Reserve Capacity Mechanism Position Paper Response

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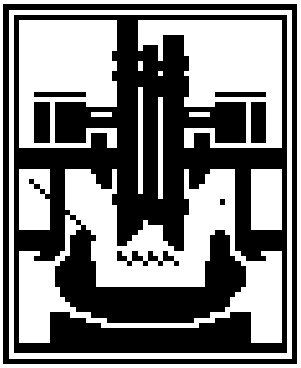
SIMCOA Operations Pty Ltd



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Executive Summary

The underlying objective for change in the WEM - in simple terms – to address the current surplus of supply and introduce a mechanism to avoid a recurrence of the current situation, **in order to reduce costs to end users** is sound.

The problem is that while the stated focus is on addressing the current surplus of supply the proposals do little to address this issue in real terms by minimising the financial impact on generators in WA, whilst at the same time providing limited relief to the Reserve Capacity Mechanism at the severe detriment of the DSM providers.

The main methodology proposed to address surplus capacity appears to be the internationally novel approach of treating DSM in the same way as generation, with the exception of the limits placed on DSM, and the payments received for the provision of that service. There needs to be a balance of interests between generators, DSM providers and customers in the proposed reforms.

In Simcoa's view, the proposed reforms to the RCM do not reflect the abovementioned balance – at least so far as an important DSM provider and customer such as Simcoa is concerned, with the reforms being heavily biased to the interests of the generators.

For example, it is forecast that by the end of the Transition Period generators can be confident to receive the same capacity payments as today; whereas payments for DSM will remain at around 10% of today's levels.

Similarly, there remain mechanisms reflected in the proposed reforms to ensure that there will be an adequate safety margin in terms of generation capacity; however, there are no measures proposed to ensure that an economic level of DSM is retained in the market.

Numerous examples and studies from around the world are cited to support the proposition that it is most cost effective to utilise DSM to meet the need for safety margins rather than to build / maintain generation capacity which will rarely be called upon. The position paper uses examples of overseas networks as to how an auction process for generation capacity should be developed. There is no acknowledgement or recognition, however, of the DSM programs in the markets that are referred to, and the value they bring to those markets.

Key specific failings in the Position Paper include:

- The perceptions are that:
  - *compared to the initial capital investment requirements of supply side generation, demand side resources generally have upfront costs many orders of magnitude lower;*
  - *demand side management capacity does not generally involve commitment to a long term "sunk" asset.*

These perceptions reflect a fundamental misunderstanding of the characteristics and importance to the WEM of genuine DSM providers such as Simcoa. They may apply to many DSM providers however they do not apply to Simcoa - a 70 MW load available

on minimum notice with greater than 96% availability. Simcoa is a facility established on the basis of reasonable financial recognition for the provision of DSM services in the WEM, largely offsetting the capacity charges levied.

- The *"expected economic value of demand side management in meeting the reliability requirement"* appears to have been determined arbitrarily rather than with any degree of science or economics. It is understood that, whilst not referenced in the Position Paper, DSM, as well as receiving capacity payments, will continue to receive energy payments. This needs to be clarified, as the wording in the Position Paper is ambiguous in this respect.
- Payments to DSM: The manner of determining payments to DSM is also arbitrary and has been done without any science or consideration of the value attributed to DSM in the WEM or other jurisdictions – unlike the capacity payments to be made to generators.
- Apart from the proposed changes to the Capacity Baseline, there has been no differentiation of DSM in terms of what different providers contribute to the WEM in terms of availability, required notice time, size of energy blocks, etc.

These and other issues are explained in Simcoa's submission.

Simcoa is a true DSM provider. It already has in place the necessary equipment for remote as well as automatic dispatch of its load. Currently Simcoa's capabilities for short term outages with no notice are called upon frequently by System Control. Simcoa has never required advance preparation to allow for the implementation of alternative business interruption mitigation measures and would welcome the introduction of a program for no notice dispatch of DSM (with appropriate remuneration).

Simcoa has a proven ability to meet / exceed curtailability requirements on every occasion, both when tested and when needed due to energy supply issues.

DSM providers such as Simcoa, where investment decisions were made based on a realistic value being placed on their DSM capabilities and who have made and continue to make a significant contribution to the State economy, will be driven out of WA unless the balance of interests between generators, DSM providers and customers in the proposed reforms is redressed, or significant modifications to the RC charges payable by consumers who are also significant DSM providers are implemented as part of the reform process.

Introduction

Simcoa Operations Pty Ltd (**Simcoa**) refers to the Position Paper on Reforms to the Reserve Capacity Mechanism (**RCM**), and welcomes the opportunity to make a submission to the RCM Project Team in relation to the proposed reforms. Simcoa would be pleased to meet with the Team to discuss its submission or the proposed Reforms generally, if that would be helpful.

