Climate Action Network Australia Submission to
Productivity Commission Review of Energy Efficiency

Climate Action Network Australia (CANA) is an alliance of over 30 regional, state and national environmental, health, community development, and research groups from throughout Australia. CANA was formed in 1998 to be the Australian branch of the global CAN network, with representative groups in over 70 nations

Energy Efficiency and Australia's International Climate Change Obligations

For governments in the 21st Century the main reason to aggressively introduce energy efficiency and energy demand management policies is related to the immediate problem of global warming, and the longer term issues of oil and gas resource depletion around 2030 – 2050.

The UN's Climate Convention, which has been signed but not ratified by the Australian Government, commits governments to avoiding "dangerous" levels of climate change and to stabilising the climate in a time frame that allows natural systems to adapt, food production not to be threatened and for economic development to proceed in a sustainable manner.[1] In 1997, world leaders agreed to the Kyoto Protocol which sets legally binding targets or limits on greenhouse gas pollution for industrialised nations. It is acknowledged that the targets set in Kyoto will not meet the objective of the convention but Kyoto is the first step along this pathway. International talks on developing new commitments for the period after 2012 are set to start within the next 12 months.[2]

In order for Australia to meet our international obligations, to help ensure a safe and healthy environment and vibrant economy for our children and ourselves, as part of a package of policies and measures the Federal Government must:

1. Set a national target to reduce greenhouse emissions by at least 60% below 1990 levels by 2050.

a. To establish real progress towards the long-term target, set a 20% reduction target by 2020.
b. Acknowledge that average temperature increases of 2°C above pre-industrial levels would have severe impacts on Australia such as catastrophic impacts on the Great Barrier Reef, and join the EU in committing to ensuring that global temperatures do not exceed this level.

Setting Long and Short Term Emission Reduction targets is in Australia's National Interest

Stabilising the climate is in Australia's national interest:
Australia is highly vulnerable to climate change.[3] Recent droughts and decreases in rainfall from south-western to south-eastern Australia illustrate the enormous social and economic cost to the nation of failing to tackle climate change. The cities of Perth, Adelaide, Melbourne and Sydney are all suffering water restrictions and our farmers are increasingly suffering crippling droughts. As climate change continues, these trends are expected to continue and worsen.[4]

A 2°C increase in global average temperatures above pre-industrial levels must be avoided:
Many scientists[5], the European Union[6], the international environment community[7] and more recently even industrialists such as Lord John Brown, Group Executive of BP[8] advocate that global temperature increases above 2°C are too dangerous to contemplate. Scientific studies have

projected that allowing global temperatures to increase above 2°C could have the following consequences:

- The Great Barrier Reef: Catastrophic damage with around 90% of the Great Barrier Reef bleaching every second year.[9] One estimate suggests that by 2020 the total estimated loss to local Queensland communities due to damage to the Great Barrier Reef ranges from $3.5 to $8 billion.[10]

- Terrestrial Ecosystems: In Northern Australia's Wet Tropics rainforests catastrophic regional extinctions with all 65 regionally unique vertebrates projected to lose up to 90% of their core environment.[11] In regions that cover some 20% of the Earth's land mass some 35% of species would need to shift beyond their current climatic ranges, or adapt to new climates. Those that failed would become extinct.[12] All of Kakadu's fresh water wetlands could be lost.[13]

- Global Impacts: Close to 2.4-3.1 billion additional people could be at risk from water shortages with a warming of around 2.5°C and 3.1-3.5 billion additional persons at risk at 2.5-3°C warming. With a 3°C warming, 3.3-5.5 billion people may be living in places experiencing large crop losses.[14]

Major reductions in greenhouse pollution are required in the short and long-term if we are to stabilise the climate:
To avoid an increase in temperature of 2°C industrialised countries need to reduce greenhouse emissions by 60-80% by 2050.[15] By 2020 industrialised nations need to have reduced their emissions by more than 20%.[16] In response to a UK Royal Commission report on climate change and energy the Prime Minister Tony Blair pledged the UK Government to cut its emissions of carbon dioxide, the main greenhouse gas, by 60% by 2050, France and the EU is committed to a 75% reduction by 2050 and the German Government has signaled it will commit to reduce its emissions by 40% by 2020 if the EU commits to a 35% reduction over the same period.

