MINISTERIAL COUNCIL ON ENERGY

ISSUES

Standing Committee of Officials Forum on 6 April 2004 regarding

User participation in the NEM by:

- **Demand responses**
- **Interval metering**
- **Retail pricing and FRC**

Response from:

- **Electricity Consumers Coalition of South Australia**
- **Energy Consumers Coalition of Victoria**
- **Energy Markets Reform Forum**

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A. General observations on demand side responsiveness:

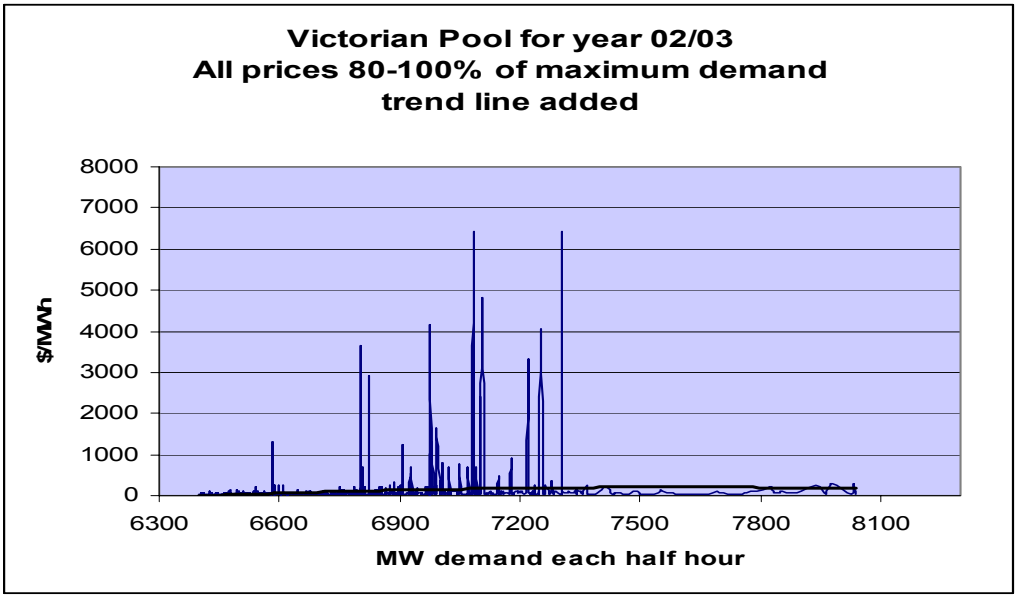
The need for a demand side response to the current electricity market is predominantly driven by two main issues.

- To reduce the "needle peak" demands observed in the electricity market. These needle peaks require significant infrastructure for relatively small periods of time.

- To provide a counter-foil to the market power of the generators by reducing the ability of the generators to "spike" the system wholesale prices, and to a lesser extent reduce the need for investment in infrastructure.

To fully appreciate the ability of the demand side to respond sufficiently to impact the electricity market needs understanding of a number of issues.

1. Electricity supply and the right to use it "as and when" is seen as an essential service. Businesses and households cannot operate in today's environment without electricity. To reduce the amount of electricity impacts on the normal operation of the business and household
2. In comparable terms the cost of electricity in Australia is relatively low and therefore is a small component of the overall cost structure of most businesses and households. Therefore to get the attention of the demand side is quite difficult, with a common response being "why should the business put its core activity at risk to save a modest amount from reducing its electricity demand?"
3. Most businesses and an even larger proportion of households do not have a sufficient understanding of the new electricity market for them to be able to participate with knowledge, in the new electricity market. The market is complex and to participate requires time, effort and understanding – aspects which businesses and domestic consumers may wish to dedicate to their business or other pursuits for similar rewards.
4. By and large generators have the ability to provide (or withdraw) large amounts of electricity from the system at very short notice. Other than perhaps metal refineries, few if any consumers have the ability to react sufficiently quickly to counter the ability of the generators to control the wholesale market.
5. Forecasting when a demand reduction may deliver a large financial benefit is difficult, as the price spikes which will deliver the savings do not closely correlate to demand as the following typical demand versus price chart shows.



Source: NEM Review

6. If businesses are to be involved in demand reduction at call, there are a number of precursors that are required –
    a. what can be reduced without greatly affecting the business,
    b. how long will the reduction apply for and how often will it be called on,
    c. will the reduction be called on (the need for certainty),
    d. when is the reduction to be instituted (so that plans can be introduced),
    e. what is the revenue going to be (so the revenue can be measured against the costs) and
    f. what is the staffing need to be involved (how will the process be managed).

