Mr Bruce Wilson
Energy White Paper Secretariat
Department of Resources, Energy and Tourism
Email: Secretariat.EWP@ret.gov.au

Dear Mr Wilson,

The Energy Efficiency Council welcomes the opportunity to comment on the Draft Energy White Paper (EWP).

The Energy Efficiency Council is the peak body for energy efficiency, demand-management and cogeneration services and products in businesses and government. The Council brings together experts from across Australia to support the development of policy and programs, and has assisted the Government on a range of policy issues, including a role as one of nine advisors to the Prime Minister's Task Group on Energy Efficiency.

Australia's energy systems are undergoing profound changes, and are likely to change further over the coming decades. Fuel prices are rising, new technologies are emerging, including distributed generation and smart-grid, and new policies like the Commercial Building Disclosure scheme have started to unlock the potential of the demand-side. The Council believes that an effective EWP is essential to guide the development of our energy markets over the next twenty years.

The Draft EWP raises a number of critical issues, particularly the urgent imperative to address peak electricity demand and the economic benefits of boosting energy productivity. However, the Draft EWP is inconsistent and many parts lack a demand-side perspective, and so the EWP will need important revisions to guide Australia through this critical period. The Council and its members are keen to engage with the Government to ensure that Australia has an EWP that meets its needs.

As the Draft EWP states, domestic energy prices are rising and "the era of cheap energy is over". However, the choices that we make today will determine whether further domestic price rises are modest or excessive. While governments cannot set global fuel prices, they can fix market failures and problems in energy markets that unnecessarily inflate energy bills. Unlocking the potential of energy efficiency, demand-management and cogeneration is one of the few options that governments have to keep energy affordable while cutting greenhouse gas emissions. Failing to unlock this potential would result in billions of dollars of expenditure on unnecessary infrastructure and stranded assets.

The Council welcomes the EWP's clear statements that addressing peak electricity demand is critical to keep electricity affordable in Australia. We believe that this is the most critical issue to address in the next year. Peak demand events that last less than 0.5 per cent of the year are responsible for between 10 to 25 per cent of electricity costs. The peak demand problem is getting worse, as peak demand grows at 2.6 per cent per annum while electricity consumption has not increased at all in the last two years. The rapid rate of peak demand growth is caused by distorted price signals, flaws in the market structure and regulatory failures. Fixing these flaws is an urgent and vital task.

Likewise, the Council welcomes the recognition in Chapter 6c that boosting energy productivity can deliver substantial economic and social benefits, and the statement on page 167 that *"Historically energy policy and market development in Australia have had a strong supply-side focus…".* However, the insights in Chapter 6c are not integrated throughout the draft EWP, with the result that much of the draft EWP perpetuates this supply-side focus.

For example, a demand-side perspective is entirely absent from the core objectives and the core principles of the energy policy framework and the chapter on energy security. Demand-side is even largely ignored in the chapter on 'cleaner energy', despite many sources estimating that energy efficiency could account for between 30 and 65 per cent of domestic and global abatement to 2020[1,2]. Furthermore, demand-side activities are critical to defer investment in immature cleaner generation technologies and address supply variation from intermittent sources of energy generation like solar and wind.

[1] ClimateWorks Australia 2010 *A Low Carbon Growth Plan for Australia,* ClimateWorks Australia, Melbourne
[2] International Energy Agency 2008 World Energy Outlook, International Energy Agency, Paris

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The impact of not fully integrating demand-side perspectives is demonstrated by the use of a single projection in the White Paper that electricity demand will grow by 42 per cent to 2035 and this demand must be met by a staggering $240 billion of supply-side investment. Clearly, if the demand-side opportunities outlined in Chapter 6c are fully realised, electricity demand will not grow at this rate, ameliorating many of the risks and challenges identified in the draft White Paper. Global experience shows that, if we choose to, we can draw on a suite of strategies to manage demand.

The supply-side focus of the paper partly arises from an over-simplification of energy markets and the role of consumers and other market participants. In particular, the National Electricity Market (NEM) is not a simple, natural market. Australian Governments have come a long way to introduce competition into the NEM, but it is and will remain a highly regulated system that includes regional monopolies and semi-competitive structures. Electricity prices do not adequately reflect the time and location of energy use and this will remain the case for the foreseeable future. While the council recommends increasing the cost-reflectiveness of energy prices, there are very real practical and political limits to achieving fully cost-reflective prices in the next decade.

In the context of highly regulated markets with imperfect prices, components that are natural monopolies and components that are competitive, it is simply untenable to assume that consumers will optimise their level of energy demand without third-party support and specific mechanisms that correct market distortions. As a result, simply focusing on supply-side solutions and leaving the demand-side to consumers is inappropriate.

The Energy Efficiency Council looks forward to working closely with the Australian Government to rework the EWP. The Council recommends that the EWP should:

- Place boosting energy generation productivity and energy productivity as one of five major goals. This is essential to correct the historical supply-side policy focus and would be in line with recommendations by organisations like the International Energy Agency (IEA) that this is the biggest opportunity to keep energy affordable and reduce greenhouse gasses.
- Set clear directions to tackle peak electricity demand, that include:
    - Improving the cost-reflectivity of energy prices, noting that it is impossible to achieve fully cost-reflective pricing and, on its own, this is insufficient.
    - A mechanism to allow demand reduction to compete with supply during critical peak demand periods; and
    - Reforms to the way that network companies are regulated and compensated.
- Establish a clearer framework for boosting energy productivity.
- Integrate demand-side considerations throughout the EWP, particularly in the sections on core objectives, core principles, energy security and cleaner energy.
- Include a number of energy demand scenarios, including a business-as-usual projection of 42 per cent growth in electricity demand and a low-growth projection.
- Consider the implications of emerging technologies for the energy sector, including smart-grid, distributed generation, energy storage and electric vehicles. The Draft EWP does not substantially tackle the effects that these technologies could have on energy systems, despite the Australian Government investing over $100 million in Smart-Grid, Smart Cities.

