Meeting Agenda

Meeting Title:	Reserve Capacity Mechanism Review Working Group (**RCMRWG**)
Meeting Number:	2023_10_19
Date:	Thursday 19 October 2023
Time:	9:30 AM to 11:30 AM
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda	Chair	Noting	1 min
2	Meeting Apologies/Attendance	Chair	Noting	1 min
3	Draft Minutes of Meeting 2023_09_21	Chair	Noting	1 min
4	Sequencing of the Draft WEM Amending Rules implementing the outcomes of the RCM Review	Chair/RBP	Discussion	90 min
5	BRCP Reference Technology Review – Net/Gross CONE analysis	Chair/ RBP	Discussion	25 min
6	Next Steps	Chair	Discussion	1 min
7	General Business	Chair	Discussion	1 min

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.

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Energy Policy WA

Minutes

Meeting Title:	Reserve Capacity Mechanism Review Working Group (RCMRWG)
Date:	21 September 2023
Time:	11:00 AM to 12:30 PM
Location:	Microsoft TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair	
Manus Higgins	AEMO	
Toby Price	AEMO	
Oscar Carlberg	Alinta Energy	
Geoff Gaston	Change Energy	
Richard Cheng	Economic Regulation Authority (ERA)	
Andrew Stevens	Energy Person	
Samuel Lee Mahon	Frontier Energy	
Patrick Peake	Perth Energy	
Paul Arias	Shell Energy	
Tessa Liddelow	Shell Energy	
Noel Schubert	Small-Use Consumer representative	
Andrew Walker	South 32	
Daniel Kurz	Summit Southern Cross Power	
Rhiannon Bedola	Synergy	
Peter Huxtable	Water Corporation	
Mark McKinnon	Western Power	
Tim Robinson	Robinson Bowmaker Paul (RBP)	
Richard Bowmaker	RBP	
Isaac Gumbrell	RBP	
Ajith Sreenivasan	RBP	
Geoff Glazier	Merz Consulting (Merz)	
Shelley Worthington	EPWA	
Tonia Curby	EPWA	

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1 Welcome

The Chair opened the meeting with an Acknowledgment of Country and welcomed members.

2 Meeting Attendance

The meeting attendance as listed above.

3 Benchmark Reserve Capacity Price Reference Technology Review

The Chair noted that this review results from a Reserve Capacity Mechanism (RCM) Review outcome for the Coordinator to review the Benchmark Reserve Capacity Price (BRCP) reference technology for both the Peak and the Flexible (Flex) capacity product.

The Chair noted the review was a matter of priority as:

- the ERA needs to undertake a review of the BRCP methodology and requires the reference technology for the BRCP in order to commence the review at the start of 2024; and
- the sequencing of the WEM Amending Rules had not been determined and will be discussed with the RCMRWG on 19 October 2023, including when the provisions for the new Flex product would commence, for which a reference technology needs to be determined.

The Chair noted that:

- RBP and Merz are providing technical support to assist EPWA and the Coordinator to determine the most cost-efficient new entrant for both the Peak and Flex products;
- there will be a public consultation process seeking feedback on a proposed reference technology later in the year; and
- it is anticipated that EPWA will determine the technology type for the Flex and Peak products by the end of the year.

The Chair acknowledged that some members of the RCMRWG were not comfortable with moving from gross cost of new entry (CONE) to net CONE and that economic analysis would be undertaken to assist further consideration of this.

Mr Bowmaker presented an overview of the work completed so far, including:

- the technology long list;
- the technology shortlist of five technologies based on:
  - the ability of the technology to meet the requirements of providing the Peak and Flex products;
  - an assumed capacity factor of 10% (Peak) and 25% (Flex);
  - the technology's ability to meet the provisional emissions thresholds being developed under the WEM investment certainty review (WIC Review); and

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	○ the cost of the technology. Mr Bowmaker noted that the next steps will be to undertake gross vs net CONE analysis and modelling, and develop the proposal for the reference technologies for consultation. The analysis regarding gross CONE vs net CONE is intended to be discussed at the RCMRWG meeting on 19 October 2023. • Regarding the capacity service requirements, Mr Gaston sought to clarify if EPWA was looking at the definition of capacity and whether it must be dispatchable to a specific output. The Chair responded that all capacity must be dispatchable to a specific output in order to receive Capacity Credits. • Mr Gaston responded that there was a need to ensure that capacity is reliable, noting there are certain technologies for which the output is not guaranteed. The Chair responded that the reference technology is used for setting the BRCP only, and that there is no guarantee that there will be certified facilities of this technology type in practice. She added that: • conventional generators are certified at 41 degrees Celsius with their NAQ taken into account in awarding them with capacity credits; • intermittent generators are certified under the Relevant Level Method (RLM) to determine what portion of their nameplate capacity can be awarded capacity credits; and • storage is rated based on linear derating at 41 degrees Celsius over four hours. The Chair noted that the issue was to set the BRCP on the basis of the most efficient new entrant in the market, which for many years has been the 160MW Siemens open cycle turbine. • Mr Gaston sought to clarify whether 100MW of the Flexible Capacity would be able to produce 100MW. The Chair confirmed that, to be eligible for Flexible Capacity credits Facilities must have Peak Capacity Credits, should always be certified on how much they can actually achieve at 41 degrees Celsius, or under the RLM for intermittent generators. She added that flexible capacity will need to meet other requirements that are different to the Peak Capacity requirements, including: • fast start; • low minimum generation; • fast shut down; and • fast ramping. The Chair confirmed that no matter what the reference technology is, individual facilities will have to demonstrate to the AEMO that they can reach the level of certified capacity when called. • Mr Schubert considered that if the quantity of demand side programmes were to grow significantly, the assumed 10% capacity	

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factor may need to increase. This is because the increase in DSPs, if dispatched last, would shave a bigger section of the load duration curve off. This means that there are more hours in the next level down which would be met by peaking technology.

