



Government of Western Australia
Department of Finance
Public Utilities Office

Final Report: Reforms to the Reserve Capacity Mechanism

Electricity Market Review

Department of Finance | Public Utilities Office

7 April 2016

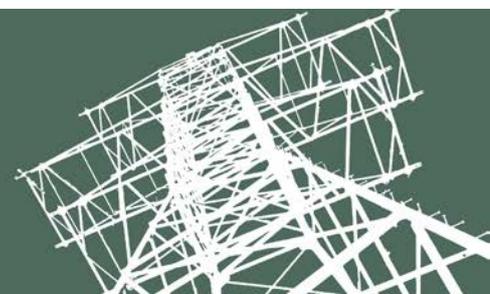


Table of Contents

Executive Summary	iii
1. Introduction.....	1
1.1 Purpose of this report	1
1.2 Submissions on draft amendments to the Wholesale Electricity Market Rules	1
1.3 Implementation timetable	2
2. Reasons for reform	3
3. Final reform package	5
4. Benefits from reforms	7
5. Response to submissions.....	10
5.1 Capacity auction	10
5.2 Harmonisation and availability requirements.....	12
5.3 Transition period	14
5.3.1 Capacity auction trigger	14
5.3.2 Transition price slope	15
5.3.3 Transition pricing of demand side management	16
6. Amendments to the Wholesale Electricity Market Rules	17
Appendix A : Template for comments on draft amendments to the Wholesale Electricity Market Rules.....	20

List of Tables

Table 2.1: Estimated market cost of excess capacity	4
Table 3.1: Revised slopes for the transition administered price curve	5
Table 3.2: Reforms to demand side management availability.....	6
Table 4.1: Reserve Capacity Price and total capacity cost - existing arrangements	8
Table 4.2: Reserve Capacity Price and total costs of capacity under transitional arrangements for the Reserve Capacity Mechanism	8
Table 4.3: Capacity payments for demand side management capacity under current and transitional arrangements	8
Table 4.4: Estimated annual savings from the transitional arrangements	9
Table 5.1: Revised slopes for the transition administered price curve	16
Table 5.2: Estimated capacity price for demand side resources.....	16

List of Figures

Figure 2.1: Projected excess reserve capacity	4
---	---

Executive Summary

A large excess of capacity within the Wholesale Electricity Market is imposing a sizeable cost on electricity consumers through higher electricity prices, and taxpayers through higher subsidy payments to Synergy. In 2016-17 there will be an excess of capacity of 1,061 MW above the Reserve Capacity Requirement, or 23 per cent. The annual cost of this excess capacity is about \$116 million.

This report sets out a set of reforms to address the problem of excess capacity by making the Reserve Capacity Mechanism more responsive to market conditions; that is, more responsive to the level of capacity in the market relative to the Reserve Capacity Requirement. There are four principal elements of the reforms.

1. Adoption of a three-year ahead auction as the basis for procurement and pricing of capacity, with the first auction process to occur at the earlier of a pre-set level of excess capacity (five to six per cent) or a fixed date of 2021.
2. Changes to the capacity price formula for a transition period prior to the auction, that involves maintaining the existing administered price mechanism but with a steeper pricing curve and a different pricing arrangement for demand side management capacity.
3. Implementation of measures to harmonise demand side management availability requirements with requirements for conventional generators.
4. Stronger commercial incentives for all forms of capacity to be made available for dispatch.

Implementing an auction in the near-term would cause the capacity price to sharply fall to around zero. This sudden reduction in price could be financially disruptive for industry participants and create risks for the stability and functioning of the wholesale electricity market. To address these risks, the following transitional arrangements have been developed.

- The auction will occur at the earlier of two trigger events. The first trigger will be an Australian Energy Market Operator forecast that the market will reach a pre-set level of excess capacity (five to six per cent) for a particular capacity year. The second trigger will be a fixed date for holding the first auction in 2021. This means that the auction will at the latest be held in 2021 for the delivery of capacity in the 2024-25 Capacity Year.
- A capacity price curve during the transition period with a progressively steeper price curve. The slope of the pricing curve will be adjusted on an annual basis from negative 3.75 in the 2017-18 Capacity Year, through to negative 7 in the 2023-24 Capacity Year, with an average slope of negative five over the period – if a capacity auction is not held before 2021.

- The capacity price paid to demand side management resources during the transition period is to be based on the “value of customer reliability” in the National Electricity Market. Payments will be made on the basis of expected dispatch (with compensation for overhead costs based on a half-hour period).

The Electricity Market Review has estimated that the total value of the reforms to the market as being in the range of \$274 million to \$910 million over the seven year period from 2017-18 to 2023-24.¹ These values are based on an assumption that 250 MW of demand side management capacity remains in the market, with no generation capacity withdrawals throughout the forecast period. The market benefits reflect lower capacity costs and consequently lower wholesale energy prices.

Other reforms being progressed by the Electricity Market Review will potentially have consequential effects on the final design of the Reserve Capacity Mechanism, in particular the introduction of a “constrained access” model of network and market operation. These matters will be the subject of future consultation.

Proposed amendments to the Wholesale Electricity Market Rules required to give effect to the finalised Reserve Capacity Mechanism reforms (excluding the detailed auction design) are attached for consideration by stakeholders. Rules relating to the capacity auction will be developed at a later stage following a more detailed evaluation of an auction design.

¹ The actual benefit will differ from this estimation depending on the level of bilateral contracting within the market and the extent to which such bilateral contracts incorporate ‘pass through’ arrangements.

1. Introduction

1.1 Purpose of this report

On 3 December 2015, the Public Utilities Office published a Position Paper proposing changes to the design of the Reserve Capacity Mechanism.² Thirty-two submissions were received on the proposed reforms.³

This paper outlines changes to the proposed package of reforms following consideration of the matters raised in submissions. These changes, together with the measures outlined in the Position Paper, comprise the finalised reforms to the Reserve Capacity Mechanism, to be implemented by amendments to the Wholesale Electricity Market Rules.

