Improving User Participation in the Australian Energy Market

Discussion Paper

User Participation Working Group

Ministerial Council on Energy Standing Committee of Officials

March 2004

User Participation Working Group Consultation Process

The Ministerial Council on Energy's Standing Committee of Officials (SCO) is seeking specific comments and/or views on the range of issues discussed in the paper to inform the development of policy actions by the MCE. SCO is particularly interested in obtaining the views of energy consumers, consumer advocates, retailers, distributors, and other market participants and institutions.

The consultation process will comprise two workshops in April 2004 (locations to be determined based on demand) and the opportunity to provide written comments to SCO's User Participation Working Group by 16 April 2004.

Please include your name, address, organisation, and contact details, including your email address, if applicable, on your submission. Wherever possible submissions should be provided electronically.

To ensure the Working Group is able to consider all views within the work program timeframe, it is requested that written submissions be limited to five pages, and consider the consolidated set of issues on pp 22-23 of this Discussion Paper. Any supporting documents should be clearly labelled as attachments.

It is intended to make electronic submissions publicly available on the User Participation section of the Ministerial Council on Energy website at the end of the process. If you do not want all or part of your submission made publicly available, or you consider any part of your submission to be confidential or commercial-in-confidence, you should make this clear in your submission.

Submissions must be received by 16 April and addressed to:

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Table of Contents

Executive Summary **1**

1 Introduction **4**

2 Options to Encourage Demand Side Response in Energy Markets **6**

2.1 Context 6

2.2 Market Mechanisms to Facilitate Demand Side Response 7

2.3 International Experiences with Market-Based Demand Response 9

2.4 Proposed Policy Direction 10

3 Interval Meters **12**

3.1 The Status of Interval Meters in Australia 12

3.2 Specific Benefits of Interval Meters 14

3.3 Proposed Policy Direction 15

4 Retail Pricing **17**

4.1 Role of Price Regulation 17

4.2 Periodic Review of Retail Price Regulation 17

4.3 Accessible Consumer Information 19

4.4 Proposed Policy Direction 20

5 Issues for Consultation **22**

5.1 Demand Side Response Market Mechanisms 22

5.2 Interval Meters 22

5.3 Retail Pricing 23

Appendix **24**

Glossary **31**

Executive Summary

In its December 2003 response to the Council of Australian Governments' (CoAG) Energy Market Review, the Ministerial Council on Energy (MCE) included user participation in the priority items for further market reform. The need to increase the engagement of end users in the Australian energy market was identified as necessary to achieve effective competition and to maximise the benefits of market reform for energy consumers.

The MCE directed its Standing Committee of Officials (SCO) to consider three factors that would facilitate greater end user participation in the energy market. They are:

- the scope to facilitate a demand side response pool in the National Electricity Market (NEM);
- the costs and benefits of interval metering in the NEM; and
- alignment of retail price caps with supply costs and periodically review of the need for price caps in jurisdictions where full retail competition is operating.

This discussion paper examines each of these issues in turn and considers generic market barriers that currently impede user participation. These barriers include inadequate market knowledge, varying levels of contract negotiation abilities, energy pricing issues and associated technology considerations. SCO will investigate strategies for the removal of these impediments and the facilitation of improved demand response from all market participants.

In response to the issues raised by MCE a set of policy directions have been proposed as a path to achieve the objective of enhanced user participation and these are summarised below:

Demand Side Response

Demand side response mechanisms enable end users to be financially rewarded when they choose to switch off, or re-schedule their energy usage in response to market signals. Within the NEM two potential market-based demand side response pool mechanisms are considered:

- a 'pay-as-bid' mechanism proposed by the CoAG Review that dispatches and pays for demand side response in the physical energy supply market; and
- a demand side aggregation facility that brokers the demand side response from a number of end users and sells this package of response in either the financial or the physical market.

Benefits of both mechanisms include the potential moderation of spot prices and financial returns for end users who provide demand side response. However, a 'pay-as-bid' mechanism raises a number of efficiency concerns, including its ability to effectively price and dispatch demand side response in the spot market. An aggregation facility that facilitates demand side response in the financial market appears a more promising mechanism to maximise available value to end users.

SCO therefore proposes to commission further work to examine the feasibility of an aggregation facility, taking into account the results of the Energy Users' Association of Australia's (EUAA) demand aggregation trial.

Interval Meters

Interval metering technology coupled with appropriate time-of-use tariffs has the potential to deliver a range of benefits to market participants. Interval meters may encourage consumers to address their energy consumption by moderating electricity load at times of high wholesale spot prices or network congestion. The reduction of peak energy demand may benefit the market in delaying the need for investment in the electricity supply industry and lessening wholesale spot price peaks.

Interval meters and associated time-of-use tariffs are potentially more equitable than existing less differentiated pricing arrangements, and more cost-reflective tariffs enable consumers to gain benefits from load shifting. Properly implemented, interval metering can also be used to settle the wholesale market more efficiently than load profiling and reduce retailers' financial risk. The extent of these benefits, in comparison to the likely costs of implementation, vary between the different customer segments and across the jurisdictions.

SCO proposes an assessment of the benefits derived from the existing interval meter stock to provide information on areas where benefits of interval meters can be enhanced and which additional customer classes may benefit from greater application of interval metering technology. A wide scale mandatory rollout of interval metering across all customer classes may be premature at this stage of market development, however, the appropriate analysis has not been carried out in most jurisdictions.

Low cost, remote activated load control and measurement technology may be a cost effective alternative to interval meters for the small customer classes. SCO proposes that this concept be further explored.

Retail Pricing

In those jurisdictions where full retail competition has been introduced, various forms of retail tariff regulation are being applied as a safety-net mechanism to ease the transition to a competitive market for small customers. SCO recognises the need for the development of a transparent and predictable process. Enhanced market efficiency should be promoted through the alignment of regulated retail prices with energy costs to reflect growing levels of competition. Such a defined process would also allow for periodic review of the need for retail price regulation as the retail market matures.

SCO proposes to develop an overarching set of policy principles, which will guide all governments where FRC has been introduced, to ensure transparent decision-making on retail price regulation issues. Refinement of price setting methodologies to inform decisions on cost components of regulated tariffs is essential to align retail prices with energy supply costs. It can be argued that greater consistency is required across jurisdictions to encourage the development of competition.

SCO considers that a robust assessment framework is needed to underpin periodic review of the need for ongoing retail price regulation where full retail competition has been introduced. The

framework will establish criteria against which the removal of retail price regulation may be considered and provide a clear process and timeline for the review.

The review will also clearly need to give regard to the ongoing need to protect various customer groups who, for various reasons, are unable to access the potential benefits of an effective competitive retail market for energy.

SCO recognises that information impediments exist in the current transition to a competitive retail market. Electricity price comparison websites have been used overseas to enable consumers to compare market offers of retailers and make informed choices about their energy supply options and some similar developments have commenced in Australia. The further development of similar products addressing the information needs of the Australian market is proposed to meet this information gap.

Consultation

SCO is seeking specific comments and/or views from stakeholders on the policy directions outlined above and discussed in more detail in chapters 2-4. Stakeholder input will be used to inform the development of policy actions by the MCE. The process for consultation is described on page (i). Specific issues for consultation, that stakeholders may wish to address in their submissions, are listed in chapter 5.

1 Introduction

In December 2003, the Ministerial Council on Energy (MCE) identified the need to increase participation of end users in energy markets to "achieve effective competition and maximise the benefits of market reform" for energy consumers. Ministers recognised that low levels of user participation are a shortcoming of current energy market operations and that strong inter-linkages exist between improved demand side responses and cost-reflective price signals accessed through appropriate metering technology[1].

As a result, the Standing Committee of Officials (SCO) has been directed to examine options to further develop the demand side of the Australian energy market and report to Ministers on their recommendations. The areas under examination include:

- facilitation of a demand response pool in the National Electricity Market (NEM);
- the relative costs and benefits of interval metering in the NEM; and
- the development of more cost-reflective price caps over time, including a process for periodic review in jurisdictions where full retail contestability is operating.