Starting now and setting targets creates certainty for business and helps avoid costly and disruptive action:[17]
A commitment to set a national target and roadmap would stimulate real action now and avoid more dramatic, disruptive and expensive changes later on. It would place Australia in an ideal position to capitalise on being among the leaders in developing a low emissions economy. Setting short and long-term targets will provide an overall framework within which early, well-planned action can take place. It allows industry and the economy as a whole (including the jobs and skills base) to adjust within a reasonable timeframe. It allows industry to plan with certainty and in the course of normal capital replacement cycles. It helps avoid the risk of having large assets stranded by unplanned, ad hoc or "emergency" government responses. It will encourage new technologies, industries and innovators to come forward to meet the challenge we face as a nation.

Strong emission reduction targets are both necessary and achievable:
Establishing targets requires political vision and leadership. And to be meaningful they need to be backed up by mandatory policy measures to ensure they are achieved. Action to achieve them needs to start now. Such leadership is being shown in other parts of the world. In the UK, scientists warned the government in 2000 that: "*The challenge climate change poses for the world is so fundamental however that a complete transformation in the UK's use of energy will be an essential part of an effective global response.*"[18] In response to this the UK government produced an Energy White Paper that sets out how the nation will achieve its national target of a 60% reduction in greenhouse pollution by 2050 with little impact on the economy.[19] In Australia, the Clean Energy Future for Australia report concluded that:[20] "*The barrier to …* [a 50% reduction

in carbon dioxide emissions from the stationary energy sector by 2040] *is not that the clean technologies cannot produce enough energy at relatively affordable prices, nor is it that the cleaner fuels are not available. The barrier is a lack of achievable policies and strategies for facilitating the transition to new fuels and commitment by decision-makers."*

Energy Efficiency has a Key Role to Play in Meeting Strong Emission Reduction Targets:
Australia has adopted a short-term target of modest real emission increases by 2008-12 over 1990 levels equivalent to that agreed in the Kyoto Protocol. It has also acknowledged the need for major global emissions reductions of the order of 50-60% by 2050.[21] The generous land clearing deal Australia demanded at Kyoto means that we are within striking distance of our 108% Kyoto target despite projected emissions from the energy sector being some 40% over 1990 levels. Beyond Kyoto, however, most emission reductions will have to come from reduced emissions from fossil fuel use. The stationary energy sector is responsible for around 50% of total emissions and will therefore have the major role to play. Energy efficiency has a key role to play in reducing emissions from the energy sector. Some strictly indicative estimates show how challenging it is to meet strong targets without strong energy efficiency measures. For example, if energy efficiency policy programs managed to keep energy consumption at 2004 levels by 2020, then achieving a 20% by 2020 target for the electricity sector would require major changes in how we produce energy. For the electricity sector, the approximate scale of change required is to a generation mix of 40% coal (from its present level of around 85%), 30% gas (currently around 7%) and 30% renewable energy (currently around 8%).

Cost of Climate Change

Energy efficiency by definition results in the decrease of greenhouse gases produced whilst similar or improved energy outcomes are gained. Therefore when assessing the cost of energy efficiency uptake, this should be considered in relation to the cost of climate change impacts and the mitigation of these costs through reduced emission of greenhouse gases.

The insurance and re-insurance industries have begun annual reporting of the increased cost of natural disasters, which can be taken as an indication of the cost of climate change on private property, community health, public services and infrastructure. Similarly state and national emergency and health services can provide useful data on the costs of responding to natural disasters. The proportion of future costs that can be mitigated by the uptake of energy efficiency is debatable and there is insufficient analysis to declare with any certainty, however this should not prevent the costs of climate change being included in a cost-benefit assessment of energy efficiency.

The Challenges to Energy Efficiency

The barriers to energy efficiency are now well understood and documented. These barriers are a result of organisational and societal behaviour, economic and regulatory disincentives as well as inadequate information. These barriers are perpetuated by a lack of expertise and existence of a self-sustaining energy efficiency industry within Australia, a taxation system which provides a disincentive to energy efficiency and information asymmetry which ensures energy users are unlikely to invest in profitable energy efficiency and engage in socially optimal energy conservation.

CANA believes that market based mechanisms cannot address these barriers alone as market failure has been a key contributor to the lack of progress on energy efficiency. For example. energy consumption produces negative externalities - pollution inflicted on society and the environment - which is not reflected in the price of energy. Energy efficiency therefore produces

positive externalities, by reducing greenhouse emissions. These externalities distort the real price for electricity – and benefit of energy efficiency – which along with tariff structures which encourage consumption (such as flat rate service charges) contribute to impeding energy efficiency.

These barriers ensure that the current levels of investment in energy efficiency remain sub-optimal and CANA believes this requires a new and comprehensive approach to achieving the full benefits of energy efficiency.