The following pages discuss these issues in more detail.

Australians deserve energy markets that serve their interests. The Energy Efficiency Council looks forward to working with the Australian Government to ensure that the EWP meets the needs of the community. Please contact me on 03 8327 8422 should you require further information on any of the issues raised in this submission.

Yours sincerely

Rob Murray-Leach

Chief Executive Officer

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1. Overall document structure

The Energy Efficiency Council is comfortable with the overall structure of the draft EWP, but recommends that energy productivity and energy generation productivity are elevated in priority to form one of five priorities:

1. Strengthening the energy policy framework
2. Boosting energy productivity and energy generation productivity
3. Energy market reform
4. Developing energy resources
5. Accelerating clean energy outcomes

The Council notes that boosting energy productivity and energy generation productivity are also relevant to other areas:

- **Strengthening the energy policy framework** - understanding energy use and energy intensity data is critical to energy policy
- **Developing energy resources** - domestic efficiency is a key way to ensure that competition for energy resources for export and local use is balanced.
- **Accelerating clean energy outcomes** - energy efficiency is not only a major source of greenhouse gas reductions, but also is essential to the cost-effective deployment of clean energy by balancing intermittent supply and avoiding unnecessary investment in generation, which both allows us to avoid short-term deployment of greenhouse intensive technologies (stranded assets) and defer investment in new technologies until they are mature.

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2. Energy productivity and energy generation productivity

The Energy Efficiency Council believes that boosting energy efficiency and tackling peak energy demand are the most critical and pressing areas of reform over the next year. The Council welcomes the draft EWP recognising the importance of these issues, and agrees that these issues can be framed as boosting energy productivity and energy generation productivity. The Council recommends that Chapter 6c should be elevated to a stand-alone chapter and one of five key priorities for the EWP.

Tackling peak electricity demand is critical to keep electricity affordable in Australia. As noted by the draft EWP, peak demand has grown by 30 percent between 1999 and 2010, from 26 GW to 34 GW (page 136). This has a strong impact on energy prices, with up to 25 per cent of retail electricity costs are driven by peak demand events that last less than 0.5 per cent of the year. The peak demand problem is getting worse, as peak demand grows at 2.6 per cent per annum, whereas the rate of growth total electricity consumption has been declining, and consumption has not actually increased in the last two years.

If peak demand continues to grow at this rate, under the current market structure it will require billions of dollars of expenditure on peaking plant and transmission and distribution infrastructure with very low utilisation rates. Further investment in infrastructure will substantially increase energy prices, and avoiding this investment would constrain increases in energy prices. The Council believes that tackling rising peak demand would save consumers well over $1 billion per annum.

Variable levels of energy demand are an entirely natural and expected feature of any energy system. However, the current levels of peak energy demand are far from efficient and are driven by a number of market failures that mean that consumers, on their own, are unable to optimise their energy demand.

Imperfect pricing

The draft EWP notes a number of the market failures that distort demand for energy, but is overly cautious about the extent of these market failures. For example, on page 177 the draft EWP states "Energy prices, particularly electricity prices, faced by consumers **may not** reflect the true cost of supply". This is a major understatement – it is an incontrovertible fact that most, if not all, energy consumers face electricity prices that do not accurately represent the cost of supply at the specific time and location of use. As noted in the draft EWP, at the point of installation, households only face 17 per cent of the costs of installing an air conditioner ($1,500 out a total cost of $8,500).

While households and businesses may be charged different rates during peak and off-peak times, in fact the biggest difference in the cost of supply is between 'most of the year' and 'critical peaks' that can last less than 0.5 per cent of the year. In generation alone the true cost of supply in the NEM during critical peaks can be over 300 times the average cost, and if distribution is accounted for the cost of supply during critical peaks is even higher. Almost no energy users face critical peak pricing costs. Costs are smeared so heavily that consumers face nothing like a cost-reflective price signal.

The Energy Efficiency Council supports the broad intent to reduce distortions in energy prices. However, it is clear that there are practical limits to the extent that prices can be cost-reflective. For example, it would be almost politically impossible for any government to either charge consumers an appropriate fee of around $7,000 for installing 2kW of air conditioning load, or raise critical peak prices to $12,500 per MWh plus marginal infrastructure costs. Nodal pricing, where the cost of supply varies by location, will be even harder to achieve.

Therefore, the Council urges the Australian Government to explicitly state in the final EWP:

> *"Consumers do not face price signals that reflect the cost of supply at a specific time and location of supply. While pricing reform is highly desirable, true cost-reflective pricing is unlikely to appear within the next two decades"*

Information failures and bounded rationality

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Even if prices were perfect, gaps in information, skills and high transaction costs can make it non-economic for individual consumers to optimise their pattern of energy consumption, even large consumers. For example, the transaction costs for most energy users to invest in understanding about energy response, monitor real-time energy costs and respond would exceed the benefit of responding to prices.

