Mr Howard Bamsey
Secretariat to the Task Group on Energy Efficiency
c/- Department of Climate Change and Energy Efficiency
GPO Box 854
Canberra ACT 2600 Australia

3 May 2010

Dear Mr Bamsey

The Energy Efficiency Council welcomes the opportunity to provide a submission to the Prime Minister's Task Group on Energy Efficiency. As the peak body for companies that provide commercial and industrial energy efficiency services and products, the Energy Efficiency Council has extensive expertise in technology and policy relating to energy efficiency and cogeneration.

The Energy Efficiency Council endorses the goal of the Prime Minister's Task Group to deliver a step-change in energy efficiency. Energy efficiency is the largest opportunity for cutting greenhouse emissions by 2020. The International Energy Agency estimates that 65 per cent of global carbon cuts to 2020 will come from energy efficiency. Investing in energy efficiency also delivers positive returns to the economy, with ClimateWorks Australia estimating that improved energy efficiency would expand the Australian economy by around $5 billion per annum by 2020.

Energy efficiency is an enormous opportunity to simultaneously cut emissions and prepare Australian industry to compete in a carbon-constrained global economy. However, like any worthwhile task, driving a step change in energy efficiency requires commitment, resources and carefully designed policies. The barriers to energy efficiency are complex, and therefore the policy response needs to be designed with diligence and expertise.

The Energy Efficiency Council recommends three overarching policies and detailed policies in four priority sectors. The three overarching policies are:

- A national energy efficiency goal to reduce stationary energy demand by 20 per cent below business as usual by 2020, with annual targets on the way to the 2020 target. Achieving this goal would reduce greenhouse emissions by around 50 Megatonnes per annum.
- Support and mandate electricity network operators to spend 10 per cent of the $42 billion that they are planning to spend over the next five years on demand-side measures. This would drive a step change in energy efficiency while lowering the cost of electricity supply. Those network operators that fail to deliver this level of investment in demand-side measures would have a levy placed on their regions, which an independent body would invest in energy efficiency to offset network expansion and reduce their customers' bills.
- A National Efficiency Scheme (NES) to drive energy efficiency in all sectors, including industry and commercial buildings. The scheme would replace existing schemes in New South Wales, Victoria and South Australia.

There are also sector-specific barriers to energy efficiency. The Energy Efficiency Council recommends policies in four priority sectors:

Industry

Industrial energy efficiency and cogeneration could cut Australia's greenhouse emissions by over 22 Megatonnes a year by 2020 while expanding the economy. However, there is overwhelming evidence that industry won't invest in energy efficiency without supportive policies. The Council recommends:

- Financial support through the NES for projects with longer payback periods, and support for trialling and demonstrating new technologies.
- Establishing a scheme for large energy users that requires them to spend the equivalent of 5 per cent of their annual energy bill on energy efficiency.
- A target for the top 200 energy users to improve their energy efficiency by a minimum of one percent per annum between 2010 and 2020.
- Standards for new and expanded plants and mines.
- A $50 million program to develop tools to drive energy efficiency in SMEs.

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Commercial Buildings

Energy efficiency retrofits commercial buildings will deliver over 16 Megatonnes of abatement per annum by 2020. The Council recommends:

- Incentives for energy efficiency retrofits through the NES.
- $500 million to support several innovative models to provide capital for energy efficiency upgrades, including “PACE” and revolving funds.
- Mandatory display of NABERS base building and tenancy ratings in building foyers, commencing with buildings occupied by the public sector.
- Building the capacity of the property and energy efficiency service sectors.

Government Operations

The public sector collectively wastes millions of dollars every year through inefficient energy use. Investing in energy efficiency would allow this money to be redirected to vital areas like health and education, and would transform the market for energy efficiency in Australia. Governments need to implement four key policies to drive energy efficiency in their agencies:

- A clear funding path for agencies to access capital for upgrades, equivalent to 25 per cent of their energy bill each year.
- Mandate agencies to upgrade the energy efficiency of their largest sites by 2012 and the remaining sites by 2020.
- Appoint one agency to lead on energy efficiency in each government and provide them with the resources to assist agencies to implement energy efficiency.
- All agencies to publicly report their progress on an annual basis, and publicly disclose NABERS tenancy ratings for all owned or leased offices over 1000m^2

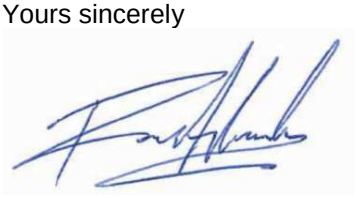
Cogeneration

Cogeneration is significantly more efficient than conventional generation. In addition to eliminating transmission losses, cogeneration is more than twice as efficient as conventional generation as waste heat is turned into useful services. Cogeneration will also deliver critical grid stabilisation services as an increasing proportion of energy comes from intermittent sources. The Council recommends:

- Creating and enforcing equitable standard rules for grid connection, including a grid-connection ombudsman, clear time and cost for connection studies and clear rules about who pays for grid augmentation
- Allowing cogenerators to directly sell electricity to on and off-site energy users and facilitating off-site distribution through virtual private wire rules
- Use the Future Fund to invest in the expansion of gas supply and create clear rules about who pays for the minor expansion of the gas network
- Create a feed-in tariff or similar for 3,000 MW of cogeneration

Should you require further information on any of the issues raised in this submission please contact the Energy Efficiency Council on info@eec.org.au or 03 8327 8422.

Yours sincerely



Rob Murray-Leach
Chief Executive Officer

Suite 2, 490 Spencer Street, West Melbourne VIC 3205 ABRN 136 469 291 ABN 63 136 469 291

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1. The importance of energy efficiency

This section responds to the following questions raised in the Issues Paper

- What do you see as the key goal(s) of energy efficiency? What is the simplest way of measuring progress against these key goal(s)?
- How could these key goals(s) be better communicated to all sectors of Australian society?
- What do you consider a step-change in energy efficiency to be?
- What non-greenhouse co-benefits could be delivered through a step change in energy efficiency in Australia?

Energy efficiency will deliver significant benefits to Australia, including:

- Around half of Australia's greenhouse gas abatement by 2020
- Improved productivity, international competitiveness and economic growth
- Cheaper, more reliable and more secure energy supply
- A competitive energy efficiency industry

Based on these benefits, the Energy Efficiency Council recommends that Australia should aim to unlock all cost-effective energy efficiency, which is equivalent to reducing stationary energy demand by 20 per cent below business as usual by 2020. This Australian government should report annually on progress against this goal.

