



CAPACITY MECHANISMS IN THE NATIONAL ELECTRICITY MARKET

FINAL REPORT

July 1999

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Review of capacity mechanisms in the national electricity market

Executive summary

NECA initiated this review of capacity mechanisms in the national electricity market to address concerns that the current market design may not be able to attract sufficient investment in the supply and demand side resources necessary to achieve the reliability standards set by the Reliability Panel. The review was also intended as a proactive assessment of the reserve trader arrangements and to establish a framework for the Reliability Panel's initial review of the level of VoLL.

The national electricity market is designed as an energy-only market. Spot market revenues are based on the market clearing prices. No other payments are made in the spot market, except for those arising from specifically-designed reliability safety nets. Reliability requires that the market clears consistently and voluntarily, ie that supply and demand are able to balance without involuntary load-shedding or other non-market intervention, in all but the most extreme and exceptional circumstances.

We strongly endorse retention of the energy-only market design. An appropriate level of VoLL that ensures consistent voluntary market clearing is essential to the efficient and effective operation of the market. Nonetheless, we recognise that the market is not yet fully mature and therefore that some form of reliability safety net will continue to be required at least for a further, limited, period beyond the current 30 June 2000 sunset for the existing reserve trader arrangements.

Level of VoLL. VoLL should be set at a level consistent with the objective of achieving consistent voluntary market clearing through a combination of supply and demand-side responses. As we have already stressed, this is essential to the efficient and effective operation of the energy-only market. The Reliability Panel's review of VoLL should take account of this overriding objective but also of the need for appropriate risk management and other mechanisms to be allowed time fully to develop if the market is to be able to cope with any resulting significant increase in VoLL.

Reliability safety net. The existing reserve trader provisions in the Code should be replaced with a reliability safety net that extends the timeframe for its operation from the current six-month, to a rolling three-year, period. This is intended to provide clearer and more certain signals to the market and to provide improved opportunities for demand-side initiatives to constitute an increasing component of any contracted reserve. The fundamental reliability standard, currently expressed as a maximum level of unserved energy, should continue to be set by the Reliability Panel. NEMMCO should remain responsible for calculating the appropriate level of capacity required in each region to meet that standard. Reflecting the

reality, however, that this requires NEMMCO to make judgements about future demand and generating capacity which involve wider issues of legitimate public policy, NEMMCO should in future take this decision in consultation with experts appointed or nominated by the participating jurisdictions.

The revised safety net should be designed to ensure that its rôle can diminish as the market matures. It should be removed entirely at the earliest opportunity in response to firm evidence of consistent voluntary market clearing, the development of a proactive demand-side response and development of more sophisticated contract and risk management mechanisms. The Reliability Panel should be required, as part of its future annual review of VoLL in accordance with clause 3.9.4 of the Code, to consider and report on whether adequate such evidence yet exists. If the Panel concludes that it does, the safety net should immediately and automatically be removed. As a further safeguard to ensure that the safety net does not simply become institutionalised, the express approval of the ACCC should be required for the safety net to extend beyond 1 July 2003.

The potential for individual participants to reduce the need for the safety net, for example through the submission of demand-side bids, should be recognised and encouraged by the allocation of responsibility for funding those arrangements. The net costs of the safety net should therefore be allocated on an energy basis in benefiting regions in peak times during the periods when the safety net is in place. Exemptions should be available for demand-side bids. We also propose to investigate additional opportunities to recognise the actions of individual participants which reduce the need for intervention.

Short-term reserve. The reliability standard does not currently distinguish between the need for short and long term reserve. This arguably leads, however, to NEMMCO being required to hold a higher level of reserve than is necessary close to despatch. The Reliability Panel should undertake work if possible to refine the arrangements.

Other issues. A number of other issues is also critical to the efficient and effective operation of the energy-only market:

- ◆ the market rules and planning criteria should be stable and transparent in order to facilitate consistent and equitable assessment of investment opportunities by generators, end-use customers and network service providers. The ACCC's draft statement of principles for the regulation of transmission revenues, the conclusions of the final report of our transmission and distribution pricing review and the Code Change Panel's proposed amendments to the network regulatory and planning provisions of the Code together go a large part of the way to providing that essential framework;
- ◆ increased demand-side participation in the market should be encouraged and facilitated in order to constrain supply-side market power and achieve dynamic efficiency. Demand-side participation can add value to the electricity itself either through direct participation as a demand-side bid, independent customer price responsiveness as a wholesale market participant or under a retail tariff arrangement or as under contract to a generator. It can also add value more broadly through the provision of ancillary services, eg for frequency or voltage control, under contract to NEMMCO or through competitive bidding under the likely revised ancillary service arrangement or through substituting for network

services, eg for localised voltage contract and peak or contingency load management. We intend shortly to launch a demand-side initiative that will concentrate on the regulatory framework, commercial incentives, technical coordination, market information and communication and transaction costs; and

- ◆ market participants should have flexibility to establish contract and hedging arrangements in accordance with their needs. These broader financial market arrangements can usefully supplement the Code's prudential and settlement reallocation provisions. The settlement reallocation provisions themselves also need to be refined.

More generally, regulatory uncertainty needs to be minimised and the market needs to be as well-informed as possible.

Compensation for directions for reliability. Compensation to generators who are directed for reliability purposes should in future be based on the higher of:

- ◆ fair market value for the energy produced during the period of the direction as determined using the prevailing spot price in the market at the time;
- ◆ fair market value for the energy produced during the period of the direction as determined by an independent expert taking into account the contract prices and associated terms and conditions under any active reserve contracts with capacity in the same region as the directed party; and
- ◆ out-of-pocket expenses as currently set out in the Code.

Plant directed to be available will receive the prevailing spot price for energy despatched but also be assured of recovering all its costs even if it is not in the event despatched. More fundamentally, however, our recommendations in this report are intended significantly to reduce the likelihood of NEMMCO needing to use its powers of direction.

The review process

The capacity mechanism review is one of a series of reviews sponsored by or involving NECA to address the reliability issue. These include reviews of:

- ◆ longer-term inter-regional hedging arrangements;
- ◆ firm access, which has been included in the terms of reference for the NECA transmission and distribution pricing review;
- ◆ improved arrangements for the provision of ancillary services; and
- ◆ the role of demand-side management (DSM) in the market and how this can be achieved.

As part of the capacity mechanism review, NECA established the capacity mechanism working group (working group), composed of industry representatives to:

- ◆ advise NECA on final terms of reference for the appointment of an Adviser to prepare a discussion paper on reliability related issues;
- ◆ advise and assist NECA and the adviser in the production of the discussion paper;
- ◆ assist and facilitate discussion;
- ◆ analyse and comment on responses to the discussion paper; and
- ◆ ensure strong cross linkage to the broader set of reviews being undertaken under the guidance of NECA's Market Development Strategy Group.

Putnam, Hayes and Bartlett (PHB) and Gallagher & Associates (GA) (together, for simple reference, as "PHB") were engaged by NECA to prepare the discussion paper, which was finalised and published on 29 January 1999. In addition to the publication of the paper, our public consultation process included a workshop in Sydney and an invitation to all interested parties to submit comments on the issues and options canvassed in the paper.

In response to the discussion paper, written submissions were received from participants and other organisations with an interest in the development of the National Electricity Market (NEM).

The following submissions, to the discussion paper which have been published in full and are available for downloading from our website, were received in time for review and consideration in this paper:

- ◆ Bardak
- ◆ The Commonwealth Department of Industry, Science and Resources
- ◆ CS Energy
- ◆ Delta Generation
- ◆ Eastern Energy
- ◆ Ecogen Energy
- ◆ Energex Network
- ◆ Energex Retail
- ◆ Ergon
- ◆ Hazelwood Power
- ◆ Integral Energy
- ◆ Loy Yang Power
- ◆ Macquarie Generation
- ◆ National Generators Forum
- ◆ Queensland Transitional Power Trading Corporation
- ◆ Snowy Trading Company
- ◆ South Australian Electricity Reform and Sales Unit
- ◆ Southern Hydro
- ◆ The Victorian Distribution Businesses

On 3 May we published a draft report. We conducted a forum to discuss the draft on 21 May in conjunction with a forum of the Reliability Panel's review of VoLL. We received submissions, which have been published on our website, from the following organisations.

The following is a list of respondents to the Capacity Mechanism draft report.

