MARKET POWER

TRANSMISSION ACCESS REFORM TECHNICAL WORKING GROUP #11

30/07/2020

AEMC

Agenda

1. Welcome and introductions
2. Definition of local market power
3. LMPs and the execise of local market power
4. Mitigating market power
5. Market power and FTRs

Welcome and introductions

Recap:

- The technical working group **assists with the detailed design of the model**
- It includes representatives from **networks, generators, consumer bodies and market bodies** – it has also expanded to **include** interested **ESB 2025 working group members**

- The purpose of the technical working group:
  - **Provide advice** and **input** into the progression of the project by attending and participating in working groups
  - **Share expertise** to input into consideration and development of issues
  - Provide **differing viewpoints** to challenge thinking

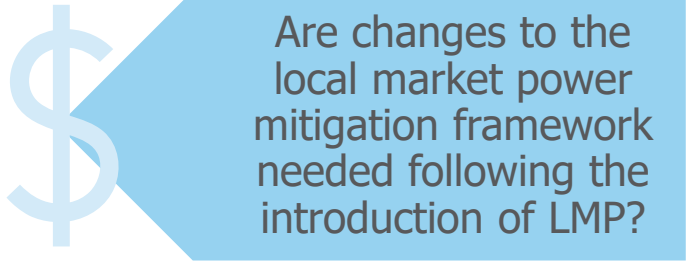
Workplan

Month	July 20	Aug 20	Sept 20	Oct 20	Nov 20	Dec 20
NERA modelling completed						
Cost modelling – IT, implementation and participant costs						
TWG#9 Contract market liquidity						
TWG#10 Transitionals & simplification						
TWG #11 Market Power						
TWG#12 Reform Model Design						
Public forum – NERA modelling results						
Public forum – Simplified model						
August consultation paper – design of access model						
ESB consultation paper on 2025 work						
Written feedback on consultation paper						
Rule drafting						
Report and draft rules published						
Energy National Cabinet meeting						

- Extensive consultation in TWG, public forums and August paper will run through to the end of September.
- Additional TWG meetings may be scheduled as required.
- Draft rules and accompanying report to be published in November in time for Energy National Cabinet consideration December. We will welcome feedback on these and report this feedback to the Energy National Cabinet.

Purpose of this session

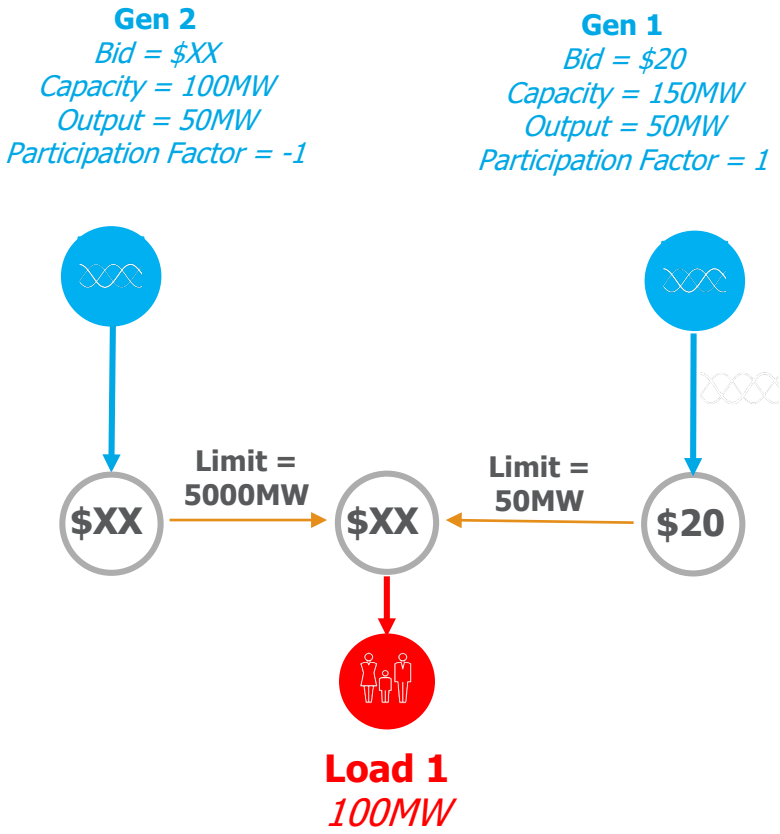
- On the 24 July, we discussed the design proposals for the transitional allocation of FTRs and potential measures to simplify the access reform model.
- Today, we are discussing **market power mitigation**, in relation to:
  - how the introduction of LMP may change the way that **local market power** is exercised and the potential need for mitigation
  - how the introduction of FTRs may impact both the exercise of local market power in the NEM and have a bearing on the exercise of market power in the **market for FTRs**.
- Our focus is on understanding whether additional market power mitigation measures will be necessary alongside the implementation of transmission access reform, in relation to both LMP and FTRs.
- Broader issues of market power in the NEM are not addressed through this reform and are not the focus of today's session.



