Ms Tania Constable
Department of Resources, Energy and Tourism
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29 May 2009

Dear Ms Constable

The Energy Efficiency Council welcomes the opportunity to provide a submission on the Energy White Paper.

As the peak body for companies that deliver cutting-edge energy efficiency services in the non-residential sectors, the Energy Efficiency Council has extensive on-ground expertise in the commercial reality of technology and policy relating to greenhouse emissions and energy generation, distribution and use.

The Energy White Paper should set out a vision for Australia's energy future, and the reforms that will be needed to deliver this future. As noted in the Strategic Directions Paper, radical change will be required for Australia to meet its goal of reducing greenhouse emissions by 60 per cent by 2050 while ensuring that energy is secure, reliable and affordable.

Achieving these goals will require a step-change in Australian markets for energy efficiency and distributed generation. However, the discussion papers only briefly cover these issues, and the implications of energy efficiency and distributed generation are not consistently integrated throughout the discussion papers. As a result, the discussion papers do not explore the range of issues that need to be considered for Australia's energy future.

The Energy Efficiency Council looks forward to a visionary White Paper that integrates energy efficiency and distributed generation into its analysis, and recommends that:

- The White Paper incorporate major improvements in energy efficiency into its projections for future energy demand, and specifically include a scenario where energy demand growth over the next 20 years is offset by increased energy efficiency.
- The White Paper canvass some of the market barriers to demand-side participation.
- A demand-management scheme be established in the short to medium-term, while the National Electricity Market is reformed to enable effective demand-side participation.
- The White Paper discuss the need for policies to achieve the significant potential for energy efficiency in sectors such as commercial buildings and industry.

Please do not hesitate to contact me on 03 8807 4650 should you require further information on any of the issues raised in this submission.

Yours sincerely

Rob Murray-Leach
Chief Executive Officer

The Energy Efficiency Council

The Energy Efficiency Council is the Peak Body for companies that deliver non-residential energy management. The Council aims to expand the market for energy efficiency products and services and ensure that energy efficiency is implemented with excellence and accountability. The Energy Efficiency Council was formed in 2009, incorporating the members of the Australasian Energy Performance Contracting Alliance.

Overview

The Energy White Paper should set out a vision for Australia's energy future. Australia's energy system must be able to respond to three major pressures:

- Mitigating greenhouse gas emissions
- Improved energy security
- Energy affordability.

Responding to these challenges will require a significant increase in energy efficiency and distributed generation. Energy efficiency should be central to the Energy White Paper, as it can deliver much of the four goals set out in the Energy White Paper:

Cleaner Energy	Energy efficiency will be essential to meet aggressive emission reduction targets. The Stern Review notes that energy efficiency represents the most cost-effective and largest source of emissions abatement, and the International Energy Agency suggests that 54 per cent of emission reductions in 450 ppm policy scenarios could come from energy efficiency.
Adequate Energy	California has long recognised that energy efficiency is the 'first form of energy supply'. Energy efficiency could offset all of the growth in Australia's domestic energy demand over the next 20 years.
Reliable Energy	Energy efficiency can improve energy reliability by reducing peak loads and strains on transmission and distribution networks.
Affordable Energy	Energy efficiency can improve affordability in three key ways: - Reduce peak demand and the need to expand network infrastructure - Reduce the need for investment in immature generation technologies - Reduce the quantity of energy needed to deliver a service, improving the affordability of services such as heating and cooling. For every dollar spent on energy in most commercial buildings, well over 30 cents are wasted.

Currently, the discussion papers are framed from the perspective of centralised energy supply. Energy efficiency and distributed generation are given limited coverage. Even those energy efficiency issues that have been discussed are applied inconsistently, with statements throughout the white paper that treat significant domestic energy demand growth as inevitable.

The White Paper will need to explore the full potential for energy efficiency to meet its Terms of Reference and the key principals set out in the Strategic Directions Paper:

1. Economic development is sustainable and efficient

   Energy efficiency is critical for reducing the cost and environmental impact of energy use

2. Effective operation of competitive energy markets is promoted

   Energy markets do not currently allow demand and supply side options to compete.

