ENERGY SECURITY BOARD

POST 2025 FUTURE MARKET PROGRAM

TECHNICAL WORKING GROUP (TWG)

9 APRIL 2020

IMPORTANT NOTE

These slides are solely for workshop purposes only. The contents provide general information for the purpose of fostering a diversity of thinking and enabling stakeholder engagement and feedback.

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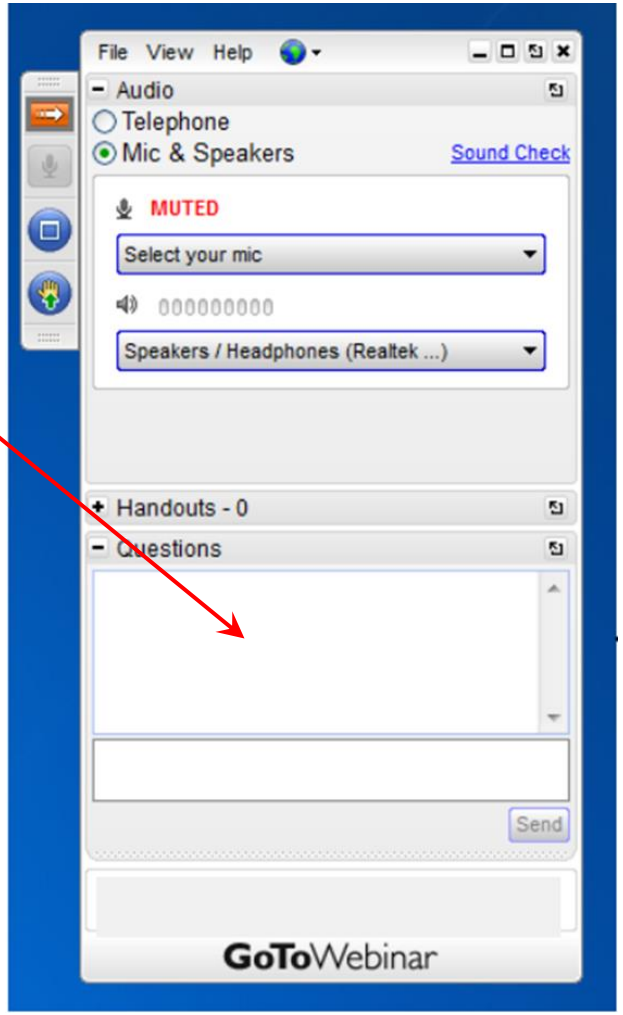
WEBINAR LOGISTICS

- All participants are currently in listen-only mode
- We will pause where you see the  symbol to answer questions. Please:
  - Type your questions here as we proceed through the content; and/or,
  - Use the *Raised Hand* to signal that you would like to speak when we open the audio.
- Today's webinar is being recorded and a link to the recording will be provided after the webinar



POST 2025 FUTURE MARKET PROGRAM (P2025)