WHAT IS LOCAL MARKET POWER?

What is local market power (1 of 2)

- Binding constraints break the network up into "sub-markets".
- Generators within these sub-markets can have local market power.
- A common example is a "**load-pocket**", where a constrained area has a single or small number of generators alongside load, with constraints limiting the amount of electricity that can be imported.
- This situation is more complex in a **meshed network**, as one route to a load pocket may be constrained, while alternative routes may be unconstrained.
    - Geographically defining a local "market" for the purpose of market power analysis in considering is difficult given the meshed nature of transmission networks.



What is local market power (2 of 2)

- LMPs are mathematically defined* as:

$$LMP_x = MC_{RRP} - \sum_{i=1}^{n} (MV_i * \alpha_x)$$

- A generator at x with a negative participation factor (α) in a binding transmission constraint (ie, where the marginal value of the constraint > 0) may be able to economically withhold, increasing the marginal value of the constraint, and so increase its LMP.
- A relevant market, for the purpose of market power analysis, is the market for generation which alleviates binding constraints.
  - Market power mitigation approaches in US markets consider the market structure of generators who have negative participation factors in binding transmission constraints.
  - Such an approach addresses the challenges of trying to define markets geographically.

Where:

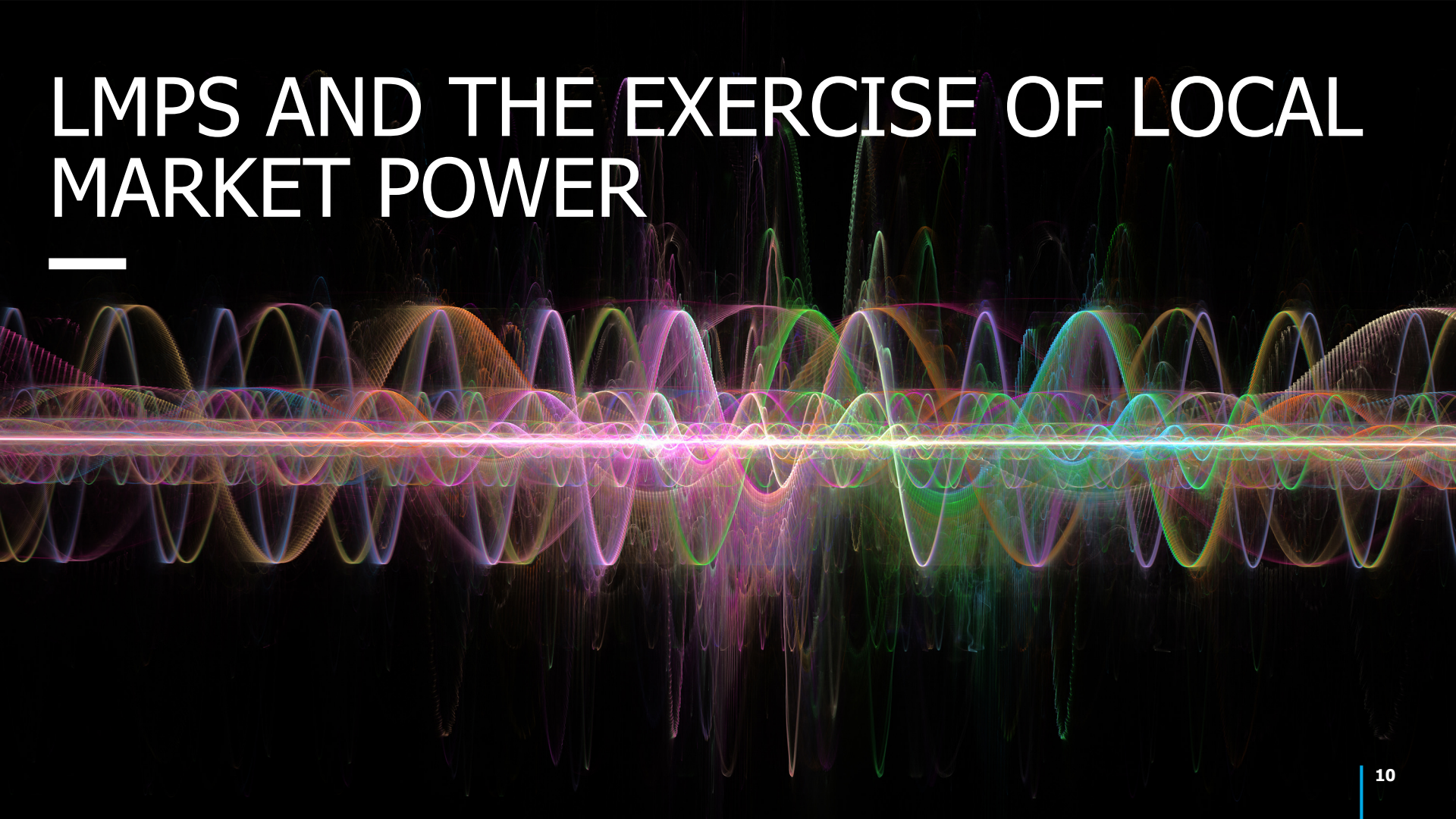
- x = A location on the network
- MC_{RRP} = The increase in the cost of dispatch were an extra unit of load to be required at a pre-defined node (i.e. the LMP at a pre-defined node)
- n = All constraints represented in the dispatch engine
- $MV_i * \alpha_x$ = The marginal value of alleviating a constraint, multiplied by the participation factor of the generator at location x.

