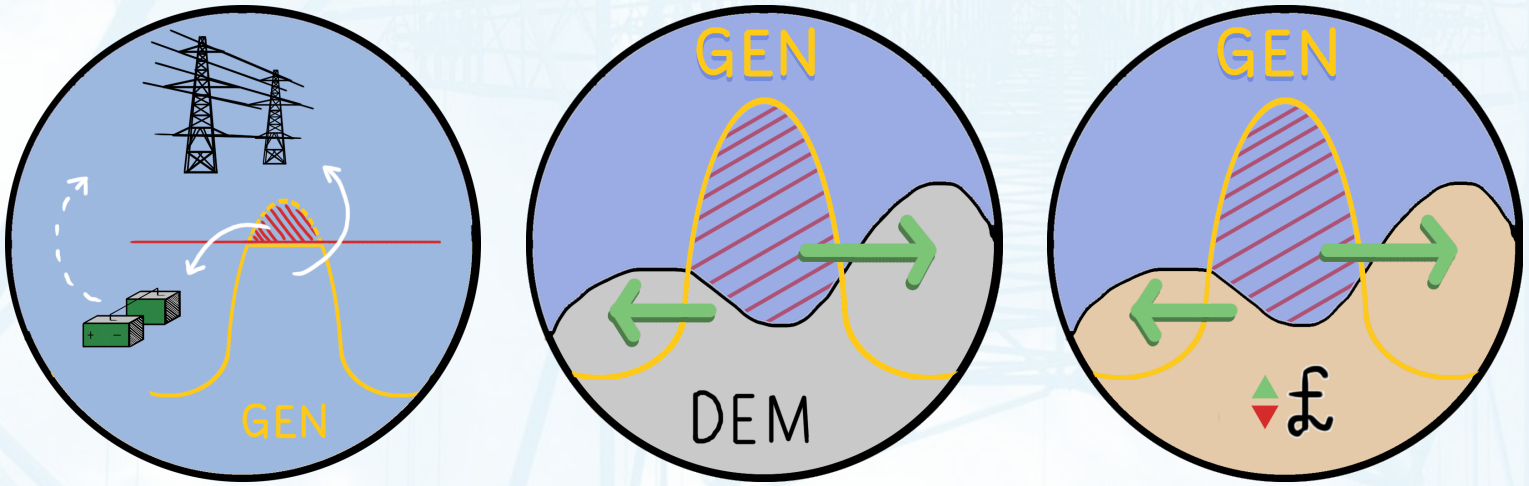
Flexibility for an energy generator:

- Time shifting or price shifting generation output – optimizing income
- Routes to market for new/additional sources of revenue
- Mitigating the impact of export constraints
- Reducing poor power quality issues (and related charges)



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What do we **actually** mean by flexibility?