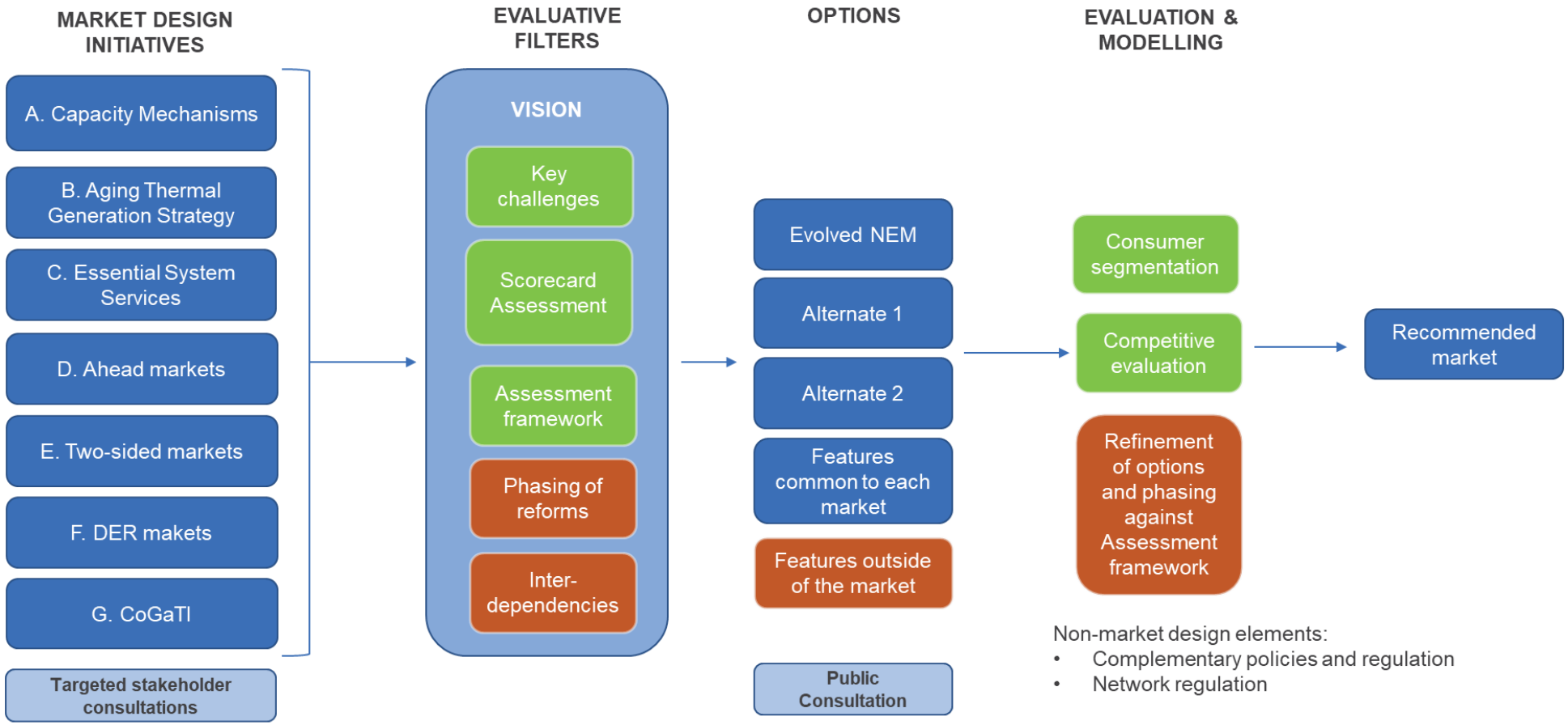
The COAG Energy Council tasked the ESB with developing advice on a

long-term, fit-for-purpose market framework

to support reliability that could apply from the mid-2020's.

The ESB needs to recommend any changes to the existing market design or recommend an alternative market design to enable the provision of the full range of services to customers necessary to deliver a secure, reliable and lower emissions electricity system at least-cost.

P2025 PROGRAM STRUCTURE & ASSESSMENT FRAMEWORK



P2025 PROGRAM – KEY DELIVERABLES

P2025 PROGRAM – STAKEHOLDER ENGAGEMENT PRINCIPLES

PRINCIPLE	DESCRIPTION
Inclusive	A proactive approach is taken to ensure relevant stakeholder groups are engaged and provided opportunities for involvement.
Transparent	Processes are conducted in an open and frank manner with key premises, assumptions and boundaries communicated clearly.
Coherent	The work program and schedule is logically structured and effectively communicated to external stakeholders.
Comprehensible	Content is designed to be as accessible to informed energy sector generalists as possible while recognising that specific content will of necessity involve significant technical complexity.
Responsive	Stakeholder input is given appropriate consideration and their needs and concerns are proactively explored and addressed where possible.

