Energy Action Group

Submission
to the
Productivity Commission's
Draft Report on Energy Efficiency

Funded by National Consumers Electricity Advocacy Panel

Introduction

The Energy Action Group (EAG) is a 28 year old, member-based, not-for-profit incorporated association representing the interests of residential consumers in the National Electricity Market (NEM).

It is the EAG's contention that a successful energy efficiency program provides a very important and strategic tool in achieving relatively low-cost amelioration of greenhouse gas emissions whilst at the same time contributing to reduction in the growth of peak electricity demand that is the primary economic driver of increasing electricity cost. Energy efficiency can also provide a physical reduction in energy consumption that can assist in managing financial risk in a similar way to instruments like financial hedges and insurance that provides security to the financial sector of the economy.

Unfortunately, energy efficiency is not an instantaneous solution to the problems of peak load and energy consumption growth. The development of energy efficient products and the market penetration of energy efficient machines, appliances and building stock may be extremely slow, particularly if the energy efficiency measure only applies to new industrial and commercial buildings and housing stock. As alluded to by the Commission in its draft report, consumer response to a new fashion appliance can result in very high (relative) market penetration of new high energy use appliances. The rapid increase in air conditioning in Australian housing stock and plasma screen televisions are two relevant examples.

The small size of the Australian energy efficiency market and successive failures in implementing an energy efficiency strategy has greatly restricted innovation and significantly hampered the development of energy efficient products. This is in marked contrast to many OECD countries where energy efficiency initiatives have been stimulated by higher energy prices and by governments less concerned with maintaining the dogma that "the market will provide".

The draft Report provides a strong focus on theoretical economic analysis relating to energy efficiency and markets while the 82 submissions and the transcripts of evidence provided the basis of the real world experience to the Commission. The focus on mechanisms of market failure (e.g. imperfect information, split incentives, behavioural and cultural barriers) is laudable but the Commission fails to acknowledge that energy markets operate almost entirely without any consideration of environmental or social externalities. The Commission also fails to demonstrate understanding of key drivers in the energy markets and presumes that competition at the retail level is effective in delivering "value-adding" services to consumers.

It is the EAG's experience that a prime driver for energy utilities is to sell more energy. For example:

- until recently many energy retailers offered inducements (typically in the form of cash rebates) for consumers to install air-conditioning;
- even now, United Energy offers time-of-use tariffs for air-conditioners that promote their use for off-peak winter heating; and
- the Commission is correct is stating that "energy service companies are widespread in North America" and some are emerging in Australia – but there is very little proactive focus by energy retailers or energy service companies on the residential sector.

It is these latter deficiencies that can be addressed, at least partially, by well-designed energy efficiency measures – without resulting in substantially increased energy bills for consumers.[1]

The draft Report makes the comment that *"Energy efficiency in most countries has been steadily improving. In Australia (primary) energy consumption per unit of output declined by 18% between 1973-74 and 2000-01"*[2]

While this may be true on average, the demand for energy in Australia, in the forms of electricity, gas and transport fuels has been growing steadily, in both absolute and per capita terms along with the rest of the economy.

During the period 1973-74 and 2000-01 the Australian energy market has seen significant growth in the use of natural gas as a fuel source in Victoria, South Australia, New South Wales and Western Australia. The market penetration of natural gas as the fuel of choice for heating hot water in Victoria, in gas reticulated areas, changed the end use efficiency from 20% for electricity derived from base load coal fired power stations to over 75% for gas hot water appliances. This change resulted from the installation of around 1.4 million gas hot water services in Victoria over that period.

[1] The Commission, quite correctly notes that pricing signals are weakly aligned with cost drivers in the retail electricity market. However, it is not clear that more cost-reflective pricing would provide greater stimulus for energy efficiency since cost-reflectivity would focus on peak summer demand not energy consumption *per se*. For example, United Energy's time-of-use network tariffs provide strong signals to moderate air-conditioning use in summer, but also very strong signals to use reverse-cycle air-conditioning in winter; and not one retailer offers a matching product that transfers the costs and benefits of United's network tariffs to small consumers.

[2] Page xviv

However, there have been significant offsets to increased energy efficiency due to changes in energy sources and increased per capita consumption. These offsets include increases over this period in the average size of housing stock as well as the number and diversity of household appliances. The increased per capita consumption has significantly added to the infrastructure required to meet projected load growth and increasing peak demand growth, whilst existing infrastructure is ageing and in need of augmentation to ensure that demands for future load growth can be met.

Hamilton and Denniss[3] comment that between 1985 and 2000, the average new home floor size increased by 30% to 221 squares: in the 1950s, the size was half the 2000 floor size.

It is important to recognise that Australian society has developed on the basis of access to cheap oil, electricity and natural gas. Without access to these three prime sources of energy our society would have to undergo radical structural change. For example, coal fired generation still produces the cheapest electricity, a point demonstrated by the relative cost differential of base load electricity in South Australia, generated by 80% natural gas, and Victoria, generated by 80% brown coal. Relying on increased energy prices as the primary motivator for investment in energy efficiency that is privately cost effective is an unsatisfactory policy, when similar energy efficiency outcomes could be achieved through regulations that aim to address the failure of the energy market and the energy efficiency market – without imposing much higher costs on consumers.