Barriers to third parties

In well-functioning markets, information barriers are largely solved by market intermediaries, who can use economies of scale to develop skills, gather information and perform functions on behalf of multiple consumers. As noted, for the vast majority of energy consumers, the costs of monitoring and responding to periods of peak load would outweigh the benefits. However, a third party with the right information technology and remote load control technology could:

- Identify demand-side opportunities at numerous sites, such as switching off chiller units for short periods.
- Sign contracts with energy consumers that assign the control of these loads under specified conditions to the third party in exchange for a fee and / or a share of the benefits from selling these demand-side services
- Monitor energy prices, energy loads and prices for network services
- In real-time, identify spatially and temporally specific opportunities to reduce energy consumers costs or sell peak reduction services to the network

However, the NEM does not currently provide a market structure that supports third parties to provide demand-side services. While there are also a number of technical and contractual issues in relation to remote load shedding that need to be worked through before the practice can become very widespread, the market structure needs to be in place before these issues can be resolved.

Principal-Agent Problems in the NEM

While energy users have some control over their energy demand, many decisions are made by their 'agents' in the NEM. For example, even if perfectly informed consumers received completely perfect price signals, they still rely on electricity network businesses to respond to their energy use decisions in the way that they invest in infrastructure. Theoretically, network businesses should respond to consumer decisions in ways that maximise benefits for consumers. It appears that this is not occurring.

Network businesses should consider both peak demand and consumption when determining the cost benefits of DSP versus network augmentation (i.e. peak demand reduction is much more cost-effective when the peaks are much higher than average demand). However, network businesses are still assuming that energy consumption is rising, when in fact it has been declining for the last few years. This is likely to result in overinvestment in distribution infrastructure, which increases electricity costs. Professor Ross Garnaut estimates that 68 per cent of recent rises in electricity prices have come from investment in electricity transmission and distribution infrastructure.

Distribution businesses are monopolies – energy consumers do not have the ability to switch to another distribution business if they feel that their distribution business is making poor investment decisions. Consumers are in a weak position to influence distribution businesses' behaviour. The result for energy consumers is that, even though they are responding somewhat to energy prices, distributors' investment decisions are not reflecting their choices. In other words, there are principal-agent problems between consumers and distributors.

The role of distributors is even more critical when we reflect that consumers are not receiving perfect price signals and are not able to perfectly respond to price signals. For example, the lack of nodal pricing means that consumers in a suburb with a constrained network do not receive the price signals that would encourage them to reduce their demand if it's more efficient than augmenting the network. Therefore, distributors or another third party will need to determine whether to invest in demand- or supply-side solutions in that suburb. Given that the electricity network extends far beyond the suburb level, the role of network businesses and other intermediaries becomes even more critical.

Recommendations

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As a result, rather than simply focusing on an unachievable 'holy grail' of fully cost-reflective pricing, the Council recommends a range of policy solutions, in particular:

- Incentives for companies that choose to load-shed during critical peaks, which is critical as most energy users are not charged critical peak prices at the moment. This system must allow aggregators to participate by assisting multiple energy users, as the costs for many individual energy users to monitor and respond to real-time changes could exceed their benefits, whereas a single aggregator could assist hundreds of energy users.
- Minimum standards for new air-conditioners that account for the societal costs of critical peak demand. Until recently, Australia had some of the lowest standards for domestic air conditioning units, which exacerbated the problem of highly distorted price-signals. However, there are still no standards for much of the air conditioning that is typical in SMEs, with the result that these systems are far less efficient than is possible.
- A national Energy Savings Initiative that provides an incentive for the business sector to overcome market failures that impede improved consumption efficiency of electricity, gas and potentially other fuels. While some improvements in electricity consumption efficiency would not reduce peak, others will. For example, improving the efficiency of office lighting will provide an absolute reduction in MW demand, as well as MWh consumption, during peak periods. Peak demand reduction would be even greater for efficiency improvements in appliances that are used during peak times.
- Reforms to the way that distribution and transmission companies are regulated and compensated. The Council notes that decoupling revenue from energy sales has been a key area of reform in the US, and the revenue cap model has been far more effective than the 'fixed fee' or 'cost-recovery' mechanisms.
- A range of other programs that address specific barriers and market failures. For example, when governments invest in improving the energy efficiency of their own operations it both reduces government expenditure on energy and provides sufficient discerning demand in the market to encourage energy efficiency providers to invest in upskilling their staff.

The first of these mechanisms is absolutely critical. Most energy markets in the world have some kind of capacity mechanism for peak demand, including the UK and Texas markets whose designs resemble the NEM.

While the Council acknowledges that there are substantial differences between different types of energy market, the quantum of demand-side activity in other types of market is substantially higher than the NEM. For example, the US's largest energy market, the Pennsylvania-New Jersey-Maryland Interconnection (PJM) is a reliability pricing model, effectively a capacity market. The PJM has increased its demand-response purchases from around 100 MW in 2007 to 6000 MW in 2013-14, around 4.2 per cent of its total peak demand of 140,000 MW. The increase in demand-response has lowered the capacity price by 6 to 8 percent, and reduced the need to build and activate high-cost generators.

The Council recommends that the EWP consider either a 'pay-as-bid' system as recommended by Parer, or a peaking-only capacity market that sits alongside the main 'energy-only' market, as is used in Texas.

Energy use productivity policy framework

The Council is broadly comfortable with the objectives and principles of the energy use productivity policy framework.

