Net Zero Market Reform
Case for Change Workshops
27th-29th July 2021

Outputs and Feedback Summary

nationalgridESO

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Overview of all 3 workshops

Objective: Gather evidence for the case for market reform from an investment, flexibility and location perspective

Workshop 1: Investment

Discussion Session 1

"What, if any, are the key barriers in current market design for investment in assets needed for net zero?"

Discussion Session 2

"Other than an ROI calculation, how would you evidence the case for change for market reform from an investment perspective?"

Session 3

Multiple choice poll questions

Workshop 2: Flexibility

Discussion Session 1

"What are the biggest market barriers/challenges to flexibility on the Supply side?"

Discussion Session 2

"What are the biggest market barriers/challenges to flexibility on the demand side?"

Session 3

Multiple choice poll questions

Workshop 3: Location

Discussion Session 1

"What problems, if any, are there with current locational market signals?"

Discussion Session 2

"What principles and objectives should be considered when setting locational signals? What trade-offs are involved?"

Session 3

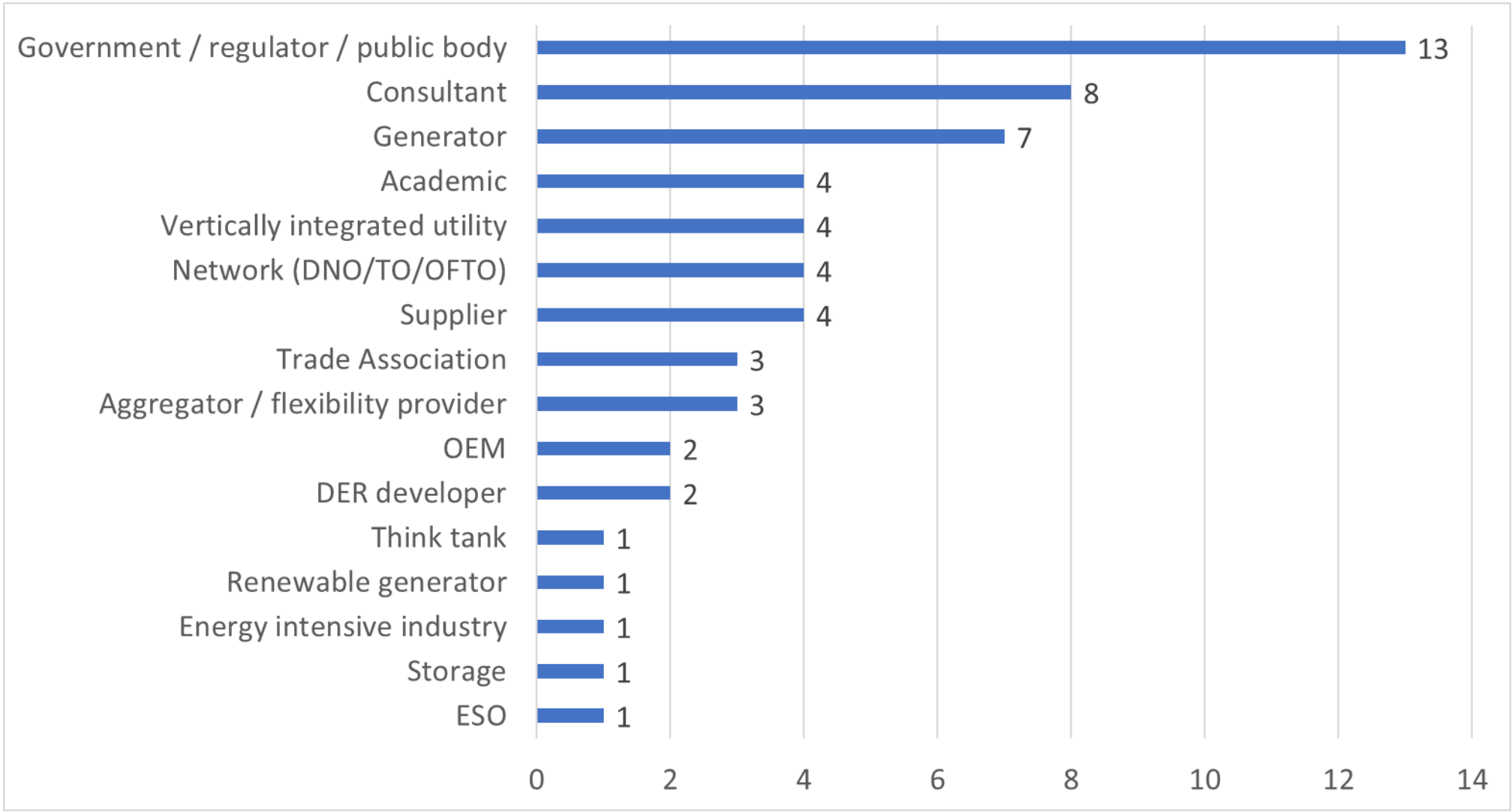
Multiple choice poll questions

For awareness

- This pack summarises the views expressed by stakeholders during the workshops
- National Grid ESO will include these views as evidence in the case for change phase of the net zero market reform project
- The case for change evidence will then be taken forward into future phases of the project and will support the identification and assessment of possible market solutions

