



Meeting Agenda

Meeting Title:	WEM Investment Certainty Review Working Group (WICRWG)
Date:	Wednesday 8 November 2023
Time:	9:30 AM – 11:30 AM
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda <ul style="list-style-type: none">Conflicts of interestCompetition Law	Chair	Noting	2 min
2	Meeting Apologies/Attendance	Chair	Noting	2 min
3	Minutes of previous meeting	Chair	Discussion	6 min
4	Emissions thresholds	RPB	Discussion	25 min
5	Ten-year RCP guarantee for new technologies	RPB	Discussion	20 min
6	RCP curve – history	RPB	Discussion	15 min
7	RCP curve – international comparison	RPB	Discussion	15 min
8	RCP curve – options	RPB	Discussion	20 min
9	General Business	Chair	Discussion	10 min
10	Next Steps	Chair	Noting	5 min
	Next meeting: 6 December 2023			

Please note, this meeting will be recorded.

Competition and Consumer Law Obligations

Members of the MAC's WEM Investment Certainty 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 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:	WEM Investment Certainty Review (WIC Review)
Date:	11 October 2023
Time:	9:30 AM to 11:30 AM
Location:	Microsoft TEAMS

Attendees	Company	Comment
Dora Guzeleva	Chair	
Mena Gilchrist	AEMO	
Oscar Carlberg	Alinta Energy	
Graham Pearson	Australian Energy Council	
Daniel Kurz	Bluewaters Power 1 Pty Ltd	
Francis Ip	BLT Energy Pty Ltd	
Tom Froid	Bright Energy Investments	Joined at 10:10am
Jake Flynn	Collgar Renewables	
Liz Aitken	Empire Carbon and Energy	
William Street	Entego Group Pty Ltd	
Dr Matt Shahnazari	ERA	
Luke Skinner	Expert Consumer Panel	
Noel Schubert	Expert Consumer Panel	
Dale Waterson	Merredin Energy	
Timothy Edwards	Metro Power	
Patrick Peake	Perth Energy	
Tessa Liddelow	Shell Energy	
Shane Cremin	Summit Southern Cross Power Pty Ltd	
Rhiannon Bedola	Synergy	
Peter Huxtable	Water Corporation	
Valentina Kogon	Western Power	
Shelley Worthington	Energy Policy WA	
Tonia Curby	Energy Policy WA	
Tim Robinson	RBP (consultants to Energy Policy WA)	



Item	Subject	Action
1-3	Welcome, Minutes and attendance <p>The Chair opened the meeting with an Acknowledgment of Country and welcomed members.</p> <p>The attendance was taken as listed above.</p> <p>The Minutes from WICRWG 2023_08_31 were approved.</p>	
4	Approach to emissions threshold regime – existing facilities <p>Mr Robinson recapped the two proposed thresholds, the Emissions Rate Threshold and the Emissions Quantity Threshold. He noted that existing facilities would only be subject to the Emissions Rate Threshold, with arrangements to phase it in.</p> <p>Mr Robinson noted that this proposal is different to the proposal presented at the last WICRWG meeting.</p> <p>Mr Robinson described the issues with using National Greenhouse Emissions Register (NGER) data to assess performance against the emissions thresholds, noting that:</p> <ul style="list-style-type: none">○ the use of NGER data no longer seems workable;○ NGER groups facilities differently to how they are registered in the WEM;○ some facilities do not produce enough energy to have reporting obligations meaning that these facilities would require an additional mechanism to capture emissions data;○ due to the nature of the NGER reporting period, emissions data would be 18 months old by the time it would be used for the purpose of the RCM;○ the data includes emissions and energy produced for all uses, including sources not directly related with electricity generation; and○ emissions intensities are volatile between years due to facilities' efficiencies at different capacity factors. <p>• Mrs Bedola asked which facilities do not have reporting obligations.</p> <p>Mr Robinson answered that small facilities generally do not have reporting obligations.</p> <ul style="list-style-type: none">• Ms Aitken answered that the Tesla units do not have to report to NGER.• Mr Waterson answered that the Merredin facility does not need to report to the NGER. <p>Mr Robinson noted that EPWA considers that a WEM specific reporting mechanism should be developed.</p> <p>Mr Robinson outlined the two options for the approach to emissions tracking in the WEM:</p>	



Item	Subject	Action
	<ul style="list-style-type: none">option one is to use a historical emissions rate based on actual output and actual emissions using historical data - Mr Robinson noted that this option would cause more volatility from year to year; andoption two is to use a theoretical emissions rate based on theoretical emissions at a specified point on the heat rate curve - Mr Robinson noted that this option would be less volatile and less complex and would provide clear signals. He considered that this option would be easier to manage and monitor than having to calculate historical emissions data every year. <p>Mr Robinson noted that EPWA considers that option two is more suitable.</p> <ul style="list-style-type: none">Ms Aitken considered that the actual emissions rate would be better than the theoretical emissions rate as dispatch in the WEM may cause the plant to not be able to operate at theoretical emissions intensities.Mr Skinner was concerned with what the transparency would be when comparing actual with theoretical emissions, noting that there are risks with relying on manufacturer or generator provided data. <p>Mr Robinson asked if Mr Skinner meant that there would need to be a way to check and validate the theoretical emissions rate against the actual rate.</p> <ul style="list-style-type: none">Mr Skinner agreed and noted that transparency was also needed to ensure that what is said is being done, is what is actually being done. <p>The Chair noted that EPWA will consider this further and take these views into account, and that EPWA would consider both options.</p> <ul style="list-style-type: none">Mr Schubert noted that he is happy with the theoretical emissions limit but agrees with Mr Skinner that it would need to be checked against actual emissions.Mr Schubert considers that sent out generation should be used as this would incentivise plants to improve their efficiency. <p>Mr Robinson noted that sent out generation is currently used in the proposal.</p> <ul style="list-style-type: none">Mr Edwards considered that the Clean Energy Regulator does something similar, for example it uses meter data to create Large-scale Generation Certificates (LGCs). He considered that there needs to be a theoretical threshold and a true-up at the end of the period.Mr Carlberg noted his support with the theoretical emissions limit approach and the intent of a true-up but is concerned it may present a high risk to investors. He considered that true-ups would be related to heat rate which is not always in the generator's control. <p>The Chair clarified whether Mr Carlberg meant he was happy with the theoretical emissions rate but does not support changing the threshold afterwards.</p> <ul style="list-style-type: none">Mr Carlberg noted that he is hesitant to support the true-up.	



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	<ul style="list-style-type: none">Mrs Bedola agreed with Mr Carlberg.Mr Peake agreed with Mr Carlberg, especially if the plant is providing ESS and is not at optimum operating efficiency. <p>Mr Robinson discussed the annual emissions quantity variation for different facilities and noted that a facility's actual emissions rate may be quite different from its theoretical emission rates from year to year. He asked Mr Carlberg if he was questioning how to avoid this volatility.</p> <ul style="list-style-type: none">Mr Carlberg considered that aside from choosing their technology type, generators are not in control of the emissions.Mr Kurz considered that the heat rate variation between loading levels can be large.Ms Aitken agreed with Mr Carlberg's point that not operating at optimum efficiency is a real risk in the theoretical approach. She noted that every generator knows what its fuel use is in real time which could be used to calculate emissions and suggested penalising facilities if they deviate by more than 10%. <p>The Chair noted that tracking fuel use may make sense.</p> <p>Mr Robinson noted that these are not directly comparable, but could be factored in.</p> <ul style="list-style-type: none">Mr Schubert agreed with Ms Aitken that actual fuel use could be a good basis of emissions calculation. <p>The Chair noted that EPWA may further investigate the use of heat curves for calculating emissions.</p> <ul style="list-style-type: none">Mrs Bedola noted that she would be able to provide some heat curves for analysis. <p>The Chair accepted Mrs Bedola's offer.</p> <ul style="list-style-type: none">Mr Skinner considered that this supports why true-ups should be required, because it would be a big problem for reducing emissions if a facility emits more than they say they will. <p>The Chair clarified that emissions would not be self-reported by generators.</p> <p>Mr Robinsons responded that this would be like the expert reports for the Relevant Level Method, for example. He noted that this would need to be substantiated through actual heat rates and comparisons to the forecast rate.</p> <p>The Chair noted that at a high level, using the heat rate would be less volatile than using the output.</p> <ul style="list-style-type: none">Mr Street asked how the heat rate point would be chosen for the calculation. <p>Mr Robinson responded that this would need to take into account the projected capacity factor for the plant.</p>	



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	<ul style="list-style-type: none">Mr Street clarified that the likely type of generator in this space will be flexible rather than baseload and the variability of its output by year depends on system and commercial requirements and can change greatly. Mr Street considered that a dynamic input which can reflect this variability may be more appropriate. <p>The Chair noted that EPWA will look further into this.</p>	
	<ul style="list-style-type: none">Mr Carlberg noted he is happy with checking the heat rates but is mindful of penalising a generator when it is forced to operate at a less efficient part of their heat rate curve than expected. <p>The Chair noted that the proposed methodology presented today provides more certainty than the methodology discussed last time. She noted that the majority view at the last WICRWG meeting was that a more robust method which provides more certainty for investors is required.</p> <p>Mr Robinson summarised that WICRWG members are settling somewhere in-between the two options.</p> <p>The Chair noted that the methodology will need transparency, clarity, verifiability and auditability and that this will be drafted in the WEM Rules.</p>	
	<ul style="list-style-type: none">Ms Aitken considered that annual volatility is the point here noting that, if a plant is becoming more marginal and its operational threshold becomes closer to the prescribed level, then it needs to make decisions about either reducing operations, investing capital to reduce emissions or shut down.Ms Gilchrist noted that AEMO is supportive of the proposal, however, questioned what AEMO's role would be in the testing of the theoretical rate. She noted that AEMO would like the flexibility of being able to use independent experts if this can deliver better outcomes. <p>The Chair noted that AEMO would have the flexibility to use independent experts if this is determined to have better outcomes.</p>	
	<ul style="list-style-type: none">Mr Peak noted that plants have been operating well away from their predicted outputs this year due to external issues.Mr Schubert considered that ideally WEMDE would be able to optimise for emissions too and noted that a price on emissions would help WEMDE to do this.Mr Peake asked how batteries are treated under this proposal. <p>Mr Robinson responded that batteries are not considered in emissions calculations as the emissions of the facility producing the electricity are counted.</p>	
	<ul style="list-style-type: none">Mr Skinner responded that emissions are not counted twice.Mrs Bedola noted that there needs to be some level of oversight as to how the rate is used but that the variability in output levels should not penalise facilities if it is driven by market needs.Mr Peake considered that the target may need to be more sophisticated. He considered that there may need to be a curve or	



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	<p>bounds that a facility is allowed to operate in. He considered that this would account for emissions that are outside of the generators control to a degree.</p> <p>The Chair considered that the simplest approach would be to look at manufacturer data and then compare it to actual facility data.</p> <ul style="list-style-type: none">• Mrs Bedola responded to Mr Peake that facilities could certify at lower capacity if the rate is too high at their maximum output.• Ms Gilchrist asked if this meant that the facility could still run at its maximum output but would not receive capacity credits for all of its capacity.• Ms Bedola responded that this would restrict their capacity credits. <p>The Chair considered that this may get too complex, noting that the intention of this review is to provide a signal in the RCM and give certainty to the AEMO regarding what is happening in each Reserve Capacity Cycle.</p> <ul style="list-style-type: none">• Mr Waterson questioned whether emissions rate would be less favourable at a lower operating output. <p>Mr Robinson agreed, noting that the optimum emissions rate is around 90% of the capacity.</p> <ul style="list-style-type: none">• Mr Peake considered that to limit emissions a generator would want to avoid a low level of output rather than high.• Mr Kurz noted that the most efficient rate is not at the top end of the capacity.• Mrs Bedola considered that the maximum sent out could be set at the level at which it has been certified.• Mr Schubert asked whether the 0.55 threshold would need to change if we used sent out rather than generated MWh.• Mrs Bedola considered that this would need to be accounted for in the 14-hour obligation. <p>Mr Robinson noted that EPWA will consider this discussion and come back with revised proposals.</p> <ul style="list-style-type: none">• Mr Cremin agreed with Mr Peake and considered that, if the aim of this work is investment certainty, it would be very challenging for proponents to invest if there are factors that are out of their hands. He noted that this is not dissimilar to what is done at the moment, with capacity credits awarded at 41 degrees Celsius which is not standard and as a result specialist tests are required. He considered that simplicity is needed and change should not be made each year. <p>The Chair agreed about simplicity.</p> <ul style="list-style-type: none">• Mr Street agreed with Mr Cremin.• Mr Skinner noted that he did not think new gas turbines should be encouraged.	