3. The need and scope for government intervention on the basis of market failure is identified

   The market and regulatory failures that impede energy efficiency are well established

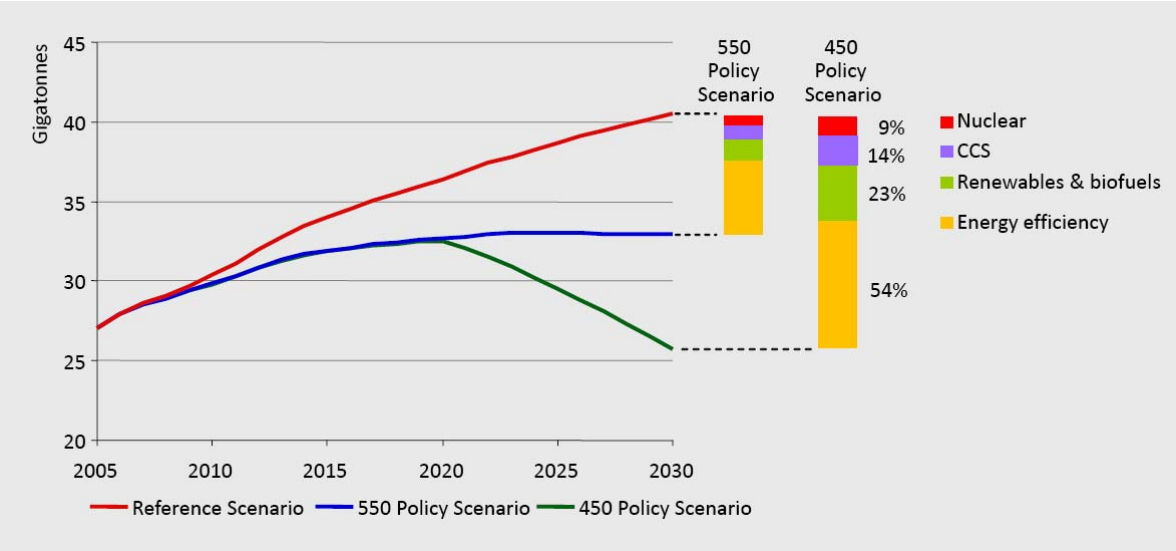
4. International and national interests and obligations are met

   Energy efficiency is essential to meet proposed international climate change obligations

The Council is surprised to note that there is no energy efficiency organisation on the Consultative Committee, and looks forward to more proactive engagement from the Australian Government.

The need for action on climate change

The Energy White Paper should discuss the technical options that could deliver greenhouse gas abatement. The International Energy Agency (IEA) estimates that energy efficiency could deliver around 54 per cent of global emission reductions in 450 ppm policy scenarios. The IEA modelling incorporated a range of technological issues, as opposed to the Treasury modelling, which assumes a low autonomous rate of energy efficiency improvement in most sectors.



Source: IEA World Energy Outlook 2008

The potential for energy efficiency

A key assumption underlying the discussion papers is the continued rapid growth in Australia's primary energy consumption, "projected to increase by 1.6 per cent per year, or 46 per cent [by 2030], under a static ('business as usual') policy scenario.[1]" However, with the right policy frameworks it is possible to offset all of the growth in energy demand over the next 20 years through energy efficiency.

The Australian Government has committed to put Australia at the *'forefront of the Organisation for Economic Cooperation and Development energy efficiency improvement.'* Based on recent commitments in Europe, putting Australia at the forefront of the OECD would translate into a minimum target to reduce total energy demand by 20 per cent below business as usual by 2020. The Energy Efficiency Council urges that the White Paper consider scenarios in which energy efficiency reduces the need for investment in energy supply and network expansion.

There are potential end-use efficiencies across the economy, but they are largest and cheapest in commercial buildings and industrial energy efficiency, rather than housing and small businesses. Australia's top 215 energy users, largely in manufacturing and mining, spend over $25 billion on energy per year, around 65 per cent of all business energy use. With carbon pricing, many sites will have the potential to cost-effectively cut their energy demand by 20 per cent or more.