A draft of the proposed rule amendments relating to the reforms (excluding the detailed auction design) is published separately on the Department of Finance Electricity Market Review webpage⁴. Rules relating to the capacity auction will be developed at a later stage following a more detailed evaluation of an auction design.

Specifically, this report includes:

- an outline of the benefits of the Reserve Capacity Mechanism reforms; and
- details of three modifications to the transitional reforms proposed in the Position Paper, made by the Electricity Market Review following consideration of stakeholder submissions.

1.2 Submissions on draft amendments to the Wholesale Electricity Market Rules

This Paper invites stakeholder comments on the attached draft amendments to the Wholesale Electricity Market Rules. Submissions are invited on whether the draft rule provisions achieve the intent of the related reforms to the Reserve Capacity Mechanism.

When commenting on a particular rule provision, the Electricity Market Review requests stakeholders to provide comment in the form of the table provided in Appendix A.

Submissions are due by 3 May 2016 and must be sent to the following email address: electricitymarketreview@finance.wa.gov.au

Email submissions are to be entitled “Reform of the Reserve Capacity Mechanism - Comment on Draft Market Rules – [Name of the submitting company or individual]”.

Submissions will be available for public review at www.finance.wa.gov.au/publicutilitiesoffice unless you request otherwise.

² Public Utilities Office, *Position Paper on Reforms to the Reserve Capacity Mechanism*, 3 December 2015. http://www.finance.wa.gov.au/cms/Public_Utilities_Office/Electricity_Market_Review/Wholesale_Electricity_Market_Improvements.aspx

³ Submissions (confidential submissions are listed) are available at: http://www.finance.wa.gov.au/cms/Public_Utilities_Office/Electricity_Market_Review/Wholesale_Electricity_Market_Improvements.aspx

⁴ https://www.finance.wa.gov.au/cms/Public_Utilities_Office/Electricity_Market_Review/Electricity_Market_Review_Documents.aspx

Please indicate clearly on the front of your submission if you wish all or part of it to be treated as confidential. Contact information, other than your name and organisation (where applicable) will not be published.

Requests may be made under the *Freedom of Information Act 1992 (WA)* for any submissions marked confidential to be made available. Requests made in this manner will be determined in accordance with the provisions under that Act.

1.3 Implementation timetable⁵

It is intended that the Wholesale Electricity Market Rule amendments pertaining to the initial set of reforms to the Reserve Capacity Mechanism will be progressed as follows:

7 April - 3 May	Consultation Period including individual stakeholder meetings where requested
Early to Mid-May	Consideration of submissions and amendments to the draft Rule provisions following stakeholder feedback
Mid May	Submission of proposed amendments to the Wholesale Electricity Market Rules to be made by the Minister.
1 June 2016	New Wholesale Electricity Market Rule provisions become effective.

⁵ The Australian Energy Market Operator has deferred the commencement of the 2015 Capacity Cycle to 1 June 2016.

2. Reasons for reform

The Reserve Capacity Mechanism is an element of the Wholesale Electricity Market in Western Australia that ensures that the electricity system has access to sufficient generation capacity to meet the requirements to deliver reliable electricity supplies.

The responsibility for determining the capacity requirement lies with the Market Operator. This requirement (the Reserve Capacity Requirement) must be sufficient to meet demand (based on the occurrence of a one-in-ten year peak demand event) plus a margin for system support and reserve.

The Market Operator also has responsibility for procuring the capacity by contracting with capacity providers (i.e. thermal generation plant, renewable energy facilities and demand side resources) who seek and qualify for Capacity Credits. The Market Operator recovers the cost of procuring capacity from market customers, largely electricity retailers.

The price paid by the Market Operator for this capacity – the Reserve Capacity Price – is derived from a pricing formula established in the Wholesale Electricity Market Rules. Under the Rules, capacity is procured by the Market Operator at an administered price, rather than a price determined by the market.

There has been an emerging problem of excess capacity in the electricity system, largely as a result of actual demand growth has been considerably below forecasts. In 2016-17 there will be 23 per cent (1,061 MW) more capacity in the electricity system than is needed to meet the Reserve Capacity Requirement for that year. Taking into account current levels of bilateral contracting, the cost of this excess capacity in 2016-17 will be around \$116 million. This cost is met by market retailers and ultimately by electricity consumers, and also taxpayers, in funding subsidy payments to Synergy for electricity prices paid by households and some small business customers.

A shortcoming of the Reserve Capacity Mechanism is that it provides insufficient signals for the capacity market to adjust to a more balanced state. Under the current Reserve Capacity Mechanism the capacity excess is likely to continue for some years (Figure 2.1).

The costs of a continued capacity excess is substantial. Table 2.1 shows the projected cost of excess capacity to the market under the existing administered pricing arrangement.