A cross-jurisdictional working group has been established to investigate this issue, to consult with stakeholders and to develop an integrated policy plan for MCE consideration by June 2004. Implementation is proposed to commence from July 2004. The working group consists of the Tasmanian Department of Infrastructure, Energy and Resources; the Victorian Department of Infrastructure and the Australian Government Department of Industry, Tourism and Resources.

The objective of this work is to develop a policy framework to facilitate the move from what is widely considered a supply-side focussed market towards a genuine, two-sided market with active involvement by end users including residential, small business and large industrial customers. It is intended that the final policy framework will be complementary to other demand side related activities including the proposed National Framework for Energy Efficiency.

The purpose of this discussion paper is to:

- present SCO's preliminary thinking on the options available to enhance user participation in Australian energy markets;
- describe policy options under consideration; and
- invite submissions from stakeholders.

The development of an active role for end users requires consideration of a range of issues. The ability and desire of end users to participate in the market will vary significantly, depending on factors such as their knowledge and understanding of the market, their risk aversion, price elasticity, need for price certainty and continuity of supply. While the focus of the demand response discussion is currently on the electricity market, there is potential for future application to gas once an effective wholesale market for gas develops.

[1] Ministerial Council on Energy, *Report to CoAG on Reform of Energy Markets*, 11 December 2003, pp11-12.

SCO recognises that to promote greater demand side response a number of underlying market impediments need to be addressed. These impediments include information and awareness barriers, energy and network pricing issues affecting user participation in all market segments and other market barriers to increased demand side response. For example, end users require timely and accurate price signals to stimulate consideration of demand side response. If such information is available, consumer behaviour will be better able to respond to changes in energy prices and discretionary energy demand will be adjusted accordingly. These impediments are just as applicable to existing bilateral approaches to encouraging demand side response as they are to new market mechanisms.

In general, mechanisms appropriate to encourage user participation for the larger end of the market are likely to differ significantly from those required for the domestic and small business market. Approaches to promote greater user participation therefore need to be multi-faceted and suited to the characteristics of specific customer classes.

Access to information on prices and energy usage patterns remains an obstacle to effective user participation even for large to medium sized businesses. Without a good understanding of energy usage patterns and the opportunities to better manage such patterns, it is very difficult for even the most sophisticated energy user to respond to changes in price. Enhanced information provided by accurate and time-of-use metering coupled with meaningful price signals should result in lowered demand levels or re-scheduling of demand to non-peak periods thereby easing upward pressure on energy prices.

For the residential sector, consideration needs to be given to balancing the opportunities for improved user participation through more effective price signals and metering technologies, with social policy objectives.

Each aspect of these issues has been considered within this paper; however, the paper also forms initial policy views on the role of government in facilitating enhanced user participation.

A summary of the proposed policy directions is provided at the end of each ensuing chapter on demand side response, interval meters and retail pricing (Chapters 2-4) and a consolidated list of issues for consultation is detailed in Chapter 5.

2 Options to Encourage Demand Side Response in Energy Markets

2.1 Context

Demand side response refers to end users (or third parties acting on their behalf) reacting to price or other signals provided through the energy market. Responses range from re-scheduling energy loads to the curtailment of loads altogether. The concept recognises that a customer need not merely be a price taker. Instead, customers can place a value on continued energy supply and be able to react when the cost of energy exceeds that value. Through appropriate market mechanisms consumers may be able to capture the economic benefits of reducing load during high priced events and network congestion.

Demand response also benefits the market directly by meeting energy security requirements by addressing the growing demand for energy at peak times (such as that caused by household air conditioning use). In particular, embedded generation is a growing and flexible form of demand side response that can be usefully deployed to ensure more efficient and secure energy supplies. Consideration of market mechanisms to encourage the participation of energy users should ensure barriers to embedded generation are removed.

Estimates of existing levels of demand side response vary. Relatively large parcels of response appear to be available to the market through negotiated bilateral supply contracts between energy retailers and large customers. Yet these amounts are often not considered reliable or firm and are generally not of sufficient magnitude to impact on energy spot prices[2]. To date, this approach has delivered virtually all of the demand side response seen in the NEM but has been somewhat limited in achieving the levels of response required to ensure demand side involvement in market processes.

An added difficulty in estimating the value of demand side response is the nature of pricing. The commercial-in-confidence nature of contractual negotiations obscures the price discovery process from other market participants, resulting in vastly differing perceptions of the market value of demand side response. As a result, many end users are not fully aware of how to maximise the value of their potential non-consumption and response providers tend to be limited to the large end user customer class.

While it is clear that further improvements in existing approaches can be made to secure adequate demand side response, recent policy debate has canvassed the concept of developing specific market based mechanisms to encourage the consideration of opportunities to enhance demand side responsiveness[3]. These proposals are not intended to replace contracted provision

[2] NEMMCO's *Statement of Opportunities 2003* indicates 526 MW of demand side response is currently available for dispatch in the NEM, however through application of a discount to reflect the unfirm nature of the product the total firm quantity is considered to be only 295 MW. Other studies and investigations have indicated that many times this amount is potentially available – for example, the 2001 NEM Ministers' Forum Working Group found approximately 1000MW of contracted load currently subject to load shedding, load interruption or pool price sharing contracts.

[3] A number of studies have been undertaken to examine the impediments to and ways of unlocking the value of demand side response by individual jurisdictions. Joint government investigations have included the NEM Ministers' Forum Working Group on Demand Side Participation in 2001-02 and the CoAG *Independent Review of Energy Market Directions* concluded in December 2002. These studies identified two potential market mechanisms

of demand response, but rather as complementary mechanisms to ensure that the optimal level of effective demand response is accessed.

2.2 Market Mechanisms to Facilitate Demand Side Response

2.2.1 A Pay-as-Bid Demand Response Pool

The CoAG Energy Market Review recommended the development of a pay-as-bid mechanism using the physical market to value and stimulate dispatch of demand side response. Bids to reduce load would be paid on an 'as bid'[4] basis with payment funded through an 'appropriate levy' on wholesale market operations[5]. Subsequently, the Australian Government commissioned a scoping study to advise on preliminary design and implementation issues on the pay-as-bid mechanism[6].

Subject to satisfactory development of the pay-as-bid mechanism, two clear benefits were identified in the study. The mechanism would be an attractive prospect if it offered response providers a significant financial benefit combined with price and time certainty. As a result, response providers would receive higher returns and face lower risks than would otherwise be achievable from alternative mechanisms (eg: bilateral contracts). The mechanism also has the potential to moderate spot market price spikes by enabling consumption to respond to price changes. This has the potential for reduced retail prices in the long term due to less volatility and price risk.

Conversely, a number of impediments and policy issues require resolution before a pay-as-bid facility could operate satisfactorily in the physical market. Particular concerns raised by the scoping study include:

- clarification on what 'pay-as-bid' entails. That is, should providers be paid on their bid price or should they be rewarded for the impact the dispatch of their response bid has on overall system marginal price;
- demand response tends to be structurally mis-matched with the five minute dispatch intervals of the physical market. Flexibility in notice periods and response duration needs to be accommodated;
- the scale and scope of the suggested levy required to fund the difference between the bid price and system marginal price needs to be determined;
- associated flow-on effects of a market-wide levy need to be considered, including the impact of the levy on consumers, and on prudential requirements due to possible problems in hedging the levy;

[3] that could price demand side response in the market - the CoAG 'pay-as-bid' mechanism and an aggregation facility.

[4] 'As bid' is a concept introduced in Chapter 6 of CoAG's *Independent Review of Energy Market Directions* report. It refers to consumers bidding price and volume of demand side response into the spot market.

[5] An 'appropriate levy' would be required to fund payments for the accepted demand side response due to the separation that would arise between the demand response bid price and system marginal price. The CoAG's *Independent Review of Energy Market Directions* suggests the market provide the revenue to fund this difference.