*Ignoring the effect of losses for simplicity.

Questions

Do the TWG agree with the previous analysis?

LMPS AND THE EXERCISE OF LOCAL MARKET POWER



Local market power mitigation in the existing NEM design

- The existing market design has features that limit the negative effects of local market power. In particular, the prices that generators receive are *regulated* to equal either:
  - The locational marginal price at the regional reference node (ie, the regional reference price), or
  - The 90th percentile price if the generator is directed by AEMO.
- These features limit the ability of generators to use local market power to influence the price that they receive in settlement
- These features appear to be very blunt mechanisms and are a strong limitation on effective price signals.

Grid access reform - the introduction of LMP and the exercise of market power

- The introduction of locational marginal prices (absent of any other changes) removes the regulation of current prices, and with it the existing market power mitigation measures.
- Generators with local market power may be able to more effectively economically withhold capacity in order to influence the price they receive – the LMP.

	Individual generator required to prohibit localised load shedding	**Small number of generators able to alleviate binding constraint**
Current arrangements	Bid unavailable, receive 90th percentile price, or exploit market power in Network Service Agreements	Bid competitively, receive RRP
LMPs (absent of further market power mitigation)	Bid high, potentially sending LMP to market price cap	Bid high, sending LMP to between efficient price and market price cap

Questions

Do participants agree with the project team's characterisation of local market power issues within the NEM currently?

Do participants agree that the project team have correctly described the impacts that the introduction of LMP will have on issues of local market power?

MITIGATING MARKET POWER

The trade-off between intervention and consumer protection

- Depending on how regular and material the instances of localised market power are, both the decision to mitigate and the mitigation method introduce a trade-off between the **risk of inhibiting market participants** from recovering the costs of their investments (which may in turn deter future efficient investments), and **protecting consumers** from high or volatile prices.
- This trade off depends on a number of factors, including:
  - The expected **frequency, scale and duration** of market power events
  - The timeframe with which **new generation investment** can respond
  - The dampening effect of **over-mitigation** on investment signals, and the extent of investment signal required for different technologies.
- We are currently undertaking analysis of historical instances of dispatch where generators have market power over binding transmission constraints. This work is ongoing and involves:
  - defining the market for the market power analysis, by identifying historic instances of binding congestion when generators alleviate the congestion
  - assessing the market structure of the generators that are alleviating the congestion.