Simcoa operates a silicon production facility in Western Australia. Simcoa is Australia's only manufacturer of silicon, producing about 50,000 tonnes per annum of high-grade silicon with a value of around $150 million, primarily for international markets and employing approximately 180 employees.

During the period 1985-88, a range of circumstances led a group to consider the opportunity to establish a silicon production business in Western Australia.

Those circumstances included a Western Australian State Government initiative to purchase gas from the North-West Shelf Gas project on a long term basis to underpin the construction of the Dampier to Bunbury Natural Gas Pipeline.

This initiative, together with demand imbalances in the supply network, led to the availability of limited electricity at internationally competitive prices based on the value of this load in view of the high load factor and the ability of a silicon production facility to contribute to Demand Side Management (**DSM**) in the South West Interconnected System (**SWIS**). These prices were generally competitive with those paid by energy intensive ferroalloy production activities overseas.

Hence, the Barrack Silicon project was established under the Barrack Mines Group of Companies. The group was subsequently re-named the "Simcoa Group" and was acquired by Simcoa's current parent company, Shin-Etsu Chemical Co., of Japan.

It must be emphasised that the decision to establish the Barrack Silicon / Simcoa project in WA was based on the availability of a power tariff which was discounted in view of Simcoa's capability to make a significant contribution to DSM.

In 2005, when Simcoa's original power contract was approaching its end, Western Power temporarily lost sight of the value of the DSM capabilities of Simcoa. As a result, there was a risk of the operation becoming unviable in WA. The disaggregation of Western Power (including consultation with end users such as Simcoa), allowed Simcoa to go to the market, which recognised the value of DSM, thereby ensuring Simcoa's survival and subsequent expansion.

The major expansion of the Simcoa facility in 2011 was also based on the fact that capacity costs for power in the SWIS could be substantially offset by Simcoa's capability to curtail its load. The expansion would otherwise <u>not</u> have proceeded.

Background – Silicon Production Process

The production of silicon is a very energy intensive process. Using the enormous heat generated within electric submerged arc furnaces, the quartz feedstock is mixed with a carbon reductant, usually in the form of charcoal or coal, to liberate the silicon in the following chemical reaction:

$$SiO_2 + 2C \Rightarrow 2CO + Si$$

The molten silicon is then tapped from the furnaces into ladles where it is subjected to further refining before being cast into large slabs, crushed and then exported.

Silicon is an integral part of modern society and plays an important role in global sustainability. Silicon is found in many modern components such as photovoltaic (solar) cells, optical fibre, computer chips, semi-conductors, synthetic oils and aluminium alloys. Clearly, many of these products are pivotal in improving manufacturing efficiencies in numerous industries.

The three key inputs for silicon production are competitively priced power, a source of appropriate quality carbon, and a supply of quartz (SiO_2)

The most important requirement is competitively priced power. This requirement was met in Western Australia due to the recognition of the value of large, high load factor, interruptible / curtailable loads in the SWIS.

The WEM today still has the challenge of dealing with low off-peak demand whilst a high proportion of capacity is provided by relatively inflexible, coal fired, base load generating units. This was a key factor in the decision to establish Simcoa's silicon production operation in Western Australia, and to expand four years ago.

Simcoa's plant expansion commenced in 2010 and was completed in 2012, with the new furnace reaching full capacity in early 2013. As a result of the expansion, Simcoa's production and energy usage increased by approximately 55%.

Today Simcoa uses a total of approximately 70 MW power with a load factor in excess of 96%. This is supplied to Simcoa from the WEM by two electricity retailers. Due to the nature of the silicon smelting process, which allows the plant to be tripped instantaneously and for extended periods of time, Simcoa is a significant contributor to DSM and ancillary services in the SWIS.

The production of silicon is extremely energy intensive, due to the inherent nature of quartz from which it is produced - power accounts for approximately 30% of total production cost. This makes silicon one of the most energy intensive production processes in Australia. Therefore, Simcoa is highly vulnerable to the impact of changes to the rules and / or structure of the electricity market in WA, including those relating to DSM providers. This vulnerability is compounded by Simcoa’s high trade exposure, with in excess of 95% of its product being exported bringing significant overseas revenue into the state. Simcoa currently spends in excess of 70% of its total operating expenditure within the state of Western Australia.

Reform Objectives and Principles

Objectives

The Objectives listed appear appropriate, particularly the first one, but clearly contradict the questionable principle of harmonisation.

The concept of DSM is to meet the 1 in 10 year scenarios that may be a 5 – 10% spike in forecast demand. The idea is to avoid the construction and maintenance of generation facilities to meet this demand i.e. those which will only be expected to operate once in 10 yrs (maybe 2 to 3 times in the life of the plant). This makes no sense either economically (principle of least cost to the end user) or in terms of sustainability.