1.1 Greenhouse gas abatement

Energy efficiency is the largest and most cost-effective source of abatement to 2020. Energy efficiency could deliver well over 50 per cent of Australia's abatement between 2000 and 2020. Around half of this abatement potential is already included in the Australian Government's business-as-usual (BAU) emissions projections to 2020, and additional energy efficiency policies could drive an extra 50 Megatonnes of cost-effective abatement per annum beyond BAU.

Numerous global and local studies have found that energy efficiency is one of the largest sources of abatement. The International Energy Agency (IEA) estimated that energy efficiency will account for 65 per cent of global emission abatement in the energy sector to 2020, and 54 per cent to 2030, in a scenario where global carbon dioxide levels stabilise at 450ppm.

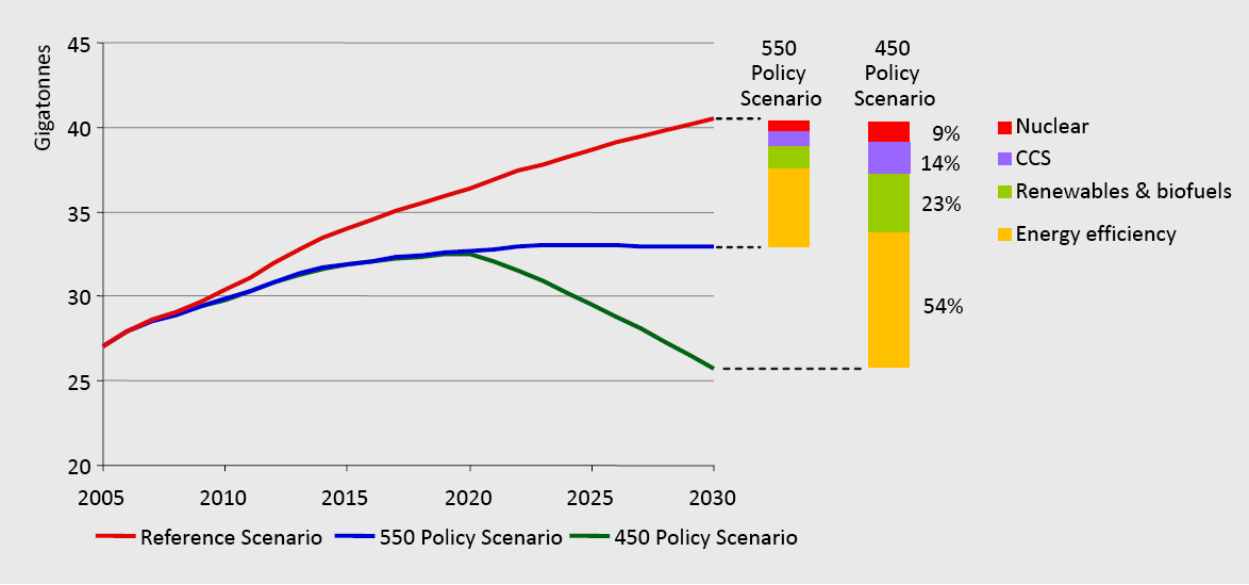

Figure 1: The proportion of global abatement from different sources, from IEA World Energy Outlook 2008

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Local research by the Australian Bureau of Agricultural and Research Economics estimated that energy efficiency will account for around 55 per cent of Australian emission abatement to 2050 (Gurney et al 2007). Recent work by ClimateWorks Australia found that additional energy efficiency beyond business-as-usual could deliver an additional 51 Megatonnes of abatement per annum by 2020, with particularly large savings in industry and commercial buildings.

These international and local reports may underestimate the potential contribution of energy efficiency to emissions abatement. The International Panel on Climate Change notes that its own estimate of the energy efficiency potential in buildings is likely to be lower than the real potential "*...due to the limited number of demand-side end-use efficiency options considered by the studies, the omission of non-technological options, the often significant co-benefits, as well as the exclusion of advanced integrated highly efficiency buildings."* (Metz et al 2007 p409).

In addition to being the largest source of emission abatement, energy efficiency is widely acknowledged as the most cost-effective form of abatement. The recent ClimateWorks Australia cost-curve (below) indicates that the most cost-effective opportunities for abatement are in energy efficiency, to the left of the curve. As a result, the economic cost of tackling climate change in Australia will be substantially higher if we fail to mobilise the potential for energy efficiency.

While many forms of abatement policy need to be pursued in parallel, governments should put the highest priority on delivering abatement over the next ten years through energy efficiency, as opposed to more expensive forms of abatement.

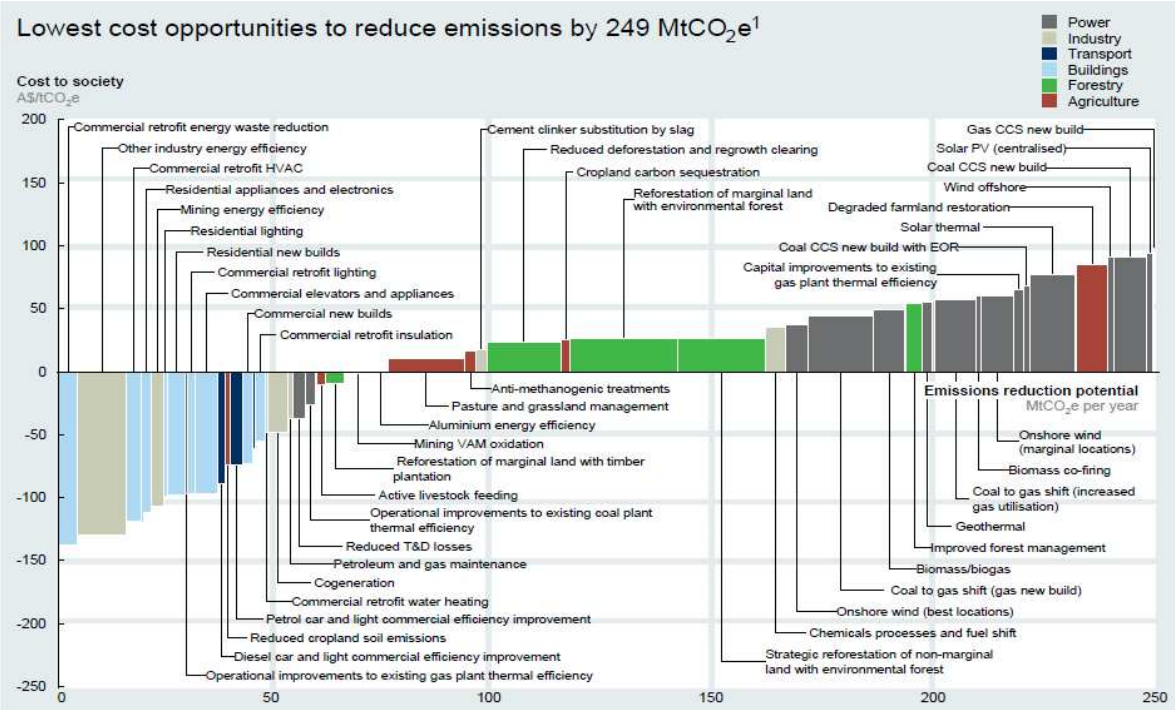

Figure 2: An abatement cost curve for Australia, from ClimateWorks Australia 2010

