



Meeting Agenda

Meeting Title:	Reserve Capacity Mechanism Review Working Group (RCMRWG)
Meeting Number:	2022_11_24
Date:	Thursday 24 November 2022
Time:	12:30PM to 2:00 PM
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda	Chair	Noting	2 min
2	Meeting Apologies/Attendance	Chair	Noting	2 min
3	Minutes of meeting 2022_10_13	Chair	Decision	2 min
4	Action Items	Chair	Discussion	2 min
5	Amended draft statement of policy principles	Chair	Noting	2 min
6	Purpose of this session	RBP	Discussion	2 min
7	Feedback on options presented	RBP	Discussion	10 min
8	Implementation options revised	RBP	Discussion	20 min
9	Analysis	RBP	Discussion	40 min
10	Next Steps	Chair	Discussion	5 min
11	General Business	Chair	Discussion	3 min
	Next Meeting: 15 December 2022			

Please note this meeting will be recorded.

Competition and Consumer Law Obligations

Members of the MAC's Reserve Capacity Mechanism Review Working Group (**Members**) note their obligations under the *Competition and Consumer Act 2010 (CCA)*.

If a Member has a concern regarding the competition law implications of any issue being discussed at any meeting, please bring the matter to the immediate attention of the Chairperson.

Part IV of the CCA (titled "Restrictive Trade Practices") contains several prohibitions (rules) targeting anti-competitive conduct. These include:

- (a) **cartel conduct**: cartel conduct is an arrangement or understanding between competitors to fix prices; restrict the supply or acquisition of goods or services by parties to the arrangement; allocate customers or territories; and or rig bids.
- (b) **concerted practices**: a concerted practice can be conceived of as involving cooperation between competitors which has the purpose, effect or likely effect of substantially lessening competition, in particular, sharing Competitively Sensitive Information with competitors such as future pricing intentions and this end:
 - a concerted practice, according to the ACCC, involves a lower threshold between parties than a contract arrangement or understanding; and accordingly; and
 - a forum like the MAC's Reserve Capacity Mechanism Review Working Group is capable being a place where such cooperation could occur.
- (c) **anti-competitive contracts, arrangements understandings**: any contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition.
- (d) **anti-competitive conduct (market power)**: any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition.
- (e) **collective boycotts**: where a group of competitors agree not to acquire goods or services from, or not to supply goods or services to, a business with whom the group is negotiating, unless the business accepts the terms and conditions offered by the group.

A contravention of the CCA could result in a significant fine (up to \$500,000 for individuals and more than \$10 million for companies). Cartel conduct may also result in criminal sanctions, including gaol terms for individuals.

Sensitive Information means and includes:

- (a) commercially sensitive information belonging to a Member's organisation or business (in this document such bodies are referred to as an Industry Stakeholder); and
- (b) information which, if disclosed, would breach an Industry Stakeholder's obligations of confidence to third parties, be against laws or regulations (including competition laws), would waive legal professional privilege, or cause unreasonable prejudice to the Coordinator of Energy or the State of Western Australia).

Guiding Principle – what not to discuss

In any circumstance in which Industry Stakeholders are or are likely to be in competition with one another a Member must not discuss or exchange with any of the other Members information that is not otherwise in the public domain about commercially sensitive matters, including without limitation the following:

- (a) the rates or prices (including any discounts or rebates) for the goods produced or the services produced by the Industry Stakeholders that are paid by or offered to third parties;
- (b) the confidential details regarding a customer or supplier of an Industry Stakeholder;
- (c) any strategies employed by an Industry Stakeholder to further any business that is or is likely to be in competition with a business of another Industry Stakeholder, (including, without limitation, any strategy related to an Industry Stakeholder's approach to bilateral contracting or bidding in the energy or ancillary/essential system services markets);
- (d) the prices paid or offered to be paid (including any aspects of a transaction) by an Industry Stakeholder to acquire goods or services from third parties; and
- (e) the confidential particulars of a third party supplier of goods or services to an Industry Stakeholder, including any circumstances in which an Industry Stakeholder has refused to or would refuse to acquire goods or services from a third party supplier or class of third party supplier.

Compliance Procedures for Meetings

If any of the matters listed above is raised for discussion, or information is sought to be exchanged in relation to the matter, the relevant Member must object to the matter being discussed. If, despite the objection, discussion of the relevant matter continues, then the relevant Member should advise the Chairperson and cease participation in the meeting/discussion and the relevant events must be recorded in the minutes for the meeting, including the time at which the relevant Member ceased to participate.



Minutes

Meeting Title:	Reserve Capacity Mechanism Review Working Group (RCMRWG)
Date:	13 October 2022
Time:	9:00am – 11:30am
Location:	Microsoft TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair	
Rhiannon Bedola	Synergy	
Manus Higgins	AEMO	Until 11:00am
Toby Price	AEMO	Subject matter expert
Jacinda Papps	Alinta Energy	
Geoff Down	Water Corporation	Proxy for Peter Huxtable
Paul Arias	Bluewaters Power	
Mark McKinnon	Western Power	
Patrick Peake	Perth Energy	
Matt Shahnazari	Economic Regulation Authority	
Noel Schubert	Small-Use Consumer representative	
Andrew Stevens	Consultant	Until 11:10am
Rebecca White	Collgar Wind Farm	
Tessa Liddelow	Shell Energy	
Dev Tayal	Tesla Energy	Until 10:00am
Andrew Walker	South32 (Worsley Alumina)	Until 10:00am
Kiran Ranbir	ATCO Australia	
Daniel Kurz	SSCP Power	Until 11:00am
Richard Bowmaker	Robinson Bowmaker Paul (RBP)	
Ajith Sreenivasan	RBP	
Tim Robinson	RBP	
Stephen Eliot	Energy Policy WA (EPWA)	
Laura Koziol	EPWA	
Shelley Worthington	EPWA	
Isadora Salviano	EPWA	

Apologies	From	Comment
Dale Waterson	Merredin Energy	

Item	Subject	Action
1	Welcome The Chair opened the meeting at 9:00am and provided an update on the current work for the RCM Review and the RCMRWG work schedule. The Chair noted that, based on the submissions on the stage 1 consultation paper and initial analysis, EPWA determined that additional analysis is needed on the method to assign Certified Reserve Capacity (CRC) to intermittent generators. Therefore, this matter will not be discussed at this RCMRWG meeting as originally planned. The following meetings are planned for the remainder of the year: 13/11/2022 – Penalty for high emission technologies: discussion of options for assessment 24/11/2022 – Penalties for high emission technologies: assessment and modelling 15/12/2022 – Certification of Intermittent Generators analysis.	
2	Meeting Apologies/Attendance The Chair noted the attendance as listed above	
3	Minutes of RCMRWG meeting 2022_07_14 and RCMRWG meeting 2022_07_21 The RCMRWG noted the minutes from the working group meetings held on 14 July 2022 and 21 July 2022.	
4	Action Items The paper was taken as read. The slides for agenda items 5 to 10 are available on the webpage for the RCM Review (https://www.wa.gov.au/government/document-collections/reserve-capacity-mechanism-review-working-group). Note that updated slides have been published after the meeting	
5	Purpose of this session Mr Robinson noted that the purpose of this meeting is to seek input on the direction and the proposed options for the implementation of penalties for high emission technologies and support of firming technologies.	
6	Policy statement principles Mr Robinson recapped the draft statement of policy principles and summarised the constraints and flexibilities for proposing a design for a penalty for high emission technologies. The following was discussed: <ul style="list-style-type: none"> Ms White sought clarification on the purpose of the policy and if the intent is to incentivise investment in new technologies or if it is a 	

Item	Subject	Action
	<p>reaction to the absence of a broader economy wide emission scheme.</p> <ul style="list-style-type: none"> ○ The Chair noted that this is the Minister’s draft statement and that she cannot speak for the Minister but the statement of policy principle is clear that the purpose is to penalise high emission technologies and to incentivise firming technologies. ○ Mr Shahnazari considered that it is important to first set a clear objective or target for the policy. Mrs Papps agreed with Mr Shahnazari. ○ Mr Stevens considered that the penalty should not be discussed as part of the RCM Review because it is not a reserve capacity issue but an energy and emissions issue. Mr Stevens considered that providing available capacity does not contribute to emissions. ○ The Chair acknowledged Mr Stevens’ view and agreed that the penalty should be based on actual emissions and not available capacity. The Chair noted that: <ul style="list-style-type: none"> – The draft statement has been discussed with the MAC and the MAC provided views that penalties may not be best addressed in the RCM. – EPWA had been asked to assess options for a penalty on high emission technologies as part of the RCM Review but the penalty could be implemented within or outside the RCM. – Including the assessment of options for the penalty in the RCM Review allows to assess the penalty and its impact as part of the modelling for the review. ○ Mr Peake and Mr Stevens considered that the RCMRWG is well placed to assess the issue and provide feedback including whether emissions are better addressed in the energy market than in the RCM. <ul style="list-style-type: none"> ● In response to a question from Mrs Papps, the Chair noted that the draft statement is about getting to net-zero emissions and indicated that, for the purpose of the draft statement, firming technologies are low emission technologies, such as storage technologies and in particular long-duration storage, that use clean resources. <ul style="list-style-type: none"> ○ Mr Kurz considered that a mechanism that utilises penalties to support firming technologies can force high emission technologies to exit the market. Such a mechanism would not incentivise investment in firming technology because of the uncertainty of the support. ● Mrs Papps considered that another constraint should be added to the draft statement, requiring competitive neutrality of the penalty regime. Ms White, Mrs Bedola and Mr Arias supported Mrs Papps suggestion. 	