The draft EWP acknowledges the difficulty of securing cost-reflective pricing on page 180, although it understates the difficulty of securing fully cost-reflective prices, and on page 177 the draft EWP states "Efficient pricing, while a critical foundation, is not in itself sufficient to address many of the above impediments that act to reduce consumers' ability to make informed decisions".

However, it's possible to misinterpret the principle on page 179 that "cost-reflective price signals supported by sound market and regulatory frameworks that provide appropriate incentive to consumers to efficiently manage their energy use are the primary enabler of energy productivity". Therefore, the Council recommends that the first principle on page 179 in the draft EWP should be clarified (see below).

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The Council also recommends that the Australian Government reframe the third principle *"market failures and other non-price barriers should only be addressed directly where this is shown to be cost-effective, and in ways that do not distort efficient operation of the markets."* This wording suggests an approach that assumes that the market is already optimal, and that the burden of proof should fall on reformers to demonstrate unequivocally that reforms are necessary. Given the obvious distortions in the market and the urgent need for reform, the Council holds that this approach has a 'business-as-usual' bias that would impede effective reform.

The Council recommends the following objective:

> *"The objective of the energy use productivity policy framework is to improve the productivity of Australia's energy use and production, including through:*
>
> - *Developing regulatory and market frameworks that provide the incentives to optimally balance demand-side and supply-side options to maximise economic and social development*
> - *Empowering consumers (households and businesses) to efficiently and effectively optimise their energy use (and costs), including allowing third parties to act on behalf of consumers.*

The Council recommends the following principles:

1. *Cost-reflective price signals supported by sound market and regulatory frameworks that provide appropriate incentive to consumers **and other market participants** to efficiently manage energy use is the **foundation** for energy productivity. However, cost-reflective prices are not always possible and these will not be, on their own, sufficient to address the impediments to improved energy productivity*
2. *Market failures and non-price barriers should be addressed by the most cost-effective means. If the cost of measures to address a market failure exceeds the benefit, that action should not be undertaken.*
3. *Governance arrangements should support a consistent national approach to demand-side participation and energy efficiency to minimise consumer costs and overall regulatory burden.*

The Council supports the framework elements, but believes that they could be reframed as:

- *Market-based price signals – Prices to consumers and market intermediaries should support and encourage optimal balancing of demand and supply across the NEM. Where consumers do not face cost-reflective prices, incentives or third-parties should redress inadequate price signals. This should include:*
    - *A mechanism for demand-side to compete with supply-side during peaks*
- *Appropriate energy market regulations and structures – Energy market intermediaries, particularly network service providers, must have the right incentive structure, skills mix, regulation and clear directions from government to enable optimised demand-side. This should include:*
    - *Reforms to the way that distribution and transmission companies are regulated and compensated, including decoupling revenue from energy sales.*
    - *Unleashing competition to unlock demand-side activities, such as opening up provision of streetlighting services to competition. Currently, parties like network companies that are in a position to unlock demand-side activities have conflicting incentives. Opening up the market to competition will enable parties with both expertise and simpler incentives to provide demand-side services.*
    - *The Government's proposed Energy Saving Initiative (noting that this addresses market failures outside the energy market as well)*
- *Informing consumers (including appliance labelling, the Commercial Building Disclosure Scheme and the Energy Efficiency Opportunities Scheme)*
- *Measures to address market failures that lie outside the energy market, such as financial barriers and barriers to low-income households*
- *Balanced regulation and planning outside the energy market – e.g. appliance standards, building codes, vehicles standards and urban planning*

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- *Supporting the development and introduction of new and little-used technologies and services (including smart meters, smart grid and thermal storage)*
- *Governance Reforms – which includes a possible new body to drive energy efficiency and data on barriers and energy efficiency opportunities in industry and households*

Additional comments

- While it is correct that it is difficult to precisely measure energy efficiency across the whole economy, the EWP should explicitly state that it is clear from a range of indicators that the rate of improvement in energy productivity in Australia has been much slower than the rest of the world.
- While it is true that the energy intensity of Australia's economy has been affected by a shift to more energy-intensive activities within the mining sector (e.g. LPG extraction), it is also true that there are very large opportunities for energy efficiency improvements in the mining sector, which can be benchmarked against global peers. Resource projects tend to be driven by tight deadlines, and unless opportunities are found early, they won't be taken up.
- The framework needs to understand and address that there are several dimensions to peak demand. Firstly, there are peaks in both generation and networks that can coincide but are not identical, with the result that reductions in generation peaks delivered by parties like retailers could benefit networks. Secondly, network peaks vary geographically. Thirdly, there are temporal variations, where demand reductions can have higher value prior to network augmentation than after augmentation.
- Energy productivity on p168 is defined for businesses and households. However, energy productivity can also be defined across the whole network, which includes losses in generation, transmission and distribution.

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3. Cogeneration

In addition to the generic barriers for demand-side participation, there are specific barriers to distributed generation. This submission focuses on the barriers to cogeneration and trigeneration, although they are relevant to other forms of distributed generation. In this submission, the term 'cogeneration' refers to both cogeneration and trigeneration.

Difficulties in grid connection

Connecting cogeneration units to the grid can deliver benefits to the network and improve the economics of cogeneration projects. While cogeneration can deliver benefits to the network, there are genuine technical issues and costs for connecting cogeneration units, particularly where fault levels need to be addressed. The costs and benefits of connecting a cogeneration unit to the network will vary on a case-by-case basis, and so need to be set on a case by case basis.

