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Dear Mr Corrigan

Comments on Power of Choice Directions Paper

Thank you for this opportunity to contribute to the Power of Choice Review. We apologise for the lateness of this submission.

The Australian Energy Market Operator (AEMO) operates the National Electricity Market (NEM), the Victorian Declared Wholesale Gas Market (DWGM) in Victoria and the Short Term Trading Markets (STTM) for gas at hubs in Adelaide, Sydney and Brisbane. AEMO is also responsible for the procurement and planning of the shared network and connections of electricity transmission in Victoria and has a range of national planning functions for electricity and gas transmission.

AEMO is a member of the Power of Choice stakeholder reference group, and participated at the recent public forum and aggregated ancillary services loads forum.

Please find attached our submission. If you would like to further discuss any matters raised in this submission, please contact Ben Skinner on 03 9609 8769.

Yours sincerely



David Swift
Executive General Manager Corporate Development

Attachments: AEMO Submission

AEMO Submission to Directions Paper: Power of Choice Review

General Comments

AEMO welcomes the AEMC's efforts in this review and considers the progressive expansion of demand-side participation a key part of the successful evolution of the NEM. Efficient demand-side activities are occurring now, are becoming increasingly common and will continue to grow.

The most significant growth driver is technological: the transactional costs that once limited demand-side potential are falling dramatically. For this reason it is appropriate to reconsider aspects of the NEM: A market designed before these advances is likely to have features that now require refinement.

This technological change is progressive. Therefore the Power of Choice should be seen as part of a continuous re-assessment of the energy market's ability to embrace efficient and competitive participation, identifying and resolving barriers as they emerge. Our proposal to aggregate small generator registrations is an example. The issue was first identified in the AEMC's DSP2 review, AEMO then analysed it in its own Review into the Small Generator Framework, resulting in the current rule change which is receiving widespread support.

We must also avoid locking ourselves into any tight framework driven by a view of current technology. An approach overly focussed on capturing scale-efficiencies by "pushing" widespread adoption of a contemporary technology will hamper future market flexibility.

NEM Market Design

AEMO welcomes the preliminary view that the fundamental NEM wholesale market design, of an energy-only market with single-pass pricing and security constrained 5 minute dispatch is not in itself a barrier to an efficient demand-side. We recognise there are other electricity market designs used elsewhere with varying levels of success in encouraging demand-side participation. Electricity market designs that attempt to separate capacity value from energy usually require the market operator to determine an appropriate reward, and/or quota, for the provision of capacity through demand-side action (amongst other forms of capacity). This is a difficult role for the market operator, and is unlikely to adapt as quickly to technological advance.

The existing wholesale market design has the advantage that it recognises equally the value of all buyers and sellers, their reliable capacity as well as energy, at all times without relying upon central oversight, and is therefore best placed to adapt quickly to evolving market forces.

8. Do retailers have the right incentives to pass through appropriate wholesale costs and network charges to consumers?
9. Do retailers have an incentive to minimise the costs of their customers' consumption?

The AEMC are correct in recognising that a retailer has an incentive to pursue efficient customer response in order to minimise its exposure to wholesale price peaks. In theory, the

marginal incentive should not change whether the retailer uses hedge cover or physical generation to manage its risk. Concerns raised about the potential for vertical integration to inhibit the demand-side are more correctly seen as a generic problem of market concentration: as in any market, a monopolistic supplier may behave inefficiently to hinder the competitive growth of other suppliers. When seen in this light, it becomes clear that the best remedy to such market power, should it exist, is via anti-trust or structural action, rather than the adoption of an imperfect market design.

Metering Contestability and Metering Data

Monopoly metering service provision for geographic areas of small customers was granted due to scale efficiencies in a traditional passive consumption model with physical reads. This historical circumstance is likely to restrict the capacity for flexibility in the use of technologies, and presumably the potential for demand-side innovation. Whilst intended to support scale-efficiency in metering provision, it may conversely hinder scale efficiency by aggregators with their own specific technologies targeting sub-categories of small customers. An important policy consideration for Power of Choice is whether and how to increase customer contestability in metering provision.

1. What should be the arrangements for consumers (or third parties acting on their behalf) to access their energy data?

There is merit in recognising that consumers, should be free to inspect or share their consumption data. In particular, where interval metering data has been collected by a monopoly metering provider, this should be readily viewable, and the consumer should be able to permit third party access to it. AEMO would welcome the development of a common set of protocols as to how the data is provided.

Subtractive Metering and Load Profiling

48. What are the appropriate metering and settlement arrangements to facilitate the ability of consumers and DG projects to sell their demand response to any party?

Subtractive metering provides greater potential for the portability of distributed generation, but it also provides an option for separately managed loads within a customer's premises. Whilst subtractive metering is allowed in the NEM, it is not universally endorsed because of the complexities involved in defining the party responsible for child metering¹, due to regulatory uncertainty introduced by a lack of relevant regulation in the Rules. The regulatory framework for subtractive metering should be clarified and formalised. AEMO is willing to assist in this work. Load profiling for embedded networks does not appear to be an attractive approach.