- Mr Glazier responded that the outcome is not overly sensitive to the capacity factor because of the interplay between operation and cost recovery in the energy market. If capacity factor informs anything, it would be the operational life considerations by the.
- Mrs Bedola considered that a higher capacity factor would impact battery life.
- Mr Schubert added that the 10% capacity factor may pose a problem if it exceeds an annual emissions threshold.

The Chair noted that this is a good question which will be discussed at the Market Advisory Committee (MAC) meeting on 12 October 2023.

- Mrs Bedola asked when it is expected that the four-hour duration would not be enough for battery storage.

The Chair responded that RBP undertook modelling and concluded that four hours is sufficient until the baseload plants retire.

The Chair noted that it is expected that the BRCP reference technology would be reviewed frequently and may change in the future.

- Mrs Bedola noted that, if the assumption is that we need four-hour batteries and the duration gap is six hours, this would have very different cost outcomes. If this reference technology is forward focused, a five- or six-hour battery may need to be considered rather than a four-hour battery.

The Chair responded that customers should not pay for something they do not yet need. Modelling showed that the duration gap is unlikely to extend before there is high penetration of storage and DSPs to shave the peak, around the time when coal retires. There are also extensive provisions in the draft WEM Rules to protect existing storage when new longer duration storage is required.

Mr Robinson agreed that this was correct, that the announced coal retirement by 2030 begin to drive the extension of the duration gap. However, it is not until about 2032 when the duration gap increases to six hours.

- Mrs Bedola considered that if the requirement of six-hour storage is in the next couple of years, the BRCP or some other mechanism, should put out a signal earlier than required.
- Mrs Bedola pointed to the reliability gap resulting from the retirement of coal and increase of renewables, and noted the role of storage in system reliability and security, not just for peak demand.

The Chair questioned what would drive a duration gap opening in the next two years. She noted that analysis was undertaken in the first stage of the RCM review to identify the drivers for the duration gap widening and it was determined that the main driver is the retirement of the baseload plant.

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	• Mrs Bedola noted the similar issues in South Australia and their need for longer duration storage to address reliability. The Chair noted that, in this instance, we are not considering the whole of the duration curve, rather discussing a Peak (agreeing that the length of the peak is important) and a Flex product. Until the duration gap is projected to go beyond four hours, customers should not be paying for longer duration storage in the interim. There are provisions in the draft rules to protect the existing storage that has been commissioned before the date the duration gap actually starts to grow. • Mr Cheng sought to clarify whether EPWA is proposing to change the capacity factor from 2% to 10%. The Chair confirmed this. Mr Bowmaker presented the proposed service requirements for the Peak and Flex service. • Mr Carlberg questioned whether EPWA was assuming the AEMO Flex certification requirements, noting that these requirements should be consistent. Mr Bowmaker answered that assumptions were made in undertaking the analysis, including assuming decisions/parameters that would be made by the ERA and AEMO. Mr Bowmaker noted that the analysis does not appear to be sensitive to the capacity factor and, in a similar way, it is not sensitive to these assumptions. These will be described in the consultation paper. Mr Bowmaker clarified that these assumptions do not preclude the ERA or AEMO from making different decisions. Mr Bowmaker presented the technology shortlist for the Flex and Peak service. Mr Bowmaker noted that the current BRCP is set by the Siemens open cycle gas turbine (OCGT) liquid fuelled 160MW generator, which does not meet the emissions requirement of 0.55 tonnes of CO_2 per MWh proposed for implementation through the WIC Review. This technology, however, has been included in the presented figures as a reference. • Mr Schubert noted an error on slide twelve. Mr Glazier confirmed that this was an error, noting the headings have been switched around. Mr Bowmaker noted that he will amend this slide. Mr Bowmaker noted that the technology size is defined by economic use of fuel supply and electrical connections. He noted that a facility bigger than about 200MW will increase the Contingency Reserve Raise requirement, which may have a flow on effect on market costs. Mr Bowmaker discussed the connection location, noting that this has been considered in order to make estimates of cost impacts. The assumption was a standalone facility with 330kV connection, at ~200MW in total, made up of smaller units. • Mrs Bedola considered that sharing existing connection should not be the baseline assumption for new entrants noting that, although there	

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may be opportunity to put a project behind an existing connection, it is doubtful that the owner of that connection would let another entity put a facility behind their connection point. The assumption should be on the basis of a new entrant facility.

- Mrs Bedola also considered that Non-Co-optimised Essential System Service (NCESS) revenues should be done after the fact. Peak facilities should be assumed to be procured solely for Peak and not making assumptions around NCESS. Facilities should not get a lower capacity price because it is assumed that the facility will get NCESS. Rather, the NCESS cost should be decreased because the facility gets more money through these other market mechanisms.

The Chair responded that NCESS has not been taken into account.

Mr Glazier responded that these are intended to be discussion points and ultimately the outcome was consistent with the point raised by Mrs Bedola and NCESS was not taken into account.

In response to Mrs Bedola's comment regarding facilities sharing connection points, Mr Glazier clarified that it was found that there is a fair amount of declared sent out capacity (DSOC) left in the vicinity of solar and wind facilities which could be used to install facilities that work cooperatively with wind and solar. The question was whether the most efficient new entrant was new capacity in combination with wind and solar behind the connection point.

- Mr Schubert considered that, as coal retires, network capacity will be freed up and available for new technologies even if not placed on the existing site.
- Mrs Bedola noted that Synergy may or may not use this freed up capacity itself. Mrs Bedola did not agree with the assumption that DSOC is available due to coal retirement, especially given the announcement of the Collie battery. Mrs Bedola assumed that Synergy would be using its existing connection points.