The Australian urban form has been developing in a manner that has ensured the dispersal of destination. The outer urban growth areas have a lower population density than the middle and inner suburbs. Most large Australian cities, particularly the capital cities, have doubled in area over the past 30 years. This has led to substantial new investment in physical infrastructure to meet existing and projected future demand for both electricity and gas. The new investment has to be added to the investment for replacement of existing assets. Some 16 to 18 % of the electricity and transmission and distribution assets were installed over 40 years of age and are close to or are incapable of meeting peak demands.

An unfortunate bias

The draft Report is almost correct when it states that energy only constitutes a small proportion of household expenditure or the aggregate of the national accounts, particularly the Australian Standard Industrial Code (ASIC). *However, this statement is dependent on the interpretation of the available Australian Bureau of Statistics input and output statistics.* ASIC provides final consumption figures based on the role played by industry and its contribution to Gross Domestic Product. These statistics exclude the input costs for industry and commerce (including energy) and therefore understate the financial and economic role of energy and transport[4] in the Australian economy.

[3] Hamilton, C. and Denniss, R. *Affluenza*, Allen and Unwin, June (2005).

[4] By reallocating the ASIC figures and setting up a transport code transport can constitute over 30% of economic activity. Around 80% of the rubber industry and 5% of the glass industry supply the transport industry and over 70% of the occupations in the dairy industry are given as drivers whilst at least 20%

It is clear that there is a correlation between household income, household energy consumption patterns and the level of energy consumption. High income households can and do spend more of their disposable income on energy than low income households. However, low income consumers spend more of their disposable income on buying less energy than high income households. The lower household disposable income is, the greater the proportion of their disposable income is spent on the essential services of housing, food, energy and transport. Low-income households constitute at least 27% to 30% of the Australian household population. As a group, they are more likely to be unable to purchase reasonably priced energy efficient appliances or have access to energy efficient housing stock than median to high income households. Unfortunately, this observation is particularly relevant for low income consumers accessing rental housing stock.

A number of jurisdictions have adopted the IAC/IC recommendations that they should put in place Community Service Obligations rather than seek to address social equity issues in energy prices. These governments are providing energy concessions to help low income consumers pay their energy bills. However, this paper presents empirical evidence that energy prices will increase in real terms for residential consumer if load growth is not curtailed. Energy price increases due to increasing load growth – particularly peak summer demand growth - will add to the various state budgets' concession expenditure via three cost drivers:

a) increasing per capita consumption associated with economic activity;
b) tariff increases due to load growth; and
c) more people being eligible for concessions due to the ageing population.

Energy efficiency programs for low income households can be used to address cost drivers a) and b). Such programs have the dual effect of lowering low income consumers' energy bills and increasing disposable income, while at the same time limiting the various state governments' budget expenditure on concessions.

It is important to recognise that governments are sensitive to both blackouts and price increases. This political sensitivity flows through to utility planning and service delivery.

Different Technologies

The Draft Report defines *allocative* and *technical* efficiency, but then fails to address the different nature of the technologies involved in the production, storage and distribution of petroleum, gas and electricity. The different technologies create different cost drivers and timeframes for investment decisions. But in each case, the incentive to invest in capacity also creates the incentive to increase throughput.

The Draft Report also alludes to the benefits (to energy efficiency) of cost-reflective, time-of-use pricing in the electricity sector and even suggests that locationally-specific pricing would assist in promoting energy efficiency. These allusions indicate a fundamental misunderstanding of the mismatch between energy efficiency and cost

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of the police force has responsibility for either traffic management or over 50% drive on a daily basis as part of the job.

drivers in the electricity sector. It is the EAG's view that cost-reflective pricing would not do much to stimulate energy efficiency in the electricity sector. This is simply because the primary cost drivers in electricity are related to peak system demand, not energy throughput. As noted above United Energy's time-of-use tariffs, which are rationally cost-reflective, still provide strong incentives to increase energy consumption in non-peak demand periods.

A brief outline of the differences in energy technologies may assist in clarifying these issues.

Petroleum is relatively easily processed and refined and very cheaply stored compared to gas and electricity. Petroleum has a high energy value for volume and can be readily distributed by road, sea or air to most destinations with minimal losses. Petroleum refiners have a flat production process using storage to cover peak consumption periods. Distillate and aviation fuel are used to provide standby sources for gas fired generation and fuel oil can be used by coal fired generators for ignition purposes.

Natural gas and coal bed methane require processing to decontaminate the gas stream, similar to petroleum production. The processing facility is usually close to the well head and is then distributed by high pressure pipeline to the region in which the gas is to be consumed. There are minimal pipeline losses and cheap transportation costs. Long, high pressure pipelines are able to provide sufficient capacity (linepac[5] or swing gas) to cover several days load volatility.