The Directions Paper has asked whether greater subdivision of load profiles might provide an option for more demand-side response to be explored with those small customers who remain on accumulation meters or where subtractive metering does not exist. Load-profiles are presently derived from the subtraction of interval metered energies from boundary meters across a Local Retailer's area, which ensures a net settlement balance. Subdividing the load profiles implies complexity, as estimates of different load profiles, derived from an interval

¹ Directions paper pg. 175

metered sample of the of various customer types, must be peeled off the Local Retailer's overall load.

Such an approach would be second-best to the installation of interval metering on at least those customers where the current load profile is a materially poor representation. The costs of installing interval metering for such customers is not necessarily a very expensive option, and should be compared with the on-going challenges of implementing, managing and reconciling load profile subdivisions.

Subdividing small customers into smaller load profile groups may assist in removing cross-subsidies, but it does not necessarily follow that an individual incentive is created to explore active demand-side participation. Individual actions will still be lost within the new load profiles which remain shared.

AEMO suggests the AEMC's metrology focus for creating demand-side incentive for small customers should firstly be on the installation and active use of interval meters. This does not necessarily imply an expensive mass roll-out by the network businesses.

Separation of Energy Retailing and Demand-Side Response

49. Are amendments to the current market arrangements required to facilitate DSP contracts which enable the DSP provider to sell its services to any party? If so, what amendments are appropriate?

The NEM has developed along the expectation that one Financially Responsible Market Participant (FRMP) would liaise with AEMO for all the market engagement with respect to a connection point. That model provides a clear retailer-market operator relationship, and it is presumed that the retailer would manage additional customer services, such as controllable load.

AEMO recognises there is now a strong commercial interest in having multiple market facing activities within a single customer's premises. This is evidenced by the emergence of non-retail companies that specialise in aggregated energy services provision to demand-side response, electric vehicle charging and micro generators.

A possible future model for market settlement may be one where there is a FRMP for every market data/cash-flow stream rather than physical connection. However in going down that path, it is crucial that the division of legal responsibilities for each service provision is clear. The division must not create gaps in responsibilities, nor should it result in AEMO finding itself dealing with disagreements between multiple FRMPs at one site.

An example of such a model is the AEMC's interest in a rule change to permit load ancillary services to be classified by a participant which is not the energy FRMP. In a technical sense, this unbundling is readily achievable, and, if it increases the opportunity for load to participate in the ancillary services market, it is worth pursuing. However it also must be recognised that a customer's energy consumption affects its ability to sell ancillary services. AEMO would be concerned about a situation where responsibility for compliance with the ancillary services specification becomes confused.

Forecasting of Demand-Side Response

In the NEM, the role of forecasting demand is allocated to AEMO². Forecasting demand is a challenging task, especially as AEMO has no control of outcomes and limited ground-up information. AEMO is undertaking a major project aimed at improving its ability to predict general energy consumption trends, such as the take-up of photovoltaics and air-conditioner purchases³.

Accuracy in AEMO's forecasts across all timeframes: from 5 minutes to 20 years, is a critical enabler of an efficient market, supporting:

- In the long-term, the investment decisions of market participants and networks.
- In the medium-term, maintenance scheduling, contract cover and reliability management.
- In the short-term, market participant operations, such as the scheduling of demand-side response and generator commitment.

As an example of its importance, consider the impact of failing to predict the pause in the rate of electricity demand growth that has occurred between 2008 to 2012. Had this been foreseen, there might have been opportunities to defer large amounts of capital expenditure.

Where demand-side action is gradual, such as the progressive shifting of demand into off-peak periods or photovoltaic output, AEMO's measurements will, in time observe the trend and activities such as AEMO's forecasting project are the appropriate response. However where a significant amount of load is under the direct control of an individual decision maker who will respond in an operational timeframe to market signals or network congestion, there is no reliable way to estimate the effect apart from the direct advice of the decision maker.

Forms of response that can only be forecast this way include:

- Large discrete industrial loads with an interruptible characteristic, such as smelters, where the FRMP is also managing the load.
- Medium sized industrial loads that are not the FRMP but are responding to price signals through a spot price pass-through arrangement with their retailer.
- Retailers or Aggregators controlling significant quantities of load in total.
- Network businesses with dispatchable network support arrangements with demand-side response or unscheduled generation.
- Customer reaction to network businesses' critical peak pricing notifications.

² In some markets, such as the Victorian Declared Wholesale Gas Market, it is the responsibility of retailers to forecast demand, who are exposed to deviation payments caused by their error.

³ See <http://www.aemo.com.au/en/Electricity/Forecasting>.

AEMO's attempts to collect medium-term forecasting data from retailers, aggregators and networks through an annual survey is sometimes met with disinterest and it is likely that much of the existing response is not being discovered⁴. Parties resist obligations to provide more and higher quality information primarily on the basis of cost, such as the effort of investigating the behaviours of retailers' customers on pass-through arrangements⁵. But these individual costs are likely to be small in comparison to the market-wide benefit of achieving more accurate demand forecasts.

For short-term demand forecasting, AEMO has no mechanism to incorporate data from the above forms of non-scheduled demand-side response when decisions are being made to activate it. AEMO would require a data conduit for such information to be fed automatically into predispatch, supported by a rules obligation and performance auditing. Clearly, a well-developed framework would be required to manage such a process.

⁴ For the 2011 Electricity Statement of Opportunities survey, AEMO discovered only 142MW of firm demand-side response across the NEM.

⁵ See TRUenergy submission to Issues Paper, Section 18.