

## **Introduction**

The Government of Western Australia appreciates the opportunity to provide comments to the Inquiry into the Economic and Environmental Potential Offered by Energy Efficiency.

Energy is an essential service for most Australians' day-to-day needs and is central to our economic success. However, it is clear that many households and business view energy as a fixed cost over which they have very little influence. Moreover, many energy users are unaware of the environmental costs associated with energy use and consume more than is socially optimal.

This submission explores issues critical to improving energy efficiency and the interplay with key barriers and impediments. The submission also discusses the role of potential and current policy interventions to improve energy efficiency in the context of these key impediments.

## **WA Government Interest in Energy Efficiency**

The Government of Western Australia has a strategic interest in improving energy efficiency and to minimise the burden on the community and economy of inefficient energy consumption.

Western Australia has an energy intensive economy including export-oriented industries such as alumina production and silicon smelting. Many of Western Australia's large energy intensive trade exposed industries have a respectable record in improving energy efficiency. Western Australia also covers the largest geographical area in the country impacting on the transport sector and its reliance on oil. In addition, large areas of the state are outside the interconnected electricity grid with major private off-grid power stations supplying the mining industry.

Electricity demand in Western Australia is forecast to increase by an average annual growth rate of 2.8% over the next 15 years. As forecast increases in demand are realised, considerable resources will need to be committed to increasing the capacity of networks and generation. The ESAA estimates that national investment in the order of \$12-15 billion will be required to meet this increase in demand in the next five years. The Productivity Commission noted in the review of National Competition Policy Reforms that this comes at a time when uncertainty over future policy direction to tackle climate change is potentially acting to deter investment in new generation capacity.

Analysis conducted by ABARE and analysis conducted for the NFEE shows that Australia is falling behind similar developed countries in improving energy efficiency. ABARE analysis shows that after accounting for structural changes in the Western Australian economy, Western Australia's energy intensity has at best remained static or deteriorated marginally in some sectors of the economy. The poor performance in improving the energy intensity of production reduces Australia's international competitiveness and requires over investment in supply infrastructure, capital that could be invested elsewhere to promote economic growth and development.

There are many energy-associated costs that are external to the price of energy which are borne by the community as a whole. Inefficient consumption of energy increases these costs, thus improving energy efficiency reduces the external price burden on the whole of the economy. If the environmental impact of climate change and the health impact of airborne pollutants are included, the costs of inefficient energy use become more significant.

Energy use is the single largest contributor to Australia's greenhouse gas emissions. In Australia it is responsible for 67% of net emissions, with stationary use and transport comprising 48% and 14% respectively. Climate change, perhaps the most significant environmental externality of energy consumption, poses significant threats to Western Australia's economy. CSIRO forecasts reductions in rainfall over the majority of Western Australia's agricultural areas of up to 20% by 2030. This would have severe impacts on regional areas of the state and its economy.

Price signals that might otherwise improve energy efficiency may have undesirable social implications, complicating the appropriate policy response. Examples include price burdens on lower income or disadvantaged members of the community, the cost to reinforce networks to facilitate economic development in regional areas or cross subsidising energy prices across the state to reduce the cost of living in remote areas. There has been long standing bipartisan political support for Western Australia's uniform tariff policy where all customers, regardless of location, can access electricity at the same price. Network users cross-subsidise electricity use in off-grid areas. The uniform tariff policy is an equity mechanism to moderate living expenses in regional areas.

Western Australia, as a participant in the Ministerial Council on Energy (MCE), has endorsed the development of a National Framework for Energy Efficiency (NFEE). The NFEE was established to define future directions for energy efficiency policy and programs in Australia that are best delivered or coordinated at a national level.

The purpose of the National Framework is to realise the significant economic potential offered through the adoption of energy efficient technologies and processes to achieve a step change in Australia's energy efficiency. This will reduce energy demand, costs to industry and the community, and associated environmental impacts. It is also noted that the Productivity Commission, in its review of National Competition Policy Reform, recognised the role the NFEE might have in progressing a nationally coordinated approach to climate change.