There are opportunities to improve energy efficiency throughout the energy supply chain. The largest opportunities for efficiency improvements are in end-use efficiency and distributed generation. As these efficiencies occur at the end of the supply chain, they create proportionally much larger emission savings than upstream improvements in efficiency

1.2 Improved productivity, international competitiveness and economic growth

There are significant economic justifications for energy efficiency policy even in the absence of climate change. When a company invests in cost-effective energy efficiency it improves their overall efficiency and productivity. These savings help businesses save money, improve productivity and retain staff, while creating new jobs in energy efficiency. As a result tapping into Australia's full energy efficiency policy would increase GDP, even in the absence of a carbon price.

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US President Barack Obama recently stated:

> *"One of the fastest, easiest and cheapest ways to make our economy stronger and cleaner is to make our economy more energy efficient."*

There are extensive studies on the potential economic benefits of energy efficiency. The Energy Efficiency Opportunities program recently identified real-world opportunities for just 199 companies to save over 60 Petajoules of energy per annum, boosting their bottom lines by $736 million.

In a carbon-constrained economy, the economic benefits of energy efficiency are even more substantial, as energy efficiency reduces the need to invest in more expensive forms of abatement. Recent work by ClimateWorks Australia found that energy efficiency in commercial buildings saves around $90 per tonne of carbon abatement, and energy efficiency in industry saves around $100 per tonne of abatement. In contrast, many renewable technologies cost over $100 per tonne of abatement. As a result, the Centre for International Economics estimates that energy efficiency in the building sector alone would increase GDP in Australia by $38 billion per annum by 2050, and reduce the carbon price by 14 per cent.

1.3 Cheaper, more reliable and more secure energy supply

Energy efficiency could significantly lower the cost of energy supply by:

- Reducing expenditure on electricity network infrastructure by reducing the growth in energy demand, particularly peak demand
- Reducing expenditure on peak generation and new generation technologies, particularly while these technologies are still immature
- Reducing the quantity of energy needed to deliver a service, which improves the affordability of services such as heating and cooling.

Where there is a need for new capacity and reliability in the electricity grid, distribution and transmission companies have the option of either investing in increased grid network infrastructure or investing in energy efficiency and distributed generation. While the costs of these options will vary between locations, investing in energy efficiency and distributed generation would often provide the same capacity at much lower costs to the public.

Augmenting the grid is extremely expensive. Distribution and transmission companies are currently seeking approval to spend $42 billion over the next 5 years to augment the grid. As network companies are regional monopolies, these costs will be directly passed on to energy consumers, generally irrespective of their role in increasing energy demand. In New South Wales increased transmission and distribution costs will increase energy bills by 42 per cent in some areas by 2013. If network companies had invested in energy efficiency over the last decade it would have offset the requirement for much of this investment, saving households and businesses billions of dollars.

Similarly, investing in energy efficiency can offset the need to expand generation infrastructure, which is particularly important when companies are considering investing in immature renewable and low-emission energy technologies. California has vertically integrated energy utilities which have been directed to invest in energy efficiency when it is cheaper than investing in new supply (generation, transmission and distribution). As a result, California has saved $31 billion of investment in new infrastructure, including 24 power plants, reducing household energy bills by an average of US$165 per capita.

Investing in energy efficiency and distributed generation would also improve the reliability and security of energy supply. Energy efficiency and distributed generation can improve energy reliability by reducing peak loads and strains on transmission and distribution networks.

1.4 A competitive energy efficiency industry

Energy efficiency is not only critical for protecting the economy, it is also a substantial economic opportunity. One of the world's largest financial institutions, HSBC, estimates that global revenue from energy efficiency reached US$164 billion in 2009. The German Government uses a wider definition of energy efficiency, and estimates that the world market for energy efficiency is $540 billion. The market for energy efficiency is growing rapidly, because energy efficiency delivers major financial benefits at the same time as reducing greenhouse gasses. HSBC estimates that global revenue from energy efficiency more than doubled between 2008 and 2009, increasing by 126 per cent in one year.

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If Australia can position itself as a regional hub for exporting energy efficiency technology and services it would significantly benefit the economy. Research by the Australian Council of Trade Unions and the Australian Conservation Foundation found that if Australia immediately introduced policies to grow the domestic market for energy efficiency it could capture 5 per cent of the global market, potentially creating 75,000 jobs in energy efficiency by 2030 (2008*).*

1.5 What is a step-change in energy efficiency?

According to a wide range of metrics Australia is energy inefficient compared to other countires. The goal of a 'step-change in energy efficiency' should be to capture as much cost-effective energy efficiency as possible, to deliver maximum economic and environmental benefits. A step-change will not be delivered by a single measure, but by a number of ambitious, well-funded and well-designed policies.

While a step-change in energy efficiency will necessarily entail improvements in both Australia's rate of energy efficiency improvement and absolute energy efficiency, the metric for a 'step-change' should be in progress against achieving cost-effective energy efficiency potential. The Energy Efficiency Council recommends that this be expressed in a simple, concrete figure, such as actual energy demand versus business-as-usual.

1.6 An energy efficiency goal

An energy efficiency goal is critical to drive coordinated action by ministers, bureaucrats and industry, and clearly communicates the benefits of energy efficiency. Numerous countries have set clear energy efficiency goals. These goals are based on reducing energy use below business-as-usual or reducing the energy intensity of the economy.

EU The European Union set a target to reduce primary energy use by 20 per cent below business-as-usual by 2020.

USA The US has announced its intention to reduce energy demand by 15 per cent below business-as-usual by 2020.