Figure 2.1: Projected excess reserve capacity

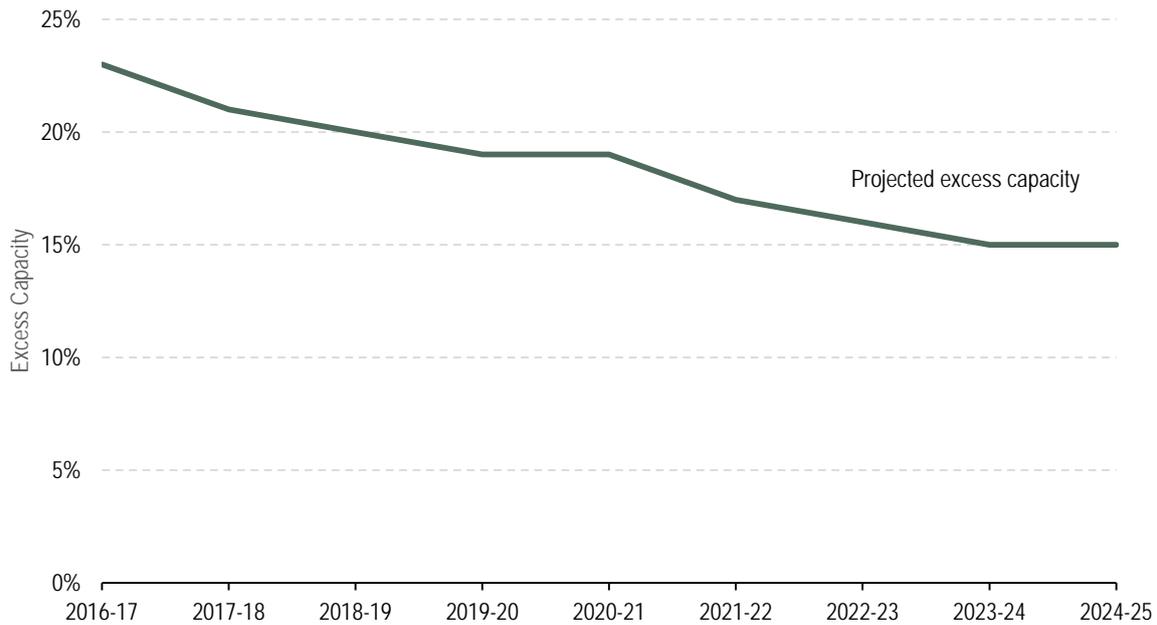


Table 2.1: Estimated market cost of excess capacity

2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
\$134 million	\$132 million	\$130 million	\$127 million	\$118 million	\$113 million	\$107 million

(1) Assuming a Maximum Reserve Capacity Price of \$164,800/MW for 2017-18 and a Maximum Reserve Capacity Price of \$159,800/MW for the subsequent years.

The purpose of capacity in an electricity market is to reduce the incidence of shortfalls of energy supply and consequent blackouts. It follows that the value of an additional unit of capacity lies in its ability to reduce the probability of avoiding a loss of load. Given the load growth forecast for the South West Interconnected System and the current level of capacity in the market, the value of incremental capacity is likely to remain close to zero until the 2023-24 Capacity Year. This is because the probability of a shortfall in energy supply prior to this time is extremely low. During this period electricity consumers and taxpayers would be paying for excess capacity for no material benefit.

In contrast to the value of incremental capacity being near zero, the current capacity price is \$120,199 per MW. Capacity providers are being paid to maintain capacity in the system or to invest in new capacity that has no value for consumers. As it stands, the Reserve Capacity Mechanism has no means of self-correction.

In addition to the inadequate pricing framework, the Reserve Capacity Mechanism also provides insufficient incentives for capacity providers to make capacity available for dispatch. Capacity that is unavailable for reasons such as sustained outage is being over-compensated.

Additionally, demand side management resources currently enter the market under more favourable terms of use than electricity generation resources. All capacity resources should face availability and measurement requirements that are broadly equivalent.

3. Final reform package

The reforms to the Reserve Capacity Mechanism comprise the following elements.

1. The Reserve Capacity Mechanism will incorporate an auction as the basis for procurement of capacity. High level auction design features are as follows.
 - The auction will be held on a three year forward basis.
 - There will be a one year delivery period.
 - The auction will require mandatory participation by all capacity providers, including capacity covered by bilateral contracts.
 - The auction will be a single-round sealed bid auction, with the marginal unit to set the clearing price.
 - Auctions will be administered by the Australian Energy Market Operator.
 - The auction design will incorporate controls to mitigate market power.

The detailed auction design, including an auction demand curve, will be developed by the Electricity Market Review during 2016 in close consultation with industry and other stakeholders.
2. The timing of the first auction will occur at the earlier of two triggers.
 - Trigger 1: 2021 Reserve Capacity Cycle.
 - Trigger 2: an Australian Energy Market Operator forecast of a pre-specified level of excess capacity - at this stage considered to be five to six per cent but subject to review as part of the calibration of the auction demand curve during development of the detailed auction design.
3. During the transition period before the auction mechanism has effect, the existing administered formula for deriving the reserve capacity price will be amended. This revised formula will set the reserve capacity price for all forms of capacity (other than demand side resources) in the transition period prior to the auction trigger. The existing capacity price curve slope will be amended as follows:

Table 3.1: Revised slopes for the transition administered price curve

2017-18	2018-19	2019-20	2020-21	2021-22	2012-23	2023-24
-3.75	-3.95	-4.2	-4.7	-5.3	-6.1	-7.0

4. A separate pricing mechanism will be applied to demand side management capacity during the transition period.
 - The capacity price for demand side management will be based on the expected value provided by this capacity under a forecast (by the Australian Energy Market Operator) of expected dispatch, with a further payment equal to one half-hour of additional dispatch time to cover costs with running a demand side management program.

- The expected value used will be the value of customer reliability in the National Electricity Market – currently \$33,460 per MWh.
 - The expected dispatch of demand side capacity will be calculated for a one-in-ten year peak demand event.
5. The existing capacity cost refund regime will be amended to incorporate stronger links to market conditions. This will be achieved by adopting the dynamic refunds proposal developed by the Independent Market Operator (Rule Change RC_2013_20).
 6. Capacity refund payments will be distributed to market generators.
 7. The following availability requirements will apply to demand side management capacity to harmonise the treatment of that capacity with other forms of generation capacity:

Table 3.2: Reforms to demand side management availability

Requirement	Current rules	Proposed reform
Days of availability	All business days	All business days
Dispatch events per year	Once on at least 6 days ⁶	200 hours
Hours per day	4 hours	12 hours
Total hours available per year	24 hours	200 hours
Earliest start	12:00 pm	8:00 am
Latest Finish	8:00 pm	8:00 pm
Minimum notice period of dispatch	4 hours	Near real time with 30 minute delivery period
Measure of availability	N/A	Real time telemetry
Capacity baseline	Median 32 intervals	5th percentile of top 200 hours and capped at the Individual Reserve Capacity Requirement level and calculated as a portfolio.