Currently, when a proponent wants to connect a cogeneration unit to the grid they have to negotiate with distribution businesses that are given monopoly powers in relation to grid connection. The incentive structure and culture of many network businesses discourages them from actively supporting grid connection.

The monopoly power of distribution businesses, particularly privatised distribution businesses, is a *prima facie* case for regulating the cogeneration connection process. While some distribution businesses have been reasonable in negotiating connection to the grid, the unjustifiable behaviour of other distribution businesses makes it clear that regulation is essential. The current process for connecting a cogeneration unit to the grid is extremely arbitrary, and can include:

- Uncertain and often completely unjustifiable timeframes for negotiating an agreement
- Uncertain and often unjustifiable costs for studies to determine the costs of connecting to the grid.
- Uncertain and often unjustifiable costs for connecting to the grid.
- Inequitable rules about who pays for network upgrades to facilitate cogeneration.

Currently, the next cogeneration unit that wants to connect to the grid when an upgrade is required has to pay the full cost of the upgrade, despite the fact that other units may connect before or after the upgrade. In contrast, the cost of upgrades to the grid to address rising energy demand are frequently smeared across all energy users.

These issues are exacerbated by the low numbers of appropriately skilled technical experts that can assist in grid-connection. Some jurisdictions have developed guidelines on cogeneration connection, but there is still no NEM-wide regulated process for cogeneration connection. A number of processes are underway that could partially address these issues, like the AEMC's 'Comprehensive Technical Standards Review', but even if these deliver on their potential there will still be major gaps.

The Council recommends:

- Standard national grid connection rules that include:
    - A maximum of three months to provide a letter of offer for a connection, including specific requirements and a connection price.
    - A method for determining the cost of connection studies.
    - A method for determining the cost of connection and benefits from network services
- Annual maps of the costs and benefits of connecting cogeneration at different points on the grid, including potential payments for offsetting infrastructure investment. The preemptive analysis of the costs and benefits of connecting to the grid at different points would provide greater information transparency, opening up competition in the market.
- Establishing a distributed generation ombudsman in the Australian Energy Regulator. The ombudsman would ensure adherence with the standard connection process and enforce rules about who pays those costs of any upgrades to the grid.

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Payments for network benefits

As noted above, cogeneration can provide location-specific benefits, saving distributors from having to augment grid infrastructure. Transferring part of the avoided capital benefit to cogenerators for this outcome will encourage delivery of these services. The Council recommends a transparent system for transferring part of the avoided capital benefit to the cogeneration operators and owners for the network benefits they provide to the wider community.

Difficulties in retailing and distributing electricity

The benefits of cogeneration come from being able to provide both thermal and electrical energy services. However, a number of current regulations and processes impede cogeneration operators and owners from being able to capture these benefits. These include:

- Rules preventing cogenerators from using the distribution network to move energy between local sites (e.g. two council offices) at a cost that reflects the actual cost of using the network to move energy such short distances. These rules are being addressed in some jurisdictions, but this needs to be undertaken at a national level.
- Rules that state that if cogenerators export electricity into the grid it has to be sold at wholesale prices.
- Rules that prevent cogenerators selling electricity to all buildings on a site as regulated monopolies. The rules generally require buildings to have access to competitors, which limits the ability for cogenerators to have a secure market for their power.

The Council recommends:

- Amending rules to allow cogenerators to sell electricity to energy users at appropriate rates.
- Virtual private wire rules be developed that allow cogenerators to use the public electricity network to supply electricity to local sites (e.g. multiple council buildings) but only pay cost reflective distribution costs.
- Rules be amended to allow cogenerators to sell directly to tenants at some site as regulated monopolies.

Issues with gas infrastructure

In some regions gas infrastructure is inadequate to support cogeneration. If a proponent wants to develop a project they are often both required to pay for the full cost of augmenting the gas network and then charged a service fee for the ongoing use of the network. Subsequent cogeneration developers are only required to pay the ongoing service fee. This creates a 'first mover disadvantage', as discussed in Chapter 19 of the Garnaut Review (2008). These issues will become increasingly critical if there is a major expansion of both centralised and distributed gasfired generation. The Council recommends:

- Investing in the backbone gas supply network
- Clear rules about who pays for minor expansions of the gas network
- A national study into competition and accessibility in gas supply.

Delays in addressing barriers and first-mover disadvantage

The Energy Efficiency Council recommends addressing the main barriers to cogeneration directly (see above). However, there are still numerous barriers that will take many years to completely address, and first-movers will face higher costs to overcome these barriers. Recent work by CSIRO indicated that Australia could develop over 5,000 MW of cogeneration by 2020. This level of cogeneration would deliver substantial benefits to the economy, including stabilisation of the grid as more intermittent supply comes on board.

The Council recommends that the first 3,000 MW of cogeneration in Australia should receive financial support. The incentive should only be provided to cogeneration that:

- Exceeds a minimum threshold of efficiency (e.g. 50 per cent), with additional incentives for cogeneration units as their efficiency increases beyond this threshold.
- Is below 30 MW and runs for more than a certain number of hours per year. In addition to addressing first-mover disadvantage, the incentive could be used to reward cogeneration providers for the network benefits that they provide to the electricity network.

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4. Energy Security

The definition of energy security in the Energy White Paper needs to be substantially revised to include energy user and demand-side considerations.