It is to be expected that the cost of securing DSM resources will be less than the cost of building a generation facility. On the other hand, a DSM facility has no interest in making its power available a high proportion of the time.

To meet the Objectives, DSM should be handled separately to peaking plants – to do otherwise is like comparing, or harmonising, apples and bananas.

The proposed model is likely to give rise to an outcome whereby DSM is forced out of the market completely by having to compete with generators in an oversupplied market. This makes no more sense than allowing DSM providers to grow to supply 20% of demand in an undersupplied market. Each has its role and characteristics, each should be managed accordingly.

Principles

The Principles also appear to be appropriate. However, due to the current situation of oversupply – which is not the doing of the DSM providers - a rigid application of the first principle (reflecting the marginal economic value of capacity) will lead to a breach of the second principle (not subject to volatility, clear and consistent price signals).

The transition process addresses this issue for generators. However, it pushes all the "pain" to the DSM providers who are not considered to have sunk costs.

The potential impact of this will be to make a DSM provider, like Simcoa, whose initial capital investment was dependent upon a (fair) DSM based power price, uneconomical. This not only has the potential to remove this DSM capacity from the system, but also has the potential to remove Simcoa's economic contribution to the broader economy.

Generation facilities face a progressive (non-volatile) transition to a future auction based market structure. It is expected that after an initial 30% reduction in capacity payments to generators, prices will progressively return to approximately the existing levels by the time of the first auction. DSM providers on the other hand face a reduction of almost 90% increase in payments, with then negligible change until the auction process commences. At that stage their capacity payments will again potentially increase by nearly 90% back to the same level as generators.

Proposed Reforms to the Reserve Capacity Mechanism

Reference is made to the PJM and ISO-NE (New England) capacity markets but there is no mention made as to how DSM is managed in these markets - i.e. whether it is harmonised or not. None of the PJM DSM programs have been acknowledged in any way.

It is stated that the proposed design for the SWIS is based on the design of these markets allowing for the special factors listed below.

The WEM:

- *is extremely small and is isolated from other electricity systems;*
- *has relatively concentrated ownership of generation;*
- *has a load profile characterised by the potential for extreme summer peaks;*
- *has relatively low load growth, but with potentially large and lumpy demand additions, creating uncertainties for demand forecasting; and*
- *has a high level of bilateral contracting.*

Several of these special factors serve to heighten the importance of DSM in the WEM.

Transition Period to a Capacity Auction

If the auction is implemented in the near-term, the large amount of excess capacity would cause the capacity price to sharply fall to around zero. This sudden reduction in price would be financially disruptive for participants and create risks for the sustainability of the market as a whole.

Simcoa agrees wholeheartedly with the above sentiments. Generators have been protected well in the transition period in that with a capacity price being maintained at around $80,000, even without market exits, capacity payments will only be reduced by around 33%.

On the other hand, there is minimal protection or support for organisations such as Simcoa, whose viability depends upon a DSM offset power price. Payments to DSM providers are forecast to fall from $62.5 million to $7.6 million in 2016/17 i.e. a reduction of 88%.

With a $40,000/MW reduction in capacity pricing, 5,000 MW of generation capacity will be delivering only $200 million savings to end users; whilst $55 million is to come from only 560 MW of DSM.

At the same time the required availability of DSM providers will be increased dramatically whilst the only change with respect to generators is that payments when they are not available anyway will be reduced and passed back to other generators, i.e not passed on to the consumer and thereby not reducing costs to the end user, despite that being the underlying objective of the reform process.

Simcoa questions the principles proposed in the reforms in that it is both an end user consumer of electricity, which is effectively going to see very little reduction in real terms of the Reserve Capacity charges it will be levied with (33%), whilst at the same

time it is a provider of a significant portion of DSM capacity, and will see the value of this provision disproportionately reduced (88%).

To be fair and return the value to the end user, protection should not be provided to the generators in isolation, or at all, with the adoption of the artificial and somewhat arbitrarily determined RCP curve as proposed but rather the RC price charged and paid should be reflective of the actual economic value. Adoption of the true economic value as the payment mechanism would effectively solve the proposed discrepancy created for consumers who are also DSM providers whereby their RC charges levied would fall significantly as would their DSM payments.

It is agreed that this would significantly affect the position of many generators, whose projects are funded on the basis that they will never/rarely be called upon, but ultimately this is the capacity that needs to be lost, and not paid for. There is a definite perception held by Simcoa that the proposed reforms do little to reduce the current level of capacity oversupply and have been structured solely to provide a level of protection for the generators. Therefore, the balance of interests between generators, DSM providers and customers reflected in the proposed Reforms needs to be redressed.

