



Energy Efficiency Inquiry
Productivity Commission
LB2 Collins Street East
Melbourne VIC 8003

10 November 2004

Dear Sir/Madam,

Re: Productivity Commission Inquiry into Energy Efficiency Issues Paper.

Please find attached a response to the Issues Paper from the Alternative Technology Association (ATA). ATA is a member of the Climate Action Network Australia (CANA) and also fully supports the submission by CANA to the Productivity Commission.

ATA looks forward to further discussion and consultation.

Yours Sincerely,

Kane Thornton

Energy Policy

Submission to Productivity Commission Inquiry into Energy Efficiency Issues Paper

ATA is a consumer organisation that was established in 1980. It stimulates uptake of sustainable technologies in order to protect our environment. The organisation provides services to over 3000 members who are actively walking the talk in their own homes by using good building design, and installing water conservation and renewable energy. ATA advocates in both government and industry arena for easy access to these technologies as well as continual improvement of the technology, information and products needed to change the way we live.

ATA has delivered extensive public training programs for over 20 years and are currently developing a national training program for the AGO's Your Home Technical Manual. ATA has also delivered a number of projects which involve energy and sustainability audits and assessments at the domestic scale. Cool Communities and Green Home Action projects were funded through Environment Victoria while two Energy Task Force projects in Broadmeadows and Ashwood, Ashburton and Chadstone were funded through collaborations with SEAV and Neighbourhood Renewal. ATA is currently delivering assessments for local councils and a commercial venture called Easy Being Green. ATA has also offered assessment services to energy and water utilities.

These projects focused on building capacity and expertise among residential householders. ATA's submission therefore focuses on the barriers and impediments to domestic householders in implementing cost effective energy efficiency.

ATA believes that energy efficiency is important to all Australians for three key reasons:

1. The Business as Usual (BAU) forecasted growth in energy demand, and more significantly in the summer peak demand attributable to air conditioning (AC) is going to require significant investment in supply to satisfy. This rapid increase in peak summer demand – with NEMMCO predicting shortfalls in supply as early as 2005/06 in Victoria and South Australia - is placing increasing pressure on the electricity supply industry. The result is, and will if left to market mechanisms (for reasons outlined below) be continued investment in new fossil fuel electricity generation. The cost of this to meet future demand is predicted by the Electricity Supply Association Australia to be many billions of dollars.

The cost of this supply is ultimately borne by energy consumers. And given, current energy tariff structures (explored further below) this cost is absorbed by *all* energy consumers. ATA believes that these billions of dollars would be better spent on removing the current barriers and encouraging cost effective energy efficiency. Society would benefit not only through lower energy costs but also through the increased comfort and standard of living of Australians generally.

2. Australia currently has among the highest level of emissions of greenhouse gas (GHG) per capita, which requires immediate and deep cuts to minimise the impacts of global warming. ATA believes that energy efficiency is the most cost effective means of achieving these necessary reductions in GHG emissions. While Australia must commence an immediate transition to cleaner and renewable fuel sources for our energy generation, such as solar photovoltaic (PV), ATA believes that energy efficiency can also achieve significant reductions in emissions.
3. The implementation of energy efficiency measures and development of an energy efficiency services industry will provide a clear net social benefit to Australia. Strong commitment to policy and program implementation would stimulate the development of much needed (and currently absent) skills and expertise necessary to deliver energy efficiency. This would translate to jobs within the trade and services sector of the economy as well as research, development and distribution of new and innovative energy efficiency technology. These will result in a strong and positive contribution to the economic well being of Australia.

Policy Recommendations

ATA wishes to emphasise that price signals play a minor role in motivating energy efficiency among low energy consumers. Energy charges are a small portion of these householders expenditure, and as a result price signals are limited in their scope to motivate energy efficient behaviour and/or investments.

For this reason ATA believes that a holistic, long term and wide ranging policy approach is required which acknowledges the complexity of human behaviour and decision making. This should include:

- Control or regulation such as minimum equipment performance standards (MEPS) and building standards.

- Support mechanisms such as information provision and education.
- Market mechanisms which ensure cost reflective energy costs and provide price signals to allow the implementation of cost effective energy efficiency improvements.

The barriers and impediments to adopting cost-effective energy efficiency improvements

ATA's experience delivering energy efficiency programs has illustrated the many technologies and practices which are cost effective in achieving energy efficiency. This experience has however highlighted many barriers and impediments that have prevented energy consumers from undertaking these improvements.

These are as follows:

Pricing

Externalities – market failure. Energy generation produces negative externalities - pollution inflicted on society and the environment - which is not reflected in the price of energy consumed. Energy efficiency therefore produces positive externalities, by reducing greenhouse emissions. These externalities distort the real price for electricity, and subsequent benefit of energy efficiency. Indeed the absence of these externalities in the price of electricity has ensured that Australians enjoy amongst the cheapest electricity in the world.