The draft EWP states *"...energy security can be defined as 'the adequate, reliable and competitive **supply** of energy to support the nation's economic and social development..."* (p64). This is an entirely inappropriate definition, as it dictates supply-side solutions irrespective of the cost and brevity of demand. If this definition is applied it would result in billions of dollars of expenditure on unnecessary infrastructure and dramatically increase energy prices.

The Energy Efficiency Council recommends that the definition of energy security is redefined as:

> *'Energy users have access to adequate, reliable and competitive energy services in a way that maximises the economic and social development of the nation'*

The Council also notes that demand-side perspectives are relevant to adequacy, reliability and competitiveness.

Adequacy

The Draft EWP defines adequacy as '*the provision of sufficient energy to support economic and social activity*.' This definition assumes that demand is fixed, which ignores the fact that demand is flexible and energy market structures profoundly affect demand. As a result, this definition dictates that supply is provided to meet demand, irrespective of the cost and the brevity of demand.

This definition of adequacy exacerbates two of the adequacy risks identified in the draft EWP – the scale of investment required to meet demand and the risk that some energy technologies don't mature fast enough to meet this demand. Effective demand-side solutions, especially activities that reduce peak demand, could ameliorate these risks by deferring and reducing the scale of investment required in expensive, immature energy technologies.

The definition of adequacy would be strengthened if it was clarified to:

> *'Adequacy is ensuring that overall supply and demand match in a way that maximises economic and social development'*

Reliability

The Draft EWP defines reliability as '*the provision of energy with minimal disruptions to supply'.* Again, this definition assumes that demand is fixed and dictates supply-side solutions, irrespective of the cost. The negative impact of this approach can be seen in New South Wales, where controversial and possibly unnecessary increases in supply-side reliability standards were a major factor in increased energy prices.

Demand-side solutions can often improve system reliability at significantly lower cost than supply-side solutions. This includes ensuring reliable 'adequacy' during periods of peak demand, increased robustness of the energy system with increased penetration of distributed generation, and reserve capacity that can be deployed during periods of supply disruption. For example, following two recent events where supply in Texas dropped by up to 20 per cent, the state introduced an Emergency Interruptible Load Service (EILS) to cope with these types of shortages.

Demand-side solutions to energy disruptions are particularly important, given that energy prices, the main method of allocating scarce resources and balancing demand and supply, are politically and practically difficult to adjust during short-term disruptions. An effective demand-management response, including incentives for demand reduction, would assist in allocating scarce energy supply during disruptions.

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The Energy Efficiency Council recommends that demand-side solutions must be included in the emergency response arrangements which are set out in pages 70 to 71 of the draft EWP. Furthermore, the definition of 'reliability' should be redefined to:

> *'Reliability is using supply and demand-side solutions so that energy users have access to energy services with the minimal level of disruption that is cost-effective'*

Competitiveness

The Draft EWP defines competitiveness as '*the provision of energy at an affordable price that does not adversely impact on the competitiveness of the economy and that supports continued investment in the energy sector'.*

However, this goal is both unobtainable and inappropriate. Firstly, as the Draft EWP states 'the era of cheap energy is over'. Secondly, demand-side solutions, particularly reducing peak demand, can limit the overall increase in energy prices by improving energy generation productivity and avoiding and deferring the need to invest in immature technologies and short-term assets. Finally, and most critically, it is not the price of energy, but the total cost of energy services that matters to consumers. If the price of energy doubles, but the amount of energy required to deliver a service (e.g. lighting) is reduced by more than 50 per cent, energy services will actually become more affordable.

Conversely, inappropriately insulating energy consumers from energy price rises will take away the incentive to improve their efficiency, which will promote poor adaptation to rising energy costs and disadvantage energy consumers in the long term.

Therefore, the Council recommends that Competitiveness is defined as:

> *'Competitiveness is access to reasonably priced energy services in a way that optimises the competitiveness of the economy and that supports continued investment in demand-side and supply-side infrastructure and services.'*

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5. Projections of energy demand and supply

The draft EWP bases much of its work around a single projection of energy demand. Given the uncertainties around the energy market over the next twenty years, it is unwise and inappropriate to use a single projection. The EWP should include a range of projections, including:

- The scenario used in the draft EWP, which predicts that energy demand will grow by 42 per cent by 2035, is used as a 'high demand' scenario.
- A 'medium demand' scenario.
- A 'low demand' scenario that assumes that a large proportion of cost-effective demand-side opportunities will be accessed, including opportunities for reduced peak-demand.

The single scenario used in the draft EWP is inconsistent with trends in energy demand and many statements in the draft EWP. The rate in growth of energy use has declined since 1960s from 6 per cent per annum to around 1.6 per cent since 2000 (p11). In electricity the reduction in growth rates has been even more dramatic – energy use per household has declined and there has been no growth in electricity demand over the last two years, despite continued population growth. Actual NEM-wide electricity demand in 2010-11 is well below the 2010 Australian Energy Market Operator (AEMO) projection (see figure 1), and AEMO's revised projections for 2011-21 appear to be unrealistic. If recent trends are considered along with expected energy price rises, it is highly unlikely that energy demand will increase by 42 per cent by 2020.