Significant DSM providers (> 20 MW) who continue to make their facilities available at short notice, or without notice, and thereby maintain the valuable DSM capacity within the market, although for a significantly reduced payment, should be provided effective relief from the changes to the RCP mechanism. This can be effectively achieved by exempting those providers from payment of the Reserve Capacity charges. This is justified in that it recognises that as significant DSM providers, no generation capacity is required to maintain their supply – they are making use of the capacity safety margin when it is not otherwise required. Whether this mechanism would be an ongoing arrangement, or solely for the transition period, until which time the market can determine the true value of the DSM programme offered by the likes of Simcoa, is open for discussion. Again, Simcoa would be pleased to meet with the RCM Project Team to discuss its submission or the proposed reforms generally, if that would be helpful.

The transition period is intended to:

- *reduce the cost to customers of the capacity excess by implementing a more value- reflective capacity pricing formula;*
- *provide greater incentives for the capacity market to move towards balance;*
- *provide a period of adjustment without widespread disruption of businesses in the Wholesale Electricity Market; and*
- *allow time to fully design the auction mechanism, and for implementation in an orderly and robust manner.*

With respect to the third bullet point, little consideration appears to have been given to DSM providers.

The inequity of the proposed mechanism and clear protection of generators at the expense of DSM providers is again apparent in the forward modelling.

By 2024/25 it is expected that excess capacity will have fallen to below 5% thereby increasing capacity payments to generators above today's levels. On the other hand the same calculations show that in 2024/25 DSM payments will still be 87% below today's levels and despite a 2600% increase in expected downtime, returns/MW will have only increased by 17%.

On page 14 it is noted: *During the transition period and commencing from the next capacity cycle to commence in 2016, the demand side capacity price would be based on an estimate of the expected hours of dispatch and reasonable costs incurred.*

This is difficult to follow as the hours of expected dispatch will have increased by 2600% for a 17% price increase and Simcoa, currently the largest single site provider of DSM, has not been approached with respect to the costs that will be incurred.

Further on page 14 it continues: *Where demand side management capacity is dispatched for more hours than estimated, it will be eligible to receive a higher energy price. These arrangements aim to send more suitable price signals and promote more efficient demand side management participation in the Wholesale Electricity Market. When the auction arrangements commence, demand side management capacity will be subjected to the correct signals to compete on a level playing field with other capacity providers.*

It is not clear here what is meant by a higher energy price. Is it intended to mean the energy payments normally received by a DSM provider when dispatched have been included in the proposed new payments for capacity, or are they on top of the capacity price?

This proposition remains extremely confusing as it appears that the sum of the capacity price and increased energy price/energy payments is to be capped at the reserve capacity market price - i.e. a mixture of energy and capacity pricing. This implies that beyond this cap no further payments will be received. The logic of capping DSM providers' returns at the reserve capacity market price is totally flawed. Generators receive the market capacity price plus payments for energy which cover operating costs plus profit. DSM providers' dispatch payments must still continue uncapped and separate to capacity payments as these are required to cover their fixed costs plus lost profit when dispatched, in addition to the process and customer disruption incurred. Simcoa has been informed that no Alternative Max. STEM price payments will be made until the reserve capacity market price has been reached and then they will commence. It seems unreasonable that up to the market capacity price no energy payments will be received. Generators do not have this restriction.

The Capacity Auction

In this section of the Position Paper the role of DSM beyond the Transition Period appears to have been ignored either because it is likely to have been removed from the system or completely rolled into the capacity auctions for generators. The former appears to be a likely outcome, it is hard to see how the latter can work.

Researching the PJM, ISO-NE and NY-ISO markets often quoted in the Position Paper, there appears to be no harmonisation of DSM with generation - rather they maintain a range of DSM programs.

PJM now has added three Demand Response products: Limited DR (10 days during the summer peak season for a maximum of six hours per day), Extended Summer DR (unlimited days during summer for 10 hours per day) and Annual DR (unlimited days throughout the year for a maximum of 10 hours per day) **- NERC 2014 Summer Reliability Assessment.**

These jurisdictions clearly recognise that the economic benefits of encouraging DSM outweigh the need to protect generation facilities.

The Position Paper states that: *"The preliminary position for the Wholesale Electricity Market is to ensure the capacity auction only under-procures capacity, on average, once every four years."*

In other words, the price of the projected cost savings is that one year in four there will be a shortfall of power - i.e. brownouts in Perth.

This is to be addressed through a "*supplementary reserve capacity procurement process*" although the potential sources of this supplementary capacity have not been clearly defined – is this the future role of DSM? To be called upon and receive payment once every four years?