- ◆ Commonwealth Department of Industry Science Resources
- ◆ Energex Ltd
- ◆ S.A. Department of Treasury and Finance
- ◆ Pacific Power
- ◆ AGL Energy Trading
- ◆ United Energy
- ◆ Citipower
- ◆ CS Energy
- ◆ Edison Mission Energy
- ◆ Energy Australia
- ◆ Ergon Energy
- ◆ Hazelwood Power
- ◆ Integral Energy
- ◆ Macquarie Generation
- ◆ NEMMCO
- ◆ Optima Energy Pty Ltd
- ◆ Snowy Hydro Trading Pty Ltd
- ◆ Southern Hydro
- ◆ TXUA
- ◆ Yallourn Energy

The issue

The NEM is intended – as any competitive market is intended – to operate without significant or recurring non-market intervention, at least once the NEM has matured. Applying this fundamental premise of all competitive markets to the NEM means that electricity market participants, responding to market incentives, are expected to achieve and maintain an overall level of reliability that requires little or no further intervention. The ability of the NEM in its current form to achieve and maintain acceptable reliability through a non-interventionist mode of operation has been questioned by a wide range of market participants.

As a result, there is a perception that the current market arrangements may not provide adequate incentives to participants to allow the market to clear voluntarily within the boundaries set by the Reliability Panel in all credible conditions. This perception and the realities that create or support it represent some of the few remaining obstacles to achieving fully the promise of the NEM.

Does this perception arise because the NEM is fundamentally flawed? Or does it arise because, while the underlying structures and principles are sound, deficiencies exist in the specific implementation of the market? This central question of whether an energy-only market can be structured that would support voluntary clearing of supply and demand was addressed in the discussion paper, which set forth the principles of the relationship between energy-only market structures and reliability. The overwhelming majority of comments received indicated strong support for maintaining the NEM as an energy-only market, subject to the ability to address perceived deficiencies in specific areas.

The NEM as an energy-only market

As an energy-only market, the NEM can only clear voluntarily if there is sufficient supply to satisfy all loads seeking supply at the market price and participants receive the correct signals (i.e. prices). If there is not, there must be an ability for price to increase and supply to increase and/or demand to decrease so that the amount of load seeking supply balances. To reach and maintain this state of reliability, market participants must expect that actions consistent with maintaining or achieving reliability will be cost-effective (i.e., profitable). Reliability is then determined by the responsiveness of the market to price signals. If further supply-side resources are not available to meet the load seeking to be supplied at the current price, then there must be an ability for prices to increase and demand to decrease so that the amount of load seeking to be supplied reduces to a level that can be served.

In energy-only markets, the need for supply and demand-side resources is signalled through market prices. The NEM market design depends on the bidding behaviour and response of supply- and demand-side resources to obtain a market clearing energy-only price that reflects the underlying economic value of the capacity used to generate that energy. In energy-only markets, generation capacity *per se* receives no separate remuneration in the spot market. More specifically, spot market prices and the contracts that participants freely undertake amongst themselves support investor expectations of future net revenues (profits) associated with potential investments. If expected profits are not sufficient, no investment will be made.

The January discussion paper provided background on the theory of the energy-only market approach and canvassed alternative approaches involving specific capacity remuneration.

Energy-only market design principles. Several basic market design principles underlie an effective energy-only market:

- ◆ it must be recognised by all participants that the energy-only structure of the market is pivotal and that any changes to the NEM will be made consistent with energy-only market principles;
- ◆ an energy-only market requires essentially unconstrained spot market prices – at least to the level where the market will clear voluntarily (the concept of voluntary clearing of the market was introduced in the discussion paper);
- ◆ spot prices in commodity markets can be extremely volatile, but this volatility *per se* should not be regulated;
- ◆ a contract market provides an efficient means to manage volatility of spot prices and to enable participants to hedge price risks by taking and supporting positions (and investments) based on their evaluation of future opportunities – perhaps supported by other risk instruments such as insurance products; Risk is an essential element of an energy only market. It is risk that either directly or indirectly provides the incentive for reserve capability and hence reliability of supply. If contract arrangements are hedges against the spot market price, one party or the other at some stage accepts the risk of being forced to buy from the spot market in order to meet the contract. If hedges are non-firm the risk lies with the retailer. If contracts with a generator are firm the generator accepts the risk although retailers also face a volume risk due to uncertainty in consumer demand.

The size of the risk will determine the level of response. If the generator accepts the risk, and does not wish to carry it internally it is incentivised to find either; sufficient supply sources to generate in the event it cannot meet the full contract amount – the risk premium charged for this will therefore be related to the overall cost of the alternative supplier, or, sufficient consumer load willing to reduce consumption under contract to the generator i.e. a demand side response linked to the contracting generator’s performance – the risk premium in this case will be at least the valuation of the interruptible consumer.

- ◆ market participants are, in the main, responsible for a managing their own risks; as far as practicable, accountability for actions causing adverse market outcomes should be clearly identified and assigned to those who are most capable of managing them.

NECA strongly endorses and supports the energy-only framework upon which the NEM is based. Where the Code is not conducive to either efficient behavioural response or efficient capital investment in new supply or demand options consistent with these principles, the Code should be changed. At the same time, We recognise that not all changes to the NEM potentially required to implement an energy-only market consistent with the above principles can be advanced through changes to the Code. We also recognise the role and responsibilities of governments in the participating jurisdictions in relation to the overall reliability issue. Where Code change alone is not sufficient, we may point out possible directions for further evaluation and decision-making by market participants and/or the relevant Government institutions.

Criticism of the NEM design. In evaluating the responses submitted in relation to the discussion paper, only one, the submission by Bardak, proposed a radical change to the structure and design of the NEM. Bardak is extremely critical of the current market design and advocates what, in its view, is a much broader based review than we are currently undertaking. Principally, whilst Bardak accepts that the NEM must be implemented in the short term, it argues that the NEM “will not be perfect, or even near perfect”, noting:

The long-term solution has to be to move away from the mandatory spot market and centralised despatch concept and make participation in the spot market and despatch system operated by NEMMCO voluntary. This is particularly so given the obvious physical and political difficulties associated with achieving multiple and independent generation sectors in some of the States.

Much of Bardak’s criticism is not directed at the reliability issue, the perception the market may not balance supply and demand voluntarily. It appears the criticism is related more to concern that structural issues are inhibiting two sided competition in the market. Bardak argues that constraints in the NEM prevent participants from interacting in potentially desirable ways, not only in terms of the scheduling and despatch of generation plant but also in terms of the ways they can enter into contracts. Bardak’s arguments, however, do not take into account the extraordinary amount of commercial freedom NEM participants have, a level matching or bettering that available in most other wholesale electricity markets around the world.

Mandatory participation. Under the existing national market arrangements, it is mandatory for all generating units in excess of 30 MW to participate in the centralised scheduling and despatch process. This requirement exists only so that NEMMCO will have sufficient information to safely coordinate and oversee the physical operation of the main power system. It is similar to the mandatory requirement in other electricity markets for the market/system operator to know about physical intentions. It also allows efficiency gains that are created through the centralisation of a market-clearing process and system operations.

Whilst participation in the centralised scheduling and despatch process is mandated for large generators, substantial flexibility exists for generators to coordinate their physical operation with their commercial arrangements. Participants may:

- ◆ stipulate a physical level of production/consumption – a self-despatch level – at any time; and
- ◆ optionally submit any offer price for despatch above that self-despatch level on the basis that any generator may wish to generate more than their planned output if the price is attractive. This is clearly to the advantage of the individual and the efficiency of the market as a whole and is equivalent to the decremental and incremental bids/offers in balancing markets elsewhere.

The only mandatory price offer requirement placed on a generator in these circumstances is to offer a price (which can be zero or negative) at which it is prepared to reduce or decommit. This condition is imposed solely for system security reasons; i.e., NEMMCO must have a merit order for off-loading generators under an excess generation condition.

On the demand-side of the market, while customers may submit price bids and participate directly in the centralised scheduling and despatch process if they wish, participation is purely optional.

Participant freedom to enter into a broad range of contracts. The market's legal and regulatory framework places virtually no restrictions on the electricity trading strategies, the contracting arrangements that may be negotiated or forms of contracts used, or on the risk preferences or risk management policies of any of the participants. It also places no restriction on those who wish to participate in electricity trading although financial market regulation does require the relevant authorities to be obtained. We consider that there are in principle no fundamental barriers to more active participation in the market by both electricity users and other participants.

If parties wish, bilateral “physical” contracts may be negotiated between generators and customers which give the customer physical despatch rights over a nominated amount of physical generation capacity but does not mandate this as the only form of contract. The parties would need to establish the communication arrangements which ensure the plant operation is able to be coordinated with the NEMMCO scheduling and despatch process and despatched in accord with the customer's directions. As already noted this communication and coordination is common to all forms of electricity markets.

In addition, the Code provides that participant rights and obligations in financial settlements of spot market transactions may be re-allocated by agreement from one party to another under any terms and conditions the parties choose. The effect of a settlement re-allocation is to

replace payments to and from NEMMCO with payments directly and solely between participants. This re-allocation process contrasts with less flexible approaches that mandate spot market-based settlement of all trades. Re-allocations can also be taken into account in the calculation of prudential obligations.