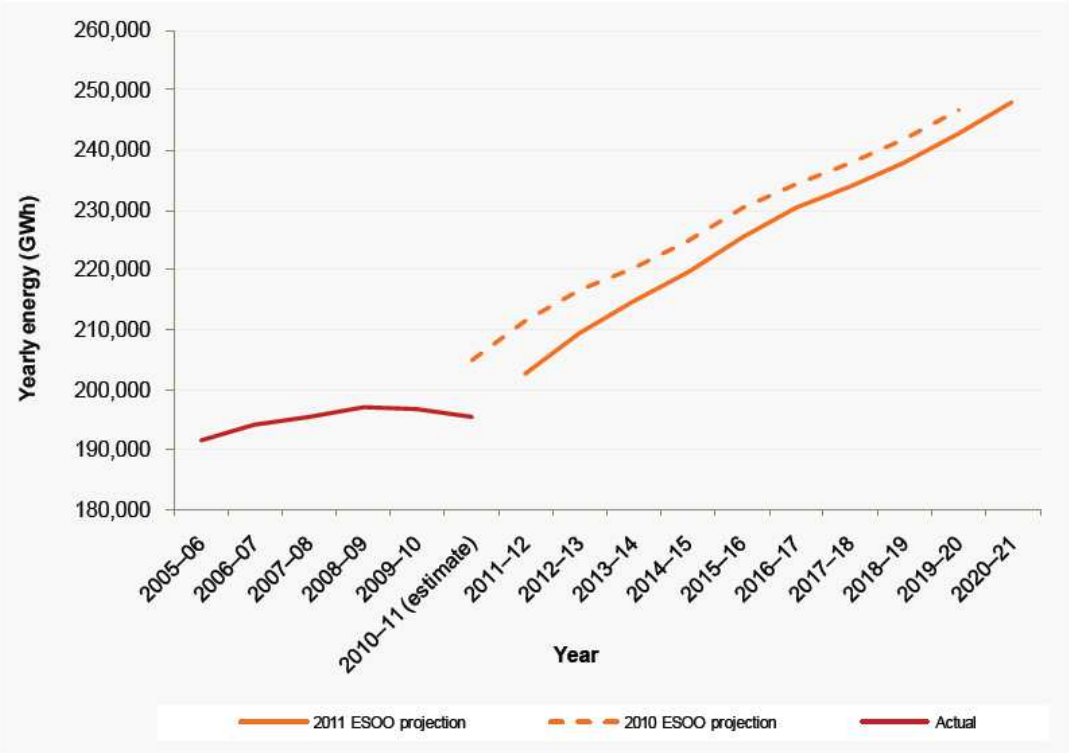

Figure 1 – Comparison of the NEM-wide medium growth energy projection (GWh)

Source: Australian Energy Market Operator, 2011 Electricity Statement of Opportunities for the National Electricity Market, Australian Energy Market Operator, p 3.9

Finally, at the state level, page 157 of the draft EWP states that substantial supply-side investment is required, based on the AEMO 2011 Statement of Opportunities analysis that projects future demand and suggests that most jurisdictions will reach low reserve conditions in 2-8 years. Firstly, some of the assumptions in these projections are questionable, and AEMO has flagged a review. Secondly, much of this increase in demand could be met by demand-side investment, particularly reductions in peak energy demand. If this increase in demand was solely met by supply-side solutions the electricity price would rise dramatically. The Council recommends that Australia should adopt the process adopted in California, where much of its growth in energy demand has been met through energy efficiency, delivering substantial benefits to the Californian economy.

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6. Energy markets (Chapter 6.1 and 6.2 and 6B)

The Council believes that there are many positive aspects to the sections on energy markets, but they need to accept more change to the status quo and include a much stronger demand-side perspective.

Objectives and Principles

The Council broadly supports the objectives for the energy market policy framework (p108), but strongly recommends the following minor amendments:

> *To maintain well-functioning energy markets and services that deliver reliable, safe, secure and competitive **energy services** for all Australians, including by:*
>
> - *ensuring timely and efficient investment in all facets of the energy **supply and demand** system*
> - *promoting competitive and accessible energy services*
> - *providing appropriate transparency and protection for consumers.*

The Council recommends the addition of the following to the principles for the energy market (p108):

> *Supply-side and demand-side services should be able to compete to maximise benefits for consumers*

National Electricity Objective

The National Electricity Objective (NEO) is

> *to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –*
>
> 1. *price, quality, safety, reliability, and security of supply of electricity; and*
> 2. *the reliability, safety and security of the national electricity system.*

An electricity market that involves an optimal combination of supply-side activities and demand-side activities will be significantly more cost-effective than a market that only involves supply-side activities. Therefore, many parties have stated that it is already implicit in the NEO that the market should optimise supply-side and demand-side activities.

However, while demand-side may be implicit in the NEO, it is not explicit. As a result, many regulators and market participants have overlooked the role of demand-side activities, which explains why *"Historically energy policy and market development in Australia have had a strong supply-side focus…" (draft EWP p167).* The Council believes that changing the implicit direction in the NEO to an explicit direction would help to overcome the historical supply-side bias. The Council recommends modifying the NEO to:

> *to promote efficient investment in, and efficient operation and use of, **demand- and supply-side** electricity services for the long term interests of consumers of electricity with respect to –*
>
> 1. *total cost, quality, safety, reliability, and security of supply of electricity; and*
> 2. *the reliability, safety and security of the national electricity system.*

It is untenable to state that this type of change to the objective would create uncertainty or compromise the clarity of the NEO's "single objective" as:

- If it is already implicit in the NEO that supply-side and demand-side activities should be used to optimise the NEM, this change is simply making this explicit.
- The NEO is not a 'single objective' or singular in the pursuit of its objectives. It needs to, and does, balance multiple objectives including price, quality, reliability and security.

