Major Energy Users Inc.

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The Chairman
Energy Security Board
C/- CoAG Energy Council

Sent by: email to info@esb.org.au

**Moving to a Two-sided market**
**Response to Consultation Paper**

The Major Energy Users Inc (MEU) welcomes the opportunity to provide its views on the Energy Security Board (ESB) consultation paper on moving to a two-sided market.

## About the MEU and its member's operations

The MEU was established by very large energy using firms to represent their interests in the energy markets. With regard to all of the energy supplies they need to continue their operations and so supply to their customers, MEU members are vitally interested in four key aspects – the cost of the energy supplies, the reliability of delivery for those supplies, the quality of the delivered supplies and the long term security for the continuation of those supplies.

Many of the MEU members, being regionally based, are heavily dependent on local staff, suppliers of hardware and services, and have an obligation to represent the views of these local suppliers. With this in mind, the members of the MEU require their views to not only represent the views of large energy users, but also those interests of smaller power and gas users, and even at the residences used by their workforces that live in the regions where the members operate.

It is on this basis the MEU and its regional affiliates have been advocating in the interests of energy consumers for over 20 years and it has a high recognition as providing informed comment on energy issues from a consumer viewpoint with various regulators (ACCC, AEMO, AEMC, AER and regional regulators) and with governments.

The MEU members also have to operate in their own markets and, although they are knowledgeable about the markets their providers of input services and products

operate in, they do not seek to become participants in those upstream markets as they have the market(s) for their own products that they have to operate in and get deeply involved.

They see that the supply of energy (electricity and gas) is no different to the supply of any other product they need to acquire, and this clearly highlights their view on how deeply they should get involved in the electricity market. The fact that many MEU members have already moved more deeply into the electricity market should not be seen as a desire to be active in the electricity market, but more a response to the very high costs that they are subject to if they elect not to be more active in that market.

MEU members that are more active in the electricity market and reduce demand when prices are excessively high advise that their ability to load shed is constrained by the durations of any high priced event, the frequency of these and the impacts that load shedding will have on the commitments they have in their own markets and with their customers. They advise that there is a considerable cost impact from their decision to be active in the electricity market and they would prefer lower prices so they would not need to be as active in the electricity market as they have become.

## 1. About electricity and end users

The MEU observes that the use of electricity is now essential across society and cannot be considered to be an optional input, regardless of whether the end user is an industrial, commercial or residential user – no operation can operate in today's world without using electricity in some form. As an essential service, electricity cannot be equated to a market where a decision can be made to not acquire or to acquire a different input based on cost. This means that the concept of a two-sided market is quite limited where the option not to use is not an option.

Most end users have implemented their responses to the electricity market as a direct result of unsustainably high costs and have therefore have invested in various forms of self-generation, load shedding when high prices occur in the electricity market and other means to minimise their usage of mains electricity to minimise the high costs they face.

Electricity use for almost all end users is a relatively small part of their overall spend and this has an impact on whether an end user will or will not be active in the market. The exception is perhaps where the cost of electricity becomes a significant part of the input costs to an end user, such as a smelter or a disadvantaged end user on limited income.

The concept behind moving to a two-sided market is driven by a perception that smaller end users would be able to interact with the electricity market more than they do now and, to some extent, see some of the benefits that larger end users can obtain through more active involvement.

MEU members state that being exposed to the electricity market is not a costless exercise and involves considerable time and effort to establish the necessary controls to manage the risk. The consultation paper assumes that the development of new technology will make involvement less arduous, but it will still require time to manage the process and costs to make it possible. This cost and time commitment is likely to be a barrier to disadvantaged end users who have limited capacity to provide the necessary appliances that will allow their involvement and be able to manage the risk being exposed to the spot market entails.

The decision to assess the value of a two-sided market is based on the presumption that with increasing amounts of solar PV embedded in distribution networks (especially roof top solar PV which is predominantly provided by residential end users), a growth in battery storage and EVs, there will result in a move away from the traditional one way electricity flows of the past. To some extent, this is true but what is important to recognise when considering a two-sided market, is the ultimate level to which electricity flows will change. There is little doubt that almost all end users will continue to have significant electricity inflows to their operations at different times of the day and year.