The Government of Western Australia has outlined its programs and policy direction for encouraging greater adoption of energy efficiency through the Sustainable Energy Development Office (SEDO), in the State Greenhouse and Sustainability Strategies and through its actions in restructuring the electricity sector. Actions outlined in these strategies seek to address what, where and how energy is used in the state. Specific actions relating to energy efficiency in these strategies include:

- Government leading by example with targets to reduce energy consumption, setting rigorous performance standards and incorporating energy efficiency into government accommodation and state housing specifications and purchasing policies;
- Reforming the energy market to facilitate demand side initiatives, in order to enhance the efficiency of energy supply and use and examining means by which demand-side management and energy efficiency can effectively participate in the market;
- Participation in national minimum energy performance standards programs, including appliances, equipment and building standards; and
- Promoting awareness of energy efficiency through the delivery of community education and awareness programs and supporting greenhouse benchmarking of commercial properties.

## **Economic and Environmental Costs and Benefits**

The economic costs and benefits of energy efficiency are sensitive to the assessment type and assumptions. The threshold of net private benefit can vary significantly from sector to sector and between firms within sectors. When coupled with such variation, an inquiry limited to assessment of the benefit accruing to individuals or organisations will not provide a true representation of the economic and environmental potential of energy efficiency in the Australian economy.

Improved energy efficiency can have multiple benefits, for example reducing input costs, increasing production by freeing up capacity, deferring investment in energy supply infrastructure and reducing air pollution and greenhouse gas emissions. In many cases, however, the investor is not able to capture all of the benefits of that investment. To develop a complete picture of the benefits of energy efficiency, the energy supply, conversion and end use sectors must be treated as a single system where the system-wide benefits and costs are considered and accounted for.

It is also questionable whether net private benefit is an appropriate criterion to evaluate government action to improve energy efficiency. Ideally, government agencies should consider the costs and benefits to the whole community, as well as the obvious leadership role, rather than accounting only for the monetary impact to the agency in isolation.

As a result, it is of concern that the scope of the Inquiry has been limited to the examination of private benefits only as this will provide an incomplete picture of the potential benefits of energy efficiency. Findings that are based on only a fraction of the benefit may also serve to undermine efforts to improve energy efficiency made by Governments across Australia.

**The WA Government recommends that The Productivity Commission use a multi factor analysis accounting for all benefits and costs when assessing the economic and environmental potential of improved energy efficiency.**

The Government of Western Australia has been closely involved in the development of national and local policies aimed at encouraging greater uptake of energy efficiency. Considerable analysis on the topic has been conducted to inform development of the NFEE. This analysis suggests that Western Australia's economy stands to benefit greatly from improved energy efficiency in terms of new job formation and economic output from key industries.

In general terms the economic benefits of energy efficiency can be summarised as:

- Reduced costs for households and business;
- Deferred costs to the economy to expand energy generation and network infrastructure;
- Greater efficiency of consumption of natural resources;
- Improved international competitiveness in industry;
- Reduced demand for foreign energy sources and improved energy security;
- Increases in GDP;
- Increased employment; and
- Reduced burden on community of energy price externalities.

The environmental benefits of improved energy efficiency can be summarised as:

- Reduced airborne pollutants from energy consumption;
- Reduced environmental impacts from resource extraction;
- Mitigation of greenhouse gas emissions from fossil fuels;

- More efficient use of natural resources; and
- Preparation for more stringent greenhouse requirements.

Although there are no net costs of “cost effective” energy efficiency, energy efficiency projects have an opportunity cost and must compete for capital with other investment options. Energy efficiency must also compete for time and resources to investigate a cost segment that may represent a relatively small part of the cost of production. The counterbalancing argument for policy makers against the costs of inaction is that resources and capital spent unnecessarily on new supply infrastructure represents capital that could be invested in other sectors of the economy. The economic costs of inaction on energy efficiency are:

- Increased reliance on foreign sources of energy and reduced energy security;
- Industry is less internationally competitive;
- Potential employment opportunities are not realised where capital is bound by inefficient practices; and
- Long-term higher infrastructure, maintenance and transport costs resulting from poor urban design.

### *Climate Change*

Western Australia is already experiencing climate change and appears vulnerable to further climate change impacts in the near future. Climate scientists suggest the 15 to 20 per cent decrease in rainfall in the South West of the State since the mid 70's are partly attributable to human induced global climate change.

For Western Australia climate change is a significant issue. In September 2004 Western Australia released its Greenhouse Strategy. Improving energy efficiency in government, households and commercial operations is an integral part of the Strategy.

A number of economies have implemented emissions trading schemes to factor the cost of climate change response into the economy and provide further incentive for undertaking actions to reduce greenhouse gas emissions. It is also interesting to note that real energy intensity of many of these economies is already lower than that of Australia.