The Centre for International Economics (CIE) has identified the potential for energy efficiency to reduce emissions from commercial buildings by 30-35 per cent by 2050 whilst accommodating growth in the overall number of buildings[2]. CIE further estimated that GDP in 2050 was is nearly 2 per cent higher, roughly equivalent to $38 billion per annum, in scenarios with significant improvements in building energy efficiency compared to base case scenarios.

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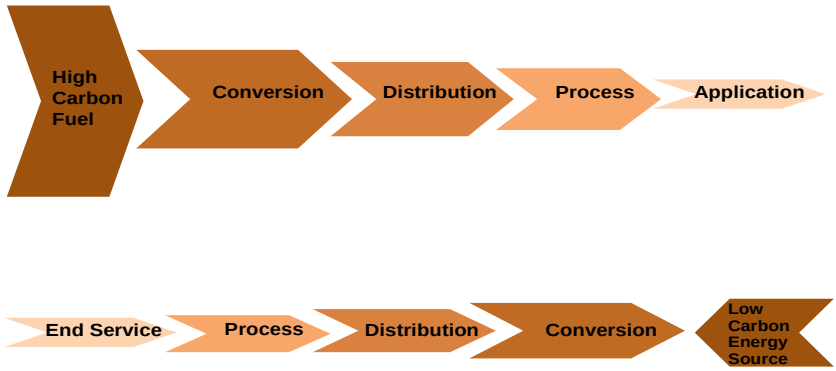
[1] DRET 2009 '*Energy White Paper Discussion Paper: Investment, Competitive Markets and Structural Reform,* p16

[2] Centre for International Economics 2008 *Capitalising on the building sector's potential to lessen the costs of a broad based GHG emissions cut, CIE, Sydney.*

Major improvements in end-use energy efficiency can be complemented by savings throughout the energy supply chain. An 'energy services' perspective can highlight these potential efficiencies. Consumers and businesses demand a range of services, like heating, lighting and hot water. These services can be delivered in a number of ways, not just centralised energy supply.

For example, an electric storage water heater potentially uses less than 10 per cent of the energy in the supply chain to deliver the end service:

- Energy and methane are lost in mining and transporting coal.
- Around 65 per cent of the energy in coal is lost in generation as low grade heat
- Around 5 to 7 per cent of energy is lost in transmission and distribution
- Further energy is lost from the hot water storage unit.



In contrast, a combination of distributed generation and efficient processes could heat domestic water to 40^{o}C extremely efficiently.

Tapping into the full potential for energy efficiency will require a combination of addressing market failures and reforming energy markets in Australia to support distributed generation and effective demand-side participation.

Optimising markets: short and long-term measures

The Discussion paper on 'Investment, Competitive Markets and Structural Reform' states that Australian 'energy markets generally deliver energy at least cost' (p15). However, this is not correct:

- Opportunities are missed to lower the cost of energy supply by using energy efficiency to offset the need to expand network infrastructure and peak-load generation.
- The cost of using energy includes the efficiency of end-use. An energy market that results in the delivery of low-cost energy but does not result in efficient energy use is not delivering least cost outcomes.

The Energy Efficiency Council welcomes the 'Investment, Competitive Markets and Structural Reform' discussion paper recognising the potential for demand-side participation in the electricity and gas markets. A variety of parties can potentially take place in demand-side measures, including end-users, retailers, network distributors and other private companies.

Demand-side measures can significantly reduce the need for network infrastructure expansion. Distribution and transmission charges amount to around 50 per cent of the cost of retail energy, and with recent commitments for $18 billion in network infrastructure in New South Wales alone the scale of potential benefits is enormous.

The Energy Efficiency Council strongly believes that the current market rules do not foster effective demand-side participation. Network infrastructure is provided by regulated monopolies, and regulations do not enable network service providers or other parties to capture the full benefits of demand-side measures. While there are measures in place in New South Wales to foster demand-side involvement, these foster only a fraction of the potential for demand-side participation (Dunstan et al 2008). Improving the information to demand-side participants through mechanisms such as

intelligent grid technologies, so that they have the same quality of information as the supply side, will be critical.