China China reduced the energy intensity of its economy by 14 per cent between 2006 and 2009 and has set a new goal to reduce the greenhouse intensity of the economy by 40 to 45 per cent by 2020.

Russia President Dmitry Medvedev set a goal of reducing the energy intensity of the Russian economy by 40 per cent by 2020 (above the 2005 baseline)

The Energy Efficiency Council recommends that Australia should aim to drive all additional cost-effective energy efficiency in Australia. As noted, both the Energy Efficiency Council and ClimateWorks have estimated that there is around 50 Megatonnes of additional cost-effective energy efficiency in the economy by 2020 (beyond BAU). The Energy Efficiency Council recommends that this goal should be expressed in energy units, as there are non-greenhouse reasons to improve energy efficiency and the carbon intensity of electricity can change over time.

The Energy Efficiency Council recommends that Australia set a goal to reduce stationary energy demand by 20 per cent below business as usual by 2020. This Australian government should report annually on progress against this goal. This goal is equivalent to the estimate of 50 Megatonnes of additional cost-effective energy efficiency. The goal could be clearly communicated to the public by explaining how much deferred generation this represents.

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2. Policy Overview

This section responds to the following questions raised in the Issues Paper

- What do you believe are the key barriers to uptake of energy efficiency improvements?
- What would be the most efficient and effective ways(s) of overcoming these barriers?

Australia needs both a carbon price and a range of dedicated energy efficiency policies. The Energy Efficiency Council supports a price on carbon. However, there are a range of well-established market failures that impede energy efficiency, and a carbon price on its own won't result in Australia mobilising all it cost-effective energy efficiency potential. As noted on page 5, failure to drive energy efficiency will significantly increase the cost of tackling climate change. Therefore, even with a carbon price Australia needs a range of dedicated energy efficiency policies.

The recent decision by the Australian Government to delay a carbon price until at least 2013 means that Australia must significantly cut emissions over the next four years to avoid a significantly faster, and therefore more costly, abatement task between 2014 and 2020. This has two implications:

- There is now a critical imperative to introduce dedicated energy efficiency policies that are complementary to a carbon price. These dedicated policies would drive action even in the absence of a carbon price, and without these policies little action will be taken over the next four years.
- Australia will also need transitional measures that act as a 'shadow carbon price'. The Council recommends including a shadow carbon price in the National Efficiency Scheme discussed in Section 4 and the 'feed-in tariff' for cogeneration discussed in Section 8.

The market failures that impede energy efficiency are discussed in detail in the Garnaut Review and the sources listed in the references at the end of this submission. The key market failures that impede energy efficiency are:

Externalities	In addition to the carbon externality, energy efficiency has spillover benefits such as reduced network infrastructure costs. As noted below, the National Electricity Market currently fails to reward companies for delivering these benefits.
Early mover spillovers	Support for research and development is required to extend the potential of energy efficiency.
Principal agent problems	The incentives facing landlords, tenants and building managers are frequently not aligned, resulting in sub-optimal outcomes.
Public good information, information spillovers & information asymmetry	Many homeowners, companies and specialists lack information on energy efficiency due to a range of market failures. With information asymmetry this can impede coordination between parties. Information gaps are not minor problems; they can entirely impede otherwise cost-effective energy efficiency.
Bounded rationality and organisational failures	Even with access to information, individuals and organisations can fail to recall, process or use information effectively. The Energy Efficiency Opportunities (EEO) program found over $700 million of untapped energy efficiency savings in Australia's largest energy users, despite these companies having access to expertise and significant incentives to reduce energy costs.
Energy Markets	Energy efficiency is impeded by the structure of Australia's energy markets. This is discussed in more detail in Section 4.

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These market failures interact to create emergent problems. For example, bounded rationality and gaps in knowledge within companies and financial institutions can impede access to capital for energy efficiency projects. In particular, governments' budgetary policies can be a significant impediment to cost-effective energy efficiency projects. Therefore, directly addressing access to capital can overcome multiple market-failures.

Similarly, principal-agent problems, serious gaps in knowledge and bounded rationality create barriers throughout a supply chain, impeding the entry and diffusion of novel technologies. For this reason, market transformation approaches that consider the whole supply chain can be more effective than addressing each part of the chain separately.

As a result of multiple market-failures, there is no single program that can deliver a step-change in energy efficiency in Australia. Rather, Australia needs a range of ambitious and well-designed programs. As barriers are sector specific, policies need to be sector specific.

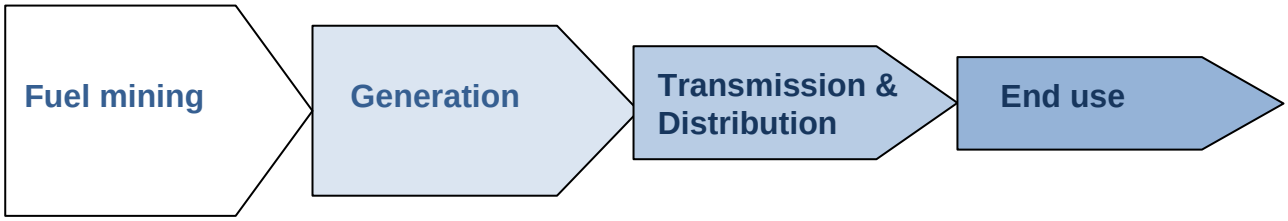
2.1 Principals for policies and programs

The suite of policies and programs should be assessed against the principals that they should:

1. Drive as much cost-effective energy efficiency as possible. The level of energy efficiency that is cost-effective will be affected by all costs (capital, labour and program costs) and all benefits (energy savings, energy infrastructure savings, productivity improvements, health and greenhouse reductions). The benefits now include carbon savings until at least 2013.
2. Focus on tackling market failures and regulatory failures in the energy market.
3. Address the full range of market failures and distortions to unlock the full potential for energy efficiency. Where multiple barriers impede energy efficiency, each barrier needs to be addressed to deliver energy efficiency at the lowest cost.
4. Have sufficient funding to drive cost-effective energy efficiency, but be cost-effective so that each dollar invested in a program drives the maximum amount of energy efficiency.

2.2 Sectors for Priority action

Energy is wasted throughout the energy supply chain, from fuel extraction, through transmission, distribution and end-use. As a result, every joule of energy saved in end-use energy efficiency often saves three joules of fuel, with the result that end-use energy efficiency has proportionally greater impact in total carbon savings than improved efficiency in other parts of the chain. Likewise, cogeneration not only doubles generation efficiency by converting waste heat into a useful service, it also eliminates transmission and distribution losses.