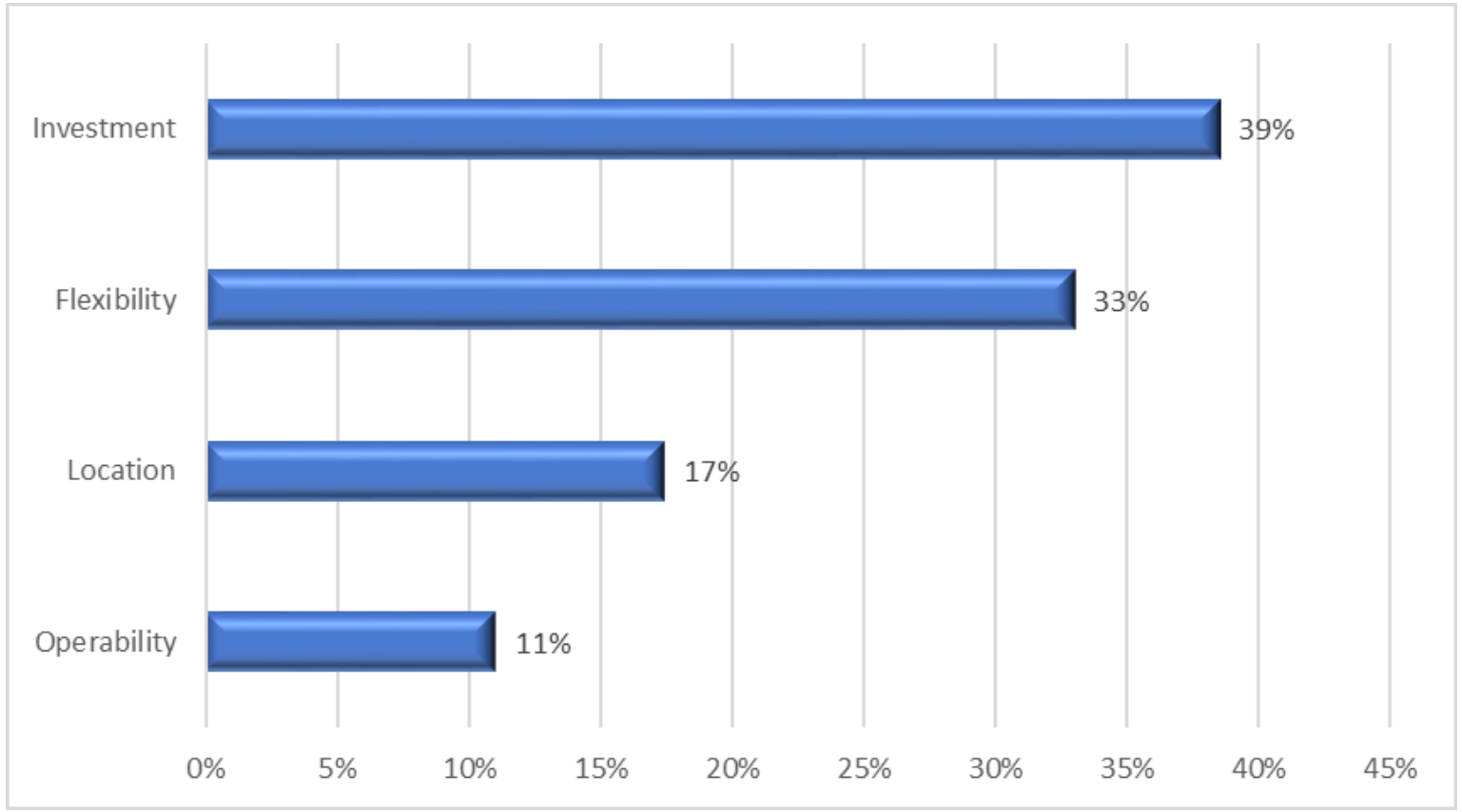
Stakeholder breakdown

Stakeholder type mix of all unique attendees across workshops (59 in total)



Workshop poll results (overarching)

Where do you think the most significant issue with current market design is?



109 responses in total

Investment workshop: What are the key barriers in today's market design for investment in assets needed for net zero?