Item	Subject	Action
	<ul style="list-style-type: none"> ○ The Chair acknowledged the desire for competitive neutrality but noted that any solution for implementing the policy must honour the existing constraints set out in the Minister's draft statement. ● Mrs Bedola considered that the net zero cost impact on consumers will be difficult to meet. Penalties will change dispatch, investment and retirement and that will impact costs. Mr Peake and Mr Arias agreed with Mrs Bedola. ● In response to a question from Mrs Bedola, the Chair noted that the Minister has not provided direction on the timing for the implementation of the penalty regime. Therefore, she considered that the timing would be part of EPWA's recommendations. 	

7 Policy implementation options

Mr Robinson presented identified number of options for designing a penalty on high emission technologies. The following was discussed:

General

- Mrs Papps considered that the penalty should be designed in a way so participants can manage their exposure to it.
 - The Chair agreed that, while it was not a stated objective, the penalty design should allow participants to change behaviour.

Option 1- Penalty based on estimated emissions produced in each Trading Interval:

- Ms White asked how the ERA would monitor compliance that bilateral contracts are not amended to pass through the penalty.
 - The Chair considered that, if the WEM Rules don't allow the penalty to be passed through when offering into the energy and Essential System Services markets, it is unlikely that the counterparty would agree to pass through the penalty in a bilateral contract.
 - Mr Shahnazari considered that if the penalty is not allowed to be passed through to consumers, then there is no increase in complexity for the ERA's compliance monitoring.
 - Ms White commented that in the near future demand is expected to exceed available energy, which would impact bilateral contracts and customers may not have the bargaining power to negotiate new contracts.
- Mrs Papps asked how the penalty would affect the Benchmark Reserve Capacity Price (BRCP) considering the current reference technology is an open cycle gas turbine (OCGT).
 - The Chair noted that the penalty must not affect the BRCP, otherwise everyone who pays the penalty can recover it through the higher BRCP. Therefore, further consideration is needed about the treatment of the technology of the marginal capacity provider.

Item	Subject	Action
	<ul style="list-style-type: none"> • Mr Peake noted that the government had already announced the retirement of Synergy’s coal fired power plants by 2030 and expressed his concern that if the penalties are not to be passed through to costumers then it could lead to an early retirement of Synergy’s and Bluewaters’ coal fired facilities. This capacity will be difficult to replace in the short term. <ul style="list-style-type: none"> ○ The Chair acknowledged Mr Peake’s concern and noted that: <ul style="list-style-type: none"> – it will be important to model the impact of the penalty on the generation fleet; – the modelling results need to be reflected in the recommendations for the timing of the implementation; – allowing to pass the cost through to the consumer would be against the constraints of the draft statement because such an option would not result in a penalty. ○ Mr Peake considered that, if the penalty is introduced after the retirement of the coal fired facilities, the only high emission facilities will be gas fired facilities which are needed to firm up the intermittent generators. ○ The Chair reiterated that special consideration must be given to facilities that are marginal capacity providers. ○ Mr Arias considered that allowing participants to pass through the penalty to consumers would still fund the entry of firming technologies. Mr Kurz agreed with Mr Arias. ○ Mr Shahnazari considered that passing penalties onto the energy market drives innovation and investment in low emission technologies and noted that there is a substantial body of knowledge on market based and administered mechanisms. Mr Shahnazari considered that for the policy constraint requiring that the implementation of the penalty has a net-zero-impact on consumers it should be clarified over what time frame the impact should be net-zero and whether the cost of emissions are included in the consideration. • Mr Robinson noted that modelling will assess: <ul style="list-style-type: none"> ○ the impact on prices, thus the cost to consumers; and ○ the impact on commercial viability of individual facilities, entry and exit decisions, and the effect on reliability. 	
	<p><u>Option 2 – RCM penalty based on settlement period emissions:</u></p> <ul style="list-style-type: none"> • There was some discussion about the first formula on slide 13. <ul style="list-style-type: none"> ○ Mr Robinson clarified that the intent was to limit a facility’s penalty to the emissions associated with its Capacity Credits. ○ Mr Shanazari and Mr Schubert considered that the penalty should be based on actual emissions and not be related to a facility’s Capacity Credits. 	

Item	Subject	Action
	<ul style="list-style-type: none"> ○ The Chair agreed that a facility's absolute penalty should be based on actual emissions and not be related to the number of Capacity Credits. However, in order to charge the penalty through the RCM, the absolute penalty, the Capacity Credits and the received capacity price need to be considered. Therefore, the formula will be changed as follows: max(facility generation, facility capacity credits) * facility emissions rate <u>facility generation * facility emissions rate</u> ○ The Chair noted that slide 13 will be amended accordingly and recirculated. ○ Mrs Bedola asked how facilities that don't have Capacity Credits would be treated. <ul style="list-style-type: none"> – The Chair indicated that this issue will be further considered. 	
	<p><u>Option 3- RCM penalty based on historic emission:</u></p> <ul style="list-style-type: none"> • Mrs Bedola noted, that basing the penalty on historic emissions could incentivise a retiring plant to increase emissions in their last year as they won't get penalised for it. Mr Price and Mr Peake supported Mrs Bedola's comment. <ul style="list-style-type: none"> ○ The Chair agreed that this will need to be considered as part of the assessment. • Mr Peake considered that a penalty should not be based on historical generation because operations are likely to change dramatically over the years. Mr Kurz supported Mr Peake's statement. 	
	<p><u>Option 4 - RCM penalty based on theoretical maximum emissions:</u></p> <ul style="list-style-type: none"> • Mr Robinson noted that basing penalties on theoretical maximum emissions would disconnect them from actual emissions. Therefore, this option will likely not be further considered. 	

8 Common elements

The following was discussed:

- Mr Stevens noted that all options presented are dealing with scope one emissions which are the focus of numerous mechanisms. Mr Stevens considered that any mechanism implemented in the WEM would likely be replaced soon by a federal mechanism.
 - Mr Robinson noted that scope one emissions are based on fuel consumption and not metered generation in MWh as in the options proposed.
 - Mr Robinson agreed that any WEM penalty for high emission technologies scheme should be revisited if a federal mechanism is implemented.

Item	Subject	Action
	<ul style="list-style-type: none"> ○ Mr Schubert considered that the fuel consumption could be determined by applying a factor to the generation measured in MWh to link the penalty to scope one emissions. ○ Mr Peake considered that a penalty regime based on MWh should be cheaper to operate because that information is readily available. 	
	<ul style="list-style-type: none"> ● Ms White considered that: <ul style="list-style-type: none"> ○ Participants cannot materially decrease the quantity of energy a facility generates given its obligations to offer into the market (at SRMC or similar). Therefore, the only behaviour change available is retirement, which risks a potential capacity shortfall and firming issues. ○ The penalty should not be linked to Capacity Credits as this would add unnecessary complexity and delay or mute the signal for behaviour change. ○ The most suitable approach is to base the penalty on the actual energy generated and only apply the penalty to generators and not to storage facilities to avoid double penalising emissions. <p>Mrs Bedola, Mr Peake and Mr Shahnazari supported Ms White's considerations.</p> 	
	<ul style="list-style-type: none"> ● Mr Schubert suggested an alternative approach for the implementation of the penalty using the Renewable Energy Certificates (REC) regime. He suggested that generators should be required to acquire RECs in proportion to their emissions and relinquish them to a state body such as AEMO or EPWA for the funding of firming technology. <ul style="list-style-type: none"> ○ The Chair asked Mr Schubert to provide the detail of his suggestion in writing. Mr Schubert agreed to email EPWA his suggestion. ○ The Chair noted that the RECs are administered by the Commonwealth Regulator and expressed concerns that the proposed approach could be seen as WA trying to dictate the evolution of the RECs beyond 2030. ○ Mr Stevens considered that a penalty regime using the RECs: <ul style="list-style-type: none"> – would attract legal challenges; and – would introduce investor uncertainty because of the variability of the RECs. ○ Mr Peake considered that RECs have high overhead costs. ○ Mr Schubert clarified that his suggested method could also be based on a WA local scheme instead of the RECs. ○ Mrs Bedola pointed out that this approach could cause an issue weighing WA certificates against national certificates. 	