Common technology	Coal-fired generator	Electricity grid	Incandescent bulb
Energy loss	~ 65 per cent	~ 7-15 per cent	~ 88 per cent
Energy units	100 ► 35	35 ► 28	28 ► 3

In addition to overarching policies relating to electricity distributors and a National Efficiency Scheme, this submission provides recommendations in the following priority areas:

- Energy efficiency in industry
- Energy efficiency in commercial buildings
- Energy efficiency in government operations
- Cogeneration

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3. The National Electricity Market and the role of distributors

This section responds to the following questions raised in the Issues Paper

- Noting current arrangements for energy market participants (generators, networks, retailers and consumers) what improvement could be made to support a step change in energy efficiency?
- What improvements could be made to national electricity market operations and network incentives

The Energy Efficiency Council strongly advocates interventions to address serious flaws in the National Electricity Market that result in overinvestment in supply-side activities (generation and distribution infrastructure) and under-investment in demand-side activities. To address these flaws the Council recommends that the Government:

- Support and mandate electricity network operators to spend 10 per cent of the $42 billion that they are planning to spend over the next five years on demand-side measures. Those network operators that fail to deliver this level of investment in demand-side measures in 2010-2012 would have a levy placed on their regions, which an independent body would invest in energy efficiency to offset network expansion and reduce their customers' bills.
- A National Efficiency Scheme (NES) to support energy efficiency in all sectors, including industry and commercial buildings. The scheme would replace existing schemes in New South Wales, Victoria and South Australia. This is discussed in Section 4.

As noted in Section 1.3, energy efficiency and distributed generation could significantly lower the cost of energy supply. Where there is a need for new capacity in the electricity grid, vertically integrated energy utilities have the option of either investing in new generators and network infrastructure or investing in energy efficiency and distributed generation. While the costs of these options will vary between locations, energy efficiency and distributed generation will often provide the same capacity at much lower costs to the public than supply-side options.

California has vertically integrated energy utilities which have been directed to invest in energy efficiency when it is cheaper than investing in new supply (including generation, transmission and distribution). As a result, California has saved $31 billion of investment in new infrastructure, reducing household energy bills by an average of US$165 per capita.

The rules and regulations of Australia's National Electricity Market (NEM) govern the operation of the electricity network that delivers electricity from generators to end users, according to specified objectives for optimizing price, quality, safety, reliability and security of supply. The way in which the NEM is regulated has a pivotal role in influencing the way our energy needs are met, because it sets up a system of incentives that drive energy behaviour and affect many activities including:

- How the cost of electricity generation is reflected to consumers, including the cost of energy use at different times of the day
- Linking to the grid to access or supply energy, and the costs of transporting electricity
- If consumers use more energy in specific locations it either requires other users to lower their demand, or an expansion of network infrastructure.
- The way that utilities make investments in acquiring network capacity that is required to meet current or future electricity demand.
- The cost to connect distributed generation at specific points in the grid.

A wide variety of expert reviews, including the Parer Review and the Garnaut Review, have identified flaws in the current NEM rules. These flaws favour established supply-side options over distributed generation and energy efficiency.

One key example is the opportunity to acquire new electricity distribution capacity through energy efficiency and distributed generation sources. Although investing in energy efficiency and distributed generation would often provide the same capacity at much lower costs to the public, the NEM rules strongly favour investing in more expensive networks and centralised supply.

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Even in the absence of climate change these flaws should be tackled as they distort the energy market, increasing energy supply costs for households and businesses. With an aim to reduce Australia's emissions by 5 to 25 per cent by 2020, the economic implications of these flaws are more severe. The NEM rules create incentives for activities that increase emissions and artificially inflate the cost of low-cost emission abatement options. This distorts the market for carbon abatement.

Addressing the failures in the NEM is critical to helping Australia lower the cost of meeting its greenhouse targets. Tackling these failures will remove impediments to abatement, allowing a carbon price or 'abatement purchasing' system to drive abatement more effectively.

Full NEM reform to achieve this will take at least a decade to address issues like time-of-use pricing and full marginal pricing for increased peak demand. Therefore, the Energy Efficiency Council recommends two specific reforms:

- Support and mandate electricity network operators to spend 10 per cent of the $42 billion that they are planning to spend over the next five years on demand-side measures. Those network operators that fail to deliver this level of investment in demand-side measures in 2010-2012 would have a levy placed on their regions, which an independent body would invest in energy efficiency to offset network expansion and reduce their customers' bills.
- Australia's utilities are not vertically integrated, which means that no single party can capture a substantial proportion of the benefits of deferred generation. Re-integrating Australia's utilities is a complex and potentially undesirable action at this point in time. Therefore, the Energy Efficiency Council recommends a National Efficiency Scheme (NES) to support energy efficiency in all sectors, including industry and commercial buildings. The scheme would replace existing schemes in New South Wales, Victoria and South Australia.

  The NES would also act as a vehicle for transitional incentives to drive change in the way that businesses act on energy efficiency, and now would need to include a shadow carbon price.

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4. A National Efficiency Scheme

This section responds to the following questions raised in the Issues Paper

- Noting current arrangements for energy market participants (generators, networks, retailers and consumers) what improvement could be made to support a step change in energy efficiency?

Section Three sets out the case for a National Efficiency Scheme (NES). This section sets out the Energy Efficiency Council's recommendations for a NES.

1. Create a National Efficiency Scheme (NES) to replace the state schemes

The Energy Efficiency Council recommends the development of a NES with a very clearly defined intent. The NES should aim to:

- Create a market for energy efficiency to address the split for incentives for energy efficiency between customers, retailers, distributors and generators. A clear, long-term scheme would result in the development of companies that are able to provide cost-effective energy efficiency services
- Provide transitional incentives to change companies' behaviour
- Create a shadow-price for carbon until a carbon price is introduced.

There are several options for a NES (see recommendation 8), but the option selected should be able to be established rapidly, ideally within 6 months. The NES would reduce costs for businesses by replacing the multiple existing State schemes, including the New South Wales Energy Saving Scheme, Victorian Energy Efficiency Target and South Australian Residential Energy Efficiency Scheme. The Australian Capital Territory has also announced its intention to develop a scheme, and a Queensland Parliamentary Enquiry has recommended the adoption of a scheme in that state.