It is clear that generation from embedded roof top solar PV is by and large fixed in orientation and is located to maximise output at the time of highest solar radiation which occurs between 10 am and 2 pm EST. Further, the NEM is mainly centred on a north/south axis meaning reducing the diversity of supply from roof top solar PV. This severely limits the ability of small end users to directly vary their output and this output is effectively defined by weather conditions and time of year. As discussed elsewhere in the submission, there needs to be a significant incentive for small end users to change their habits to “assist” the electricity market, recognising they will tend to consider convenience over costs for much of their electricity usage.

The MEU recognises that small end users can limit their risk exposure through using a trader as an intermediary. The MEU points out that this facility already exists. Large end users already do provide responses to the market price movements and the firms that trade on their behalf (retailers) develop a unique price offering which reflects the actual usage pattern and planned changes in the coming year(s). The contracts include certain constraints on deviations that are allowed without penalty, and if there is a significant deviation to the usage pattern, the penalties can be quite severe.

Small end users have very limited ability to vary their output of electricity, as it is controlled by the orientation of their roof top solar PV and their usage of electricity is controlled by what they need to do, and when[1]. This limits their ability to be responsive to the electricity market.

Almost all small end users and most large end users will continue to operate through a retailer for their electricity supplies. In Victoria, retailers can already tailor a unique price offering to small end users but it is clear that retailers currently do not do this for

[1] For example, for residential end users, times for cooking and lighting are relatively fixed as is the usage of entertainment devices. For larger end users, (commercial and industrial) usage is controlled by production needs or when customers and employees are present in the facilities.

the 2.5 million residences and the 600,000 small businesses that exist in Victoria where there is currently the ability measure the usage patterns of all end users. So, in total there are currently at least 3.1 million individual small usage connection points in existence in Victoria that each retailer would have to make a unique pricing offer to and so reflect the unique usage patterns and end user responsiveness in their electricity usage. Even with technological advances, the MEU sees that managing this number of pricing offers will be more than challenging.

Larger end users (like MEU members) have unique contracts reflecting their usage patterns and total volume. When setting up contracts with larger end users, retailers seek agreements where the end user and retailer mange longer term risks through fixing the term of any agreement, limiting the variation allowed from an agreed annual volume and the clear knowledge that the large end user usage pattern is relatively fixed. In contrast, small end users are not locked into agreed term contracts and can change retailers when they want, and their individual usage is quite volatile[2]. These effects increase the risk for a retailer in tailoring a unique price offering for each and every small user.

A retailer manages the risk of small user usage volatility by recognising the average usage pattern over a large number of small users delivers a more reliable pattern and this is a key tool for risk management for retailers. But this averaging results in the need for common pricing across this large cohort, severely reducing the incentive for the retailer to provide unique pricing to each end user.

In the analysis provided in the consultation paper, there is an assumption that technology will make it possible to treat each end user uniquely but while this is already the case for larger end users, examination in more detail how the small end user market actually operates, it becomes increasingly obvious that extending the process used for large end users to small end users is much more challenging than first appears. Yet it is by assuming that the small end users can see benefits, that the two-sided market is assumed to be viable by extending service to small end users.

In its determination to highlight the benefits of a two-sided market, the paper has not examined the processes for managing risk that traders (retailers) must implement to remain viable and so justify the two-sided market service that the consultation paper views as the way forward.

## 2. The need for a two-sided electricity market

The MEU accepts that there is anticipated an increasing incidence of roof top solar making small end users into generators as well as being users of electricity which implies that small end users would see benefits by being more active in the electricity market, following the trend set by some large end users.

[2] Even when excluding the effects of the appliances which they might program to help modify their overall usage pattern

The MEU also notes that there is increasing use of technology in the use of electricity where many electricity using appliances in the home have the ability to switch on or off depending on price in the market. The paper cites, electric vehicles, hot water systems, pool pumps and air-conditioners which could be programmed to operate when the market prices make their operation electricity usage more cost effective, allowing small end users to participate in the electricity market.

