Net Zero Market Reform

Transmission Charging Methodology Forum

2nd September 2021

nationalgridESO

Agenda

- The Market Strategy team
- Introduction to project
- Analysis framework
- External engagement
- Locational case for change analysis
- Locational case for change workshop feedback
- Q&A and future engagement

Phase 2 and 3 Overview

Apr-21 **PHASE 2 (WP1-WP3)** *Sep-21*

What are the current and future challenges in the electricity market and what is the 'Case for Change'?

- Phase 2 has been divided into workstreams:

Investment Will we see the investment we need?	**Location** Will investment happen in the right place?
Flexibility How will supply and demand be matched?	**Operability** Will operability issues be manageable?

- Market objectives and success criteria for achieving Net Zero
- Emerging problems with current market design
- Evolution of the characteristics of the energy system
- Range of market design options to address the challenges

Oct-21 **PHASE 3 (WP3-WP5)** *Mar-22*

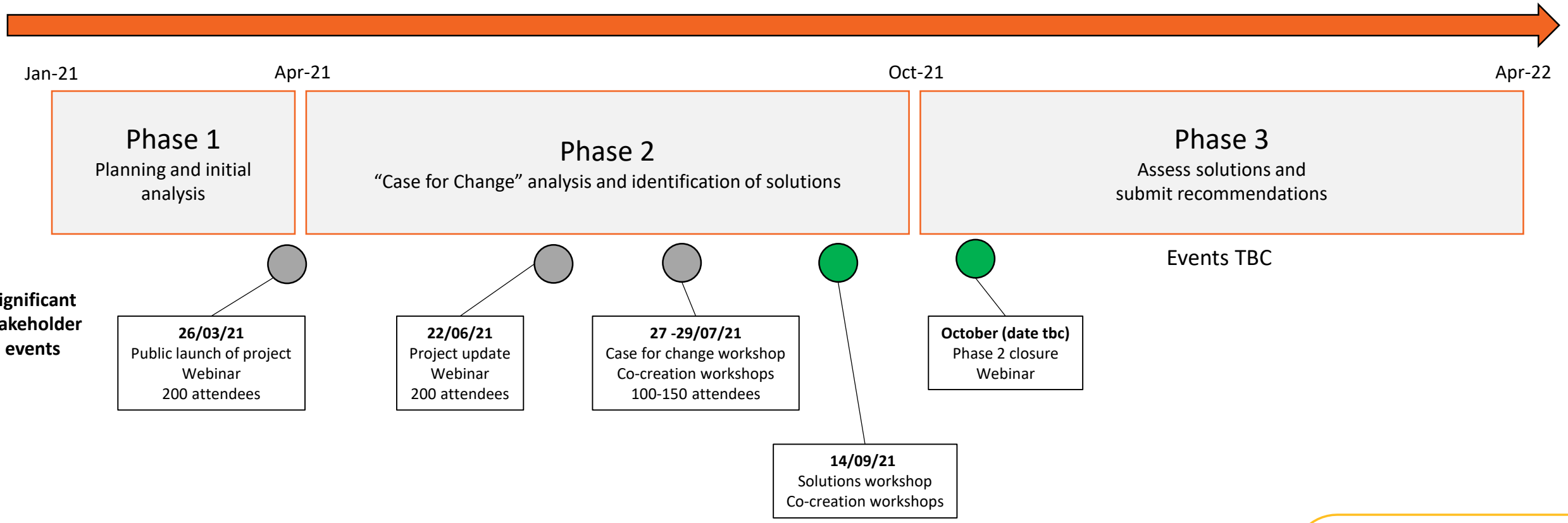
Options assessment and recommendations

- Assess the range of market design options to address the challenges in Phase 2
- Inherent trade-offs, natural combinations and incompatible options
- Evaluate each credible set of solutions identified against agreed market objectives and success criteria
- Recommend preferred high-level package of solutions