Is it is intended that (as "harmonisation" implies), DSM can compete against generation in future auctions and receive the same payments? If so, it is difficult to understand why DSM payments are held at around $16,000/MW up until the first auction, whilst payments to generators will be progressively returned to $120,000/MW after having initially fallen only moderately.

Complementary Reforms

Harmonisation of Demand Side Management

The statement: *"The introduction of a capacity auction requires that all resources face equivalent availability and measurement requirements*." presumes that inclusion of DSM and generation capacity in a single auction process is essential.

However, this is not consistent with the first Objective of the reform process as presented on page 9 of the Position Paper: *"Capacity market incentives and outcomes are conducive to a least cost, sustainable delivery of capacity and energy to customers."*

Insisting that a resource that is servicing the 7.6% reliability reserve or the 5% (250 MW) of peak demand only required 72 hrs/yr be available for 200 hrs only serves to discourage DSM participation in the market and facilitates ongoing payments to generating units that will never be called upon.

Harmonisation only serves to protect the position of generators in an oversupplied market at the expense of achieving least cost supply of energy to customers through, for example, DSM providers.]

There is a definite perception that the proposed reforms do little to reduce the current level of capacity oversupply, and have been structured solely to provide a level of protection for generators only, whilst delivering the required objective of significant cost savings to the overall supply of electricity at the expense of the DSM providers like Simcoa – the very same programme that the current W.A. Treasurer and Minister for Energy, the Honourable Dr. Mike Nahan, MLA, stated "programmes like that (those offered by Simcoa) make sense".

The Position Paper Objective referred to above can best be served by following the lead of other markets used as models in the Position Paper and establishing DSM programs outside of the capacity process (these can include auctions) in order to ensure secure supply at least cost for customers.

The statement that: *"At present demand side management resources enter the capacity market under more favourable conditions than electricity generation resources."* may well be true, but the best outcome for end users is not to force DSM out of the market through harmonisation but rather to take the lead of other markets in analysing how the characteristics of DSM can best service the end user and manage DSM accordingly outside of the market process best suited for generation capacity..

There must also be differentiation between DSM loads. A large DSM load with a high load factor 24/7 and an ability to come off-line with a minimum dispatch notice period must be treated differently to a smaller load with a lower availability or longer dispatch notice period.

It cannot be assumed that DSM will only be required in summer or during normal peak demand times.

In past years the only significant call for DSM was as a result of fuel supply issues rather than generation capacity and hence not related to peak demand.

It should also be noted that in such circumstances, the service provided by DSM cannot be provided by peaking plants.

It is not clear why these issues have not been considered in the harmonisation proposal or elsewhere in the position paper.

In view of the above, the rationale for the statement: *"To require demand side management resources to be available outside those intervals where it has economic value is inefficient and may cause otherwise valuable capacity to exit the market, reducing competition overall."* is not clear.

Historical precedent shows that the most critical situations have arisen outside what is normally considered the peak demand season, so what are the intervals where it has greatest economic value?

There is also no explanation given as to why generation capacity exiting the market is more of an issue (particularly in an oversupplied market) than the loss of DSM resources. Maintaining a strong DSM program will result in lower energy prices for end users than paying for idle generation capacity.

A general concern with the approach reflected in the Position Paper is an attempt for everything to be oversimplified. No examples or precedents of other markets where DSM is distorted in order to combine it with generation as is proposed here or where different classes of DSM have not been developed to maximise the potential benefits to the end user have been presented.

Capacity Baseline

It is understood that the proposed changes to the Capacity Baseline are intended to identify the "real operating capacity" of DSM providers.

This would appear to be reasonable in principle as it seeks to identify those providers with the most to contribute in terms of back-up services. In terms of fairness, however, the proposal needs to be modified to recognise genuine maintenance downtime just as maintenance downtime is allowed for generators.

In terms of equity, will all capacity payments also be removed from any generator under the same circumstances - i.e. if it does not have at least 95% availability?

The Transition Period

Obviously, the main intent of the Transition Period is the reduction of supply capacity from the current oversupply situation. This involves a reduction of about 500 MW generation capacity to approximately 5,000 MW.

In markets such as the much quoted PJM, ISO-NE and NY-ISO markets, there is around 8% DSM and there is no indication that this is considered to be excessive.

This suggests that at least 400 MW of quality DSM capacity should be retained in the SWIS. If so, it is inexplicable as to why measures are being proposed to reduce DSM payments by almost 90% and which will potentially remove DSM from the WEM completely.

One of the Objectives identified in this section is:

Encouraging mothballing/retirement of inefficient capacity (either demand side management or generating capacity).

As noted above but overlooked in this Objective, it will be counterproductive in terms of achieving the primary reform objective of lower energy costs to end users if all capacity reduction comes from forcing DSM out of the market.

The meaning of inefficient generation capacity is clear. It is non-competitive in delivering power to the end user.