The Chair considered that it did not matter who used the connection points, but rather that the retirement of coal will enable free capacity at that voltage.

Mr Glazier clarified that this was not looking at spare capacity behind existing coal facilities, but rather spare capacity behind new wind and solar connections, but clarified that this assumption will not be moved forward.

- Mr Peake asked whether this is just shallow connection costs and whether it includes new transmission lines to the facility.

The Chair responded that the BRCP does not include new transmission lines to the facility.

Mr Bowmaker discussed the economic life, noting that 25-year economic life was assumed for all technology types but that this is something the ERA will ultimately determine.

Mr Bowmaker noted that major overhauls may be included as a variable cost component and that Flex Capacity providers will incur greater maintenance costs than Peak providers.

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	• Mrs Bedola asked the ERA to confirm the assumption that major overhauls can be recovered as a variable cost. • Mr Cheng responded that this can be included in the formation of price offers. Mr Bowmaker presented the capital/upfront costs of the shortlisted technologies, relative to the existing BRCP reference technology. Mr Bowmaker noted that all of the reference technologies are more expensive compared to the current BRCP reference technology. The lithium-based batteries are the lowest capital/upfront cost shortlisted technology at a per MW basis. Mr Bowmaker presented the fixed operating costs. Mr Bowmaker noted that shortlisted technologies, other than lithium- and vanadium-based batteries, are more expensive on a per MW basis than the current reference technology. Mr Bowmaker noted that the likely Peak and Flex service reference technology is a 200MW/800MWh lithium Electric Storage Resource (ESR) connected at 300kV. • Mrs Bedola noted concerns around dealing with longer-term reliability, security and stability issues, such as renewable droughts, which a four-hour battery cannot cover. There needs to be some consideration of duration and how it is encouraged to be covered. The Chair questioned whether members understood that this will lead to an increase in the current reserve capacity price. She noted that it would be unwise to include requirements for this Peak and Flex service, which are not currently needed, as this would increase the immediate cost to customers. The Chair noted that if there is a desire to have another service, this should be discussed as a separate service. • Mr Arias questioned the reasoning behind 14-hour supply gas lateral, noting that not all gas technologies have this, and noted that there is an inclusion of a reservation charge on the pipeline which is a change from the existing calculation. Mr Glazier responded that this was included to reflect the existing requirement for the reference technology to have 14-hours of storage. Mr Glazier noted that the assumption was for a 1km gas lateral and a gas compressor station, but that this does not appear to make a huge difference to the cost. • Mr Arias considered that the connection to the pipeline itself provides that security of supply. Mr Glazier responded that this is only the case if the facility pays to be able to draw gas from the network for 100% output of the plant. The modelled facility achieves lower cost gas transport contracts by assuming 14-hour gas storage at the facility. • Mr Arias responded that he was not sure that this would be the model but understands the reasoning in this context.	

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The Chair highlighted the significant difference in the capital/upfront costs between the current reference technology and the ESR. The Chair also noted that, if the ERA decides to move from 50 year to 25 year life, the costs will increase further significantly.

- Mr Price considered that the power system cannot be operated with 100% peak capacity supplied by storage as there is nothing to charge the storage. Mr Price considered that there may be a need to reconsider the incentives that lead to fleet compositions which would not be adequate.

The Chair did not understand this argument unless there will be no renewable generation on the system but only storage. She noted that the current reference technology does not provide everything this system needs, for instance the baseload needs during the night given that the current technology is assumed to operate for 2%. She added that the capacity factor assumption is 10%, not 2%, and that this is intended to reflect the marginal plant which is only needed during the system peak. Everything else, which has a lower variable cost, gets dispatched first.

- Mr Price considered this supported his point. If the incentives were there for all capacity types to enter this would work. However, if these incentives were not there then there is a question whether the framework is appropriate, noting that he was not arguing that it is not appropriate.
- Mr Carlberg asked whether any additional fixed costs are added to the forecast contracting cost based on the 14-hour fuel requirement.

The Chair noted that the ERA is compelled by the WEM Rules to allow participants to recover long-term take-or-pay gas contract costs through their offers.

- Mr Carlberg clarified that there are certain fixed costs associated with the 14-hour requirement, for example having an option to buy more gas to meet the 14-hour requirements, and that there is a cost to having this option in the contract.

Mr Robinson responded that the assumption is for a 14-hour storage in a gas lateral and contracting for firm gas transport for a portion of that.

Mr Glazier clarified that a facility would need a gas lateral anyway and increasing the diameter to allow for 14-hour storage addsrelatively small cost. Mr Glazier noted that the aqua coloured bar in the graph on slide 19 is the gas transport reservation charge. It is assumed that the gas will come from the spot market in this context.

- Mr Arias asked whether other fixed market related costs were considered, for example compliance and trading system costs.

The Chair considered that this is for the ERA to determine.

- Mr Cheng responded that currently this is covered under the M costs in the margin which are all the fixed cost incidentals required to be recovered through the BRCP.