Options for dealing with market power

Method	Description	Pros	Cons
Unmitigated price signals	Do not directly mitigate against market power but instead allows high prices that may arise to provide signals for new investment, which would in turn address market power concerns.	Limits the amount of intervention that a regulator/operator has in the market.	Increases the risks of inefficient outcomes due to the exercise of market power, such as high prices for load, as well as potential revenue inadequacy if RRP is retained (instead of VWAP pricing).
Replicate the status quo	Cap the LMPs at the RRP and offer the 90th percentile price to generators that bid unavailable.	Familiar to market participants.	Method would regulate prices in all instances where the LMP exceeds the RRP and would likely lead to significant over-mitigation. Will remove price signals.
Ex post mitigation	Investigate abuses of market power after the fact and retroactively change outcomes.	Limits the amount of excessive intervention in the market if ex post intervention used sparingly.	Introduces discretion (uncertainty) to the mitigation process. Also may be resource intensive.
Ex ante mitigation	Identifies and mitigates generators with the potential to exercise local market power before dispatch.	Can be built into dispatch and occurs automatically, removing uncertainty.	If setup incorrectly, runs the risk of consistent over and under mitigation.

Three approaches to ex ante market power tests

Pivotal Supplier Test (PST):

- Structural measure of market power testing the extent to which a generator or group of generators is necessary to meet load in a given dispatch interval
- Test is performed on the generation capacity available to help to alleviate a binding constraint.

Herfindahl-Hirschmann Index (HHI) based test:

- Structural measure of market power, testing the concentration of the supply of generators which can alleviate a given constraint
- Test is also performed on the generation capacity available to help to alleviate a binding constraint.

Conduct and Impact Test (CIT):

- A behavioural measure of market power, testing the impact that non-competitive bidding behaviour would have on prices
- Test is performed on a group of generators in a pre-defined geographic area.

The team intends to continue to explore these options.