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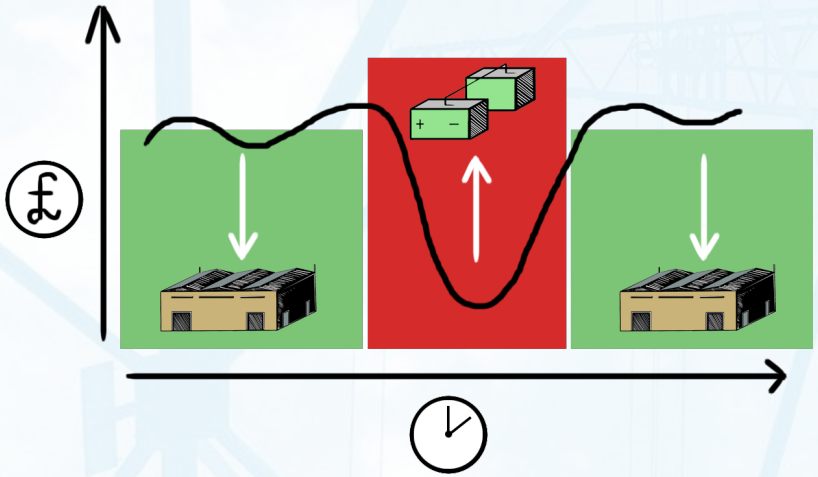
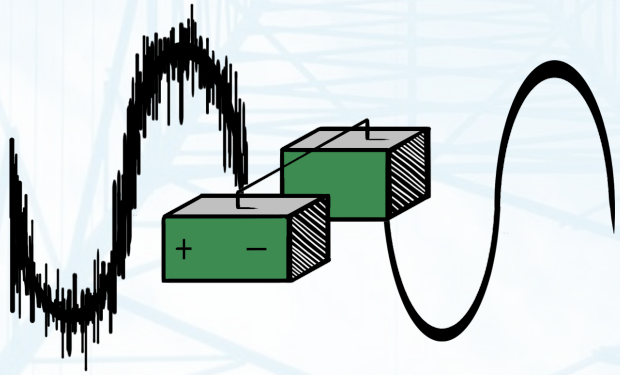
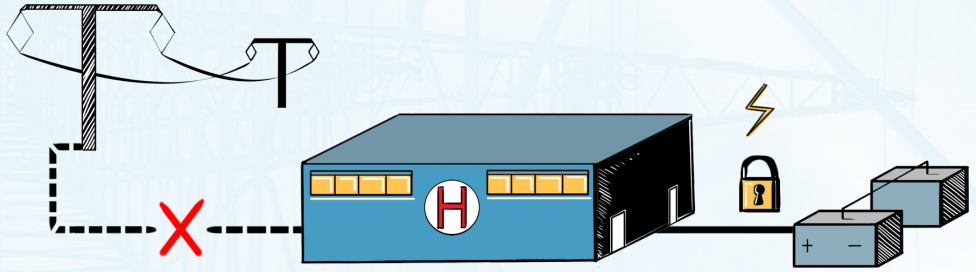
Flexibility for an energy user:

- Operational load shifting
- Avoidance of high price periods
- Resilience to loss of power supply or power quality
- Routes to market for otherwise unattainable revenue opportunities







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Regen core storage business models

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Response and Reserve

Generation Co-location

Energy Trader

High Energy User

Domestic

Standalone | Co-Located | Behind-the-Meter

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Enhanced Frequency Response

Kicked off the commercial storage market in 2016(?), but a one off tender

Provider	Project Name	Technology	EFR Capacity (MW)	Price (£/MW/hr)
EDF Renewables	EDF T_WBURB-4	Storage	49	£7.00
Vattenfall	Pen Y Cymoedd	Storage	22	£7.45
Low Carbon	Cleator	Storage	10	£7.94
Low Carbon	Glassenbury	Storage	40	£9.38
E.ON UK	Sheffield	Storage	10	£11.09
Element Power	TESS	Storage	25	£11.49
RES	RESEFR7-PT	Storage	35	£11.93
Belectric	Nevedon	Storage	10	£11.97