Some states and territories have implemented measures to address climate change such as the New South Wales Greenhouse Abatement Scheme, the Queensland Government's 13% Gas Scheme and the ACT Greenhouse Gas Abatement Program. There is a fragmented approach to climate change nationally, a point noted by the Productivity Commission in its review of National Competition Policy. However, Australia has no national framework to account for the cost of climate change. Consequently, climate change related costs remain largely external to the price of energy in Australia further reducing the incentive to change energy consumption patterns.

### *Potential for Cost Effective Energy Efficiency*

Considerable modelling has been conducted on the scope of energy efficiency in various sectors to inform the development of the NFEE. The estimates were compiled from a wide range of sources and consider the existing energy consumption patterns, technology market penetration and indicative implementation costs. The results found the scope, after accounting for business as usual improvements in energy efficiency with an average two-year payback, conservatively to be 6% for the industrial sector, 10% for the commercial sector and 5% for the residential sector.

Evidence supporting the case for improved energy efficiency exists. As an example, early results from an energy efficiency program targeting government agencies have been positive. These suggest that there is considerable scope for improvement in some agencies indicated by a wide difference in energy intensity from the highest to the lowest case. As agencies develop greater capacity to critically analyse their operations it is expected that an acceleration in improvement will occur delivering sustained energy savings.

With regard to the role for incentives, modelling conducted for the NFEE in relation to a National Energy Efficiency Target (NEET) found that a 1% NEET would defer the need for investment in new electricity infrastructure by almost two years. A 1% NEET would translate to a 4% reduction in primary energy use or 2,370PJ over the forecast period out to 2025. Other benefits included improved reliability of service, reduced energy costs and reduced fuel consumption and greenhouse gas emissions.

## **Barriers and Impediments**

Barriers to energy efficiency were examined in detail as part of preliminary work of developing stage one of the NFEE. As part of this process, a broad stakeholder consultation was conducted. As might be expected, different sectors identified different aspects of barriers and impediments but several key barriers and impediments were common to most sectors. These key impediments were information deficiencies on behalf of consumers, information asymmetries within and outside organisations, split incentives, access to capital, price signals and inconsistent and poorly coordinated policy. Similar barriers were also found in a survey of business and local government undertaken for the Government of Western Australia.

### *Information*

Issues relating to accessing information were common across all sectors. There appears to be a general lack of awareness across sectors of the potential and benefit of energy efficiency. A lack of awareness manifested in several forms including:

- Ignorance of the ability to reduce energy consumption and costs;
- Lack of recognition of the need for energy efficiency;
- Lack of understanding of energy efficiency at decision-making levels;
- Lack of understanding at operational levels; and
- Difficulties in accessing expertise.

Quite simply, organisations that do not recognise the need or understand the potential to improve energy efficiency, will not seek information or conduct investigations into energy efficiency. This is particularly critical when it occurs at decision-making levels. A lack of support from senior management is frequently identified as a significant factor in organisations not investing in cost-effective energy efficiency. Poor comprehension of energy efficiency at senior levels will hamper supporting cases to invest in energy efficiency or to seek outside expertise. Research has identified that a lack of understanding at operational levels manifests as staff resistance to change and can reduce the benefits of energy efficiency investment.

Limited financial resources within small businesses and the fact that energy management is not core business can mean that they are more constrained in accessing information and affordable expertise. Small businesses also frequently lack the resources to investigate, implement and maintain energy efficiency programs.

Where there is an awareness of the potential for energy efficiency, access to information or expertise has long been identified as a limiting factor at improving energy efficiency. Many companies and government agencies lack the in-house expertise to properly evaluate the benefits of specific investment in energy efficiency. This dearth of understanding matters relating to energy efficiency can also obstruct accessing external expertise or assessing the quality of advice from external expertise. Some industrial stakeholders contributing to the NFEES stakeholder consultation noted that there was a lack of expertise specific to their industry.

The low knowledge base on matters relating to energy efficiency means that knowledge is highly mobile and not embedded in the general knowledge of the community or business. For example in the residential sector the occupants can readily undo the gains of a well-designed house. Similarly, investment in improving knowledge within organisations can be lost when staff move on without strategies to link the knowledge base with the operation or improving the understanding across the organisation.