Item	Subject	Action
	<ul style="list-style-type: none"> ○ Mr Price agreed with Mrs Bedola's concerns and added that the method would require definition of eligible certificates. ● Mr Peake asked if it is possible to legally apply penalties to an estimated quantity of emissions. <ul style="list-style-type: none"> ○ Ms White presumed that the estimate would need to meet the National Measurements Act requirements of 'for trade' measurement. ○ The Chair noted that the certificate scheme in the Eastern States is based on estimates but indicated that legal impediments will need to be assessed. ● Mr Shahnazari noted that for determining the emission <u>penalty</u> rate, the ERA's recent modelling could be a good framework. ● In response to a comment from Mr Peake, the Chair clarified that the penalty would put a value on emissions and that different ways of setting the penalty rate will be assessed through modelling. ● Mr Arias noted his disagreement with the statement that facilities in the SWIS don't currently face financial costs of emissions. ● Mr Kurz agreed with Mr Arias and noted that high emitting facilities face higher costs for finance and insurance. ● Ms White asked if the Minister has provided any guidance about the treatment of generators that are not connected to the SWIS. The Chair noted that no guidance had been provided. 	
9	<p data-bbox="336 1151 938 1182">Options for Distributing Support Payments</p> <p data-bbox="336 1196 1278 1263">Mr Robinson presented a number of options for distributing the penalties to firming technologies.</p> <ul style="list-style-type: none"> ● Mr Schubert considered that the penalties should not be distributed to firming technologies via Capacity Credits but based on the energy delivered in a predetermined period of time. ● Mrs Bedola asked whether the intent is to only support new technologies to assist their commercial viability. The Chair considered that this is the intent. <ul style="list-style-type: none"> ○ Mr Peake considered that the proposed hydrogen subsidy needs to be considered when designing the support for new firming technology. The Chair agreed. ○ Mr Schubert considered that the support should be used to make new firming technologies economic and not pay for their full cost. The Chair agreed. ● Ms White raised a concern that, if the support is provided on a pro rata basis for Capacity Credits of firming technologies, as suggested under proposed option 1, participants with a portfolio of high emission technologies and firming technologies will pay the penalty and receive the support. Ms White questioned whether in this case the benefits justify the administration costs of the regime. 	

Item	Subject	Action
	<ul style="list-style-type: none"> ○ The Chair indicated, that the cost and benefits of each option will be assessed. ● Mr Shahnazari expressed his support for a competitive mechanisms, or an administrative mechanism emulating a competitive outcomes, for distributing the penalties that does not pick winners and losers. ● Ms White asked how the firming technologies that produce emissions will be treated. <ul style="list-style-type: none"> ○ The Chair considered that the policy intent is to support firming technologies that enable an overall increase in renewable generation and help achieve the goal of net-zero emissions. ● Mr Price sought clarification on how renewable energy will be funded. <ul style="list-style-type: none"> ○ The Chair noted that this question is important but is out of scope for the assessment of penalties for high emission technologies. ○ Mr Robinson noted that the effect on prices and the possible entry and exit of facilities will be assessed as part of the economic modelling. . ● Mr Schubert considered that enabling a high emitter to manage their exposure by receiving funds to build their own firming technology is a good thing. ● Mr Shahnazari suggested to distribute the penalties to firming <u>iesy</u> technologies based on the estimated reduction of high emission generation that can be achieved by their addition, similar to a cap and trade mechanism. Mr Shahnazari provided a reference to a paper he considered relevant.¹ ● Mr Schubert considered that renewable conventional generation (e.g. biomass fired generation) should also be eligible for the support. 	

10 Next Steps

- The Chair requested feedback to be submitted to EPWA by 28 October 2022 to allow enough time for EPWA to assess and model the viable options before the next working group meeting on 24 November 2022.
 - Mrs Papps requested an extension of the timeline to 2 November 2022.
 - The Chair agreed to extend the timeline but encouraged all members to provide their input by 28 October 2022, if possible.
- In response to a question from Mrs Bedola, the Chair noted that the policy for the penalties will be discussed with the MAC at the 13 December 2022 meeting.

¹ note page 18 Paragraph 3 [Incorporating Wind Generation in Cap and Trade Programs \(nrel.gov\)](https://www.nrel.gov/energy-efficiency/energy-modeling/articles/Incorporating-Wind-Generation-in-Cap-and-Trade-Programs)

Item	Subject	Action
	<ul style="list-style-type: none"> • Mr Peake considered that the timing for the implementation of the penalty should be set soon to provide certainty for new investment, for example in the needed high efficiency gas turbines. <ul style="list-style-type: none"> ○ The Chair noted that special consideration must be given to reliability and how required firming technologies that produce emissions will be treated. • In response to a question from Mrs Bedola, the Chair noted that the term 'high emission technologies' will need to be clearly defined for the purpose of the penalty. 	
11	General Business	
	No general business was discussed.	

The meeting closed at 11:30am.

Agenda Item 4: RCMRWG Action Items

Reserve Capacity Mechanism Review Working Group (**RCMRWG**) Meeting 2022_11_24

Shaded	Shaded action items are actions that have been completed since the last MAC meeting.
Unshaded	Unshaded action items are still being progressed.
Missing	Action items missing in sequence have been completed from previous meetings and subsequently removed from log.

Item	Action	Responsibility	Meeting Arising	Status
No Actions to report				



Draft Statement of Policy Principles: Penalties for high emission technologies in the Wholesale Electricity Market

The Government is considering how to introduce penalties for all (i.e. incumbent and new) high carbon emission electricity generation technologies in the electricity market in the South West Interconnected System (SWIS). This complements discussions about capacity mechanism design and incentives for connection of new renewable generation capacity in other jurisdictions.

The Coordinator of Energy (**Coordinator**) is already undertaking a review of the Reserve Capacity Mechanism (**RCM**) in the Wholesale Electricity Market (**WEM**). In accordance with clause 2.5.2 of the WEM Rules, the Minister for Energy is providing the following draft statement of policy principles to the Coordinator to consider this new policy:

The Coordinator is to:

1. progress the design and the implementation of the policy of introducing penalties for all (i.e. incumbent and new) high carbon emission electricity generation technologies in the WEM;
2. consider options and propose a preferred option for the application of the penalty;
3. as part of (2), consider whether this policy can be effectively and efficiently implemented through the RCM and whether a different option could better achieve the intended outcome;
4. as part of the existing RCM Review, examine options for utilising the collected penalties to provide incentives for the early entry of alternative “firming” technologies in the market to ensure reliability of supply is maintained in the transition to net zero emissions energy sector by 2050;
5. ensure that the introduction, and the utilisation of, the penalties do not reduce the effectiveness of the RCM in maintaining reliability on the SWIS or increase the overall cost to consumers; and
6. integrate the policy in the modelling currently undertaken and planned for the RCM Review.

Background

Clause 2.5.2 of the WEM Rules provides for the Minister to issue a statement of policy principles to the Coordinator with respect to development of the market, such as for the forthcoming RCM Review. The statement of policy principles must not be inconsistent with the Wholesale Market Objectives.

Energy Policy WA is seeking some enhancements to the legal framework, including the introduction of an overarching State Electricity Objective to replace the current WEM objectives. The State Electricity Objective will focus on promoting the long-term interests of consumers, rather than on an exhaustive list of objectives which may often be in conflict or present an obstacle for implementing specific Government policies.

The proposed State Electricity Objective will provide scope for the Minister to issue a final statement of policy principles to the Coordinator.

Consultation

Clause 2.5.2 indicates that the Minister may provide a draft of a proposed statement to the Market Advisory Committee (**MAC**) and seek the MAC's views on the draft statement.

A draft statement of policy principles was circulated to the MAC for review and comment at an out-of-session meeting in early August 2022, and the Coordinator has advised the Minister of the MAC's views.



Government of Western Australia
Energy Policy WA

Reserve Capacity Mechanism Review Working Group Meeting 2022_11_24

24 November 2022

Working together for a
brighter energy future.