With small linepac/ swing gas capacity, the Victorian and South Australian gas transmission systems have had to provide alternate sources of supply and back up arrangements to minimise load interruption in case of supply shortfalls. Gas producers have to size their production trains to ensure that they produce at optimal capacity for most of the year and use linepac/swing gas, underground storage and liquid natural gas to supplement system capacity in peak load capacity short fall periods.

The gas industry also uses interruptible supply contracts to provide further system flexibility. Natural gas is also used for ignition purposes to start up and increase the ramp rate[6] in coal fired generators.

The contract price of natural gas is around $ 3.20/GJ to $3.50/GJwith the costs of transportation and the linepac swing arrangements further adding to the cost of gas to consumers. The one exception is the unique Victorian gas Market System Operating Rules (MSOR) which are based on a merit order dispatch with ex-post price adjustments. This market design is similar to the NEM bid and dispatch arrangements used to meet the changing electricity demand and system load. The Victorian gas market places a market cap of $ 800/GJ to address supply constraint and, in the case of an emergency, the Independent System Operator can also 'constrain off' consumers.

[5] In marked contrast to the long transmission systems, the Australian gas distribution systems have minimal linepac/swing gas capacity

[6] Ramp rate is a term describing how quickly an electrical generator can increase its production to track load.

Unfortunately, the electricity system does not have the luxury of the more flexible storage arrangements of the gas or petroleum systems. Electricity is unique. Supply must equal demand at every instance because electricity is not easily stored. The electricity system has to be sized to meet the maximum peak demand, particularly if consumers are not to be interrupted. Base load power stations and transmission systems take a number of years to construct. They need to be sized to meet projected future demand if supply reliability is to be maintained. The investment in electricity infrastructure and the projected investment to meet load and load growth dwarfs both the capital assets and the projected investment in the petroleum and gas industries.

The NEM is a merit order dispatch, ex-post adjusted; energy market supplemented by frequency control Ancillary Service Payment markets, Network Constraints Ancillary Services and Black Start Ancillary Services arrangements to ensure that the system is operated in a secure and reliable condition. The wholesale market energy price is capped at $10,000/MWh with a Cumulative Price Threshold of $150,000 /MW/week.

ACIL Tasman[7] estimated new generator entrant prices in the order of $31 to $35/MWh for coal fired base load plant operating at around 80% capacity factor. This compares to gas fired Combined Cycle Gas Turbines costing between $38 to $50/MWh. The Transition Institute[8] put the costs of wind energy at between $72 to $90/MWh in 2002 but with time, to the year 2010, the costs drop to between $45 to $60 /MWh. By 2020, the costs would be competitive with coal and gas with costs of between $38 to $50/MWh.

It is clear that with load growth and the current new entrant costs, prices will rise across the NEM compared to the current contract prices for electricity. The extent of the price increases will be determined by the investment in peak intermediate and base load generation, the generation mix, the load factor, the forced and unforced outage rates and the reserve plant margins available at the time.

The annual transmission and distribution load duration curves shown in Exhibit 1 illustrate the different performance and asset utilisation between the various regions across the NEM. Unfortunately, Exhibit 1 fails to show that the annual load duration curves for both transmission and distribution entities have deteriorated over the past ten years. The average network load factor has dropped by around 4 to 5 % since the start of deregulation in 1995 and the introduction of a national electricity market. Queensland transmission and distribution network average utilisation has dropped from around 80% down to 76%, while Victoria moved from 65% down to 60%. These changes to the Annual Load Duration Curve have further added to the investment needs of network assets owners. South Australia now has an average asset utilisation of less than 50% and the low load factor is an important part of explaining the high South Australian network charges.

This decline in load factor also indicates that there is the need for increased peak and intermediate load electricity generation plant. The investment cost of peak load

[7] ACIL Tasman (2005), Report on NEM generator costs (Part 2), Prepared for the Inter Regional Planning Committee (IRPC) and NEMMCo. February.
[8] Transition Institute (2004), Cost Convergence of Wind Power and Conventional Generation in Australia, A Report for the Australian Wind Energy Association, June.

generators is relatively cheap compared to base load coal fired stations but they have much higher fuel costs.

The networks recover their revenue from a combination of network charges. Most large consumers pay a small annual (connection) charge, a Maximum Demand (MW) charge based on their maximum instantaneous consumption for the year plus energy charges (GWh or MWh depending on size) which constitute the greatest proportion of their bill. Most small consumers pay a standing charge plus an energy charge (MWh). Networks need to invest to cover peak demand (MW) but recover most of these costs using energy pricing (MWh or GWh).

The better the annual load duration curve, the lower the network charges paid by consumers. The trend towards the use of appliances with remote control switching has added to both the on and off peak load while the substantial increase in the temperature sensitive summer cooling load and increased system losses has added significantly to the network investment costs.