Level playing field

- Weak investment signals for low-carbon assets (especially long duration storage)
- System balancing procured mostly from carbon-intensive assets
- Interconnectors are not operating on a level playing field
- The CM inherently favours low capex / high opex plant over high capex / low opex plant
- Market mechanisms focused on supply side (CfD, CM)

Regional granularity

- Lack of transparency in locational signals of markets including BM
- CM doesn't recognise the value and attributes of different types of capacity in different locations

Revenue stacking

- Stacking across multiple markets (including across T&D) is needed

Industry rules and governance

- Policy uncertainty leading to general uncertainty of future system
- Lack of central system planning role
- Complexity of codes

Planning

- Ongoing uncertainty/risk around planning

Duration of contracts

- Need long term guarantee of revenue to promote investment
- Grid stability contracts through pathfinders – great initiative. But most of these machines/sites have a longer lifetime than the contract.

Revenue uncertainty

- Subsidies lead to suppression of carbon prices and wholesale prices, creating uncertainty and risk around revenues for merchant and post-subsidy low carbon assets, pushing up WACCs and cost to consumers
- Ancillary services are becoming increasingly important revenue streams, but are very difficult to forecast / predict

Network access

- Availability of grid connection is a barrier and huge investment needed, especially offshore

Network charging

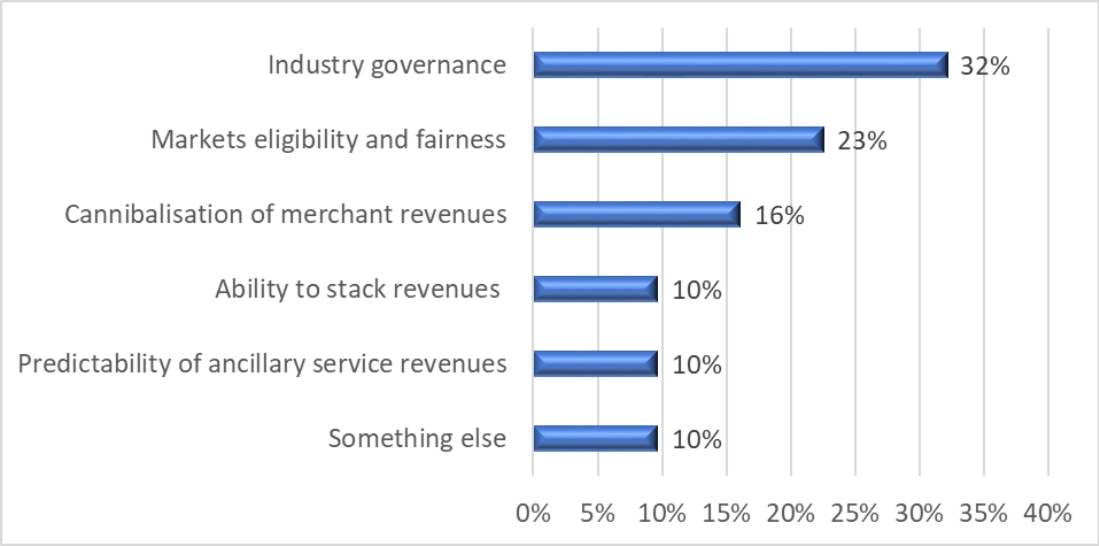
- Lots of different charges with huge uncertainties, difficult to understand and predict
- Punitive network charges for renewable and (potentially) storage assets in Scotland and the North of England

ESO delivery limitations

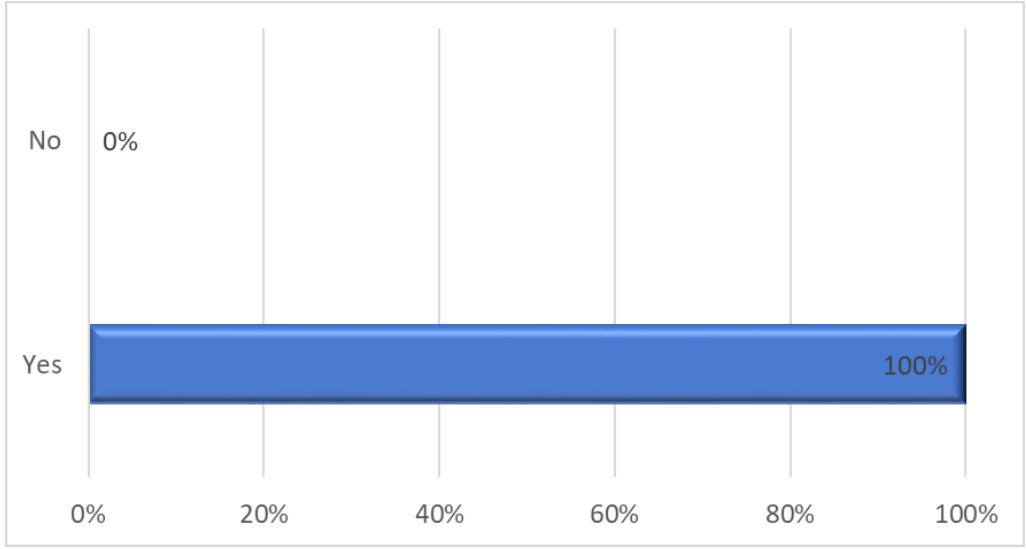
- ESO’s ability to accept innovation from the market. Innovation needs to happen quicker and not dependent on ESO’s schedule of work.

