System Management, Western Power

SUBMISSION TO THE ELECTRICITY MARKET REVIEW POSITION PAPER: REFORMS TO THE RESERVE CAPACITY MECHANISM

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PURPOSE OF THIS DOCUMENT

The Electricity Market Review (EMR) includes a reform project for Reserve Capacity Mechanism (RCM) aimed at reducing the costs of generation on the South West Interconnected System (SWIS). As part of the ongoing engagement process for Phase 2 of the EMR, the Steering Committee has released a Position Paper on the proposed design of the RCM, this being the '*Position Paper on Reforms to the Reserve Capacity Mechanism*' dated 3 December 2015 (the RCM Position Paper)

The purpose of this document is to provide the EMR Steering Committee with System Management's response to the content of the RCM Position Paper.

System Management's submission is prepared in two parts; the first part addresses the RCM paper from System Operations' perspective, and the second part, from an Economic Perspective.

System Management appreciates the opportunity to provide this submission and would welcome the opportunity to discuss any of these matters in further detail with the EMR Steering Committee or its delegates.

Signed for and on behalf of System Management

Dean Sharafi
Head of System Management

1. INTRODUCTION

System Management has historically taken an active interest in an efficient, pragmatic and system security centred reform of the Reserve Capacity Mechanism. We have attended the RCM Working Groups and on every opportunity, have provided our input. While the large excess of capacity in the Wholesale Electricity Market (WEM) has contributed significantly to recent increases in the retail cost of electricity on the SWIS, the dispatchable capacity for System Management has not been at the level perceived by the market. In our view, the capacity should be a capacity that is available for dispatch, has the right capability, and is in the right location to address system's need. In this context, we see capacity in a different light. Our response will address the need for Capacity from these points of view as well as from an efficient economic perspective.

2. RCM from System Security Perspective

2.1 Availability and Reliability

At present there is over 1000MW of capacity, on average, that is bid at the Maximum price in the balancing market during any given 30 minute interval. While there is an excess of Capacity in the market it is unlikely that Capacity at the caps will ever be required for dispatch, however it is paid the same capacity price as generation that is used on a regular basis to supply electricity to consumers.

Given that this capacity is rarely used its reliability to commence operation on short notice in emergency situations is largely untested. Capacity payments are made to encourage generation to be built and made available to meet demand, however neither the current or proposed mechanisms provide incentives for generation to be used and available rather than on continual standby.

The principles of the current Balancing Market assume that if a facility appears in the balancing merit order that it is available for dispatch when required. This is not necessarily the case and there are several reasons for facilities to be placed at the price cap that may mean that they cannot realistically be dispatched if they are called upon.

There are several generators in the existing market that have start-up times of multiple hours and some that have start up times longer than the existing balancing horizon. These facilities, while appearing to be available in the BMO, may be physically unable to be dispatched to meet security needs. This may be due to issues such as fuel restrictions or resourcing requirements to start up generation, yet these facilities receive the same capacity payments as other generators and provide a false impression of the actual capacity available at any given time.

2.2 Locational Incentives

By 1 July 2018 the WEM will be based on a constrained access market model. Constraints occur due to restrictions that prevent an optimal level of electricity travelling from where it is generated to where it is required by consumers.

Two common causes of constraints are lack of generation or excess generation at a specific location. Both of these constraint types increase costs to the market and consumers and are caused by generation being built in locations without due consideration to network limitations or demand requirements.

Introducing locational incentives into capacity pricing would ensure that the longer term demand of consumers can continue to be met in an economical manner while also reducing the likelihood of many constraints binding within the SWIS. Neither the current or proposed Capacity Markets provide any incentives for new generation to be built in locations where it provides the most economical benefit to consumers. This seems to be in contradiction to Objective 1 of the capacity market reform proposal.

A locational incentive in the capacity mechanism may also reduce the need for future Network Control Service contracts. As more capacity is brought into the SWIS without consideration for its location, the necessity for Network Control Services is likely to increase at significant expense to the Network Operator.

2.3 Generation Type

A mix of various generation types and attributes such as fast start capability, Black Start/ System Restart capabilities and dynamic ramping capabilities across the SWIS would result in the cost effective and secure provision of electricity to consumers. While no analysis of this ideal mix has been done, there are some basic generator attributes that lower overall costs and provide flexibility for the System Operator to be able to respond to issues quickly in a dynamic and fluctuation market.

While there are no capacity or market financial incentives to build or provide these capabilities the SWIS generation mix may trend towards slow moving and inflexible generation that is cheaper to build and run. In the longer term this can only raise market costs as the responsibility to meet real time demand falls to a smaller number of generators that have the capability to meet these requirements. This will also provide challenges for the System Operator in finding solutions to changes in generation availability and load demands, without requiring the curtailment of facilities or loads.