We believe that there is not a systemic bias in the rules, *per se*, or in the energy-only structure of the NEM, against physical contracts. It is entirely up to customers and generators to evaluate the benefits and risks of entering into such contracts, and agreeing what risks each will bear. Where customers are reluctant to take on risks related to physical performance, it may be that they merely wish to buy power at a firm delivered price without having to learn the generation business in the process.

We recognise the possibility that existing prudential arrangements for trading in the spot market may be a disincentive for wholesale purchasers to use the re-allocation provisions as generators may then seek a higher level of protection from the risk of default. With some modifications to the existing reallocation and prudential arrangements in the spot market, a substantial reduction in money flows through NEMMCO's settlements process would be likely, and the financial relationships between participants involved in electricity trading would more closely emulate physical contract arrangements. There is scope for further review of the NEM's prudential arrangements.

Market equality between buyers and sellers. If the NEM were inflexible with respect to physical scheduling and contracting arrangements, buyers in the market could be at the mercy of suppliers. As noted above, however, the NEM supports a sufficiently broad range of physical and financial contractual arrangements. Consequently, NECA does not consider further action is required in relation to increasing the range of physical or financial arrangements available to NEM participants.

We believe buyers' influence in the market will be enhanced by ensuring that there are incentives for both buyers and sellers to enter into contracts rather than through buyer influence over generator dispatch rights. It is the price for despatch that is critical, not the control. If an uneven negotiating position exists in arranging contracts based on the spot market price it is highly likely the same position will exist in any form of contract. Neither will affect the basic reliability outcome *per se*. An important factor in the balance of negotiating power is the level of demand-side response as an alternative for buyers. We are proposing to examine ways of increasing the opportunity for additional demand-side participation.

More importantly, we do not accept that the Code (as it exists or through changes to it) provides an efficient means of overcoming market power issues that relate to market structure. In fact, the market objectives do not address market power issues other than requiring an assurance that the market be competitive. These are matters, which can only be addressed within the legislative framework of the Trade Practices Act, which is administered by the ACCC.

Fundamental soundness of the NEM. As noted above, we strongly endorse the energy-only framework upon which the NEM is based. The NEM design provides participants with a wide range of freedoms, both operationally and financially, as required in an efficient energy-only market. In our view, some changes are required within the energy-only market

framework to address the existing concerns about reliability and enhance the opportunity for a fully competitive and efficient industry. These changes can be classified in two groups:

- ◆ modifications to the NEM to remove impediments to efficient operation of an energy-only market; and
- ◆ needed transition and safety net mechanisms to ensure adequate reliability can be delivered during the period in which the market is maturing.

The rest of this paper focuses on these two areas.

Perceived impediments to an energy-only market: stakeholder views. As discussed in the previous sections, almost all of the submissions to the discussion and draft reports support the retention of an energy-only market and reject the introduction of a new, permanent capacity payment mechanism. However, amongst this group of respondents, there was strong support, particularly from the generation sector, for an interim capacity payment mechanism in the event there is either no increase in VoLL, or if such an increase is introduced progressively over time.

VoLL. The Reliability Panel is currently reviewing the level of VoLL. It has published an issue paper and called for submissions. It will shortly publish its report and commence Code consultation on any necessary changes.

Views on the appropriate level of VoLL expressed in response to this review's discussion paper and the panel's issues paper included calling for consideration of a decrease, no increase at any stage, progressive increase to a range of levels through to an immediate and dramatic increase.

Whilst there is considerable diversity in opinion, it would appear that:

- ◆ peaking generators are the market sector most in favour of a substantial increase and this sector also supports the view that, if this increase is to occur over a transition period, an interim capacity payment arrangement in some form is needed. In this respect, there is some support for a centrally facilitated non-firm capacity options market with compulsory participation by all generators, and which is paid for by contributions from all wholesale purchases for which there are no demand-side bids below VoLL during the most critical times of the year;
- ◆ base load generators were split on the need for increase in VoLL and there does not appear to be a consensus on level or timing amongst those seeking an increase or the need for interim capacity payment arrangements; and
- ◆ retailers either do not support any increase at all (particularly in New South Wales and Queensland), or alternatively believe any increase should be delayed as long as possible, while other measures which are considered more economic are used to balance supply and demand before any investment in new generation must be committed (Victoria).

Interim capacity payment mechanism. Almost all of the submissions to the discussion paper (Commonwealth Department of Industry, Science and Resources, Delta, Ecogen,

Hazelwood, Loy Yang Power, National Generators Forum, Queensland Transitional Power Trading Corporation, Victorian Distribution Businesses, Energex Retail, and Snowy) support the retention of an energy-only market and reject the introduction of a new, permanent, capacity payment mechanism. In most cases, stakeholders supported the views expressed in the discussion paper that such measures are themselves distortionary and would lead to inefficient market outcomes.

However, there was strong support from some parts of the generation sector for an interim capacity payment mechanism in the event there is either no increase in VoLL, or if such an increase is introduced progressively over time.

Determination of spot prices. One respondent (Ecogen) has called for the replacement of the existing 30-minute pricing (based on 5-minute prices) regime with a 30-minute *ex ante* price combined with greater use of contracted ancillary services to deal with sub 30-minute issues associated with instantaneous balancing of supply and demand. Submissions to the draft report supported review of these arrangements.

Risk management instruments. Almost all respondents advocating an increase in the value of VoLL also acknowledge the market currently lacks the full range of risk management products that market participants need to manage the increased trading risks that would ensue. However, they also expressed a strong belief that these instruments have begun to emerge and will be adequate. Edison Mission Energy outlined a range of developing forms of contract.

However, with the exception of a possible mandated capacity payment arrangement as a transition measure during the period in which VoLL is progressively increased to what some consider a more appropriate long term level, there is no support amongst the respondents for any central facilitation of the development of the risk management products the market requires in the longer term. Considerable effort is already being devoted to the development of such products on a commercial basis, and no central facilitation is considered necessary.

Retailer obligations for reliability of supply. Two generator respondents (Delta and Ecogen) argued strongly in favour of the introduction of financial penalties for retailers when their supply is interrupted due to a lack of generation (as opposed to supply interruptions caused by network limitations). In essence, the generators argue that, without such penalties, retailers do not have sufficient incentive to enter into contracts to a level which would provide a reliable level of supply.

On the other hand, all retailers reject this view arguing there is already sufficient pressure from end-users and regulators to convince retailers there is no advantage, financial or otherwise, to them if they fail to provide for a level of reliability that customers expect.

Interconnectors. A number of different views were expressed on interconnectors and how the existing treatment of interconnectors in the national market should be progressed.

One respondent (the Victorian Distribution Businesses) argued strongly for the establishment of a program to expand the capacity of the existing interconnectors wherever low cost capacity enhancements are available. Two other respondents (Ecogen and Loy Yang Power) argued for new investment in interconnectors to face the same market risks as generators. Another (Energex Retail) suggested the proposals to invest in QNI and SANI were a

demonstration the market is working adequately and no major changes are required. A number of submissions noted the importance of consistency between network augmentation and energy market incentives.

Jurisdictional risk. Whereas one respondent (the National Generators Forum) to the discussion paper cited investment decisions, such as Osborne and Pelican Point powers stations in South Australia, SANI and QNI, and recent generator investment decisions in Queensland, as instances of jurisdictional interference in the market, another respondent (Energex Retail) cited some of the same investment decisions as evidence the market is working effectively in those States and the perceived reliability issue is essentially a Victoria-only problem.

Promotion of efficient and effective energy-only market

The process of market development and market reform in the electricity sector world-wide has continued apace for over a decade now, and it will certainly continue into the new millennium as technology changes, market structures evolve, transition arrangements expire and market participants become increasingly sophisticated. No market is perfect; nevertheless markets work. Where clear distortions exist, however, particularly where they threaten to undermine the reliable functioning of the market as a whole, they must be addressed effectively and efficiently.

We propose a series of changes to aspects of the NEM market design to facilitate the development of an efficient and self-contained energy-only market consistent with the objectives in the Code. The principles underlying these proposed changes are as follows:

- ◆ market participants require clear incentives, tools and mechanisms to enable them to contract and hedge market risks, and these are best facilitated in an energy-only market able to clear voluntarily (i.e., balance supply and demand without intervention);
- ◆ market rules and planning criteria should be clear and practicable, and should be stable and transparent to facilitate consistent and equitable assessment of investment opportunities by generators, customers and network service providers alike;
- ◆ proactive demand-side participation is required in order to constrain supply-side market power and to achieve dynamic efficiency over time;
- ◆ market participants must have sufficient flexibility to establish contract and hedging arrangements in accordance with their needs; and
- ◆ intervention should be minimised, and the nature and form of interventions should seek to minimise distortions that would affect the longer-term investment decisions of market participants.