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	• Mr Schubert sought to clarify that EPWA has included replacements required for technologies to last for 25 years in the capital cost figures. Mr Glazier responded that over its life an OCGT, for example, goes through a major overhaul. Under the current methodology, major overhauls are reflected in the variable costs in the energy market. Mr Glazier considered that replacing the cells in a ERS installation is similar to major overhauls in OCGTs. The assumption is that the more these facilities are used, the more frequently a major overhaul would occur. • Mr Price sought to clarify the assumption that an ESR will degrade faster providing the Flex service because the assumption is that it is operating daily. The Chair responded that the warranty would be for one cycle per day if the ESR is providing the Flex service and it will last for ten years. After which it would undertake a major overhaul which would be picked up in its variable costs. • Mr Price clarified he was asking whether there is a difference in the Flex and the Peak in terms of replacement of cells and timing. Mr Glazier responded that further analysis is required to be undertaken to provide the detail. Mr Bowmaker clarified that the major overhaul cost has not affected the capital cost and fixed operating costs as it was assumed that major overhaul cost would be recovered through the variable costs. He noted that a battery cycling twice a day compared with daily would have higher energy offers because each hour it runs brings it closer to a major overhaul requirement. The Chair noted that a peak product would not require daily cycling noting that the assumption was a capacity factor of 10%. Mr Robinson noted that if Mr Price does not consider a Peak and Flex ESR have a different operating structure than that would be important feedback as changes to this assumption would impact the modelling to be undertaken as the next step. • Mr Price asked if there are any ESR vendors in the WICRWG. The Chair responded that there are ESR vendors in the WICRWG, but that the net vs gross CONE will be considered by this group. Consultation with ESR vendors will need to be undertaken. • Mrs Bedola considered that ESR degradation may need to be considered in terms of the Capacity Credits it receives and the costs per MW per annum need to account for this decrease in Capacity Credits due to degradation over its lifetime. Mr Glazier responded that, at this stage, only pure capacity cost has been looked at and there is likely enough margin between the lithium batteries and the next best option to be comfortable that if they are degrading at different speeds, the Capacity Credits would equalize. • Mrs Bedola clarified that the annual revenue when receiving 100% Capacity Credits should be higher to account for later in the asset's life	

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	when it only receives 85% Capacity Credits due to ESR degradation. Mrs Bedola considered that there needs to be a weighting applied to account for this. Mr Glazier took an action to investigate taking the weighted average over 25 years, including the major overhaul after a particular period, to account for this. • Mr Cheng provided the following excerpt from the ERA's Offer Construction Guideline: o ESRs – for example, lithium-ion batteries – incur cycling costs as they charge and discharge, causing the storage cells to degrade and making them less effective in total charging capability, eventually requiring cell replacement. This degradation cost is an incremental cost related to the production of electricity, and therefore, can be included in the formation of price offers. The Chair considered that this answers Mrs Bedola's earlier question about ESR degradation over ten years and that this can be included as a variable cost. She noted that this resolves Mr Glazier's action. • Mr Price expressed interest in feedback from ESR vendors, especially regarding ESR warranty. Mr Price considered he did not think any of these services would likely degrade a battery quicker and it would be capped by the warranty rather than the behaviour. Mr Glazier added that ESR manufacturers generally provide warranties based on MWh discharged. Mr Bowmaker presented the changes in capital and fixed operating costs between the current reference technology and the lithium ESR. Mr Bowmaker discussed the implications of the analysis, noting that the 160MW OCGT is still the least cost new entrant until the proposed emissions thresholds becomes binding for new entrants. He noted that the new BRCP reference technology will be higher cost than the current one due to carbon intensity target excluding liquid fuels and materially lower economic lives. • Mr Schubert asked why heavy OCGT was mentioned noting that it was not on the shortlist of technologies on slide 23. Mr Bowmaker noted that this was an error and will amend the slide. • Mrs Bedola noted that she has observed a definite push from customers to be green and does not consider it likely that a new diesel facility will enter the market even prior to the emissions thresholds taking effect. • Mrs Bedola considered that there is a need to look at changing the reference technology prior to the emissions penalty taking effect. The Chair agreed with Mrs Bedola and asked members to consider whether it is completely out of the question for technologies to put a diesel tank and never use it, and how this can be taken into account in the emissions threshold. • Mr Carlberg responded that this might be what the system needs.	

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	• Mr Peake considered that the facility would lose its Capacity Credits as soon as it runs for its capacity test and that this would make it unfeasible. The Chair clarified that this is not what she meant but rather whether there could be a sensible annual limit as is the case for the current Environmental Protection Agency (EPA) ministerial statements. This would be an emergency backup fuel that would be used very infrequently. • Mr Peake responded that the facility could not be run to even test as this would cause it to lose its capacity credits. • Mr Carlberg queried whether the current premiums and costs a facility is required to cover due to it being high emissions are taken into account, for example, the cost associated with the facility reducing its emissions in line with net zero by 2050 under the new EPA guidelines. The Chair noted that the certainty of emissions thresholds is important for reliability as well as emissions and it would be a good idea to understand the implications of these EPA guidelines, noting that there is intent for EPWA to speak with the EPA in parallel. • Mr Peake considered that the analysis looks sound, however had an issue with whether there are some more fixed maintenance costs for a battery that should be included. • Mr Peake asked if EPWA had any idea how much the BRCP may rise. The Chair responded that a comparison in prices between the current reference technology and the proposed new reference technology is shown in the presentation. Mr Bowmaker discussed the key assumptions for the economic analysis to be undertaken. Mr Bowmaker noted that some of these points will ultimately be up to the ERA to determine. • Mr Schubert considered that that the 200MW size is good, and connection location could be at an existing substation with spare capacity due to coal retirement and not necessarily behind an existing connection point. • Mr Price considered that the 200MW size is reasonable as a single contingency risk but larger can certainly be accommodated with the right interconnection arrangement. • Mrs Bedola questioned the process and timeframes for EPWA and the ERA to determine the BRCP for the next cycle and whether the current BRCP reference technology would be maintained until 2024 or the new reference technology will be implemented straight away. The Chair responded that the intent is not to delay this process and would like to complete this by the end of the year. The Chair sought the views of the working group as to the likelihood of new diesel plants coming in.	