Meeting Protocols

- Please place your microphone on mute, unless you are asking a question or making a comment
- Please keep questions relevant to the agenda item being discussed
- If there is not a break in discussion and you would like to say something, you can 'raise your hand' by typing 'question' or 'comment' in the meeting chat
- Questions and comments can also be emailed to EPWA - Energy Markets energymarkets@dmirs.wa.gov.au after the meeting
- The meeting will be recorded and minutes will be taken (actions and recommendations only)
- Please state your name and organisation when you ask a question
- If you are having connection/bandwidth issues, you may want to disable the incoming and/or outgoing video

Agenda

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6. Purpose of this Session

Purpose of this Session

- Summarising feedback on options presented at the last working group
- Presenting further qualitative and quantitative analysis of options to implement penalties for high emission technologies
- Identifying final shortlisted options

7. Feedback



Feedback Themes

EPWA received written feedback on the approach to penalties from five stakeholders: AEMO, Alinta, Noel Schubert, and Perth Energy, and Shell Energy

Common themes in the responses were that:

- The penalty regime should be kept separate from other parts of the WEM – i.e. not implemented through the RCM
- Sent out energy (MWh) should be the basis for penalties, applied at a trading interval (option 1) or settlement period (option 2) to provide a link between operational actions and outcomes (although one participant favoured option 4)
- Achieving net zero cost impact on consumers will require a prohibition on passing penalty charges to customers through market offer prices
- Any penalty regime will drive existing firm capacity to retire earlier than planned at a time when significant new investment is needed in the SWIS – power system reliability will likely be negatively affected if retirement occurs before replacement capacity is available

Alternative Options Suggested

Stakeholders also identified two other options for applying penalties.

- One stakeholder suggested that participants could be required to acquire LGCs or ACCUs in proportion to their emissions, and surrender them to a state agency which would resell them to fund firming capacity (Option 5)
- Two stakeholders suggested that EPWA consider the approach used in the UK, whereby capacity types with emissions intensity above a given threshold are ineligible to participate in the capacity mechanism (Option 6)

Stakeholders gave mixed feedback on the best mechanism for distributing support payments – there was support for making payments on the basis of MWh (generated or potential) but concern that support payments:

- Should only be made to capacity that is truly additional
- Would disappear once high emitting facilities exit the market
- Would provide limited incentives for investment as the duration and size of payments is uncertain.

8. Implementation Options Revisited

Criteria for Penalty Design

The Minister issued an updated draft statement of policy principles in October 2022 and can only issue a final statement once the objectives of the WEM are changed

The purpose of the policy is to impose a financial penalty on existing and new high emission technologies

Assessment criteria:

1. Actual penalty imposed on high-emission technologies
2. Implemented through the WEM
3. Net zero cost impact on consumers
4. Power system security and reliability are not compromised
5. Simple and low-cost implementation
6. The accumulated penalties incentivize firming solutions to facilitate the growth in renewable intermittent generation

Penalty Implementation Options

- The rest of this slide deck presents options for implementing penalties based on:
 1. Estimated emissions produced in each interval, implemented through WEM settlement
 2. Estimated emissions produced in each settlement period, implemented through WEM settlement
 4. Theoretical maximum emissions that could be produced in each settlement period
 5. Estimated emissions produced in each settlement period, implemented as LGC or ACCU obligation
 6. Emissions intensity, where facilities above a threshold are ineligible to participate in the RCM
- Options 1 through 4 were discussed in the last meeting
- Option 3 (estimated emissions produced in previous capacity year) has been ruled out and is not assessed further.
- Options 1, 2 and 4 are described further in the appendix
- New options 5 and 6 are discussed on subsequent slides

Option 5 – Penalty Implemented through ACCUs or LGCs

- For each facility:
 - determine facility emissions (tCO₂e) in the settlement period as:
*facility generation * facility emissions rate*
 - require owner to surrender ACCUs equal to facility emissions to AEMO
- Penalties would be applied outside WEM settlement
- Penalties would apply to all facilities with non-zero emissions
- Participants would be precluded from including cost of ACCUs in their energy offers

UK Capacity Market – Emission Participation Thresholds

- EU Electricity Regulations set limits on the emissions intensity of facilities participating in the capacity market
- In 2021, the UK made changes to its capacity market to implement these limits – there are two limits:
 - 0.55 tCO₂e of Fossil Fuel origin per MWh of electricity generated (“the Fossil Fuel Emissions Limit”); and
 - 350 tCO₂e of Fossil Fuel origin on average per year per installed MWe (“the Fossil Fuel Yearly Emissions Limit”)
- New generation is only eligible for capacity payments if it has (fossil fuel sourced) emissions less than both limits
- Existing generation (pre 2019) is only eligible for capacity payments if it has (fossil fuel sourced) emissions less than the second limit

Option 6 – Emissions Threshold for RCM Participation

- Perform additional checks during CRC allocation for each facility:
 - Determine facility emissions (tCO₂e) in previous capacity year as:
*facility generation * facility emissions rate*
 - Determine whether facility emissions intensity is below threshold:
facility emissions rate ≤ rate threshold
 - Determine whether actual facility emissions are below threshold:
facility emissions ≤ quantity threshold
- If facility is above either threshold, CRC = 0
- The thresholds would apply to all new facilities at implementation
- A higher threshold would be adopted for existing facilities, and ratcheted down over a five-year period
- This option would not collect any penalty funds for redistribution

Common Parameters

- All options will require AEMO to determine emission intensity parameters for each facility. EPWA proposes these will be set by:
 - Determining an emissions content value for each type of fuel
 - Determining facility-specific heat rates
 - Accounting for generation used to self supply on-site load
 - Accounting for cogeneration production of heat energy
 - Combining these factors to determine a tCO₂e/MWh emissions factor for each facility
- The specific method used will be based on existing methodologies as far as possible, and tie in with assumptions made for other WEM processes that consider emissions, such as the WOSP
- Options 1, 2 and 4 would also require the Coordinator to determine the penalty rate to be applied
- Option 6 would require the Coordinator to determine a threshold value or values.
- EPWA considers that the penalty regime would be phased in over a number of years, but has not yet determined an appropriate starting penalty rate or threshold, or the appropriate trajectory over time

Distribution of Collected Penalties

Penalties collected under options 1, 2, 4 and 5 would be distributed as follows:

- Take the total amount of penalties collected in \$
- Sum the Flexible Capacity Credits allocated to all low emission firming facilities built after the date that the penalty regime commences – those in capability class 1 or 2 that have not paid emissions penalties
- Determine the incentive price in \$/MW by dividing the penalties collected by the total Capacity Credits held by qualifying firming facilities
- Pay each applicable facility the incentive price * MWCC as part of capacity payments

Sustainability of Support Payments

- Option 6 does not collect penalties to distribute
- Penalties collected under options 1, 2, 4 and 5 would only be available to new firming facilities as long as high emission facilities remain in the market and do not retire
- The amount of revenue would not be known before real time, except under penalty collection option 4, and could change at short notice as it is dependent on the operating patterns of high emission facilities.
- This poses problems for investment as the amount and duration of the revenue would be uncertain.
- Under any option, investment signals are probably better provided by the fundamentals of the RCM to signal the value of firming capacity, including:
 - The new flexible capacity product
 - Applying availability duration parameters to energy limited capacity
 - Potentially, at some future date, making capability class three facilities liable for refunds based on performance, or ineligible for capacity credits altogether
- Under any option, where collected penalties are insufficient to fund new firming technology, it may be necessary to explore options for topping up the fund from other sources