Each of these is addressed in turn.

Establishing clear incentives, tools and mechanisms to contract and hedge. It is reasonable to expect that secondary markets and associated improved risk management

strategies will evolve as market participants become more sensitive to commercial realities. But, given the clear importance of an active contract market to decisions to invest in the market, is this evolution proceeding quickly enough?

The pace of this evolution is affected by a number of factors. Many participants, for example, are not fully exposed to spot prices, and indeed, the current VoLL caps those prices.

A further impediment to the maturation of the NEM is the fact that the commercial and regulatory environment itself has not been stable. Without it, participants and investors (both supply-and demand-side) cannot reasonably be expected to:

- ◆ commit to new investments in the industry on a purely market-based assessment; and
- ◆ have access to all the commercial risk management arrangements they need to manage their business risks efficiently and effectively.

We consider approaches that may increase the incentives for market participants to contract and hedge (short of mandating participation in a forward contract market) to be somewhat limited. Within the regulatory framework that governs the operation of the spot market, a range of possible and not mutually exclusive options exists:

- ◆ raise or completely remove the VoLL price cap;
- ◆ lower or completely remove the price floor (allow negative prices);
- ◆ manage and minimise collection risk in the spot market by overhauling the market prudential requirements in a way that reflects participants' contract positions in setting those prudential requirements;
- ◆ allocate reserve trader costs to participants who are not appropriately contracted consistent with the reliability level being sought across the market;
- ◆ require retailers to compensate their customers during periods of involuntary load shedding;
- ◆ after any event involving involuntary load shedding due to a supply shortage, mandate disclosure of all participant contract positions at the time and publish the aggregate contract volume position of each participant; and
- ◆ mandate regular disclosure by market participants of their Board-endorsed risk management policies, their authorised trading limits and their contract portfolio positions on a confidential basis to an independent assessment body which would regularly review and publish a "rating" of the risk position of each participant in the physical market.

Options related to price caps or floors are being separately considered:

- ◆ the price cap is the subject of a separate review process under the auspices of the Reliability Panel and is already underway; and
- ◆ as a condition of full authorisation of the Code, the ACCC has demanded the price floor for wholesale purchases in the spot market be removed within twelve months of market commencement.

Each of the options above is considered in more detail. Finally, issues with respect to the determination of spot prices in the market are noted.

The price cap. The divergent views expressed by participants about the existing level of VoLL and whether it should be changed is not surprising. The range of views reflects to some extent the range of vested interests of the parties concerned. More importantly, they reflect the broad range of perceptions about how participants perceive that the NEM will develop over time and to what extent participants expect short-term price elasticity and active demand-side participation in the market to facilitate balancing physical supply and demand in real time.

We agree that the level of VoLL as a price cap is a crucial factor in resolving the reliability issue. In our terms of reference to the Reliability Panel we called for an appropriate level of VoLL to allow the market to operate without intervention. In a mature market we would not expect any price cap set in this way to be reached very often and the market will set its own clearing price where demand and supply balance. We do not anticipate that this price will exceed even the current level of VoLL for any significant time. What is important at this time is to note that in the absence of a mature demand-side response capability, it is particularly important to promote increased price-sensitivity at the retail and consuming end of the supply chain. It is also important that the market be able to recognise and manage any consequential risk. This risk is a primary incentive for the existence of reserve plant and forecasts of future risk are a driver for new investment. If risk is unmanageable the integrity of the market will be threatened. On the other hand if the market price is capped at too low a level to contain risk there will be insufficient incentive to pursue risk management strategies and reliability will be reduced accordingly.

Over time, technological advances will increasingly allow electricity users to express their price preference, providing a more efficient demand-side response capability. In addition, market opportunities will increasingly promote lower relative cost, low duty peak supply options such as chemical or super-conductor based energy storage systems.

In the terms of reference for the review of VoLL, we acknowledged the central importance of VoLL as a key driver for investment in new facilities. We asked the Reliability Panel to take into account both the findings of this review of capacity mechanisms and participants' views on the matter. We also asked the Reliability Panel to consider what, if any, transitional arrangements are necessary to accompany an increase in VoLL, if an increase is warranted.

The price floor. Removal of the price floor, whilst increasing the incentive to contract and hedge, is not particularly relevant to the question of supply reliability. Negative spot prices would imply a market condition where there is an excess of generation, not a shortage or potential risk to supply reliability. At the same time, contracting and hedging behaviour is central to facilitating secondary market activity, which in turn provides an important signal for planning and investment. Furthermore, a decision was made by the ACCC on this issue

more than twelve months ago. We are committed to removing the zero price floor to comply with the terms of the ACCC's full authorisation of the Code. In this respect, we will be making a submission in due course for the required Code changes to go before the Code Change Panel.

Spot market prudential arrangements. The existing spot market prudential arrangements require each expected debtor to the spot market to provide access to cleared funds to cover the spot market's expected reasonable worst case exposure. The arrangements also provide for margin calls and/or requirements for affected participants to provide additional collateral in the event the actual exposure at any time approaches the level of the bank guarantee provided.

These arrangements provide comprehensive protection against collection risk for the spot market's creditors under normal trading conditions, and the margin call arrangements, combined with NEMMCO's ability to review and revise the level of guarantee as and when required, allow these arrangements to operate effectively even if market prices rise for a sustained period.

We support the view that a robust spot market prudential system which reduces collection risk in the spot market would facilitate longer-term contracting. The allocation of collection risk among market participants can be adjusted to reflect participant contract positions.

Further there is scope to review prudential obligations to ensure that collection risk does not threaten the viability of the market under extreme conditions.

The Code already provides a mechanism to reduce the level of prudential guarantee individual participants are required to lodge through a settlement re-allocation, which would generally be an integral part of a bilateral contract, although it is not currently being used by any parties. The arrangement allows a participant to reallocate its obligation to pay, or its entitlement to receive revenue, in the spot market, to or from another party. For example a generator could accept a reduction in its entitlement to receive payment from the Spot Market as part of a contract deal with a customer who had a matching reduction in its obligation to pay. If the cost of prudential cover were raised, it could increase the incentive for wholesale purchasers in the spot market to take advantage of the re-allocation provisions in the Code. Through re-allocation, Participants can reduce their net exposure to the spot market and their corresponding prudential costs.

We believe, however, that the current re-allocation arrangements do not offer sufficient flexibility, may not be sufficiently stringent and will require amendment. For example, re-allocations could be made more flexible by accommodating shorter-term re-allocations and taking into account a wider range of external parties. In promoting increased flexibility and use of reallocation transactions we are seeking to ensure that the greatest level of flexibility exists for parties to make their own arrangements. As NEMMCO obtains the data to be able to establish prudential obligations more in line with the principles in the Code for the longer term, of not being exceeded more than once in 48 months, the level of prudential guarantee will inevitably increase making alternatives which decrease the obligation more attractive. We believe improved reallocation provisions and increased recognition of external arrangements – for example insured contracts will increase the choices available to participants. We also believe that other possibilities that would still give NEMMCO access to the required level of cleared funds at all times should be investigated, including shortening

the time delay between physical spot trading and financial settlement (currently approximately 30 days). We do not believe sufficient debate has occurred through this review for us to propose Code changes but believe further detailed consideration is warranted at a later stage.

NECA acknowledges the ACCC's concerns that stringent prudential requirements could be seen as a barrier to entry, particularly for new retailers. Experience to date, however, suggests the retailing sector is extremely competitive, with more retailers competing in each market region than there are generators. In addition, provided any new prudential arrangements take proper account of a retailer's contracted position, the effective cost of prudential cover in the spot market could potentially be much less than it is now. Ergon, in its submission, argued for a review of the existing prudentials arrangement for this very reason.

Allocation of reliability safety net costs. NECA supports the concept of rewarding those participants in the market who, through their energy trading activities and their behaviour in the spot market, are responding to the commercial incentives in the market and are playing their part in the evolution of the market to the point where it will clear voluntarily at all times. This point is examined further in the section dealing with revised safety net arrangements.

Retailer obligations for reliability of supply. We are not persuaded by the arguments presented by generators that we should take a position on this issue. However, if the generator view as expressed is correct, we agree it would be a serious impediment to the development of an efficient and effective energy-only market. In view of this, we believe the issue needs further detailed consideration by the relevant regulatory bodies.

Where retailers are submitting active demand-side bids into the spot market, we believe end use customer load should only be included in a retailer's 'voluntary' response or price sensitivity allowance to wholesale market conditions where the retailer has a clear contractual right to do so. Retailers argue this occurs in any event. We would expect that contestable customer contracts and/or legal protection would be sufficient to ensure the appropriate drivers exist in this regard. We consider that this is a local jurisdictional issue as it deals with retail conditions of supply; in some circumstances, it may also be a Trades Practices Act issue. However, we also note recent debate does not appear to have clearly identified who is accountable for reliability from the energy market.