[6] Firecone Associates, *Pay-as-bid Mechanism Scoping Study*, June 2003 <http://www.mce.gov.au/upwg/ >

- the physical market prevents the provision of demand response bids from a third party aggregator due to technical requirements for a single connection point for load measurement and verification purposes;
- the mechanism may not deliver the most efficient or least cost demand response. Depending on design decisions regarding bid and payment characteristics, it could shift existing and potentially lower cost response already occurring off market without increasing total levels;
- effective delivery of demand response may have the perverse result of removing incentives for improved response levels as system marginal price is suppressed; and
- design of the mechanism needs to focus on enhanced market efficiency and maximise the net welfare impact to the market.

A range of more general issues associated with direct participation in the NEM also exist. Direct participation in the spot market presents a complex and onerous series of codes and rules for end user compliance which may prevent effective take-up of the pay-as-bid mechanism by potential providers. Introduction of the mechanism may also impose an element of uncertainty and risk for market participants as the market operator may be required to make discretionary judgements and trade-offs in dispatch decisions because of the more complex nature of demand response bids.

2.2.2 A Demand Side Aggregation Facility

This proposal involves a third party taking on a brokerage role to achieve a more reliable, higher value demand response product. The aggregated response can then be sold to retailers, distributors or other parties interested in hedging their positions in the market against spot price volatility. The facility could be run as a secondary market, that is, more akin to a financial market with load reduction occurring 'off-market'. Alternatively, aggregated response could potentially be bid into the physical market should appropriate mechanisms be in place.

The Energy Users' Association of Australia (EUAA) has taken the first steps to develop such a facility following a paper trial over summer 2002-03[7]. The trial was successful in demonstrating that a facility could aggregate individual response provider offers, match these to buyers' requirements and satisfactorily execute the dispatch and settlement processes.

An independent assessment of the trial concluded that the facility delivered market benefits to all the participants, namely[8]:

- end users were motivated to offer response if adequately compensated. Prices offered by retailers were higher than what is currently on offer in interruptability contracts[9]. However, prices offered by distributors were generally considered unrealistically low;

[7] The participants were from three NEM states, and included nine industrial/commercial end users, three retailers and three distributors. A total of 120 MW of response was bid into the trial under six test scenarios to gauge the impact on a range of market parameters.
[8] Pareto Associates, *A Demand Side Response Facility for the National Electricity Market*, November 2003
[9] Ibid, p(x)

- retailer benefits were estimated to be in the order of $65 million per annum from response dispatched at a spot trigger price of greater than $1000/MWh through reduced hedging costs;
- distributors could potentially gain around $60-80 million per annum from the deferral of new capital investment and approximately $100 million from improved utilisation of existing network assets; and
- long term benefits through establishment of a voluntary price cap well below VoLL once sufficient scale was achieved[10] through reduced energy and hedging costs.

To achieve these benefits, a number of impediments will need to be addressed, including:

- the structural mismatch between response products and physical supply products needs to be overcome if aggregators wished to participate under existing arrangements for scheduled loads in the physical market;
- the National Electricity Code (NEC) requires a single connection point for load participation which effectively prohibits future involvement of aggregators in the physical market;
- the free-rider issue[11] minimises incentives for participation as response providers may only capture between five-ten percent of the value of their response;
- current regulatory arrangements and incentives may discourage the use of demand side response by distributors, for example, different distribution pricing approaches can result in distributors assigning a lower value to demand response than expected; and
- provisions in jurisdictional distribution codes to encourage demand response over network investment may need to be strengthened, or interpreted more consistently.

2.3 International Experiences with Market-Based Demand Response

Consideration of market based demand side response models in the United States and United Kingdom present a range of interesting policy perspectives. The approach to the use of demand response programs in the physical energy market in each country is quite different, with a number of direct participatory programs for end users to provide load curtailment operational across a range of US regional markets. In some US markets, direct bidding can take place in a variety of electricity markets, including the day-ahead energy and ancillary markets and in the real-time spot market. The level of participation in demand side bidding may be facilitated by the use of multi-settlement systems in some US markets where the day-ahead market performs a hedging function and reduces the exposure of retailers and consumers to unexpected shortages in the real-time markets[12].

[10] 500-1000MW of demand response would be required to significantly impact on spot prices.

[11] Sufficient demand side response has the potential to drive down interval and spot market prices. This may deliver value to all retailers and their contracted individual end users (through reduced energy supply and hedging costs), including those who have shown no direct commercial or participatory interests in demand side response activity.

[12] In a multi-settlement system, the market is settled more than once. In the first day-ahead market, bids are taken for both loads and supply resources. Demand and supply bids are matched for each settlement period for the next day. Bids are not hypothetical, but are firm financial commitments to buy power at the settled price. Further adjustments can be made after the initial settlement which are also financially binding and any deviations from the settlements are presumed to be met by purchases from the spot market and are charged at spot market rates.

In addition, approaches to facilitate emergency load curtailment via a contingency reserve market appear relatively popular and preferred to more intrusive emergency management procedures. The returns to providers of contingency reserve are considerably larger than for the economic response programs, reflecting the higher priority placed on reliable supply by US market participants. Some retailers make considerable use of mass market direct load control programs to help control the peak air-conditioning sector.

The US experience indicates that for response to be effective, it is important to achieve sufficient scale. Without sufficient scale across customer classes, it is unlikely that significant long-term impacts on system marginal price and long-term average prices will be achieved. At the same time, different classes of customers are more restricted in their ability to react to market movements, and the establishment of a suite of response programs to tap into different customer segments appears to reflect these factors.

In contrast, demand response bidding in the England/Wales spot market is quite limited and largely restricted to the provision of contracted ancillary services by large industrial and commercial end users equipped with half-hourly meters[13]. The mass retail market in the UK is highly aggregated with customers subject to deemed customer profiles and no use of interval meters. This results in no real-time or time-of use price offerings and hence no real incentive for this large class of customers to provide demand response services.

2.4 Proposed Policy Direction

2.4.1 'Pay-as-Bid'- no additional work presently proposed

It is the initial view of the SCO that from the concerns discussed above in section 2.2.1, a pay-as-bid mechanism is not the most efficient or least cost response to facilitate greater demand side participation. Therefore, SCO is not proposing to undertake additional work to investigate the feasibility of a pay-as-bid mechanism. We are open to reconsidering this position if stakeholders mount a strong case for further investigation of the feasibility of such a mechanism in the physical market.

2.4.2 Further Investigation of Demand Side Aggregation Facility

SCO considers the concept of delivering improved demand side response via a secondary financial market mechanism, such as a third party aggregator, is worth pursuing. Additional work is proposed to further examine the feasibility of an aggregation facility, including addressing policy and market impediments to the establishment of a commercial facility.

In particular, SCO will work with the EUAA and other interested stakeholders to define an effective role for government. This may include commissioning external advice on, inter alia:

[13] The Balancing Services Market (BSM) supplies only 2 per cent of electricity demand under the UK's New Electricity Trading Arrangements (NETA). While demand side response supplies up to 29 per cent of frequency response services and 29 percent of standing reserves in the BSM, the small scale of electricity traded under NETA means that the overall levels of response currently accessed appears very low.

- the likely impacts of an aggregation facility on other market operations, including generator bidding, financial market arrangements and operation of the ancillary services market;
- modelling of market behaviour to better define the value an aggregation facility creates in the market for various market participants to enable targeting of the measure to the most applicable customer classes;
- the most appropriate mechanism for end users offering demand side response to capture the value created for other market participants;
- changes that may be required to regulatory arrangements and incentives to ensure that network service providers are motivated to use demand side response effectively;
- technical changes that might be required to ensure the compatibility of aggregated demand side response with the physical market to enable use of demand response products in spot and frequency control markets as their usage evolves; and
- investigation of future demand response opportunities by jurisdictions as part of their respective energy management and procurement activities.

2.4.3 End-user capacity building

SCO recognises that end users must be equipped with the skills and opportunities to understand and engage in demand side response activities.

An end user capacity building program focussing on developing practical commercial skills to assist in the provision of demand side response by business would address an important and commonly identified impediment in the energy market. Coverage of the program would include contract negotiation, demand response valuation and financial risk management skills.