The Electricity Market Review expects that the imposition of the new capacity baseline requirements for demand side providers will reduce the amount of this capacity in the market by about 220 MW. However, it is anticipated that a total of approximately 310 MW⁷ of demand side management capacity will exit the market due to the commercial decisions of providers as a result of the reforms outlined in this report.

⁶ Demand side management resources are not required to comply with a dispatch instruction made on a third consecutive day (i.e. following dispatch instructions made on two previous days in succession).

⁷ Relative to the quantity of demand side management capacity in the 2016-17 Capacity Year.

4. Benefits from reforms

Given the existing high level of excess capacity and the inability of the capacity market to self-correct over the foreseeable future to any reasonable level of balance, the Reserve Capacity Mechanism reforms will result in lower capacity costs to the market than would have otherwise been the case.

In the longer-term the introduction of a capacity auction to determine the capacity price will mean that consumers are paying a price that is reflective of the value of incremental capacity in reliability of the electricity system.

During the transition period, reform of the existing administered pricing formula will reduce the costs of capacity.

- Stronger pricing signals will be provided to capacity suppliers, indicating that capacity has a lower value to consumers during times of excess. Given the current level of excess this will mean a sharper reduction in the price of capacity compared to the existing pricing formula.
- During the transition period demand side management resources will be paid a different price to that for other forms of capacity. This price will be more reflective of its value to system reliability during the transition period. Commencing from the deferred 2015 Capacity Cycle demand side resources will receive payments based on an estimate of expected dispatch plus a margin for reasonable costs incurred.

There is currently 550 MW⁸ of demand side resources in the market. Given the current substantial excess of capacity, the likelihood of demand side management resources being dispatched is very low – as evidenced in the recent summer peak demand events when there was no dispatch of demand side resources. The Electricity Market Review considers that harmonised demand side resources should be eligible for the same price as other capacity – and this will be the case under an auction, as noted below. However, there is a need to price demand side resources differently in the transition to hasten the shift of the market to a closer supply-demand balance.

These pricing reforms together with reforms to harmonise the treatment of demand side management capacity with other capacity types will result in lower costs to the market.

Table 4.1 below provides an estimate of annual capacity prices and capacity costs that would occur if the current Reserve Capacity Mechanism arrangements remain unchanged.

⁸ In the 2015-16 Capacity Year. In the 2016-17 Capacity Year the amount of demand side management capacity is accredited to be 560 MW.

Table 4.1: Reserve Capacity Price and total capacity cost - existing arrangements

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity Price/MW	\$115,960	\$118,940	\$119,464	\$119,991	\$121,603	\$122,480	\$123,482
Total Capacity Cost	\$651 million	\$668 million	\$671 million	\$674 million	\$683 million	\$688 million	\$694 million

- (1) Assuming a Maximum Reserve Capacity Price of \$164,800/MW for 2017-18 and \$159,800/MW for the subsequent capacity years.
- (2) Assuming 550 MW of demand side management capacity throughout the forecast period.

Table 4.2 provides an estimate of annual capacity prices and capacity costs that would occur following implementation of the finalised transition (pre-auction) reforms to the Reserve Capacity Mechanism.⁹

Table 4.2: Reserve Capacity Price and total costs of capacity under transitional arrangements for the Reserve Capacity Mechanism

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Capacity Price/MW	\$108,006	\$104,948	\$104,213	\$102,152	\$101,091	\$99,033	\$97,656
Total Capacity Cost	\$545 million	\$558 million	\$554 million	\$543 million	\$538 million	\$523 million	\$519 million

- (1) Assuming a Maximum Reserve Capacity Price of \$164,800/MW for 2017-18 and \$159,800/MW for the subsequent capacity years
- (2) Assuming 250 MW of demand side management capacity throughout the forecast period.
- (3) As no precise auction timelines have been determined and the auction design is still to be finalised, estimate figures are based on use of the reformed administered price formula.

Demand side resources will be paid a different price to other forms of capacity for the duration of the transition period. Table 4.3 estimates of the capacity payments to demand side providers compared to the cost of demand side capacity under the existing pricing arrangements.

Table 4.3: Capacity payments for demand side management capacity under current and transitional arrangements

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Current Reserve Capacity Mechanism							
Capacity Price/MW	\$115,960	\$118,940	\$119,464	\$119,991	\$121,603	\$122,480	\$123,482
Total Capacity Payment	\$64 million	\$65 million	\$66 million	\$66 million	\$67 million	\$67 million	\$68 million

⁹ The assumption of 250 MW of demand side resources remaining in the market during the transition period is based on analysis of the load profiles of this form of capacity and considers the changes in participant behaviour resulting from the transitional arrangements.

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Reformed Reserve Capacity Mechanism (transition period)							
DSM Capacity Price/MW	\$17,544	\$17,952	\$18,566	\$19,487	\$20,871	\$22,950	\$26,073
Total Capacity Payment	\$4.4 million	\$4.5 million	\$4.6 million	\$4.9 million	\$5.2 million	\$5.7 million	\$6.5 million

(1) Assuming 250 MW of demand side management capacity throughout the forecast period.

The projected reduction in capacity payments is \$274 million to \$910 million over the seven year period from 2017-18 to 2023-24 (Table 4.4). This assessment is based on an assumption of 250 MW of demand side management capacity remaining in the market and no exit of generation capacity throughout the forecast period.

Table 4.4: Estimated annual savings from the transitional arrangements

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Upper bound	\$102 million	\$106 million	\$112 million	\$126 million	\$140 million	\$156 million	\$168 million	\$910 million
Lower bound	\$31 million	\$32 million	\$34 million	\$38 million	\$42 million	\$47 million	\$50 million	\$274 million

(1) Upper bound estimates: assumes 100 per cent of capacity receives the administered capacity price.