Exhibit 1 NEM Annual Load Duration Curves

Source Kema[9] page 24

In South Australia, 36% of the assets are used to meet the peak load for 10% of the time compared to Victoria which is operating at 22% for 10% of the time. NSW is operating at 20% and Qld at 13%. It is clear that if the load duration curves continue to deteriorate there will be ongoing pressure for investment in generation, transmission and distribution assets to meet the growth in summer peak demand. Under the current network planning arrangements, Network Service Providers generally aim to invest to meet the projected load growth for a 1 in 10 year peak load, with clear incentives to invest that are reviewed every 5 year regulatory cycle.

[9] Kema (2005), Review of Methodology and Assumptions used in NEMMCo's 2003/04 Minimum Reserve Levels Assessment, January

Network Service Providers continually argue that these technical factors have significantly added to the increase in investment required to meet projected load growth due to increased per capita consumption (particularly to meet summer peaks) and population growth.

A cursory analysis of regulated new and replacement electricity transmission and distribution investment shows that approximately $17 billion has been authorised across the National Electricity Market (NEM) for capital expenditure from the years 2004 to 2009. Of this, $9 billion is projected to be spent on load growth, another $4 billion in customer contributions (primarily for new connections) and $ 4 billion on replacement of aged assets.

Investment in new electricity generation plant indicated above and some of the associated transmission infrastructure to meet increased peak loads requires extra investment on top of the $17 billion approved by the network regulators!

An effective energy efficiency program will help address the deterioration in the annual load duration curve and help reduce the infrastructure investment in meeting peak loads.

Metering

Even a close examination of the evidence presented in applications by distribution companies to the relevant jurisdictional regulators Independent Pricing and Regulatory Tribunal (IPART), Essential Services Commission of Victoria (ESCV), Essential Services Commission of South Australia (ESCoSA) and Queensland competition Authority (QCA), the regulators' commissioned reports and interested parties' submissions to pricing determinations fail to show the load growth drivers and the changing consumption pattern changes. This particularly applies to the contribution of less than 160 MWh consumers with manually read accumulation electricity (Type 6) metering.

Under the joint jurisdictional metrology procedures Type 1 to 4 meters are interval meters with communication capability that allows the meters to be automatically and remotely read. Type 5 meters is an interval meter that must be manually read (to collect the ½ hr meter readings) every 1 to 3 months depending on the Meter Data Agent meter reading cycle depending on the customer class. Type 6 meters are accumulation meters that provide a reading of the energy consumed between each meter reading. So-called Type 7 meters are actually calculated readings used for predictable flat load usage consumers like telephone booths, street lights and traffic lights.

The NEM wholesale spot market is settled on the basis of ½ hourly data. It is relatively easy to settle metering Type 1 to 5 and Type 7 by reference to real time wholesale market pricing if required. Type 5 meters can be settled and the costs can be accurately allocated on the ½ hourly data soon after each meter read. Type 6 meters, used by some 7.4 million small NEM consumers, cannot be used directly to

settle the wholesale market; but are settled using a regionally based Net System Load Profile[10].

It is clear that if the objective of the reform process is to use market pricing as the basis of allocating scarce resources with application of the 'user/causer pays' principle, then Type 4 interval meters must be used. These are the only meters with the ability to price energy and network services at a real time cost for almost all the current Type 6 meter installations.

It is unfortunate that the evidence presented by the distribution companies to the various jurisdictional electricity and gas distribution pricing reviews does not comprehensively explain the various drivers causing load growth.

The lack of adequate time series, regional household energy consumption pattern changes and appliance use data makes load research a priority to understand the role that energy efficiency can play in minimising load growth of Type 6 metered consumers - the most volatile part of the customer base.

EAG has commissioned three reports on interval metering from Pareto Associates since 2000. The latest report[11] comments on the important role that metering plus communications/load control can play in limiting summer peak load growth.

It is clear from the Pareto reports that Type 4 metering provides a range of extra opportunities to the meter service provider or appropriate associate parties who can gain legitimates access to the network. Type 4 metering can increase the range of services offered to electricity consumers to limit their consumption including choice of load management options or extra services like home security and possibly even an internet broadband connection. However, Pareto also concludes that low-cost, remotely-activated; load control technology will be needed to allow small consumers to benefit from time-of-use pricing that could be delivered with half-hourly interval meters.

There are substantial complexities yet to be resolved before time-of-use tariffs can be effectively deployed to small consumers with increasingly volatile loads. **In the meantime, Energy Efficiency provides a more than useful cost effective tool to reduce network investment to meet load growth and delivering more efficient investment outcomes. Energy efficiency also delivers a policy outcome that minimises price increases associated with that network investment and the cost recovery by investors and retailers associated with the operation of peak load generation.**

[10] The regionally based Net System Load Profile is derived by subtracting the data from metering Type 1 to 6 and Type 7 from the energy delivered into the distribution business from the transmission system on a ½ hourly basis. The remaining consumption is allocated to Type 6 metering. The aggregate consumption pattern provides the regional based net profile. The profile of the regional Type 6 meter energy consumption is then allocated to the each accumulated meter read on a proportional basis. All consumers with a Type 6 meter are assumed to make a proportional contribution to consumption across the meter reading period.