Two additional, and potentially more heavy-handed, options involve different approaches but have in common the objective of fostering disclosure of the contract positions of physical participants in the spot market. Both options, however, have significant administrative issues that would need to be resolved for them to be viable. Neither is recommended.

In the first option, disclosure would be required after any involuntary load shedding event, with the aggregate contract position of each physical participant published along with details of the volume of their physical generation and/or purchases at the time (including an estimate of the amount of load shed involuntarily). This would enable all stakeholders in the market to determine which participants were over- or under-contracted during the supply emergency. This information could prove to be relevant to any parties contemplating redress in the aftermath of such an event. More importantly, the knowledge that such disclosure would be mandated would provide an incentive for participants to take positions that would hold up under such scrutiny.

The second disclosure option is less transparent but could prove to be a more effective way to foster the incentives needed for participants to contract and hedge appropriately. An independent assessment body would monitor risk management policies and trading behaviour, not unlike rating services used in the finance and insurance industry throughout the world. The public disclosure of such policies and information, or the ratings derived therefrom, would act as an incentive for participants to ensure their risk management strategies are sound and faithfully implemented. Such disclosure would foster the development of a contract and hedging market.

Neither of these two options is an initiative that could be addressed within the framework of the Code. Contracting issues are essentially matters for the national regulatory bodies (e.g., the ACCC and ASIC). Options of this nature would arguably be more justified if impediments to essential features of the energy only market could not be implemented.

Spot market price determination process. One participant has argued that the NEM's spot market price determination process should be changed to clarify the price signals in the market. The current market price determination process uses an average of five-minute prices over a thirty-minute period as the spot market price. The current arrangements reflect a compromise between a longer-period pricing approach, say based on 30-minute intervals, which would increase reliance on ancillary services, and a shorter period, which would push up against the limits of current technology and information management. Consistent with energy-only market design principles, shorter periods of price setting will eventually be desirable, subject to the limits of informational and technological constraints. We accept that the current arrangements are having a significant impact on some peak generators. One objective of the market is technology neutrality. Wherever possible the NEM requires individual participants to work within their own technical limitations. However some aspects of the current design arguably do not provide equal opportunity to some peak load participants. One answer is to amend the manner, in which the trading price is calculated, however, other options also exist. For example an under/over or balancing payment/charge could be introduced where despatch is inconsistent with the 30 minute price or, shortening of the trading interval. We are aware of work within industry working groups on this matter. We believe the matter must be addressed with some urgency and certainly prior to any increase in VoLL that may be determined through the Reliability Panel review. We endorse the consideration being given to this matter.

Supporting a stable and transparent market environment for new investment

The discussion paper focused considerable attention on regulatory and governmental matters that could adversely affect the climate for new investment in either the supply- or demand-side of the market. These included the following issues:

- ◆ the regulatory environment is still very unstable with many important issues targeted for review, and the various regulatory processes are still untested;
- ◆ in particular, the regulatory arrangements that govern new transmission investment are unresolved; yet transmission competes directly with generation in critical locations in the market; and

Participants, in their submissions in response to the discussion paper, expressed quite divergent views about the extent to which any of these matters are relevant to the reliability

issue. Even where considered relevant, some believed any problems were merely symptomatic of the market's immaturity, and that the passage of time would resolve them.

We have considered each of the issues separately and the following sections summarise its position on each.

The regulatory environment. We acknowledge that the large number of reviews already underway or planned may be having an unsettling influence on the market. In addition, the safety net features of the market are not proven and contribute to regulatory and market uncertainty. A later section deals more explicitly with issues related to transition mechanisms and reliability safety nets.

A number of the ongoing reviews are a direct result of the conditions imposed by the ACCC for full authorisation of the Code. Where clear deficiencies in the existing regulatory framework have been identified, whether by the ACCC during the Code authorisation process or as a result of initial operating experience with the market, we believe it is better to take the necessary corrective action as quickly as possible so that a more stable regulatory environment can be firmly established.

Also where possible, we have developed and published regulatory guidelines to assist market participants in their understanding of NECA's role and responsibilities in the market and how it will administer important regulatory functions, such as market surveillance and monitoring of code compliance. We have also executed a formal agreement with the ACCC that clearly delineates the regulatory responsibilities of the two organisations, and this agreement has been published for the information of all stakeholders. We will continually look for opportunities to reduce the regulatory uncertainty during the market transition period and will work with other regulatory agencies as required in pursuit of this aim.

Transmission planning and investment. There are three important initiatives in train that will, when finalised, remove much of the existing uncertainty about the regulatory framework for network planning, pricing and investment. These are:

- ◆ the transmission and distribution pricing review which is scheduled for completion this month;
- ◆ changes to the NEC to accommodate the operation of non-regulated links in the spot market, currently being considered by the Code Change Panel; and
- ◆ the ACCC's review of the assessment criteria for planning decisions governing new investment in regulated inter-connectors, which, presumably, will flow onto consideration of other regulated networks as well.

We acknowledge however, there will still be a number of very important network issues left unresolved following completion of the current pricing review. We have flagged our intent to consider locational pricing and access obligation matters more thoroughly. Further time is required to develop a full package of processes and policies for the market.

We acknowledge the potential impact of investment in new interconnector facilities on market prices in one or more regions. The impact of such price changes will not affect all participants in the market evenly. The beneficiaries of the expansion will typically be all

generators in the exporting region and all customers in the importing region, with dis-benefits accruing to generators in the importing region and consumers in the exporting region. There may be impacts on participants in other regions as well. All participants in competitive markets can be affected by the actions of new entrants, who may not only cause lower market prices, but also take substantial market share away from incumbent suppliers. The participants in the competitive electricity market expect to face similar threats; however, incumbent generators are particularly concerned about the threat posed by the potential for uneconomic investment in new regulated interconnector capacity.

Unless the right balance is achieved, there will be some loss of market efficiency, which will translate into higher than necessary prices for consumers, or stranded generation or network investments.

In its draft decision, the ACCC has demonstrated a strong preference for non-regulated links and has proposed in effect not to sanction any new regulated links where it can be demonstrated a non-regulated link investment would be financially viable.

We are confident the completion of current initiatives which will result in a much stronger emphasis on non-regulated link investment will provide a more stable and predictable planning environment for new transmission interconnector investments and will ensure new transmission and generation investments are evaluated on a commercially consistent basis.

The submission to the discussion paper by the Victorian Distribution Businesses argued that “low cost” increments of new interconnector capacity should be used to delay the need for the next increment of generation in Victoria by a further two years or so. As a result, the market would gain time to enable the development of a more robust demand-side response, potentially delaying further any need for new generation. We agree that in some instances the next economic increment in capacity may well be additional interconnector capacity. When the current initiatives referred to above are completed, the market will be able to assess the relative economic merits of the interconnector capacity enhancement options identified by the Victorian Distribution Businesses.

In supporting an efficient energy-only market, we are seeking to minimise market distortions and facilitate the creation of consistent rules for the evaluation of generation, network and demand-side investments.

Facilitating the development of a demand side response. As a general principle, NECA’s role is to create, through the market rules, an appropriate market environment which encourages electricity consumers to enter into commercial arrangements with retailers and others operating in the financial markets, which reflect the consumers’ sensitivities to prices.

We recognise the need for more active demand-side participation in the market. However, we stop short of recommending the introduction of mandatory demand-side bidding. However it must also be recognised that its absence means that wholesale market customers are free to add/withdraw demand at anytime. Generators basing their offers to the spot market on forecasts of the aggregate demand therefore face uncertainty over the final volume. On the other hand retailers, in the main, do not currently control the level of their own demand. The market is designed to allow contracts to be struck between generators and customers to remove uncertainty. It also allows generators to adjust volumes. It is vital that flexibility

exists in practice as well as in theory on both sides of the market. Increased opportunity for demand side participation would assist this process.

Whilst some demand is flexible enough to participate directly in the despatch process because the user can withstand regular interruptions to supply without notice, other users will only accept a “voluntary” reduction in demand, provided there is sufficient warning to ameliorate the impacts.

In the discussion of energy only market design principles we noted that risk management instruments will be needed that establish the value of different forms of demand-side participation in advance, thereby encouraging electricity users to invest in new control systems (or modifications to existing control systems) at their premises as well as in suitable communications between them and their retailers or other service providers. In addition, it may require investment in additional stock-holdings or other capital facilities that provide increased flexibility in demand for the consumer.