Investment Workshop: Polls

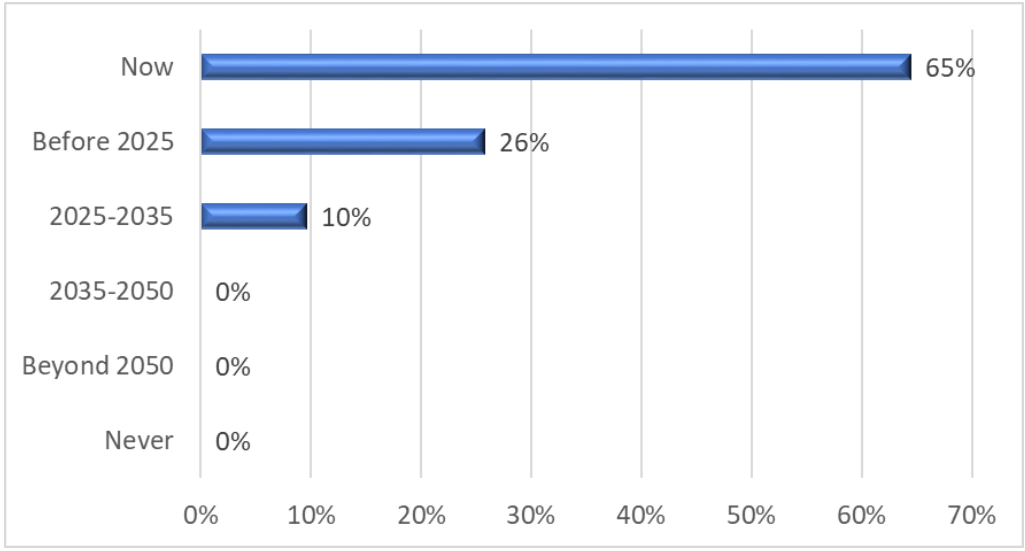
What do you see as the number one barrier in market design for investment of assets needed for net zero? (31 responses)



Are there issues with market design that are currently preventing investment in assets for net zero? (31 responses)



When, if at all, should reform start? (31 responses)



Flexibility workshop: What are the biggest market barriers/challenges to flexibility?

Lack of investment signals

- No market signal to invest in flexibility yet (particularly long-term; particularly storage; particularly large scale)
- Revenue streams are not bankable (e.g. energy arbitrage for storage)

Uncertainty around physical system requirements

- Limited visibility of current flexible DER
- Unclear future flexibility requirements
- No long-term procurement signals (or forecasts) for ancillary services

Coordination and coherence of markets

- Stacking revenues across different markets is currently hampered since markets are not coordinated
- ESO and DNO/DSO markets/products need to be more integrated
- CM and CfDs address specific issues – but don't cover flex needs
- Retail markets need to be more aligned with real time wholesale markets – e.g. ToU tariffs

Industry rules and governance

- Existing landscape is complex and not designed for storage
- Inability to connect in the right location (especially co-location connections) at a reasonable cost

Regulatory / policy uncertainty

- Uncertainty over a raft of potential changes required (e.g. EV charging, smart meters, DSR, transport charging review) to get to net zero – but uncertainty undermines investor confidence

Market access

- Markets (esp. wholesale and BM) still favour larger players
- Ancillary market reforms risk losing DSR participation, especially industrial

Market design not fit for purpose

- Short term nature of markets (other than CM and CfDs) means long-term contracts (required to underpin large capex projects) are not possible