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	• Mr Carlberg agreed that given the emissions thresholds are coming in, it is unlikely that participants will invest in new diesel plants. • Mr Carlberg also considered that there is a risk of overpaying by bringing in the new reference technology ahead of the emissions thresholds. The Chair responded that, under the new WEM rules, the price caps are set at the highest cost technology which is currently diesel. The Chair asked the ERA what the timeline of its BRCP process will be. • Mr Cheng responded that it was dependent on the time it takes for the methodology and procedure changes. It is possible this would be ready for the next cycle but could not guarantee a time at this point.	
4	**Next Steps** Mr Bowmaker outlined the next steps which are to finalise data, conduct modelling and develop a reference technology and gross/net cone proposal. The Chair noted that the gross vs net CONE will be discussed at an upcoming RCMRWG on 19 October and summarised that: • RCMRWG members are generally comfortable as long as this and the methodology developed by the ERA cover all of the expected fixed costs; and • there is an outstanding issue regarding 50 year versus 25 year life, however EPWA will assume 25 years for the purposes of modelling, noting this will ultimately be determined by the ERA. The Chair welcomed feedback from the working group members prior to the economic analysis being undertaken.	
5	**General Business** No general business was discussed.	

The meeting closed at 12:30 pm

Rule Commencement

Rule Commencement

Commencement of the RCM Review policy changes has given consideration to implementation duration and the Reserve Capacity Timeline. These considerations include:

- Investment in the new Capacity is deemed priority and delaying the 2024 cycle or commencing with 2025 cycle would not improve future capacity shortfalls.
- Peak Capacity changes are expected to align with 2024 cycle.
  - ☑ DSP Certification and RLM deemed to be most beneficial for Market Participants in incentivising capacity investment.
  - ☒ Component pricing requires fundamental changes to AEMOs system design and deemed less beneficial than RLM. Will be commenced in 2025 RC Cycle.
  - ☐ Peak IRCR changes to be commenced with Year 3. (2026)
  - ☑ RC Refund to be returned via IRCR to be commenced from 1 Oct 2024.
- Flexible Capacity has significant implementation effort, AEMO does not have capacity to implement within timeframes for 2024 cycle. Flexible Capacity is expected to commence with the 2025 RC Cycle.

Proposed commencement

2024	2025	2026	2027

2024

Year 1:
- EOI changes
- DSP changes*
- Relevant Level Method
- Capability Classes
- Appendix 3 changes
- ESOO Forecast Changes*

Year 3:
- Peak RC Rebate

Considerations:
- DSP Dispatch Requirement to be determined in ESOO
- ESOO forecast only includes data for 2024 Cycle
- Introduction of the return of capacity refunds via IRCR from October 2024.

2025

Year 1:
- EOI Information Pack*
- Flexible Capacity Certification
- ESOO Forecasting changes
- Flexible Capacity Price
- Component Pricing for SCC

Considerations:
- EOI Information pack to publish information required for certification in 2025.

2026

Year 1:
- ESROI extends to Availability Duration Gap

Year 3:
- Peak IRCR intervals*
- Peak IRCR*
- DSP RC Testing
- DSP RC Refunds

Considerations:
- Peak IRCR changes scheduled to align with 2024 cycle (year 3).

2027

Year 3:
- Flexible IRCR intervals
- Flexible RCOQ
- Flexible Settlement
- Flexible IRCR
- Ramping Forecasts
- Flexible Outages
- Component Settlement

Considerations:
- Flexible IRCR intervals determined for use with Flexible IRCR from Oct 2027.

Preliminary RCM Constraint Equations Discussion Item

- The EOI process is now non-mandatory, so the Preliminary RCM Constraint Equations and RCM Limit Advice developed and published before 20 May under clause 4.4B only include new Facilities that have submitted an EOI and existing Facilities.
- AEMO's view is that these equations are unlikely to capture all new Facilities submitting a CRC application, therefore provide little value to new proponents for the time and effort spent generating them.
- New proponents can gain an understanding of their Facilities' contribution to network congestion by using the Final RCM Constraint Equations and RCM Limit Advice published as part of the Network Access Quantity Model Inputs in the previous Reserve Capacity Cycle and the available operational Constraint Equations.
- Therefore, AEMO believes the publication requirement for both these aspects could be removed.

Do Market Participants find benefit (and if so, what) in the Preliminary RCM Constraint Equations?

Peak IRCR and RC Rebate Discussion Item

- Current consideration is to implement the changes for Peak IRCR and the rebate of refunds via IRCR from October 2024.
- 5-Minute Settlement (5MS) has a notional commencement date of October 2025 and is expected to include the changes resulting from the Cost Allocation Review (CAR).
- The Peak IRCR changes mainly encompass updates to AEMO's metering and settlement systems. AEMO would gain some efficiency in implementing the Peak IRCR changes in parallel with 5MS and CAR.

Do Market Participants see benefit in introducing the changes for Peak IRCR alongside 5MS and Cost Allocation Review?

ESOO timing and Data Provision

- Current drafting requires publication of some key ESOO determinations to inform the CRC application by the ESOO publication deadline (~17 June).
- This schedule leaves only one week for MPs to use this information in preparing and submitting their CRC applications before the CRC application window closes (~24 June).
- AEMO proposes two options, potentially improving the ESOO determinations provision timeline, including the timing to publish the information required to commence the Flexible Capacity certification for the 2025 RC Cycle.

Do MPs see more benefits in providing the ESOO determinations using Option 1 or Option 2?