Quite understandably, consumers will not seriously consider such investments until there is clear evidence in the market that they are worthwhile. The worth of such investments to consumers and/or their retailers is a function of their exposure to market prices. Over time, consumers may be expected to develop increasingly price sensitive behaviour as they replace or upgrade existing equipment and adopt new technologies. Last year, we established a demand-side working group to explore this issue further. In spite of the variable pace at which a significant demand response is emerging, there is evidence that, where the technical control capability exists, consumers can and do respond. In addition, retailers in some States already have remote control equipment available to them which they are employing to modify their customer demand profile in response to pre-despatch price forecasts.

Submissions received in response to our discussion paper and draft report did not support direct intervention to accelerate the development of increased demand-side response in the market, although no submissions were received directly from customers or representative bodies. We believe increased opportunity for demand-side participation is a high priority and will provide significant benefits to the market and in particular will ensure that appropriate incentives and accountabilities for reliability exist. Therefore we shall shortly launch a renewed initiative to examine the scope for improving the broad regulatory environment for, increased opportunity for demand-side participation in the market.

Supporting participant flexibility to contract and hedge. In addition to having the right incentives to contract and hedge, market participants also need:

- ◆ competencies in risk management policy formulation and implementation;
- ◆ authority to enter into contracts of the form which they prefer; and
- ◆ ready access to the full range of hedging instruments (i.e., both range of products and sufficient market liquidity to be able to trade as and when required with reasonably reliable price discovery) needed to implement their chosen risk management strategy.

Virtually none of the respondents to the discussion paper supported the suggestion of industry-wide training programs to raise the level of knowledge and skills in the industry to

formulate and implement well designed risk management strategies that govern their energy trading activities in the market.

In some cases, individual companies are introducing their own training programs. In addition, ESAA has increased its focus on risk management issues in its training courses, and if necessary, it can respond to the needs of the industry in this area. Therefore, we are not convinced there is any justification for us to sponsor any new initiatives.

All of the existing market participants who have applied have been granted the required exemptions from ASIC to trade in electricity price hedging instruments. Therefore, having the required authorities to contract and hedge is clearly not an issue.

A number of participants have suggested that the contract market is still relatively illiquid and the range of hedging instruments available in the bilateral, OTC and futures markets falls short of what is necessary in a mature market, particularly if changes to VoLL result in increased risk for participants.

On the positive side, there has been reasonable progress in addressing the inter-regional price risk issue, and a series of Code changes that enable auction of the Settlements Residue have been authorised and auctions are about to commence. In addition, a number of the submissions alluded to efforts underway to develop and launch new, innovative hedge products to enable participants to manage their exposures particularly in relation to high price events.

A relatively slow maturation process in the evolution of the contract market is consistent with the very high level of initial vesting contract volumes and the progressive reduction in the volumes of these contracts as the retail market is deregulated over periods of up to five years. In addition, it is understood the forms of the vesting arrangements that apply under very high price conditions have also been an inhibiting factor.

At this stage, we generally support the view that the contract market will respond as and when required to meet the risk management needs of participants in the market. More particularly, there does not appear to be strong evidence that the contract market is not responding. We consider that central codified facilitation of the development and trading of risk management instruments is not justified at this time.

Nevertheless, a number of submissions express concern in relation to the specific timing, certainty and viability of risk management products. This point has been given particular prominence in expert advice provided to us as part of research on behalf of the Reliability Panel in its review of VoLL and in many participant responses.

Some submissions and anecdotal commentary have suggested that a full range of appropriately priced hedges are not being offered to retailers by generators in some regions. The reverse has been claimed in other regions where peaking plant has sought contracts but could not find counterparties at what was considered to be a fair price. These concerns relate particularly to high the price cover essential for robust risk management. It would be of serious concern to NECA if a liquid trade in suitable instruments did not emerge. If this were to be the case we would support some form of central/regulatory oversight of contract arrangements.

Enforcing and instituting accountability for market participant actions. Both the discussion paper and the submissions received subsequently from market participants focused on a number of situations in the current market structure and operations where it was argued that the lack of accountability of some Code participants adversely affects the reliability of supply to end-use customers. Specifically, it is argued that Code participants who have the potential to materially affect market outcomes are currently not being held accountable financially for acts or omissions that adversely affect the financial position of other market participants and/or the price and reliability of supply to end-use customers.

In particular, it has been argued:

- ◆ retailers are not financially accountable to their customers for failure to supply in the event of involuntary load shedding caused by a shortage of generation;
- ◆ retailing and wires-related functions are not clearly separated;
- ◆ transmission network service providers are not financially accountable to network users (both generators and wholesale purchasers) in the event their network fails and is unable to provide appropriate access to the market;
- ◆ neither NEMMCO nor its agents are financially accountable to the affected parties in the event that they fail to comply with the Code in the daily operation of the market; and
- ◆ the existing prudential arrangements in the spot market do not provide for full financial accountability of wholesale purchasers, which would guarantee payments to the spot market under all market conditions.

We accept the view that proper financial accountability for the impacts any player can have on the market is important to the evolution of efficiently priced risk management products that will enable all market participants to manage their risks, particularly under extreme market conditions.

Since the establishment of the first state market in Australia in 1994, there have been a number of instances of extremely high prices in the market caused by the acts or omissions of organisations such as network service providers and/or market operators. We are concerned the possibility of such events could impede the contract market by deterring the entry of new energy traders with adverse consequences for market liquidity.

We are in a position to address only two of the above listed issues, namely transmission access obligations and spot market prudential arrangements. Transmission access obligations have been considered extensively already in the transmission and distribution pricing review. The spot market prudentials issue has already been addressed elsewhere in this paper.

The remaining issues, to the extent that they may be a cause for concern, are not matters that we are in a position to assess. Retailers, for example, reject the view (promoted mainly by generators) they are not financially accountable to their customers. If involuntary load shedding occurs, retailers generally believe that they will suffer a considerable loss of market confidence, and in addition, they face the threat of class actions and other forms of legal and regulating sanctions from affected parties.

The NEMMCO accountability or liability issue is already the subject of a comprehensive multi-jurisdictional review being sponsored by the member Governments. This review is considering NEM governance issues, including our role.

To the extent that the above matters can be addressed by us, they will be pursued. The residual issues are, and must remain, questions for the member jurisdictions and/or the jurisdictional regulators to consider.

Safety nets during transition

We believe safety net mechanisms must play a constructive role during the maturation and transition phases of the development of the NEM. Safety net features are important during the period in which the market is developing the precedents that will eventually be taken for granted by market participants. They provide greater assurance that an adequate level of supply reliability will be maintained during the period in which market participants and regulatory entities gear up to deal with the new operating realities and investment incentives of a commercial environment.

The member jurisdictions were justifiably concerned to ensure there would not be any unnecessary load curtailments in the early stages while market forces replace a central command and control approach to scheduling and despatch, as well as planning for reliability. When authorising the Code, the ACCC also acknowledged the public benefit of these measures.

Supply reliability is ultimately measured in physical outcomes. Avoidable involuntary load shedding would unnecessarily undermine consumer and investor confidence in the emerging market, and member jurisdictions have, by their actions in recent times, made it abundantly clear that reliability of supply is, and is likely to remain, a high priority issue as a matter of public policy. Whilst we strongly support the use of market mechanisms as the primary means to achieve an acceptable level of reliability, it is a very different matter to completely abandon the concept of a safety net which deals directly with the physical elements of the market in all circumstances. Therefore, until it can be clearly demonstrated market intervention measures are unnecessary, we believe safety nets should be retained.

Safety nets nevertheless should only be safety nets: in place to protect against a potential disaster, but not to be a manifest part of the main event itself. The purpose of safety net mechanisms, therefore, should be well defined, and their time scale and scope of application should be clear and appropriately limited. To the extent possible, activation and operation of safety net mechanisms should be transparent and well understood by all market participants.

The existing safety net provisions are in two parts:

- ◆ NEMMCO's powers of direction either for system security or for short term system reliability; and
- ◆ NEMMCO's reserve trader function for short to medium term (up to six months ahead) reliability.

Whereas the reserve trader function has a codified sunset provision which takes effect on 1 July 2000, NEMMCO's powers of direction will remain in place until modified or terminated via the normal Code change process.

As required by the Code, we have undertaken a review of the reserve trader arrangements, which, due to its direct importance to the reliability issue, has been incorporated into this capacity mechanism review. We are not satisfied that the existing safety net arrangements, which include the reserve trader provisions, would prove to be workable or effective under the situations in which they may be called upon by NEMMCO.

The only experience able to be drawn upon here is the Victorian Power Exchange contracting for capacity for Victoria and South Australia over the 1997/98 summer. The discussion paper examined this experience. It was noted that the programme was very rushed and provided limited opportunity for assessment and certainly only existing facilities could realistically tender. The perceived opportunity for gaming was severely criticised – existing facilities had a virtual monopoly. Other aspects criticised included the uncertainty over the level of supply reliability and the potential costs associated with it, both to the community at large and/or market participants funding of contracting activity. No budget/planning allowance could be made given the 6 month time horizon for the commencement of contracting.