Stakeholder engagement throughout

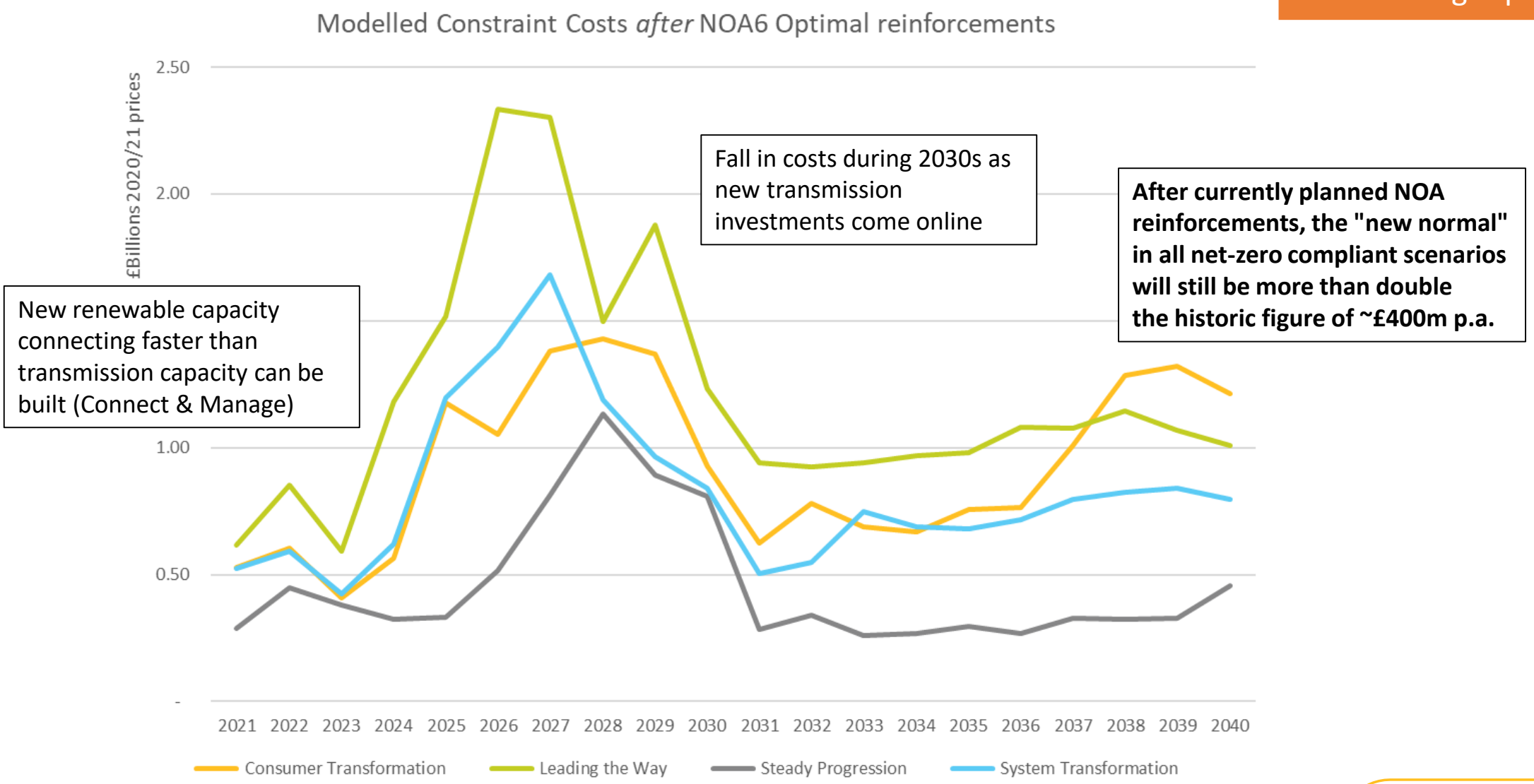
The Net Zero Market Reform project

The Market Strategy team is leading on a project looking at long term market reform (2030 onwards) with recommendations to be published by the end of March 2022. The Market Strategy team will be working closely with BEIS and Ofgem, and will be engaging with stakeholders across the industry throughout ensuring all possible solutions are considered before being assessed and refined into a package of recommendations.



Location: How will constraint costs evolve?

Location
Will investment happen in the right place?



New renewable capacity connecting faster than transmission capacity can be built (Connect & Manage)

Fall in costs during 2030s as new transmission investments come online

After currently planned NOA reinforcements, the "new normal" in all net-zero compliant scenarios will still be more than double the historic figure of ~£400m p.a.