Reform of the National Electricity Market is the ideal solution, but could take well over a decade. Investigations into demand-side participation have been going for several years and have delivered limited results to date. The Energy Efficiency Council strongly recommends the development of a Demand-Side Scheme to fund energy efficiency and distributed generation projects that offset investment in the electricity transmission grid. The scheme would operate in the short- and medium-term, until substantial reform of the national electricity market is complete.

Market Failures

Dedicated programs are essential to overcome the complex barriers to energy efficiency. This will drive a surge in employment and Australia's competitiveness. The Energy Efficiency Council supports the introduction of a Carbon Pollution Reduction Scheme (CPRS), but a carbon price alone will not unleash the huge potential for energy efficiency in Australia. The failure to internalise the cost of carbon in the cost of energy is only one of the barriers to energy efficiency. In fact, there is a large unrealised potential for energy efficiency that is already cost-effective, even in the absence of a carbon price.

There are a range of other market failures that impede the uptake of energy efficiency. These market failures have been established through extensive studies and are well accepted by experts.

Further detail on these market failures can be found in the Garnaut Review and the sources listed in the references on page 8. The following list of market failures affecting energy efficiency is not exhaustive:

Externalities	In addition to the carbon externality, energy efficiency has spillover benefits such as reduced network infrastructure costs
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, spillovers and 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

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.

The Garnaut Climate Change Review highlights that the energy services sector plays a critical role in tackling many of the barriers to energy efficiency in the building sector (Garnaut 2008:411). Energy service companies are one of the most cost-effective routes to deliver emissions savings, as they use economies of scale in information to deliver reductions in energy use to a wide range of clients.

Energy efficiency programs must focus on the largest and cheapest opportunities in large companies and commercial buildings. The diversity of small to medium enterprises means that savings are smaller and harder to secure in this sector. Key programs include:

Industry

- Expanding the Energy Efficiency Opportunities program to all companies using over 0.1 Petajoules, and eliminating overlapping State-based programs
- Making free CPRS permits for Energy Intensive Trade Exposed (EITE) companies conditional on improvements in energy efficiency
- Incentives for non-EITE companies to invest in energy efficiency

Commercial Buildings

- Comprehensive building retrofit programs
- Incentives for building owners to invest in energy efficiency
- Annual mandatory disclosure of building performance through display certificates
- Minimum Performance Standards for buildings and equipment

Technology development and deployment

Achieving Australia's energy efficiency potential will require R&D support and different types of demand-pull support for innovative and established technologies.

Some forms of energy efficiency research are strategically relevant for Australia. There are a number of technologies which meet the Cutler Review's criteria. Examples include energy efficiency relating to processes that are critical in major Australian industries and technologies that relate to building heating, cooling and ventilation.

As noted on page 28 of the discussion paper on 'Maximising the Value of Technology in the Energy Sector', only 3.6 per cent of national energy R&D spending is directed to energy conservation and efficiency research. This is in stark contrast to the potential for energy efficiency to deliver major emission reductions and cost-savings to the economy.

Support for energy efficiency research and development needs to extend beyond the laboratory, with much energy efficiency research taking place within buildings and industrial projects. The line between demonstration, commercialisation and adoption of some energy efficiency research is blurred. Gann et al. (1998) identify four types of overlapping innovation in buildings alone, including:

- Developing new technologies
- Developing new ways to install technologies
- Optimising the in-situ performance of technologies
- Integrating technologies to optimise the overall performance of a building

As a result, even with globally established energy efficiency technologies there can be significant early mover spillovers and cost reduction and learning curves. These spillovers are particularly strong in energy efficiency, where companies that deliver energy efficiency at one building or site then apply their experiences to multiple firms.

Programs to support energy efficiency innovation need to designed to recognize the specifics of innovation in energy efficiency. Key programs should include:

- Specific funding support for building and industrial projects that advance energy efficiency technology and practices
- Tax breaks to encourage the initial deployment of novel technologies

However, the most critical driver for energy efficiency technologies are policies that support demand-pull, specifically a demand-management scheme and policies to address market failures that impede cost-effective energy efficiency.

References and further reading

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