    Domestic users have there own list of precursors.
7. If businesses are to load shift, they need to work with their retailer to formalize the benefits so these can be compared to the costs and potential disruption. The cash benefits offered by retailers are usually modest, probably because retailers themselves are uncertain of the magnitude of the rewards.
8. There is a general inertia of business and households to vary their electricity usage[1].

[1] See “Interval Metering of Electricity Supplies to Domestic Consumers” by Headberry Partners, February, 2004, and “Electricity Pricing Structures for Customers with Interval Metering” by Energetics, March 2003.

B. Encouraging demand side responses:

Before this issue can be addressed, clarification is needed as to what is being sought by way of the demand side response.

- Is it the reduction of peak demand to reduce the load on the networks or
- Is it the reduction of demand to reduce the wholesale (pool) price.

The response to these two fundamental issues drives the necessary demand side response.

The implication of the working paper is that both of these quite different questions can be answered with a single solution. In fact the two need to be addressed quite independently. For example, a highly loaded distribution network in the residential part of a capital city will not have the stress on it reduced by the demand reduction of a regionally based alumina refinery. Conversely a lightly loaded network will not gain any benefit because the alumina refinery reduced its demand in response to an artificial wholesale price spike brought about by generators benefiting from an interconnector failure or constraint.

	ISSUE	RESPONSE
	The demand side and the pool	
1	There is a major market asymmetry between the power of the generators and the demand side to react to changes in the market.	The power of the generators to "game" the market must be reduced before any meaningful demand side response is likely.
2	Most demand side participants need a high degree of certainty of timing and revenue.	The wholesale market needs to be much more predictable than at present. This runs counter to the nature of the energy only market which essentially requires, even encourages, volatility. Revenue from demand reduction must match the expectation.
3	There is a need for the demand side to know what the benefit they will gain from offering a demand reduction	If "pay-as-bid" is not seen as a viable option, then there must be another option considered which provides the same level of certainty of revenue
4	The EUAA trial aggregated some 500 MW, with lesser amounts being "dispatched". Just one unit in the large portfolio of	This asymmetry needs to be overcome to provide a balance in the ability to respond to regional price spikes

	generators owned by Loy Yang, Delta, Macquarie, Eraring Power, etc, exceeds the aggregation of the many demand side contributors to the trail.	
5	The SCO proposes that the secondary market might provide appropriate price signals to assist in the aggregation of demand and a demand side response.	The current secondary market is extremely illiquid, with counterparties coming basically from the ranks of generators and retailers. This is a result of the highly volatile wholesale price. This price volatility needs to be reduced to encourage third parties and consumers to enter into this secondary market
6	Aggregation of demand has faced a number of challenges, particularly at the small end of the market.	The solution has to recognize that retailers are a key element in this issue as they interface with consumers.
7	Retailers have exercised their ability to "cherry pick" customers involved in aggregation, particularly to retain/gain attractive loads. Retailers gain their profits from sales and maximizing volume.	Retailers will have to be incentivised to provide aggregation and load management tools to gain the outcomes being sought.
The demand side and the network		
8	Network constraints occur usually on hot days, usually referred to as caused by the incidence of air conditioning load. Load shifting is an option.	Consumers (domestic and business) see that such loads cannot be readily shifted – why have an air conditioner working when the temperature is not hot, but turned off when it is needed!
9	Reducing demand elsewhere does not assist a local excess demand issue, so wholesale market solutions are not applicable	Local network augmentation must either be paid for or the <u>local</u> demand reduced.
10	The issue then becomes one of cost allocation for augmentation or demand limitation. If a consumer and distribution company have agreed to a given demand, then the consumer has	Cost allocation must be based on the demand on the network when the network is at maximum usage (ie kW not kWh). The demand used now has to be either paid for or not used. The "ratchet"

	effectively paid for the right to this level of demand.	approach[2] to excess demand provides a penalty for exceeding demand and a cost allocation mechanism. Demand reduction can be voluntary (eg local demand limit switch giving the consumer the power to select what appliances it wishes to use) or by agreed compulsory switching (eg remotely by ripple control or similar of specific appliances)[3]

C. Interval meters and the demand side:

The response to this issue is more fully developed in the report prepared by Headberry Partners P/L sent to the Essential services Commission of Victoria on 1 April 2004. This work addresses issues related to the domestic use of electricity. Another report, prepared for the Essential Services Commission of SA by Energetics P/L in March 2003 also provides useful information on this issue as applied to businesses use of interval metering.