Settlement periods

- Opportunity to move to more granular settlement periods

Demand-side engagement

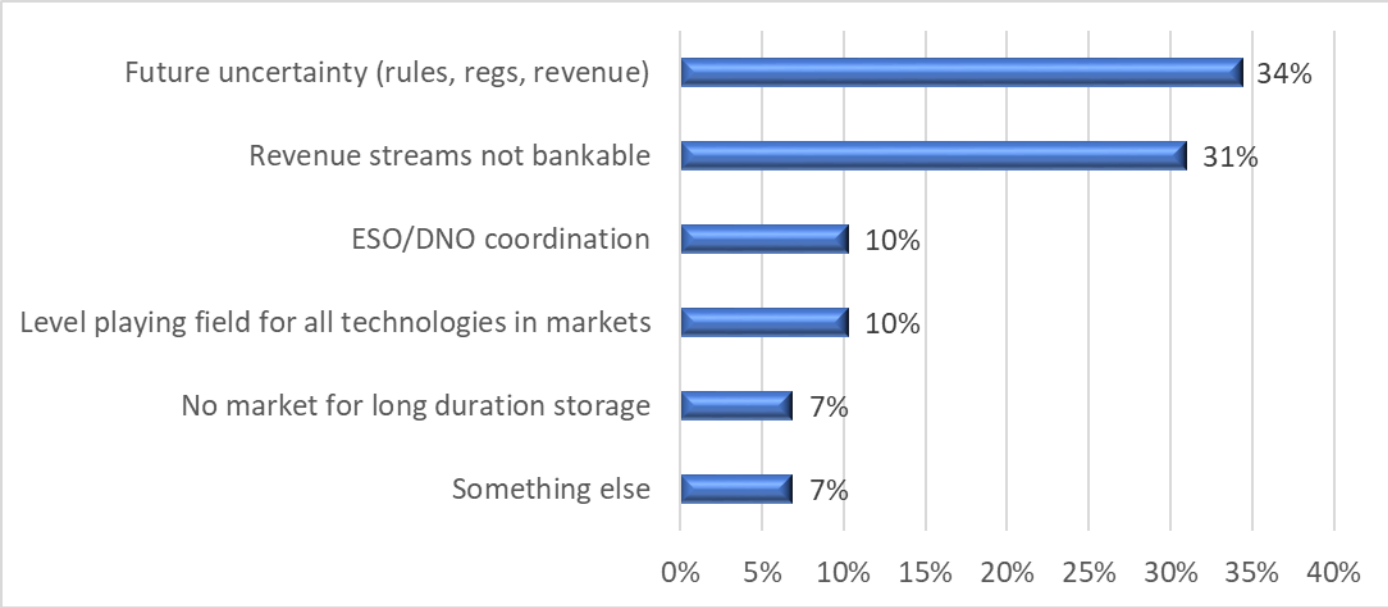
- Are consumers aware? Willing to take part? Is it worth their while?
- Energy intensive users can offer significant DSR if market designs allow
- Need mandated standards/interfaces for e.g. EV charging, appliances

Network access

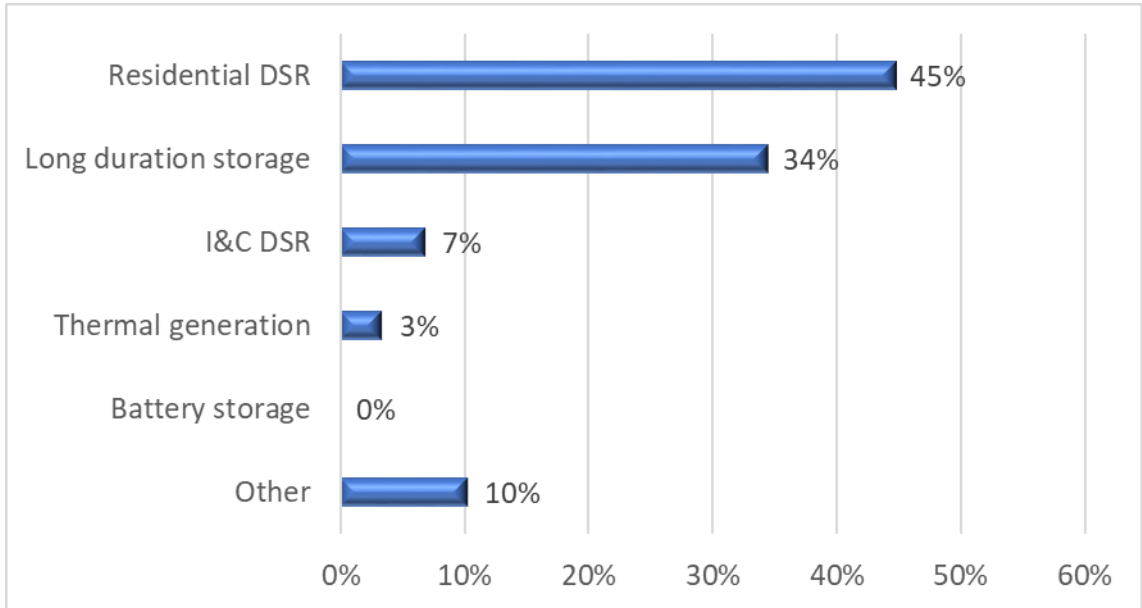
- Grid connection difficult; distribution connection comes with restrictions

Flexibility Workshop: Polls

What do you see as the number one barrier in market design to securing the level of flexibility needed for net zero? (29 responses)



Which flexibility technology is most negatively impacted by today's market design? (29 responses)



Location workshop: What problems, if any, are there with current locational signals?