There is no analysis in the paper, however, as to what constitutes inefficient demand side management capacity.

The role of DSM capacity is to permit reduced investment in generation capacity that would stand idle except for unforeseen circumstances or unusual peaks in demand.

There is no historical data to suggest that DSM would be required for more than 72 hrs per year in a well run market. Therefore, efficient DSM is that which can be available on call for up to 72 hrs per year at a lower cost than that required to build and maintain generation capacity with comparable operating time. Therefore, it seems obvious that separate targets in terms of capacity reduction and separate pricing mechanisms need to be established for generation capacity and DSM.

Reforms to demand side management for the transition period

The statements that:

- *compared to the initial capital investment requirements of supply side generation, demand side resources generally have upfront costs many orders of magnitude lower; and*
- *demand side management capacity does not generally involve commitment to a long term "sunk" asset;*

focus only on the DSM aggregators that collect together a large number of small existing loads who are prepared to shed load for financial gain.

These statements ignore the core providers of DSM in WA such as Simcoa, that have made major investment decisions and a commitment to the State economy based on power tariffs which were offset by DSM payments, and largely offset the cost of the Reserve Capacity charges levied upon them being end users.

It is correctly stated that:

The commercial driver for a demand side resource to participate in the Reserve Capacity Mechanism is that it expects to have enough money left over from capacity credit revenues after accounting for whatever it loses whenever it is dispatched.

A fiscally responsible DSM provider will not gamble upon not being called upon. Rather, it will assume that it will be called upon for its maximum liability (proposed to be 200 hrs) and assess this against what the returns will be (proposed to be capped at max. capacity market price $164,800). This can be expected to effectively remove any DSM from the WEM. DSM is not supposed to reduce market costs by duplicating the role of generators. It is a cost effective alternative to manage short term peaks rather than building surplus capacity to stand idle.

It is stated that DSM capacity should face similar incentives to *"other forms of generation capacity"*. DSM is not a form of generation capacity. In the current oversupply situation, the incentive to generation to reduce capacity is a reduction from around $120,000/MW to $80,000/MW i.e. a 33% reduction in revenue. DSM providers face a reduction from $120,000/MW to $14,000/MW i.e. an 88% reduction. This cannot be considered a similar incentive, however it is represented.

In the example used regarding unserved energy and the cost of servicing it: The 1,000 MWh example is used to justify the payment of $14,000/MW to DSM. There is no mention of the time frame over which this 1,000 MWh unserved demand would be spread. The implication is that it would be across the whole year.

In the real world, such a peak would probably be a 2 hr spike on a hot day. To deal with this using generation capacity, an extra 500 MW generation unit would be required which would receive, even under the proposed reforms, 500 x $ 80,000 - $120,000 in capacity payments for the year i.e. $40 million - $60 million. However, what is effectively proposed, is to pay DSM providers only 500 x $14,000 i.e. $7 million to provide the same service. There is a definite imbalance being proposed supporting the position solely of the generators, which defies economic rationalism and does not address the underlying issues of excess capacity in the market being paid for by the end user.

Calculating the amount to be paid to demand side management facilities

The calculation for the amount to be paid to DSM follows through from the flawed argument that DSM has no sunk costs. This ignores those facilities where the availability of a realistic DSM program was a core component of their initial investment decision.

Data from the NEM is presented and then a comment made that the "*cheapest available loads"* would participate in DSM and this is used as a justification to set the DSM capacity price at $13,800 rather than closer to the average value of reliability of $33,460.

Simcoa's research has shown that currently the value of DSM in the NEM (also experiencing surplus capacity conditions) is in the range $20,000 - $30,000/MW. Has any research been carried out by the RCM project team with respect to the value attributed to DSM in other jurisdictions?

Additional considerations

It is proposed that:

"all demand side management resources would be required to sell capacity credits to the Market Operator, with market customers making payments for demand side capacity on a pro-rata basis. This would prevent a single market retailer from contracting for lower priced capacity, and being able to offer a price with which other retailers cannot compete."

This highlights the conflicts in the proposals in the Position Paper. The amount being offered to DSM providers is so unreasonably low that retailers will be able to reduce energy costs to their customers by contracting with DSM providers directly at a price that will keep the DSM providers in the market.

It appears from the proposed reforms that in order to protect generators it is proposed to block this option, forcing DSM providers out of the market and increasing energy costs to the end users – i.e. overruling the first and fundamental objective of the reform process.

Expected reserve capacity price to be paid to demand side management facilities during the transition period

The expected capacity price for DSM is forecast to increase from $13,898 in 2016/17 when there is 20% capacity surplus in the market to only $16,334 in 2024/25 when there is expected to be only 5% surplus. It should be noted that in the same time frame payments to generators are forecast to increase from $80,232/MW to $123,214/MW.