[11] Pareto Associates (2003) Smart Meters for Smart Competition? Will current proposals hand back power to consumers? Update 2003. March

The current disaggregated electricity and gas industry arrangements make it difficult for market participants and consumers to gain benefits from energy efficiency and demand management. This problem is exacerbated by cost smearing of the industry energy and network charges for the less than 160 MWh volatile load customers.

Institutionalisation

A new or renovated house and the main appliances effectively "institutionalise" long term consumption patterns of the occupants. The average life of Australian housing stock is around 40 years and the main appliances hot water, heating and/or cooling is around 10 years or slightly longer. The installation of cheap appliance like an instantaneous hot water system and radiators[12] as the only source of heating will guarantee the occupants have high bills due to fact that these appliances are locked into the highest residential retail electricity tariff. The cost of alternate energy efficient gas heaters, or off peak solar hot water services, has relatively higher purchase prices but these are off set by the comparatively very low running costs.

The policy objective should to be to increase the market for energy efficient housing stock and appliances to minimise utility investment in infrastructure to meet load growth.

Housing and Appliance Energy Efficiency

From 28 years experience in dealing with residential electricity consumers, EAG is aware of a number of instances where residential units purchased off the plan had a building envelope conforming to a 5 star rating while the main appliances were purchased by the builder or developer based on the cheapest price. The purchasers frequently only realise that their utility bill were far higher than they expected after living in the unit or dwelling for 12 month. There are at least three responses:

a) sell the property;
b) remove the appliances and replace them with more efficient ones;
c) try not to use the appliances and clearly lower the occupant's quality of life.

However, if the occupant is renting a dwelling or unit with either a poor thermal envelope and inefficient appliances or both, the result is large energy bills. It is not unusual for the tenant to move out. The question is at what expense to the landlord, the tenant and the utility, particularly if the tenant defaults with bill payment.

There are insufficient drivers in a small economy to develop an effective energy efficiency industry.

It is EAG's contention that there has been systemic failure in the Australian economy to develop an energy efficiency industry. There are a number of examples of less than adequate performances in developing energy efficiency programs including the Australian Greenhouse Office[13], the Sustainable Energy Development Authority and Sustainable Energy Authority Victoria.

[12] A 2.5 KW wall mounted air conditioner can be purchased for around $420 on a sale. The electrical infrastructure required to ensure supply to this appliance is between $ 1750 and $ $8650 plus running costs depending on the type of generator used to the supply energy.
[13] Auditor General (2004) Auditor General (2004) The Auditor-General, Audit Report No.34 2003–04, Performance Audit-The Administration of Major Programs: Australian Greenhouse Office

A recommendation that promotes the intelligent use of energy efficiency for a combination of buildings and appliances will help develop part of the industry in Australia and reduce the number of poor performing appliances entering the country.

Deficiencies in the regulatory compact based on light handed 'incentive regulation' reward load growth.

The current regulatory arrangements have encouraged regulated utilities to maintain the status quo and do nothing regarding energy efficiency because they get well rewarded for load growth.

The regulatory arrangements recognise that there is an information asymmetry between the regulator and the regulated business. Therefore, the regulatory regime has been designed to provide incentives for the regulated businesses to improve their performance and strip out inefficiencies; but this also encourages behaviours associated with gaming the regulatory regime.

The regulated businesses receive regulated revenue based on the management of the Regulated Asset Base. The revenue stream is determined to a significant extent by the rate of return on the asset base determined by the CAPM[14] plus the return of assets depreciation and operations and maintenance expenses.

The regulator establishes a model of a theoretically efficient, competitive network business where the network owner is rewarded by keeping the surplus if they "beat" the performance assumed in the regulator's model. Further incentives can be added by allowing the business to share the efficiency rewards in future regulatory period, known as the efficiency carry-over mechanism.[15]

The two major risks faced by regulated business are a harsh regulatory determination or that of asset stranding from imprudent investment decisions.[16]

The larger the regulated asset base the greater the revenue. The network businesses have a strong incentive to do nothing in regard to load growth. To date, one regulator, IPART, has introduced a D-factor in an attempt to stimulate some business incentives to minimise load growth, particularly peak summer load growth. However, it is too early to say whether or not this will be effective in stimulate more demand side response.

[14] Capital Asset Pricing Model using the Weighted Cost of Capital

[15] Some jurisdictional regulators have added other incentive features such as a Service Standard or S-factor and a Demand Management or D-factor as a means of inducing specific responses thought to deliver benefits to consumers.

[16] Asset stranding can occur through over investing in assets or losing a major load that makes assets redundant. Most Australian regulators have introduced "protections" that limit asset stranding risks that are considered to be beyond the capability of regulated entity to manage. That is, if the entity is judged to have made a sound investment decision based on reasonable information that was available at the time the investment decision was made – the entity is permitted to recover the full value of the initial investment from consumers.