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	<ul style="list-style-type: none">Mr Carlberg considered that the SWISDA says otherwise.Ms Aitken noted preference for the approach presented today, over the proposal from the last WICRWG meeting.Mr Peake considered that the nominated rate should be the facility's rated capacity. <p>Mr Robinson suggested using emissions rates at different points of the heat rate curve and either combining them or having different emission thresholds along the heat curve.</p> <ul style="list-style-type: none">Mrs Bedola suggested that a facility could certify a smaller number of MW to prevent it from being removed from the market. She considered that this would prevent a whole facility's worth of capacity being removed, but rather a smaller amount of capacity to assist with the transition. <p>The Chair noted that new technologies are needed to come in, noting that the network is currently constrained. She was not sure what the consequence would be of having a fleet of generators generating below their rated capacity preventing new capacity of coming in.</p> <p>Mr Robinson was concerned that this would actually make things less certain.</p> <ul style="list-style-type: none">Mr Schubert noted that existing facilities can improve as technology evolves. <p>The Chair noted that this is something that should be considered.</p> <p>The Chair summarised that the key concerns of the WICRWG are:</p> <ul style="list-style-type: none">providing certainty for investors;members prefer the option presented in this meeting, over the option presented at the previous WICRWG meeting; andthe chosen option will need transparency and simplicity.	
5	Approach to emissions threshold regime - New Facilities <ul style="list-style-type: none">Ms Gilchrist questioned how directions from AEMO would impact a facility running at or above its emissions cap. <p>The Chair noted that this would not be relevant for existing facilities under this proposal.</p> <p>Mr Robinson noted that this would be relevant for new facilities and that this will be covered in a later slide.</p> <p>Mr Robinson noted that the proposed thresholds are 0.55tCO₂-e/MWh and 1000tCO₂-e/MW annual threshold. He noted that this does not preclude new peaking/firming gas fired plants which would be able to run at a capacity factor of up to 20% under this proposal. He noted that this does preclude new coal and diesel plants.</p> <p>Mr Robinson noted that the Benchmark Reserve Capacity Price Reference Technology Review is assuming a capacity factor of 10%.</p>	



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	<p>Mr Robinson noted that AEMO directions could be excluded from the annual cap, but the ERA would need to monitor for facilities deliberately forcing a direction by AEMO.</p> <ul style="list-style-type: none">Mrs Bedola noted if a gas-fired facility is coming in, it cannot have an obligation to have 14-hour fuel if the thresholds are limited to 20% capacity factor. <p>The Chair responded that the 14-hour obligation does not mean that a facility needs to run for 14 hours but rather that the facility has 14 hours of fuel when the AEMO needs it.</p> <ul style="list-style-type: none">Mrs Bedola noted that these facilities would prefer to be certified in the capability class two. She noted that there are issues with creating a system where facilities over-contract for fuel. <p>The Chair considered that these are two different things, what availability is wanted from a plant compared to what a plant is expected to run during the year. She noted that the proposal requires the facilities to have 14-hour of fuel and the ability to replenish this within three days.</p> <ul style="list-style-type: none">Mrs Bedola noted she was not sure if one could get a gas contract for three days in a row. <p>The Chair responded that there have been various allowances made for the ways a plant can meet this obligation including the use of gas laterals and storage.</p> <ul style="list-style-type: none">Ms Aitken asked why the emissions rate is greater than the current WEM average intensity published by the CER of 0.52. Ms Aitken considered that the threshold should be at or below the emissions average of the WEM. <p>The Chair considered that this calculation takes into account all the generation above a certain size.</p> <p>Mr Robinson considered that the average intensity rate would include all of the generation and this average would be made up of lots of different types of facilities.</p> <p>The Chair considered that this rate would drop rapidly if we achieved the level of intermittent renewable generation we want on our system, and that this average rate includes the renewables generators.</p> <ul style="list-style-type: none">Ms Aitken raised a concern that the proposed thresholds would never bring us to net zero. <p>The Chair responded that the threshold is proposed to decrease over time.</p> <ul style="list-style-type: none">Mr Schubert responded to Ms Aitken noting that this average includes renewables, and if this average removed all renewables, it would be higher than 0.55.Ms Aitken responded that we should be aiming for a reduction over time, noting that a new facility can be exempt from these thresholds.	



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	<p>The Chair clarified that only existing facilities would be eligible for exemption. She noted that participants have expressed concerns about reliability.</p> <ul style="list-style-type: none">• Mr Skinner agreed with Ms Aitken in theory and considered that any new entrant should have lower than the existing average emissions intensity and that this is a question about whether or not we should build new gas facilities.• Mr Bedola responded that when Synergy's coal facilities retire, the average will drop.• Mr Skinner considered that this meeting is about the peaking plant which has a relatively small impact on overall emissions.• Mr Schubert responded that in a system with 90% renewables, for example, the emissions intensity would be extremely low and there would be no plant other than renewables which could meet this threshold. <p>The Chair emphasized the importance of demonstrating a transition which does not harm reliability and security of the system.</p> <ul style="list-style-type: none">• Mr Carlberg noted support in principle with the 0.55 threshold, noting that new gas would be sensitive to a true-up which would expose it to risk.• Mr Carlberg asked for the rationale behind the quantity threshold, noting that he did not think that thermal capacity which operates under the proposed threshold would be displacing other capacity types. <p>The Chair responded that, while we want to help the security of the system by bringing in peaking plants, the objective is not to have gas replace coal at high emissions rates.</p> <ul style="list-style-type: none">• With regard to exemptions for AEMO directions, Mr Carlberg noted that peaking plants would be offering at the price cap, and asked whether exemptions would be given when dispatched at the cap. <p>Mr Robinson responded that this is not the intent, and that the facility would need a formal direction from AEMO, when it is intervening in the market, to receive an exemption.</p> <p>The Chair noted that AEMO would provide directions under the Rules during a high risk operating state. She reminded members that this point arose from concerns raised by Ms Gilchrist regarding a situation in which AEMO is issuing more directions than usual and in which AEMO should be able to direct facilities close to their emissions cap. The Chair emphasized that this would not apply to participant bidding behaviour.</p> <ul style="list-style-type: none">• Mr Carlberg referred to the volatility in the new market and noted that the 1000tCO₂ limit may be a big risk to generators, specifically when a facility is being called unexpectedly.• Mr Cremin agreed with Mr Carlberg, noting that the 1000tCO₂ thresholds to not make sense and that no investor will build base load	



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	<p>gas in this market. Reciprocating plants are more likely and it would not be sensible to limit them to 20% capacity factor.</p> <p>The Chair asked members not to draw any conclusions from the first two weeks of new market operation, noting that there have been some unexpected outcomes which AEMO is investigating.</p> <ul style="list-style-type: none">• Dr Shahnazari noted that he is not too concerned about setting the emissions threshold at the average of the system and that it is unlikely that most of the generation in the system would come from facilities with a higher-than-average emissions intensity. He added that he is not too concerned at this stage, as it seems that at this point in time we are more concerned about removing coal from the system. <p>The Chair clarified that we wish to remove baseload gas from the system, as well as baseload coal.</p> <p>The Chair noted that the 0.55 will change over time and that this will be explained later in the slidepack.</p> <ul style="list-style-type: none">• Mr Peake questioned whether there would be new capacity to meet a lower emission threshold. <p>Mr Robinson noted that the threshold was chosen as at this level there are facilities which could meet it.</p> <p>Mr Robinson clarified that, if the threshold was lowered all current technologies would be excluded and the only facilities left would be new relatively unproven technologies such as those using hydrogen blending, and carbon capture and storage.</p> <p>Mr Robinson explained that the threshold would decrease towards 2050, which would either decrease capacity factors or drive the introduction of new technologies.</p> <ul style="list-style-type: none">• Mr Froud asked why not net zero, rather than zero emissions, by 2050. <p>Mr Robinson responded that there may be some mechanisms to offset emissions.</p> <ul style="list-style-type: none">• Mr Skinner considered that, although 2050 is the current legislated date for net zero, if the aim is to actually stay below 2C we need to reach net zero closer to 2035. <p>The Chair noted that this is relevant context for the risks we are dealing with here.</p> <p>Mr Robinson provided an example of what the quantity threshold could look like over time.</p> <p>Mr Robinson asked members to consider whether a trajectory should be set, which reduces over time to 2050, or if the threshold should be regularly reviewed, e.g. every 5 years.</p> <p>Mr Robinson asked whether more certainty would be provided if the threshold drops every year by a small amount, or if the threshold reductions are larger but only every 5 years.</p>	



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	<p>The Chair reminded members that the aim is to maintain reliability and security while providing investment certainty.</p> <ul style="list-style-type: none">Ms Gilchrist noted that the assumption is that facilities will retire when they are no longer eligible for capacity payments and questioned whether this was an accurate assumption. She questioned whether there was the potential for facilities to run more often in the real time market because they are no longer eligible for capacity credits. <p>The Chair responded that Ms Gilchrist is correct, and that these facilities would still be able to operate in the market without receiving capacity credits. The Chair noted that in other jurisdictions there is a lot of concern about the uncertainty of facilities exiting the market at a short notice. One of the objectives of this review is to provide certainty of when capacity credits are due to be retired in order to bring new capacity in. She considered that this would allow new capacity to enter the market with presumably much lower running costs, which would help competition and pricing.</p> <p>The Chair noted that this review is being undertaken in the absence of clear national policy and noted that this policy may be retired if Commonwealth policy came in that could replace it.</p> <ul style="list-style-type: none">Mr Schubert noted that his favoured option is to drop the threshold by a small amount each year, with regular review.Mr Peake agreed with Mr Schubert and considered that costs to customers need to be considered. He considered that driving out an older plant which hardly runs and replacing it with a new expensive plant is not a good idea. <p>The Chair considered that this is not necessarily true, and that bringing in new plant would not necessarily increase but may decrease the price.</p> <ul style="list-style-type: none">Mr Street considered that the option to decrease the threshold every 5 years would provide more certainty, noting the risks around the lag in facilities being brought into operation.Mr Frood considered that although the constant drop is attractive, it may not reflect the changing technology landscape and considered that this needs to be reviewed regularly.Mr Carlberg considered that this should be subject to regular reviews based on modelling.Mr Skinner agreed with Mr Carlberg noting that there will be too much change to predict 20 years in the future. <p>The Chair summarised the members views that the market should signal a gradual drop in the threshold which would be reviewed at regular intervals outlined under the Rules.</p> <ul style="list-style-type: none">Mrs Bedola agreed with the Chair.Ms Aitken considered if we want new gas, the facility needs to last for 20 years to ensure a return on investment. She noted that if the threshold rate continues to decline, then the proponents would have to	



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	<p>finance the facility over 10 years as this is the only time the facility output will be guaranteed to not be curtailed based on the emissions intensity threshold. Ms Aitken asked if the way that the capacity mechanism pays for these plants is going to change. Ms Aitken did not believe this has been addressed.</p> <ul style="list-style-type: none">Ms Aitken emphasized that the reserve capacity price would need to be doubled in order to allow for a new gas plant to make return on investment. She noted that this does not provide investment certainty and cannot see a new facility investing under this proposal. <p>The Chair noted that the mechanism has to be designed so net zero emissions can be achieved by 2050.</p> <ul style="list-style-type: none">Mr Carlberg and Mr Cremin agreed with Ms Aitken.Ms Gilchrist questioned whether a drop for each year could be provided for in the rules, with the reviews allowing the drop to be less. She considered that this could provide more certainty and allow the drop to be decreased in the event there is no capacity to replace the capacity which would be excluded. <p>The Chair considered that this would be the purpose of the proposed review.</p> <ul style="list-style-type: none">Mrs Bedola sought to clarify her understanding that once a facility was registered, it would be considered an existing facility and be subject to reduced rates. She added that the rate threshold would remain, but the annual threshold would continue to decrease. <p>Mr Robinson responded that the proposal is that a facility would keep its thresholds from when the facility entered for 10 years. He considered that it could be an option to allow the facility to keep its rate threshold forever, but the annual threshold decreases over time.</p> <ul style="list-style-type: none">Mr Skinner considered that there is no emission reduction policy setting which can give investment certainty to high emissions technology beyond ten years in reality.Dr Shahnazari considered that there is a deep level of uncertainty on future technology costs and the system mix. He considered that a trajectory for emissions levels over time to net zero needs to be agreed to provide some certainty for investors.Mr Carlberg noted that SWISDA showed new gas being built to approximately 2040 which suggests lowering the threshold for new facilities would need to occur around that time.	
6	Existing Facilities - transition	
	<p>Mr Robinson explained that the transitional threshold would initially be capped at 1tCO₂-e/MWh, with a decrease of 0.05tCO₂-e each year, which would provide a relatively smooth profile of capacity excluded from the RCM.</p> <ul style="list-style-type: none">Mr Peake considered that he would prefer to use the previous proposal noting it would be better to have older, less efficient	



Item	Subject	Action
	<p>machines running with a cap on emissions, over closing plants and forcing new plants onto the system.</p> <p>The Chair noted that the analysis has shown this approach may not be practical.</p> <ul style="list-style-type: none">Ms Aitken considered that this could be solved if generators would be allowed to use offsets allowing them to operate for their full investment term.Mr Carlberg considered that the target is net zero not absolute zero, noting that the final 20% is expensive.Mr Waterson considered that offsets could work as a penalty to allow older plants to operate.Mrs Bedola considered that offsets could be included in the energy market rather than the RCM.Ms Aitken considers that this does not solve the problem of recovering fixed and investment costs over 20 years. <p>The Chair noted that offsets were discussed in a previous meeting and noted that members were not receptive to offsets.</p>	
7	Exemptions for Flexible Capacity Providers <p>Mr Robinson noted that there would be 2GW of existing capacity, which would be eligible for Flexible Capacity Credits, noting that these facilities would be exempt from emission thresholds for ten years.</p> <ul style="list-style-type: none">Mrs Bedola asked what the assumptions were for the Flex product. <p>Mr Robinson responded that the assumptions were similar to those made under the BRCP reference technology review.</p> <p>Mr Robinson noted that the reason for the exemptions are the reliability concerns.</p> <ul style="list-style-type: none">Dr Shahnazari asked what the implications of this policy are, noting that the exemptions would mean we need to do more after 2030. <p>Mr Robinson responded that further modelling of the effects of this proposal on emissions will be done as a part of this project which may answer this question.</p> <ul style="list-style-type: none">Mr Skinner sought to understand how the exemptions allow us to stay within carbon budgets we are internationally committed to, noting we should get data on emissions scenarios before we make decisions. He noted that the importance of emissions reductions is being overridden by reliability concerns, rather than balancing the two. <p>The Chair responded that this exemption would only apply to existing plants as applying exemptions for new plants would add to emissions rather than gradually reducing emissions. Regarding existing plants, the analysis shows that we need to be careful to maintain reliability.</p> <p>The Chair noted that this proposal will not solve our emissions objectives, but is rather to ensure that our reserve capacity</p>	



Item	Subject	Action
	<p>mechanism does not continue to entrench this. She noted that in the absence of this mechanism, new liquid fuel plants could be built.</p> <ul style="list-style-type: none">Mr Carlberg considered that a similar exemption should be provided for the new Flex capacity plant, noting that the Flex product requires facilities to operate at low levels, and turn on and off quickly. He considers that this would dramatically deteriorate emissions intensity rates. <p>The Chair responded that the proposal is not to apply exemptions for new plants unless people provide strong evidence why we should.</p> <p>The Chair noted the risk with introducing this proposal too radically on reliability.</p> <ul style="list-style-type: none">Mr Skinner agreed with the Chair but was concerned about the opposite outcome, if international, federal and state pressures may require decarbonisation at a quicker rate. <p>The Chair acknowledged this and noted that with a shift in Government policy, this review outcomes will need to be changed. She noted that this policy aims to balance reliability with emissions reductions in the WEM. The Chair noted the lack of legislated carbon budgets.</p> <ul style="list-style-type: none">Mr Skinner noted that, while there are no legislated carbon budgets, there are clear international guidelines regarding Australia's carbon budget and noted that these are real and can be pointed to. He noted that the difficulty is these do not match up to Government policy. <p>Mr Robinson noted that this is the first time this type of policy is being introduced.</p> <ul style="list-style-type: none">Ms Aitken asked for an example of an existing plant in the WEM which could become flexible.Mrs Bedola provided an example of Synergy's HEGT and possibly Pinjar units.Mr Peake added Kwinana Swift.Mr Peake considered that the amount of emissions in the future can only be reduced by major investment in renewables and that, if the transmission system is built, investors will build renewables.	
8	Cogeneration <p>Mr Robinson outlined two options</p> <ul style="list-style-type: none">add a mechanism to split emissions from electricity and process heat; orexclude cogeneration from these thresholds altogether. <p>Mr Robinson noted that most of the cogeneration plants are not receiving capacity credits and that most of these plants are reaching end of life in the next 10-15 years.</p>	