P2025 PROGRAM – TWO-SIDED MARKETS

TWG #1
THURSDAY 9 APRIL

TODAY'S PRESENTERS

Kate Wild, A/Director

Declan Kelly, Senior Adviser

Lily Mitchell, Senior Lawyer

Greg Williams, Senior Economist

AGENDA

The market today

What is a two-sided market?

Benefits of a two-sided market

Coherent market design

Aspects of a two-sided market

Transitional steps

Next steps for project

OVERVIEW OF A TWO-SIDED MARKET

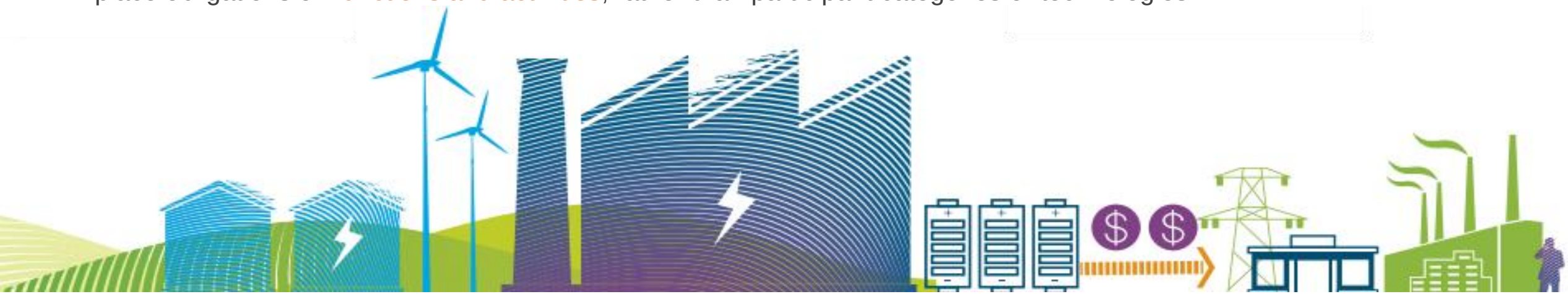
WHERE WE ARE TODAY

- When the NEM was developed over 20 years ago, designers envisaged that, once technology was more advanced, there would be active participation from both the supply and demand sides.
- The energy sector is undergoing a unique transition where:
  - the generation mix is increasingly made up of a large number of a smaller resources (both renewable and batteries) which are geographically dispersed
  - network companies are facing more dynamic and two-way network flows
  - the nature of the 'consumer' is fundamentally changing.
- Advances in technology and digitalisation are providing the opportunity to continue the evolution of the industry towards a two-sided market.

WHAT WILL THIS MEAN FOR THE NEM?

A two-sided market would:

- be informed by quantity and price inputs from both the demand and supply sides
- maximise participation by requiring that all entities trading energy in the wholesale market submit bids and be scheduled
- allow consumers to choose if and how they participate directly in the wholesale market or operate through someone who does (for example through a retailer or aggregator)
- place obligations on functions and activities, rather than participant categories or technologies.



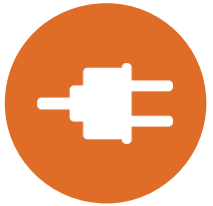
WHAT WILL THIS MEAN FOR THE ENERGY MARKET?

Moving toward a two-sided market would provide these benefits:

- Increasing the accuracy of forecasts by incorporating the intentions of active end users

- Create incentives to change behaviours when prices are high or low and facilitate innovation in services for customers

- An efficient signal to connect, invest, use more or less and produce more or less electricity for participants, however large or small and wherever they are located