### *Split Incentives*

Split incentives are commonly identified as a barrier to investment in energy efficiency. Split incentives in the absence of sufficient compensatory mechanisms weaken incentives to invest in improving energy efficiency. Investors in energy efficiency generally do so to reduce their costs, but their expenditure may provide benefits to others for which they are not compensated.

Split incentives can exist on a number of levels and affect both the supply and demand side of energy use. On the supply side, benefits such as reduced average and peak demand will reduce network loading potentially deferring expenditure on network expansion and generation capacity. Similarly, distributed or embedded generators can have a positive impact on electricity network reliability and reduce transmission losses, benefiting network owners and retailers.

The most cost effective time to incorporate energy efficiency in any project is during the initial construction or installation stage. For builders or developers however, the principle focus is on reducing the costs of construction. They will not see the ongoing costs of operating a particular building and thus have little incentive to incorporate energy efficiency in building design. Similar disincentives exist for some building owners in the commercial building and residential rental market where tenants benefit from actions that improve a buildings energy performance. Equally, tenants are less likely to invest in energy efficiency where the opportunity to make a return on the investment is limited by the lease duration or the increase in capital value flowing to the building owner.

A concern frequently raised by industry bodies for the housing and construction industries relates to the impact of up-front capital costs on housing affordability. However, a Victorian study found that requiring a five star minimum standard compared with no minimum energy efficiency standards would have little effect on housing affordability or demand. Significantly, the study found that the economy wide benefits far outweighed the costs incurred by individual householders and that energy cost savings would generally meet or exceed any difference in mortgage repayments.

### *Access to Capital and Project Financing*

Difficulties in accessing capital can impede investment and energy efficiency projects must compete with other potential investments for finance. Where energy represents a smaller part of the cost of operating a business, energy will become a lower priority for investment. Small businesses may be particularly constrained in their ability to access capital due to a more specialised nature and focus and typically small capitalisation levels.

Participants in the NFEE Stakeholder Consultation reported that accounting methods can tend to favour capital expansion and income streams over cost saving measures. This has a tendency to flow through to investment decision-making criteria where perceptions of risk for energy efficiency projects can often result in more stringent requirements than that for plant that will generate new income streams and meet shareholder imperatives. Consequently the hurdle rate for energy efficiency projects can tend to be higher than other investment. Additionally, where energy is a small proportion of total costs, the transaction costs associated with improving energy efficiency may act as a disincentive to invest.

A lack of understanding of the subject can increase the relative perception of risk of investment in energy efficiency amongst decision makers reducing capital availability. Many sectors can also be very conservative, persisting with existing technologies because it is easier to justify to management (cultural inertia) reflecting a lack of understanding of new technologies and methods.

Sunk costs, plant lifespan and taxation disincentives may also postpone investment in more energy efficient plant. The Federal Government changes to the tax system, abolishing accelerated depreciation provisions may have adversely impacted on investment in improving energy efficiency in the long life, capital-intensive resources and manufacturing sectors. Consequently, replacing plant prior to full depreciation represents an additional cost burden to be factored into the cost benefit analysis for businesses. Changing the depreciation rate from the medium term to “useful life” serves to extend plant lifespan postponing replacement of older less efficient plant. For example, an ore crusher at a mine site may have a useful life as long as the mine site. The entire cost to repair motors on such equipment is claimable in the tax year of expenditure. However, the cost to replace the motors with new models with a higher efficiency is depreciated over a much longer period. The Aluminium Council in its presentation to the Business of Energy Efficiency conference noted the limiting affect depreciation changes would have on early opportunities to replace plant and equipment with more energy efficient models.

The NFEE stakeholder consultation also identified financing as an area where perceptions can tangibly increase the level of risk attached to energy efficiency projects substantially increasing the returns required for that investment. It was found that some lenders were attaching a risk premium to investment in improving energy efficiency, effectively pricing many projects out of the market.

### *Market Signals, Energy Pricing and Market Distortions*

The cost of energy to the consumer often does not reflect the cost to supply that energy. Reasons why the cost of supply may not be reflected in the energy price include subsidies, pricing structures, government policy and price externalities.

Recent research estimates that nationally perverse subsidies, i.e. those that increase greenhouse gas emissions while decreasing economic efficiency, on fossil fuels are of the order of \$5 billion. While the diesel fuel excise exemption principally

recognises the extra cost of providing energy to regional and remote areas, others note excise exemptions for power generation encourages continuing investment in existing power infrastructure at mine sites and acts as a disincentive to switch to energy sources with a lower environmental impact such as gas and renewable energy or to more efficient energy conversion technologies such as cogeneration.