Item	Subject	Action
	<p>Mr Robinson noted the recommended option is to exclude these from the scheme.</p> <p>The Chair noted that most cogeneration facilities do not receive capacity credits and are usually collocated with processing facilities. She noted that there is an ambition for these processes to electrify. She noted the potential equity issues if those cogeneration facilities which have capacity credits are included in this proposal while not including the facilities which do not have capacity credits.</p> <ul style="list-style-type: none">• Mr Schubert noted the efficiency of cogeneration facilities and considered that cogeneration plants emissions could be calculated based on 'useful energy produced'.• Ms Aitken noted that cogeneration facilities are treated as scope 1 and are captured under the safeguard mechanism.• Mrs Bedola noted she is not in a position to comment here and that this should be a discussion EPWA has with the cogeneration facility owners, and accepts the proposal to exclude them from this regime as they will be captured under the federal safeguard mechanism.• Mr Carlberg considers that one process heat emissions are removed from cogeneration facilities, the facility would be within the proposed existing threshold for their remaining life.• Ms Gilchrist noted the BRCP review which could increase the capacity price and questioned whether this could be considered as a floor only meaning the price could go up but not down for those eligible.	
9	Summary of emissions threshold proposals <p>This agenda item was deferred to the next WICRWG meeting.</p>	
10	10-year RCP guarantee for new technologies <p>Mr Robinson noted that:</p> <ul style="list-style-type: none">• the RCM proposes to offer a 10-year fixed price for proponents of new flexible technologies such as long-duration storage; and• EPWA proposes that any facility which uses a renewable fuel source to provide firm availability that exceeds to prevailing Electric Storage Resource Duration Requirement would be eligible.• Mr Schubert queried whether pumped hydro with 4.1 hours of running time would be eligible. <p>The Chair clarified that this price guarantee can be introduced as soon as the RCM rules are implemented.</p> <ul style="list-style-type: none">• Mr Skinner questioned the definition of renewable fuel source noting that biofuels are not necessarily a low emissions fuel source. <p>The Chair considered that more detailed discussions were needed to determine an appropriate definition of renewable fuel source.</p>	



Item	Subject	Action
	<ul style="list-style-type: none">Mrs Bedola noted that EPWA needed to consider how to treat the change in duration, for example a 4-hour battery that ran for 6 hours. <p>The Chair clarified that a battery's duration would be determined if its nameplate capacity duration is longer than the duration gap.</p> <p>The Chair clarified that if the duration gap is 4 hours, a 6-hour battery for example, would be eligible for the guarantee. If the duration gap moves to 6 hours, a new 6 hour battery would not get the guarantee, but an 8 hour battery would.</p> <ul style="list-style-type: none">Mr Carlberg considered that the definition could leverage the national legislation about renewable energy and asked whether batteries would be assumed to be renewable facilities.Mr Carlberg suggested offering this to all capacity identified by the SWISDA that meets the emissions thresholds. He did not think that it can be assumed that the business case for other technologies are in any less need of certainty than renewable technologies.	
11	Upcoming meeting schedule Members were provided with the upcoming meeting schedule.	
12	General Business No general business was discussed.	

The meeting closed at 11:30 AM



Government of Western Australia
Energy Policy WA

WEM Investment Certainty Review Working Group Meeting 2023_11_08

8 November 2023

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

Item	Item	Responsibility	Type	Duration
1	Welcome and agenda	Chair	Noting	2 min
2	Meeting apologies/attendance	Chair	Noting	2 min
3	Minutes of previous meeting	Chair	Discussion	6 min
4	Emissions thresholds	RBP	Discussion	25 min
5	Ten-year RCP guarantee for new technologies	RBP	Discussion	20 min
6	RCP curve – history	RBP	Discussion	15 min
7	RCP curve – international comparison	RBP	Discussion	15 min
8	RCP curve – options	RBP	Discussion	20 min
9	General business	Chair	Discussion	10 min
10	Next steps	Chair	Noting	5 min

4. Emissions thresholds

Emissions tracking approach for the WEM

EPWA proposes to assess emissions using data specific to the WEM for all facilities, both existing and new using a theoretical emission rate:

- Emissions rate based on theoretical emissions at specified point on heat rate curve.
- Emissions quantity based on metered generation at theoretical emissions rate

This approach:

- Should be stable and predictable from year to year
- Reduces complexity (compared to using actual emission figures)
- Requires reliance on expert reports for all facilities
- Provides clear signals as to when facilities will exit the RCM

Setting the theoretical heat rate

The working group considered that the method for identifying the theoretical emission rate should reflect that thermal facility efficiency depends on how hard it is running. Facilities operating at minimum generation use more fuel (and produce more emissions) per MWh than facilities operating at near maximum capacity.

The choice of operating level used to determine the theoretical emission rate could be linked to past actual operating levels. If this approach were used, the emission rate for an individual facility could vary considerably from year to year.

Facilities already need to lodge heat rate curves as part of their confidential standing data, so EPWA has reviewed this data to assess the potential variability. EPWA considers that using the efficiency at maximum output (or at the level of Capacity Credits held) would provide investment certainty and reduce year-to-year volatility, while still allowing the threshold to be adjusted over time to reduce carbon emissions.

The formula to determine the emission rate for a facility would be something like:

$$EmissionRate(facility) = \frac{EmissionFactor(fuel) \times ConsumptionRate(facility) \times EnergyContent(fuel)}{NameplateCapacity(facility)}$$

This approach would mean that AEMO does not need to measure actual emissions, but it would need to compare the standing data heat rate curve with actual performance. Fuel used at maximum output could be assessed alongside reserve capacity tests.

Emissions Threshold Proposals (1)

EPWA proposes to:

- Set an emission intensity threshold of 0.55 tCO₂e/MWh to apply to all new facilities from the 2026 capacity cycle (for the 2028 Capacity Year). This threshold would not apply to existing facilities.
- Set an emissions quantity threshold of 1,000 tCO₂e/MW to apply to all new facilities from the 2026 capacity cycle (2028 Capacity Year).
- Set an emissions rate of 1 tCO₂e/MWh to apply to all existing facilities for the 2026 capacity cycle (2028 Capacity Year).
- Decrease the threshold for existing facilities by 0.05 tCO₂e/MWh in each subsequent year, until the threshold is the same for new and existing facilities in the 2037 capacity cycle.
- Postpone threshold reduction for ten years for exempt facilities, then reduce to 0.75 in 2037, and then by 0.05 each year until 2041.
- Reduce the thresholds for new facilities over time, with an indicative target of zero in 2050, and actual thresholds determined every five years for the following five capacity cycles.

Emissions Threshold Proposals (2)

EPWA proposes to:

- Measure a facility's emissions rate based on theoretical emissions at maximum generation.
- Measure a facility's emissions quantity based on the metered generation at the theoretical emissions rate.
- Require AEMO to test the accuracy of heat rate curves alongside capacity testing.
- Exclude cogeneration facilities from threshold regime, while allowing cogeneration facilities to hold Capacity Credits.

5. Ten-Year RCP Guarantee for New Technologies

Defining “new technologies” (1)

Initiative 2 offers a ten-year fixed price for “proponents of new flexible technologies, such as long-duration storage”. The desired outcome is to provide additional incentive for investment in these technologies, which will allow more variable renewable generation to connect without compromising reliability.

Under the proposed rules that implement the outcomes of the RCM Review, the required duration of storage facilities will be extended over time, as measured by the Availability Duration Gap. Any facility that can provide firm capacity over this timeframe will support the replacement of fossil-fuelled generation by renewables.

EPWA considers that requiring a facility to be of a technology type not already present in the SWIS would be inconsistent with the desire to encourage increased renewable build.

Defining “new technologies” (2)

Proposal: Allow a fixed capacity price for any new facility that:

- *provides firm availability over a period of time that exceeds the prevailing ESR Duration Requirement, and*
- *uses a renewable fuel source.*

Such a facility would be treated like current fixed price facilities for RCM pricing purposes, but would be considered along with non-fixed price proposed facilities for NAQ purposes.

A thermal facility running on renewable hydrogen would be eligible. This is a matter for future consideration once that technology is more mature.

What do “renewable” and “exceeds ESR duration” mean?

Working group discussions highlighted issues around qualifying as:

- Renewably fuelled – for example a facility to be fired on biogas that cannot source enough biogas:
 - Applicants would need to provide evidence that their fuel supply was from renewable sources.
 - At first application, this could be in the form of firm or non-firm contracts for future periods.
 - For subsequent applications, this could be in terms of the fuel actually used.
- Exceeding the storage duration requirement:
 - This would be based on the design capability of a facility.
 - For a storage facility, it would be determined as MWh stored divided by nameplate capacity, regardless of whether the facility is certified for less capacity than its nameplate.

6. RCP Curve - History

The WEM Reserve Capacity Price curve

The Reserve Capacity Price (RCP) curve, together with the Benchmark Reserve Capacity Price and the Reserve Capacity Target, determines the price paid to Market Participants for each MW of capacity.

During the RCM review, stakeholders identified issues with the existing RCP curve, and the WIC Review is now considering amendments.

The current approach to setting the price curve has applied since the 2019 Reserve Capacity Cycle. Until 2019, the price curve was set based on a calculation that effectively divided a fixed amount of capacity payments among all eligible capacity, with a price cap of 1.1 times the BRCP. This approach provided only very muted investment signals for retirement when there was excess capacity, and for investment in times of shortfall.

A 2018 review by the then Public Utilities Office decided to continue the administered pricing approach with an amended price curve, rather than replacing it with a capacity auction or a reliability obligation

WEM RCP Curve

Price Curve: based on lines joining the following price points:

- Price cap equal to 1.3 times BRCP at the RC Target
- Absolute Zero point at 30% excess capacity
- Economic Zero point at Price of 50% of BRCP and Capacity of 10% excess capacity.

Formula is given as: $Max(Segment\ 1, Segment\ 2, 0) * BRCP$

Segment 1

$$= \left(\frac{EZ\ BRCP\ Factor - BRCP\ Cap\ Factor}{EZ} \times Excess\ Capacity + BRCP\ Cap\ Factor \right)$$

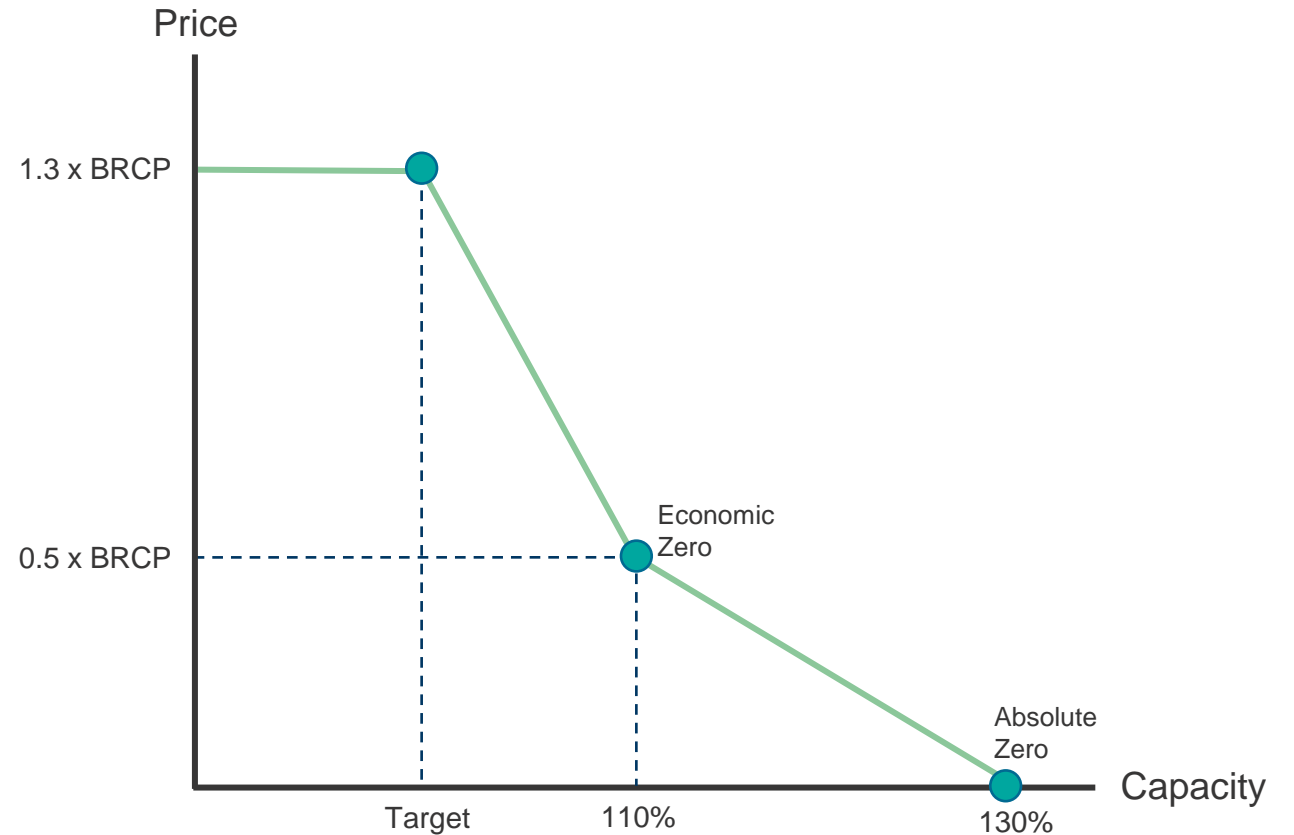
$$Segment\ 2 = \left(\frac{EZ\ BRCP\ Factor}{EZ - AZ} \right) \times (Excess\ Capacity - AZ)$$

Reference Price: CONE

Price at Capacity Target: Price Cap

Maximum Price: 1.3 * BRCP at zero excess capacity

Minimum Price: 0 at 30% of excess capacity



Key parameters of the current RCP curve

The current price curve is defined using three points:

- The price cap. At the Reserve Capacity Target or below, the capacity price will be 1.3 times the BRCP.
- The economic zero point. A “level of capacity surplus and price at which no additional resources will enter the system under a very wide variety of market conditions”. This is set at 50% of the BRCP and a 10% surplus above the Reserve Capacity Target
- The absolute zero point. The “point where the amount of excess capacity is deemed to be sufficiently high for the capacity price to be zero”. This is set at a 30% surplus above the Reserve Capacity Target.