(2) Lower bound estimates: assumes 30 per cent of capacity receives the administered capacity price.

5. Response to submissions

The final set of reforms to the Reserve Capacity Mechanism has been altered from the set of reforms set out in the earlier Position Paper, having regard to submissions.

5.1 Capacity auction

Why a capacity auction?

A minority of submissions expressed strong opposition to the proposed move to a capacity auction arrangement and related reforms, arguing that there were other causes of the high level of excess capacity in the market. The submissions contended that these other drivers should be the focus of the Electricity Market Review and that the existing capacity pricing formula should remain largely unchanged.

The Position Paper recognised that factors other than the Reserve Capacity Mechanism have contributed to the over-supply of capacity. However, the Electricity Market Review remains of the view that the shortcomings of the mechanism must be addressed to ensure, firstly, that capacity is priced and procured based on its economic value and, secondly, that there are suitable incentives for capacity providers to make capacity available to the electricity system.

The Electricity Market Review considers that the existing administered pricing of capacity is flawed and that without reform the Reserve Capacity Mechanism is likely to continue to sustain substantial excess capacity to the detriment of retailers and consumers who bear the associated costs. The Electricity Market Review was not persuaded by the arguments made that the proposed suite of reforms to the Reserve Capacity Mechanism is not necessary.

Auction design

Submissions that offered support for a capacity auction required more clarity around the auction process, in particular the parameters of an auction demand curve. The Electricity Market Review acknowledges these concerns. The detailed arrangements pertaining to the auction process and the calibration of the auction demand curve will be developed in close consultation with industry stakeholders prior to the requisite market rule changes being prepared. On this basis, only those changes to the Wholesale Electricity Market Rules relating to the pre-auction transition period will be implemented at this time. The focus of the Electricity Market Review at this point is to lock in an auction as the eventual mechanism for the procurement of capacity, rather than to develop the detailed auction model; which is being deferred to a later more detailed consultation process.

The Electricity Market Review also acknowledges the concern expressed in some submissions around risks that an auction arrangement will not promote project financing of capacity assets; in particular new entrant facilities. This concern appears to emanate from the uncertainty regarding the capacity price that would be determined by the auction process. This risk can be mitigated through the use of bilateral contracts.

A capacity auction easily accommodates bilateral contracts since contracted supply and demand are inherently hedged through the contracts. Although the demand and supply settle in the auction at the market (auction) price, the bilateral contract effectively operates as a contract for differences so that the agreed price still applies to the contracted quantity.

The Electricity Market Review intends that the capacity auction arrangement will be supported by a well-designed process with detailed procedures, and a pre-specified auction curve suitably calibrated to the circumstances of the Wholesale Electricity Market in Western Australia, meaning that it will be supportive of investment in capacity resources.

Capacity markets in other international jurisdictions where auctions are employed have demonstrated the ability to attract new entrant funding.

Regional capacity pricing

Western Power and System Management proposed the introduction of regional capacity pricing, with capacity credits being allocated to defined regions of the network on the basis of capacity constraints and the economically efficient level of generation in each region.

The Electricity Market Review does not agree that regional capacity pricing is required during the transition period. Such an approach would circumvent the current net benefits test required for network control service contracts (and the equivalent under the proposed national regulatory arrangements to be applied to the electricity network).

Additionally, while the Wholesale Electricity Market continues to have a single reserve capacity target, it is not feasible to introduce regional capacity pricing. At this stage of the capacity market reform process regional reserve capacity targets are not considered to be warranted.

Participation of demand side management resources in the auction

Submissions identified polarised views regarding the participation of demand side resources in the capacity auction. The Position Paper proposed that a different capacity price be paid to these capacity resources during the transition period, with the “harmonised” resources being able to fully participate in the auction on a similar basis to other capacity types, given that the auction arrangement would provide suitable incentives for efficient participation. Several submissions also argued that demand side management services are essentially an energy market product that should be contracted by retailers and, therefore, removed from the capacity market altogether.

The Electricity Market Review is firmly committed to “harmonised” demand side resources being able to compete on an even footing with generation capacity in an auction arrangement. Demand side resources make a valuable contribution in reserve capacity auctions around the world.

- This form of capacity is able to delay the establishment of new peaking generation facilities, thereby increasing the economic efficiency of an auction.
- Demand side resources can be delivered on an incremental basis, thereby acting as a dampener to price volatility in an auction.
- Demand side resources are very flexible and are able to enter the auction on a year-to-year basis, thus dramatically improving competitive forces within the auction.

Following the transition period, harmonised demand side resources will be eligible to fully participate in the capacity auction.

Market Power

The Position Paper proposed that a capacity auction would need to be supported by measures to mitigate potential market power in respect of both bids and offers into an auction. The level of market concentration in the Wholesale Electricity Market suggests that such measures would need to be at least as rigorous as those adopted in other capacity markets. The Position Paper however also noted that market power controls should not unduly constrain efficient auction bids and pricing outcomes from the auction.

Stakeholders had various perspectives on market power but the majority of comments recognised the need for an auction to be supported by strong market power controls, particularly with the continuation of the existing market structure and market dominance of Synergy. Stakeholders variously:

- sought more detail on specific market power mitigation measures;
- suggested that such measures should be aligned between the energy and capacity markets; and
- considered such measures as being “second best” to structural change and expressed doubt as to their effectiveness under the current market structure.

Analysis of capacity auction arrangements in other markets identifies that they all have strong market power controls over auction bids and offers, mainly in the form of bid and offer caps with independent monitoring. This is the case notwithstanding that these markets are less concentrated than the Wholesale Electricity Market in Western Australia.

Unlike the balancing and energy markets, where a breach of the short run marginal cost bidding requirement can be investigated ex post (perhaps weeks or months after the event) a capacity auction requires mitigation in “real time” and prior to being cleared. Market power mitigation therefore remains as an important element of the capacity auction design.