The NES should drive energy efficiency in all sectors, including industry and commercial buildings. The NES must focus on those areas with the greatest potential savings, including retrofitting industrial plant and commercial buildings, and making the best use of existing infrastructure.

As the scheme has a secondary aim of providing transitional incentives to change company behaviours, over the next 10 - 20 years the size of incentives should decline over time. This clearly signposted decline in incentives would drive more action than the incentive on its own. This additional incentive over the next 10 - 20 years should support all stationary energy, including electricity, coke, diesel and gas.

The scheme should also incorporate a shadow carbon price until a carbon price is introduced.

2. The NES should drive energy efficiency in addition to BAU

The aim of the NES should be to drive energy efficiency that is additional to BAU, rather than simply reward companies for actions that they were planning to undertake. However many energy efficiency projects that are privately cost-effective are additional to BAU, and so the NES should focus on driving a wide range of actions, particularly in the first years of the scheme. The NES should be tightened over time so that it continually focuses on actions that are additional to BAU.

3. The NES needs to provide incentives that promote the desired behaviours

While on the surface this recommendation sounds obvious, the implications are quite significant. Carefully tailoring the NES will ensure that it encourages the desired behaviours, rather than providing incentives for unexpected activities.

Firstly, the NES should provide incentives based on the amount of energy actually saved, i.e. in dollars per Megawatt-hour.

Secondly, the NES should encourage companies to implement whole building / plant upgrades that deliver major reductions in energy use. While some support for low-cost energy efficiency upgrades can encourage companies to implement these and then undertake deeper retrofits, the NES should not encourage 'cherry-picking' projects that would then undermine subsequent deeper retrofits. For example, undertaking lighting retrofits in isolation can prevent subsequent Heating, Ventilation and

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Air Conditioning (HVAC) upgrades, which generally need to be bundled with lighting upgrades to meet companies' Internal Rate of Return criteria.

The scheme should be scaled to provide a greater incentive for these deeper retrofits. For example, retrofits that improve the NABERS rating of a building from 4 to 5 stars should be eligible for more reward than retrofits that improve ratings from 2 to 3 stars.

4. Incentive partly upfront, partly after measurement and verification

Anderson and Newell (2004) note that *"a study of small and medium industrial firms in the United States has found that, in the short term, policies to reduce the up-front costs of efficiency investments, e.g., subsidies and tax relief, are more effective at inducing efficiency than higher energy prices"*

The Energy Efficiency Council recommends that the scheme adopt an approach similar to the New York Sustainable Energy Research Authority (NYSERA), where grants are awarded 60 per cent upfront and 40 per cent after measurement and verification of savings.

Measurement and verification should be based on actual energy use, rather than modelling, and the protocol needs to be straightforward and not overly onerous. The Energy Efficiency Council recommends the use of the International Performance Measurement and Verification Protocol.

5. The scheme should be simple to apply for

If the transaction costs for companies to apply for funding are too high the size of the incentive will need to be much higher to encourage action. The scheme requires:

- Clear rules for obtaining funding, to increase the certainty that companies will secure funding if they meet certain criteria
- A rapid assessment process that includes a quick first scan for eligibility and a slightly more detailed second-stage assessment. Companies should be provided with feedback if they are unsuccessful in securing a grant.
- Multiple annual funding rounds or ongoing eligibility for funds
- "Hand-holding" support for companies to apply funding

6. Clear, long-term program rather than constant change

The design of the scheme may change over time, including tightening, but these changes need to be signalled a long time in advance. Ad hoc changes to the rules of the scheme will create boom-and-bust cycles of activity.

7. Run by an independent body of energy efficiency experts

The scheme should be run by an independent body including energy efficiency experts. In addition to reducing volatility in scheme design, an independent body would be more likely to reward proposals based on merit rather than short-term political issues.

8. There are a range of options for scheme design

The Energy Efficiency Council recognises that the scheme could be implemented through a scheme where the government sets the volume of desired energy savings, and the market sets the price (e.g. the New South Wales ESS), or a scheme where the government sets the price (eg. NSERA grants). There are also a range of options, including point-of-obligation, for such schemes. Whichever option is chosen, the Government needs to work closely with the Council to work through detailed design options, as the design details are as critical as the overarching design.

9. Strong compliance mechanisms

The scheme needs to be audited from the beginning to drive compliance, and the government needs to immediately invest $10 million to create accredited and well-trained service providers across a range of sectors. This is discussed in Section 6.

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5. Policies for the Industrial Sector

This section responds to the following specific questions raised in the Issues Paper

- What further measures could be used to deliver a step change improvement in energy efficiency in your sector?
- What are the ways in which governments can facilitate new investment in energy efficiency?

Non-experts often assume that large energy users will implement the optimum level of energy efficiency without support from government. The evidence is overwhelming that this is incorrect. The Energy Efficiency Opportunities (EEO) program mandated that companies investigate their options for energy efficiency. This program uncovered opportunities for just 199 companies to save $736 million and cut Australia's greenhouse gasses by 1.1 per cent. The Council believes that the opportunities in these companies are at far greater than reported so far. The following programs would drive energy efficiency and deliver major benefits to the economy.

Minimum energy improvement targets

Almost every large energy user has extensive opportunities for energy efficiency improvement. Every EEO participant should be required to improve their energy efficiency by a minimum 1 per cent per annum between 2010 and 2020. This low target is easily achievable by all EEO participants.

Similar schemes in Europe have successfully driven a revolution in energy efficiency in industry. For example, the Long-Term Agreements in the Netherlands improved average energy efficiency amongst participants by 22.3 per cent between 1989 and 2000 (*Price et al. 2008).* Rather than being an imposition on business, such a scheme will improve the competitiveness of Australian companies. As noted above, the EEO program has already found a large number of projects with internal rates of return well in excess of 20 per cent.

The European schemes involved setting 'stretch' targets for different sectors. For example, the Dutch scheme involved 29 different agreements with industry bodies representing 1000 industrial companies, covering around 90 per cent of industrial primary energy (Price et al 2008). Developing 'stretch' targets for the various sectors is a complex process that takes several years of negotiation. Therefore, the Energy Efficiency Council recommends that the Government should set a single minimum target rather than a series of stretch targets. This will ensure that all large energy users develop the internal processes to drive energy efficiency, which will allow them to respond to energy prices and incentives to go beyond the minimum targets.

