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Promoting renewable energy and water conservation since 1980
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Standing Committee on Public Works
Parliament House
Macquarie Street
Sydney NSW 2000

12 August 2003

re: Inquiry into Energy Consumption in Residential Buildings

Dear Ian Thackery

High per capita energy use and a reliance on fossil fuel technologies is a liability in a carbon-constrained world - yet per capita, Australia's overall energy consumption is growing.

A typical (and increasingly archaic) state-government approach to addressing energy supply issues is to build more energy infrastructure to support growth in demand. ATA calls on the Standing Committee to take a different approach to addressing energy consumption issues in the residential sector.

Rather than continuing to cater for New South Wales residents' increasing demand for energy, the Standing Committee should set in train short- and long-term mechanisms and programs which will make it possible for residents and businesses to improve the energy efficiency of their homes and workplaces.

Residential buildings which are designed to remain a comfortable temperature in high summer temperatures and on cool winter days, have the effect of reducing per capita energy use in peak times, due to a reduced reliance on artificial heating and cooling systems. Residential buildings which are designed to suit the climate they are in are an asset to NSW as they mitigate the need for expensive, and ultimately unsustainable, upgrades to the state's energy supply infrastructure.

It is widely acknowledged that air-conditioning systems are a major contributor to summer peaks in energy demand in NSW. Homes which are designed to perform well in the summer heat do not use nearly as much electricity for artificial cooling, and in some instances do not require an air-conditioning system at all. As a result, these homes will not contribute to summer peaks in electricity demand.

New South Wales can and should choose to meet now, the challenge of reducing energy demand in the state. In addition, by acting swiftly, New South Wales has the ability to prepare for, and minimise, any economic, social and environmental impacts associated with adapting residents and the energy and building industries to a changing world, where

reduction in energy use will become an important indicator of good governance.

ATA (The Alternative Technology Association) believes that massive cuts to energy use, and a move towards greenhouse abatement in the residential sector is possible, and should be a Government priority.

ATA welcomes the opportunity to contribute to the *Inquiry into Energy Consumption in Residential Buildings*.

ATA was established in 1980 and is a national community-based environmental organisation which promotes better use of our solar, wind and water resources.

A national organisation, ATA's focus is largely on the residential sector. ATA has a wealth of experience in its membership about what works and what proves problematic at the practical stages of implementing efficient energy and water systems. ATA represents more than 3000 members who wish to see policy at all tiers of government identifying and addressing where greenhouse reductions can be made.

ATA's members are highly skilled and include energy engineers and professionals, however the knowledge found in ATA's membership is not necessarily reflected in this paper. Unfortunately we have been unable to consult widely with our membership on the *Inquiry into Energy Consumption in Residential Buildings* submissions paper, as we do not have the human resources to undertake such a time-consuming process in the short lead time given.

We would like to tap into this expertise, experience and analysis and are seeking a consultation process that makes this possible. Further, ATA is willing to participate in any ongoing consultation undertaken by the Standing Committee on Public Works to support this inquiry.

Please do not hesitate to contact me.

Regards

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Growth in energy consumption – an electricity supply and state greenhouse challenge

The generation of electricity in Australia accounts for almost 50 per cent of the nation's greenhouse gas (GHG) emissions. Shifting away from fossil fuel generation and reducing the amount of energy used by government, industry and residential sectors is essential in the quest to address climate change.

The CSIRO has stated that globally GHG emissions need to be reduced by around 60 per cent of current rates in order to stabilise concentrations of atmospheric CO₂. Australia's Federal Environment Minister David Kemp has also cited this fact.

The effects of global warming on the Australian environment are likely to be severe with increased floods, drought, severe storms and loss of native flora and fauna species. Recognising that Australia will pay a high price due to climate change, it is in the interest of our communities and environment to take strong steps to reduce our greenhouse signature, and support those industries that will be an asset to a low-carbon economy.

ATA sees the *Inquiry into Energy Consumption in Residential Buildings* as a step in the right direction for NSW, and calls on the Carr Government to take seriously the climate science which points to massive reductions of CO₂. ATA would like to see the Standing Committee in this process link the need for greenhouse gas emissions reductions to energy supply issues, and actively seek ways for NSW to reduce energy consumption.