Some Comments on the Draft Report Recommendations

Energy efficiency programs can have relatively long lead times, that is, a long time between starting a program and seeing the effects on consumption from that program. Some of the Recommendations in the Draft Report require the application of relatively expensive evaluation techniques to programs that have not been running long enough to deliver meaningful savings.

To stop or hold up any of the programs referred to in the draft Report Draft Recommendations, until a survey, a benefit-cost or a regulatory analysis is carried out, will delay or hold up their implementation.

Draft Recommendation 11.1
The Australian Building Codes Board should examine ways to reduce the scope for local governments to erode the uniform minimum energy efficiency standards for new houses.

EAG supports the thrust of Draft Recommendation 11.1 (and also supports the Commission's concerns about the cost of purchasing copies of the Code).

However, there should be a specific time frame for the report from the Australian Building Codes Board. There should also be an added requirement for the report to give examples of both good and bad local government practice relating to enforcement and the effectiveness of their management of energy efficiency standards in the Code.

This recommendation should also add that each of the jurisdictional building codes should address the envelope and the appliances in a similar manner to the NSW Building Sustainability Index BASIX program for Sydney. See www.basix.nsw.gov.au

Draft Recommendation 11.2
National Framework for Energy Efficiency Stage One proposals (that are not directly affected by other recommendations) should be deferred until independent evaluations of existing energy efficiency programs have been undertaken. The evaluations should determine the effectiveness of these programs in promoting the uptake of cost-effective energy efficiency improvements.

EAG does not support this Draft Recommendation.

The AGO /SEAV implementation of the Energy Efficiency Stage One proposals has been very slow.[17] It is too early to determine how effective these proposals will be. They have been less than effective in addressing the role of some of the most important appliances that have been adding to consumers load. Too little attention has been taken by the NFEES on the role of so called remote appliance (standby[18])

[17] EAG is concerned about progress of the scheme. It has taken the over 6 years for the program to address the issue of single phase air conditioning.
[18] Harrington L. Kleverlaan P. (2001) Quantification of Residential Standby Power Consumption in Australia; Results of Recent Survey Work, Project of NAEEEC. March

switching and the appliance sleeper mode as a source of continuing energy load, for instance.

The time taken to stop the program, evaluate it, then recommence it would further increase the time taken for an already inefficient scheme to make an impact.

The Draft Recommendation, as it is written, fails to address an important part of the problem: Australian energy businesses, governments and regulators[19] know far too little about household energy consumption, the behavioural drivers and appliance purchase patterns.

Draft Recommendation 7.1
The National Appliance and Equipment Energy Efficiency Committee should adopt procedures to ensure that future regulatory impact assessments of appliance minimum performance standards (MEPS) include a more comprehensive analysis of:

- ***why consumers - with guidance from an energy-performance label- are not best placed to judge what is in their best interests;***
- ***whether a voluntary standard, such as an energy star program would be more cost effective;***
- ***what proportion of consumers would be prevented from buying appliances that are not cost effective for them;***
- ***the extent to which consumers would be forced to forgo product features that they value more highly than energy efficiency;***
- ***the distributional impacts, including the extent that MEPS is regressive;***
- ***whether MEPS would reduce competition and how this would affect prices and service quality; and***
- ***whether a disendorsement label would achieve a more cost effective result.***

EAG does not support this Draft Recommendation.

EAG concedes that the appliance rating scheme, MEPS, comes at some cost but the costs are far out weighed by the benefits. It is worth noting that once rated, a particular appliance only needs to be labelled.

The voluntary scheme allows irresponsible manufacturers to opt out and in the process increases the costs for manufacturers who stay with the scheme. It is also easy to argue that if the part of the recommendation relating to a voluntary scheme was implemented then it disadvantages those consumers who purchase their appliances on the basis of the scheme.

There are a large number of appliances readily available with appliance ratings and numbers of outlets, particularly discounters that have appliance stock rated at two stars or less[20]. These items are cheap to buy but expensive to run. The rating scheme adds to the available public information.

[19] The ABS provides some statistics but they tend to be dated and of a limited sample as there needs to be ma larger sample with more regional diversity. Most consumers will buy and switch on or off as the case may be, if they are either hot, cold, bored or hungry!
[20] Many appliance retailers add to their income streams by selling credit as well as the appliance.

Many of the results from recommendations are dependent on timing of the survey. Consumers respond rapidly to extreme climate events particularly very hot temperatures (air conditioning) and very cold spells (radiators). It is not unheard of for all appliances on sale locally to be sold out under these extreme circumstances.[21] In consequence, this means that consumers do not get the choice they may want when appliances are scarce – they may want a five star appliance but a one star appliance is the only type available.

Draft Recommendation 7.2
Before the States and the Northern Territory mandate energy-performance ratings for existing buildings at the time or sale or lease, the Ministerial Council on Energy Efficiency should commission an independent evaluation of the ACT rating scheme that has operated since 1999. The evaluation should include an assessment of:

- ***the accuracy of home ratings in predicting the actual energy performance achieved by home buyers and tenants; and***
- ***the costs and benefits and effectiveness of the scheme, taking account of the diverse preference and financial circumstances of individual home buyers.***

EAG has reservations on this set of Draft Recommendations.