Design principles

Seven dimensions of performance were considered to develop the current pricing arrangements:

- Price signal for investment
- Appropriate exposure to risk
- Signals for capacity withdrawal or retirement
- Same capacity price for equal qualifying resources
- Capacity price should only compensate credible, verifiable resources
- Promotion of the most appropriate capacity mix over time as demand profiles change
- Binding contract against exit

EPWA considers that these dimensions are still valid, but that the current approach can be improved.

Issues with the current RCM price curve

The RCM review identified two issues with the existing price curve:

1. The absolute zero point used is relatively high compared to other jurisdictions.
2. Because the price is set at the cap at the Reserve Capacity Target, the investment signal does not change when there is a shortfall.

It also proposed to use the same parameters to set the price curve for both peak and flexible capacity

The BRCP Reference Technology review has identified a further issue:

3. If there is no difference between the reference technology for peak capacity and flexible capacity, then a peak capacity shortfall will mean a zero price differential for flexible capacity, even if there is also a shortfall of flexible capacity.

7. RCP Curves – International Comparison

International scan

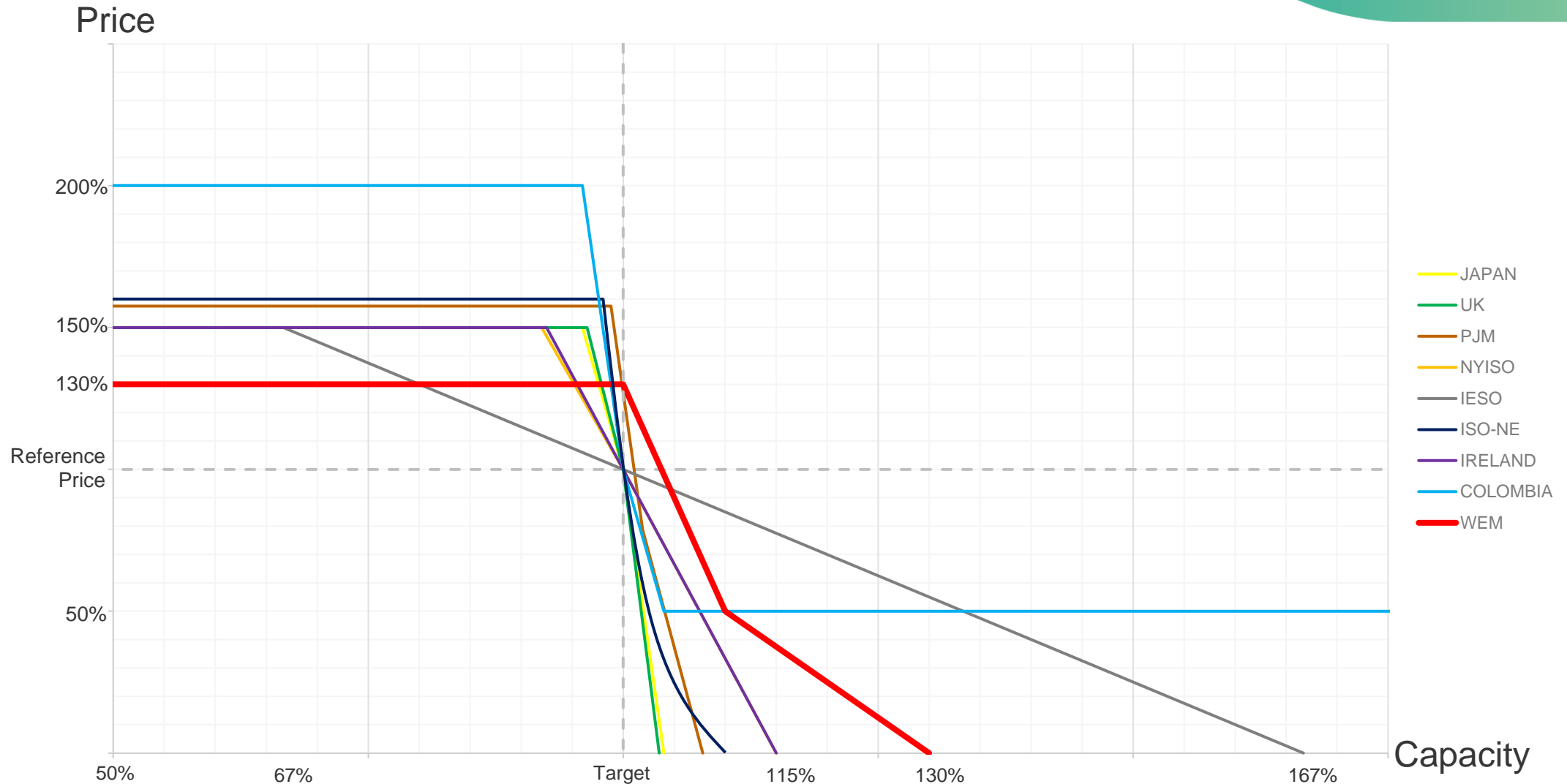
EPWA has revisited the analysis of international price curves conducted during the RCM Review. Some of the jurisdictions covered in that review do not have a price curve, as they do not use central procurement, so these were supplemented with additional jurisdictions which do.

The markets considered are: Colombia, Ireland, ISO-NE, Japan, NYISO, Ontario, PJM, and UK.

While these curves are used in a capacity auction, they provide the same function as in the WEM, defining the maximum and minimum prices paid for capacity, and their relation to the capacity target.

See appendix for details of the price curves for each market.

International Scan Price Curves¹



¹ NYISO's curve is estimated from the average of Zero Crossing Point for each region; ISO-NE's curve is not exact and is for illustrative purposes only.

Observations from international scan

- The WEM price cap is lower (as a percentage of reference price) than other jurisdictions
- Most of the other jurisdictions use Net CONE, while the WEM uses gross CONE
- All other markets set the capacity price at the reference capacity price when capacity procured exactly equals the target, while the WEM sets the price at the cap at the target capacity.
- Most (but not all) markets have a three-part curve, with a straight line from the cap to the floor. The WEM has four.
- Some markets have a convex curve (like the WEM) that sends a sharper signal when in shortage, and provides non-zero payment to capacity providers at higher levels of overcapacity.

8. WEM RCP Curve – Options

WIC Review scope – Initiative 1: RCP curve

The WIC Review must consider whether:

1. The overall methodology for setting the RCP is appropriate
2. The shape of the price curve is appropriate
3. The parameters for the price curve are appropriate
4. The transitional arrangements are appropriate

The review also needs to consider whether there should be a difference between the price curves used to set the peak and flexible capacity prices.

Options

EPWA has identified seven options for working group discussion:

1. Status quo: four segment curve, with the same curve used for both peak capacity and flexible capacity
2. Adjusted four segment curve, with the same curve for both products
3. Separate four segment curves for each product
4. Separate five segment curves for each product (four segment with a deadband)
5. Separate three segment curves for each product
6. Smooth curve with absolute zero point
7. Smooth curve with no absolute zero point

Option 1: Status Quo

In the current arrangement, both services use the same curve illustrated on the right.

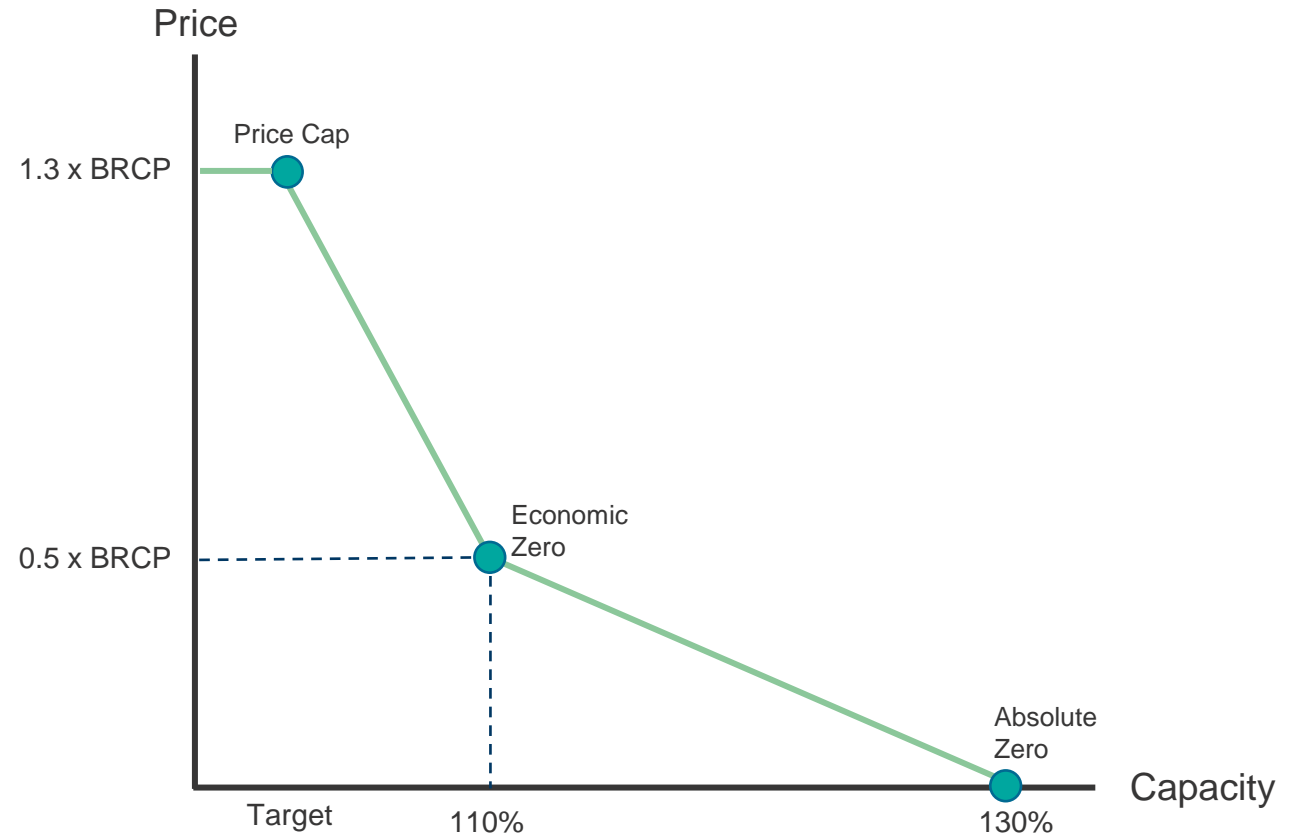
Price at Capacity Target: Price Cap

Maximum Price: $1.3 \times \text{BRCP}$ at Target Capacity

Minimum Price: 0 at 130% of Target Capacity

Other Point(s): $0.5 \times \text{BRCP}$ at 110% of Target Capacity

This option is not suitable, for the reasons discussed above.



Option 2: Adjusted Four Segment Curve

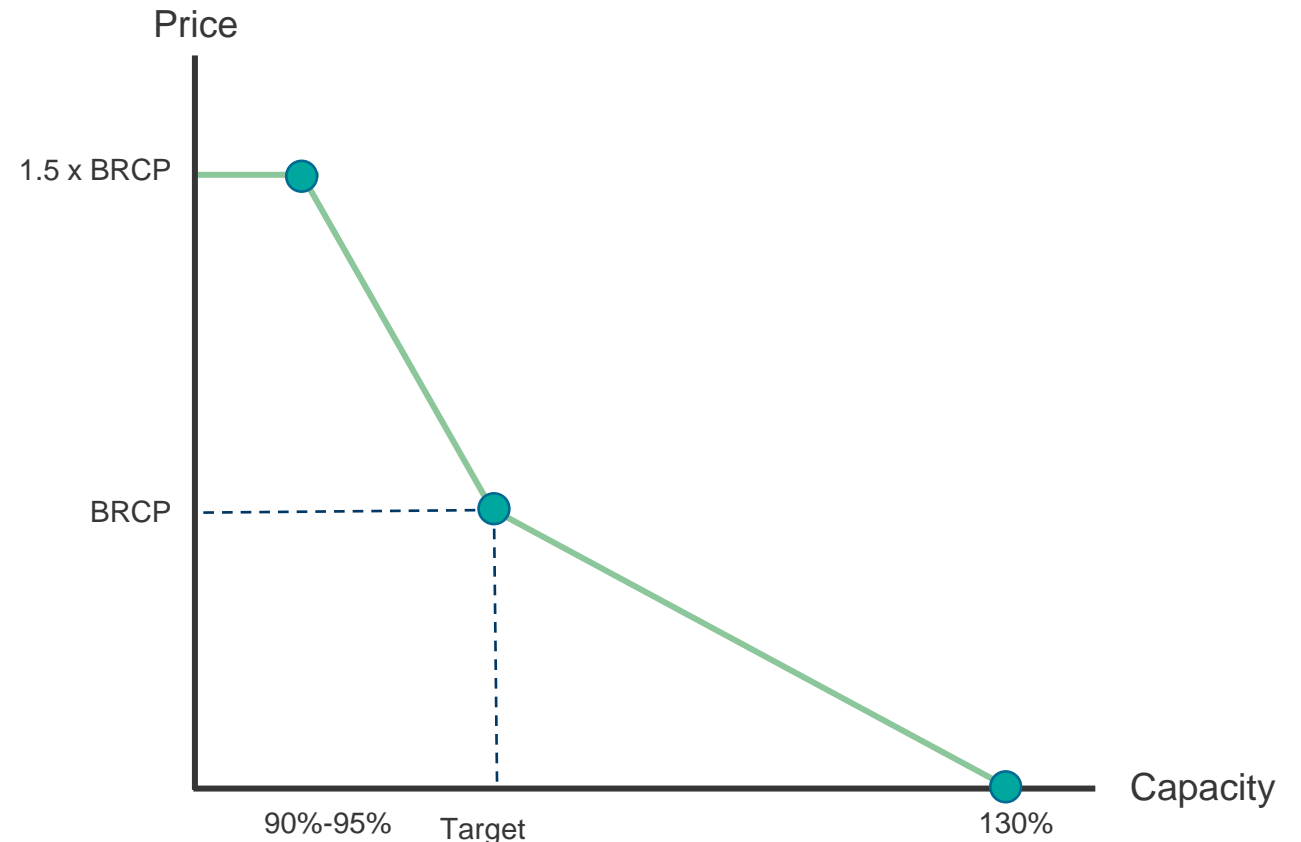
Four segment curve for both services with the following parameters:

Price at Capacity Target: BRCP (CONE)

Maximum Price: $1.5 \times \text{BRCP}$ at 90-95% of Target Capacity

Minimum Price: 0 at 130% of Target Capacity

This curve would increase the price cap to provide a stronger signal for investment in times of capacity shortfall.



