



Planning and Forecasting 2019 Consultation Process

Briefing Webinar

Wednesday 3 April 2019

Agenda

Welcome and overview

Summary and analysis of submissions

Next steps

Time for clarification





Welcome and overview

Today's facilitation team and participants

Facilitators



Nicola Falcon
General Manager,
Forecasting, AEMO



Andrew Turley
Manager, Integrated Energy
Systems, AEMO



Phil Hirschhorn
Senior Partner and Managing
Director, BCG

Participants

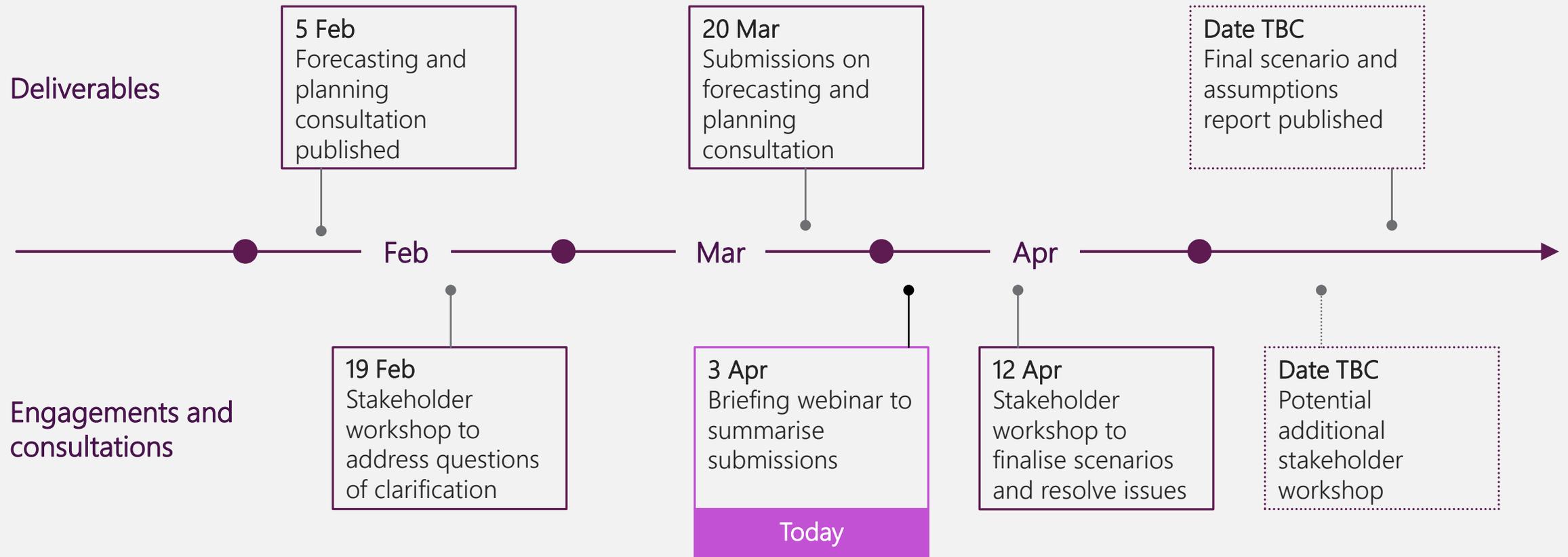
- Angela Taljaard, ACCC
- Trish Auld, Adani
- Oliver Nunn, AEMC
- Adam Day, AER
- Jacqueline Bridge, AusNet
- Ben Skinner, Australian Energy Council
- Lillian Patterson, Clean Energy Council
- Peter Wormwald, Delta Energy
- Terrence Hogan, Department of the Environment and Energy
- Tyson Vaughan, Enel
- Jill Caine, ENA
- Jillian Vanderstoep, Energy Queensland
- Justin Gardner, Energy Queensland
- Craig Pollard, Energy Queensland
- Donovan Marsh, Energy Security Board
- Ron Logan, ERM
- Nick Cutler, EY
- Clare Giacomantonio, EY
- Tarek Alsampaile, FRV
- Umer Siddique, FRV
- Prajit Parameswar, Hydro Tasmania
- Vedran Kovac, Hydro Tasmania
- David Headberry, Major Energy Users
- Tom Hare, North Queensland Bio-Energy
- Susan Cunningham, NSW Treasury
- Alex Fattal, Origin Energy
- Chris Lim, PIAC
- Enrique Montiel, Powerlink
- Samuel Oosterholt, SA Power Networks
- John Sligar, Sligar and Associates
- Joe Hemingway, Stanwell
- Bradley Woods, TasNetworks
- Dev Tayal, Tesla
- Michael Vawser, Total Eren
- Lulu Shao, Transgrid