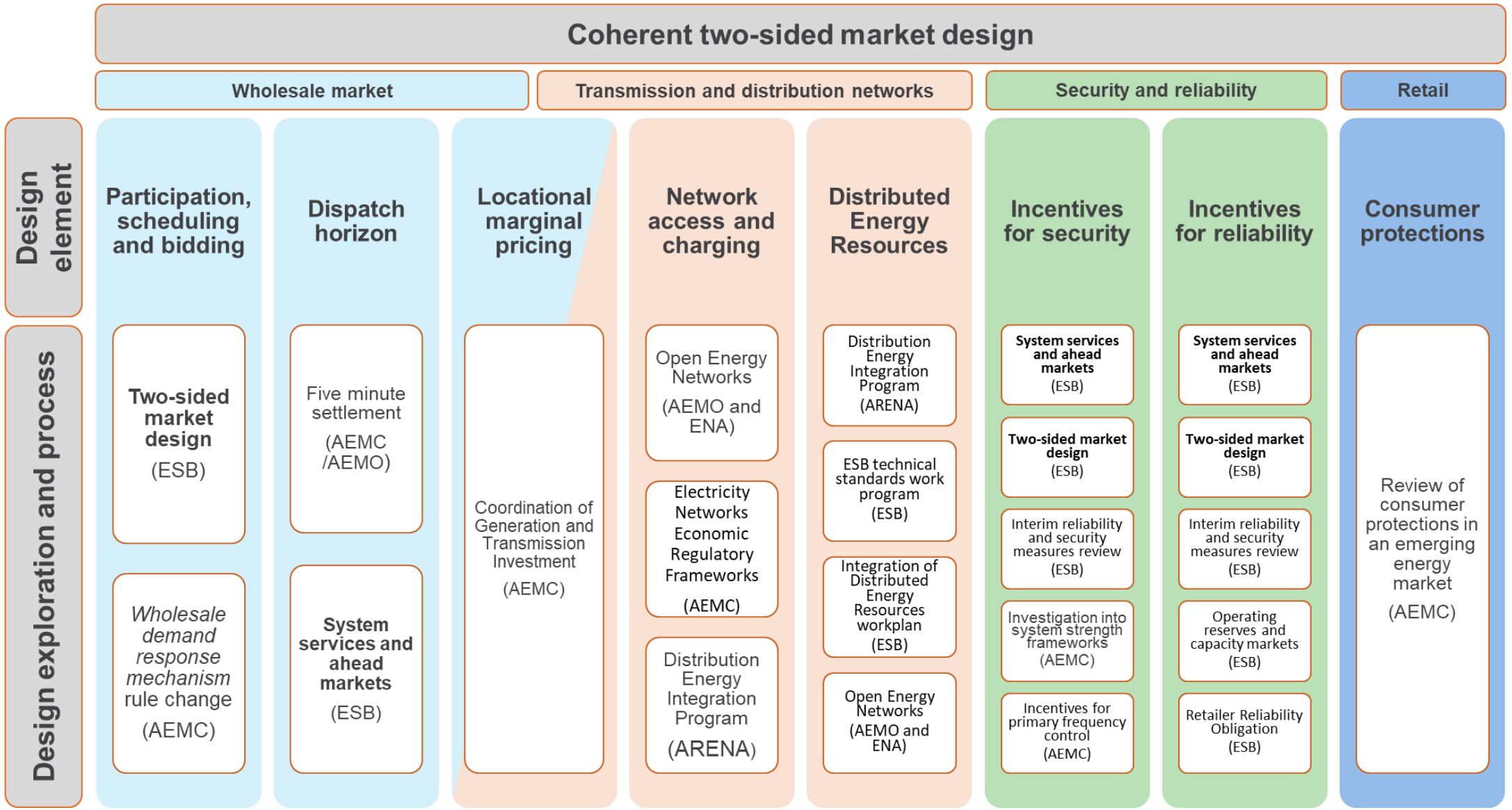


- Supporting the provision of flexible capacity from both consumers and DER. Greater flexibility through exposure to price for all participants can enhance market efficiency and robustness.