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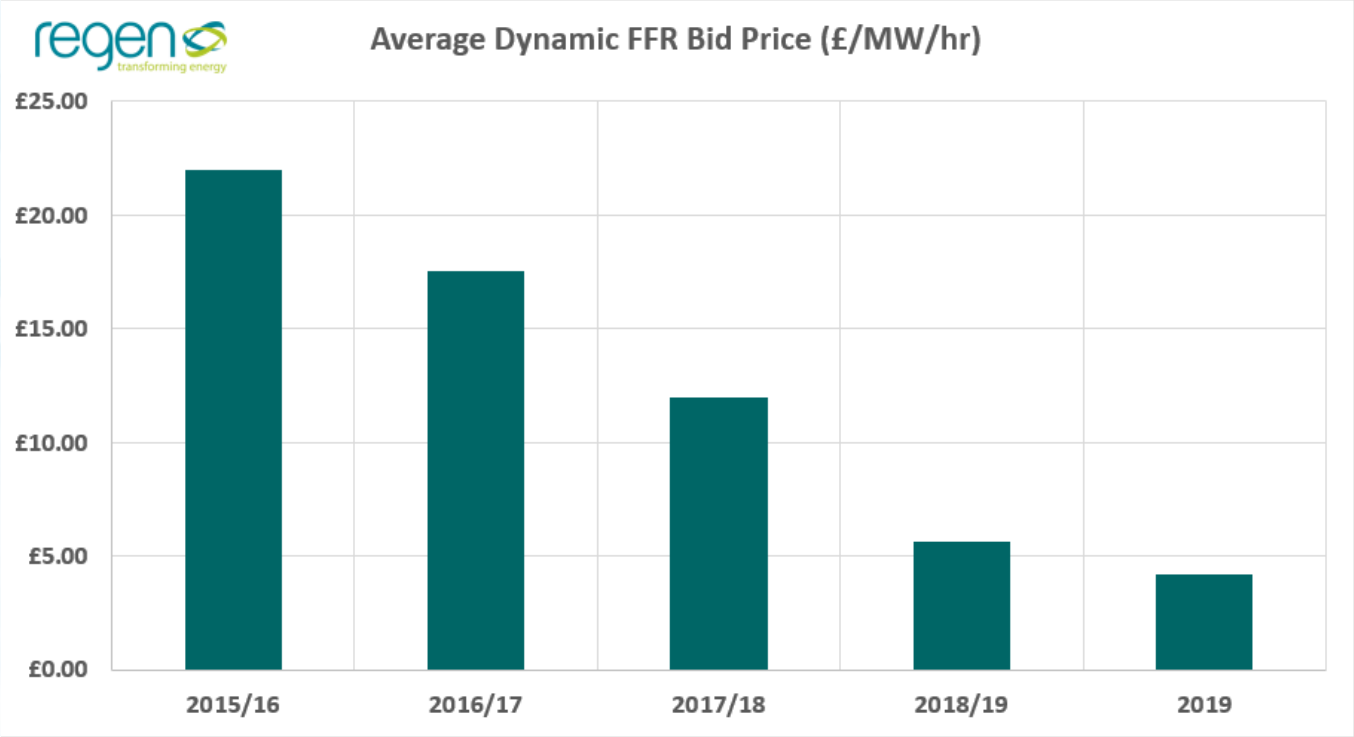
Firm Frequency Response

Burgeoning to saturated market in c.3yrs?
Could pricing rise in 2020s?



Data sourced from Baringa Partners and Aurora Energy Research

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Capacity Market

Significant market activity since 2016 auctions, but storage de-rating and suspension puts bankable validity of CM into question

CM Auction	No. Storage CMUs	Total Capacity (MW)
T4 2016	41	3,324
T4 2017	37	3,031
T1 2018	21	409

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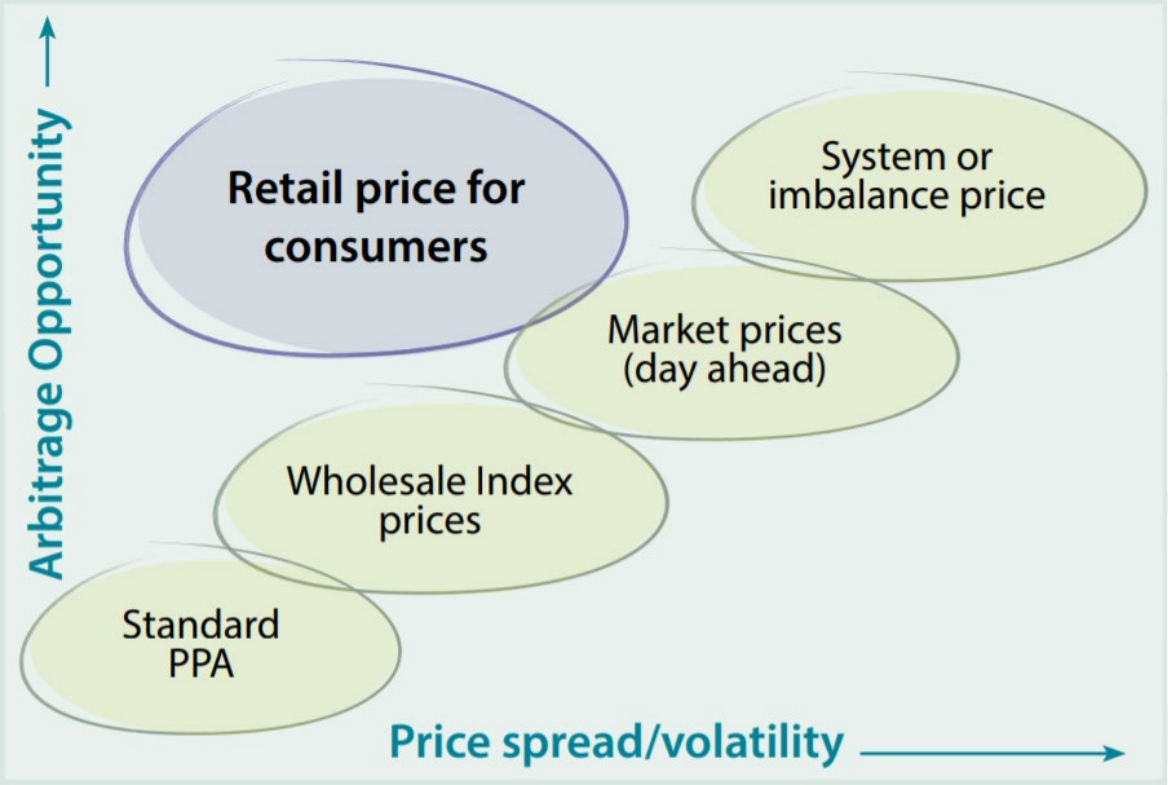
Balancing Mechanism