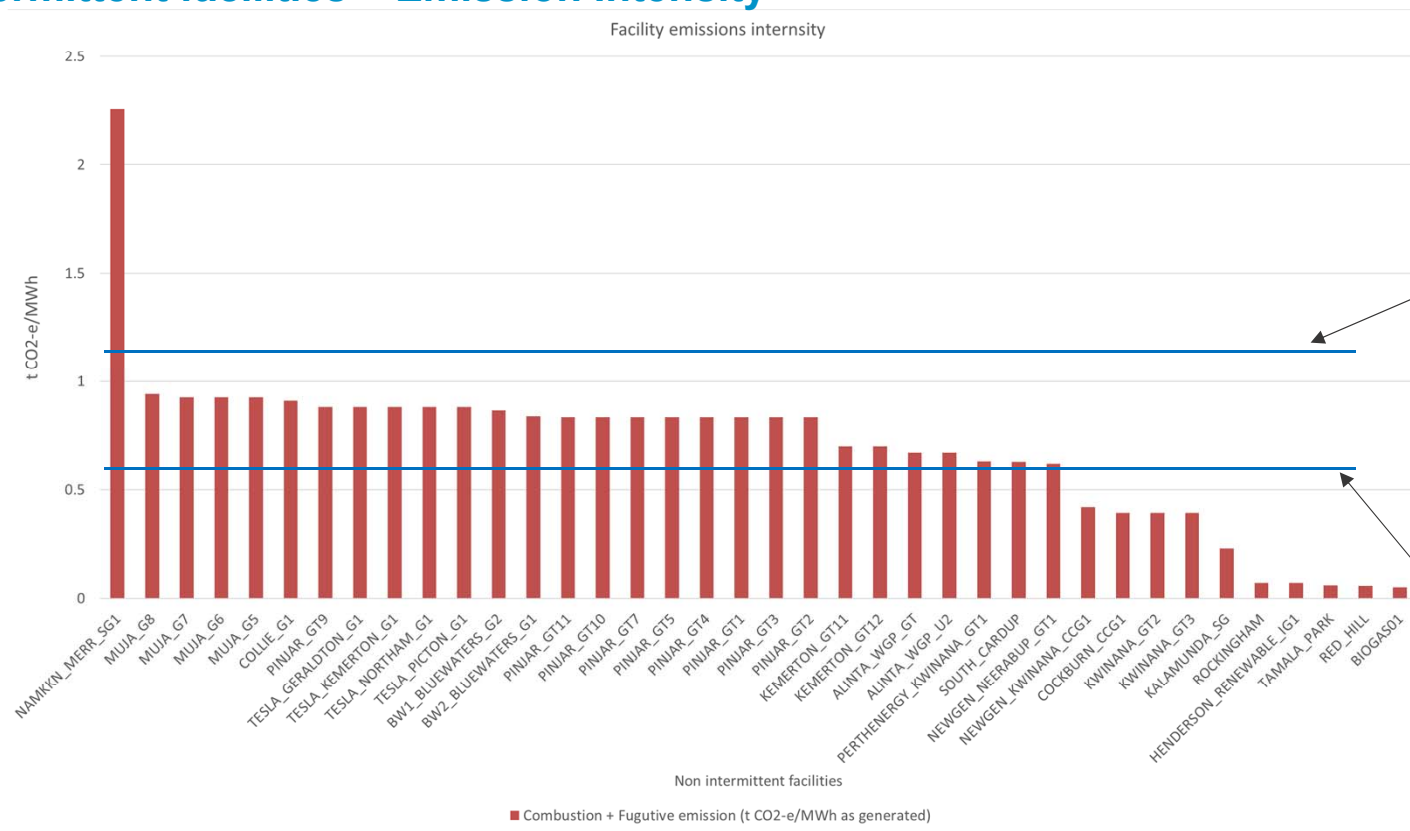
9. Analysis



Facility Emission Rates (tCO2e/MWh)

Non intermittent facilities – Emission Intensity

This slide shows the application of the first threshold – inherent emissions intensity per MWh produced.



An initial threshold double the UK value would exceed almost all emission rates in the SWIS fleet

UK limit: 0.55 tCO2e of Fossil Fuel origin per MWh of electricity generated

Not feasible as starting value for WEM penalty, as it would risk system reliability

Biogas/biomass not penalized as not fossil fuel derived

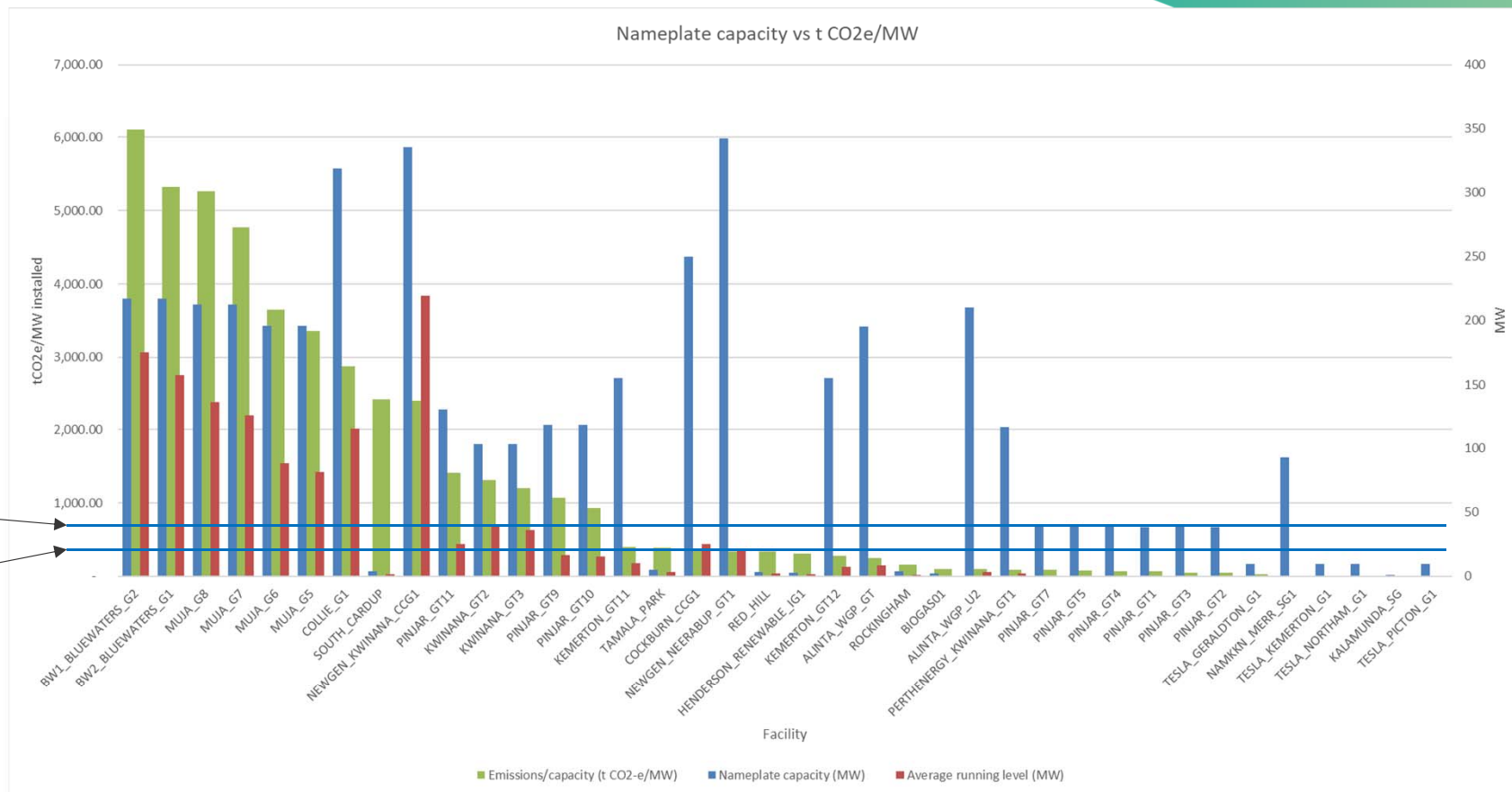
Sources:
 • Combustion emissions: 5 year average - NGER report; Fugitive emissions – WOSP
 • [Carbon Emissions Limits in the Capacity Market – Guidance](#)

Facility Emission Rates per MW Installed

This slide shows the application of the second threshold – total emissions per MW of installed capacity.

A threshold twice the UK value would exclude all coal-fired facilities and a handful of gas-fired facilities

UK limit – 350 tCO₂e/MW
Not feasible as starting value for WEM penalty, as it would risk system reliability



Analysis – Penalty Application

Coal and Distillate

Facility Code	Fuel	Combustion + Fugitive emissions (t CO2-e/MWh as generated)	Emissions/capacity (t CO2-e/MW)	0.55T of CO2 of Fossil Fuel origin per kWh of electricity generated	350T of CO2 of Fossil Fuel origin on average per year per installed MWe	Penalty amount (25 AUD/t CO2-e)	Penalty amount (50 AUD/t CO2-e)	Penalty amount (100 AUD/t CO2-e)
BW1_BLUEWATERS_G2	Black coal	0.91	6,107.81	x	x	\$33,134,861.36	\$66,269,722.72	\$132,539,445.44
BW2_BLUEWATERS_G1	Black coal	0.89	5,323.44	x	x	\$28,879,654.46	\$57,759,308.93	\$115,518,617.85
MUJA_G8	Black Coal	0.94	5,259.11	x	x	\$27,952,167.78	\$55,904,335.56	\$111,808,671.11
MUJA_G7	Black Coal	0.94	4,769.90	x	x	\$25,352,043.14	\$50,704,086.27	\$101,408,172.55
MUJA_G6	Black Coal	0.95	3,651.71	x	x	\$17,875,119.27	\$35,750,238.55	\$71,500,477.10
MUJA_G5	Black Coal	0.95	3,355.54	x	x	\$16,425,364.31	\$32,850,728.61	\$65,701,457.22
COLLIE_G1	Black coal	0.92	2,880.63	x	x	\$22,922,582.03	\$45,845,164.05	\$91,690,328.10
TESLA_GERALDTON_G1	Distillate	0.88	24.63	x	✓	\$6,095.61	\$12,191.21	\$24,382.42
NAMKKN_MERR_SG1	Distillate	1.11	8.39	x	✓	\$19,413.30	\$38,826.61	\$77,653.22
TESLA_KEMERTON_G1	Distillate	0.88	3.06	x	✓	\$757.15	\$1,514.30	\$3,028.61
TESLA_NORTHAM_G1	Distillate	0.88	1.40	x	✓	\$346.94	\$693.88	\$1,387.76
TESLA_PICTON_G1	Distillate	0.88	0.03	x	✓	\$6.60	\$13.20	\$26.40