- Providing more information and certainty to market participants and the market operator

- Rewarding retailers and aggregators who understand their customers and act in their customers' interests

DEVELOPING A COHERENT TWO-SIDED MARKET DESIGN



Q&A ON THE OVERVIEW OF A TWO-SIDED MARKET

ASPECTS OF A TWO-SIDED MARKET

CORE ELEMENTS AND BUILDING BLOCKS

Element	Description
The system	The integrated electricity network is a complex system, operated by the power system operator (AEMO). Energy services are provided by means of the system. As system operator, AEMO's role is to ensure the system operates within its limits and is reliable and secure.
Connection points	Parties obtain access to the system via a connection point. A connection point is where: • connection to and disconnection from the system occurs • flows of electrical energy and quantities of other energy services are measured and accounted for • the party with operational control and obligations regarding the flow of energy to and from the system is established and changes from time to time.
Services	A range of energy services are provided through the system and traded on the energy markets. The two-sided market design should allow innovations in technical standards and services, without rigid market designs linking services back to physical types of generators, loads or storage devices. Technical capabilities and the set of services offered could then evolve without requiring major rule change processes. Further, the design should enable participants to tailor solutions that are proportionate to their scale, while still allowing for protections for end users as necessary.

KEY ENTITIES

Entity	Description
End user	The party who provides or receives services at a connection point is an end user. An end user could be a supplier of services, a consumer of services or both, and includes generators, battery owners, EV owners, small and large customers, and customers who also provide energy or other services to the system through their own facilities (for example rooftop solar PV). End users pay for the services they use, and are paid for the services they provide, through a trader.
Trader	Traders perform all trading of energy services within the market, on behalf of end users. This simple concept captures the diverse arrangements that exist today – including retailers, generators, different types of aggregators, and special arrangements for storage and other devices – but without necessarily having specific market rules and participant categories for each, as exist today. There are a range of ways an end user may interact with a trader: • be a trader at a connection point • procure services through a trader • provide services through a trader. A single end user may be its own trader in respect of some services and procure or provide other services through one or more traders.

CORE ELEMENTS AND BUILDING BLOCKS – QUESTIONS FOR DISCUSSION

1. Focusing on these key concepts allows for a radically simpler approach to market structure and regulation. Do you think this is the right starting point? Have we missed anything?
2. What considerations should we take into account in determining the rights and obligations of end users, traders and the market operator, in light of the national electricity objective?
3. What considerations should we take into account in designing a two-sided market that allows innovations in technical standards and services?

HOW SHOULD PARTICIPATION IN A TWO-SIDED MARKET WORK?

- Scheduling broadly involves information sharing between market participants and a commitment to meet dispatch targets.
- An increasing proportion of market participants (particularly new entrants) are not fully participating in scheduling. We envisage greater participation in scheduling in a two-sided market from both demand and supply (non-scheduled and semi-scheduled).
- The development of a two-sided market will depend on finding the appropriate balance of scheduling obligations that produce the benefits of scheduling while accommodating a broader range of participants. As such, scheduling should be viewed as a cornerstone of a two-sided market.

WHO SHOULD PARTICIPATE IN A TWO-SIDED MARKET?

Options for participation	Description	Potential benefits	Potential drawbacks
Voluntary participation	Participants opt-in to the two-sided market, requirements on scheduled load category to be explored to potential enhance participation.	• Enables participants to use and bid in their responsive capabilities as it develops and would not place obligations on them to participate • Potentially the lowest cost option to implement.	• Would likely result in the lowest demand side participation. • With lower participation, less information would be available for planning reliability and security.
Selective participation	Certain categories would be required to participate in a two-sided market (e.g. all large customers or all large retailers). Participation voluntary for other categories.	• Focuses on more sophisticated participants, representing the majority of overall demand, while allowing less sophisticated participants to participate when the develop their capabilities.	• Only partial information available for reliability and security planning. • Could be issues in discriminating between categories. E.g. large customer definitions vary between jurisdictions.
Full participation	All participants partake in the two-sided market.	• Full information available for planning security and reliability purposes. • Greatest incentive to participants to understand load and unlock responsive capabilities.	• Likely to be the highest cost option. • May create obligations for participants to changes systems and processes where they have limited means to benefit from a two sided market.