AEMO is committed to continually improving our suite of planning publications to better meet stakeholder needs

We respect your expertise and value all feedback, which is critical in guiding meaningful progress and developing a strategic vision for the future development of Australia's energy system



Today's webinar is part of our broader stakeholder engagement and consultation process



We have taken steps to ensure this consultation process is objective and rigorous



An objective lens

- Engaged BCG to support in analysis of submissions and workshop design
- Deep expertise within the energy sector, as well as in process design and analysis



A rigorous approach

- Submission analysis approach employed an academic qualitative research methodology
- All submission content was thematically coded to a node structure using industry standard qualitative data analysis software

Thank you for your participation in Workshop 1; we have taken on board your feedback



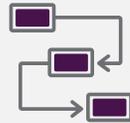
Key takeaways

Improve the narratives that support each scenario

Consider role of policy in scenarios and modelling

A range of feedback on inputs, assumptions and material issues

Increase transparency of submissions process



Actions taken



- We have designed Workshop 2 so that a core element is further developing the narratives of the scenarios
- Additional scenario material is also being developed to support the scenario narratives



- Consistent with themes of written submissions
- Response being considered



- Consistent with themes of written submissions
- We address some areas in this session and other areas are being considered
- We have also designed elements of Workshop 2 specifically to address certain areas of concern



- We have publically published submissions received in this process
- We are holding this Webinar to play back our findings to prepare all stakeholder for Workshop 2



Objectives for today's session

- 1 Provide a high-level summary of the submissions received in order to frame areas of agreement, contention and uncertainty
- 2 Prepare participants for key areas related to the activities of Workshop 2
- 3 Ensure AEMO has accurately understood stakeholder submissions

Note: The purpose of today's session is not to be a forum for debate of the accuracy or veracity of submissions



Summary and analysis of submissions

Summary and analysis of submissions

Overview and main themes

AEMO received 24 written submissions



Generators and Retailers



Network Service Providers



Other



Consulting Firms



Content within the submissions was analysed and synthesised into four broad topics

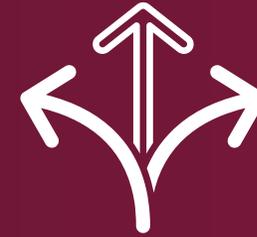
Topic 1 — Approach to Engagement, 15 Organisations responded

Topic 2 — Approach to Scenarios, 17 Organisations responded

Topic 3 — Inputs and Assumptions, 24 Organisations responded

- Generation and Storage, 24 Organisations responded
- Networks, 13 Organisations responded
- Consumption, 10 Organisations responded
- Cross value chain, 9 Organisations responded
 - E.g., resilience modelling and system strength