The Need for a Comprehensive National Framework on Energy Efficiency

CANA acknowledges the need for a comprehensive policy package to ensure the potential economic, social and environmental benefits of energy efficiency are captured. CANA notes the package of nine energy efficiency policy measures which have been endorsed by the Ministerial Council on Energy as part of the National Framework on Energy Efficiency process and CANA:

- Supports the packages as being a significant positive step towards overcoming the barriers to energy efficiency and unlocking the potential benefits.
- Urges the MCE to engage the jurisdictions to prioritise the roll out of this first stage, with a view to having made significant progress at the end of twelve months and to having the second tranche of policy measures agreed to and commenced by the end of three years.
- Supports ongoing participation in the implementation and development of the National Framework on Energy Efficiency from the community, with adequate resources.
- Seeks clarification from the MCE of the ongoing role of the community and environment NGOs in the roll out of the first stage.

More than just Energy Efficiency

While CANA understands that the focus of the inquiry is energy efficiency, we believe that it can be very difficult to talk about efficiency in isolation from demand management and conservation. Where it is appropriate, energy conservation and demand management will be referred to in our submission.

Demand management	A general term for strategies that result in more efficient use of resources
Energy conservation	Giving up something of value in order to save energy
Energy efficiency	Achieving the same or greater output or outcome, using less energy

CANA is concerned that the Productivity Commission does not address the potential benefits of energy conservation. We contend that forgoing the use of energy can be the best approach in some circumstances and that there are clear economic benefits as a result. For example, given that the growth in air conditioning is driving an increase in supply for economically inefficient peak power, switching off air conditioning that is not required returns economic value to the whole community.

Role of Energy Efficiency in Responding to Peak Demand

CANA notes that the increased use of air conditioning in the commercial and residential sectors is shifting peaking profiles in many states in the National Electricity Market from winter peaking to summer.

CANA recognises that the lack of time of use tariffs for most customers masks the real cost of electricity during peak times. Therefore any analysis of the economic potential of peak energy efficiency measures which are based on pay back periods will significantly underestimate the potential. Such analysis needs to take into account the costs to the whole community through higher prices for electricity for low peak customers as well as the costs of electricity network augmentation.

CANA supports the use of energy efficiency measures in their broadest sense and other demand management approaches as a primary means of reducing peak demand, as opposed to supply side solutions. This would include:

- Regulating the capacity of domestic air conditioners
- Installation of remote control technology to enable customers to be switched off for a short period of time each hour at peak times
- Programs to encourage the increased take up of passive cooling measures such as efficient building design and retrofits
- Increasing the efficiency of air conditioning systems through Minimum Energy Performance measures
- Interval metering with time of use tariffs
- Programs which retrofit existing air conditioning units to increase their efficiency.

CANA supports the principle of large energy users being required to drop load or load shift during peak times to reduce pressure on the grid. CANA is however concerned that contracts which provide for lower energy prices as a means of getting the support of businesses could have an overall negative impact on energy efficiency. Providing support for increasing energy efficiency as opposed to reducing energy prices would be the better policy option.

Retail Sector

The transformation of the electricity sector away from vertically integrated state owned utilities towards market-based competition has created energy retailers as profit-maximising energy sales agents who see improved energy efficiency as a competitor rather than a business opportunity. Far greater attention has to be paid to retail market design and demand-side decision-making. Specific energy efficiency, as well as wider sustainability related, objectives need to be built into the processes of the new Australian Energy Regulator (AER) and Australian Energy Market Commission (AEMC).[22] In particular, the role of retailers in the restructured energy industries should be re-specified as energy service providers.

Accredited Training

Through the members of our organisations anecdotal evidence of the barriers include lack of skilled tradespeople to install energy efficient mechanisms (including alternative energy and energy conservation) in the residential sector. Both appliance sales-people and tradespeople are key influencers on the homeowners decision to purchase and install energy efficient (or inefficient) technology, however lack of knowledge of energy efficiency options is a barrier to wider uptake of these technologies.

The 'GreenPlumbers' scheme is an ideal model to expand and replicate, as it provides a comprehensive service including:

- Accredited training for tradespeople in energy efficiency and more recently water efficiency,

- Public information accessibly via the internet,
- Auditing service for residential sector
- 'GreenPlumber' directory

CANA recommends a voluntary training scheme be established for registered tradespeople in electrical and plumbing trades, marketing services for residential and commercial sector. In addition, each major electrical retailer should be encouraged to have at least one salesperson complete accredited training on energy efficiency technology and be available to provide customers with quality information on energy efficiency benefits and options.