Bringing down the cost of projects

Supporting companies to go beyond the minimum targets will deliver major benefits to the economy. Incentives should aim to drive projects that are additional to business as usual. Experience from the EEO Program suggests that many companies will consider investing in energy efficiency projects with a payback periods under 18 months, although some won't even invest in projects that payback within 12 months. However, almost all companies are reluctant to invest in projects with payback periods over 2 years, and so almost all projects with payback periods over 2 years are 'additional to BAU'.

Therefore, the Energy Efficiency Council recommends using the NES to provide incentives that are scaled based on energy savings ($ per MWh) and payback period. The incentive should diminish over time, so that in the first two years all projects over 2 years would be eligible, in the second year projects over 3 years would be eligible, and so on. The following is **not** a recommended scheme design, but simply illustrates the principal of incentives changing with payback period and over time.

	Payback period for activity (years)				
Date	**2+**	**3+**	**4+**	**5+**	**6+**
2010-12	20% x NES ($MWh)	50% NES	100% NES	100% NES	100% NES
2012-14		20% NES	50% NES	100% NES	100% NES
2014-16			20% NES	50% NES	100% NES
2016-18				20% NES	50% NES

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Creation of internal energy efficiency funds

Companies often fail to invest in energy efficiency due to giving it insufficient priority in allocation of capital. There are a range of options to address this, such as offsets to energy and resource rent taxes. The Energy Efficiency Council recommends that all companies, including generators, captured in the first two rounds of the National Greenhouse and Energy Reporting System be subject to a 5 per cent tax on energy. However, companies would be exempt from this tax if they spend the equivalent of 5 per cent of their annual energy spend each year on energy efficiency and carbon reduction projects. This would have the effect of creating an internal energy efficiency fund in large energy users.

Standards for new or expanded operations

The most cost-effective point for improving the energy efficiency of a plant or mine is at the point of design and construction. Most European states have mandated efficient design for new or expanded operations. For example, the Swedish 'Energy Management Protocol' requires companies to use energy management processes that include:

- Purchasing procedures, so that when a company purchases equipment that uses more than 30 MWh per annum it automatically selects the most energy efficient model, unless it can be demonstrated that this would not pay back in 3 years relative to a less efficient model.
- Procedures for planning alterations, renovations or building new plant, which must include a whole of plant, systems approach that compares the energy efficiency and lifecycle costs of various options.

The Energy Efficiency Council recommends that new or expanded operations are required to assess and report all opportunities for energy efficiency that have a payback of less than 4 years, in line with the guidelines and assessment protocols set out in the EEO Program.

Metering and monitoring

It's hard to make the case to invest in an upgrade of plant without the data from good metering and monitoring. The EEO program requires companies to have the metering in place to be able to carry out an energy mass balance, but does not specify what this is. As a result, companies are not putting in place effective metering and monitoring equipment because:

- Companies are poorly informed about the value of metering
- Companies do not know what metering systems are ideal for different contexts. For example, different metering systems are required for compressed air and electricity.

The Energy Efficiency Council recommends that the EEO should specify in more detail what metering is required, and provide funding to install metering and monitoring. The Council recommends that the government invest $2 million over 2 years to develop best-practice metering and monitoring guides for the various industry sectors that participate in the EEO. Detailed work is required to develop these guides, with best-practice varying between sectors and energy uses. For example, while ongoing monitoring is good practice for electricity use, periodic monitoring is more appropriate for compressed air.

Best-practice for Small-to-Medium enterprises

Small-to-Medium enterprises should be eligible for incentives through the NES. However, information barriers mean that some form of mechanism is needed to roll out energy efficiency in the SME sector. The Energy Efficiency Council recommends that the Government invest $50 million over 4 years in an "SME Best-Practice Program" that develops and trials methods to encourage energy efficiency in the SME sector.

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6. Policies for Commercial Buildings

This section responds to the following specific questions raised in the Issues Paper

- What further measures could be used to deliver a step change improvement in energy efficiency in your sector?
- What are the ways in which governments can facilitate new investment in energy efficiency?

Commercial buildings are one of the largest sectors of Australia's economy. Even in the absence of climate change, retrofitting existing buildings would drive a "fourth wave" of productivity growth, with businesses channelling billions of dollars from energy waste into production, and workers flourishing in healthier buildings. With the imperative to cut carbon dramatically, energy efficiency in buildings is even more critical:

- McKinsey and Company estimates that energy efficiency in commercial buildings can save $130 per tonne of CO_2^{e-} reduction
- A report for the Australian Sustainable Built Environment Council found that complementing the CPRS with key programs could save $38 billion a year by 2050.

Standards for new buildings are important, but over the next two decades energy savings from existing buildings will dwarf savings from new buildings. A major retrofit program would also create 27,000 green-collar jobs each year over the next ten (*Davis Langdon, 2009).* The Council recommends the following policies:

The NES

The national energy efficiency incentive scheme would provide support for buildings owners to improve the energy efficiency of their stock. The incentive would be predominantly provided upfront, with the remainder paid on verification. The incentive should encourage whole-of-building upgrades.

Access to capital

The government should support innovation in financial instruments to find the most effective model. Governments should provide funding to test a number of models, including revolving funds, Property-Assessed Clean Energy (PACE) Programs and government-securitised loans. The financing mechanisms need to be simple and transparent and designed for building owners without easy access to capital.

Support innovation in technology and practices

While substantial efficiency savings of 20-50 per cent can be delivered using current technologies and practices, to deliver very low-carbon buildings governments will need to support innovation through specific R&D funding for energy efficiency and using innovating technologies when they upgrade their own buildings

Performance Disclosure

The Australian Government has introduced a Bill into Parliament that will require commercial building owners to disclosure the energy efficiency of buildings at the point of lease and sale. The Council supports this policy, but recommends going beyond it by requiring tenants and owners to display NABERS tenancy and base-building ratings in building foyers. The Council recommends that, at a minimum, governments should introduce an ongoing "performance disclosure" scheme into their own operations now and then examine expanding it to private buildings.

Capacity Building

There is a significant need to build capacity in the energy efficiency sector and property sector. The Energy Efficiency Council recommends that the Australian Government invest $10 million over 4 years as part of an Energy Efficiency skills development program across a wide variety of industries. This should not only develop training and accreditation schemes, but also informing building owners and tenants about the opportunities for energy efficiency upgrades, including communicating the value proposition to CFOs and rolling out Green Leases.

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7. Policies for Government Leadership

This section responds to the following specific questions raised in the Issues Paper

- What further measures could be used to deliver a step change improvement in energy efficiency in your sector?