Topic 4 — Other Topics, 7 Organisations responded

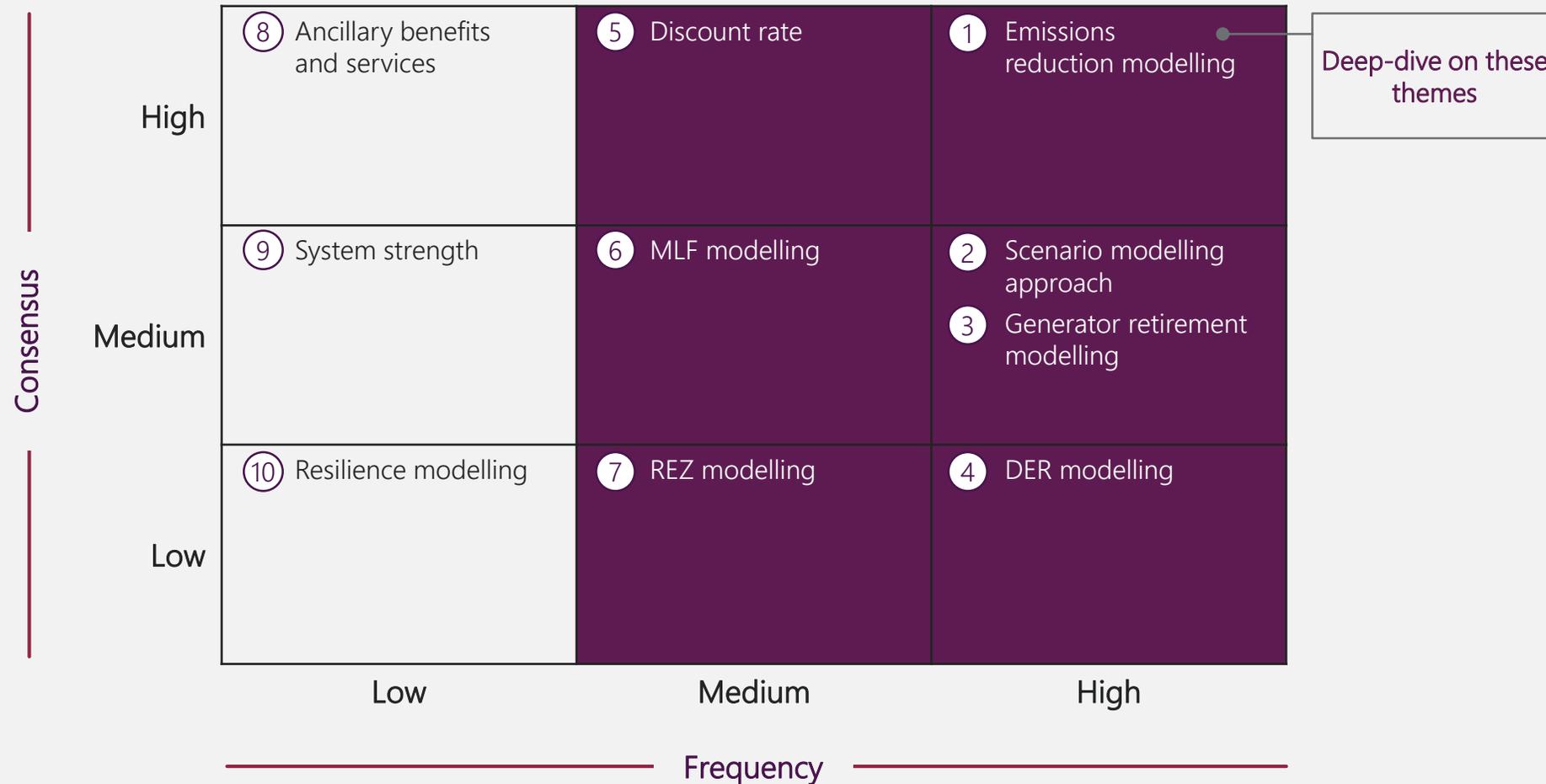


A number of main themes emerged

10 main themes emerged from the analysis

Theme	Frequency	Consensus
- The consultation process and the efforts being made to increase engagement with stakeholders are positive	High	High
1 Emissions reduction modelling needs to explicitly incorporate policies and account for stricter trajectories	High	High
2 The current scenarios do not sufficiently capture the range of possible energy futures	High	Medium
3 The modelling of generator retirements needs to account for earlier retirements, and be based on more than technical retirement age	High	Medium
4 Improvements can be made to the Distributed Energy Resources modelling approach	High	Low
5 A commercial discount rate should be used, as opposed to a social discount rate below the WACC	Medium	High
6 Increase the transparency and dynamism of Marginal Loss Factor modelling	Medium	Medium
7 The establishment of more Renewable Energy Zones and their modelling	Medium	Low
8 When modelling benefits, incorporate ancillary benefits and services , or establish a market for these services	Low	High
9 System strength is an important issue and improvements need to keep being made in terms of how to incorporate it effectively into the models	Low	Medium
10 Resilience modelling approach: both HILP and mitigation options	Low	Low

High and medium frequency themes will be discussed in detail today



Summary and analysis of submissions

Deep-dives on main themes

Theme 1: Emissions reduction modelling needs to explicitly incorporate policies and account for stricter emissions reduction trajectories

17 of 24 organisations responded: High frequency, high consensus

Main issue raised

Emissions reductions policies and targets are not explicitly considered within the scenarios

- "... AEMO should publish, consult on, and apply explicit emissions trajectories."
- "... recommends AEMO clearly define policy settings in the core scenarios and consider potential alternative mainstream emission policies."