Development of a suitable market power mitigation regime will be addressed in detail as part of the auction design and implementation process.

5.2 Harmonisation and availability requirements

The majority of stakeholders were strongly supportive of the reforms proposed to strengthen the availability requirements of capacity resources, including introduction of a dynamic refund regime. This is to provide stronger incentives for capacity to be made available, particularly at peak times.

Synergy objected to adoption of the former Independent Market Operator’s proposed availability requirements, on the basis that the existing regime together with dynamic refunds would provide strong incentives for availability. The Electricity Market Review does not consider Synergy’s submission on this matter to be persuasive.

The Electricity Market Review has re-evaluated previous consultation that was performed by the Independent Market Operator, and remains confident that the proposed reforms will correct the flaws with the current availability requirements without placing an unnecessary burden on market participants. Additionally, the Electricity Market Review considers the proposed reforms relating to the recycling of capacity refunds to generators improve the alignment of risk and reward, while also promoting the increased availability of generators.

The Electricity Market Review has also reviewed arguments raised in the EnerNOC and Simcoa Operations P/L submissions opposing the proposed new harmonisation arrangements for demand side resources; in particular, the proposed revised method for the allocation of capacity credits.

The proposed harmonisation requirements are designed to ensure that demand side resources that receive capacity certification are available at all times when there may be a reasonable likelihood of dispatch for a peak demand event. Based on analysis by the Electricity Market Review, these periods can occur between 8.00 am and 8.00 pm during the summer months. A facility that cannot provide capacity at these times is not providing a similar “capacity product” to other capacity resources.

The new capacity baseline for demand side resources will be set relevant to a provider’s highest 200 hours of load. Where a demand side program consists of multiple loads, this baseline will be determined on a portfolio basis. This arrangement will still allow for separate demand side facilities to be aggregated, provided that the overall program meets the baseline requirement.

The Electricity Market Review accepts that there may be value that could be provided from lower availability resources, through adoption of a more flexible “profile” baseline approach; however it considers the complexity and time required to implement separate procurement measures for these resources is not warranted at this point.

It is important that demand side programs are capable of being dispatched with equivalent notice requirements to generation facilities, to allow System Management the flexibility to use these resources to react to market conditions during peak demand events. Under the proposed new arrangements demand side programs will need to nominate minimum notice periods as part of their standing data.

In the case of out of merit dispatch, there will be a minimum period of two hours’ notice for demand side programs to ready themselves for dispatch. Where dispatched for a particular trading interval, the demand side program will have to reduce its load down to the dispatched level relative to its relevant demand, by the end of the 30 minute trading interval.

The Electricity Market Review has noted the claim in the EnerNOC submission that these proposed availability and dispatch requirements for demand side resources will lead to the “exit of virtually all demand side management capacity from the WEM”. The Electricity Market Review disagrees with this assessment and has the reasonable expectation that a substantial volume of demand side capacity will remain in the market. However, some exit of these resources is expected, and is warranted, given the existing excess of both generation and demand side capacity.

The Electricity Market Review strongly refutes the arguments submitted by EnerNOC that the proposed arrangements for demand side resources during the transition period will result in “reliability emergencies”. There is no risk to power system reliability as a result of these reform measures. Even in an extreme situation where over 900 MW of capacity resources exit the market over the period to 2024-25, the Reserve Capacity Mechanism would continue to acquire sufficient resources to satisfy the capacity requirement for the electricity system.

5.3 Transition period

Comments on the transition period reforms focused on the proposed differential capacity price for demand side resources, modification of the capacity price formula and the uncertain duration of the transition period.

Following consideration of submissions made on these matters, the Electricity Market Review has made three changes to the arrangements to apply for the transition period preceding the auction. These proposed changes are discussed below.

5.3.1 Capacity auction trigger

The Position Paper proposed that the first capacity auction will be triggered by a forecast of a pre-determined level of excess capacity in the year that the capacity price determined by the auction will have effect. The Position Paper suggested this level of excess capacity would be around five or six per cent (though also indicating that the specified level of excess capacity for the trigger may change following calibration of the auction price curve). It is expected that an auction conducted with such a level of excess capacity would be likely to return a capacity price close to the expected pricing under the transitional arrangements and, hence, minimise price shock on the introduction of an auction. A trigger at this level of excess would also provide a buffer against any uplift in current forecast demand growth.

The Position Paper noted that using this approach and given current demand and capacity projections, the capacity auction would not be triggered until beyond 2025, with earlier implementation of an auction requiring the retirement of capacity. The Position Paper provided indicative timeline scenarios for triggering of the first auction based on various amounts of capacity withdrawals. For example, retirement of about 500 MW of capacity would bring the first auction forward to 2019, to apply for the 2022-23 Capacity Year.

Given the uncertainty around when the proposed excess capacity trigger would actually give rise to the conduct of the first auction, the Position Paper sought comment on an alternative approach of establishing a deadline for the introduction of the capacity auction.

Some of the submissions received supported a trigger for the auction based solely on a predetermined level of excess capacity (as proposed in the Position Paper). This view was primarily based on concern about the risk of a price shock that would result from an auction being conducted with a high level of excess capacity in the market, and the likelihood that the market would not return to reasonable balance over the medium term.

Other submissions expressed concern about the uncertain timing of an auction under the proposed approach and argued for an auction trigger based on a set date. Some submissions expressed concern that a trigger based on solely on the level of excess capacity could act as a disincentive for incumbent capacity providers to retire capacity, as a means of delaying the move towards a value reflective price, and that an extended transition period would be inconsistent with the proposed reform objectives.

The Electricity Market Review considers that the proposal for a set date for an auction to occur has merit. Implementation of an auction as a mechanism for establishing a market discovered price for capacity, to address the deficiencies associated with the current administrative arrangements, is the major element of the reform package. While the transitional pricing arrangement will be more reflective of economic value, this is still an administered process and should be in place no longer than is necessary.