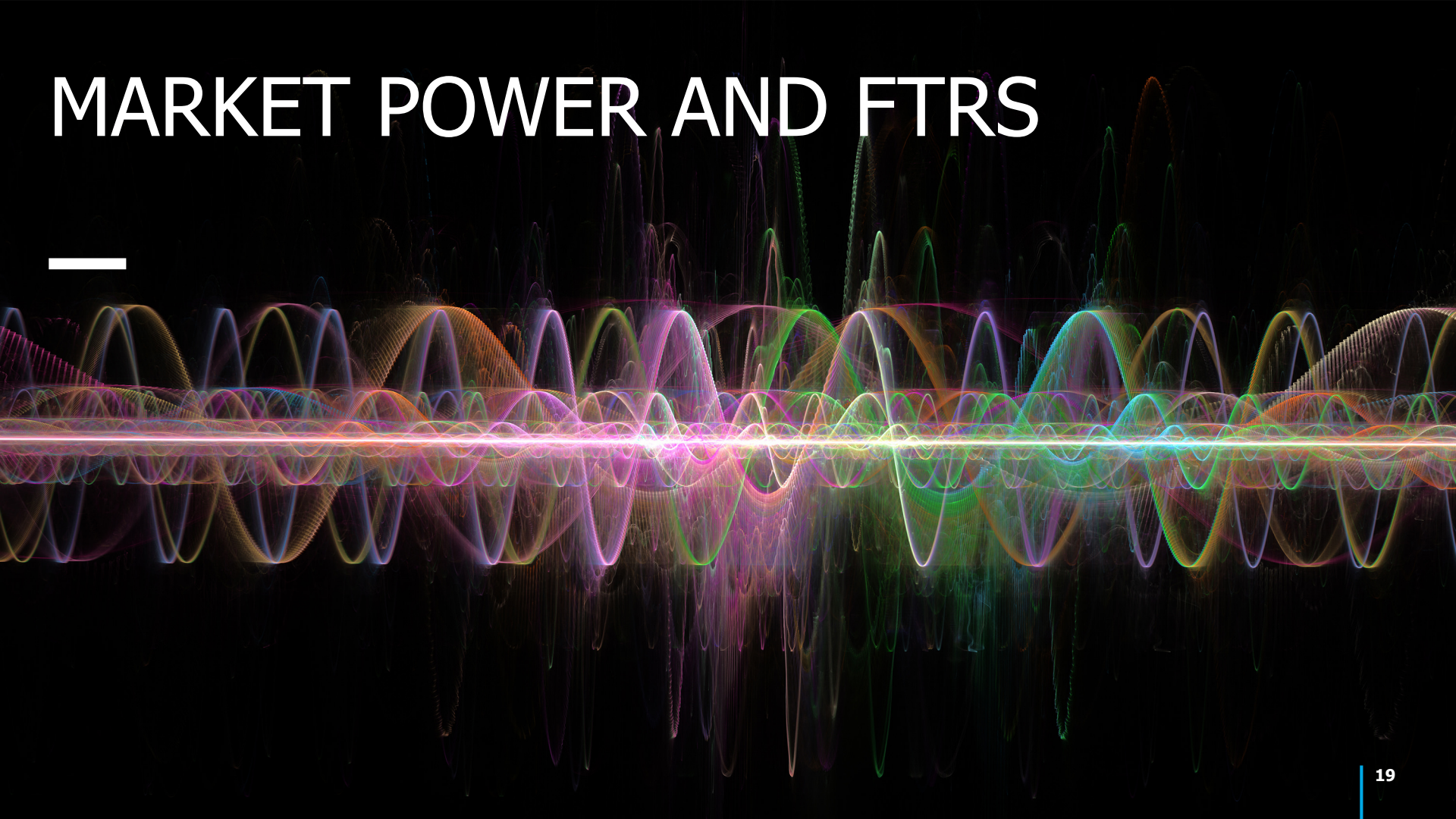
Questions

How do participants perceive the trade-off between a signal for new investment and protecting consumers, in the context of local market power under grid access reform?

What are your views on the market power mitigation options?

Noting that the AEMC's exploration of the various ex ante approach used internationally is in its early stages, what are your initial views on the tests used?

MARKET POWER AND FTRS



FTRs may influence incentives to exercise local market power over LMPs

FTRs are designed as options that pay out on the positive price difference between a particular nodal price and the RRP.

- FTRs would be available in both directions, so that they could pay out on (RRP-LMP) as well as (LMP-RRP).
- A generator that owns an FTR that pays out on (LMP-RRP) has an extra incentive to maximise their LMP in order to maximise the FTR payout
- This concern is not unique to FTRs. Any contract struck against a price influences the contract holder's incentives to exercise market power over that price
- This problem could be addressed by:
  - Employing a market power mitigation mechanism as described above, or
  - Prohibiting generators from buying an FTR "to" their local node, although this may impact risk management operations

Market power and revenue adequacy

- If the existing regional reference pricing methodology is retained (ie, the LMP at the regional reference node), then any LMPs paid to generators that are above the RRP diminish the settlement residue available to back FTRs.
- This could diminish FTR firmness.
- By exercising market power and receiving a higher LMP than is efficient, this issue will be exacerbated
- This issue could be (partially) addressed through the local market power mitigation measures discussed above (although any LMP > RRP diminishes settlement residue under the existing regional pricing methodology).
- This problem does not arise under VWAP pricing, because the price paid by non-scheduled load will increase automatically given the higher LMP paid by the load within the load pocket.

FTRs are a new market within which market power may be an issue

- A lack of competition in the FTR market may result in FTRs being regularly sold for considerably less than fair value.
  - inclusion of non-physical participants in the FTR auction will increase competition in the FTR market, decreasing the ability for participants to exercise market power.
  - competition law prohibitions under the Competition and Consumer Act 2010 would extend to conduct in the market that would be created for FTRs.
  - additional measures to limit the impact of market power in relation to FTRs include involving the AER and the ACCC in the monitoring of these markets.
  - it is proposed under the reform design that there would be a register of the sale and ownership of FTRs.
- The concern that non-physical players might hoard FTRs or restrict access to FTRs seems unfounded. Where a physical participant offers fair value for the instrument, it is in the interest of the non-physical player to trade: they cannot gain a competitive advantage in an up- or down-stream market from hoarding the instruments.