The Capacity Market mechanism is an opportunity to provide some immediate incentives for Participants to build facilities that are capable of providing security management and dynamic ramping capabilities that essential to the cost effective and secure operation of the SWIS.

2.4 Ancillary Requirements

The WEM currently has an LFAS market that is designed to provide incentives for Independent Power Producers to provide Load Following Ancillary Services alongside, or instead of Synergy. There are several other types of Ancillary Service such as Spinning Reserve, System Restart, Load Rejection that are provided via other methods such as contracts for supply and these services are generally provided by Synergy. While there is no concrete proposal for the creation of additional markets to provide Ancillary Services it may be prudent to offer incentives through the Reserve Capacity Mechanism to ensure that Synergy is not the only supplier capable of offering these services.

If there is an expectation that some Synergy plant will be retired as part of the overall Reserve Capacity changes, it will be important to ensure that there are still facilities capable of providing essential Ancillary Services. Incentives for making facilities available and suitable for the provision of Ancillary Services can be provided through the Reserve Capacity Mechanism.

While additional Ancillary Service markets may provide incentives at some point in the future, individual contracts are likely to continue to be required in the short term. These may end up being with generators that can only provide those services at a high cost. Incentivising Participants to ensure facilities are capable of providing Ancillary services through the Capacity Market may provide a more immediate solution to this problem.

3. RCM from an Economic Perspective

In the PUO's Position Paper, one of the stated Principles is that *"The capacity price should reflect the marginal economic value of capacity."* and feedback has been encouraged on the reform Principles.

We note that the Electricity Market Review has three objectives:

1. Reducing costs of production and supply of electricity and electricity related services, without compromising safe and reliable supply;
2. Reducing government exposure to energy market risks, with a particular focus on having future generation built by the private sector without government investment, underwriting or other financial support; and,
3. Attracting to the electricity market private-sector participants that are of a scale and capitalisation sufficient to facilitate long-term stability and investment.

The design of any Capacity and Energy Electricity Market is founded from the principle established by Boiteux[1] in 1949. According to this design, the market payments to suppliers are based on:

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[1] Boiteux, M. (1949), "La tarification des demandes en pointe: Application de la theorie de la vente au cout marginal", Revue Generale de l'Electricite, Translated by H. Izzard in Journal of Business, Boiteux, M. 1960, 'Peak load pricing', Journal of Business, 33(2): 157–80.

- For every unit of energy produced the price of the marginal units of energy will be paid for all energy, and
- For every unit of capacity installed the fixed cost of the highest variable cost unit should be paid.

Under these principles all investors' fixed and variable costs are recovered and the optimal mix of providers with various mixes of fixed and variable costs will be selected by the market for the forecast load curve, simulating what would be the result for an efficient centrally planned procurement.
System Management is of the view that the Position Paper's principle is not aligned with the EMR stated objectives. The capacity price needs to incentivise "dynamic economic efficiency" that is long-term not just targeting short-term cost reduction. This is required to meet objectives 1 and 3 above. A short-term signal as proposed creates an artificial barrier for new entrants by not revealing the true long-term costs faced by incumbent suppliers.

Timing for Auction

The Position Paper has stated: *"Proposed reform – introduction of the auction is to be triggered by a forecast of five to six percent of excess capacity in the year that the capacity price determined by the auction will have effect. An alternative would be to establish a deadline for introduction of the capacity auction if it has not already been triggered."*
In particular the EMR has noted[2]:
In the next four years the average cost of electricity in the SWIS is projected to increase by up to 20 percent. Short of any significant changes in the cost outlook, or the trajectory of tariff increases relative to that announced by government, the annual subsidy from taxpayers will be over $600 million or more than $2.4 billion in these four years on a business as usual basis.
The excess reserve capacity purchased essentially contributes to this subsidy as it is imposed as a levy on retailers whom pass it on to customers. The value of this component has been on average $114.4 per annum[3].

The position paper contains the following:
It is proposed that the first reserve capacity auction is triggered where it is expected that there will be a reduction in excess capacity to a level of five to six per cent in the capacity year to which the auction will first apply. This will temper the potential for price shock on introduction of the auction as the auction will return a capacity price that is close to the capacity price under the transitional arrangements. The level of five to six per cent excess capacity will also provide a buffer against higher than forecast growth in demand.
Based on current demand and capacity projections, the capacity auction would not be triggered until beyond 2025. This infers that Business As Usual will continue in the Reserve Capacity Mechanism for another 10 years with an estimated subsidy of up to $1B depending on the success of the transitional provisions. This is clearly not aligned with EMR objective 1. More widely it is inconsistent with reducing the State Debt levels.