This market failure has however ensured that investment in energy efficiency is limited, as the true costs of the energy savings are not returned to the investor (though these externalities are undoubtedly reduced). ATA believes that there is a role for government intervention to correct this market failure and ensure that these externalities are internalised and reflected in the cost of electricity. These externalities continue to mask the true benefits of energy efficiency and its contribution to reducing GHG emissions.

Tariff structures – regulatory failure. Governments currently regulate monopoly energy utilities across Australia. However, this regulation ignores the need for tariff structures that reflect the true cost of energy generation and supply and represents a clear example of regulatory failure.

- Absence of Time of Use (ToU) tariffs in the Australian energy market (for all but high energy consuming customers) ensures that the true costs of energy consumption are smeared across all energy consumers. As peak energy demand increases with the penetration of AC, the increasing costs of supply at these peak periods are not borne by the consumer, but shared by all energy consumers. This absence of the user pays principle presents another inaccurate pricing signal which prevents effective energy efficiency from being adopted. Society pays (through cross subsidy and pollution) rather than user pays remains the predominant principle.
- These cross-subsidies also exist between urban and rural energy consumers. The cost of supply per unit of electricity to rural customers is greater than for urban consumers. This is attributed to transmission losses incurred in transporting electricity long distances as well as the cost of physical infrastructure to transport. However, *postage stamp* pricing ensures that rural electricity customers' charges do not reflect the true cost of supplying electricity these distances. Again these cross subsidies impede accurate price signals which would otherwise result in energy efficiency. These subsidies to rural customers are paid by tax payers and also increase the fixed costs charged to urban customers and limit their ability to cost effectively implement energy efficiency (see below).

While ATA recognises the need to provide equality to rural energy consumers, this should not come at the cost of economically efficient energy efficiency. Government intervention is required to ensure that the full potential of energy efficiency is achieved and socially optimal outcomes are achieved, rather than continued support for inefficient energy consumption throughout rural Australia.

- Electricity regulation in most jurisdictions applies basket pricing structures that impose a regulated price cap on electricity utilities. Within that cap, utilities are free to structure tariffs at will. This regulatory failure allows these monopoly utilities to adopt – rather than cost reflective pricing – *Ramsey* tariff structures. Ramsey pricing allows utilities to increase tariffs for consumers with inelastic consumption levels, while reducing tariffs for those with more elastic consumption behaviours. This in essence allows utilities to increase the total demand and energy consumption, while sending pricing signals which deter energy efficient investment.

- This regulatory failure also results in utilities providing declining tariff rates which rewards energy consumption and energy inefficiency.
- Fixed service charges make up a considerable portion of many householders total electricity charges. This significantly reduces the scope and incentive for householders to reduce their total energy bill through energy efficiency.
- While Full Retail Contestability (FRC) has been implemented in states such as Victoria and South Australia and was anticipated to encourage more competitive cost reflective pricing, the reality is much different. The low levels of participation in retail competition, illustrated by low levels of customer switching (outside householders moving house) in these states provides a clear indication that competition within electricity remains very limited. This allows incumbent retailers to persist with discriminatory tariffs, such as Ramsey pricing.

Encouraging energy consumption - regulatory failure. Current government regulation permits energy retailers to actively market and encourage inefficient energy consumption. This is most evident in states of Australia where energy retailers offer financial incentives such as direct cash rebates, several months of free electricity or interest free loans for customers to purchase AC units. There is no incentive for retailers to encourage consumers to purchase energy efficient units, in fact current regulation rewards them for marketing and encouraging the uptake of larger and less efficient units.

This regulatory failure allows retailers to promote (and profit from) energy inefficiency.

A more efficient outcome is evident in the incentives offered by Utah Power in the United States. While they too offer cash rebates and incentives for consumers to purchase AC, they are only offered for the most energy efficient of appliances.

Information and Behaviour

Market transactions are founded on the execution of rational choices between the buyer and seller of electricity. However this rational choice requires that all players are informed and aware of the full consequences of their purchase.

ATA believes that a key barrier to the uptake of many energy efficient improvements is the absence of information required to allow energy consumers to determine the true cost/benefit of their decisions and actions.

Many energy consumers make investment decisions without considering or being aware of the true costs of those decisions. Equally, many cost effective investments are avoided by consumers who are not capable of determining the actual benefits (over the full life) of that investment. This is clearly market failure.

A couple of examples are useful:

- A large number of rental and low income householders rely on electric heating. The capital and upfront cost of purchasing electric heating appliances is the primary concern of consumers, yet is insignificant compared to the costs of energy consumed over the life of the appliance.

However electric heating appliances are not mandated by Minimum Energy Performance Standards (MEPS) and there is no disclosure of energy consumption available for consumers at the point of sale. Further, few householders even know the cost of electricity they consume.

This results in many consumers purchasing cheaper yet much less energy efficient appliances, unaware of the significantly greater ongoing costs of owning and operating that appliance.

- Double glazed windows are twice as expensive as single glazed windows. Yet double glazed windows are three times as energy efficiency. Despite this clear advantage in return on investment from the energy saved over the life of the window, very few houses have double glazed windows installed.