Although future exercise of contracting activity may elicit a wider range of offers the uncertainty and limitations to existing assets would remain.

Participant views. As a general rule, market participants are not in favour of any forms of market intervention; nevertheless, many acknowledge the reasons for having such mechanisms and accept the inevitability of them given the community's reliance on electricity for modern day living and the social and political implications of unreliable power supply.

A number of submissions argued that there is no evidence that the current arrangement requires amendment.

Amended reliability safety net. Wholesale market participant opposition of safety net provisions is understandable. However, we are not persuaded that the time is yet right to remove all but the codified power of direction, as noted only the reserve trader provisions have a sunset date. No reserve trader action has been foreshadowed by NEMMCO in the immediate future. It is therefore difficult to argue that the existence of this or similar provisions is being relied upon – in this sense it is truly a safety net.

We believe it is in the best interest of the overall market if safety net mechanisms remain in place for now. The capacity difference between adequate and inadequate reliability is small but the consequences very significant. We support a comment from the floor in the forum of 21 May to the effect that it is better to know the rules for intervention if a perception of inadequate reliability arises, than not. At this stage of development across the different regions of the NEM we believe that uncertainty is best managed by providing the clearest path for codified mechanisms to address it.

We propose improvements to the safety net arrangements to enhance their operation by replacing the reserve trader provisions currently in the Code with a reliability safety net provision that would extend the timeframe from the current maximum of six months to a

rolling three-year period, amending the details of the process for determining the level of any contracting and to refine the allocation of costs. These changes are intended to increase the flexibility of the safety net arrangements and to provide clearer signals and greater certainty to the market related to the need for them.

Time horizon. The current reserve trader provisions are intended to operate as an *ex ante* safety net in that reserve trader contracts are negotiated in anticipation of the need to have specific capacity available to deal with system conditions. The reserve trader provisions are in contrast to NEMMCO's powers of direction, which operate nearer to real-time.

Currently, NEMMCO is obliged to delay intervention action to give the market every opportunity to respond to an emerging emergency situation. However, this delay in many instances would leave too little time for NEMMCO to invoke its reserve trader powers, forcing NEMMCO to rely more on its powers of direction.

Due to the currently short time frame over which reserve trader arrangements may be negotiated, the effectiveness of the reserve trader arrangements as a safety net is impaired. Given our belief in the need for safety net mechanisms during the transition to maturity, a longer horizon is appropriate. The proposed safety net arrangements will retain the reserve trader's *ex ante* orientation in that they are to be negotiated in advance, but they will then be able to operate over a longer time frame, increasing the flexibility of the safety net concept. In general, *ex ante* arrangements that are negotiated on a commercial basis in the market are less likely to introduce significant economic distortions in terms of planning and operational decisions. By their nature, *ex ante* negotiations reflect expectations of value, which in turn are reflective of the expected development of the market. The use of *ex ante* safety net over a rolling horizon will provide the market not only with an important reliability benefit, but the market value of such safety nets will be an observable indication of the market's level of maturity, particularly with respect to the development of a more robust demand-side response, which, over time, will reduce the expected value of any supply-oriented safety net mechanism.

The submission from CS Energy has supported an extension of time, but was conditional, on no contracts being entered into until 6 months prior to the shortfall. Whilst we understand that this will provide maximum opportunity for a market response we believe it would leave both the level of uncertainty about whether adequate facilities will be available in time and the limited range of options for contracting unchanged. No alternative mechanisms, other than short term directions paid at avoidable cost has been suggested. We have acknowledged that all safety nets are likely to create distortions in the market.

Two main criticisms of the current 6 month horizon have been made. Firstly, the potential for gaming due to limited tenders and the opportunity for market players to stand-out of the market and receive a higher revenue than market participation would give. Secondly, the uncertainty, both internally for market participants, and externally for the community and governments concerned at the public policy implications, of low reliability. We remain convinced that both of these aspects are improved by extending the timeframe and involving government appointed advisors in the inevitable judgement of the level of demand and supply. This second point is presented in more detail in the following section.

Over time, the role of the revised reliability safety net should diminish as the market matures. However we share concerns that there is a risk the process will become institutionalised and

very difficult to remove. We therefore propose that a firm sunset date for the provision should be codified. The date should be chosen to be approximately 2 years after the time the value of VoLL has reached a level where market clearing is expected on a fully voluntary basis and full contestability has been introduced. The impact of vesting contracts and the associated tariff arrangements have been identified in a number of submissions as an impediment to the development of full market arrangements, 30 June 2003 is proposed.

It is also proposed that the Reliability Panel consider whether there is a need to continue the safety net through to the sunset date as part of its annual reviews the value of VoLL. This will provide the opportunity for its early abolition if there is sufficient evidence of market based investment in all regions. A sound history of voluntary spot market clearing, the development of a global demand-side response and development of more sophisticated contract and risk management mechanisms will serve to signal the appropriate changes for the early withdrawal of the reliability safety net provisions.

Actions by individual participants to reduce the potential need for safety net provisions, for example, through the submission of demand-side bids will be recognised in the allocation of responsibility for funding reserve trader and direction activities. Following this review, we will initiate work to identify further detailed options for improving the allocation of the costs of safety net activities in ways that promote more efficient contracting and facilitate market development such that the safety net provisions will eventually not be necessary.

Who should decide on the amount of capacity to be acquired. Under the existing reserve trader arrangements, the Reliability Panel determines the basic standard which underpins the threshold reserve level that triggers NEMMCO's authority to activate the reserve trader. The final decision on the amount of capacity to be acquired and the timing of that decision (provided the contracting is for a period of not more than six months) is left entirely to NEMMCO. After the event, NEMMCO is then required to, in effect, justify its actions to both the Reliability Panel and the market generally.

Under the amended safety net proposal, the fundamental standard for reliability, currently expressed as a maximum level of unserved energy, would continue to be set by the Panel. Assessing future reliability, an issue of significant public policy importance, inevitably involves judgements about future demand and generating capacity. It is therefore proposed that NEMMCO assess the appropriate level of capacity to meet the Reliability Panel standard in conjunction with experts nominated by the jurisdictions.

NEMMCO is required, appropriately, to operate in an auditable and transparent manner. The assessments involved in determining levels of supply and demand, including price responsiveness, well in advance are inherently judgmental but have important public policy implications. It is not realistic to require NEMMCO to take these judgements, this was a concern of NEMMCO in its response to the proposal. The judicial experts would provide this judgmental input. Successful tenderers would be required to stand out of the market for the full period of the contract. Whilst they would receive contracted revenue they would not be able to take advantage of market opportunities. Potentially, increased time makes this a less attractive strategy.

Jurisdictional involvement in this process is an important element of building confidence in the market's ability to deliver acceptable reliability.

Who should administer the amended safety net mechanism? NEMMCO is the logical contracting party for acquiring the capacity, despatching it as required and administering the contracts as an extension of its daily operation of the power system and the market. If NEMMCO is to be the contracting party, then it is also sensible that it co-ordinate the competitive tendering process and carry out the detailed technical and commercial contract negotiations with the successful tenderers as is the case now.

Who should be eligible to be contracted? Subject to any person being prepared to accept the terms of the contract with NEMMCO, we are of the view any person should be entitled to compete for a safety net contract. Many, of course, will not be able to provide the capacity being sought in the appropriate market region or be able to comply with all the associated technical and commercial requirements.

The contract terms and conditions themselves, therefore, will in many respects determine the eligibility issue. The treatment of supply-side capacity in such contracts would be relatively straightforward. As noted above the capacity would be dedicated to NEMMCO for the entire period of the contract who would have total despatch rights over the relevant facilities.

The situation with demand-side capacity is somewhat less clear. In essence, NEMMCO would be purchasing a contractual right to reduce a customer's demand. The level of additional security that this provides is unclear: the contracted demand may or may not be in use at the time that NEMMCO deems it necessary to exercise the contractual right. It is even possible such a contract offers no additional reliability of supply simply because the load curtailment under contract to NEMMCO could already be the subject of other curtailment obligations which NEMMCO is not aware of.

Therefore careful consideration needs to be given to the structure of the contracts and the commercial incentives to the contracted party to ensure the capacity being acquired is truly reserve capacity dedicated to NEMMCO for use in emergencies and the safety net is not simply being exploited. It is probably best addressed by a contract to reduce demand by a nominated level regardless of pre-existing consumption.

Who should pay? As a general principle, any decision to activate the safety net is made in the public interest, and thus it could be argued the costs should be borne generally by the community. As with the existing reserve trader, by spreading the costs broadly across all electricity users in proportion to the level of demand is considered to be a fair and equitable allocation of costs and broadly representative of the benefits received.