Option 3: Separate Four Segment Curves

For Peak services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.5 * BRCP at 90-95% of Target Capacity

Minimum Price: 0 at 130% of Target Capacity

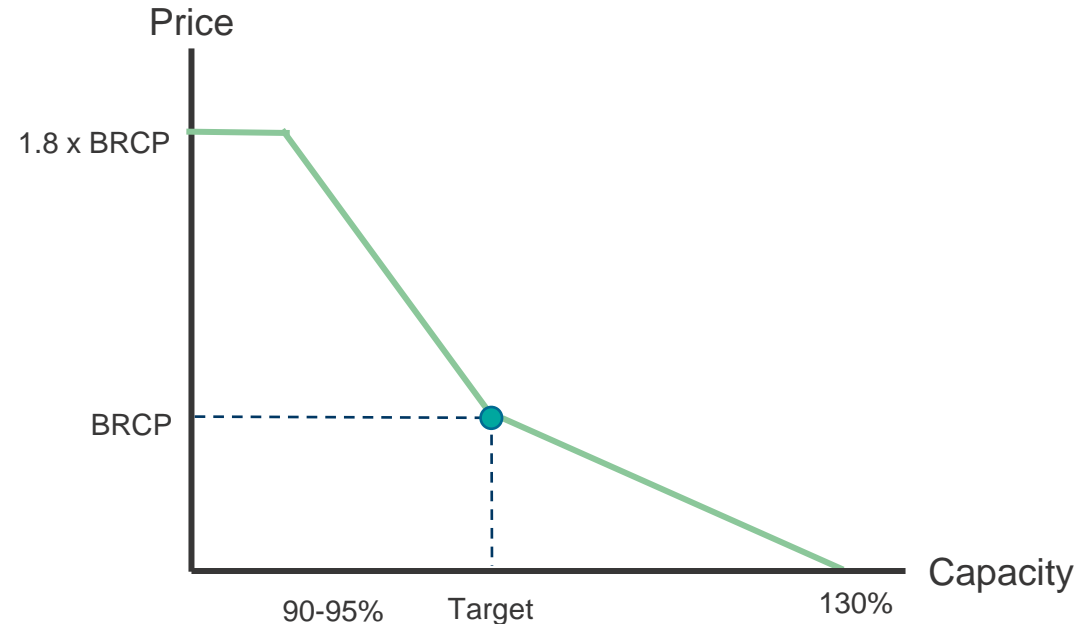
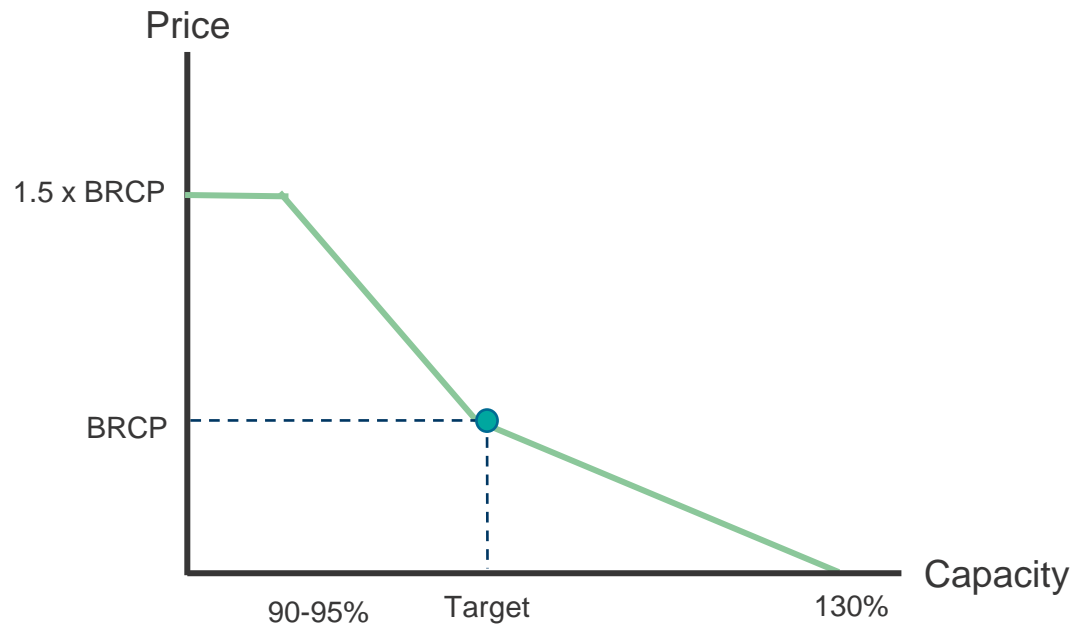
For Flex services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.8 * BRCP at 90-95% of Target Capacity

Minimum Price: 0 at 130% of Target Capacity

These curves would allow differential pricing during peak capacity shortfall.



Option 4: Separate Five Segment Curves with deadband

For Peak services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.5 * BRCP at 90% of Target Capacity

Minimum Price: 0 at 130% of Target Capacity

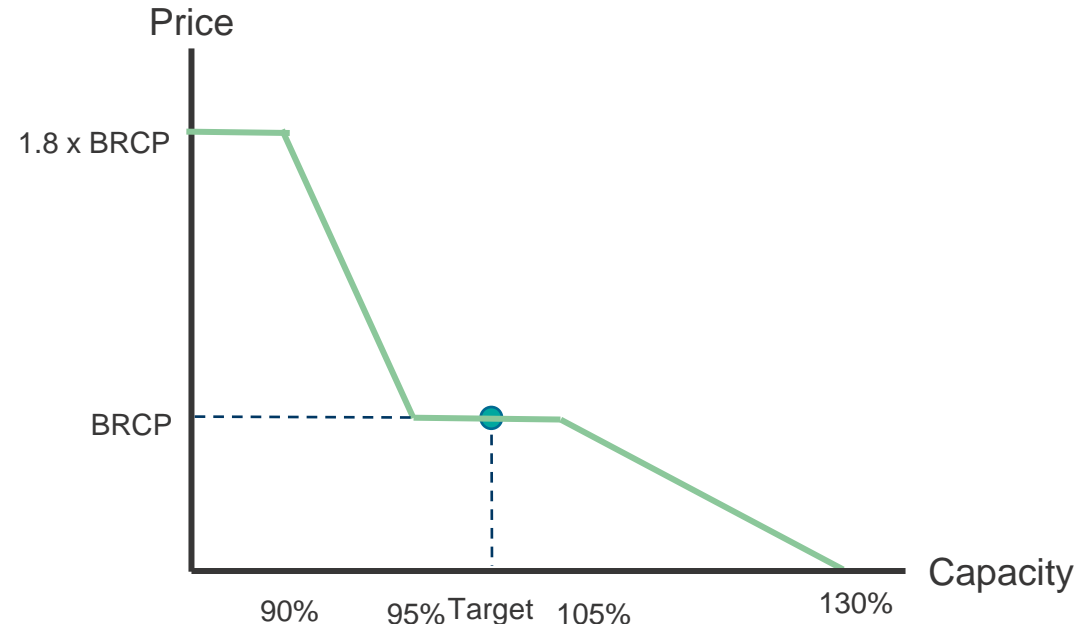
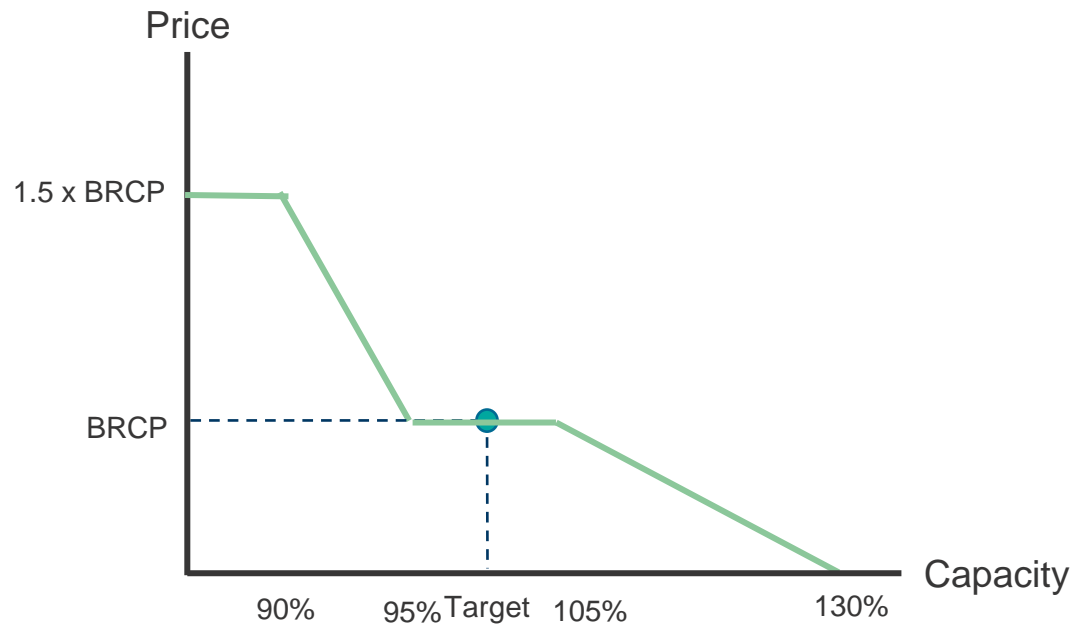
For Flex services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.8 * BRCP at 90% of Target Capacity

Minimum Price: 0 at 130% of Target Capacity

These curves would have a constant price in a band around (or only above) the target capacity level.



Option 5: Separate Three Segment Curves

For Peak services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.5 * BRCP at 90-95% of Target Capacity

Minimum Price: 0 at 110-120% of Target Capacity

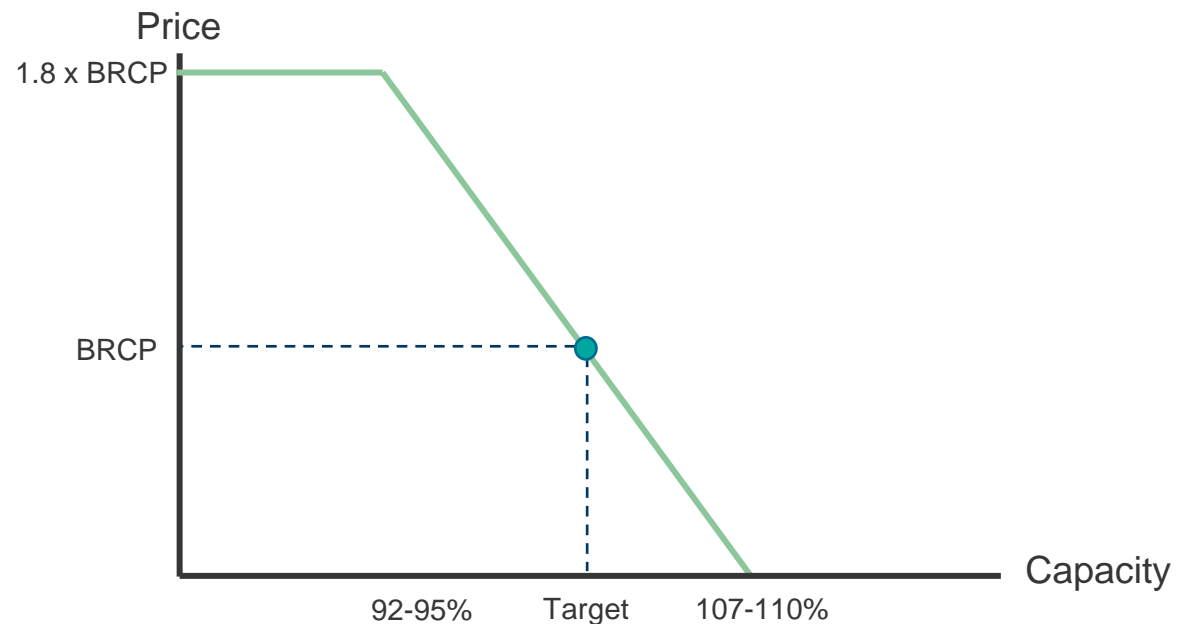
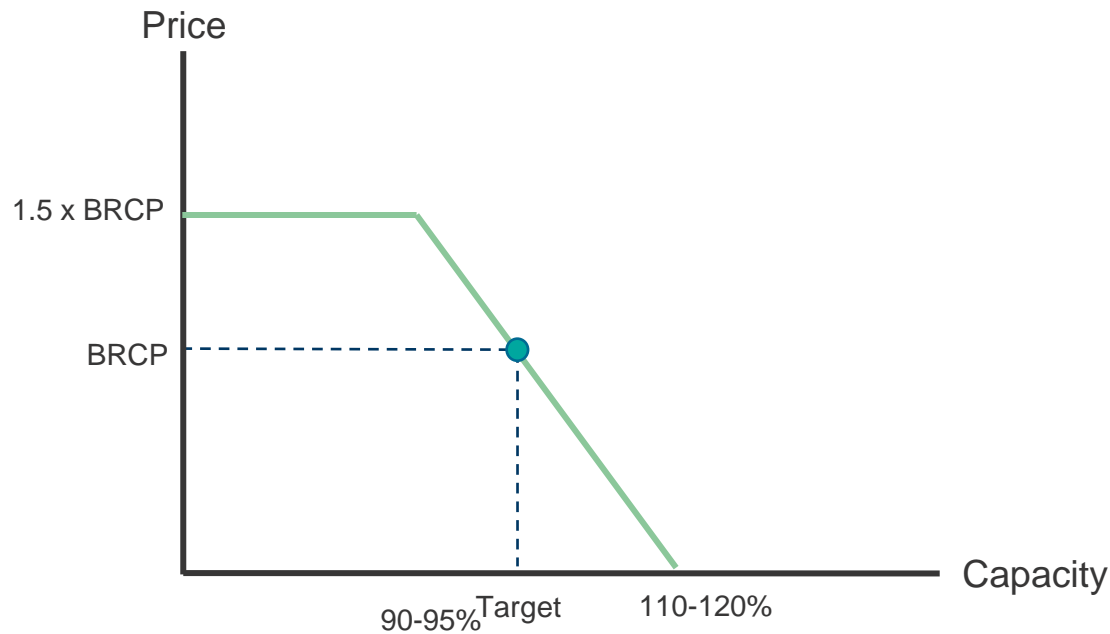
For Flex services:

Price at Capacity Target: BRCP (CONE)

Maximum Price: 1.8 * BRCP at 92-95% of Target Capacity

Minimum Price: 0 at 107-110% of Target Capacity

These curves would remove the convexity, resulting in an absolute zero point at a lower level of oversupply. *This option is not suitable. It increases the price sensitivity to oversupply, decreasing investment certainty.*

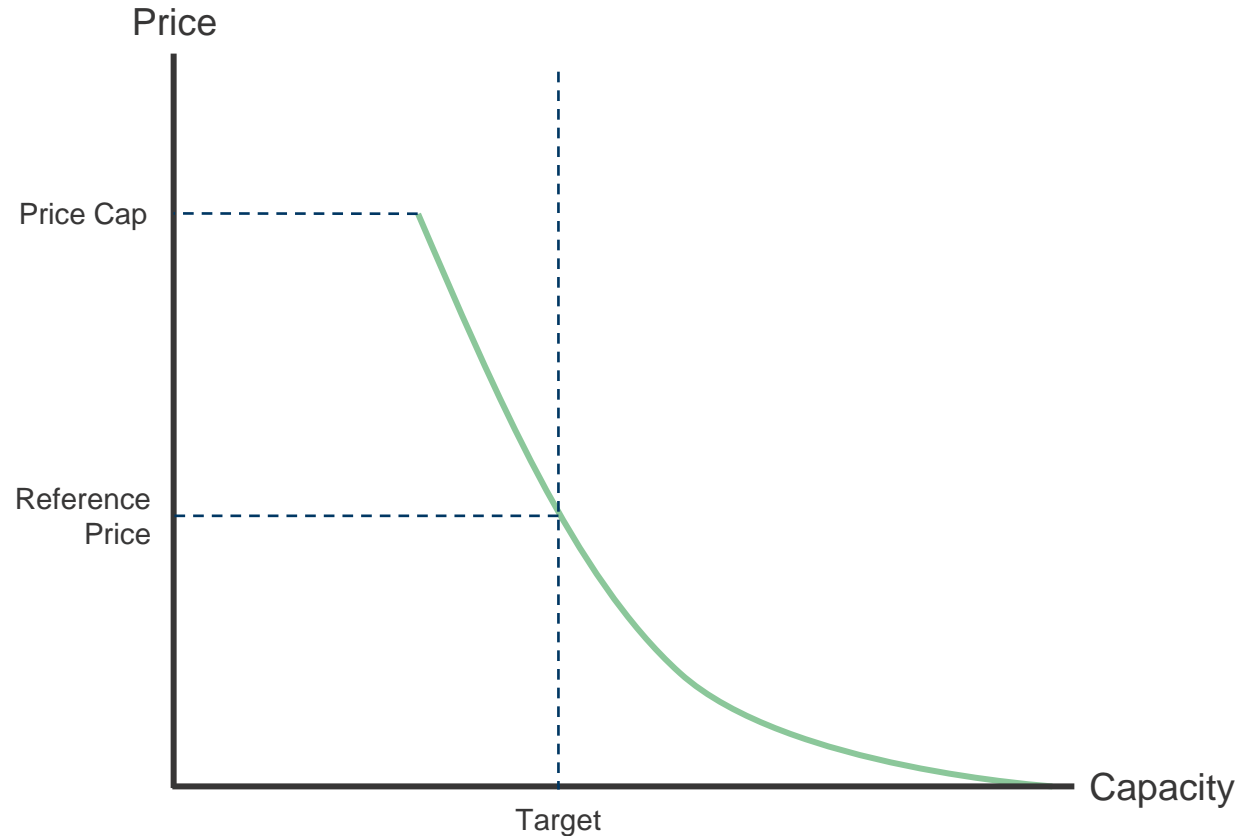


Option 6: Smooth curve with absolute zero point

ISO-NE's demand curve is not linear because it is based on the reliability impact of adding incremental capacity. This ensures cost-effective procurement of capacity.

ISO-NE uses a full-scale reliability planning simulation system called MARS (Multi-Area Reliability Simulation) to develop a system-wide and zonal demand curves.

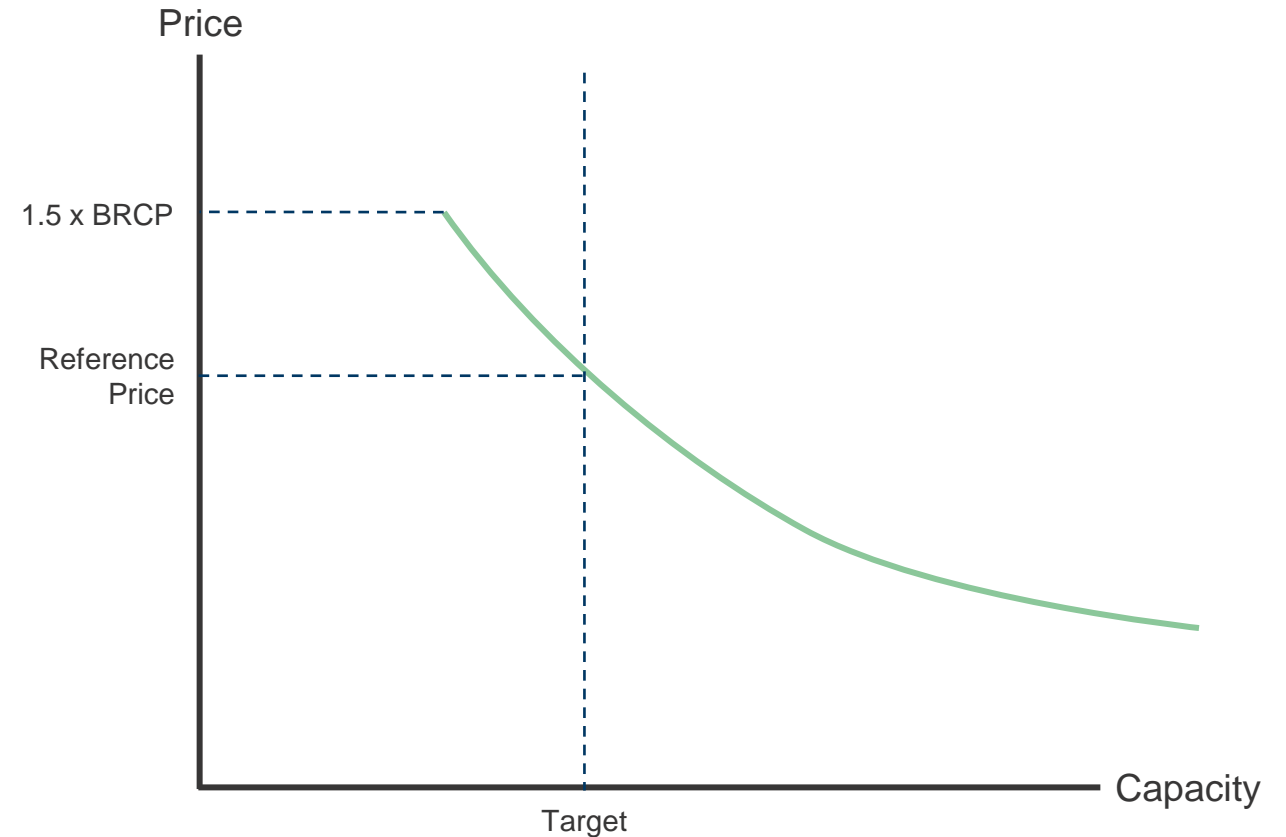
This option is not suitable, as it introduces complex modelling and analysis to set the curve that, in EPWA's view, does not provide significant benefits.



Option 7: Smooth curve with no absolute zero point

The pre-2019 Reserve Capacity Price curve was convex. The capacity price was set by calculating a total capacity payment ($RCT \times BRCP$), and then dividing by the total issued Capacity Credits to determine the capacity price.

This option would replicate that curve, but increase the cap.



Options

EPWA considers that four of the options could be workable in the WEM:

2. Adjusted four segment curve, with the same curve for both products
3. Separate four segment curves for each product
4. Separate five segment curves for each product (four segment with a deadband)
7. Smooth curve with no absolute zero point

Design principles

EPWA considers that the same dimensions of performance used in the previous review of capacity pricing arrangements remain relevant:

- Price signal for investment
- Appropriate exposure to risk
- Signals for capacity withdrawal or retirement
- Same capacity price for equal qualifying resources
- Capacity price should only compensate credible, verifiable resources
- Promotion of the most appropriate capacity mix over time as demand profiles change
- Binding contract against exit

Does the working group agree?

Are there other pricing options EPWA should consider?

9. General Business

Inflation adjustment for transitional facilities

Facilities commissioned before 2019 have a cap and floor applied to their Reserve Capacity Price. These limits are inflation adjusted each year, using RBA forecasts.

A participant has raised an issue around the method used for inflation adjustments to the cap and floor for transitional facility capacity prices, where actual inflation has diverged from the forecasts.

The WIC Review is the appropriate forum for this to be considered.

10. Next steps

Upcoming meetings

6 December:

- Price curve analysis
- Price curve initial proposal
- Modelling discussion

24 January:

- Price curve final proposal
- Price guarantee options.

February:

- Price guarantee analysis
- Price guarantee initial proposal.

March:

- Price guarantee final proposal.

April – Consultation paper released

June:

- Updates to proposals based on submissions.

June – Information paper released

July:

- Draft amending rules.

Questions or feedback can be emailed to energymarkets@dmirs.wa.gov.au



*We're working for
Western Australia.*

Appendix: International Reserve Capacity Price curves

RCM Price Curve: UK

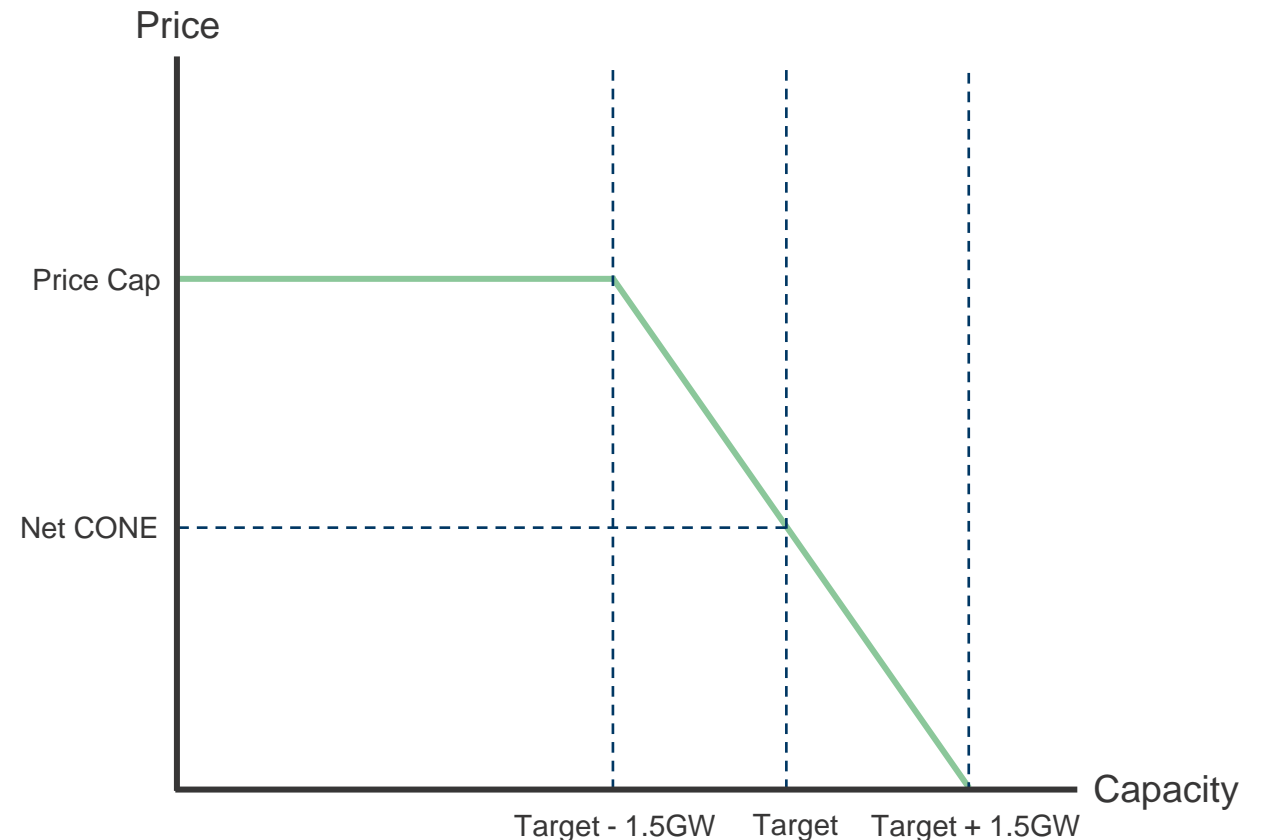
Price Curve: Consists of a horizontal line at price cap and negatively sloping from minimum to maximum capacity. The slope should include the point where the Target Capacity meets the Net CONE

Reference Point: Net CONE

Price at Capacity Target: Net CONE

Maximum Price: $1.5 * \text{Net CONE}$ from 0 to minimum capacity (Target Capacity less 1.5GW¹)

Minimum Price: 0 at maximum capacity (Target Capacity plus 1.5GW¹)



¹ 1.5GW is approximately 3.54% of UK's current Target Capacity. Thus, minimum capacity is 96.46% of Target Capacity while maximum capacity is about 103.54% of Target Capacity.