Analysis – Penalty Application

Natural gas

Facility Code	Fuel	Combustion + Fugitive emissions (t CO ₂ -e/MWh as generated)	Emissions/capacity (t CO ₂ -e/MW)	0.55T of CO ₂ of Fossil Fuel origin per kWh of electricity generated	350T of CO ₂ of Fossil Fuel origin on average per year per installed MWe	Penalty rate (25 AUD/t CO ₂ -e)	Penalty rate (50 AUD/t CO ₂ -e)	Penalty rate (100 AUD/t CO ₂ -e)
NEWGEN_KWINANA_CCG1	Natural gas	0.42	2,408.18	✓	x	\$20,168,476.07	\$40,336,952.15	\$80,673,904.29
PINJAR_GT11	Natural gas	0.832688638	1,408.71	x	x	\$4,578,320.08	\$9,156,640.16	\$18,313,280.32
KWINANA_GT2	Natural gas	0.392289411	1,311.30	✓	x	\$3,383,161.33	\$6,766,322.66	\$13,532,645.32
KWINANA_GT3	Natural gas	0.392289411	1,201.85	✓	x	\$3,100,767.54	\$6,201,535.08	\$12,403,070.16
PINJAR_GT9	Natural gas	0.88	1,073.14	x	x	\$3,171,140.48	\$6,342,280.96	\$12,684,561.91
PINJAR_GT10	Natural gas	0.832688638	934.79	x	x	\$2,762,311.91	\$5,524,623.82	\$11,049,247.63
KEMERTON_GT11	Natural gas	0.698596678	397.00	x	x	\$1,538,357.51	\$3,076,715.02	\$6,153,430.05
COCKBURN_CCG1	Natural gas	0.39284764	348.46	✓	✓	\$2,175,238.42	\$4,350,476.83	\$8,700,953.66
NEWGEN_NEERABUP_GT1	Natural gas	0.619139325	339.46	x	✓	\$2,902,403.26	\$5,804,806.53	\$11,609,613.05
KEMERTON_GT12	Natural gas	0.698596678	282.63	x	✓	\$1,095,191.97	\$2,190,383.94	\$4,380,767.87
ALINTA_WGP_GT	Natural gas	0.66985484	252.22	x	✓	\$1,230,820.57	\$2,461,641.14	\$4,923,282.29
ALINTA_WGP_U2	Natural gas	0.66985484	97.53	x	✓	\$512,014.67	\$1,024,029.33	\$2,048,058.66
PERTHENERGY_KWINANA_GT1	Natural gas	0.63	92.30	x	✓	\$267,681.35	\$535,362.69	\$1,070,725.38
PINJAR_GT7	Natural gas	0.832688638	89.96	x	✓	\$88,387.01	\$176,774.01	\$353,548.02
PINJAR_GT5	Natural gas	0.832688638	78.32	x	✓	\$76,945.74	\$153,891.48	\$307,782.95
PINJAR_GT4	Natural gas	0.832688638	69.95	x	✓	\$68,729.89	\$137,459.78	\$274,919.56
PINJAR_GT1	Natural gas	0.832688638	69.52	x	✓	\$66,910.65	\$133,821.31	\$267,642.62
PINJAR_GT3	Natural gas	0.832688638	52.39	x	✓	\$51,469.69	\$102,939.38	\$205,878.77
PINJAR_GT2	Natural gas	0.832688638	52.01	x	✓	\$50,063.18	\$100,126.35	\$200,252.71

Analysis – Penalty Amounts

Landfill and waste

Facility Code	Fuel	Combustion + Fugitive emissions (t CO ₂ -e/MWh as generated)	Emissions/capacity (t CO ₂ -e/MW)	0.55T of CO ₂ of Fossil Fuel origin per kWh of electricity generated	350T of CO ₂ of Fossil Fuel origin on average per year per installed Mwe	Penalty rate (25 AUD/t CO ₂ -e)	Penalty rate (50 AUD/t CO ₂ -e)	Penalty rate (100 AUD/t CO ₂ -e)
SOUTH_CARDUP	Landfill gas	0.628294283	2,421.60	✓	✓	\$0	\$0	\$0
TAMALA_PARK	Landfill gas	0.06007828	385.48	✓	✓	\$0	\$0	\$0
RED_HILL	Landfill gas	0.056930531	336.22	✓	✓	\$0	\$0	\$0
HENDERSON_RENEWABLE_IG1	Landfill gas	0.07	311.94	✓	✓	\$0	\$0	\$0
ROCKINGHAM	Landfill gas	0.071195285	155.31	✓	✓	\$0	\$0	\$0
BIOGAS01	Waste	0.05	102.32	✓	✓	\$0	\$0	\$0
KALAMUNDA_SG	Landfill gas	0.23	0.86	✓	✓	\$0	\$0	\$0

- Emissions from biogas and biomass facilities are not of fossil fuel origin, so do not result in penalties
- Cogeneration plant has not yet been assessed because the emissions figures available have not been adjusted to account for non-electric energy production

Analysis – Effects on Profit

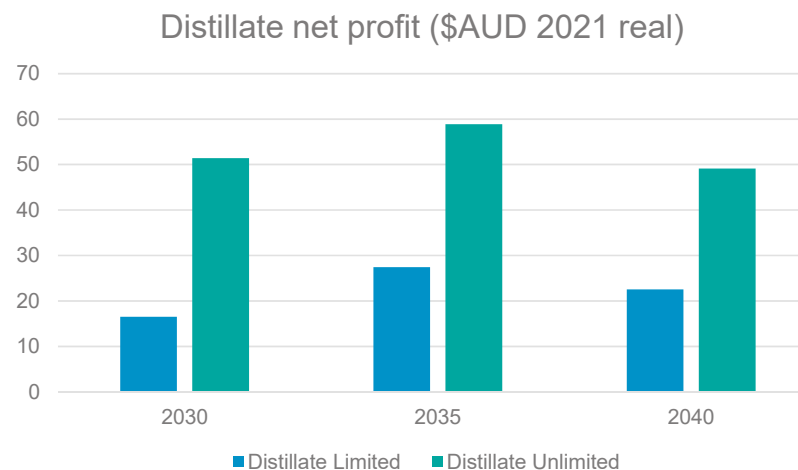
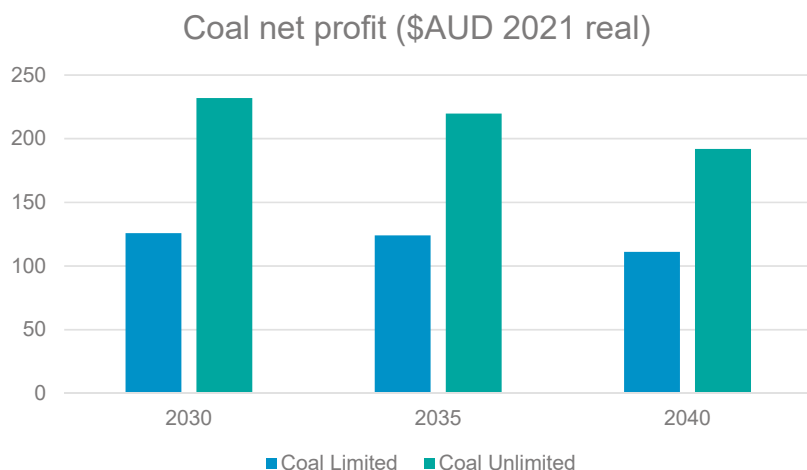
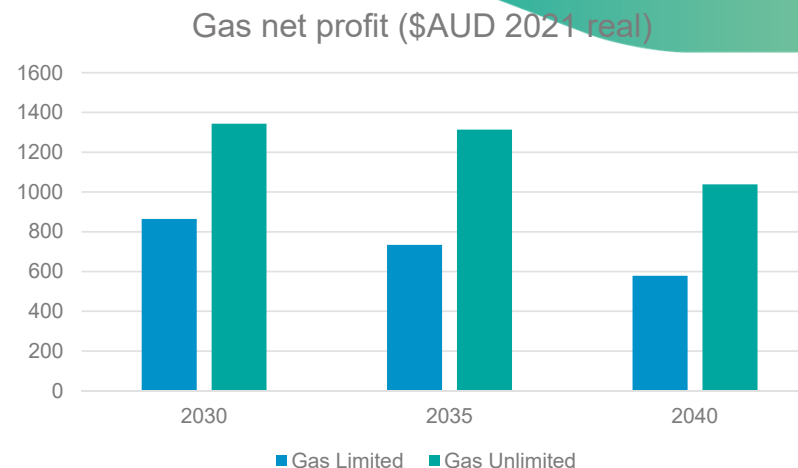
- Two scenarios assessed:
 1. High price: Wind and solar entry driven solely by capacity payments and spot prices, spot prices remain around current levels, and new entry is lower than capacity target
 2. Low price: Other factors support new (renewable) entry sufficient to meet capacity target, spot prices decrease over time
- Revised thresholds as follows:

	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Emissions intensity limit (tCO ₂ e/MWh)	None	0.75	0.75	0.75	0.75	0.75	0.55	0.55	0.55	0.55	0.55	0.55
Yearly emissions limit (tCO ₂ e/MW)	None	700	700	700	700	700	350	350	350	350	350	350

High Price Scenario: Both Emission Limits

Under the high price scenario, there is sufficient non-capacity revenue for facilities to cover their operating costs, and hence retirement still only occurs based on facility technical lifespan.