Option 1 - Preliminary Determinations in the REOI	Notes
• By the Request for EOI (REOI) report publication date (~15 Jan), publish the preliminary determinations based on the previous ESOO and using final outcomes of the previous cycle. • Publish the final determination in the current ESOO. • Move the ESOO publication deadline forward by a week to ~10 June.	• Preliminary determinations guide the CRC application, noting the final determinations may differ considerably from the preliminary determinations. • Final determinations incorporate the latest demand forecasts and Capacity Credits assignment. • Provide an additional week for MPs to react to the ESOO final determinations. • Maintain a feasible timeline for the ESOO development.
Option 2 - Final determinations in the REOI*	**Notes**
• By the REOI report publication (~15 Jan), publish the final determination of some parameters. • The ESOO publication deadline remains unchanged (~17 June) and publishes the final Peak and Flexible RCR.	• Final determinations provided in the REOI incorporate the latest Capacity Credits assignment outcome, but not the latest demand forecasts. • Potentially Provide additional five months to MPs to consider the determinations, potentially beneficial for required contract negotiations for CRC application.

** To allow sufficient time for AEMO to develop and publish some final determinations in the REOI, AEMO proposes to move the REOI publication date to early February.*

ESOO timing and Data Provision

The table compares the Option 1 and Option 2 publication timelines for the 2025 RC Cycle.

		Option 1	Option 2
Determinations	**2024 RC Cycle**	**2025 RC Cycle**	**2025 RC Cycle**
Peak RCR	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO
Flexible RCR	N/A	Preliminary: 2025 REOI (Transitional) Final: 2025 ESOO	Preliminary: 2025 REOI (Transitional) Final: 2025 ESOO
Minimum requirements for Flexible Capacity	N/A	Preliminary: 2025 REOI (Transitional) Final: 2025 ESOO	Final: 2025 REOI
Flexible Electric Storage Resource Obligation Intervals	N/A	Preliminary: 2025 REOI (Transitional) Final: 2025 ESOO	Final: 2025 REOI
Capability Class 1 Availability Assessment Intervals	Transitional Rule: 2024 ESOO	Preliminary: 2025 REOI (Transitional) Final: 2025 ESOO	Final: 2025 REOI
Availability Curve	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Final: 2025 REOI
Availability Duration Gap Load Scenario	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Final: 2025 REOI
Availability Duration Gap	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Final: 2025 REOI
ESR Duration Requirement	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Final: 2025 REOI
First Peak Electric Storage Resource Obligation Intervals	2024 ESOO	Final: 2025 ESOO	Final: 2025 REOI
Demand Side Programme Dispatch Requirement	2024 ESOO	Preliminary: 2024 ESOO Final: 2025 ESOO	Final: 2025 REOI

BRCP Reference Technology Review – Recap

Approach

1. Establish a long list of technologies
2. Define the requirements that must be met to provide Peak Capacity and Flexible Capacity
3. Create a short list of four technologies for each capacity service
4. Identify cost data (based on the existing BRCP determination approach) for each of the four technologies when delivering each capacity service
5. Identify additional data for determination of net Cost of New Entrant assessment
6. Conduct market modelling to inform proposals on Gross/Net CONE
7. Develop Reference Technology and Gross/Net CONE proposals.

EPWA has completed Steps 1-6.

Likely BRCP Technology Outcomes

The following are the cheapest new entrant technologies on a gross basis

Peak Service	Flex Service
• Lithium BESS • 200MW / 800MWh • Connected at 330kV	• Lithium BESS • 200MW / 800MWh • Connected at 330kV

BRCP Reference Technology Review – Net/Gross CONE

Net/Gross CONE : Criteria

For Peak BRCP:

- If the reference technology would be the marginal energy supplier : Gross CONE should be applied
- If not : Further assess whether applying net CONE would be more appropriate.

For Flexible BRCP:

- If the reference technology would be the marginal energy supplier *in the intervals Flexible Capacity would be required* : Gross CONE should be applied
- If not : Further assess whether applying net CONE would be more appropriate.

Marginal Energy Supplier – Methodology

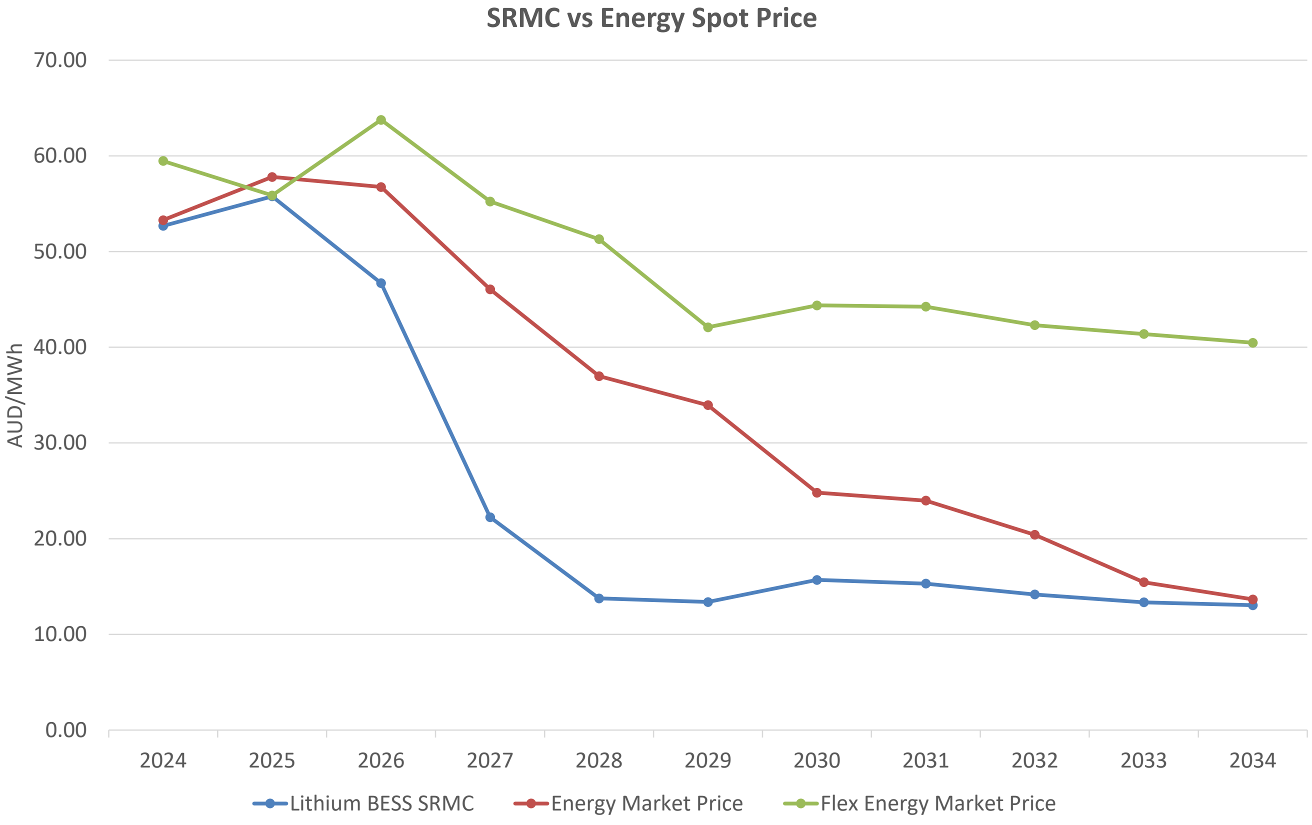
- **Perform market modelling of the WEM under new Market Rules**
- **Using RBP's WEMSIM model – update of same model used for RCM review**
- **Include a facility representing a unit of the recommended BRCP reference technology – i.e. 200MW/800MWh Lithium BESS**
- **The model will forecast:**
    - Energy market prices
    - Marginal cost of generation for the BESS facility, including captured prices at time of charging
    - Net market revenue for the BESS facility, including captured prices at time of discharging, and ESS revenues
    - CONE and Net CONE
- **<u>Note that the following results are indicative only</u>**