A risk for any end user (large and small) in using new technology to respond to market prices is that the price can move so far and so quickly, yet the usage of electricity can be continuous for a period. For example, some residential appliances (eg electric ovens, clothes washing machines, etc) are now available that can be programmed to start at a particular time. But if they are also programmed to start when the electricity price is below a certain point but then stop when the prices breaches this point, then it is probable that the end user will have a half-completed task when there was an expectation of a fully completed task by a certain time. Equally, the MEU accepts there are some other appliances that can be operated in this way (eg pool pumps and perhaps EVs).

At the moment, the small end user can already provide these same benefits to the market if its retailer or trader properly priced these benefits into its price offering to the small end user but the take up is non-existent for a number of reasons, including that retailers do not offer this service to small end users and most small end users do not have the ability yet to respond to market signals automatically.

Therefore, as an overarching observation, the MEU observes that there is an essential flaw in the paper about moving to a two-sided market. Electricity use is an adjunct to the end user's core operations, and their preference is to use electricity when it best suits the end user. Demand reduction to suit the vagaries of the electricity market has a significant impact on the normal operations of end users, whether these end users are large users or residential users. Because of this, most end users of electricity would prefer not to be active in the electricity market and would prefer to receive their electricity at a price reflective of the cost of its production and delivery rather than joining into the electricity market.

The consultation paper states (page 4) that

> "…consumption of energy occurs only when its cost of supply is less than or equal to the price at which it is valued by the party seeking to buy it. Under such an arrangement, an incentive is provided for participants to consume energy from the system when the cost of supply is significantly less than its value to the end user (for example at times of high wind or solar production). The converse is equally true: where the cost of energy is higher than its value to the end user, the end user will reduce its consumption, or shift the timing of its consumption, of energy from the system."

The paper goes on to state (page 4)

> "…[there is a] case for the development of new trading arrangements which support a two-sided market at the wholesale level – one that is informed by quantity and price inputs from both consumers and producers of electricity."

The concept of a two-sided market is sound in economic theory on the assumption that the elements being traded can be purchased at a different time or that usage is not continuous and can be readily reduced with minimal impact. Where decisions about when to use a product and to reduce its usage can be made days or weeks ahead a two-sided market makes sense but in the supply of electricity decisions about these options have to be made each 5-minute dispatch period, with a price that exhibits significant volatility.

The MEU is very concerned that the move to implement the economic purity of establishing a two-sided market for electricity has failed to recognise that electricity is an essential service (with all of the constraints that this delivers) and that it is excessively volatile over very short time periods.

The argument for a two-sided market rests with the observation that increasing numbers of residential end users are exporting amounts of electricity from their roof tops and that a number of end users (large and small) are electing to limit their electricity usage at times of very high prices, when they can.

The consultation paper cites that a two-sided market will provide considerable benefit to consumers, especially residential and small business. What is not discussed tis that an essential precursor to such involvement is the implementation of interval metering at every point of consumption, acceptance by these end users to be exposed to market pricing in some form and that the service will be offered by traders (retailers).

The MEU points to the continuing debates about tariff reform and attempting to get end users to transition to demand based and/or time of use tariffs, and resistance to implementing universal interval metering in all NEM states. Even in Victoria where interval metering is universal there is continuing resistance to changing tariffs. Yet these realities (and the reasons behind them) are not addressed in the paper. Instead, the consultation paper discusses benefits to enable trade, make the market more efficient and assist in network operation.

Overall, while the MEU can see there might be some benefits for moving to a two-sided market, the MEU considers that the benefits noted are overstated and do not recognise the reality of how electricity is used, the extent to which end users might want to get involved, and the abilities of end users to actually benefit from the change.

The MEU has an over-riding concern that the costs to implement the two-sided market will significantly exceed the benefits that consumers might garner through its implementation. The MEU notes that the costs of implementation and the increased risks that consumers might be exposed to are to be addressed at the next stage of the process, but the MEU does point out that forecasts for such a major rebuild such as this are usually under estimated (eg the costs for implementing the changes for the 5

minute settlement) by the market operator and the intermediaries such as retailers and aggregators with the benefits being over estimated.