Governments use enormous amounts of energy. The Australian Government used 9 million Gigajoules of energy in 2006-07, equivalent to the energy use of half a million Australians. Electricity and natural gas cost the Australian Government $435 million in 2007–08.

Investing in energy efficiency is simply prudent financial management. With energy efficiency services able to deliver savings of over 30 per cent, the Government could save at least $130 million per annum. The Auditor-General's own conservative assessment found potential savings of $75 million each year.

Energy efficiency in Government has an impact on the entire sector. Governments in Australia occupy 32 per cent of the commercial office market, and as a highly sought-after tenants they have an even greater impact on the property market than their size alone would suggest. The ability of governments to make bulk purchases also means that they can bring down the cost of energy efficiency products for both agencies and the wider community, transforming the market for energy efficiency services and products.

Based on global and Australian experience, policies to upgrade the energy efficiency of government operations must incorporate the following four key policies:

- **Commit to a clear funding path** for energy efficiency, such as internal loan schemes or third-party finance. In general governments should provide access to capital equivalent to 25 per cent of their annual gas and electricity bill each year over 5 years. For example, if a government had an annual energy bill of $100 million they should provide access to at least $25 million of finance per annum over five years, on top of any loan repayments if a rolling fund is used. As it will take a year or more for some agencies to be in a position to seek finance, funds allocated in early years should be quarantined for later use.
- **Mandate agencies to upgrade the energy efficiency** of their top energy using sites by 2012, accounting for 30 percent of their energy use, and by 2020 cover off on their remaining major sites, to cover 80 per cent of agency energy use.
- **Appoint one agency to lead on energy efficiency** in each government and provide them with the resources to assist agencies to implement energy efficiency.
- **All agencies to publicly report their progress** on an annual basis, and publicly disclose NABERS tenancy ratings for all owned or leased offices over 1000m^2

The Council has also developed a more detailed set of recommendations based on the extensive work on energy efficiency by its members around the world. These include:

- Favour mechanisms and service providers that provide the Government with a level of assurance about delivered energy savings. The type of service that is appropriate for specific sites will vary. Energy efficiency retrofits will be appropriate for some sites and Energy Performance Contracts for others. However, all services should include an appropriate level of monitoring and verification.
- Mandate that energy efficiency opportunities identified in facility assessments must be implemented if they have an internal rate of return of 12 per cent or more, as recommended in New South Wales. In the US most governments support projects with payback periods of up to 15 years.
- Enforce the existing target to only lease space with a NABERS rating of 4.5 or above, working with landlords to deliver upgrades. ANAO estimates that 85 per cent of Australian Government sites are leased tenancies. The Australian Government should raise its target NABERS rating to 5, given that its aim is to lead the sector.
- Apply the Energy Efficiency Opportunities framework to Government agencies that are large energy consumers, as recommended by the Wilkins' Review. Agency participation thresholds should be no greater that 0.1 Petajoules.

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- Place a priority on implementing energy efficiency programs in the departments with the largest energy use, such as Defence.
- Establish direct funding for agency sub-metering and related energy management information systems based on up to 2% of base year energy spend in line with best practice in the private sector.
- Include best-practice energy efficient procurement policy
- Include global best-practice demonstration projects in energy efficiency and distributed generation, particularly cogeneration and trigeneration.

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8. Cogeneration

This section responds to the following specific questions raised in the Issues Paper

- Are there barriers to distributed generation as a method of improving energy efficiency?

There are a wide range of barriers to cogeneration and trigeneration (termed 'cogeneration in this submission). These arise largely from the manner in which gas and electricity markets are designed and regulated. The Energy Efficiency Council recommends tacking the following priority barriers.

Grid connection

Connecting a cogeneration unit to the grid can be a drawn out and uncertain process, with electricity distributors having broad discretion over the cost and time for connection studies and the subsequent recommended cost for connecting to the grid. While fault levels on a network are a very real issue that need to be addressed, the uncertainty and arbitrariness of the process has prevented numerous cogeneration projects.

The Council recommends new standard grid connection rules, including a maximum of three months for a connection study and a model for determining the cost of connection studies. Distributors should also be funded to carry out pre-emptive analysis of the costs and benefits of cogeneration connection at various points in the grid, particularly CBDs. This would create a detailed annual statement of distributed generation opportunities.

In addition to determining the cost of connection, these studies should determine the network benefits from cogeneration, including reduced requirements to expand the electricity network. Cogenerators should receive payments for these benefits either directly and/or through a feed-in tariff or similar.

Enforcement of these rules is critical, particularly as a connection agreement is generally site specific which means that the 'standard rules' will need to be quite broad. The Council recommends creating the equivalent of a distributed generation ombudsman office in the Australian Energy Regulator. The ombudsman would also determine and enforce rules about who pays those costs of any upgrades to the grid. Currently, the rules about who pays for network upgrades in the case of new distributed generation are extremely inequitable, disadvantaging the last person to connect before upgrades are required. In contrast, with new demand loads the cost of upgrades are frequently smeared across all energy users.

Energy retail and distribution

The benefits of cogeneration come from being able to provide both energy services (heat and cooling) and electricity. However, a number of systems currently impede cogeneration owners from being able to capture these benefits. These include:

- Rules preventing cogenerators from using the distribution network to move energy between sites (e.g. two council offices) at a cost that reflects the actual cost of using the network to move energy such short distances.
- 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. However, this issue could be addressed in many sites if cogenerators were able to retail offsite.

The Council recommends that

- Rules be amended 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.

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- Rules be amended to allow cogenerators to sell directly to tenants at a site as regulated monopolies

Gas infrastructure

Gas infrastructure in some locations are inadequate to support cogeneration. If a proponent wants to develop a project they are often required to both pay for the full cost of augmentating 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.

The simplest way to address this barrier would be to use the Future Fund to invest in the expansion of the 'backbone' gas supply network and create clear rules about who pays for minor expansion of the gas network

In addition, in some regions gas supplies have been largely purchased by a single company, which can exclude third parties from accessing gas supply. The Council recommends that the Government commission a national study into competition and accessibility in gas supply.

A feed-in tariff for 3,000 MW of cogeneration

The Energy Efficiency Council recommends addressing the main barriers to cogeneration directly, as proposed in the previous three sections. 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 grid-stabilisation of the grid as more intermittent supply comes on board. The Council recommends that the Australian government provide an incentive for the first 3,000 MW of cogeneration in Australia. 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 incerases 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 feed-in tariff or similar could be used to reward cogeneration providers for the network benefits that they provide to the electricity network.

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