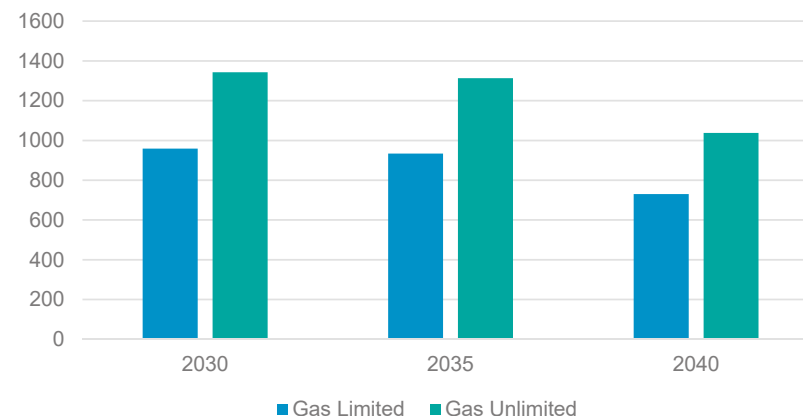
ESS revenue is increasingly important, and a coal fired facility without either capacity or ESS revenue would no longer be profitable.



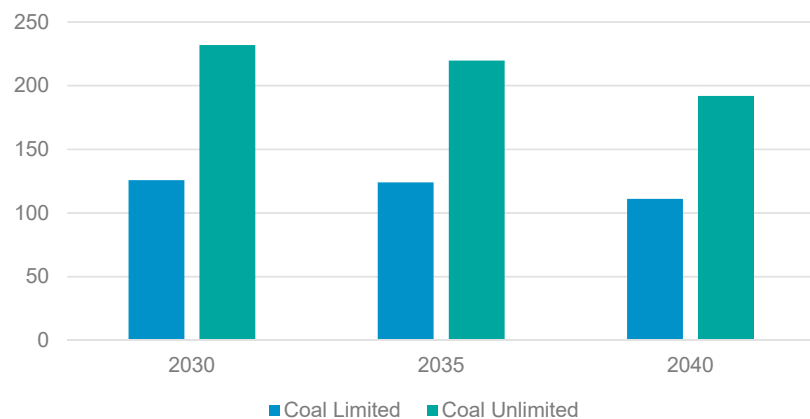
High Price Scenario: Yearly Total Emission Limits Only

If only the annual total emissions threshold is applied, distillate peakers are unaffected.

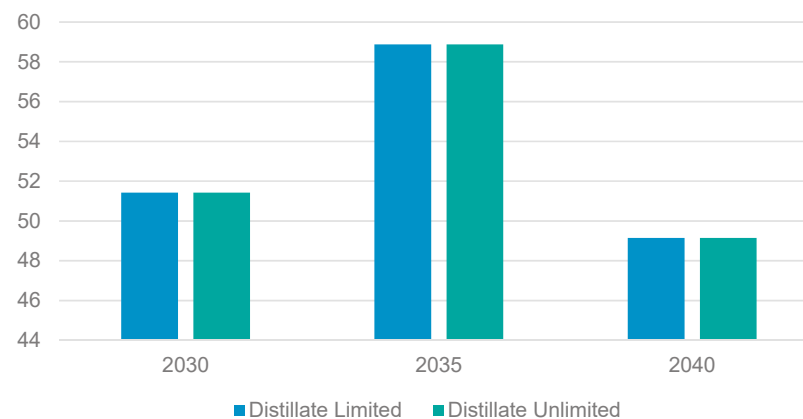
Gas net profit (\$AUD 2021 real)



Coal net profit (\$AUD 2021 real)



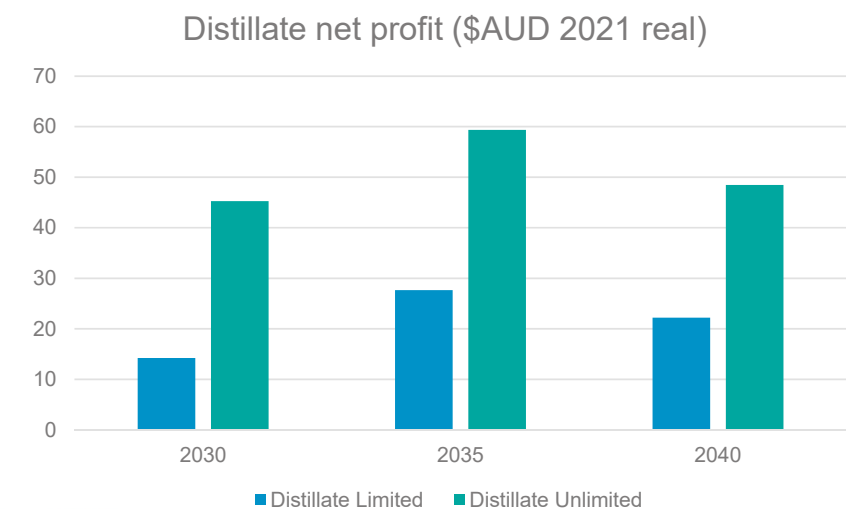
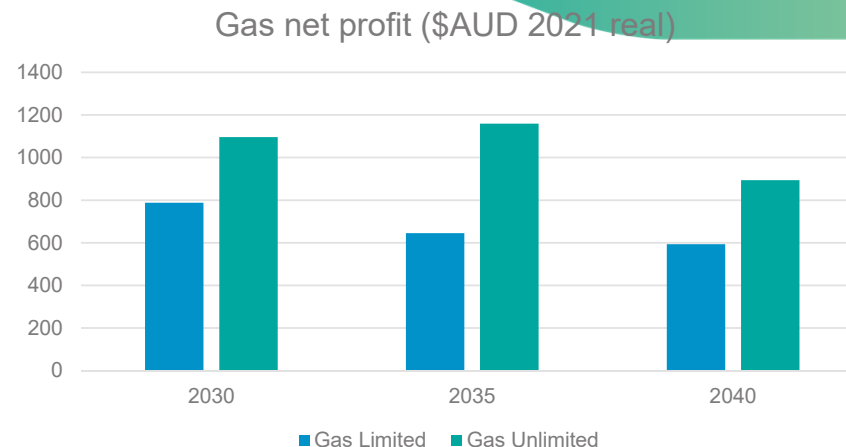
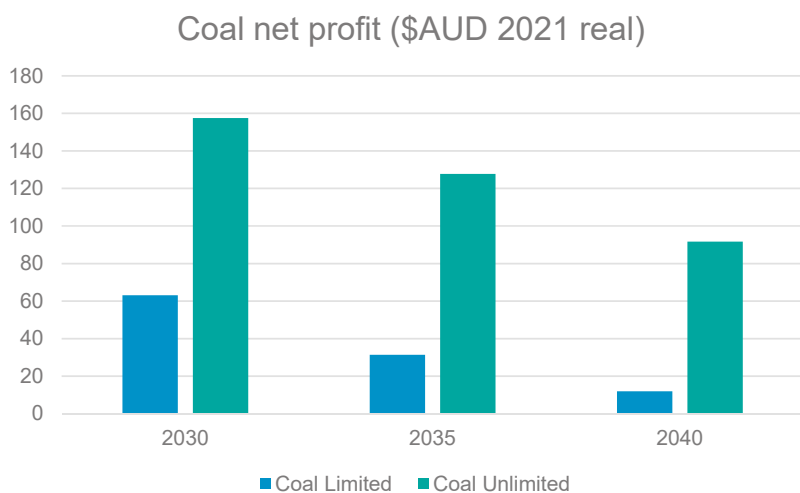
Distillate net profit (\$AUD 2021 real)



Low price scenario: Both emissions limits

Under the low price scenario, coal generators become unprofitable in the early 2040s when barred from the capacity market.