## 3. Concepts in a two-sided market

The consultation paper provides a good description of the various activities that a two-sided market could provide to small end users but what the paper doesn't highlight is the risks and costs that a small end user would face in being involved in the market, either directly by accessing the spot market or indirectly through a trader as an intermediary. The MEU points out that if an intermediary is used, then the need for a two-sided market is less obvious as the small end user would be able to access the benefits through implementation of the demand response mechanism currently being assessed as a rule change.

The concepts driving a two-sided market include NSCAS, SRAS and RERT as well as (potentially) inertia and system strength. The assumption inherent in the concept of the two-sided market is that small end user/generators could enter the market for the supply of these through technological innovations. While this might be possible, it also implies that small end user/generators might develop their skills to be able to do this. The MEU considers that this innovation might occur but the most likely approach will be delivery of these benefits through traders aggregating the services from many small user/generators which would mean that the small user/generator is not active in the market other than at the direction of the trader. If this is the case, then the need to have a formal wide-reaching two-sided market is not required and the existing market structure would be all that is necessary along with the demand response mechanism being developed.

## 4. How to Participate

The consultation paper highlights a need for change so that the electricity market can become more efficient and the MEU agrees that the points made a quite valid. As the paper states (page 14) the

> "… starting premise for a two-sided market is that there will be greater levels of participation in the scheduling process. That is, more traders will be providing information to the market about their intentions. Facilitating the integration of end users with controllable demand and supply should reduce the overall imbalances (and reduce total system cost)."

The MEU agrees that if there are greater levels of participation in the scheduling process, there will be benefits. The MEU notes that many large end users do participate in the market and this has delivered benefits. But just as importantly, while recognising that large end users can enter the market directly and indirectly, there is no discussion about why they have done so in the ways they have.

While extolling the virtues of the benefits of a two-sided market, the paper has not the examined the way small end users would actually utilise the two-sided market and what prevents small end users from being able to practically be a part of the market. In section 1 above, the MEU explains that small end user participation will be limited by their ability to manage the risk of buying electricity and how traders (retailers) could already provide this service but manage their risk by limiting the ability of individual small end users to get a benefit by better management of their use of electricity[3].

The consultation paper highlights that many small end users of electricity are also small generators of electricity through their roof top solar PV installations. The paper cites that small end user/generators could, as well as modify their demand, modify their output to reflect market prices, but this is not realistic.

As noted in section 1 above, roof top solar PV (predominantly provided by residential end users) are not able to vary the times when they will generate (in contrast dispatchable generation) although by close monitoring of the market movements, they can decide to cease generating using digital means in response to market prices, but this might be at a price well below the prices needed by large generators.

The premise behind the two-sided market is that more end users can participate in the scheduling process but the reality is that this will not be the case in either terms of the roof top solar PV that the over-whelming number of small generators use or in terms of usage patterns. Further, those small end users trading through retailers will see less of any benefit as the retailers will retain some of the benefit to offset their risks and to pay for the service they provide.

An assumption also made is that there will be increased numbers of traders (page 15)

> "…[and] these traders will not just be in the business of producing or consuming electricity as current generators are. They may be trading on behalf of consumers who are making multi-faceted decisions that impact on their electricity use. As such, the expectation that all scheduled traders can meet dispatch targets in each interval may not be realistic."

That these traders might be trading on behalf of a large number of consumers making "multi-faceted decisions" does not reflect the reality of how these small end users will be able to provide the input to allow these "multi-faceted decisions" nor how they might get paid for providing them[4]. While the consultation paper then discusses how to reward or penalise traders to meet their dispatch targets, the paper does not

[3] The MEU points to the challenges being faced in developing the demand response rule change and the decision of the AEMC not to include small end users in the program because of the difficulty aggregators/retailers face in managing such a large number of small end users within the program

[4] Noting that the trader has to agree ex ante what benefits it will pass onto the end user as the end user is unlikely to commit to a trader without knowing what the trader will pay for the services provided. The issue of a trader needing to have a large number of small end users to limit its risk and so average the prices it pays is discussed in section 1 above

investigate how the traders might be able to establish their offers in the first place, recognising that the inputs they have are uncertain except in large aggregates.