Given the indication in submissions that a sizeable amount of generation capacity is unlikely to retire under the reformed arrangements; establishing a set end date for the transition period would contribute towards achievement of the reform objectives.

Unduly delaying an auction could act to disadvantage electricity consumers by continuing to support a capacity price that exceeds its economic value. Additionally, a fixed date for implementation of an auction would require market participants to increasingly take account of a value reflective price of capacity at that trigger date, whilst still providing incumbents with a shield from a major price shock through several years of above value reflective capacity prices. A period of five years is considered to be sufficient time for the market to adjust to a reasonable level of balance and prepare for a Reserve Capacity Mechanism centred on an auction arrangement.

It is still intended however that an auction should occur as soon as a reasonable level of demand-supply balance is reached in the capacity market. Hence, the Electricity Market Review is proposing that there be two triggers for the first capacity auction. The auction would occur at the earlier of the two trigger events.

The first trigger will be an Australian Energy Market Operator forecast of a certain level of excess capacity (nominally five to six per cent) for a particular capacity year – three years ahead. This trigger will be the same as that proposed in the Position Paper. The second trigger will be fixed to holding the first auction in five years time – i.e. 2021. This would mean that if, by 2021, the prescribed forecast level of excess capacity had not been reached, so as to trigger an auction, an auction would be conducted in 2021 to procure capacity for the 2024-25 Capacity Year.

5.3.2 Transition price slope

Whilst there was a mixed response on the transition price curve, the majority of submissions supported the proposed introduction of a transition price curve with a negative 5 slope for the duration of the transition period.

The Electricity Market Review has reconsidered whether the transition price curve should be static for the duration of the transition or, alternatively, whether a progressively steepening price curve for capacity during the transition period is a superior approach.

A progressively steeper slope would be more in keeping with a transition to an auction price curve reflective of the economic value of capacity. Although the precise configuration of the auction price curve has yet to be determined, there is no doubt that it will be considerably steeper than a negative five slope. A capacity pricing formula that reflects a progressively steeper slope in each year of the transition period will also require any new entrants to the capacity market to confront the risks of a more value reflective capacity price, while limiting the exposure of current participants, on average, to the previously proposed slope of negative five.

Instead of the static price curve of negative 5 proposed in the Position Paper, the Electricity Market Review now proposes a transition administered capacity price that reflects a progressively steeper price curve with an average slope over the transition period of negative 5. On the basis that the first auction will be held in five years, as discussed above, and is triggered by the end date of 2021 for delivery of capacity in 2024-25, there is a need to establish a transition price curve for seven years (from the 2017-18 to 2023-24 Capacity Years). The transition price slopes to apply for this period are outlined in Table 5.1 below.

Table 5.1: Revised slopes for the transition administered price curve

2017-18	2018-19	2019-20	2020-21	2021-22	2012-23	2023-24
-3.75	-3.95	-4.2	-4.7	-5.3	-6.1	-7.0

5.3.3 Transition pricing of demand side management

The Position Paper proposed that during the transition period demand side resources will be removed from the Reserve Capacity Mechanism and paid a capacity payment based on expected value. Under this proposal capacity payments to demand side facilities were to be based on the number of hours of expected dispatch, plus a margin of one additional hour of dispatch time as compensation for cost overheads in running a demand side program. The proposed capacity price to demand side facilities during the transition was to be based on the market price cap in the National Electricity Market, currently \$13,800 per MWh.

The Electricity Market Review considers that a transitional price for demand side resources based on the National Energy Market energy market cap, as proposed in the Position Paper, would likely undervalue this capacity in the latter years of the transition period. As the likelihood of dispatch of these capacity resources increases, so too does their value to the market. Additionally if the demand side capacity price is too low during the transition there is the risk of a price shock at the first auction with a large quantity of demand side resources re-entering the capacity market.

It is now proposed that the capacity price to demand side resources during the transition period will be based on the Value of Customer Reliability in the National Electricity Market, currently \$33,460 per MWh. It is also proposed that compensation for overhead costs will be for a half-hour period. This price is more reflective of the value of demand side capacity when it is dispatched. Under this revised approach, the price paid to demand side capacity is more responsive as the value of these resources to the market increases. The increasing value will provide a signal to which some demand side capacity will respond to and re-enter the market. This would lead to a more orderly entry of demand side capacity than what may have occurred under the previous proposal.

Table 5.2 below shows the capacity price that would be paid to demand side resources with 250 MW of this form of capacity in the market, no generation capacity withdrawals and given current load forecasts.

Table 5.2: Estimated capacity price for demand side resources

Capacity Year	2017-18	2020-21	2023-24
“Expected dispatch” for all DSM capacity	6.1 MWh	22.2 MWh	69.8 MWh
Expected Capacity Price for DSM capacity/MW	\$17,544	\$19,701	\$26,073

6. Amendments to the Wholesale Electricity Market Rules

The draft amendments to the Wholesale Electricity Market Rules are marked up in a format to allow stakeholders to clearly, and separately, identify the changes previously proposed by the former Independent Market Operator, and the further changes proposed by the Electricity Market Review. The rule changes resulting from the Electricity Market Review proposed reforms include text box descriptions of the intent and desired effect of the relevant rule provisions. These descriptions are for explanatory purposes only and will not form part of the finalised Market Rules.

The Electricity Market Review has adopted a least change philosophy when drafting the rule amendments to give effect to the Reserve Capacity Mechanism reform package relating to the transitional period and enduring complementary reforms. There are four particular rule changes that were not directly canvassed in the Position Paper that are ancillary to the Reserve Capacity Mechanism reforms. These changes are outlined below.

Pricing of demand side management capacity

The proposed arrangements for determining capacity pricing for demand side resources will require the Australian Energy Market Operator to ascertain the expected dispatch for those certified demand side resources. This calculation is heavily dependent upon two inputs; the generation fleet that will be providing capacity and load forecasts.