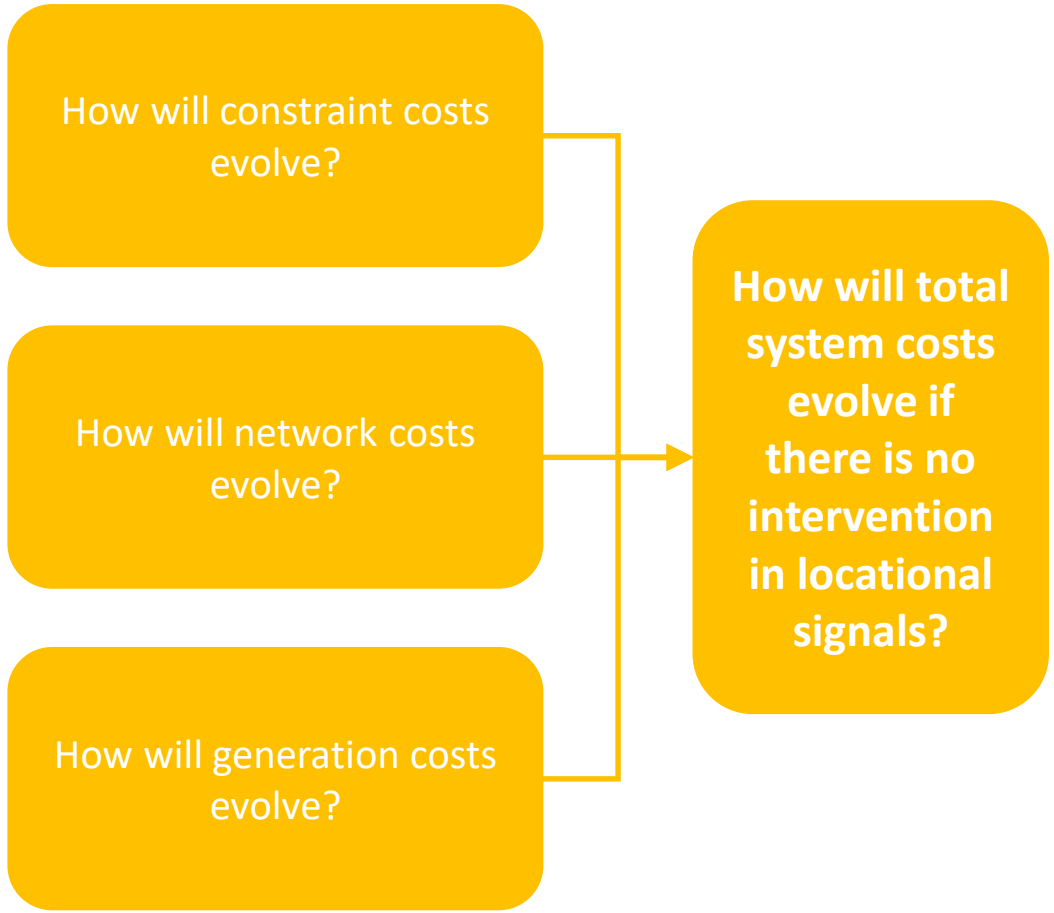
** Thermal constraint costs only (excl. actions required for Voltage and stability limits & ROCOF)*

Location: Current GB Signals – Transmission

Location
Will investment happen in the right place?

How will total system costs evolve if there is no intervention in locational signals?

Current market signal	Locational?
Wholesale Market	No
Balancing Mechanism	Yes
Capacity Mechanism	No
CfD	No
BSUoS	No
TNUoS	Yes
DUoS	Yes
Transmission and Distribution Losses	Yes