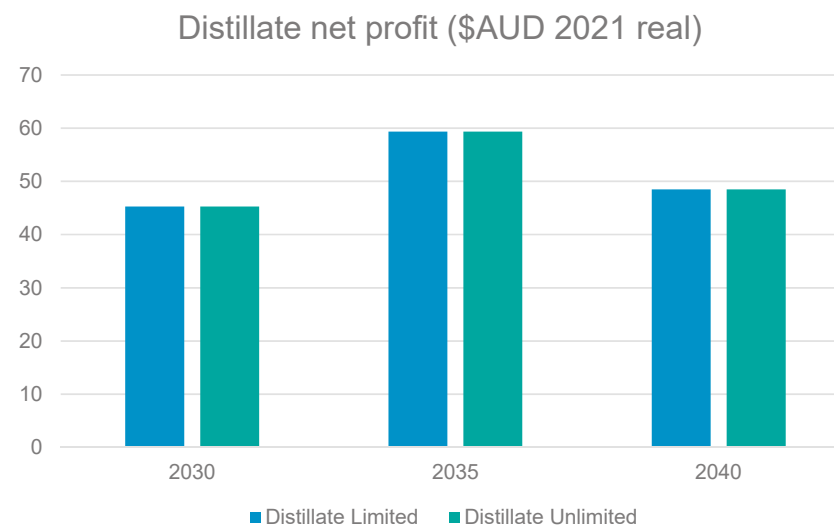
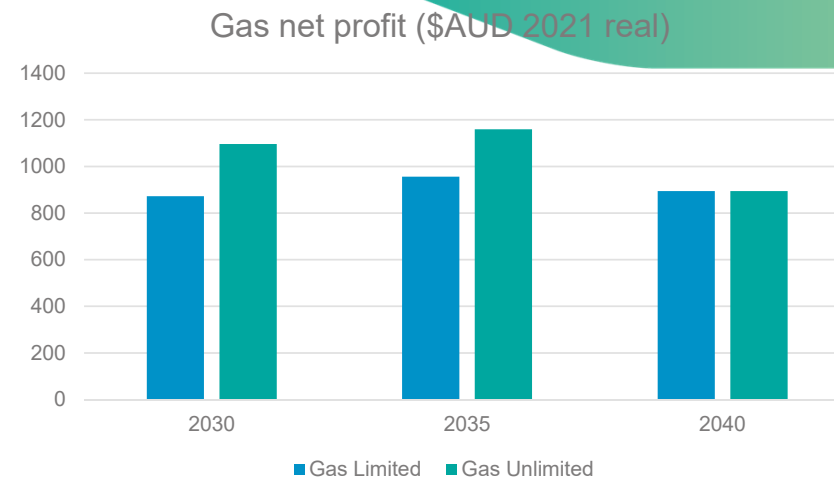
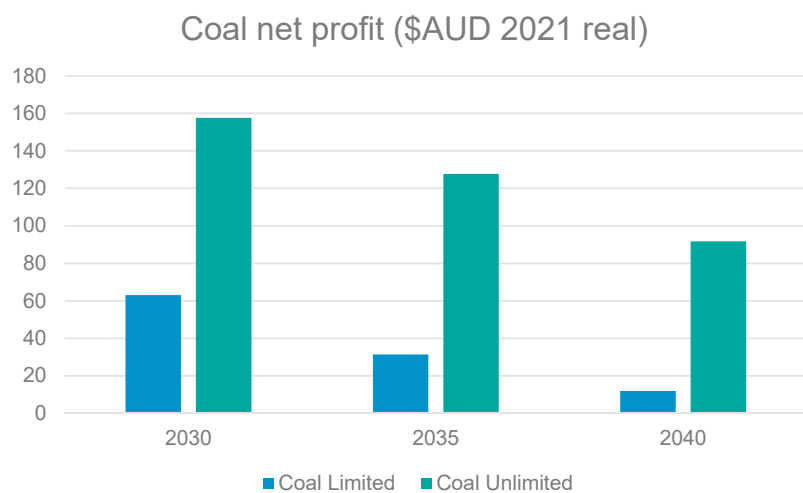
With access to the capacity market, thermal generators retain their profitability throughout the entire modelling horizon.



Low price: yearly total emission limits only

The continued profitability of thermal generators is made possible through access to ESS markets, which make up the majority of coal generators revenue from 2030 onwards, and up to 40% of gas generator revenue by 2035.

The ability of coal plant to provide ESS in future is unlikely.



Analysis – Policy Criteria

	Penalty on high emissions	WEM	Cost impact on consumers	Security and reliability	Simple implementation	Penalties can fund firming
Option 1	●	●	◐	◑	◑	◑
Option 2	●	●	◐	◑	◑	◑
Option 4	◐	●	◐	◐	◑	◐
Option 5	●	○	◐	◑	◐	◑
Option 6	●	●	◑	●	●	○

Qualitative Analysis against Policy Criteria

1. Penalty on high emissions

- Options 1, 2, 5, 6 have a penalty based on actual emissions
- Option 4 has a penalty based on theoretical emissions, not actual emissions

2. Implemented through the WEM

- Option 5 is not implemented through the WEM

3. Cost impact on consumers

- At the margin, all options will drive earlier exit by high emission facilities, increasing the overall cost to consumers of energy supply (but decreasing the external costs of environmental impacts)
- Options 1, 2, 4 and 5 all require additional measures to avoid participants passing increased operating costs through to consumers. Option 6 is simpler in that regard, as it does not change incentives for short run operating decisions

Qualitative Analysis against Policy Criteria

4. Security and reliability

- All options are likely to bring forward exit of inflexible coal plant
- Option 4 is also likely to bring forward exit of flexible gas plant
- Option 6 provides most certainty regarding the need to procure additional capacity to fill in any gaps

5. Simple implementation

- All options require new processes to determine facility emissions rates
- Options 1, 2, 4 require new settlement products for collecting penalty payments
- Option 5 requires new process infrastructure to collect and sell ACCUs rather than just using WEM processes

6. Penalties can fund firming

- Options 1, 2, 4 and 5 would collect penalties, but they would only be available to new firming facilities as long as high emission facilities remain in the market and do not retire
- The amount of revenue would not be known before real time, except under option 4, and could change at short notice as it is dependent on the operating patterns of high emission facilities
- Option 6 would not collect penalties at all
- None of the options would provide a solid revenue stream for new low-emission firming facilities

Shortlisted Options

Two options shortlisted:

- Option 1 – penalty per MWh, charged by interval
 - Has the advantage of collecting penalties for distribution as support payments
- Option 6 – emissions threshold for RCM participation
 - Has more certainty regarding reliability of supply than option 1, requires less effort to avoid increased costs to consumers, and is simpler to implement

Both options

- Have penalties relating to actual emissions
- Are implemented through the WEM
- Are relatively simple to implement
- Would first apply in the 2030 capacity year
- Could be phased in with the penalty rate (Option 1) or threshold (Option 6) becoming more stringent over a five year period.

10. Next Steps



Next Steps

- Options presented to MAC (December)
- Options presented to the Minister
- Questions or feedback can be emailed to energymarkets@energy.wa.gov.au

11. General Business



*We're working for
Western Australia.*

Appendix. Penalty Implementation Options



Option 1 – Penalty on Trading Interval Emissions

- For each facility, determine:
 - emissions in each trading interval (tCO₂e) as:
*facility generation (in MWh) * facility emissions rate*
 - Interval emissions penalty (\$) as:
*facility emissions * penalty rate*
- Penalties would be applied as a separate settlement segment.
- Penalties would apply to all facilities with non-zero emissions.
- Participants would be precluded from including penalties in their energy offers.

Option 2 – Penalty on Settlement Period Emissions

- For each facility:
 - determine facility emissions (tCO₂e) in settlement period as:
*facility generation * facility emissions rate*
 - Settlement period emissions penalty (\$) as:
*facility emissions * penalty rate*
- Penalties would be applied as a separate settlement segment.
- Penalties would apply to all facilities with non-zero emissions.
- Participants would be precluded from including penalties in their energy offers.

Option 4 – RCM Penalty on Theoretical Maximum Emissions

- For each facility, determine:
 - the maximum possible emissions (tCO₂e) as:
*facility nameplate capacity * facility emissions rate * hours in year*
 - annual emissions penalty (\$) as:
*facility emissions * penalty rate*
- Penalties would be applied as a separate settlement segment.
- Penalties would apply to all facilities with non-zero emissions.
- Participants would be precluded from including penalties in their energy offers.