Improving residential energy efficiency requires a number of different approaches and can not be achieved with one sweeping policy or market mechanism. Succeeding in reducing overall state energy demand requires strong government commitment and vision.

Trend toward increased consumption

New South Wales' energy demand is set to continue increasing in line with the national average of 2.3 per cent per annum to 2019/20, according to ABARE figures released in 2001. These figures are indicative of a future which New South Wales cannot afford to realise.

The ABARE forecasts do not take into account government policy and consumption trends which support a strong move away from greenhouse intensive industry, a polluting stationary energy sector and wasteful residential and commercial sectors – because there is none.

Nor does it take into account a broad introduction of effective and far-reaching energy efficiency, demand management, greenhouse abatement strategies, appropriate renewable energy generation or 'polluter pays' approach to GHG production – because there isn't any.

New South Wales needs to prepare its own energy consumption and energy reduction goals and then find the most appropriate way of meeting these.

In this submission ATA has included a range of views and approaches gleaned from more than 23 years working to decrease household energy and water use. We do not claim to have prepared a comprehensive approach, answering all of the questions set out in the submission paper, however we do have some idea of level of commitment that is required to supporting

individuals to make long-term change in their own lives which has informed this response.

ATA assists households to adopt renewable energy generators and greenhouse abatement technology, such as solar water heaters, and helps individuals to incorporate effective energy efficiency in the home. ATA also supports low-energy building design and materials, waste-management issues and reduced GHG emissions from transport.

ATA's experiences have demonstrated that a *combination* of consumer responses are required to adequately reduce energy use (and therefore the GHG emissions) associated with the home. However, ATA's experience also demonstrates that a strong government commitment to a range of short- and long-term visions and goals is necessary.

Many of ATA's members are early adopters of efficient home design, renewable energy systems and water conservation strategies and their achievements demonstrate that it is possible to use less than half of the energy consumption of the 'average' home. Such reductions can and should be expected to be achieved on a larger scale.

Community awareness

Our community knows that climate change is a problem and is largely human induced due to excessive CO₂ emissions, and that the way we use and generate energy is a huge contributor.

Our community expects this problem to be dealt with by government, in partnership with industry and the community, and looks to government for accountability on this issue.

In ATA's experience, individuals are often surprised when they discover how little is being accomplished in Australia to reduce the high GHG emissions associated with the energy sector, especially when energy efficiency, demand management and renewable energy options are available.

Facts and figures

A Climate Action Network poll showed that 77 per cent of those surveyed believed that the Government should be planning the phase-out of coal power stations in Australia over the next 20 years and replacing them with renewable energy and gas power stations. *Climate Action Network Australia, Feb 2002*. Yet: New coal-fired power stations are still being built.

A Greenpeace poll showed that 83 per cent of Australians would be willing to pay an extra \$3.50 on their monthly power bills if that was the price of boosting the Federal Governments' mandatory renewable energy target to 10 per cent by 2010. *Greenpeace, June 2003*. Yet: Energy efficiency and good building standards could cut monthly power bills by much more than \$3.50 per month.

Two-thirds of Australians rate the health of the environment above the health of the economy. *Australian Conservation Foundation, June 2003*.

Objectives of a vision for change

ATA would like to see the following objectives incorporated in a policy to reduce residential energy consumption in New South Wales:

- Link growth in energy consumption to environmental degradation resulting from high per capita Greenhouse Gas Emissions
- Set strong GHG reduction targets for the state and the energy sector and establish a framework for reaching them
- Achieve a net reduction in total energy consumption
- Require a 50-60 per cent reduction in GHG emissions associated with new infrastructure projects (residential and commercial buildings, power plants, roads etc)
- Improve energy efficiency and demand-side management
- Recognise that ongoing behavioural/cultural change in the way people in New South Wales use and generate energy is required for a new energy regime to succeed
- Provide adequate training and incentives for the trades to ensure they recognise benefits of energy and water efficient design, appliances and fittings
- Encourage and mandate, where possible, greenhouse abatement technologies
- Increase the proportion of energy produced from renewable sources and commit to addressing specific network issues regarding distributed generation
- Put a cap and / or a price on greenhouse gas emissions
- Introduce a 'polluter pays' system where monies are reinvested into the state's greenhouse abatement strategy
- Improve the efficiency of existing coal-fired power stations, and plan to replace them over time
- Discontinue or reform subsidy schemes that increase greenhouse gas emissions
- Government must lead by example and incorporate strong GHG reduction criteria in all of its activities.