More activity, wider participation

Market price arbitrage

Volatility vs spread



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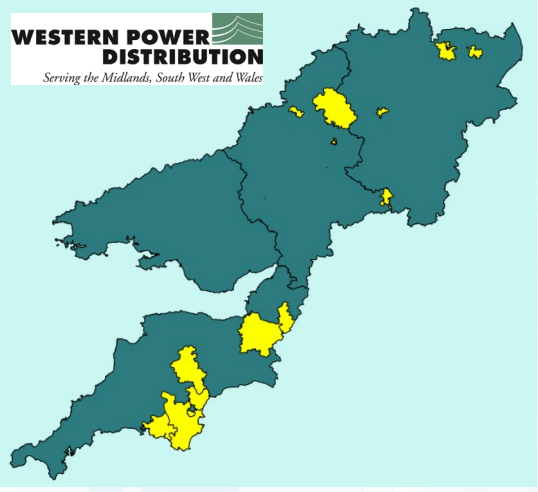
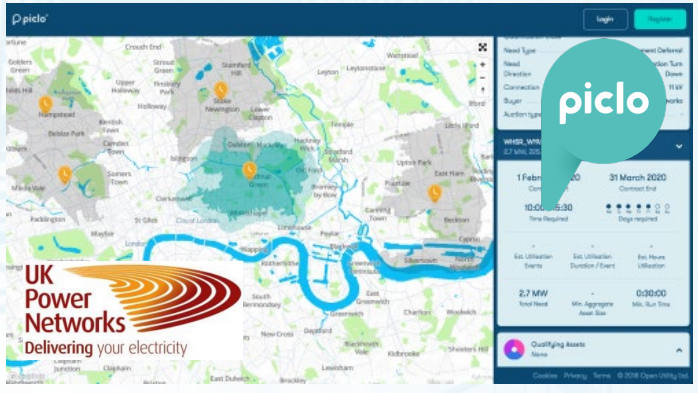
Local flexibility

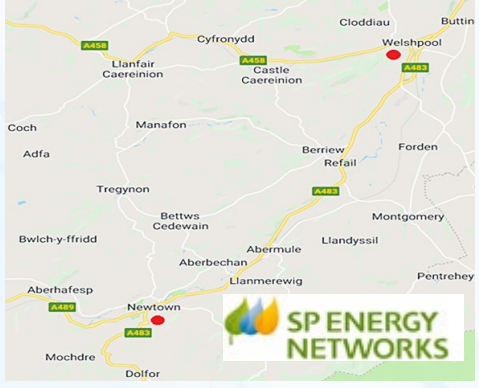
Market principle to trials to business as usual tenders across UK in 2yrs



Industry-first agreement unlocks "Proactive Flexibility" to build a smarter electricity network

Scottish & Southern Electricity Networks





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Our panel of flexibility experts

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Tom Palmer, principal consultant, Cornwall Insight

Andy Scott, consultant, Swanbarton

Steve Atkins, DSO transition manager, Scottish and Southern Electricity Networks

Hallstein Hagen, senior consultant, NODES

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