RCM Price Curve: Ireland

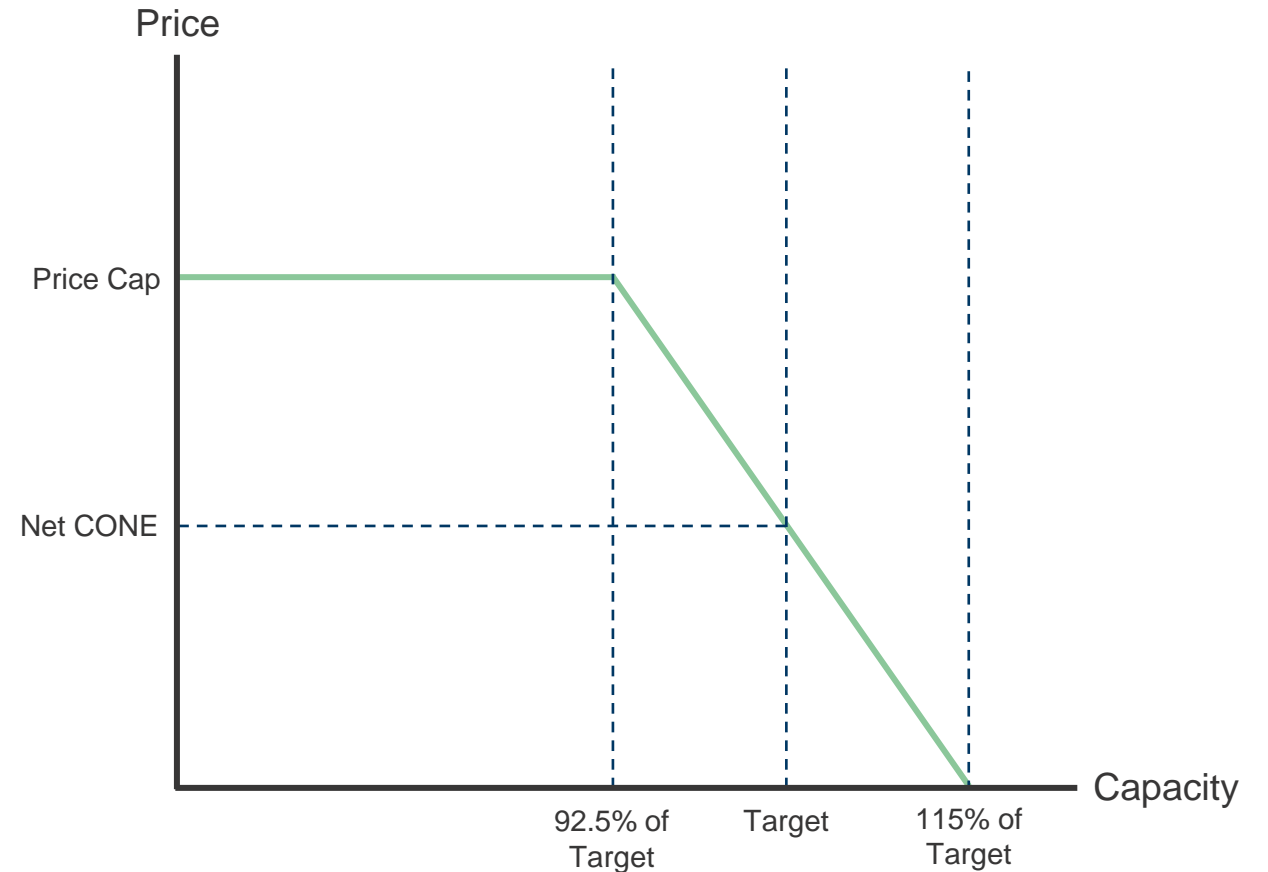
Price Curve: Consists of a horizontal portion at Auction Price Cap from 0MW to 92.5% of adjusted Capacity Requirement, and a negatively sloping straight line to 115% of adjusted Capacity Requirement. The line should pass through the point where Target Capacity is priced at Net CONE.

Reference Point: Net CONE

Price at Capacity Target: Net CONE

Maximum Price: $1.5 * \text{Net CONE}$ from 0 to 92.5% of Target Capacity

Minimum Price: 0 at 115% of Target Capacity



RCM Price Curve: Ontario IESO

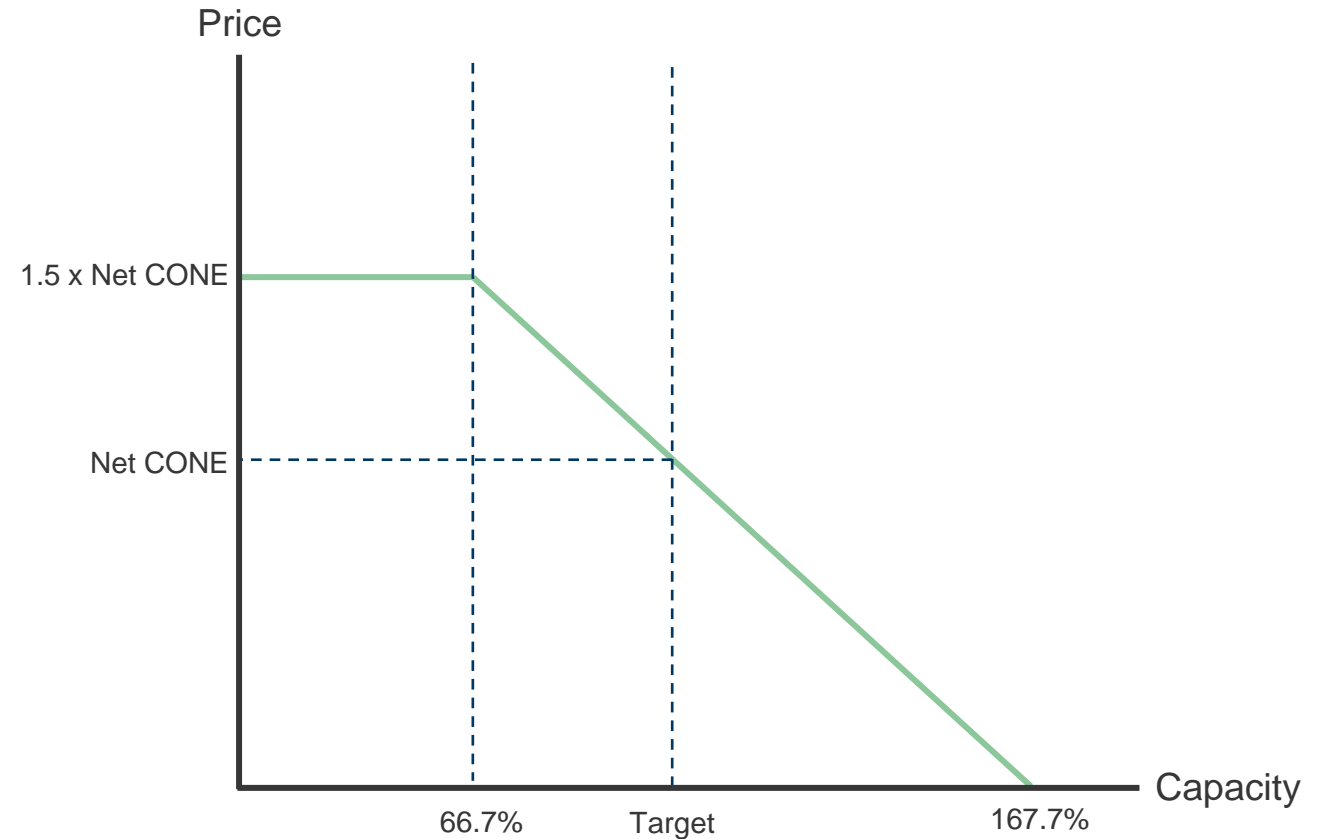
Price Curve: Consists of a horizontal portion at maximum auction clear price at minimum capacity, and a downward sloping straight line from maximum auction clearing price at maximum capacity to minimum capacity at minimum auction clearing price. The line should pass through the point where Target Capacity is priced at Reference Price.

Reference Point: Net CONE

Price at Capacity Target: Net CONE

Maximum Price: $1.5 \times$ Reference Price from 0 to Minimum Capacity Limit (66.7% of Target Capacity)

Minimum Price: 0 at Maximum Capacity Limit (167.7% of Target Capacity)



RCM Price Curve: NYISO

Price Curve: ICAP Price curve consist of three segments:

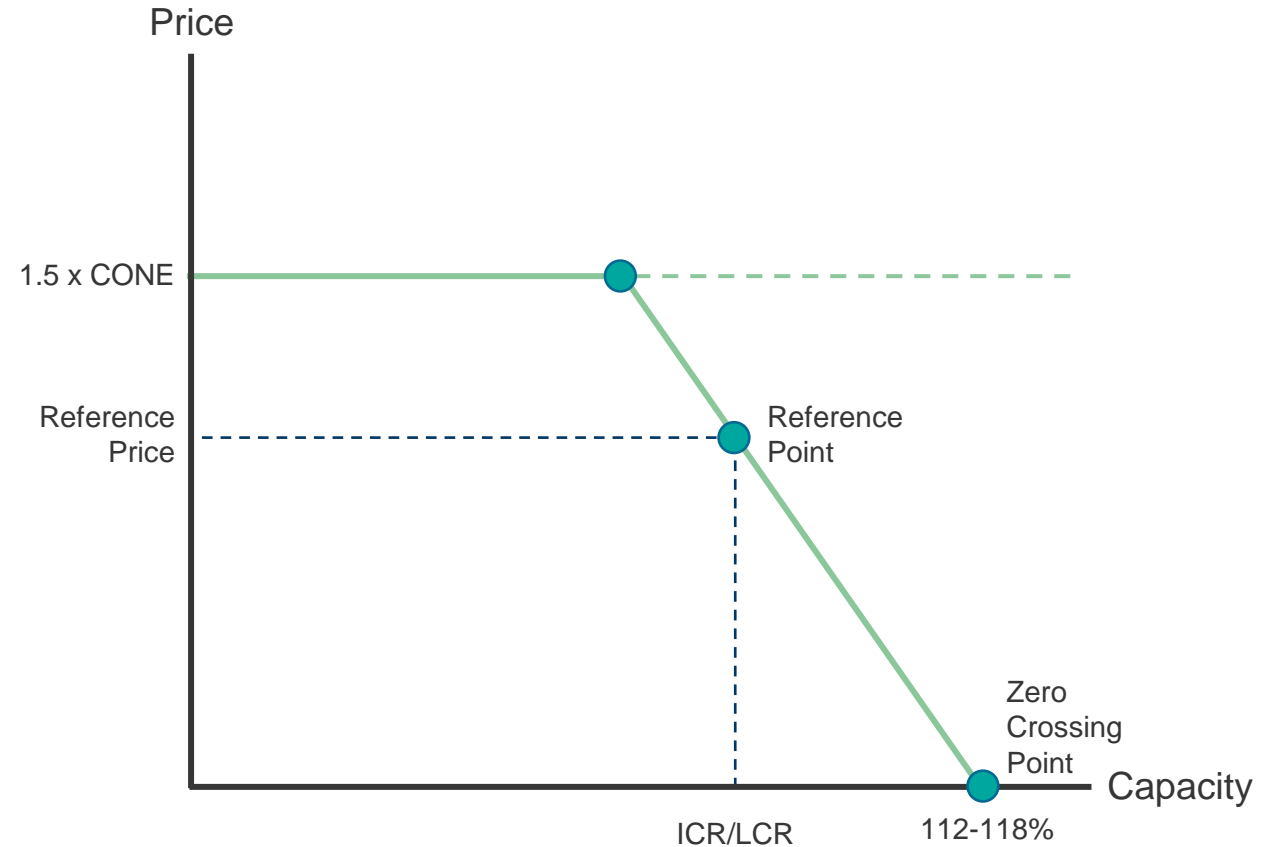
1. Horizontal segment of all points where price is 1.5 times estimated localized levelized cost to develop a new peaking plant or CONE
2. Negative slope that passes through a point where Minimum Installed Capacity Requirement (ICR) or Locational Minimum Installed Capacity Requirement (LCR) meets the Reference Point price and a point where the Zero Crossing Point is priced at 0.
3. Horizontal segment for all points for which the price is 0

Reference Point: Gross CONE

Price at Capacity Target: Reference Point Price

Maximum Price: $1.5 * \text{Gross CONE}$

Minimum Price: 0 at Zero Crossing Point (112-118% of ICR/LCR depending on location)



RCM Price Curve: PJM

Price Curve: Variable Resource Requirement Curve is plotted by combining a horizontal line from y-axis to point (a) and using a straight line to connect points (a), (b), and (c). The points are computed as follows:

Point	Price	Quantity
a	$\frac{\text{Greater of } [CONE, 1.5 \times \text{NetCONE}]}{1 - \text{PoolWide EFORD}}$	$\text{ReliabilityReq} \frac{(100\% + \text{IRM} - 1.2\%)}{(100\% + \text{IRM})}$
b	$\frac{(0.75 \times \text{NetCONE})}{1 - \text{PoolWide EFORD}}$	$\text{ReliabilityReq} \frac{(100\% + \text{IRM} + 1.9\%)}{(100\% + \text{IRM})}$
c	0	$\text{ReliabilityReq} \frac{(100\% + \text{IRM} + 7.8\%)}{(100\% + \text{IRM})}$