Reducing energy consumption

ATA recommends the NSW Standing Committee recommend an annual state energy use reduction target which would be promoted widely and requires the State's performance be measured against the target. Energy efficient customers should be rewarded through lower standing charges and should not subsidise the use of electricity at peak times.

Energy consumption is still rising, and forecasts indicate that this will continue if left unchecked. In NSW strong economic development, including growth in the residential building sector, still leads to increased demand for energy. This trend needs to be reversed through a range of energy efficiency programs, industry targets, market mechanisms and community awareness.

The Carr Government should set an annual state energy-use reduction target, and publicly seek to meet this. This has been effective in NSW with regards to water restrictions as it has been put forward as a crisis/emergency situation – and it can for energy. For example, the New Zealand Government has been able to reduce electricity use by more than 10 per cent through such measures.

An annual state energy-use reduction target should be introduced at a rate that recognises that initially large reduction gains can be made cheaply and easily, but become more difficult as the 'low hanging fruit' opportunities become fewer. This end-use approach could be a major opportunity for the Government to focus electricity consumers on a broad range of GHG reduction programs which could be used to achieve reductions.

For an energy reduction program to be a success, energy efficient customers need to be rewarded and efficiency targets need to be ramped up annually. Energy efficient customers who do not use energy at peak times, should not cross-subsidise those that do. Currently this is not the case.

Energy efficient customers achieve lower per kWh energy bills only, and do not receive reductions in standing service charges, and in fact have been shown to subsidise electricity users who use electricity at peak times, such as those who use air-conditioning on hot days. Smart meters installed in homes and offices could be used to assist with this process and make reform of electricity tariffs achievable. There are instances where electricity retailers through demand management can control the power usage of customers and turn off appliances such as air conditioners to avoid use in peak times.

Energy efficiency overview

ATA recommends the Standing Committee should identify where voluntary measures have failed and recommend a commitment to educating the people of New South Wales about the long-term benefits of energy efficiency.

Energy efficiency should be implemented broadly in industrial, commercial, government and residential sectors. The value of energy efficiency can be considered as a tax cut, as the economic benefits are similar. By freeing up these dollars, they flow back into other parts of the economy. Energy efficiency makes sense for industry and for households, and is proven to be economically beneficial.

New infrastructure should be required to meet the highest possible efficiency standards and demonstrate that they will not become a GHG emissions burden on the community.

Energy efficiency measures fall broadly into two categories: mandatory and voluntary. ATA believes that some energy efficiency measures will need to be mandatory in order for them to work. For example, voluntary measures for industries have rarely proven successful, and relying on price signals to work for individual purchases (such as fridges, heating systems etc) rarely obtain across-the-board results.

Mandatory measures:

- Strengthen energy efficiency requirements of building codes and expand them to cover commercial buildings, extensions, renovations and apartments
- Disclosure of the energy performance of existing residential and commercial buildings on resale, rental and leasing
- Minimum Energy Performance Standards for appliances
- Phase inefficient appliances and fittings out of the market
- Fuel standards
- Industry targets and emissions reductions
- All of Government reduction targets
- Energy efficiency training for trades

Other measures that fall into the voluntary category are those which are community development or community awareness raising initiatives which are largely intangible, but fundamental.

Outcomes that can be achieved by voluntary measures:

- Annual state energy targets
- Banks and lending bodies should recognise the benefits of energy efficiency measure when lending for new home and business loans
- Industry-specific energy assessment skills and resources
- Reward action on greenhouse through awards, recognition, financial benefit etc.
- Businesses and government need to value energy and invest in energy efficiency, as they do with safety, professional development and other priority areas.

Energy efficiency can result in financial savings for energy consumers, stimulate new industries and provide incentive for innovation, improve productivity and reduce energy consumption/greenhouse gas emissions.

There have been numerous inquiries and studies on energy efficiency in a large number of sectors which show far-reaching benefits, however implementation has always been ad hoc and problematic despite projected attractive financial savings.