Cheap (not reflecting true costs) electricity prices play a role in limiting penetration. However more importantly a lack of awareness of householders as well as the building industry ensures that the full potential and benefits of double glazing goes unrealised.

ATA's experience conducting energy audits highlights the power and need for information to inform energy consumers. These audits allow ATA technical experts to assess homes and make recommendations for energy efficient improvements that are cost effective.

ATA believe that these market failures must be addressed through the provision of targeted information campaigns to inform energy users. These should address:

- The distribution of clear, concise and appropriate information through a variety of media campaigns, energy efficiency displays, energy audits, workshops and through improved feedback and awareness on energy use. Community groups and social networks play a key role in this communication.
- Low income energy consumers pay a higher portion of total household expenditure on energy. Rational behaviour would suggest greater incentive for them to adopt energy efficiency. However, ATA's experience illustrates that energy audits are still required for this behavioural change, by providing these consumers with clear information regarding the costs and benefits of improvements appropriate for their homes.
- The need for education programs that understand that the attitude and action of energy users both need to be addressed to ensure change. There is a relatively weak relationship between the attitudes toward energy efficiency and conservation and the behaviours. When householders are made aware of this discrepancy between their energy attitudes and their behaviour (which reflects poor energy efficiency), the result is what psychologists refer to as cognitive dissonance.

When energy users confront cognitive dissonance they may:

- change their actions to become more energy efficient and conform to their attitudes or;
- change their attitudes to reflect their poor energy efficient behaviour.

ATA believes that the latter is more likely, particularly amongst householders who consider that they have few choices for changing their actions and behaviour. This illustrates the danger involved in poorly targeted energy efficient programs. Energy audits or changes in energy billing information are two examples of programs which may inform energy users of their weak attitude-action relationship and lead to cognitive dissonance.

ATA believe it is important that energy efficient programs understand the complex nature of human behaviour and the need for positive change in *attitude* and *behaviour* which leads to energy efficiency. ATA believes that behavioural changes are essential to the adoption and reach of cost effective energy efficient improvements.

Additional benefits from cost-effective energy efficiency improvements

Environmental

Cost effective energy efficiency will present clear and ongoing economic benefits to all energy consumers. In addition, there are a number of key environmental benefits:

- Electricity generation makes the single largest contribution to Australia's GHG emissions. Energy efficiency has the potential to reduce the level of primary energy generation and the level and impact of generation on our environment. These impacts include:
 - The impact of global warming as a result of GHG emissions which are far reaching and potentially catastrophic for both environmental and human health.
 - The generation of fossil fuel based electricity throughout Australia requires significant quantities of fresh water. An increase in energy efficiency reduces the pressure on our limited water supply and returns much needed water to the environment.
 - Transmission losses and inefficient fossil fuel based generation mean that energy efficiency reduces the energy required to be generated (and its subsequent environmental impact)
- Many energy efficient appliances, devices and technologies also have a longer life than the inefficient equivalent. Compact fluorescent lighting (CFL) for example, over and beyond the significant energy efficiency gains, on average has a life span of some 5,000 plus hours, compared to an approximate 1,000 for traditional globes. This longer life span has clear environmental benefits in reduced extraction and processing of natural resources required to manufacture as well as the reduction of manufacturing and distribution related pollution.

Promoting Renewable Energy, Energy Efficiency and Water Conservation since 1980

PO Box 2919 Fitzroy Victoria 3065 T 61 3 9419 2440 F 61 3 9419 2441

www.ata.org.au

Waste and disposal at the end of life is also reduced significantly by CFL. There are many other examples including LCT monitors (which use between a half and a third less power) compared to the CRT models.

ToU tariffs and Distributed Generation

Renewable energy systems produce electricity free of the pollution associated with traditional fossil fuel electricity generators. However for reasons discussed above, this pollution is not reflected in the price paid for such electricity. This puts distributed generation at a clear economic disadvantage, despite the fact it does not produce the same pollution.

Renewable technologies and particularly solar PV have another distinct advantage over traditional energy generators. As discussed above, electricity costs are impacted by the increasing peak summer demand. This demand, places a premium on electricity generated during the hottest periods of summer days (correlating with high ambient air temperature and AC use). The generation capacity of solar PV is also at a maximum at this time.

However the real economic benefits of solar PV to meet this summer peak demand is not recognised, due to the tariff structures which smear these peak costs across all energy consumers and times.

ToU tariffs would address this discrimination and ensure that the economic benefits of solar PV and its ability to supply electricity when costs are at a premium are rewarded. ATA believes ToU tariffs would increase investment in solar PV and other DG.

As discussed above, the cost of transmission and distribution of electricity to many rural customers is not reflected in the price they are charged. This is a disincentive for energy efficiency as well as distributed generation.

DG eliminates the losses of electricity in transmission and distribution and is therefore a much more efficient means of providing essential electricity to rural and remote consumers. Current pricing however presents a clear market failure and limits the potential of DG to provide clean and cost effective electricity.