Volatility, unpredictability & inability to hedge

- Large year to year variations in TNUoS tariffs
- No accurate long-term TNUoS forecasts
- TNUoS unpredictability has increasing influence on projects' business case as generation technology costs fall over time.
- Complexity of TNUoS methodology favours larger, vertically integrated developers (more resource) over smaller, local developers
- Short-term nature of TNUoS signals (only one year in advance) frustrates investors' desire for long-term bankable revenues
- BM revenues provide signals for cost of constraints but challenging as long-term investment signal
- Lack of coherence and transparency across different locational signals, e.g. operability through pathfinders
- Unpredictability & inability to hedge TNUoS → higher risk premia
- Impact on cost of capital for OWF projects

Demand-side effectiveness

- Asymmetric demand and supply side locational signals
- Perception of less effective existing demand-side locational signals
- Need more locational wholesale prices to stimulate demand elasticity e.g. siting of energy-intensive industries and electrolysis plant

Conflict between locational signals & other key drivers

- Most attractive wind farm locations are in areas with highest TNUoS
- Perceived conflict between net zero target and locational signals
- Lack of clarification of relative importance of decarbonisation and cost-reflectivity objectives
- Perceived conflict between government planning policy & locational signals

Lack of effective locational dispatch signal

- Efficient use of MW and MWh not incentivised
- Risk that lack of integration between wholesale market and BM will lead to two increasingly independent markets
- Increasing carbon cost associated with resolving constraints

Coordination across networks

- Incoherent charging between embedded and transmission-connected generation
- Need more granular DSO level signals to facilitate electrification of transport and heat and coherence with DSO flex market signals
- Current signals favour development of radial OWF connections and do not incentivise more efficient co-ordinated offshore network
- Lack of incentive to co-locate variable renewables & storage

Location workshop: What principles, objectives and trade-offs should be considered when setting locational signals?

Volatility, predictability & investor confidence

- Longer lived (3-4 years+) signals needed to drive investment.
- Potential trade off between signal duration and cost reflectivity
- Potential trade off between transparency and data confidentiality?
- Inability to build where signalled due to lack of connection capacity
- Trade-off between locational granularity and liquidity of wholesale market

Primacy of decarbonisation objective

- Highest level guiding principle should be consistency with delivery of economically efficient net-zero
- Anticipatory investment in network reinforcement could save money over the long term. Potential risk of over-build.

ESO/DSO coordination

- Local flexibility market signals created by DSOs in constrained areas of the distribution system must be coherent with broader market design
- Procurement approaches should be consistent across all locations/ DSOs
- Possible trade-off in terms of solving specific issues and speed of adaptation.

Competition / Level playing field/ Equity & fairness

- Locational signals should be symmetrical across supply & demand
- Parties must be able to respond to signals
- Signals must not be a barrier to smaller/ more innovative solutions
- Zonal/Nodal pricing – impact on consumers and wider market participants (place risk on those best to manage rather than consumer)

Efficient investment & efficient dispatch

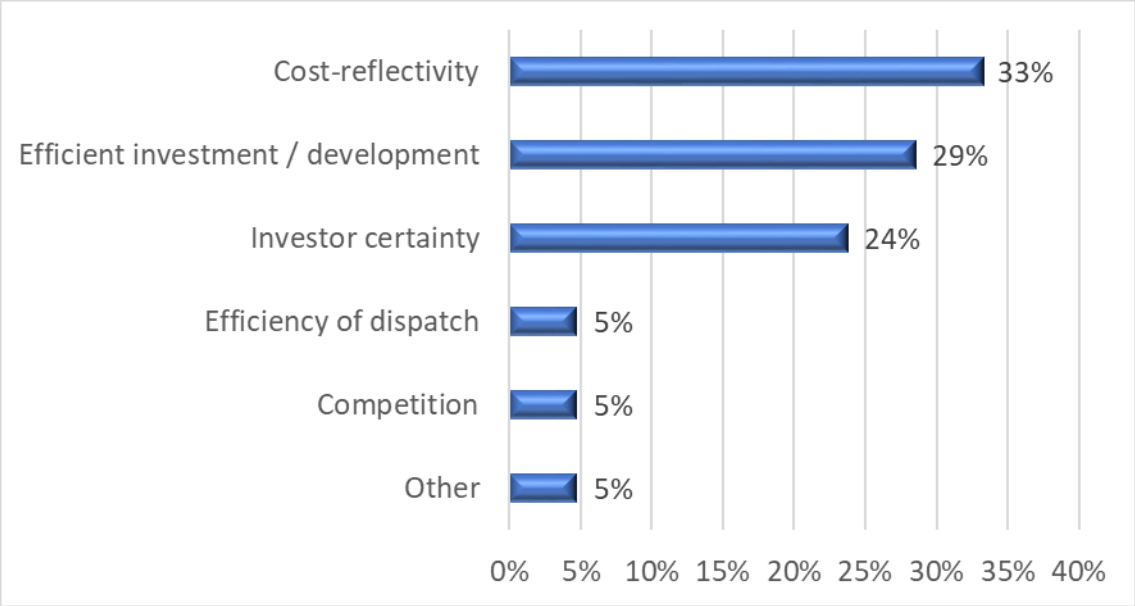
- The future requires both MW and MWh locational signals – efficient dispatch is critical
- Ultimately we are trying send signals that lower overall costs for consumers via efficient siting and operation.
- Balance to be struck between sharp and sufficiently effective signals.