These programs should be reviewed to assess their effectiveness and consideration to creation of mandatory schemes be made.

Levies and Taxes

CANA supports the principle of using levies and/or taxes on fossil fuel generated energy to:

- Encourage a culture discouraging wasteful use of polluting energy forms
- Provide funds for reinvestment into demand management, through the creation of demand management funds.
- Ensure that the cost of pollution as a result of energy generation is reflected in the cost of electricity

In supporting levies or taxes, CANA notes the need to ensure social equity by enabling low-income consumers to be protected from the impact of higher electricity prices on their bills.

More than just Cost Reflective Pricing

CANA expresses concern that the view put forward in the Issues Paper that "other things being equal, an increase in the price of energy can be expected to lead to a decrease in consumption, particularly over the medium to long term" is too simplistic.

This is because it:

- Doesn't address the difference in price elasticity per customer class. For instance, households with higher levels of discretionary income may simply absorb a price increase.
- Doesn't take into account the barriers to demand management that need to be overcome to avoid paying higher prices. For instance, a business may not be able to afford the upfront costs of replacing a major energy-using piece of equipment.
- Doesn't take into account tariff structures, where energy consumed is only one part of a bill. Currently low consuming energy users are disadvantaged in the market place by high set charges which are not based on consumption levels, such as service to property charges.
- Doesn't take into account issues of social equity. Low-income households are typically locked into energy inefficient housing with limited control over their major appliances. They frequently respond to price by rationing of energy usage, leading to loss of lifestyle and poor health.

CANA supports increasing the cost of energy by reasonable and fair amounts, when the additional revenue raised is directed to demand management, energy efficiency programs and to socially beneficial programs to reduce the costs of energy for low income and disadvantaged households.

CANA calls for a review of tariff structures to identify and eradicate in-built biases towards higher consumption, such as declining block tariffs as usages increases and high set service to property charges.

Time Of Day Pricing

CANA is concerned with social inequality and infrastructure requirements resulting from the shift from winter peak to summer peak demand, primarily as a result of air conditioning. Time Of Day pricing is recognised as a mechanism to correct these distortions, ensuring that users that operate energy intensive appliances at peak times are responsible for funding the infrastructure upgrades to meet the growing peak demand. It is recognised that focusing on peak demand reductions will have minimal effect on net greenhouse gas reductions, however given that it is detracting from implementing tougher more robust demand management measures, that will result in significant energy savings the issue should be addressed.

Distinctions need to made about whether pricing will increase just at peak times (several days) or accompany an entire season (several months). Time Of Day pricing reduces market distortions by removing information asymmetries enabling users to make informed decisions on the true costs of their actions. Pricing as an action alone has limitations and Time Of Day pricing could further disadvantage low income customers. Therefore Time Of Day pricing should be incorporated as part of a package that encompasses information campaigns and mandatory building and appliance standards, and programs to increase energy efficiency for disadvantaged customers.

The success of Time Of Day requires:

- A large roll out of metering technology to make it economically feasible
- Meters which enable householders and businesses to obtain information in a straightforward manner.
- Mandate time of use tariffs with appropriate information available to the end-user
- Social obligations must be put in place to ensure people who need to use lots of peak electricity due to health or who have low incomes are not disadvantaged
- Remote control technology that enables loads to be reduced at high peak times
- Incentives in place for customers to allow their appliances to be controlled externally.

Cost Reflective Pricing:

It is recognised that the current tariff system shows extreme distortion of cost to the end-user. The true costs of electricity are essentially invisible and this lack of information offers no incentive to implement demand side management or energy efficient processes. The tariff system is in need of reform to reflect the true costs of infrastructure and externalities, such as climate change.

Cost reflective pricing (CRP) and location reflective pricing (LRP) fit in with the dominant paradigm of reform and removing market distortions. The effectiveness of CRP and LRP depend heavily on the larger policy framework that accompanies it, as there are limitations to what pricing alone can achieve (stated under TOD pricing).

However CRP could be an effective tool if:

1. Lower income customers receive support to identify and implement energy efficient actions
2. Tougher and smarter mandatory building and appliance standards are in place
3. Support is given to educate and implement energy efficiency actions in all sectors

4. It is inclusive of externalities resulting from electricity generation, transmission, distribution and u

Benefits arising from CRP/LRP if implemented correctly, would improve reliability to the rural sector through local generators becoming more cost effective options. Cost of electricity to urban areas could be reduced. To ensure that a rebound effect doesn't occur, a scheme could be put in place whereby savings are invested into a demand management fund to further support local generation and energy efficiency as well as support for low income customers.