PARTICIPATION IN A TWO-SIDED MARKET – QUESTIONS FOR DISCUSSION

1. What components of scheduling and dispatch should be expanded in the move to a two-sided market? That is, what processes should we expect more participation in out of MT-PASA, ST-PASA, pre-dispatch and dispatch?
2. To what extent can self-submitted forecasts replace the need for centrally determined forecasts?
3. Two approaches are presented for selective participation under a two-sided market- differentiating by size of customer or size of retailer. What are the relative benefits or costs of each approach? Are there any other approaches to selective participation that should be considered?

INTERACTIONS WITH AHEAD MARKETS

- While a two-sided market facilitates the evolution of the NEM it is important that the system has the appropriate resources available to ensure a secure and reliable system.
- An ahead market typically determines a schedule of prices and volumes for multiple trading intervals ahead of the real-time market. In a two-sided market there could be benefits from an ahead schedule to assist end users in making decisions about their energy use.
- There are several key interactions between two-sided and ahead markets that will need to be considered:
    - decisions on which parties participate in a two-sided market may also impact the ahead market design.
    - any decisions about the level of 'aheadness' would create winners and losers
    - how differences between targeted and actual exports/imports of energy are treated between an ahead market and the real-time market
    - a change in scheduling requirements will impact how participants interact with an ahead market
    - may require changes to the structure of bids and offers, for example multi-part bidding

INCENTIVES FOR LONG-TERM RELIABILITY

- Preferences about the balance between the cost of reliable supply and the actual levels of reliability are difficult to determine, given different groups have different value assessments.
- Currently, the reliability standard is the expressed balance between cost and reliability (performance) and the Reliability Panel is the cross-sector body that has, to-date, advised on the standard.
- However, digitalisation provides an opportunity to change the way we treat (generation) reliability in the longer term.
- In a fully digitalised and two-sided world, individual consumers could nominate their own preferred level of reliability. At least initially, this could be referenced to the reliability standard determined for the NEM.

HOW SHOULD YOU CHARGE PEOPLE FOR ACCESS TO THE TWO-SIDED MARKET?

- People’s decisions to invest in and use solar PV, batteries, and electric vehicles are influenced by the way they are charged for energy services.
- Network businesses appreciate that charges need to adapt to a future where there are increasing amounts of two-way flows in the distribution network so they maximise the benefit of the decisions of all network connected customers (not just those with DER)
- We have been considering the way network costs might be recovered in the ultimate two-sided market (long-term).
- The DEIP Access and Pricing Working Group aims to develop a series of actions that would provide a foundation for reforms to the current access and pricing arrangements.

QUESTIONS FOR DISCUSSION

Interactions with ahead markets

1. Recognising the scope of design options being considered for an ahead mechanism, how significant are the interlinkages with a two-sided market?
2. Which form of ahead mechanism would best complement a two-sided market?

Reliability

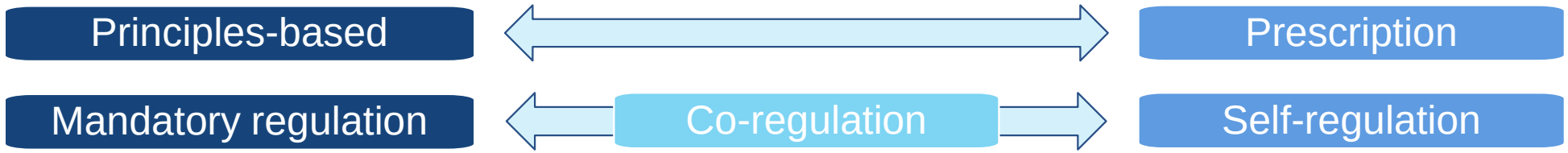
3. Question: Do stakeholders agree with our characterisation of reliability under a two-sided market noting this would be a long-term goal for an ultimate two-sided market?

Charging in networks

4. Question: Do you think locational marginal pricing would encourage behaviours to help manage congestion in distribution networks? Are there other options that would be preferable?