The most interesting study[22] that EAG is aware of, relating to residential consumer behaviour showed that low income conservation programs needed significant educational reinforcement to deliver the best outcomes.

The Australian Capital Territory's rating scheme has provided more information on the costs of housing than any other jurisdiction. This scheme places some pressure on the landlord to provide access to more efficient housing stock and appliances.

Over its 28 year lifetime, EAG has spent a considerable amount of time negotiating with utilities to stop disconnections of slow paying, low income households. Over time, our experience has demonstrated that the greatest numbers of problems related to utility disconnection are associated with rental housing stock with poor thermal performance and poor quality appliances, particularly instantaneous electric heating, cooling and hot water appliances[23]. These high consumption appliances are cheap for a developer/landlord to install but very expensive for a tenant or occupant to run. Many purchasers/tenants are forced to replace these appliances after they discover the high cost of running them over the peak energy consumption period.

The current anecdotal evidence in Victoria indicates that some developers of apartments are putting in day rate appliances. When they refurbish old building stock they do not have to consider the thermal performance of the envelope (as they are now required to do for new homes).

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[21] The hot spell in Sydney on the week of the 1st of December 2004 provides a useful example.
[22] Harrigan M (1992) Evaluating the benefits of Comprehensive Energy Management for Low-Income Payment Troubled Customers. Final Report on the Niagara Mohawk Power Partnership Pilot. Alliance to Save Energy. May
[23] These appliances are known as "day rate" because they lock the consumer into the highest unit tariffed electricity prices.

Replacing "day rate" appliances is not generally an option for tenants. New owners and purchasers have the added cost of addressing the problem of retrofitting the building envelope and replacing inefficient appliances at considerable cost over the purchase price.

A number of jurisdictional regulators collect information relating to utility disconnection as well as reconnections in the same name. These data provide a rather poor indicator of the impact of poor quality housing stock on a consumer's ability to pay their utility bills. Clearly, a house purchaser or owner will continue to pay their utility bills if they want to receive gas and electricity that is essential to sustain their lifestyle. For tenants, if the bill is large enough this may lead to the tenant 'doing a skip' without paying their landlord, foregoing their bond and adding to the bad debt level[24] of utility companies.

The two proposed studies will do little to help the problem of consumers accessing energy efficient housing stock and appliances. The Australian Capital Territory requirement provides some guidance to prospective purchasers and tenants. The current legislative arrangements across the Commonwealth are not promoting a high level of market penetration of energy efficient housing stock and appliances. This lack of market development is sustaining a high price for both the building envelope and the appliances.

It is worth noting that several large US mortgage brokers, reinsurers and resellers use a house energy efficiency rating as a basis for determining the size of a house loan and the interest rate payable by the owners.

The NSW Government Building Sustainability Index BASIX for single dwellings around Sydney and multiple buildings across NSW provides a way forward. However This is a new program there should be periodic evaluation to work out the strengths and weaknesses to this mandatory approach.

Draft Recommendation 7.3

New or more stringent energy efficiency standards for residential buildings should not be introduced until existing standards have been fully evaluated. The evaluation should be commissioned by the Australian Building Codes Board to:

- ***consider whether defining buildings standards in terms of simulated heating and cooling loads in an efficient way to raise actual; energy efficiency;***
- ***investigate whether weakness in energy rating software distort the housing market in favour of particular housing designs that are not necessarily the most cost effective, particularly over the longer term as innovations are made to building design:***
- ***evaluate the costs and benefits in a way that takes account of the diverse preferences and financial circumstances of individual home buyers;***
- ***assess how effectiveness and compliance costs differ between the deemed-to -satisfy and performance–based-standards;***
- ***analyse the distributional impacts on different socioeconomic groups including first home owners and less affluent groups; and***

[24] Australian gas and electric utilities have around 0.5% residential consumer bad debt on a 3moth billing cycle.

- ***examine the process used in setting the stringency of standards in the Building Code of Australia, including the impacts of any increase in stringency by individual States and Territories.***

EAG does not agree with these Draft Recommendations

The use of energy rating software only provides an indication as to the envelope performance. The software cannot accurately predict consumer behaviour nor should it be expected too. The role of this software is to begin the process of training the building industry, architects and designers in better energy design principles. There is ample evidence that properly designed buildings in the Australian climate with proper management need minimal energy inputs.

Our comments in draft Recommendation 7.2 in relation to several large US mortgage brokers, reinsurers and resellers should equally apply to Australian mortgage brokers, packagers and resellers. The NSW BASIX program is the first Australian attempt to implement a combined energy efficiency housing and appliance program. EAG agrees that it is important to evaluate this program but it is a retrogressive decision not to proceed with the implementation of the BASIX program and then evaluate rather than follow the recommendations outlines above.