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Market stability

Much of Chapter 6B suggests that the NEM should only be changed in extreme circumstances. While counter-productive distortions to the energy market are never desirable, the electricity market is not a natural market – it is a highly regulated market structured by legislation that includes monopoly distribution and transmission companies. Where there are existing distortions that reduce market efficiency, reform is highly desirable. For example, as discussed in section 6c, there are serious price distortions that do not provide the right incentives for households to adjust their efficiency or demand during critical peak demand periods.

Where reform is necessary, delaying reform with the intention of reassuring investors is counter-productive. In the same way that serious players in the energy market have been assuming that a carbon price would be introduced for some time, most serious players in the energy market now understand something needs to be done to address energy productivity and energy generation productivity (peak demand).

In particular, the draft EWP explicitly rules out shifting from an 'energy only market'. While the Council does not have a position on whether the NEM should be based around an energy only market or a capacity market, we do not agree with ruling out some form of parallel capacity mechanism.

As discussed in pages 7-9 of our submission, enabling demand to compete with supply during periods of critical peak is essential to reduce demand. This can be either done through a 'pay-as-bid' system, as suggested by Parer, or a capacity market for demand-side during peak periods. The Council notes that the Texan energy market is predominantly 'energy only' but has a parallel demand-side capacity mechanism.

The Council believes that ruling out one of the options that could be used to enable demand to compete with supply during periods of critical peak is entirely inappropriate. The failure to set up a mechanism to address peak demand would perpetuate the current distortions in the market and condemn households and businesses to a future of exceptionally expensive energy.

Key actions

The Council supports a number of the key actions highlighted on page 165, including:

- Promoting demand-side participation and distributed generation.
- Explore measures to reduce peak growth.

Other notes

The Energy Efficiency Council:

- Strongly supports the proposal on page 142 to improve contestability in services traditionally provided by networks, including streetlight operation, connection to networks and metering. The Council strongly urges that this be extended to demand-side services. Networks are regulated monopolies when it comes to building network infrastructure. However, they currently undertake a range of services that could be provided competitively, including streetlight maintenance and demand-side projects that reduce the need to build network infrastructure.
- Supports the proposal on page 143 for AEMC to develop a distribution planning and expansion framework.
- Agrees with proposal that the energy market reform process should use industry and experts in market design (p156), and this must include demand-side players, including demand-side aggregators and providers of energy efficiency and cogeneration services.
- Notes that demand-side investment could ensure that the NEM avoids Low Reserve Conditions. Demand-side investment could defer or avoid investment in expensive and immature technologies and, given the difficulties stated on page 157 about attracting timely investment, demand-side measures may be essential to ensure system stability.

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7. The clean energy transformation (Chapter 7)

The Council recognises that Chapter 7 in the draft EWP should have a major focus on the specific barriers to low carbon supply-side solutions, as Chapter 6c covers many demand-side issues. However, it is impossible to talk about the clean energy transformation without examining the role of the demand-side in reducing emissions. In addition, cogeneration warrants particular attention in this chapter.

This Chapter 7 should note that:

- Demand-side solutions represent the largest medium-term source of emissions reduction, but have received far less support and attention than supply-side solutions:
    - The International Energy Agency estimates that 65 per cent of global abatement potential to 2030 comes from energy efficiency.[3]
    - ClimateWorks estimates that energy efficiency could deliver around one third of the abatement needed to meet Australia's bipartisan emissions target.[4]
    - ABARE estimated that 55 per cent of Australia's emission reduction to 2050 could come from energy efficiency.[5]
- Demand-side, particularly demand response, has a role in integrating new supply-side technologies. For example, demand response and cogeneration will be critical to balance intermittent energy supply.
- Reduced demand will allow Australia to defer or avoid some investment in generation technology. Many key energy technologies are currently immature and expensive, and their maturity will depend on global R&D effort. Australia should play its role in starting to deploy these technologies, but reducing the scale of investment until these technologies mature will deliver major economic benefits.
- There is a strong case for government support for demand-side innovation as well as supply-side innovation. For example, some energy efficiency and peak management technologies would be categorised as clean energy technologies with high abatement potential and high economic benefit, suggesting that for some energy efficiency technologies the government should provide 'pro-active support'

[3] International Energy Agency 2008 World Energy Outlook, International Energy Agency, Paris

[4] ClimateWorks Australia 2010 *A Low Carbon Growth Plan for Australia,* ClimateWorks Australia, Melbourne

[5] Gurney, A. Ford, M. Low, K. Tulloh,C. Jakeman, G. & Gunasekera, D. 2007 *Technology: Toward a low emissions future,* 2007, ABARE research report 07.16 prepared for the Department of Industry, Tourism and Resources, Canberra.

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8. Other sections

The Council notes that skills development (Chapter 8.4) is only examined from a supply-side perspective, but is also critical for energy efficiency and demand-side activities. The Council draws the Department's attention to recent work by the Energy Efficiency Opportunities Program team on skills and energy efficiency.

The most critical measures for energy efficiency skills in Australia are programs that upgrade the energy efficiency of government operations. These programs should be primarily motivated by reducing government expenditure on energy, and the Victorian Government expects to save well over $1 billion in energy costs through its government energy efficiency program. However, governments can also demand that companies that provide energy efficiency products and services meet certain quality benchmarks, and as they are very large customers this provides the market size and certainty that companies and individuals need to invest in training and education.

Finally, the Council notes that international engagement and energy analysis (Chapter 9) also requires further demand-side perspectives. Energy use metrics are critical to develop good energy policy.

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