Whereas generators exiting the market will lead to increased capacity payments to other generators, there is no indication the DSM providers exiting the market will directly increase payments to those DSM providers remaining.

Whilst mechanisms are in place to incentivise generators to enter the market to ensure security of supply, it appears there is little or no value attached to retaining any DSM in the market whatsoever.

The justification used for negligible payments to DSM is the number of hours that DSM will be called upon whereas the payments to generators are based on the cost to bring new units on line. If new generators are going to be sought to supply unserved demand once the surplus in capacity drops below 5% (although these units will only be serving 101 MWH/yr), then logic dictates that DSM providers should have the same opportunity to service these spikes in demand which statistically will be a couple of hours on hot days in summer and receive the same full capacity payment as a generator i.e. $120,000/MW rather than $14,000/MW.

No examples have been presented of the proposed model being applied successfully elsewhere in the world.

Simcoa has a CMD of 72.5 MW of which 64 MW is curtailable - i.e. at times of peak demand this load can be switched off hence there is no requirement for generation

capacity to be constructed or on standby to cover this 64 MW of capacity and receiving nearly $8 million pa.

Today, the net capacity charge paid by Simcoa is $2.33 million pa. Under the proposals contained in the position paper the net capacity cost for Simcoa's 72.5 MW will increase immediately by approximately 160% to around $6 million pa and by the end of the transition period to around $9.5 million pa i.e. an overall increase of more than 300%.

It should be noted that by the end of the transition period, there will be barely 5% surplus in capacity and DSM providers will be urgently required to maintain security of supply. It should also be noted that at that time payments to generators will be higher than they are today. Across the transition period, as surplus capacity reduces from 20% to 5%, capacity charges will increase by 54% whilst the rate to be paid for DSM will only increase by 17.5%.

The above represents a significant and unrecoverable increase in overall operating costs for Simcoa and will make it very difficult for Simcoa to remain viable. At a time where Australian businesses are faced with increasing pressures to become more cost effective in order to survive, and Simcoa are currently able to compete internationally, we are seeing the potential for this issue to push Simcoa's costs towards the top of the international cost curve, where in excess of 95% of Simcoa's production is sold.]

The Role of Demand Side Management

As stated in the Position Paper, the reliability standard is defined relative to the expected one-in-ten year peak demand. The 2012 review of the reliability standard, conducted for the Independent Market Operator by Market Reform, estimated that the optimal level of capacity was, on average, 7.6 per cent greater than the forecast level of peak demand and there is no intention to change this.

DSM is of critical importance in achieving optimum efficiencies and lowest cost for consumers in any electricity market. In the SWIS, approximately 5% of the generation capacity (250 MW) is required for less than 72 hrs per year and this does not include the 7.6% safety margin which is usually not called upon. It is not economically logical or environmentally responsible to build or maintain generation capacity to be available for these 72 hrs or for the safety margin when that capacity can be sourced from end users who are prepared to curtail their load. This is not the same function served by peaking plants and is why markets such as the PJM ensure that they maintain around 8% DSM to minimise energy supply costs to the end users.

Changing the rules or market structure to force DSM out of the market to address the current situation of oversupply is short sighted. If such industries are unable to survive, this service will not be available later once economic growth has absorbed the surplus capacity in the system. Excess capacity will then again need to be installed (and paid for) to cover peak demand.

A 2005 report prepared for the Energy Users Association of Australia (Demand Side Response (DSR) in the National Electricity Market - Case Studies) highlights the value and importance of DSM. It also identified the lack of an effective DSR (ie. DSM) program as the key weakness of the NEM at that time.

"Electricity consumers also pay a significant (and largely unseen) price for the suppliers' costs for building sufficient electricity generation and networks to meet the short peaks in physical electricity demand, which can occur for only a relatively small number of hours each year. More than 5% of the network infrastructure is only used for 0.2% of the time and this under-utilised capital investment in the network is paid for by all consumers, whether they ever use it or not, due to the nature of retail energy contracts and network charges.

This means that the 7.8 million electricity end use customers in the NEM in Australia are collectively paying up to an estimated $2 billion per year more than they would if an effective DSR process was in place. If this could all be recovered and passed through to electricity consumers it would translate into an average saving of about 10% in total annual electricity costs……

Demand Side Response (DSR) is a critically important issue for all electricity consumers. This applies particularly and immediately to mid to large electricity consumers who can shift some of their electricity demand in time, who have modern meters and other equipment, and/or who any organisation which owns or operates small, distributed electricity generators.

The NEM operates satisfactorily for much of the time, but has a number of problems/issues which are still to be resolved. Arguably one of the most important of these to electricity consumers and to the national economy is the lack of an effective DSR. An effective DSR will make the NEM significantly more efficient than it currently is with a clear financial benefit to all electricity consumers, many market participants and to the Australian economy.