Alternatives proposed

Explicitly include emissions reduction policies and targets as drivers

Publish and consult on incorporated targets

Model feasible alternative policies to maintain apolitical approach

Implications

AEMO is reflecting on our approach to modelling emissions reduction policies and targets. This area will be explored more in Workshop 2.

Theme 1: Emissions reduction modelling needs to explicitly incorporate policies and account for stricter emissions reduction trajectories (cont...)

17 of 24 organisations responded: High frequency, high consensus

Main issue raised

Emissions reductions trajectories for the Neutral scenario are too conservative

- *"The Neutral scenario should represent a reasonable extrapolation of existing policies ..."*
- *"The approach to emissions proposed by AEMO implicitly assumes Australia does not fulfill its commitments under the Paris Agreement."*



Alternatives proposed

Adopt a stronger emissions reduction trajectory as an input (including a number of specific suggestions ranging from 40% to 60%)

Align emissions reduction trajectory to achieve the outcome of net zero emissions by 2050

Implications

AEMO acknowledges Australia's commitment to the Paris Agreement on climate change and the role the electricity sector will play in meeting these objectives. We are reflecting on the feedback received around how this bipartisan commitment should be considered in the scenarios and will further explore this issue in Workshop 2.

Theme 2: Current scenarios do not sufficiently capture the range of possible energy futures

14 of 24 organisations responded: High frequency, medium consensus

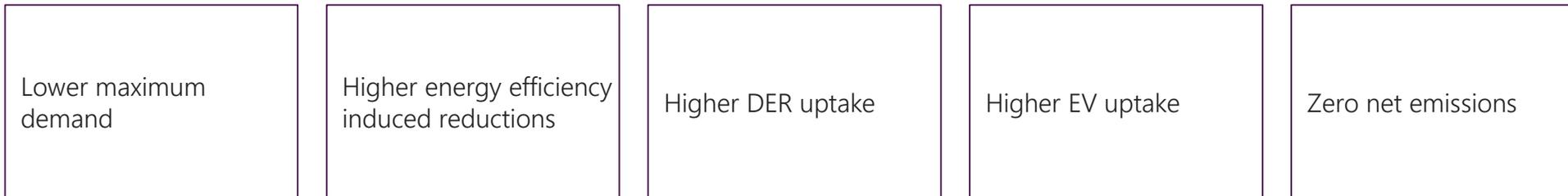
Main issue raised

The fast change scenario does not represent a realistic edge case

- "... recommends a scenario with significantly higher emission reduction be considered as a "book end" and to inform participants and policy makers of its practicality and cost."
- "Expanding modelling to include a combined high DER, high utility-scale storage uptake, and strong emissions policy scenarios"



Alternatives proposed



Implications

AEMO acknowledges the high level of uncertainty in the energy sector and the need to capture a range of plausible scenarios. We are open to the inclusion of a fifth scenario that addresses the points that have been raised here. This scenario will be developed in more detail in Workshop 2.

Theme 3: The modelling of generator retirements needs to account for earlier retirements, and be based on more than technical retirement age

17 of 24 organisations responded: High frequency, high consensus

Main issue raised

Modelling of generator retirements is based on a static technical retirement age

- "There is a high level of uncertainty on ... timing of coal retirements ... and the impact on reliability and security of supply are significant"
- "Greater focus (required) on understanding the reliability of aging plant"



Alternatives proposed

Consider early exit of coal generation (e.g., as a scenario)	Consider revenue/cost adequacy as a key retirement factor	Consider reliability of aging plants as a key retirement factor	Greater consultation with participants on retirement and emission reduction approach
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Implications

At a minimum, AEMO is going to adopt and incorporate expected closure dates for generators instead of the blanket 50 year end of life assumption. The interactions of this area with other elements of the modelling, and additional proposed approaches, will be discussed in more detail in Workshop 2.

Theme 4: Improvements can be made to the Distributed Energy Resources modelling approach

12 of 24 organisations responded: High frequency, low consensus

Main issue raised

DER modelling approach should be clarified and modified in areas

- "... the forecast uptake of DER would be improved through the consideration of the following technical factors impacting uptake ..."
- "The significant potential impact of DER highlights the importance of incorporating accurate and transparent ... forecasts across modelled scenarios."