CONSUMER PROTECTIONS

- Consumer protection is a key element of forward-looking market design projects such as a two-sided market.
- These changes raise important questions about new consumer risks, potential harms to small customers and what is the best way to move forward from a regulatory perspective.
- Identifying the core principles that should structure a ‘future-proof’ energy-consumer framework is key.
- The AEMC’s consumer protection review will explore potential consumer risks and harms in a two sided market, will analyse if there is a need to modify the NECF and will explore trade-offs between:



to draw the regulatory path to continue to protect energy consumers.

TRANSITIONAL ARRANGEMENTS AND NEXT STEPS

TRANSITIONAL ARRANGEMENTS

A critical part of the next phase of work will be determining the transitional pathway to maximise benefits while also minimizing impacts to consumers and market participants.

Interim and/or short-term

- Target for implementation will be 12 to 18 months
- Will take advantage of existing systems, but may require rule changes, and potentially changes to the National Energy Customer Framework (NECF) (law and rule changes)

Outcomes:

- Increasing participation from entities supplying energy to, or consuming energy from, the system in the wholesale market (directly or via a third party)

Potential projects include, but not limited to:

- Energy Storage Systems rule change
- Amendments to Small Generator Aggregator (rule change)
- DER integration trials
- Wholesale demand response rule change
- Possible changes to NECF (to be assessed during design phases)

Intermediate measures

- Significant implications for dispatch, most likely requiring law and rule changes (including to NECF)
- Critical to coordinate and optimise dispatch design, dispatch system changes and minimise contract market disruption and maximise benefits

Outcomes:

- Further participation from entities supplying energy to, or consuming energy from, the system in the wholesale market (directly or via a third party)

Potential projects include, but not limited to:

- Final participation framework and transitional arrangements
- Scheduling process including the dispatch of resources
- Network access and pricing through DEIP, OpEN and ENERF
- Review of work to develop new concepts of reliability
- COGATI

Ultimate two-sided market design

- Following short-term and intermediate measures, the market design will continue to develop with digitalisation and technology toward the ultimate design

Outcomes:

- All entities supplying energy to, or consuming energy from, the system are participating in the wholesale market (directly or via a third party)
- Parties best placed to provide scheduling information should do so
- Clear and transparent signal of the cost of congestion and losses between all connection points
- Every connection can be a provider or consumer of energy services
- Consumer protections appropriately applied and don’t unduly restrict innovation
- Digitalisation enables a more dynamic and individualised setting of reliability between a customer and retailer

QUESTIONS FOR DISCUSSION

Consumer protections

1. In a two-sided market, what are the risks consumers are exposed to that are not covered under the current consumer protection frameworks (NECF and the ACL)?

Transitional arrangements

2. Are there any potential transitional arrangements we should consider to help move toward a fully two-sided market?

NEXT STEPS FOR THE TWO-SIDED MARKET DESIGN WORKSTREAM

Now

Initial consultation with TWG and public consutlation

April to August

AEMO and AEMC to progress design and consult with industry

August / September

Likely public consultation of draft design

July to December

Market design developed following consultation

End of 2020

High level design presented to COAG for further public consultation

Mid 2021

Final market design presented to COAG

NEXT STEPS FOR THE TWO-SIDED MARKET DESIGN WORKSTREAM

- We are seeking feedback on the paper provided to the TWG, which includes the questions for consultation outlined today. The COAG Paper will also be released publicly next week.
- Please provide your written feedback by **18 May 2020** to info@esb.org.au with email subject heading titled 'TWG Two-sided Markets briefing'.
- We are also happy to engage directly in further discussions. Please contact Kate Wild on 0407 809 208 or at kate.wild@aemc.gov.au or Declan Kelly on (02) 8296 7861 or at declan.kelly@aemc.gov.au for further information.
- The next TWG meeting focused on this topic will be held following the close of consultation so we can discuss feedback and next steps.
- A further TWG meeting will occur in June to update you on the progress of the draft design.

GENERAL Q&A