Overall, the MEU is of the view that by disaggregating load and/or of roof top solar PV output will not increase certainty of supply and/or demand to the extent that traders will need and so be prepared to accept penalties over what they cannot in reality control. Implicit in this is that traders would seek to pass the risks of penalties to the end user, reducing the likelihood of end user take up.

## 5. Model to provide participation

The consultation paper discusses three models for how best to integrate end users into the market and participate in the two-sided market approach – voluntary participation, selective participation and full participation. Each of the options has benefits and drawbacks which are detailed from the viewpoint of the market

While the paper sets out the benefits and detriments from a market viewpoint, it does not fully analysed is what are the issues from the viewpoint of the traders (and the end users that utilise their services) and those end users that might consider entering the market on their own.

In the sections above, the MEU has attempted to provide a better view on why end users might not be able (or are unwilling) to participate in a two-sided market. We have also attempted to provide a more realistic view on the challenges facing traders who might aggregate small users into a portfolio.

What is stand out observation is that the consultation paper does not examine the risks that end users and traders might face under each of the three different models investigated. Each of the three models looks at different levels of participation and how constraints might impact the market yet the only reason that most end users would decide to participate is because it will provide them with a reduction in costs for electricity. Such a reduction in costs has to be significant enough for them to increase their risks should they fail to deliver the change in usage (increased output or reduced demand) and whether they can provide the services at the time the market prices drive the incentives.

From a trader's point of view having to bid into the market based on aggregation of a number of small end users does expose them to risk and this risk would incur a cost which in turn reduces the benefit to the small end users aggregated by that trader. This is an issue that already has been observed in the electricity market

## 6. Access and charging

To provide an equitable approach to network pricing requires the implementation of a tariff for imports and a tariff for exports. Currently, all generators do not pay a network charge for exporting their output with all network costs (except a charge for connection

which a generator has to pay if there is not sufficient capacity in the network) are borne by consumers. The consultation paper implies that to operate a two-sided market would require network charges for both imports and exports from end users. The MEU has been seeking for many years for generators to pay for the usage they make of networks to deliver their product to ends users and the MEU has consistently been advised that the current approach is the most efficient model.

The MEU notes that locational marginal pricing being discussed within CoGaTI is asserted to provide better generator locational signals and a better tool for managing constraints in the transmission networks. Within the distribution networks, most of the DER is roof top solar which exports mainly between 10 am and 2 pm. Regardless of the forecast increase in roof top solar PV, (due to its orientation) export from this source will still occur in the same time period. This means for all other times, there will be a net import of electricity by all end users, maintaining the existence of essentially the one direction flow in distribution networks.

This raise s the question as to whether a two-sided market is warranted on the basis of some reverse flows for such a limited time in the day, noting that even during this period each day, weather conditions and the time of the year will potentially amplify the need for unidirectional flows.

The MEU also points out in section 2 above, that there has been considerable resistance to changing distribution tariffs as to do so could result in increased costs for consumer less able to manage the increases.

The MEU is not convinced there is an argument to introduce locational marginal pricing in the form proposed by CoGaTI. While the MEU tends to support locational marginal pricing, it also has some concerns about its efficacy. With this in mind, the MEU does not consider that locational marginal pricing is appropriate for distribution networks.

With regard to network pricing, the MEU considers there are many other issues that must be resolved before pricing could be developed to enable a level playing field in a two-sided market

## 7. Ahead markets

The MEU sees that there will be interaction between the spot market which relies on 5-minute responsiveness and the two-sided market.

One of the challenges that the MEU sees with a two-sided market is the challenge faced by the parties (including the traders) to be able to be specific about the demand they forecast ahead of time, into any ahead market. The MEU notes that even large generators which only trade in the electricity market have difficulty in forecasting their future output.

As noted above, there are additional risks inherent in the implementation of a two-sided market which have to be managed. The MEU sees this risk is enhanced when

predicting demand (and production) in the future – AEMO has already identified challenges in its forecasting at regional levels, but each of the traders would be forecasting net demand at a much lower level; MEU members already have challenges forecasting their needs days and weeks ahead and they have much less volatile demands than most end users, so trying to be sufficiently accurate when managing a more volatile sector of end user demand will be challenging.