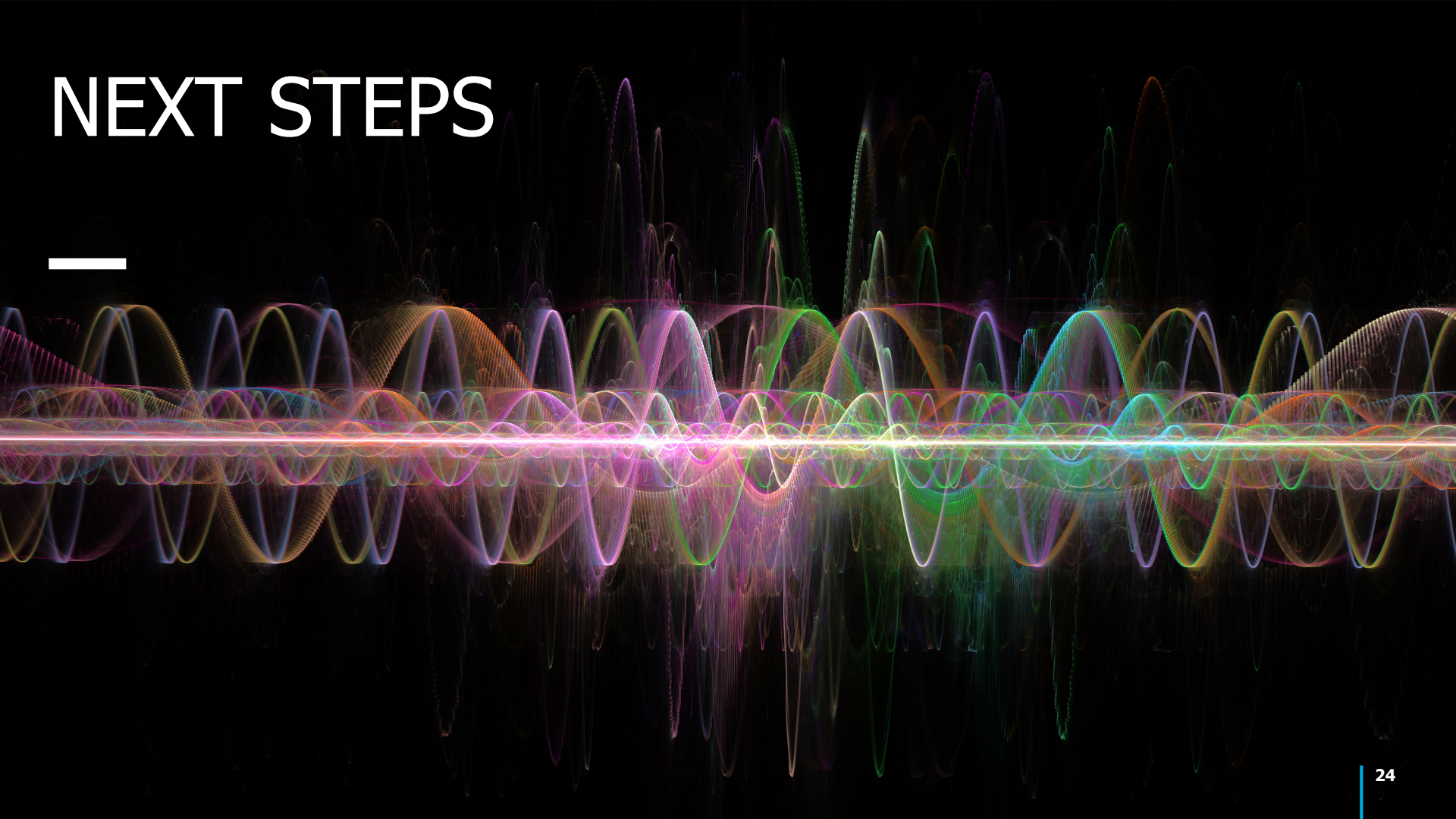
Questions

Does the LMP market power mitigation mechanism address concerns relating to changed incentives to exploit localised market power as a result of holding FTRs?

Should generators be prevented from buying an FTR to their local node under any circumstances?

How important is the decision to allow non-physical participants into the auction for FTRs for the exercise or prevention of the exercise of market power?

NEXT STEPS



Upcoming consultation

Technical working group meetings

- Further working group planned for late August/September, on overall model design
- Other working group meetings as appropriate

Public forums

- Quantitative modelling results – August
- Simplified model of reforms in action – August

Written consultation

- ESB post-2025 market design consultation paper – featuring COGATI – August
- COGATI specific technical specification document consultation report – August

- Please reach out to Russell (Russell.Pendlebury@aemc.gov.au) or Tom (tom.walker@aemc.gov.au) for a further discussion.