The view determined by the Energetics report is that businesses with interval metering (IM) show an inertia to using the meters (in direct contradiction to the expectation of the IM proponents) and businesses prefer to use simple mechanisms and tariffs for managing their electricity costs. The conclusion of the Headberry report is that domestic consumers are unlikely to use the "benefits" of interval metering due to complexity of the market, there being no clear price to demand signals, inelasticity of their demand and the relatively low cost of electricity.

The cost benefit of reduced investment in networks by limiting high demands has not been assessed against the high cost that individual consumers have to incur themselves in order to gain maximum benefit from the data the interval meter provides[4].

	ISSUE	RESPONSE
1	Demand reduction and IM. IM has the ability to reduce demand at times of network	This is not proven and independent analysis of how users with IM actually do use the IM data, does not support this contention.

[2] The ratchet approach is that a consumer automatically has its maximum demand payment related to the highest level of demand used in the previous 12 months. It can only be reduced by demonstrating there has been identifiable endeavor to reduce demand by the consumer
[3] This matter is more fully explored in the Headberry Partners P/L letter of 1 April 2004 to the Essential Services Commission of Victoria regarding interval metering.
[4] For more explanation of this observation, see Headberry letter to ESCoV of 1 April 2004

	congestion and of high wholesale prices. Remote load management is also an option to reduce demand at critical times	There are other lower cost and more direct mechanisms to achieve the desired outcomes
2	Price outcomes and IM. IM provides an incentive to encourage load shifting that accumulation meters cannot. IM provides a more cost reflective price outcome	IM only provides data, but immense quantities of it, which retailers and distributors will have to assess. Most demand is inelastic[5] and electricity costs are only a small proportion of the total cost of running a business or household. IM is not the cheapest solution to allocating network costs - this can be just as easily done with a simple demand meter.
3	Seasonally based tariffs.	Seasonally based tariffs are already being used (eg as does Alinta in the SE suburbs of Melbourne) A simple demand meter provides the ability to allocate costs, whether based around the seasons or not. A demand switch limits a consumer from exceeding the agreed demand on which the network has been sized.
4	Proposed review of the use of existing IM by consumers	This should build off the existing work already completed. However such a review should consider all of the costs incurred in making full use of the IM and the preparedness of consumers to modify their demand. If consumers are not prepared to modify their demand then the supposed benefits will not occur
5	Identification of specific consumer classes which may benefit form IM roll out	This work must also address the cost a consumer will incur to implement its program to respond to the data provided. Studies to date have only addressed the assessed market benefits a consumer may achieve, without examining the costs the consumer has to incur itself in order to achieve these gains.
6	Retailer costs associated with IM	Retailers are assumed to be able to generate competitive prices for each consumer with an IM. To do this requires an immense amount of data analysis (there are 2,000,000 households in Victoria alone). In addition

[5] This is an observation from the Energetics and Headberry reports

		there is to be added the retailer costs associated with attending on each consumer with a unique tariff structure. This provides retailers with the ability to discriminate against specific consumers or groups of consumers.
7	Remote load control technology	There are tools available to remotely control specific appliances (eg off peak hot water using the "ripple control"). This removes the power of the consumer to use appliances which are considered necessary at a particular point in time. For example, a consumer may wish to turn off all appliances except the a/c unit to limit its demand. Remote load control removes this exercise of choice.
8	Load Profiling	This is essentially a tool for allocating wholesale costs between retailers. Accumulation meter readings combined with profiles can reasonably provide a reasonably accurate cost allocation, as they are doing this currently. Whilst IM <u>may</u> improve the accuracy of the wholesale cost allocation, it should be remembered there are many other aspects of inaccurate cost estimation in the electricity market. The cost of IM roll out needs to be assessed in conjunction with the cost of the roll out and the overall improvement (if any) in cost allocation between market participants and between retailers and consumers. Distribution networks can allocate costs using a simple demand meter.

D. Retail Pricing:

The introduction of the disaggregated electricity market whilst providing an increase in transparency of pricing, has also introduced a major cost penalty to consumers due to the need for each of the individual proponents to have to manage risk between each stage of the supply chain.