SCO acknowledges the work currently being undertaken by jurisdictions and market participants to facilitate the further involvement of embedded generation in Australian electricity networks[14]. It will be important to integrate this work in regard to the use of embedded generation assets in demand response strategies.

SCO further notes that small end users are making an increasing contribution to the emerging peak demand problem and could be engaged in user participation activities designed to moderate demand growth. International experience indicates that specific programs tailored to the needs and abilities of the small user market are required to achieve effective engagement. Therefore, SCO proposes to consider options for demand response programs tailored for small energy consumers in a bid to better manage emerging peak demand problems.

[14] Charles River Associates, *Codes of Practice for Embedded Generation*, February 2004

3 Interval Meters

The MCE, in its response to CoAG, undertook to consider the costs and benefits of interval metering. Subsequently SCO at its meeting of 23 October 2003 endorsed the development of a discussion paper which would consider how the introduction of interval meters would:

- moderate consumption patterns during periods of peak demand;
- allow the development of economically efficient and cost reflective tariffs for more accurate allocation of supply costs to consumers;
- address settlement issues related to the net system load profile;
- facilitate improved network planning; and
- lead to the development of products and capabilities that would deliver the maximum economic benefits to consumers.

3.1 The Status of Interval Meters in Australia

Interval metering technology has been available to large customers in all jurisdictions for over 10 years and is mandatory under the NEC to provide market settlement, when large customers switch from their host retailer[15]. Outside of this requirement, interval metering for consumers, whether large or small, has typically been the result of a voluntary decision between a consumer and a retailer, or a distributor, where the interval meter represents the lowest cost meter for that specific application. While the tangible benefits for the consumer and retailer are well recognised there has been no comprehensive review of the benefit of interval meters in the market.

For large energy consumers, interval meters can help support a demand side response by providing a real time price signal in the electricity market. The data collected from interval meters by end users can also be used to verify load reduction. This is particularly important in any demand side response mechanism, where large users will need to verify load reductions in order to receive load reduction payments (for aggregation purposes, bilateral contracted demand side response, pay-as-bid, etc). An assessment of the effectiveness and uptake of interval meter use for large-medium consumers would identify where particular impediments are limiting the maximum benefits available to these market segments.

The introduction of interval meters for small consumers, particularly the domestic market, is less developed and has not yet progressed across the NEM. This is due to a range of factors, such as high capital outlay costs, stranded asset issues, the extent to which there are corresponding changes in energy tariffs (both regulated and market based), and the fact that small consumers are relatively unresponsive to a change in price (ie inelastic demand).

Only one jurisdiction has introduced voluntary interval metering retail tariffs for small consumers, but uptake and overall success of this program has been limited[16]. This is partly due to the fact that there was no accompanying change in the underlying distribution charges to reflect the change from accumulation to interval metering tariffs and consequently the end user

[15] Large consumers are required to install interval meters as part of a requirement that follows from taking supply from a non-host or second tier retailer in order to enable wholesale market settlement.
[16] Anecdotal evidence from Western Power on their Smartpower tariff.

was still settled on the basis of highly aggregated consumption data not reflective of time-of-use pricing. Therefore, benefits attainable through interval metering, such as reduced energy costs through improved demand response were only partly achieved. The extent of interval meter based retail tariffs in the contestable market is not documented; however, a report in South Australia has reviewed the tariffs available for customers with interval meters and acceptance by customers of those tariffs[17]. The report highlights the variability in the response from the retailers as interval meters have become available in the contestable electricity market and also notes the difficulties consumers have in responding to complex price offers including a lack of understanding of demand management and the benefits of different price structures.

A number of jurisdictions have investigated, or are in the process of investigating, what the costs and benefits to small consumers and the market would be, if interval meters were mandated for all consumers[18]. In particular, the Essential Services Commission in Victoria (ESC) is proposing to mandate the installation of interval meters for all customers based on a staggered implementation timetable. SCO understands that the ESC will shortly publish a decision. ESCOSA in South Australia is also investigating the merits of interval meters for some sectors of the market. It should be noted that some distributors are installing interval meters for customers based on cost and direct benefit to the distributors.

In response to these reviews, some stakeholders have expressed concerns over the potential negative economic and social impacts of an interval meter roll-out and the methodological assumptions of the cost-benefit analysis. In addition, many jurisdictions have significant switchable and interruptible load arrangements already in place and therefore believe that gains achieved by an interval meter roll-out to all consumers would be minimal. Similarly, electricity retailers have commented on the costs which would be ultimately passed on to consumers associated with the incremental cost of managing, storing and processing the vast amount of data generated by interval meters.

Jurisdictional regulators agree that an interval meter rollout in any single jurisdiction, as accompanied by the phasing out of load profiling, should not proceed before a comprehensive assessment of the costs and benefits has been undertaken by that jurisdiction [19].

The work undertaken to date suggests that the full benefits of interval metering would only be harnessed if both distribution and retail charges were based on time-of-use data and the wholesale electricity market settled on the basis of this information. Other cost effective options to promote end user participation may be possible as an intermediate stage and these options are discussed in the following sections.

[17] *Electricity Pricing Structure for Customer with Interval Meters*, ESCOSA, May 2003.
[18] See Appendix A for details.
[19] *Review of the Joint Jurisdictional Metrology Procedure,. Draft Report*, 31 December 2003. The final report will be issued on 26 March 2004.

3.2 Specific Benefits of Interval Meters

3.2.1 Reduction in Peak Demand

Interval metering combined with the right price incentives has the potential to moderate electricity load at times of high wholesale spot prices, or network congestion during such times as the summer peak. Within the NEM, states with a high proportion of temperature sensitive load (such as Victoria and South Australia) could benefit, if consumers were encouraged to address their energy consumption in response to interval metering and/or remote load control technologies in combination with changes in behavioural patterns of energy use.

By specifically targeting the cause of the peak summer demand, i.e. the increased penetration of air conditioning, interval meters combined with appropriate tariffs may delay investment needs in the electricity supply industry and moderate wholesale spot market peaks.

The use of interval metering or remote load control technologies gives retailers options to reduce financial risk if retailers are willing to offer time-of-use tariffs, and consumers are willing to respond to such price signals. One risk to retailers from this approach is that consumers may revert to high consumption use in sufficient numbers under extreme conditions (e.g. a longer than usual run of hot weather) and push peak demand beyond installed capacity. This would be a problem only with voluntary load reduction schemes as opposed to remote retailer controlled schemes.

In place of interval meters or as a complimentary approach to interval meters, a reduction in peak demand could also be achieved through the introduction of low cost, automated load management equipment. Remote control of discretionary load (e.g. air conditioners and pool pumps) could be used to reduce demand at peak times. This approach could be facilitated by pricing incentives and consumer education programs to encourage the uptake of interruptible load contracts and to allow small consumers continued electricity use without a significant reduction in comfort levels[20].

3.2.2 Improved Price Outcomes

A general criticism of current tariff structures is that consumers are billed through simple accumulation tariffs and not on the consumer's actual time of use. As such, consumers are not able to gain the full benefits of load shifting (using less energy at peak times or moving use to off-peak times). Interval metering technology can be used to provide information to allow different customer classes to be billed in a more cost reflective manner, which in turn could result in the reduction of financial risk to retailers. In addition, the use of interval metering would allow for the removal of net system load profiling[21]. The phasing out of load profiling and the introduction of interval metering technology would involve a series of complex economic decisions, including a full cost and benefits assessment for each jurisdiction.

[20] For example, cycling of air conditioning with compressors off and fans on via an interruptible tariff (such as 15 minutes/hour) would have a negligible impact on ambient temperature. There is already significant ability to undertake remote switching of discretionary load in Queensland.

[21] Net System Load Profiling is a mechanism to enable settlement of the franchised load market. It involves domestic and small business users being billed on the basis of an average consumption profile.

As noted, some distribution businesses already have a policy of replacing accumulation meters with interval meters and structuring distribution tariffs to better manage and invoice end users for network load. Hence, it is possible that in the medium to long term, as more interval meters are installed and time-of-use tariffs are levied by distribution businesses, electricity retailers are more likely to pass on more cost reflective tariffs to end users.