Marginal Energy Supplier – Base Results

Market modelling results show that Lithium BESS SRMC (including cost of charging at captured market price) is generally significantly lower than the average energy spot price, and the spot price during flex intervals.

Conclusion: A Lithium BESS would not be the Marginal Energy Supplier (for either peak or flex products) for the next 10 years.

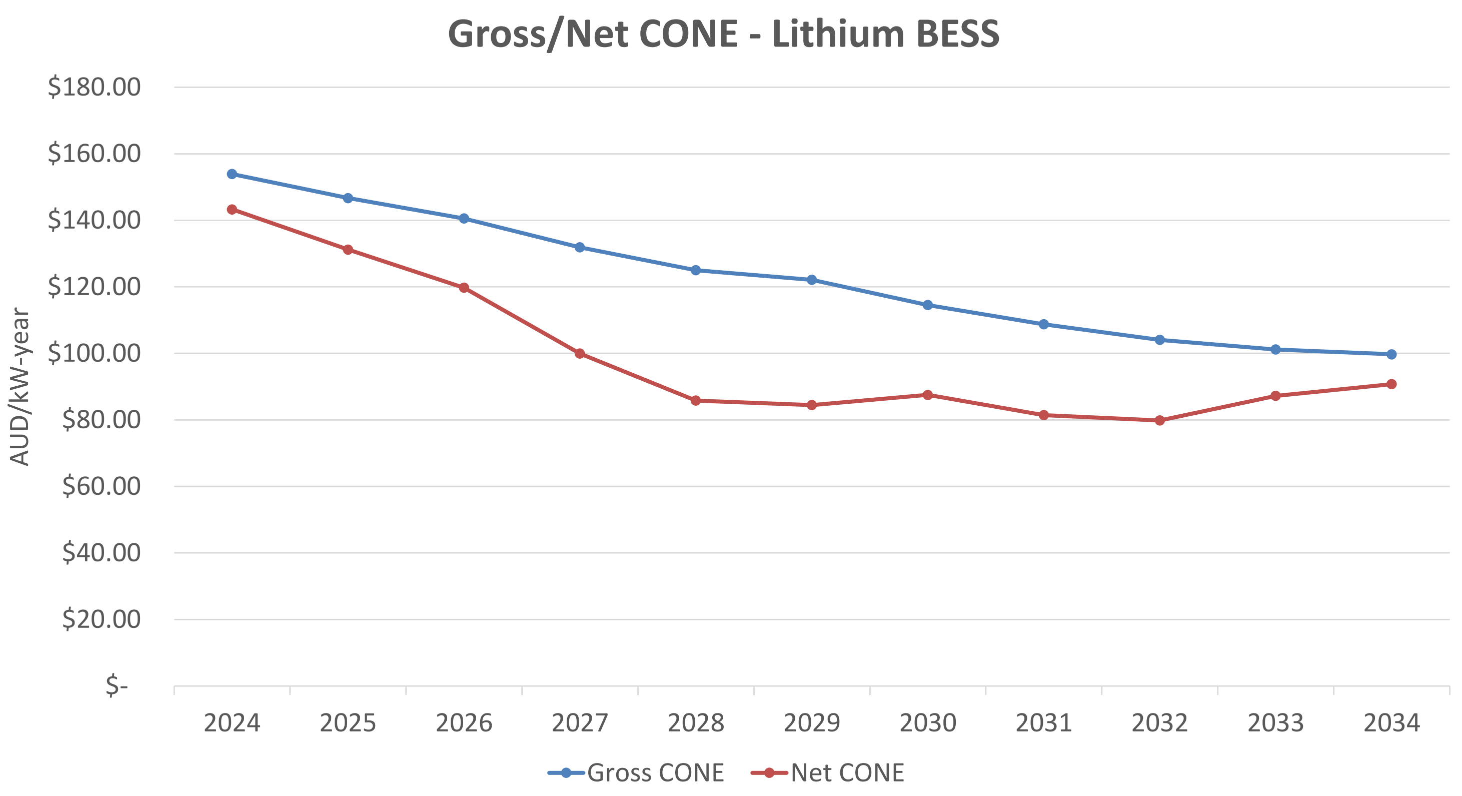
However, the gap narrows as more renewable and BESS facilities are built, lowering energy prices. Gap is almost zero by 2034.