Energy efficiency recommendations by sector

Residential building energy efficiency

ATA recommends the Standing Committee assess the Victorian five star amendments to the building code, and incorporate a similar model in NSW. Once incorporated, such a measure should be strengthened over time.

ATA supports the Victorian Government's five-star energy requirements for new homes. ATA highly recommends that the NSW Standing Committee assess this initiative and incorporate a similar model in NSW to reduce the energy consumption of new homes. Once such a program is in place, it should be strengthened over time to ensure new buildings achieve increasingly better energy performance standard, based on a set schedule.

Residential energy performance disclosure and split incentives

ATA recommends the Standing Committee investigate the long-term environmental and economic benefits of mandatory reporting for buildings upon resale and rental. Building owners should be required to install efficient appliances and fittings for their buildings, even if they do not pay the outgoings.

On resale, owners should be required to report on the energy rating and performance of the building. As with roadworthy certificates for cars, building owners should comply with a set of energy performance criteria when properties are resold or leased.

Improving and retrofitting NSW's current housing stock to reach an acceptable minimum performance standard, such as five star is a mind-bogglingly large task. However, if minimum standards are introduced and applied on sale, lease and when a building is renovated or extended, energy efficiency improvements can be made incrementally.

ATA is already involved with extensive home auditing and retrofitting projects. Current auditing and retrofitting programs are but a drop in the ocean for what is needed if NSW's existing buildings are to be brought up to standard. If higher performance criteria is applied to NSW's building stock, new investment will be directed into energy assessment and efficiency industries.

The projected financial benefits to home owners resulting from investment in energy performance improvements will pay off through lower energy bills over time, not to mention lead to more comfortable buildings. Home loan rates which reward energy efficient customers, can make this process more affordable.

Split incentives should be removed for rental properties. Building owners should be required to disclose the energy performance of a building when it is leased, and there should be programs in place to ensure owners of buildings install highly efficient appliances and fittings.

Landlords and building owners should not be able install poor energy performance cooling, heating, hot water or lighting systems in homes for which they do not pay the outgoings. Currently there are no government programs to support the rights of tenants to have an energy efficient home in government or private rental properties.

Tenants do not have rights to demand high performance water heaters, heating or cooling systems, water-saving fittings or basic insulation in walls and ceilings, despite being responsible for the outgoing bills.

Behavioural change – an ongoing challenge

ATA recommends the Standing Committee address and recognise the importance of behavioural change. Behavioural change is essential to achieve long-term change and the successful implementation of energy efficiency and demand management initiatives in the residential sector.

ATA's experience demonstrates that the adoption of simple no-cost energy efficiency such as: turning unused electrical appliances and lights off, preventing air flow draughts to reduce the need for heating and cooling and improved production line efficiencies can reduce energy bills by more than 15 per cent.

ATA is currently working with the Victorian Government through the Broadmeadows Energy Task Force project to retrofit low-income homes and we support our members to make changes to their homes and lifestyles to reduce unnecessary electricity usage.

Linking behavioural change to a state-wide reduction target could be a way of generating interest and bringing about practical change. It is important to consider behavioural change in all energy policy development, as successful implementation is essential for success.

Commercial building energy efficiency

ATA recommends the Standing Committee investigate the benefits of Mandatory Minimum Energy Performance Standards for commercial buildings.

Commercial buildings are generally extremely inefficient, and should not be overlooked when assessing energy efficiency in NSW. There are very few examples of 'best practice' energy efficient commercial building stock. As with residential properties, there is little incentive for individual tenants to make improvements to the existing building stock, and no way of forcing building owners to meet minimum energy performance for energy efficiency. Perhaps a cost-sharing approach to outgoings between landlords and tenants could address some of these split incentive issues.

There should be a requirement for all commercial building to meet, over time, higher energy efficiency criteria and for owners to be required to report on the building's performance upon leasing.

Energy efficiency in industry

ATA recommends the Standing Committee investigate the introduction of mandatory industry-specific efficiency targets and help develop industry-specific experience and knowledge in energy efficiency assessment and implementation.

It is often assumed that high energy using industries would have made most of the efficiency changes possible because it makes good business sense. This is generally not the case. ATA believes there are few triggers in industry to reduce electricity use. The current electricity market allows large buyers of electricity to negotiate lower per kilowatt-hour purchase rates.