Transition period & ease of implementation

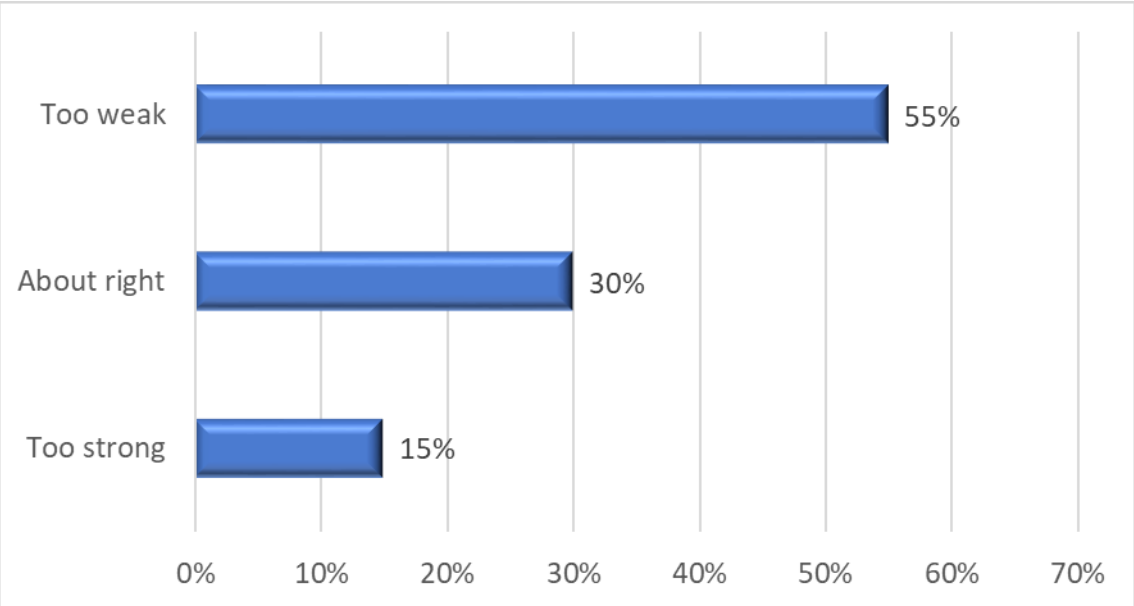
- Need to avoid major upheaval in signals to avoid a hiatus in investment?
- Systems required to implement locational wholesale market would be costly to design and implement.
- Knock-on impact on network charging (to avoid “double counting”) and Financial Transmission Access Rights of locational wholesale market
- How much can/should we consider the transitional period in pursuit of a good enduring solution?

Location Workshop: Polls

Which principle/objective is the most important when setting locational market signals? (21 responses)