Impact of Net CONE (Base)

Net CONE could result in significant savings for consumers.

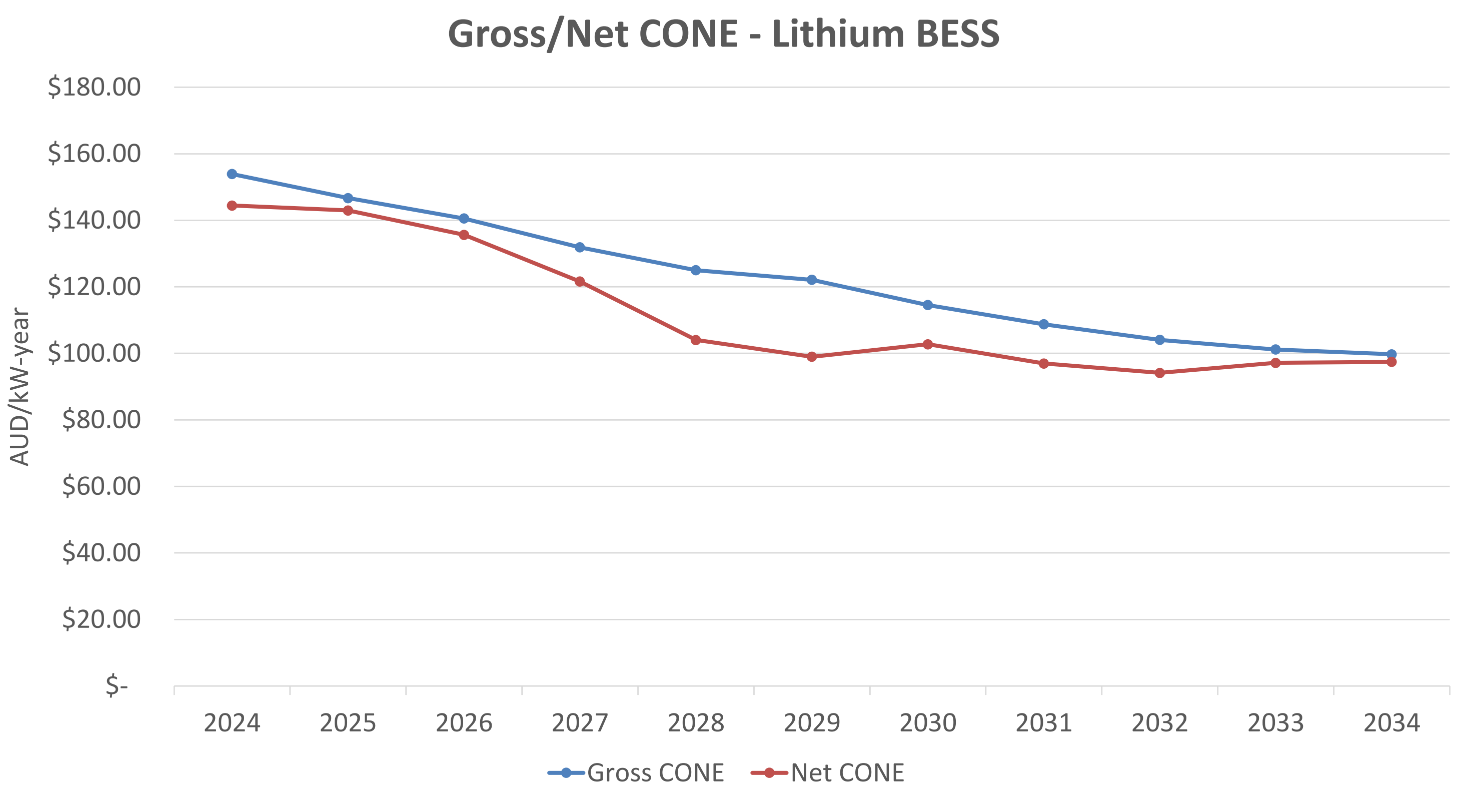
However, these results are highly dependent on input assumptions.



Impact of Net CONE (Sensitivity)

As a demonstration of the sensitivity of Net CONE, this is the results of a scenario in which an additional 2 BESS facilities are constructed in 2025 (each 200MW/800MWh).

The difference between Gross and Net CONE is significantly reduced as the competition reduces the original facility's revenue.



Net/Gross CONE: Further assessment

Net CONE Advantages

- Potentially lower cost to consumers

Net CONE Disadvantages

- Requires forward-looking modelling to forecast net revenues.
- This is highly sensitive to input assumptions, including other new build, retirements, renewables output, fuel prices etc.
- Consensus will be difficult to achieve
- Resulting uncertainty may deter investment, undermining cost savings and reliability.

Gross CONE Advantages

- Relatively predictable BRCPs provide investment certainty
- More straightforward BRCP determination process
- Consistent with current BRCP methodology

Gross CONE Disadvantages

- Potentially higher cost to consumers

Net/Gross CONE - Discussion

- While Net CONE may result in lower costs to consumers, the amount of reduction is highly sensitive to other factors
- Implementing Net CONE adds significant complexity and uncertainty to the BRCP determination procedure
- The resulting uncertainty may deter investment, undermining cost savings and reliability
- Consequently, we recommend retaining a Gross CONE approach

BRCP Reference Technology Review – Next Steps

Next Steps

1. **Develop Reference Technology and Gross/Net CONE proposals.**

We're working for
Western Australia.