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[2] Discussion Paper Electricity Market Review Steering Committee 25 July 2014 – page iv
[3] Discussion Paper Electricity Market Review Steering Committee 25 July 2014 – Table 2

System Management proposes that any change to the Reserve Capacity Mechanism occurs at the first available opportunity preferably for the Reserve Capacity Procurement Cycle starting in 2016. Delaying the auction to a reduction in excess capacity to a fixed percentage in the capacity year to which the auction will first apply will create an opportunity to delay the auction for those who will benefit from it. It also should be noted that the Reserve Capacity Promise to the energy suppliers is only a three year proposition and nothing should be guaranteed beyond this window.

RCM Procurement Design

The Position Paper has stated: *"Proposed reform – the Electricity Market Review proposes to implement a reserve capacity auction designed in accordance with the principles and proposals outlined in this chapter."*

System Management believes the proposed auction approach does not address the fundamental problem it sets to address, and risks proper functioning of the existing market design as described in section 1.

The key issue is that the current market rules have allowed the purchase of capacity in excess of the consumer needs, and passing of those costs onto consumers. To address the problem directly the Market Rules need to be changed so no cost is incurred by the market for capacity in excess of the capacity requirements. The design of the market should consider the benefit customers receive from additional reliability rather than the concern with reserve capacity quantity. It should consider the marginal Value of Customer Reliability benefit of every extra MW of reserve margin. The paper is primarily concerned with managing the reserve capacity quantity rather than customer value. It has worked out the capacity from market generators' perspective (benefits), rather than a sustainable supply chain and customers' benefit.

Reserve Capacity Pricing Effects

System Management is concerned that the proposed changes will reduce the incentive for suppliers to be available when required.

This stems from the price of capacity refunds which is linked to the capacity price. The value of lost load to the customer does not change with the amount of capacity and so the incentives to be available should also not change. A reduction in capacity price effectively reduces the incentive to generators to be available. This is a perverse outcome for consumers. The market design limits the value of capacity refunds to the value of capacity payments and is based on refunds and payments being close to the new peaker fixed costs. System Management considers breaking this link so that suppliers face a deficit between these, so capacity offers less than the cost of refunds (based on a new peaker) face refunds in excess of payments for poor performance. It is understood that this is the position in ISO New England.

Demand Response Treatment

System Management considers the harmonisation of Demand Side Management does not create enough incentive for suppliers of this type of capacity to be available when required.

It notes that the availability requirements in PJM give a much closer treatment for all types of capacity. In particular the capacity performance requirements for demand side are:

- Availability – all days
- Number of interruptions - unlimited[4]

System Management considers movement to a PJM type regime will provide a greater incentive for capacity to be available.
The current proposal can lead to a situation that the auction clears low priced DSM which displaces conventional peaking plant (gas turbines), and market accepting that DSM is part of the optimal mix of supply. Additionally this will result in insufficient revenue for an open cycle GT.
This approach leads to building capacity down to a price instead of up to a standard. This could be prevented if the auction is either separated for DSM and conventional plant, or DSM matches the start time, availability, and flexibility of convention peaking plant. If this issue is not addressed, peakers will be displaced with DSM providers and reliability standards will be at risk of not being met.

Impact of Generation Types

The proposed market design lets the market determine the optimal mix of plant, coal, gas, wind, solar, DSM.
System Management is concerned that the proposal will not provide enough financial returns to support peaking plants, as the contributions to fixed costs are not provided. This would lead to inefficient energy dispatch as reserves would need to be supplied from slow starting plant, which by their nature would be required to be on-line, essentially raising the market costs.

Transitional Arrangements

The transition period proposal is unclear as to the treatment of DSM and non-DSM suppliers.
Section 7.1 makes no mention in the differential treatment of DSM and non-DSM suppliers for the purpose of calculating the capacity price.
Section 7.2 states that a different capacity price will be paid for DSM.

Issue 1 – It should be explicitly stated that DSM capacity will not counted in the determination of the supply/demand intersection.

[4] PJM M18 Updates for Capacity Performance Filing July 15 2015 – available at http://www.pjm.com/~/media/committees-groups/committees/mrc/20150715-m18r/20150715-item-02-draft-manual-18-revisions-presentation.ashx

Issue 2 – the price of dispatch DSM per MWh from Table 2 & 3 is calculated at:
2016/17 – $7,643,820/3.9MWh = $1,955,953/MWh
2020/21 - $7,896,360/22.2MWh = $355,691/MWh
Given that the Value of Lost Load is in the order of $50,000/MWh it is unclear as to how this proposal meets the proposed principal of marginal cost should equal marginal benefit, as the cost is in multiple orders of magnitude of the benefit.