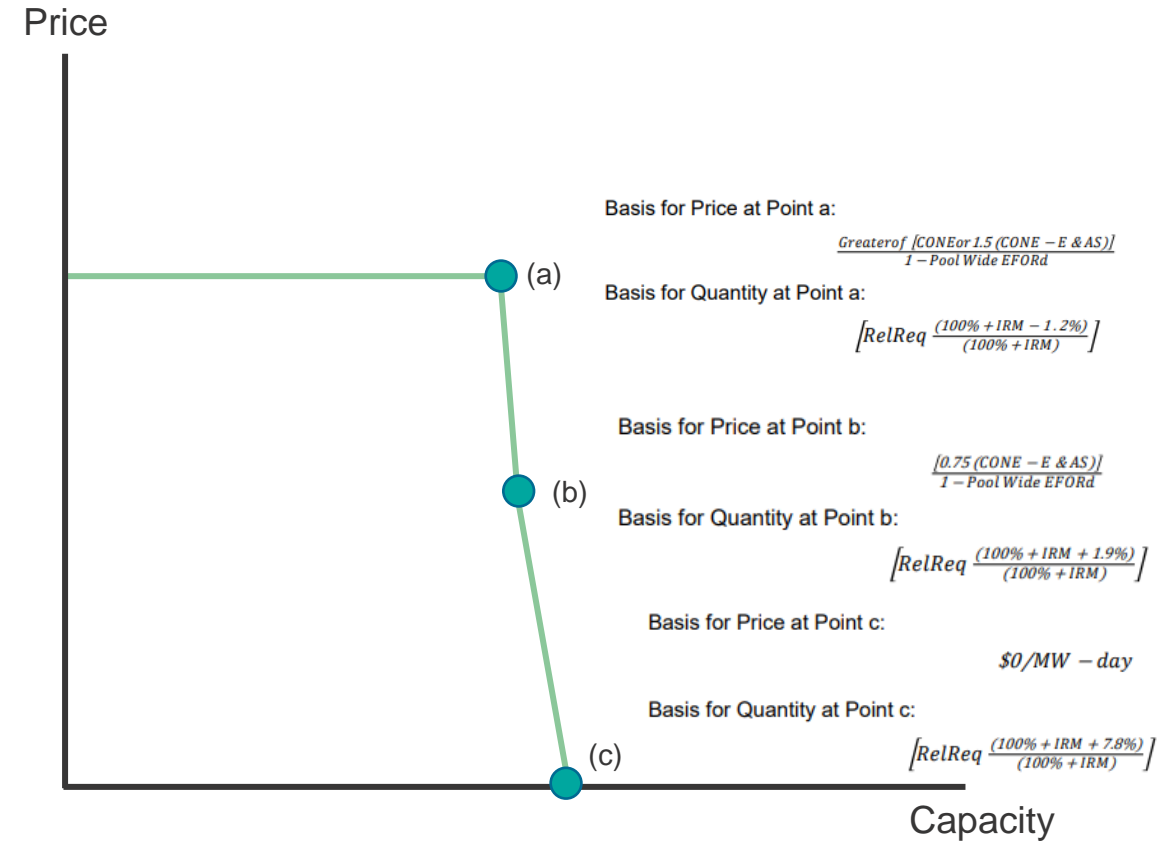
Reference Point: Net CONE

Price at Capacity Target: Reference Point Price

Maximum Price: $\frac{\text{Greater of } (\text{GrossCONE}, 1.5 \times \text{NetCONE})}{1 - \text{PoolWide EFORD}}$

Minimum Price: 0 at point (c)

Note: current IRM=14.7%, current EFORD = 4.81%



RCM Price Curve: ISO-NE

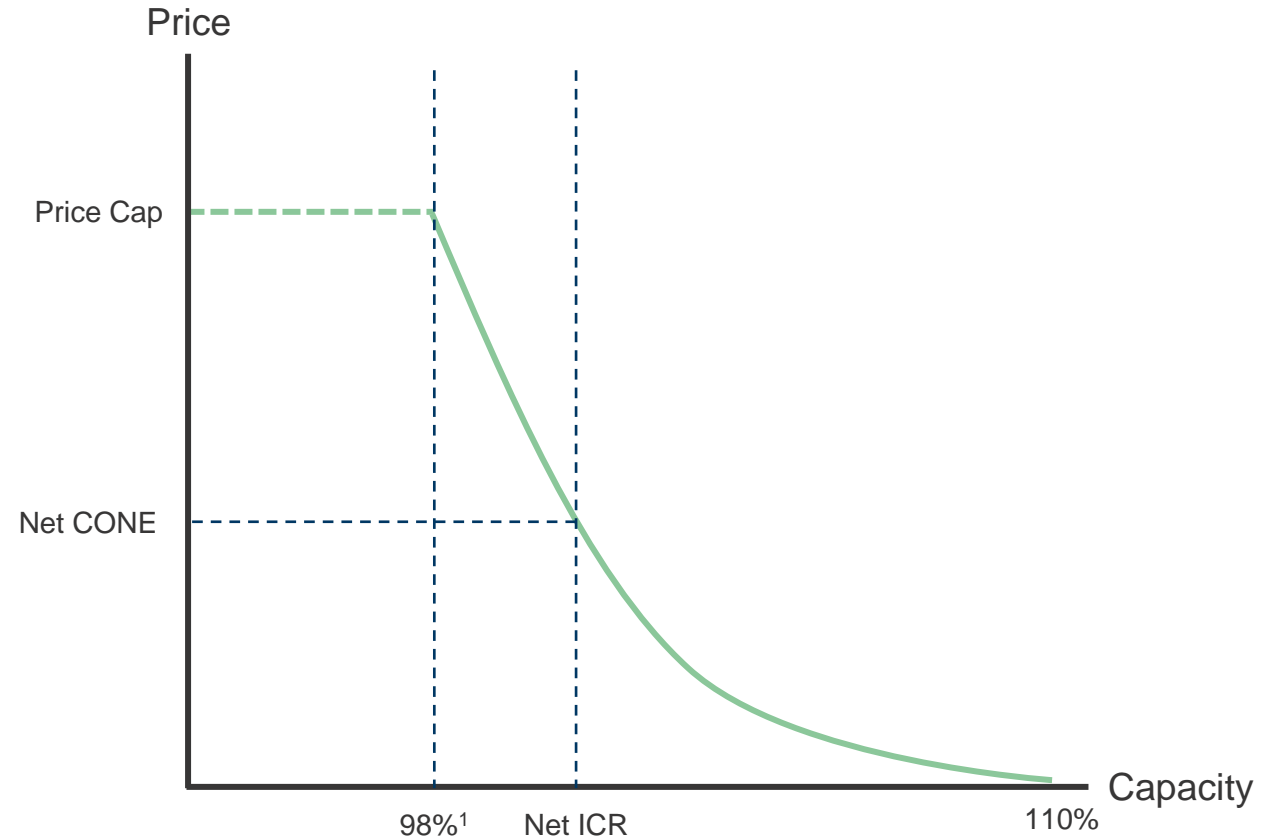
Price Curve: Marginal Reliability Impact as a function of capacity with a scaling factor that would produce a price of Net CONE equal to the Net Installed Capacity Requirement (ICR) level.

Reference Point: Net CONE

Price at Capacity Target: Net CORE

Maximum Price: $\text{Max}[1.6 * \text{Net CONE}, \text{CONE}]$ at 98%¹ of ICR

Minimum Price: 0 at Capacity greater than 110% of ICR



¹ Estimate based on existing capacity demand curves of ISO-NE

RCM Price Curve: Colombia

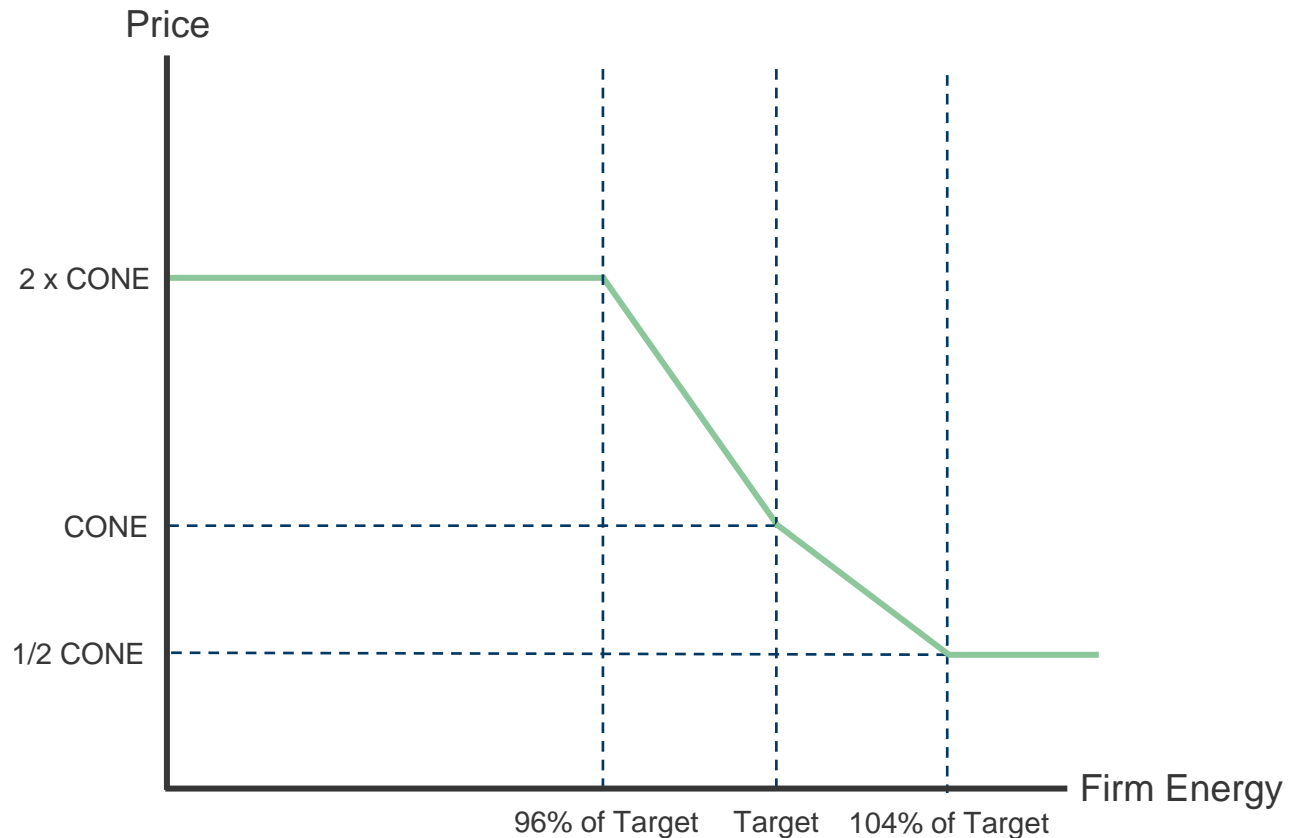
Price Curve: At CONE, load purchases its firm energy target (100% of estimated firm energy demand). At higher prices, load purchases slightly less than the target quantity; at lower prices load purchases slightly more than the target quantity

Reference Point: CONE

Price at Capacity Target: CONE

Maximum Price: $2 * \text{CONE}$ from 0 to 96% of Target Capacity

Minimum Price: $\frac{1}{2} * \text{CONE}$ at 104% of Target Capacity



RCM Price Curve: Japan

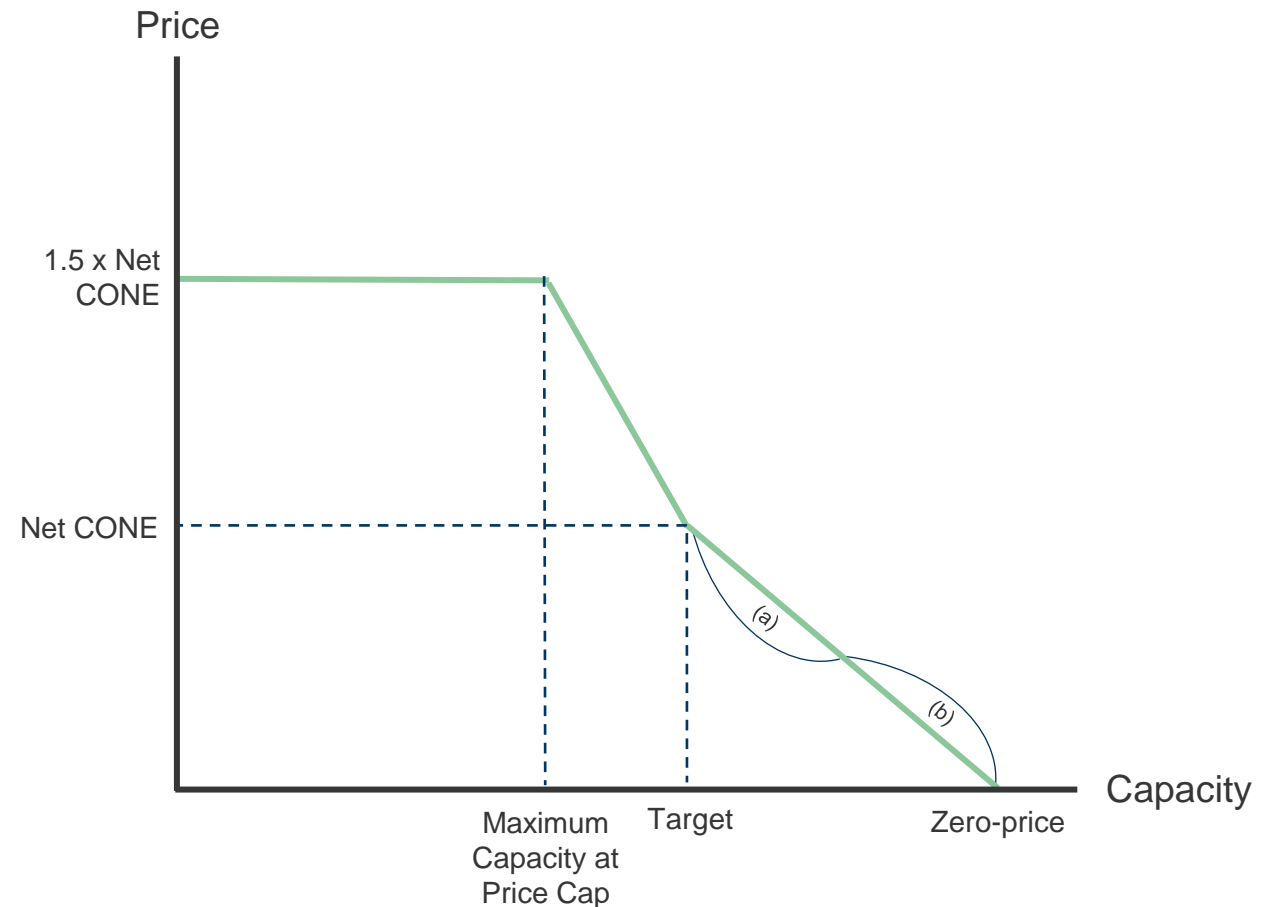
Price Curve: Convex demand curve that contains a horizontal segment from y-axis to maximum capacity at price upper limit, a negatively sloping line connecting Maximum Capacity to Target Capacity. Another straight line should connect Target Capacity to Capacity at zero-price with the area below (a) being equal to the area above (b).

Reference Point: Net CONE

Price at Capacity Target: Net CONE

Maximum Price: $1.5 \times \text{Net CONE}$ from 0 to 96%¹ of Target Capacity

Minimum Price: 0 at 104%¹ of Target Capacity



¹ A rough estimate based on limited understanding of Capacity Market Manual, [link](#).