One of the key benefits of cost reflective retail pricing using interval metering technology and tariffs is the reduction of cost smearing across small consumers. For example, the ESC has estimated that the cross-subsidies between those domestic consumers that do not have air-conditioning and those that do, could be as much as $200 per annum per consumer[22].

An alternative to interval metering tariffs, are seasonally based tariffs; an option supported by some retailers[23]. These tariffs would require those that use power in a period of high peak electricity demand (ie. summer) to pay more. Although seasonal tariffs do not reflect the time of use and are not as cost reflective or efficient as interval metering tariffs, they can be effective in reducing discretionary demand for other consumables.

In addition, whilst the removal of cross subsidies or implementation of time-of-use pricing may be seen as a more efficient approach, it may still result in households on low incomes or those with health conditions paying more for electricity for essential appliances during periods of high demand. Accordingly, removal of cross subsidies should be addressed through the delivery of alternative community service obligations. This may require governments to consider the applicability of summer energy concession schemes for certain consumer groups, and/or offering programs that would reduce the need for cooling required (e.g. discounts on insulation, shade trees, awnings). Alternatively, this option could be coupled with automatic load management technologies to minimise the financial risk to consumers during peak demand periods.

3.3 Proposed Policy Direction

3.3.1 Review of the Effectiveness of Existing Interval Meters

SCO is concerned that the full benefits from existing interval meter stock in the NEM may not have been realised. It is important to ensure that those market participants who already have installed interval meter technology are using them to their best advantage and are capturing the cost savings through better management of energy demand. Such a review would seek to assess the effectiveness of interval meters in different energy consumption classes, which would inform further discussion on extending meters to smaller consumers.

SCO proposes that a comprehensive review be undertaken to assess the costs and benefits of interval meters within the greater than 160 MWh segment of the market and whether particular impediments are prohibiting the delivery of maximum benefits to all participants.

[22] Victorian Essential Services Commission, *Installing Interval Meters for Electricity Customers*, November 2002.
[23] Anecdotal information provided by Victorian based retailers, 2003.

3.3.2 Study on roll out of interval meters for particular customer classes

SCO does not propose any specific recommendation regarding the mandated rollout of interval meters to all small consumers, given the relative costs and complexity of such a process at this time and uncertainty regarding the deliverable benefits. Benefits for the small domestic user may instead be achieved through the application of low cost metering solutions, such as those equipped to deal with broad time-of-use tariff structures. Another option may involve a targeted roll-out focussed on particular customer classes that would achieve measurable benefit from a change in technology[24], or those users that wish to participate in a demand response program such as an aggregation facility.

SCO proposes that a study is undertaken to identify specific consumer groups that may benefit or alternatively may be disadvantaged from such a targeted interval meter roll-out.

3.3.3 Low Cost Remote Load Control Technology

Generally, while it is considered that small consumers' ability to respond to price signals is limited, international research demonstrates that end-users do respond in predictable ways to "time-of-use" pricing and that consumers are more likely to change behaviour if what they are encouraged to do is simple, they are well informed of their options and there are incentives for change.

SCO understands that some market participants have introduced seasonally adjusted and/or time-of-use tariffs and it is anticipated that over time, these tariffs will be further developed and defined. Although there would appear to be no need for market intervention at this point in time, SCO considers that the associated costs and benefits of options for low cost remotely activated load control technology (or timers) and technology that could assist consumers to voluntarily manage their domestic energy use, should be explored further.

3.3.4 Status Quo for Load Profiling

Consistent with its approach on interval meters, SCO does not propose to advocate removal of load profiling at this stage of market development. As noted in Section 3.2.2, the market is beginning to respond to the replacement of accumulation meters with interval meters and re-structuring of distribution tariffs to facilitate greater use of interval meter technology. As the retail market develops, it is anticipated that cost reflective tariffs will gradually be developed for end users.

Despite this emerging trend, SCO is seeking comment as to whether there are particular policy or market impediments that are preventing the market continuing to develop in this way.

[24] For example, the Victoria Government has made a commitment to introduce interval meters for dairy farmers and potentially other high off-peak regional users.

4 Retail Pricing

4.1 Role of Price Regulation

Full retail contestability (FRC) in the electricity market has been introduced in Victoria, New South Wales, South Australia and the Australian Capital Territory. In these jurisdictions various forms of retail price regulation have been applied to retail prices for households and small businesses to manage the transition to a competitive market. In effect, they are used to protect consumers from the possible exercise of retailer market power and to achieve a measure of price equality between various customer groups.

In the absence of fully effective retail competition, regulated energy pricing should seek to balance the provision of commercial viability for retailers with consumer protection goals. This is a legitimate and ongoing role for government.

However, regulated energy price setting has the potential to conflict with, and impede efficient market outcomes if prices are not set at cost reflective levels. Predictable and transparent government interventions would assist to achieve efficient outcomes while still facilitating legitimate social objectives.

4.2 Periodic Review of Retail Price Regulation

MCE acknowledges the important transitional role performed by retail price regulation but is concerned that inappropriate or entrenched regulation may negatively impact on retail market development. Subsequently, SCO has been requested to develop a mechanism to enable periodic review of retail price setting arrangements to align with the underlying costs of supply[25].

Some specific issues associated with retail price regulation include:

- they can provide an incentive for productivity improvements and cost efficiency by allowing pass-through of 'reasonable' costs. Under an effective regulatory approach, retailers would seek to expand market share through development of competitive tariffs within the margins allowed them;
- inappropriately regulated prices can dampen the development of a fully competitive market by making it less attractive for competing companies to provide innovative products to consumers;
- price regulation may discourage elements of investment or innovation due to market uncertainty over future price regulation;
- price regulation for franchised load customers[26] reduces the opportunity for consumers to access products and/or market signals that could lead to load reductions at peak times; and
- continued adjustment and long term use of price regulation may entrench the perceived need for price regulation in a number of customer market segments.

[25] MCE, *Op Cit*, pp11-12.
[26] Residential and small business customers consume approximately 50.5 per cent of electricity by sector - *ESAA Electricity Australia 2003,* p46.

Consequently it is imperative that clear policy direction be provided to refine price regulation arrangements in FRC jurisdictions and enable market participants to make informed and long-term decisions about their market operations. A process for periodic review and refinement of price regulation will need to consider a number of elements including: an assessment framework for the review of price regulation; consideration of the tariff structures and pricing methodologies that underlie the regulation of prices; and analysis of the overarching pricing principles used to regulate prices.

4.2.1 Development of Overarching Pricing Principles

Jurisdictions' current pricing determinations are based on a combination of state based legislation and the priorities of jurisdictional regulators. There is potential to develop a consistent set of pricing principles that explicitly acknowledge the effect of various tariff structures and pricing decisions on user participation. In particular, the consideration of block decreasing tariff arrangements and the ratio of fixed to variable tariff components could be investigated to determine if consistent pricing principles can be established to encourage enhanced user participation and more cost reflective tariff structures.

Examples of such principles may include:

- Price regulation mechanisms to be aligned with costs to allow for pass-through of market signals to end-users;
- Transparent and clear price regulation processes and decision-making are developed to provide certainty to market participants;
- Community service obligations are delivered, wherever possible, through efficient mechanisms; and
- Price regulation methodologies are continuously reviewed in response to the growing maturity and competitiveness of the retail market.

While SCO supports the establishment of a transparent set of pricing principles, it is acknowledged that this may still result in different pricing outcomes across jurisdictions[27].

4.2.2 Development of a Consistent Pricing Methodology

There are two main issues to be considered – setting an appropriate and cost-reflective price and ensuring price setting methodologies are consistent across jurisdictions. Subject to the stage of development of a competitive market in each jurisdiction, electricity retail pricing methodologies aggregate four key cost components in setting retail tariff levels. The four components are:

- energy costs which cover the cost of purchasing electricity from the wholesale market including the costs associated with a prudent hedging policy. Energy costs vary between retailers depending on their individual load characteristics;
- network charges and costs, the average cost of which varies between customer class and retailer on the basis of their differing load patterns and geographical locations;

[27] For example, in Tasmania a block decreasing tariff structure is cost reflective.