Alternatives proposed



Implications

AEMO acknowledges the high level of uncertainty around DER and we have engaged two consultants to help update our projections. Draft outcomes have been shared at our Forecasting Reference Group and there will be opportunities for clarification in Workshop 2. In addition we are running a series of Electric Vehicles workshops to better understand future potential (next is on 30 April). The broader development of DER integration is an area we continue to refine.

Theme 5: Improvements can be made to the discount rate approach

6 of 24 organisations responded: Medium frequency, high consensus

Main issue raised

The social discount rate used is lower than the weighted average cost of capital (WACC)

- *"Using a different discount rate for the NPV assessment to the WACC used to determine the annual cost of network developments and generation can lead to non-intuitive outcomes as the NPV will be above the initial cost of investment"*



Alternatives proposed

Adopt a commercial discount rate

Explore lower social discount rate through sensitivity analysis

Implications

AEMO takes this feedback on board and will adopt the same commercial discount rate for both the WACC and the calculation of the net present value (NPV).

Theme 6: Increase the transparency and dynamism of Marginal Loss Factor modelling

9 of 24 organisations responded: Medium frequency, medium consensus

Main issue raised

Increase the transparency (including more forecasting) and dynamism of MLF modelling

- *"The inadvertent incorrect allocation of MLF could have a material impact on study results."*
- *"The year on year variability and lack of transparency in the MLFs creates uncertainty for generators and connection proponents"*



Alternatives proposed

Improve accuracy of assumptions (e.g., shadow connection points)

Increase transparency of MLF assumptions

Consider long-term trajectory/dynamic MLF outlook

Consider impact of a MLF-reform scenario

Implications

AEMO acknowledges the importance of Marginal Loss Factors (MLFs) in assessing the commercial viability of new developments and how different generation, transmission and storage development options may impact MLFs. A market modelling workshop will be run on 16 April to address how we can best capture MLFs in this year's ISP.

Theme 7: The establishment of more Renewable Energy Zones and their modelling

11 of 24 organisations responded: Medium frequency, low consensus

Main issue raised

There are areas where the modelling of REZ in terms of assumptions, inputs, and other factors and considerations could be improved

- *"While we understand the original driver for excluding either wind or solar from certain proposed renewable energy zones in the inaugural ISP, these exclusions appear somewhat misaligned with industry developments, and may eliminate economically optimum solutions"*



Alternatives proposed

Normalise the REZ locational costs on a more granular and national basis, rather than using regional categories

Account for transmission capacity changes

Incorporate economies of scale and synergies for generation and transmission builds (e.g., solar, wind, etc.)

Build limits for wind and solar; avoid inflating interconnector costs

Implications

AEMO is updating assumptions and methodology in relation to existing zones to better reflect current market developments. Other suggestions will be considered on a case-by-case basis to evaluate merit of inclusion based on availability of information, feasibility of approach, and materiality of change.

Theme 7: The establishment of more Renewable Energy Zones and their modelling

11 of 24 organisations responded: Medium frequency, low consensus

Main issue raised

Additional REZs are required to increase strength and security of the NEM

- *"The addition of a new REZ in Central Northern Victoria around the Glenrowan and Shepparton terminal stations."*
- *"... several priority renewable energy zones, including: Northern NSW; South-East NSW and ACT; Southern NSW; South-West NSW; and Central NSW"*