Because the generation fleet that will be providing capacity will not be known until after capacity credits are assigned, it is not possible to calculate the capacity price for demand side resources until after capacity credit assignment occurs. This of itself is not a problem because all capacity in the Wholesale Electricity Market is informed of the price it will receive after the assignment of capacity credits. Under the current Wholesale Electricity Market Rules this delay is only a matter of days, (i.e. almost two years before the obligations commence).

However, the rule provisions as currently proposed will require the Australian Energy Market Operator to calculate the final demand side management capacity price for the transitional period three months before the date the capacity obligations will commence. The reason for this is that the proposed method to calculate the capacity price is similar to the availability class calculation that the Australian Energy Market Operator is obligated to conduct as part of the Statement of Opportunities report. To minimise costs by removing the need for duplication, the rule provisions have been drafted so that the Australian Energy Market Operator delays the calculation of the capacity price for demand side resources until the time that the Statement of Opportunities is published.

In drafting the rule amendments the Electricity Market Review has also given consideration to effects of the deferral of the 2015 and 2016 reserve capacity cycles. Additionally, the likely improvements in forecasts available closer to real time with a corresponding improvement in the accuracy of the capacity price to be paid to demand side resources, and the fact that a certified capacity provider is obligated to provide capacity irrespective of the price, have guided the drafting of the relevant rule amendments.

Given these considerations the rule provisions have been drafted such that the demand side management capacity price calculation during the transition period is published in the Statement of Opportunities report released in the year that the associated demand side management capacity obligations commence. It is intended that forecasts of this capacity price will be calculated and published in the Statement of Opportunities report for each previous year.

Demand side management dispatch obligations

The current rule provisions and the processes historically undertaken by the Independent Market Operator to implement those rules are unclear as to the means of accounting for the ramp rates of demand side resources. For example, the current process for calculating the availability class quantities assume that these resources have an infinitely fast ramp rate, while the dispatch instruction rules require System Management to issue dispatch instructions to demand side resources that contain a ramp rate that is not inconsistent with the capacity provider's standing data.

In drafting the rule amendments consideration has been given to the fact that the proposed reforms will greatly increase the payments made to demand side capacity in the event that these resources are dispatched; will theoretically result in demand side resources being called more regularly in the longer term; and require demand side capacity to be dispatched in near real time (although with a two hour "on notice" requirement).

It is essential that ramp rates are dealt with suitably under the Wholesale Electricity Market Rules, so that certified capacity can actually meet the peak demand event it is procured for, and to ensure that a demand side resource is not liable to civil penalties for not meeting dispatch instructions that the facility cannot realistically achieve.

The Electricity Market Review has resolved the discrepancy between the two processes outlined above by requiring all certified demand side resources to be able to ramp to their full capacity within one trading interval. The Electricity Market Review considers that this approach:

- Represents a good compromise between the two current approaches under the Wholesale Electricity Market Rules relating to ramp rates for demand side resources and, therefore, accords with the least change philosophy adopted in drafting these rule changes. Further the demand side dispatch obligations, as for the dispatch obligations relating to all facilities, are likely to be substantially altered with the introduction of the constrained energy market, reinforcing the need for a least change philosophy at this time.
- Allows for an economic dispatch of demand side resources based on the fact that this type of capacity sits outside of the balancing merit order and is therefore called after all other facilities.

Transfer of loads between demand side management facilities

Under the current rule provisions there is ability for a Market Participant to transfer loads between its demand side management facilities. This can, theoretically, enable that market participant to satisfy its testing obligations (for example reserve capacity tests) for more than one demand side management facility, by having the same load reduce output when assigned to different facilities.

The Electricity Market Review considers that this potential practice is inconsistent with the principle of harmonisation and has drafted the required rule changes to prohibit such activities. For example, a generator cannot satisfy two reserve capacity tests in the same year at two different locations with the one turbine.

2016 Reserve Capacity Cycle

The Electricity Market Review has also obtained agreement from the Australian Energy Market Operator to a further 12 month delay to the 2016 Reserve Capacity Cycle. The basis for this approach is twofold.

Firstly, the Australian Energy Market Operator is currently obligated to assess the amount of capacity it considers a facility could provide at peak times when it assigns certified reserve capacity. How much capacity a facility could reasonably provide at peak times will be influenced by any constraints imposed on that facility under the new energy market design. Therefore, the Australian Energy Market Operator will be able to better fulfil its obligation if it has more information as to the types of constraints that may bind the facility.

Secondly, when market participants are assigned capacity credits, they accept obligations to provide that capacity in the year the capacity credit applies. The 2016 Reserve Capacity Cycle will impose these obligations on market participants for the 2018-19 Capacity Year, spanning 1 October 2018 to 1 October 2019. If the constrained energy market design commences in 1 July 2018 as currently planned, and this new energy market design considerably changes obligations in relation to dispatch obligations (which it almost certainly will for demand side management participants), this capacity year represents the first peak demand season that the new obligations will bind.

It seems equitable to provide these participants with greater certainty regarding their new obligations before requiring a commitment to provide capacity subject to those obligations. A further deferral of the 2016 Reserve Capacity Cycle by 12 months, will allow participants greater certainty regarding the likely obligations that will be imposed upon them under the new constrained energy market design when making applications for the certification of reserve capacity.

Appendix A : Template for comments on draft amendments to the Wholesale Electricity Market Rules

Comments on the draft Market Rule amendments are to be provided in the form of the following table.

Please indicate changes with an underline and deletions with a strikethrough.

Clause/Reference	Problem	Proposed solution
Eg: 4.7.3(c)	The full stop at the end of clause (c) should be a semi-colon because of the inclusion of clause 4.7.3(d).	4.7.3(c) ... for the Reserve Capacity Cycle; and <u>and</u>