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

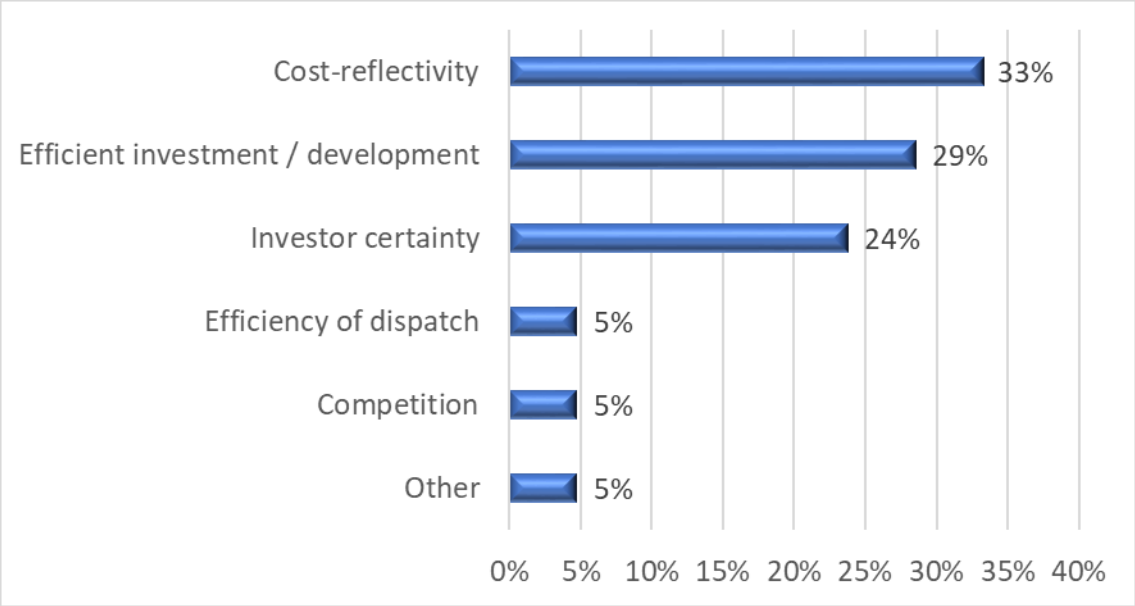
- The future requires both MW and MWh locational signals – efficient dispatch is critical
- Ultimately we are trying send signals that lower overall costs for consumers via efficient siting and operation.
- Balance to be struck between sharp and sufficiently effective signals.

Transition period & ease of implementation

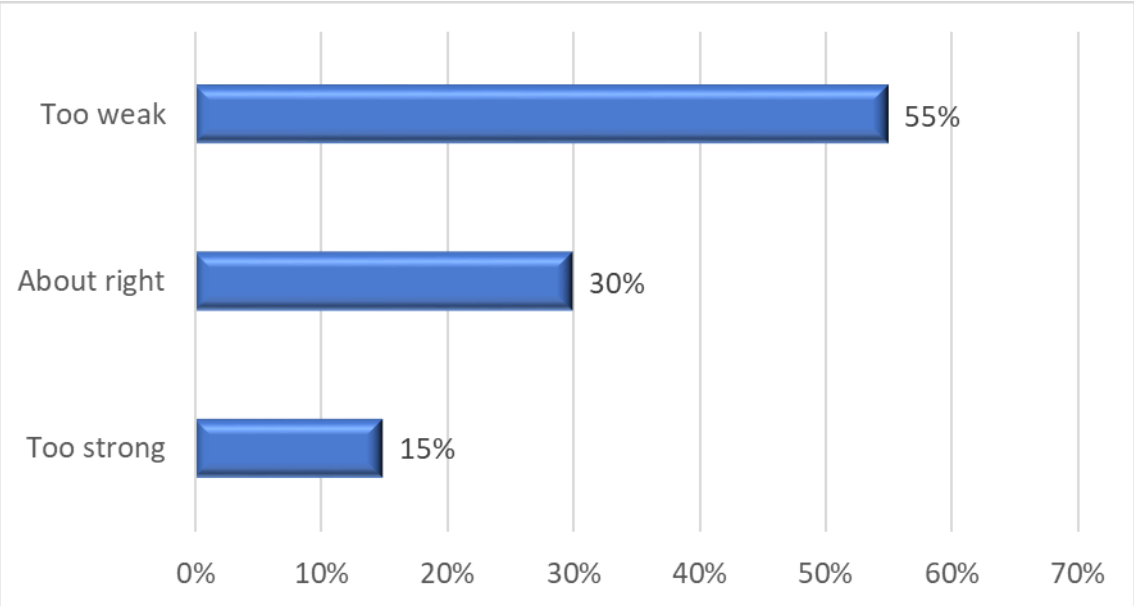
- Need to avoid major upheaval in signals to avoid a hiatus in investment?
- Systems required to implement locational wholesale market would be costly to design and implement.
- Knock-on impact on network charging (to avoid “double counting”) and Financial Transmission Access Rights of locational wholesale 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)



For any questions, comments or for more information on future engagement events please contact us:

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