In energy generation industries, such as coal-fired power stations, efficiency retrofits are adopted only when they are cost-effective for the owners. Energy generators should be required to improve emissions performance of their generators. This could be achieved through incentive programs or compulsory industry-specific targets.

Unfortunately, there seems to be a severe lack of industry-specific energy assessment skills and training available, which makes it extremely difficult in the current context for some

energy efficiency programs to be implemented successfully. ATA recommends that the standing committee identify where training needs are, and seek to address shortages of adequately trained personnel.

Energy efficiency in Government

ATA recommends the Carr Government set a strong example for reducing greenhouse gas emissions associated with its departments and businesses through an across-the-board energy reduction target of 60 per cent. This could be achieved through the fostering of innovation in its ranks and removal of split incentives.

The NSW Government should lead by example in the area of energy efficiency. All government buildings and enterprises, including offices, hospitals, public housing, schools etc, should meet the highest possible standards for energy and water efficiency.

Currently there are numerous split incentives in government which make it difficult for individual departments to take control and reduce energy consumption and wastage. Government should reward innovation in its ranks and introduce internal policies which encourage best practice.

As a way to achieving efficiency priorities within government departments and government funded institutions, electricity budgets could be the responsibility of individual departments and institutions, and any energy savings which result in financial savings could be put back into that department or institution's budget.

Departments and government institutions should have an annual budget line for investment in energy-saving measures and projects.

Department and institution heads should be required to formally report on efficiency programs and be accountable for them.

Government departments should remove and address any disincentives to improving the energy performance of existing and new public housing stock.

Energy efficiency training and education

ATA recommends the Standing Committee should recommend the development of energy efficiency industries. The focus here should be on the trades to ensure that adequate training and information is available to them about the importance of energy and water efficient design, appliances and fittings.

Community participation and education is crucial for energy efficiency programs to work. It is also essential that industries at the coal face or in point-of-sale positions, where purchasing decisions are made for appliances, heating and cooling systems, home design, home materials etc, are informed and involved.

The building profession and trades (electrical, plumbing, building, carpentry, architecture, building designers) and those working in retail and manufacturing industries which provide advice and make recommendations to customers, need to be informed and supportive of energy savings solutions, fittings and appliances.

Policies which encourage water and energy saving are not enough to bring about the required change at the consumer end of the scale. Programs, training and demonstration of efficient technologies are necessary to bring about long-term change. There needs to be a strong driver for these industries to bring about this change – or it will not take place. ATA

does not yet know what driver is required, however a change in approach to safety in homes and in the workplace has been successful through mandatory and voluntary means, and could be used as a basis for an approach to energy policy.

ATA has many ideas and some experience with working with the trades to bring about a change in approach, working style and appliance use. ATA is happy to discuss this area further in the development of the greenhouse abatement framework.

Energy assessing and retrofitting is a potentially new boom industry for New South Wales.

Appliance and fittings efficiency

NSW should champion the requirement for a minimum energy and water performance standard for all appliances and fittings across Australia. Appliances and fittings which do not meet the minimum standards should be phased out of the Australian marketplace. There are systems in place in European countries (eg Germany) which achieve this.

Renewable energy, including solar hot water

Renewable energy system use and implementation in Australia is still a niche area, and an emerging industry. ATA's staff and membership are very knowledgeable about the important of these technologies and the consumer challenges facing their implementation.

Support and research into implementation is still lacking with renewable technologies. In the case of use of renewables in the domestic market, the perceived high cost of renewable technology remains a major impediment to widespread community uptake, and there is limited understanding of the long-term benefits of investing in them.

The majority of households are still reluctant and discouraged by electricity retailers and market structure, to invest in individual power supplies when they can connect to the grid. Rebates have had some success in this area and have provided support to those who have chosen to install solar water heaters of photovoltaic solar arrays.

The major driver for the uptake of renewable technology in Australia is the mandatory renewable energy target, which is not particularly user-friendly for residential renewable installations. MRET is not necessarily the major driver for the uptake of renewable remote area power supplies (RAPS), which are economic in their own right in many parts of Australia.