Energy efficient housing with appropriate appliances has a slightly higher capital cost but if the household uses them as they are designed then they have lower outgoings which offset the cost of the higher load.

The failure to adopt appliance standards and to then incorporate them alongside the building energy efficiency standards provides a great deal of latitude to the developers to install cheap energy inefficient appliances to the long term detriment of the owner or the tenants.

Draft Recommendation 8.1
A policy of mandatory energy efficiency opportunities assessments is not warranted on private cost-effectiveness grounds. There would be no justification for mandating the implementation of Energy Efficiency Opportunities Assessment results.

EAG does not agree with this Draft Recommendation.

The draft report correctly identified that energy costs, with the odd exception to industrial consumers, is a small component of business operating costs.

The more than 160 MWh consumers constitute over 66% of the energy consumption sold through the National Electricity Market. The majority of these consumers tend to be relatively flat load consumers and they provide the bulk of all of the utility revenue streams, with the exception of peak intermediate load electricity generators. However, it is important to recognise that there are a number of commercial buildings and some industrial consumers who add to the peak load.

Box 8.4[25] from the draft Report provides three useful examples of firms that have achieved savings as a result of assessing their work practices. There are a large number of examples where commercial and industrial businesses have been able to save money.

Unfortunately, energy savings are not a priority for the vast majority of industrial and commercial energy users. Energy costs are treated as an input cost and the GST component is excluded from their bill so there is little or no incentive to invest in energy efficiency and demand management.

The various NSW Demand Management schemes implemented by the former SEDA and the distribution companies have failed to deliver substantial savings. The failure to spend the $10 m demand management fund set up as part of the Metrolink transmission tunnel approval process highlights the problem. This failure could well be exacerbated by the establishment of the Energy and Water Savings Fund recently by the NSW Department of Energy, Utilities and Sustainability. DEUS will

> "*administer a $40 million annual fund over 5 years providing funding, primarily on a contestable basis, to support energy savings initiatives by large private sector users, government and the residential sector. By 2010/11 the expected benefits from the fund are a saving of 900,000 megawatt hours per year in electricity consumption, a gross saving in consumer energy bills of $370 million in net present value terms, and a reduction in greenhouse gas emissions by 800,000 tonnes of CO_2 per year*[26]".

This fund will help provide a financial resource for the Energy Efficiency Opportunities Assessment results. However, other jurisdictions without access to a $40 M/pa fund will have considerable difficulties in providing a financial resource base to ensure that industry and commerce improves its energy efficiency.

The failure to implement energy efficiency standards, particularly in commercial buildings, offers a useful mechanism for developers of residential apartments to bypass the residential energy efficiency codes. Put simply, they build a commercial building which doesn't have to comply with energy efficiency codes and then convert it to residential apartments. This can be considered as a renovation of a building and, as such, does not need to meet the energy efficiency code requirements.

Draft Recommendation 8.2
Energy Efficiency standards for commercial buildings should not be introduced without a more thorough evaluation of the costs and the benefits of such a policy and a comprehensive analysis of the other policy options. In such an evaluation, the Australian Building Codes Board should give greater consideration to:
The sensitivity of regulatory impact statement estimates of cost savings to the assumptions used;

EAG disagrees with this Draft Recommendation.

[25] Productivity Commission (2005) draft Report on Energy Efficiency. April p. 179.
[26] http://www.deus.nsw.gov.au/energyandwaterfunds/index.htm

Most commercial and a number of industrial buildings are large users of heating and cooling, particularly over the peak load periods. The axiom of 'cheap to build, but expensive to run' still applies although organisations like the Property Council of Australia has been active in educating its members on this issue.

A number of the comments that EAG has made in relation to Draft Recommendation 8.1 that also apply to this Draft Recommendation

Draft Recommendation 13.1
Any mandated roll out of interval metering devices should be subject to a comprehensive benefit-cost analysis. Mandated roll out of technologies should not preclude choice in the device or competition between service providers.

EAG disagrees in part with this Draft Recommendation.

Theoretically, the Victorian ESC mandated interval meter roll out was subject to a comprehensive benefit –cost analysis and the results showed that the program would be cost effective as a Type 5 meter roll out.

EAG agrees that the mandated roll out should not preclude choice. There are, however, several buts:

- small consumers overall cannot benefit from "better" metering technology if the cost of meter installations is high; and electricity distributors are best placed to capture economies of scale in the meter roll-out that will be essential to reduce unit cost;[27]
- every effort should be made to investigate the simultaneous roll-out of low-cost, communications and load-control technologies that could assist individual consumers manage the impact of time-of-use tariffs through access to remotely activated, automatic load-control of individual high energy use appliances; and
- the meters should be designed to be upgradable by providing slot and card interfaces within the meter to facilitate third party enhancements to the meter and there be a single common set of addressing protocols.

John Dick
President
Energy Action Group
14th June 2005

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[27] Interval meters are never going to be "the next iPod"; and there is no way that small consumers would benefit from repeated meter changeover every time they changed retailer.