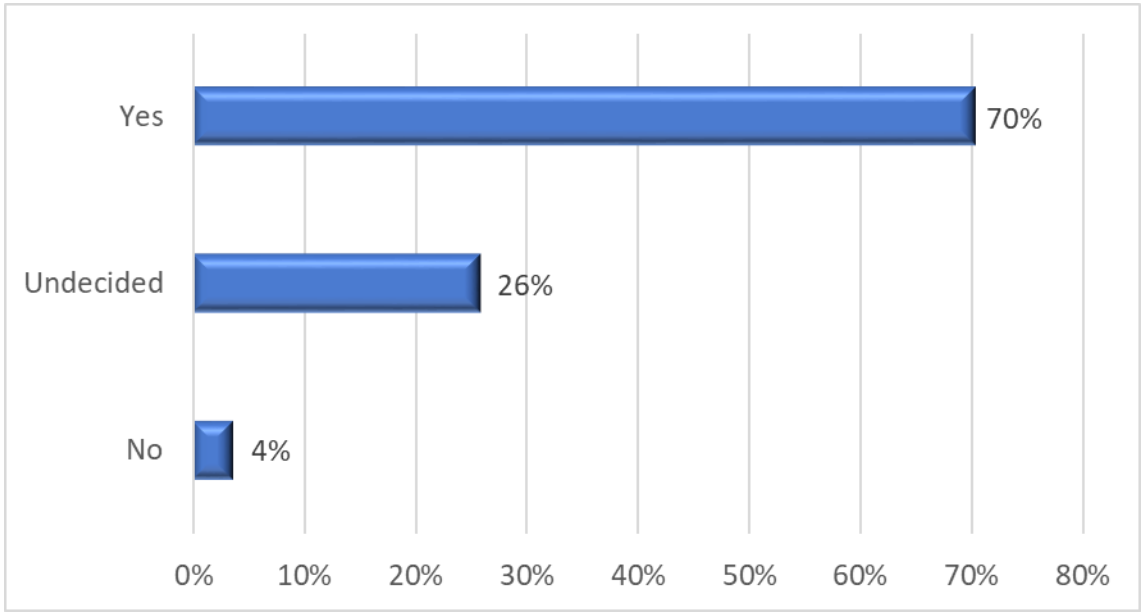


How would you rate the strength of current locational signals? (19 responses)

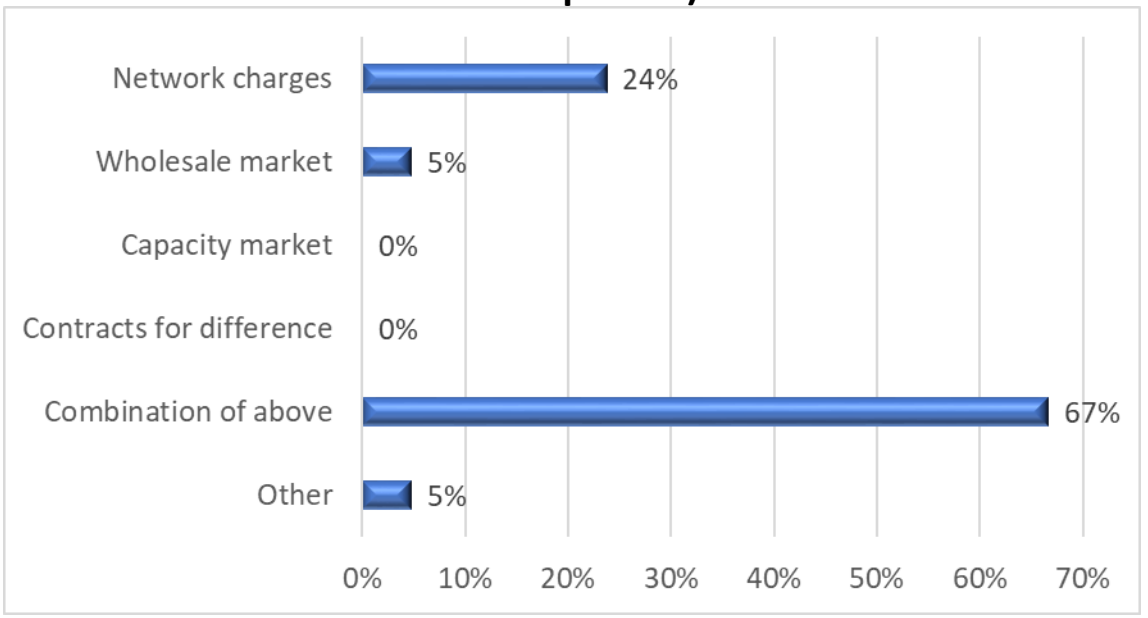


Location Workshop: Polls

Are changes to locational signals an essential component of an efficient market design to facilitate net zero? (27 responses)



Where should the locational incentive be placed? (21 responses)



Workshop feedback

Overall, how would you rate the event? - Rating (out of 10)

8.1

(average from 71 responses – combined view of poll results during workshop and Qualtrics survey after workshop)

What did you like most about the session?

- Breakout format: inclusive, respectful, easy to engage, encouraged participation, mitigated "dominant voice"
- Well facilitated
- Good to hear other people's views
- Transparency - willingness (ESO) to listen
- Constructive - did not beat about the bush about what the issues are
- Really useful discussion
- Excellent pace and no dead time. Highly productive.

What did you like least about the session?

- Not all points briefed in the summary
- Not enough time
- Concern about how much this will influence the changes that actually need to be made.
- Would be good to have the work being done by Ofgem, BEIS and the ESO all tied together into a single and holistic review rather than lots of individual efforts
- Not clear how the information will now be used and the role for the ESO (BEIS and Ofgem are decision-makers)

How could the session have been improved?

- Introduce a few key discussion points in each session
- Pre-prepared white board
- A little more time
- Some intro to possible solutions
- Less use of chat function and more discussion
- Longer interactive sessions with fewer people (5-6)
- A better definition of the reference market and a clear definition of the objective of the discussion
- Who or what does the recommendations from this project inform?
- Clarity on how this project feeds into other government's workstreams
- Missing some of key stakeholders e.g. investors.