- retailer operating costs including ancillary services costs, risk management premiums and environmental regulatory costs; and
- retail margins.

If retail price regulation is to be effective in facilitating the transition to a competitive market, it must be at a level that will provide an affordable default tariff for consumers while providing enough margin for retailers to operate profitably and create sufficient incentive for new retailers to enter the market. Traditionally tariffs have been set using a conservative approach when calculating the four components, however, the approach has been focussed on ensuring that retailers could operate profitably as much as it has been on promoting competition.

Jurisdictional regulators tend to employ different approaches when considering regulated prices which may impose a barrier to the inter-jurisdictional competitiveness of retailers. Appendix A provides further detail of retail pricing in individual jurisdictions.

4.2.3 Framework for the Review of Price Regulation

Once effective competition has developed, the consumer protection function of price regulation may no longer be necessary. In the transition to increasing retail competition a periodic review of price regulation arrangements should balance the possibility that the continuation of price regulation is likely to hamper competition, with the relative safety net benefits afforded by the exercise of regulation. Further work to develop a consistent framework for the review of price regulation is required to ensure that it does not become entrenched or impede the development of competition. A framework for the review of price regulation could consider:

- what time periods are most appropriate for a meaningful review of price regulation and competition;
- how jurisdictions' existing default arrangements will be dealt with[28];
- how the development of competition in retail markets is best measured;
- the level of competition that should trigger a review of the need for price regulation; and
- the most appropriate methodology for undertaking periodic price regulation review.

4.3 Accessible Consumer Information

While deregulation of residential retail pricing may lead to a more competitive energy marketplace, many consumers are confused about the impact this will have. Deregulation promises to yield greater benefits for the consumer, but consumers need to know how to access these benefits easily, conveniently, quickly and confidently.

If innovative and transparent tariff structures were promoted through a gradual phasing out of regulated pricing arrangements, small consumers would be better placed to participate in the market. The progressive introduction of full retail contestability has the potential to accelerate the emergence of innovative and flexible demand side products, particularly if they can be supported by cost-effective interval metering and customer propensity to respond.

[28] In some jurisdictions arrangements for price regulation review already exist.

International experience has shown that the early stages of full retail contestability need the support of accessible, easy-to-understand information about products in the competitive market to promote competition[29]. In particular, the provision of comparable, up-to-date information on the different tariffs and products available to consumers in various regions would be an important development to underpin the development of effective levels of competition. A logical extension would be enabling the information source to suggest the most appropriate retailer based on a customer's electricity consumption requirements. Additional functionality could include on-line calculators to inform users of the savings that can be made by switching retailers, the provision of information on products such as green power or interruptible tariffs and the ability for switching through an on-line system.

4.4 Proposed Policy Direction

4.4.1 Development of Overarching Pricing Principles

While SCO acknowledges the need for jurisdictions to regulate retail prices based on local circumstances, it proposes that an overarching set of pricing principles be established to provide a consistent basis for retail price regulatory decisions and to remove barriers to the cost-effective and contestable operation of retailers in multiple FRC jurisdictions. Consideration of the principles would be subject to any necessary protections for customers unable to access the benefits of effective retail competition.

4.4.2 Development of Consistent Pricing Methodology

SCO recognises the need to develop a consistent pricing methodology to inform the process for review of pricing and to enable appropriate decision making on cost components for regulated franchise tariffs. SCO will work with stakeholders, in particular the relevant regulators and commission external advice on:

- workability of a nationally consistent pricing methodology;
- development of a suitable methodology that will align price regulation with costs over time, including costs associated with time-of-use;
- development of indicative cost components to guide regulatory decisions on price regulation;
- the likely impacts of phasing out block decreasing tariffs to provide more accurate and cost-reflective price signals to consumers; and
- the most appropriate tariff structure to promote user participation in the contestable customer sector.

4.4.3 Establishment of a Framework for the Review of Price Regulation

SCO considers that a consistent framework to guide decisions on the assessment of regulated pricing should be developed. Such a framework could articulate the criteria against which price regulation removal should be considered, establish an agreed threshold for effective competition

[29] In New Zealand and Texas governments have funded independent websites to allow customers to easily compare retailers' prices, terms and conditions. Electricity price comparison websites are also available in Canada and the United Kingdom.

to facilitate the assessment of retail price caps and propose a clearly defined process for their review.

4.4.4 The Provision of Consumer Information

SCO recognises that end-users need to be able to easily compare the market offers of competing electricity retailers and to access information on demand side response opportunities to make informed choices about their energy needs. SCO proposes the development of an electricity price comparison website to encourage strong user participation in competitive markets by the small customer segment.

5 Issues for Consultation

SCO is seeking stakeholder input on the key policy directions that may be developed by governments that will facilitate increased end user participation in the Australian energy market. This paper has identified a series of policy options to enhance demand side response through market mechanisms, interval metering technology and retail pricing reviews.

Stakeholder views are specifically sought on the options canvassed and on other policy proposals that may not have been considered in this paper.

The User Participation Working Group has developed a set of specific questions to assist stakeholders in developing their submissions:

5.1 Demand Side Response Market Mechanisms

- The discussion outlined a number of issues facing the CoAG Review 'pay-as-bid' proposal. What solutions might overcome these design and implementation problems?

- Is there scope to consider improvements to existing mechanisms for physical market participation by end users (i.e. as scheduled or market loads)?

- Do stakeholders regard the aggregation facility as a viable mechanism to stimulate dispatch of otherwise untapped demand side response?

- Is the suggested scope of government involvement with the aggregation facility sufficient to define an appropriate role for government? If not, what other issues warrant consideration?

- Are there any overseas demand side bidding models that can be usefully applied in the National Electricity Market?

- What are the most appropriate mechanisms for developing and implementing an end-user education campaign to facilitate demand side commercial skills?

- What solutions (regulatory and other) might address the market impediments to enhance user participation? Specifically options addressing property rights, market based price signals, customer awareness, and technology.

5.2 Interval Meters

- Do stakeholders support a review of the effectiveness of interval metering for large end users? What are the assessment factors and criteria that should underpin this review?

- What customer classes/market segments could benefit from a rollout of interval metering technology? Please state the basis for your evaluation. What lower cost

metering solutions (if any) should be financially viable to achieve user participation benefits for this customer class?

- Do stakeholders support a remote load control program specifically targeting household air conditioning use, and other technologies that could assist consumers to voluntarily manage their domestic energy use? What cost effective technologies could facilitate an effective program?

- Have stakeholders experienced a trend towards increased use of interval meters and development of cost-reflective tariffs in the retail electricity market? Are there any policy or market impediments that may prevent this trend from continuing?

- Do stakeholders support the retention of load profiling subject to further assessment of the development of cost reflective tariffs?

5.3 Retail Pricing

- What overarching pricing principles would be appropriate to guide regulated price setting?

- What methodologies do stakeholders consider appropriate for price cap review?

- What intermediate steps could jurisdictions take to ensure consumer price certainty and affordability without instituting price caps?

- What cost components need to be included in a consistent approach to setting price caps? Are existing price setting approaches appropriate to be applied nationally? If not, what improvements can be made?

- What do stakeholders consider as an appropriate timeframe for periodic price cap review?

- What criteria are needed to developing a framework for a price cap review? For example, how do we define what constitutes effective competition?

- What are stakeholder's views on the establishment of an electricity price comparison website? Who should be responsible for its development and administration? What information and functionality should be included in such a website?

Appendix

The information below outlines the various State Government policy positions towards the mandating of interval metering and recent and current jurisdictional based studies on interval metering, as well as investigating each jurisdiction's approach to retail tariff determination.

South Australia

Interval Metering

The Essential Services Commission of South Australia (ESCoSA) commissioned consultants to undertake a preliminary study to examine electricity pricing structures within Australian and international markets where interval meters were installed.