For example, under the aggregated supply chain of the vertically integrated business, the risk of demand variation by a consumer is a single element, and managed between the consumer and the business. If there is an over or under demand the business adjusts its pricing structure at a time in the future to recover

the losses or gains it made by the varied consumer demand. If the demand exceeded expectations, and high cost plant was dispatched, the cost was "smeared" over all consumers.

Under the new structure, if the consumer varies its demand, the retailer is exposed directly to the under/over demand, and factors in a risk premium to accept taking "pool risk". As the pool is very volatile this risk (though applying to a small volume of electricity) is very high due to the maximum price possible in the pool (up to 300 times the long term average). The ESCoSA provided a break down of the costs of managing this risk[6] in its recent assessment of the retail price cap to applying in SA. As assessed by ESCoSA, this risk premium to the retailer can be as high as 40-60% of the purchase price of the forward price offered by generators.

Additionally generators face dispatch risks which have to be added to the cost of generation. In the event a generator has provided a forward hedge to a retailer but has a plant failure, the generator is exposed to sourcing any under run from the pool, which is subject to high volatility in price. The AFMA forward price includes for this risk, and the difference between the AFMA forward price and the cost of production (as typified by the long term average pool price) is of the order of a 30-50% premium of the average pool price.

In simple terms the risk premium added by generators and retailers could reach as high as 100% for domestic consumers. For large consumers with a predictable demand the risk premium is much smaller.

Whilst Victoria and SA have introduced retail price caps to insulate domestic consumers from excessive price variations, NSW and Queensland have introduced risk management tools to reduce the risk exposure of retailers and generators (ie the ETEF and BPA schemes).

To a certain extent the risk exposure faced by retailers and generators is artificial as it results from the segregation of the market elements. The approach that SCO should be taking should be one which leads to elimination of the risk profile confronted between these two key market participants.

	ISSUE	RESPONSE
1	Is there a role for price caps? What "over-arching" principles could assist?	The logistical challenge posed by the need to serve a very large number of small consumers militates against the likelihood of true competition for small consumers. Retail price caps ensure that small consumers will not

[6] A pictorial build up of the risks is provided in appendix 5 of the report "Interval Metering of Electricity Supplies to Domestic Consumers" by Headberry Partners, February, 2004,

		have the “effective inertia” of the market work to their detriment. The prime over-arching principle is the elimination of unnecessary risk premiums having to be built into the price cap
2	Price caps stultify innovation.	There has been significant competition between retailers to gain the attractive large predictable demand consumers. Evidence (eg by Energetics) is that these large consumers are price driven and desire simplicity of tariffs. The need for innovative products (particularly if seen as introducing a price premium on the “raw” electricity price) has not been evidenced as a feature large consumers seek.
3	Consistent price cap derivation What methodologies are appropriate in price cap setting?	There is a need to normalize the approach to minimizing unnecessary risk as a precursor to setting a consistent price cap derivation. Requiring independent regulators to transparently develop price caps is supported, as is a consistency of approach.
4	Price caps eliminate price signals	There is a need to differentiate between commodity prices and networks needs. Network price signals can be provided in other ways as mentioned earlier. Commodity pricing needs to address the market shortcomings (eg excessive risk) before small consumers should be exposed to the volatile market gyrations.
5	Providing a facility to carryout “comparatively shopping”	Not all consumers have access or the competence to use the web. Alternatives are required. Some regulators and ombudsmen provide some facility in this regard. SCO should examine the viability of using a number of ways to provide the facility for comparative sourcing of competitive pricing.
6	What intermediate steps need to be taken?	Elimination of the unnecessary risk premiums being built into price caps. These need to be eliminated before exposing small consumers to the risks that need to be covered in the

		volatile market
7	Cost components in the price cap	The recent ESCoSA process for setting the SA price cap provided some useful insights[7].
8	Timeframes for price caps to apply	Both retailers and consumers need some certainty which comes from a significant period of price capping. The recent agreement for price caps between the Victorian government and retailers for four years provides a high degree of future certainty
9	What is effective competition?	It is unlikely that there can be effective competition at the small consumer end of the market. Its sheer size alone and the relatively small demand by each consumer provide an effective barrier to entry. The cost to retailers to service this market is very high relative to the margins that can be earned.

[7] In particular the SA Energy Consumers Council (chaired by Prof Blandy) provided the ESCoSA with useful and appropriate submissions (dated 24 Nov 03, 7 Dec 03 and 10 Dec 03) into the SA price cap