On the other hand, the method of distributing the costs of intervention could be used as an incentive to encourage increased demand-side response and other actions to reduce the necessary lead time for the market to reach maturity, at which time intervention will no longer be necessary.

We consider such an approach has merit. In broad terms, we consider the guiding principles for determining how the amended safety net mechanism would be funded should include the following:

- ◆ operation to be fully self-funded by the industry and electricity consumers without recourse to Government consolidated revenues;

- ◆ funding to be totally transparent.
- ◆ charges to be applied at a region level in proportion to the expected incremental benefit which the portfolio of reserve trader contracts provides to each region as determined when the amount of capacity under contract is reviewed each year;
- ◆ payment arrangements to be used to provide a material incentive to market participants to contract and hedge, as well as increase the price elasticity of demand, either directly through demand-side bidding or via other more indirect methods; and
- ◆ any incremental revenues earned by NEMMCO as a result of operation of the reliability safety net as a result of contracted generation being despatched during a supply emergency not be used to offset the safety net program costs

The first three of these principles align with the current arrangements for the existing reserve trader. The fourth principle is consistent with the views expressed by a number of respondents to the discussion paper and the decision of the Regulator General for the 1997/98 capacity support program in Victoria.

The final principle serves to minimise the distortionary impacts of the safety net, which would not be minimised if every time the safety net mechanism were required, the net charges applied to beneficiaries were reduced.

We propose that initially net costs be allocated on an energy basis in peak times during periods of the year for which contracting has been undertaken. Exemptions to the charge should be made for demand-side bids. No submissions addressed the proposal that income accruing to NEMMCO not be used to offset costs of the safety net proposals. However, a number of submissions argued against the proposal to use settlement reallocation as defacto indication of contracting and no submissions supported it. Accordingly we will not pursue this latter concept immediately but leave it on the table as a future option. We also propose to investigate additional opportunities to recognise the actions of individual participants who act to reduce the need for intervention.

How should any spot market revenues earned be utilised? This issue will be considered in conjunction with the “Who pays?” question as discussed above. However, the proceeds need not necessarily be used to simply offset the fixed costs incurred under the safety net contracts, although this is clearly one option. They could be used, for example, to underpin a demand side incentive program, in which case the incentive payments would only be made based on demand-side behaviour during the period when the safety net capacity is actually despatched.

Short term intervention. Currently the reserve threshold used by NEMMCO for the short-term is the same as for the longer term. The threshold has been established on the basis that the reliability standard will be met over the longer term if that level of reserve is available in a forward projection. This means on some occasions reserve is expected to be below the threshold. There is thus a conflict in rigorously seeking the full long-term level of reserve in the short term. We therefore propose that further work be undertaken with the Reliability Panel to resolve the conflict.

Compensation for direction

The discussion paper in January also canvassed the question as to what should be the appropriate basis for determining the amount of compensation a participant should receive when it complies with market intervention action by NEMMCO when it exercises its powers of direction for system security reasons. The draft report in May presented a proposal in this regard.

In 1998, Ecogen Energy formally submitted a request for a Code change that would in effect entitle the affected party to claim compensation equal to the fair market value for the service provided. This would replace the current NEC provisions under which a directed party is only entitled to reimbursement of out-of-pocket costs.

Ecogen Energy requested that the issue be addressed as a matter of urgency given the need for new investment decisions in the short-term to meet projected demand in Victoria and South Australia in the early years of the next decade.

The discussion paper canvassed the two options identifying the advantages and disadvantages of each, demonstrating that there are some serious disadvantages with both of them. It is not surprising, therefore, that respondents to the paper expressed quite divergent views and market participants were essentially polarised on the issue.

Generators strongly support a market-based approach. As the existing approach only provides compensation for out-of-pocket costs as a result of complying with the direction, i.e., a purely short run marginal cost approach, any change could only improve the financial position of directed parties. Retailers, on the other hand, who face the prospect of having to absorb some of the charges which would be imposed to cover the compensation, strongly support the current approach. They argue that any change would mean that generators are no longer financially indifferent to whether they are directed or not and would, therefore, provide an incentive to them to "game" the rules.

Elsewhere in this report it has been concluded that reliability safety nets remain an important part of the overall market during transition from a previously non-competitive industry structure. This means that it is accepted that there is a risk that the safety nets may be required in this period as a consequence of the market design, not as a result of market failure. Having considered all the arguments, We have therefore decided in favour of a market-based approach. However, we are not persuaded by Ecogen's definition of "fair market value" which could result in the energy from the directed plant being valued at a considerably higher level than the price being paid to all other generators at the time.

The spot price in the market at the time the directed plant is operating is the most obvious benchmark for assessing the market value of the energy produced at the time of the direction. This represents the price being paid through the spot market to all the other generators operating at the time.

However, it is possible that some or all generators may be receiving more than this price as a result of their bilateral contracts. Contract payments, however, generally take into account a much longer time period than the half-hourly trading interval used in the spot market. These inter-temporal considerations in contracts make it quite difficult to compare contract prices directly with spot market prices. We are, therefore, not convinced that contract prices

generally should be taken into account in determining market value for setting the level of compensation.

One exception to this conclusion, however, is where NEMMCO has capacity under reliability safety net contract at the time of the direction. In this situation, it may be possible for an independent expert to decide, taking into account the terms and conditions of this contracts in place at the time, that the market value of the energy supplied by a directed generator is in fact higher than the prevailing spot prices.

We are of the view a directed party should at least have the opportunity to seek such a determination if it is dissatisfied with the use of spot prices alone. NECA recognises this approach may not be totally transparent, as the terms and conditions of reserve trader contracts will not be in the public domain, and the task of the independent expert will to some extent be subjective. In spite of these practical limitations, We still consider, in the interests of being fair and equitable to the party directed, that this alternative approach to assessing “fair market value” should be available.

Therefore, NECA proposes that directed parties be paid the highest of:

- ◆ “fair market value” for the energy produced during the period of the direction as determined using the prevailing spot price in the market at the time;
- ◆ “fair market value” for the energy produced during the period of the direction as determined by an independent expert, taking into account (but not necessarily equal to) the contract prices and associated terms and conditions under any active reserve trader contracts with capacity in the same region as the directed party; and
- ◆ out-of-pocket expenses as per the existing NEC provisions.

It is to be anticipated other initiatives resulting from this and other reviews associated with the reliability issue will mean the need for NEMMCO to use its powers of direction are considerably diminished and the incentive for participants to position themselves to receive a direction are also diminished. We believe that the amendments will reduce the need for all but very short-term directions. Plant directed to be available will be assured of covering all costs and will be entitled to retain market revenue if required to generate, replicating the breakeven decision a generator might take in making the decision to bid into the market. As these generators will not be despatched beyond the minimum necessary until involuntary load shedding is imminent they will forgo the opportunity to generate more than that minimum but receive market value for energy produced. The revised arrangements for reliability safety nets also proposed in this paper are intended to reduce the probability that short term action leading to either rushed reserve trader contracts or by default, reliance on direction, will be considerably reduced. Consequently, there will be much less opportunity for generators to “make a living” from being directed.

Summary of conclusions and recommendations

The report’s main conclusions and recommendations are that:

- ◆ the existing energy-only design of the national electricity market should be retained;

- ◆ VoLL should be set at a level consistent with achieving consistent voluntary market clearing through a combination of supply and demand-side responses. Any necessary increase in the level of VoLL in order to achieve this objective should, however, also take account of the need for appropriate risk management and other mechanisms to be allowed time fully to develop;
- ◆ the existing reserve trader provisions in the Code should be replaced with a reliability safety net;
- ◆ the express approval of the ACCC should be required for the reliability safety net to be extended beyond 1 July 2003. The Reliability Panel's annual reviews of VoLL should include an assessment of whether the safety net can be removed even sooner;
- ◆ the net costs of the reliability safety net should be allocated on an energy basis in benefiting regions in peak times during the periods when the safety net is in place. Exemptions should be available for demand-side bids;
- ◆ reflecting the legitimate wider public policy issues involved, NEMMCO should in future consult experts appointed or nominated by the participating jurisdictions in taking decisions on the level of capacity required in each region in order to meet the reliability standard determined by the Reliability Panel;
- ◆ the Reliability Panel should consider the scope for its reliability standard to distinguish appropriately between short and long term reserve; and
- ◆ compensation for reliability directions should be based on the higher of the prevailing spot price during the period of the direction, on expert determination also taking into account the relevant terms and conditions of any reserve contracts in the same region and out-of-pocket expenses.

Approved for Public Register and
to be published on the Internet

YES / NO

P. B. J.

15 / 11 / 00