Solar water heaters

ATA recommends the Standing Committee investigate mandatory measures which will lead to solar water heaters being chosen as the first preference for all buildings, which will bring about widespread installation.

The NSW Sustainable Energy Development Authority offers a discount on solar hot water and heat pump systems, and already has a good understanding of the greenhouse abatement and cost benefits of this technology. We know that in Sydney solar water heaters can reduce by 65 to 70% per cent the energy use associated with water heating. In the short term, rebate programs can drive demand for solar water heaters, however as rebate measures are by design short term and attract minimal financial support, ATA recommends that the Carr Government introduce drivers for the uptake of this technology in building codes.

In Victoria, the Bracks Government's five star minimum energy performance for buildings already includes solar water heaters as an optional measure for meeting the standard. ATA

recommends that a similar approach be adopted in NSW and, over time, this measure should be strengthened to require all buildings, where solar water heaters can be appropriately sited, to install them.

Photovoltaic solar technology

ATA recommends the Standing Committee support research into the value of solar PV cells as embedded generators.

The relatively high upfront cost of photovoltaic solar cells makes them a difficult technology to promote to a wide audience. However this technology has an important role to play in a carbon-constrained future. The NSW Government should support research into the benefits of solar technology as an embedded generator, as it may have long-term benefits in the electricity supply sector. It is suspected, but not yet demonstrated, that the value of solar technology as an embedded generator is under-valued in the National Electricity Market, and that its true value needs to be assessed and delivered to the owners of the systems.

MRET

The Mandatory Renewable Energy Target (MRET) is currently the most effective driver for growth in renewable energy generation in Australia. ATA supports a 10 per cent MRET by 2010 and an MRET of 30 per cent MRET by 2030. ATA believes the MRET should be extended beyond 2020 to at least 2050. This measure does not go far enough to encouraging growth in the renewable energy sector, and is not user-friendly for small (domestic) generators.

Investigate the phase out of long transmission lines and support of renewable RAPS systems

ATA recommends the Standing Committee investigate ways to support and encourage renewable RAPS solutions where it is economic to do so and where it is appropriate for the end user.

In some circumstances the poles and wires maintenance of long transmission lines is uneconomic, and the supply of electricity to customers at the end of long lines subsidised by other electricity customers.

ATA believes that all people in NSW, no matter where they live, have the right to access to a reliable and affordable electricity supply. However, in the situation where long transmission lines are an economic burden on electricity customers and transmission companies, renewable Remote Area Power Supply systems should be offered to electricity customers. Renewable RAPS systems can offer reliable, relatively inexpensive and low-emissions solutions to people who are remote from the grid.

Currently RAPS systems are largely unsupported by electricity network owners and electricity retailers. Electricity retailers do not assist people in their franchise area with RAPS information and support. The NSW government also does not offer RAPS customers with information and support and they are therefore 'on their own' when it comes to decision, pricing and maintenance. They can seek advice through ATA, private contractors and manufacturers, but cannot rely on long-term support.

Set a State GHG reduction target

ATA recommends the Carr Government set a strong GHG reduction target of 60 per cent by 2050 and rally the NSW community around this.

In order to make a cost effective analysis, the Carr Government needs to set a greenhouse gas emission reduction goal which will create strong direction for state GHG reduction policies and programs.

ATA recommends that this state target be no less than a GHG reduction of 60 per cent on current levels by 2050. By setting and working towards a target, the Carr Government will be better able to assess the cost-effectiveness of greenhouse reduction strategies and decide how great a cut needs to come from which sectors in order to meet it.

ATA believes that a clear, regularly reinforced and visible target is essential for driving ongoing behavioural change at a community and industry level.

This is a one-off decision which will enable long term planning and adaptation.

Polluter pays

Putting a price on carbon at the source is widely seen to be an inevitable and important step to recognise in the market the social, economic and environmental impact greenhouse gas emissions in the electricity supply sector. The NSW Government should support at a national level or if this is not forthcoming, implement at the state level a 'polluter pays' mechanism which will ensure that the cost for GH emissions is no longer externalised.

If proceeds from a carbon tax are directed into areas that the government wishes to prioritise, the tax will have no net impact on the economy, but will change its structure. ATA believes proceeds from a carbon tax should be directed to NSW greenhouse abatement program.