The increased risk of interacting with the ahead market and then balancing in the spot market can only be seen to increase risk and therefor costs for the trader. As noted, increasing risk for the trader, increases the cost of the service the trader provides, reducing the benefit that flows to the end user that ultimately provides the service.

Again, the analysis provided in the consultation paper does not look into how the ahead market and two-sided market would impact end users, the risks they face and their ability to benefit from its implementation to balance the increased risks either directly or indirectly through an intermediary.

## 8. Incentives for reliability

The consultation paper discusses the benefit of a two-sided market in improving reliability where end users express a toleration for losing some services at different times and/or shifting load to another time of day. The MEU agrees that this is an opportunity and if it could be implemented then this would provide a significant benefit.

However, what is not considered is that to achieve this there are at least two preconditions – one that the end user receives sufficient benefit for the inconvenience involved and secondly that end users have to install the ability for a third party to remotely operate the equipment to be load shed or shifted.

The MEU notes that some distribution networks have already trialled such remote operation of small end user appliances. It would be useful to assist in analysis of the two-sided market if those networks that have trialled this remote operation, to provide advice as to

- The preparedness for end users to enter the program,
- Ease of operation,
- The capital costs involved of such reliability improvement measures
- What the ongoing costs are to incentivise end users
- How this program would interfere with the network needs to manage peak demand in parts of their network.

## 9. Consumer protections

The MEU has identified above a number of aspects where it sees that risks for consumers are increased as a result of a two-sided market. As MEU members

implemented their own abilities to act within the market, an important aspect was that whatever they did, they were aware of the increased risks that ensued. The MEU considers that based on the approaches that its members have implemented, there is a significant increased risk that has to be managed.

The MEU has attempted to detail some in the sections above but consider that a much more comprehensive listing of these increased risks would be identified if the analysis of the two-sided market was carried out from the view of end users rather than from the benefits to the market that might accrue if a two-sided market was implemented.

## Summary of MEU position

Overwhelmingly, the consultation paper addresses the concept of a two-sided market for the viewpoint of benefits for the electricity market without considering the realities of how a wider cohort of end users (including residential and small business end users) might interact with the market if the two-sided market was in operation. When considering the two-sided market from the viewpoint of how end users might interact, there are significant aspects that would minimise end users wanting to participate and their ability to do so if they wanted to. It is also not made clear where the certainty of receiving these incentives (presumably financial) would come from to encourage end users to want to participate and whether these would be big enough to deliver the outcomes sought.

So, based on its own knowledge of how end users would view the way they would have to modify their behaviour to gain any value, the MEU does not consider that a two-sided market is warranted, even though it might provide some theoretical benefits and increase efficiency in the electricity market.

While the consultation paper does provide some views on why a two-sided market could provide an improvement, there is no discussion on the costs to implement such a change. The MEU sees that there would be massive costs incurred by AEMO in the development of such a market and making its operation possible but also there would be major costs incurred by retailers and new entrant traders to be able to deliver the end users interaction with a two-sided market. These costs need to be added to the market operating costs that consumers will ultimately bear.

On top of these costs, are the costs that each end user would incur in order to be able to participate in a two-sided market and secure sufficient benefit to offset these costs. A core aspect of this, would be to ensure that those end users not able to absorb these costs are not made more disadvantaged should it be introduced.

In addition to the costs, the MEU points to the increases in risks that market participants and end users would be exposed to and that to manage these risks, costs would increase for both cohorts[5].

[5] The MEU notes that the concept of hedging to minimise risk is not costless as the counterparty expects payment for taking on the risk

Without examination of these costs – AEMO, retailer/trader and consumer direct costs – the MEU considers that an essential next step regarding the concept of a two-sided market must be to assess these costs coupled to a better analysis of the benefits that consumers might obtain from the change.

The MEU is happy to discuss the issues further with you if needed or if you feel that any expansion on the above comments is necessary. If so, please contact the undersigned at davidheadberry@bigpond.com or (03) 5962 3225

Yours faithfully

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