Interval meters and interval metering tariffs are primarily available to commercial/industrial end-users in South Australia. The ESCOSA report found that there was limited interest and take up of interval metering for small end-users, but that for larger consumers, it provided benefits and led to retailers moving to contracts containing load curtailment options and flexible tariff structures.

ESCOSA has since commissioned a further more detailed and comprehensive analysis of the costs and benefits of a mandated interval meter rollout. This analysis is designed to assist ESCOSA in determining whether to support the mandatory extension of interval meters to classes of consumers who consume less than 750MWh/per annum or whether some other demand management programs should be supported. The report was due to be completed by mid December 2003 and it is expected that ESCOSA will publicly release the report early in 2004.

The South Australian Government considers that the benefits associated with interval meters do not appear to justify the costs of mandating installation at this stage, particularly as competition is still in its infancy in the small consumer market. In terms of second tier customers, a customer's ability to afford the installation of interval meters should not preclude a small customer from benefiting from competition. Of particular note, is the significant cost of such a meter when compared to the customer's overall electricity costs. Before mandating the installation of interval meters further investigation is required comparing the costs of changing to interval metering (including cost of meters, upgrading retailer systems, data storage and stranded assets) with the potential benefits.

As an alternative to an accelerated rollout of interval meters, the South Australian Government may consider supporting the adoption of a new and replacement policy, whereby interval meters must be installed on all new premises and as replacements for existing accumulation meters.

Retail Tariff Determination

ESCOSA, in its April 2002 *Reviewing and Approving Electricity Retail Prices in a Competitive Market - Initial Thoughts Paper*, identifies the following seven objectives as essential to an effective pricing policy:

- promoting competition;
- protecting customers where competition has not yet developed or is not effective;
- providing incentives to efficiency;
- protecting standards of service;
- providing transparency to the market;
- allowing efficient retailers to be financially viable; and
- removing price controls at the earliest opportunity.

In South Australia, AGL is prescribed to supply all small electricity customers, unless that customer chooses to be supplied by a market contract. ESCOSA issued determinations, for 2003 and 2004, fixing the price of the Standing Contracts offered by AGL.

Apart from this, under the model used in South Australia, retailers are not bound to a regulated price, however, they are required to provide justification of their prices to the regulator if required. If ESCOSA is unsatisfied with the justifications given for a retailers price then a price can be set by the regulator in accordance with S35A(1)(a) of the *Electricity Act 1996.*

ESCOSA does not require retailers to structure costs in any particular manner. This is aimed to encourage diversity and innovation in cost structures and to provide a greater choice to consumers. ESCOSA regards $80 per customer as a reasonable maximum operating cost. ESCOSA considers that five per cent is an appropriate margin in the South Australian market.

Victoria

Interval Metering

The Victorian Essential Services Commission (ESC) has released a report examining the costs and benefits of mandating an interval meter rollout for domestic and small business consumers. The ESC's initial position paper proposed that:

- interval meters should be installed within two years for large customers with consumption greater than 160 MWh;
- interval meters should be installed within 5 years for small business and residential customers (consumption <160 MWh) with off peak metering or 3 phase metering; and
- interval meters should be installed on a new and replacement basis, unless further supporting justification sufficient to justify an accelerated rollout was received for small business and residential customers with single-phase non-off peak metering.

The ESC is now undertaking further a review of the options, costs and benefits of installing interval meters following further submissions from stakeholders. A draft decision is to be released shortly with a final decision in early 2004.

The ESC's initial study presents an analysis of the demand management efficiency gains which arise from avoided generation, transmission and distribution capacity costs. These demand management efficiency gains arise from consumers responding to interval meter based price signals, primarily at the time of system peak in summer. The price elasticity of demand for

electricity is used to estimate the load reduction at peak time that would derive from improved price signalling.

The additional benefits of interval meters that come about from the improved efficiency in the integrated wholesale and retail markets and the improved equity between customers are not quantified in this paper.

The ESC initial position paper shows that for most customers the benefits to be gained from interval meters clearly exceed the additional cost of these meters. In the case of small residential and business consumers, the benefits also exceed the costs but the benefits are less certain, as these customers have smaller consumption.

The ESC considered whether there is an impediment to market participants choosing to voluntarily install these meters to help gain the benefits for their customers and concluded that there are insufficient incentives for retailers and customers to install interval meters in a way that will help capture the demand management benefits. The ESC concluded that there is a role for regulatory intervention in order to realise the long-term benefits of price based demand management that these meters will help facilitate.

If the benefits of interval meters are to be realised, more efficient electricity price structures will need to be introduced for all customers. The Victorian Government would need to consider how it would facilitate the appropriate interval metering retail pricing controls within its retail pricing oversight role.

Whilst no detailed program has yet been developed, there is an existing (2002 election) commitment for funding of $3.5 million, to facilitate the rollout of interval meters to dairy farmers and irrigators.

Retail Tariff Determination

The Victorian electricity retail market has been fully contestable since January 2002. For this reason, retail tariffs are now left for individual retailers to publish however the government retains the power to regulate retail prices.

There are currently twelve retailers operating in the Victorian market offering a variety of tariffs and product bundles to over 2.25 million commercial and domestic customers. However, not all retailers offer products to all customers.

When the final (< 160 MWh per annum) tranche of the electricity retail market was opened to competition the safety net pricing arrangements were maintained. Incumbent retailers were obliged to offer customers supply at the standing offer tariff, but were also free to offer other tariff packages (“market offers”). The standing offer tariffs that came into effect in January 2002 resulted in an average price increase of 4.7% across retailers. This increase was necessary to reflect rises in wholesale energy contract prices during 2001.

New South Wales

Interval Metering

In NSW large consumers are required to install an interval meter should they wish to change retailer. NSW requires interval meters on a new and replacement basis for first tier customers with loads above 160 MWh per annum. For new connections and where the existing metering needs to be replaced, interval metering is now mandatory. However, at present there are no interval metering tariffs available to small business and residential customers. The NSW Government presently opposes the mandatory roll out of interval meters believing they are not yet cost-effective to introduce.

The NSW Government, in its submission to the Victorian ESC review, questioned the methodological basis on which the ESC's analysis had been undertaken and recommended that the analysis be revised.

Retail Tariff Determination

The Independent Pricing and Regulatory Tribunal (IPART) is responsible for the determination of standard form contract retail tariffs for small customers (below 160 MWh per annum). Currently some customers pay below actual supply costs and are subsidised by others paying above the supply cost. IPART regards a move to cost reflective tariffs as essential.

IPART is currently conducting a review of electricity networks pricing implemented from 1 July 2004 and a review of regulated retail tariffs and charges implemented from 1 July 2004.

In determining a new tariff, IPART will give reference to the current retail operating cost per customer in NSW of $40-$60 (IPART December 2000 Determination). IPART regards the appropriate retail margin to be 1.5-2.5% (this margin is lower than most states due to the reduced risk borne by retailers through the Electricity Tariff Equalisation Fund).

Western Australia

Interval Metering

The Western Australian Government advises that there have been no studies examining the costs and benefits of a mandatory rollout of interval meters, but that as a part of the electricity reform process, it is possible that interval metering may be considered at some future time.

Interval meters and interval metering tariffs are available to large end users in Western Australia. Since market deregulation, the number of interval meters installed has been steadily increasing. Currently, about 74% of large end users in Western Australia has interval meters.

Retail Tariff Determination

Western Australia has adopted a staged approach to the introduction of full retail contestability for electricity. Since the late 1990's, progressive tranches of the market have been exposed to competition, with the next major step from 1 January 2005, which will reduce the threshold for

contestability to 5.7kW average load (50MWh). This will expose about 60% of the market to retail contestability.

The Western Australian Government is working to achieve a number of prerequisites, as part of the further reform of the electricity market, before introducing full retail contestability.

A uniform tariff is charged to consumers and business supplied by Western Power, and its tariff rates are approved by the Western Australian Government.

Tasmania

Interval Metering

The Tasmanian Government advises that there have been no studies examining the costs and benefits of interval metering, but that as a part of the electricity reform process it is possible that interval metering may be considered at some future time.