Alternatives proposed

The addition of a REZ in central north Victoria

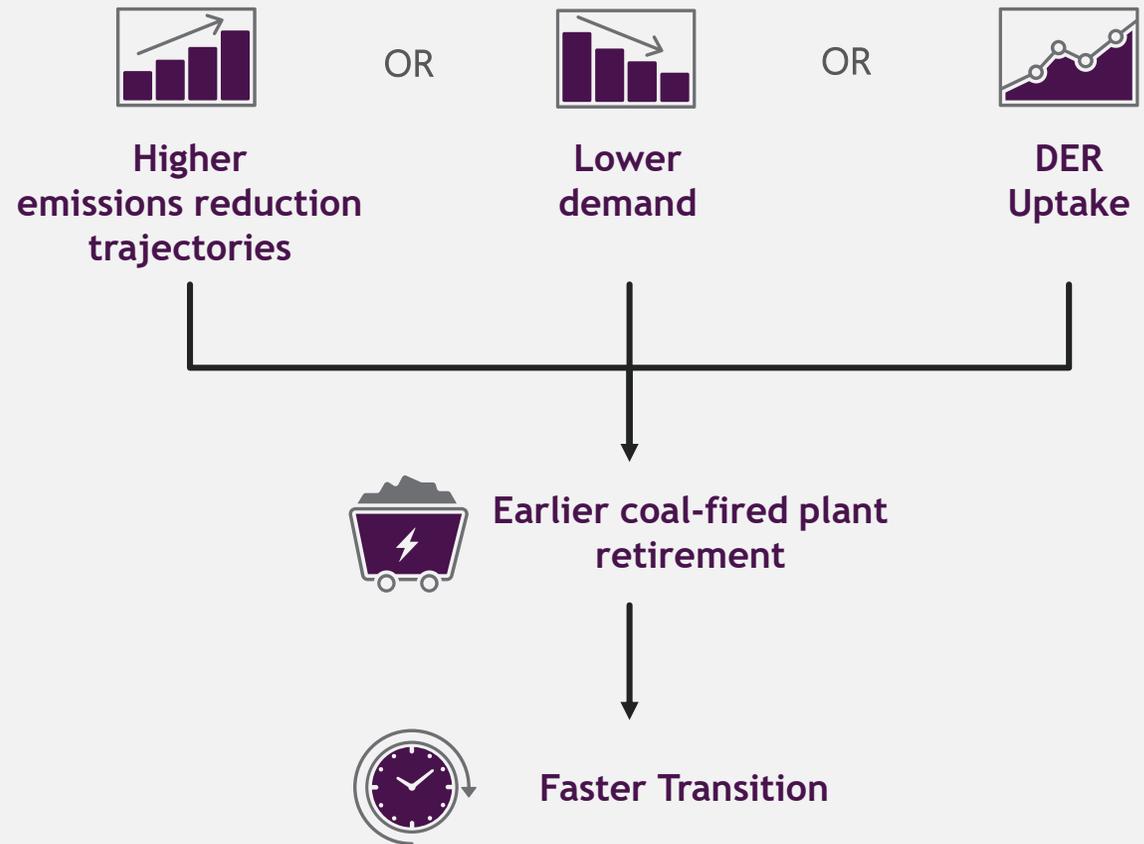
The addition of a REZ in New England

The addition of a network of REZs across NSW

Implications

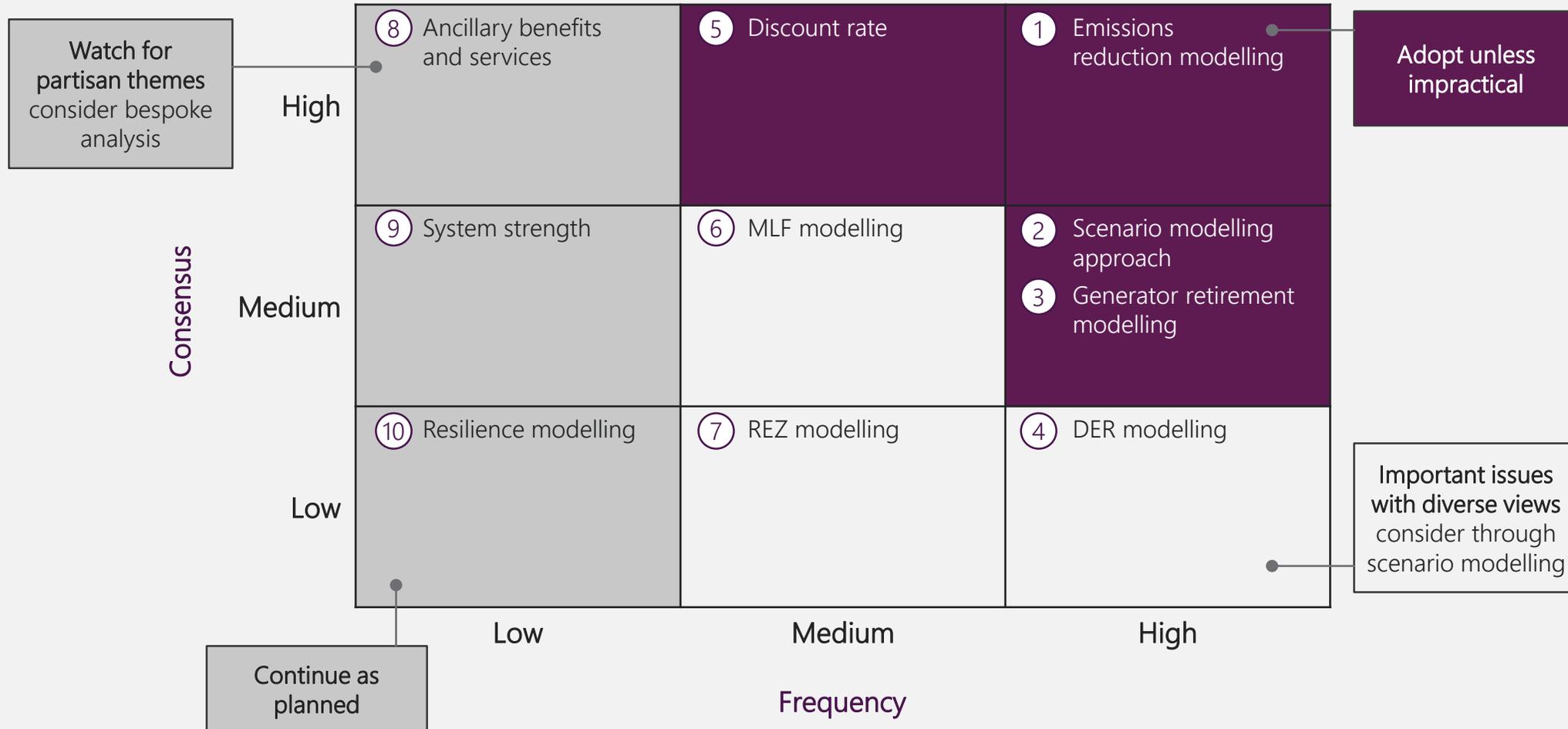
AEMO is actively considering the inclusion of a new Renewable Energy Zone in central north Victoria. We are also considering the inclusion of additional Renewable Energy Zones in other regions based on feedback.

There are significant interactions between many of the main themes



These interactions will be explored in Workshop 2

Potential implications for moving forward



Proposed next steps for main themes

Adopting into approach

- 3 Generator retirement modelling
 - 5 Use commercial discount rate
 - 7 REZ modelling
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Under consideration and to be discussed at Workshop 2

- 1 Approach to emissions reduction modelling
 - 2 Scenario modelling
 - 4 DER modelling approach
-

Under consideration and being followed up via other avenues

- 6 MLF modelling



In addition to the main themes, we are listening and taking on board your suggestions in a range of other areas

As a result of your feedback we have:

- ✓ Corrected the MLFs in Tasmania
- ✓ Adjusted build limits if they were less than the current known interest reported in the Generation Information Page
- ✓ Adjusted the mix of fuels considered in REZ if known interest exists
- ✓ Changed the correlation between DER uptake and the rate of change in the scenario definitions to remove potential internal inconsistency