Two major areas of market inefficiency are:

• The process used by the market participants, including electricity retailers and generators, to manage the risk created by extreme price volatility in the wholesale market (these extremes in the wholesale price occur for less than 1% of the time, but represent more than 20% of the wholesale turnover); and

• By network service providers who are encouraged under the current pricing regulations existing in most states/territories to build network capacity to meet the extreme peak needs of the physical demand for electricity on the electricity network (these extremes in the peak demand occur for less than 0.5% of the time, but require some 10% of the capital)."

The Position Paper appears to be focussed on reducing excess capacity without disturbing generators any more than can be helped. In this context, it appears DSM is considered to be superfluous.

Simcoa and other energy intensive operations in WA depend upon the on-going and reasonable recognition of the value of DSM for their continued economic viability. The Simcoa facility was established in WA in 1989 on the basis of a contract that utilised Simcoa's ability to curtail its load in case of a shortage of capacity. The power tariff offered by Western Power recognised the value that Simcoa brought to the network in terms of DSM.

In 2006 when Simcoa renegotiated its original contract and again in 2010, when a new power contract was negotiated for a plant expansion in excess of 50%, the value of this DSM capability was again recognised – without DSM payments the expansion would not have taken place, and if they are removed there will be a significant impact on the ongoing viability of Simcoa, with further investment in WA by Simcoa's owners unlikely.

It is recognised that rules relating to DSM may nevertheless need to be tightened to ensure that loads receiving payment for providing this service are loads that can genuinely be relied upon to be available when called upon for periods corresponding to the expected shortfall in supply in circumstances of peak demand – such as Simcoa's.

Conclusions

There is no doubt that there is an excess of capacity in the WEM due to slower growth than forecast and conservative planning.

There is also no doubt that there are issues to be addressed including generation units being built and receiving capacity payments even though they are not available for service.

DSM also needs to be reviewed and it must be ensured that those providers receiving payments can be called upon when required.

A rigorous analysis is also required with respect to the value of DSM – taking all factors into consideration and a series of incentive programs developed accordingly.

With respect to DSM, the approach of the Position Paper appears to be that it is an unwanted complication to a simple energy supply model.

There is no evaluation in the paper of the value of DSM in terms of reducing energy costs to the end user – even though this is widely accepted internationally. There are numerous studies from the NEM and overseas quantifying the financial benefits to end users of encouraging DSM rather than building power plants to meet one in ten year peak demand scenarios. None of these appears to have been considered.

In other jurisdictions, including those quoted widely as role models in the Position Paper, there are programs to encourage DSM above the current levels of around 8% of network capacity.

The approach for the WEM appears to be to reduce DSM payments by almost 90% to eliminate DSM as far as possible from the market during the Transition Period.

Should any DSM providers survive the Transition Period, it appears there will be no special programs to encourage their on-going market participation, rather they will need to compete in auctions as generators.

It also would appear that there is no mechanism at all to retain any DSM providers in the market as there is not even a mechanism to directly incentivise new participants as the pool of DSM providers diminishes.

The end result is that the surplus of Capacity in the WEM will be addressed with minimal disruption to generators and without achieving lowest cost objectives for the end users.

It seems incongruous that it is the payment for the oversupply of generation capacity to the market that has largely created the high Reserve Capacity pricing, and yet this is largely being protected, or even further rewarded, with the proposed reforms. Given the prolonged wind-back, the proposal is effectively waiting for new demand to take up the slack, as there is very little incentive for capacity to exit the market. In addition the proposal to return the capacity refunds not to the end user, but rather to the generators will not see any benefit to the consumer, but rather make it more attractive to generators to remain in the market

There is clearly a lack of balance reflected in the proposed reforms between the interests of generators, DSM providers and consumers.

It is recommended that the harmonisation approach be abandoned along with the proposed Transition Period measures insofar as they relate to DSM.

A study should be initiated to:

- Determine the real value of DSM in terms of meeting spikes in demand rather than building generation capacity which will rarely be called upon.
- Investigate world best practice in terms of DSM programs and the amount of DSM required to achieve lowest costs for end users.
- The DSM programs should provide greater returns to those providers able to come off line with little or no notice and who put least restrictions on the services they provide.

Equal consideration must be given to DSM providers along with generators in terms of minimising the financial impact / hardship during any transition period and there should be no restriction on retailers accessing DSM resources to meet their needs.

Alternate mechanisms whereby the effective offsetting of RC charges against DSM capacity should be considered, as a minimum through the transition period, until the true value of DSM can be realised in an open market auction. This DSM capacity does not contribute to any increased requirement for generation capacity in the WEM.