Retail Tariff Determination

The Office of the Tasmanian Energy Regulator (OTTER) sets retail tariffs that apply to all non-contracted customers. Retail tariff determination takes into account network (transmission and distribution), energy and system controller and other costs, including the allowable costs for the retailer. Aurora has the freedom to set tariffs within the constraints set by the Regulator and has maintained a declining block tariff structure. In recent pricing determinations OTTER has established that the cost per customer for Aurora is $76 (as submitted by Aurora in December 2002) and that an acceptable retail margin is 2.35%.

Competition will commence in July 2006, however customers <150 MWh per annum will not become contestable until a public benefits test has been completed. This is likely to occur in 2010.

Northern Territory

Interval Metering

End-users in the Northern Territory above 750MWh have access to interval metering technology and the associated tariffs, as these customers are contestable. Small volume consumers do not have access to interval metering technology or tariffs at this time.

Retail Tariff Determination

Northern Territory commenced the move toward FRC on 1 April 2000. Since this move Northern Power has exited the market, leaving the Power and Water Authority as the only retailer available to most Territorians. The roll-out of FRC has been halted at the 750MWh per annum level leaving small to medium size customers on default tariffs.

Non-contestable retail electricity tariffs and charges are regulated by the Government, via an Electricity Pricing Order issued by the Regulatory Minister. Whilst the current Electricity Pricing Order, effective from 1 July 2000, is the first to be issued under the *Electricity Reform*

Act 2000 there is an intention to develop a more formal framework for regulating electricity prices paid by non-contestable customers.

Australian Capital Territory

Interval Metering

As part of the ACT Independent Competition and Regulatory Commission's report on the costs and benefits of the implementation of FRC in electricity, the Commission considered advising whether or not the ACT should adopt deemed profiling of customer usage and the desirability, or otherwise, of moving to interval metering.

The Commission concluded that profiling is the only feasible option for FRC at this time. A mandatory rollout of interval metering was estimated to cost between $100 and $1000 per meter depending on the economies of scale. The Commission, in its report, did not consider when or how the introduction of interval metering would be managed.

The ACT Government therefore decided to opt for load profiling as opposed to interval metering when FRC was introduced on 1 July 2003. At this stage the introduction of interval meters is not being considered further.

Retail Tariff Determination

FRC commenced in the ACT on 1 July 2003. From this date, all customers had the choice to stay with their existing retailer or shop around for a better deal from an alternative retailer. Newly contestable customers also have the option of continuing on a default tariff, known as the Transition Franchise Tariff (TFT). During the three year transition period, the TFT price will apply until such time as customers opt to exercise their choice and move to contestable retail tariff offerings provided by licensed ACT retailers.

The TFT is a regulated electricity tariff which will only be available to customers who are currently franchise customers and consume less that 100MWh per annum. The TFT will be available only for the period 1 July 2003 to 30 June 2006. Customers who choose to move to an alternative tariff offered by a licensed ACT retailer will be able to stay with that competitive tariff, or to move to an alternative contestable tariff offered by another licensed ACT retailer. Customers may also remain with ActewAGL Retail but choose to negotiate a contract at a more competitive rate than the TFT. Customers have the option to return to the TFT while this tariff remains in force.

Queensland

Interval Metering

The Queensland Government considers that it is not cost-effective at this time to introduce interval meters for all consumers in Queensland. The Queensland Government will reassess the costs and benefits of implementing interval meters when it reviews its decision on full retail contestability for electricity customers in 2004.

A key issue for Government is whether or not small consumers in Queensland have the capability of responding to price changes and if they can, what type of metering technology would deliver the most efficient, cost effective outcome.

The Queensland Government notes that it already has significant demand side response capability from switchable loads and interruptible supply arrangements.

Retail Tariff Determination

Retail contestability in Queensland has been progressively introduced to customers in tranches. Customers currently consuming more than 200 MWh per annum of electricity are eligible for contestability and from 1 July 2004, retail competition will be extended to all customers consuming greater than 100 MWh per annum.

Non-contestable (franchise) customers in Queensland are charged for their electricity supply under a uniform tariff (UT). The Minister Responsible for Energy periodically reviews and sets the UT price.

The UT arrangements provide for customers in the same customer class (e.g. domestic, business, industrial, etc) to pay the same per unit charge regardless of the customer's location. Queensland's geographically dispersed population and consequently, supply network, has meant that historically, UT revenue has not been sufficient to cover the costs of supplying many customers, particularly those in regional and remote areas of the State. This results in a net community service obligation payment by Government to the franchise retailers to overcome any shortfall in revenue associated with franchise customer supply.

Queensland is of the firm view that the success of retail market competition relies heavily on the development of a robust and competitive wholesale market. Consequently, issues such as regulatory certainty and wholesale market structure have a large bearing on whether retail price deregulation will benefit consumers.

Glossary

Accumulation meter - A type of meter installed at most household premises that measures total (cumulative) electricity consumption. It does not have a time-of-use capacity.

Bilateral contract - A contract between two parties for the supply of energy at agreed prices and conditions. It is the basis for a financial transaction that occurs off market parallel to the physical wholesale market.

CoAG - Council of Australian Governments is the peak inter-governmental forum in Australia comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association. CoAG develops and monitors the implementation of policy reforms that are of national significance and require inter-governmental cooperation.

CoAG Review - Council of Australian Governments Independent Review of Energy Market Directions – *Towards a Truly National and Efficient Energy Market*, released 20 December 2002.

Demand aggregation - The brokering of demand side response into larger parcels of response so that it may be sold to interested parties (eg retailers or generators) who may call on the suppliers of that response to switch off energy consumption in accordance with their agreement.

Demand side response - A range of actions by end users to alter patterns and levels of energy consumption in response to market signals such as spot market prices or network congestion.

Discretionary energy demand - The part of an end user's energy demand which can be made available for demand side response.

EUAA - Energy Users Association of Australia. An industry association representing the energy user interests of members.

Franchised load - Refers to those retail customers whose energy costs are subject to regulatory oversight.

Full retail contestability (FRC) - Where all customers are able to choose their electricity retailer.

Interval meter - Measures electricity consumption during specific periods (for example, each half-hour) and stores the measurements in a register in the meter. The interval meter can be read manually or, if the meter is fitted with a communication link, it can be read remotely.

Load profiling - Load profiling uses a survey method to establish average patterns of use (how much electricity at what time of day) by consumer categories (eg residential, commercial, industrial). The level of demand for a group or groups of consumers at each half-hour interval of

a 24 hour period is plotted on a 'demand curve' with the level of kilowatt hours being consumed rising to coincide with peak times such as evening meals and falling during the early hours of the morning. Generally a number of bands are used, each one representing 'average' consumer within a range of consumption.

MCE - Ministerial Council on Energy - established by the Council of Australian Governments (CoAG) in 2001 as a forum for national leadership on energy issues. It is tasked to oversee the continued development of national energy policy.

NEC - National Electricity Code – the set of market rules applying to National Electricity Market participants. It sets out NEM objectives, and the rights and responsibilities of market participants including the National Electricity Market Management Company (NEMMCO), and the National Electricity Code Administrator (NECA).

NEM - National Electricity Market - an interconnected electricity grid comprising the jurisdictions of Queensland, NSW, Victoria, South Australian and the ACT (and shortly Tasmania) operated by NEMMCO.

Net system load profiling - A mechanism to enable settlement of the franchised load market. It involves domestic and small business users being billed on the basis of an average consumption profile.

Pay-as-bid - A proposed physical market mechanism which enables retailers, aggregators and end users to bid price and volume to reduce energy load into the NEM. The most appropriate demand reduction bid would be selected and paid for dispatch on an 'as bid' basis rather than the system marginal price.

SCO - Standing Committee of Officials is the peak group that supports the MCE.

Time-of-use tariffs – A tariff that is reflective of the time of day during which the electricity was used (i.e. a cheaper tariff for non-peak times).

User participation – Involvement of energy consumers in the management of their energy consumption in response to market signals.

VoLL – Value of Lost Load - the maximum spot price in the wholesale market in the NEM as set by the NEC, currently $10 000/MWh.