- ✓ Proposed to change the generation cost trajectory in the Neutral scenario based on the CSIRO's two degree scenario
- ✓ Proposed to run a demand forecasting workshop with subject matter experts on April 29 to consider the merits of suggested methodology improvements and how they could be implemented



Next steps

We welcome your participation in Workshop 2



Friday 12 April
9:00am–5:00pm AEDT (9:30am start)



The offices of Boston Consulting Group
Level 41, 161 Castlereagh St, Sydney NSW 2000



Where possible it would be appreciated if attendees from
Workshop 1 attend to maintain continuity



RSVP still open by email
forecasting.planning@aemo.com.au.

Please nominate any dietary requirements

High level structure and objectives of Workshop 2



Scenario narrative development

Develop a narrative for each of the scenarios and define key factors about the world we would need to believe



Inputs and assumptions

Understand and refine key inputs and assumptions required to support each of the developed scenarios



Analyses to strengthen scenarios

Identify additional bespoke analyses required to strengthen scenarios, as well as how to perform them

AEMO is committed to continually improving our suite of planning publications to better meet the needs of our stakeholders

Your feedback is a critical element of this process

We look forward to continuing our work with you in developing a strategic vision for the future development of Australia's energy system





Time for clarification



AEMO

AUSTRALIAN ENERGY MARKET OPERATOR