This would improve the market for distributed/off-grid options either by energy service companies, or consumers and relieve strain on the grid system, offsetting new infrastructure while pumping energy back to the grid at the edges – where its most needed, simultaneously boosting emerging industries.

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[1] UN Framework Convention on Climate Change, Article 2, 1992.

[2] The Kyoto Protocol calls for starting new talks on next steps to take place by 2005. See Article 9.2; Article 3.9

[3] Pittock P, Wratt D, Basher R, et al. (2001), **Australia and New Zealand**. in McCarthy JJ, Canziani OF, Leary NA, et al. (eds) *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Cambridge University Press, UK. (http://www.grida.no/climate/ipcc_tar/)

[4] Pittock P, Wratt D, Basher R, et al. (2001), op cit.

[5] See following for examples: Hansen J (2003), **Can we defuse the global warming time bomb?.** *naturalScience*, posted Aug. 1, 2003. (http://pubs.giss.nasa.gov/abstracts/2003/Hansen.html); W Hare. Assessment of Knowledge on Impacts of Climate Change – Contribution to the Specification of Art. 2 of the UNFCCC. Special Report prepared for WGBU. Potsdam, Berlin, Germany, 2003. (http://www.wbgu.de/wbgu_sn2003_ex01.pdf); O'Neill BC, Oppenheimer M (2002), **Dangerous Climate Impacts and the Kyoto Protocol**. *Science* 296: 1971-1972.

[6] European Community (1996). Climate Change - Council conclusions 8518/96 (Presse 188-G) 25/26. VI.96.

[7] CAN International (2002), **Preventing Dangerous Climate Change: Position Paper on the Adequacy of Commitments,** released at COP8 New Delhi, India.

[8] Browne J (2004) Beyond Kyoto. Speech to Council on Foreign Relations, New York, 24 June 2004 (http://www.bp.com/genericarticle.do?categoryId=98&contentId=2018970)

[9] Jones RJ (2003), **Managing climate change risks**. Paper prepared for: *OECD Workshop on the Benefits of Climate Policy: Improving Information for Policy Makers*, Working Party on Global and Structural Policies, ENV/EPOC/GSP(2003)22/FINAL, OECD, Paris.

[10] Hoegh-Guldberg O, Hoegh-Guldberg H (2004), **The implications of Climate Change for Australia's Great Barrier Reef: People and Industries at Risk**. WWF Australia, Queensland Tourism Industry Council, Sydney.

[11] Williams SE, Hilbert DW (2004), **Climate Change Threats to the Biological Diversity of Tropical Rainforests in Australia**. in WF Laurance, C Peres (eds) *Emerging Threats to Tropical Forests*, in press.

[12] Thomas CD, Cameron A, Green RE, et al. (2004), **Extinction risk from climate change**. *Nature* 427: 145-148.

[13] Hare W (2003), **Assessment of Knowledge on Impacts of Climate Change – Contribution to the Specification of Art. 2 of the UNFCCC**. Special Report prepared for WGBU. Potsdam, Berlin, Germany (http://www.wbgu.de/wbgu_sn2003_ex01.pdf)

[14] W Hare (2003), op cit.

[15] CAN International (2002), ibid.

[16] German Advisory Council on Global Change (2003) **Climate Protection Strategies for the 21st Century: Kyoto and beyond**. Berlin, Germany. (http://www.wbgu.de)

[17] See: UK Department of Trade and Industry (2003) **Energy White Paper: Our Energy Future – Creating a Low Carbon Economy**. (http://www.dti.gov.uk/energy/whitepaper/index.shtml)

[18] UK Royal Commission on Environmental Pollution (2000). **Royal Commission Calls for Transformation in the UK's use of Energy to Counter Climate Change**. News release, 16 June 2000 (http://www.rcep.org.uk/news/00-2.htm)

[19] See: UK Department of Trade and Industry (2003), ibid.

[20] Saddler H, Diesendorf M, Denniss R (2004), **A Clean Energy Future for Australia**. WWF Australia, Sydney. (http://www.wwf.org.au)

[21] Media Release, Minister for the Environment and Heritage, Senator the Hon. Ian Campbell, 2 September 2004, http://www.deh.gov.au/minister/env/2004/mr02sep204.html

[22] For example, the CoAG NATIONAL FRAMEWORK FOR ELECTRICITY AND GAS DISTRIBUTION AND RETAIL REGULATION: FOREWORD AND ISSUES PAPER released in August 2004, makes no mention of energy efficiency or sustainability at all.