Flat tariff pricing provides no pricing signal to consumers to shift their consumption patterns to manage plant scheduling for greater generation efficiency and economic efficiency. Unchecked demand during peak periods has implications for both generation and economic efficiency. For example, it is estimated that the final 260 MW (approximately 10% of peak demand) of demand on the Western Australian south-west interconnected system, (SWIS), exists for around 24 hours a year.

One of the outcomes implementing policies that increase competition is that users will tend to face the full cost of their consumption decisions. However, low electricity prices can dilute signals to improve demand side energy efficiency. Reducing the cost of electricity to consumers by increasing competition has been a significant focus of electricity reforms nationally. The reforms have been fairly successful in delivering against objectives, however the Productivity Commission in its review of National Competition Policy Reforms noted there is evidence that this may have come at the expense of unintended detrimental environmental outcomes.

### *Policy Coordination*

A lack of government coordination has meant that organisations operating across jurisdictions often face different regulations, reporting requirements and formats in relation to energy programs. Feedback from the NFEE stakeholder consultation indicates that this has reduced willingness of some organisations to participate in energy efficiency programs. Some industrial stakeholders noted a lack of inter-jurisdictional coordination had also failed to provide a single point of reference for information and case studies.

The perceived lack of national leadership and coordination in the matter of energy efficiency and related climate change issues has prompted some states and territories, namely New South Wales, Queensland and the ACT to instigate legislative approaches to tackle climate change. In its review of National Competition Policy Reforms, the Productivity Commission noted that a fragmented approach to climate change policy could potentially have a deterrent affect on investment in new energy infrastructure. The Commission strongly endorsed the need to “reduce regulatory fragmentation and improve certainty about future policy” in the area of climate change. Markedly, the Commission further noted that the NFEE might have a role to play in delivering a national approach to climate change.

### *Market Research*

Two surveys were recently commissioned by the Western Australian Government looking at energy efficiency attitudes and practices in the business and government sectors. This research indicates that only 29% of the business community actively incorporate energy efficiency into their business. The two main impediments to improving energy efficiency identified were a lack of awareness or expertise within the organisation and access to capital for investment.

A lack of knowledge on energy efficiency was the fundamental barrier to improving energy efficiency. Nearly three quarters of businesses not implementing energy efficiency improvements (just over half of all businesses) were unaware improvements could be made, believed there was no need to make changes or that



any opportunity for change existed. As a result of this lack of awareness and understanding, no further investigation of energy efficiency opportunities is undertaken and hence potential improvement in energy efficiency is not realised. The research also found that smaller businesses were less aware of the potential benefits of improving energy efficiency than larger businesses. Local Government in particular, appeared unaware of the potential economic benefits of improved energy efficiency.

Impediments identified varied between businesses that were implementing energy efficiency measures and those that were not. Impediments identified by businesses implementing energy efficiency were access to capital, staff resistance to change and working within the design constraints of existing facilities. However, it is worth noting that only 17% of these businesses reported facing these impediments.

## **Solutions**

Addressing specific impediments and barriers in isolation will only provide limited benefits. The NFEE has gone through an extensive consultation and research process to identify the dominant barriers in different sectors of the economy and develop targeted packages to improve energy efficiency specific to those sectors.

### *Current Government Action in Western Australia*

The Western Australian Government announced the formation of the Sustainable Energy Development Office (SEDO) in November 2001 to deliver a range of programs aimed at increasing the uptake of energy efficiency and renewable energy by the Western Australian Community. Program packages delivered by SEDO target the residential, commercial, industrial and government sectors and uses measures such as incentives, penalties, zero interest capital advances, information awareness, community education and developing industry linkages to counter key barriers and impediments to improving energy efficiency.

### **Government Energy Use**

The Western Australian 'Energy Smart Government' program requires liable Government agencies to reduce energy consumption between 2002 and 2007. Through leading by example government can also demonstrate to the business sector and the community the benefits of reducing energy consumption. The program sets mandatory progressive reduction targets coupled with incentives and assistance for capital expenditure on energy efficiency. The program is designed in recognition of the issues faced by agencies where energy management is not core business and that lack of expertise and capital is the significant limiting factor to improving energy performance. To assist in mitigating these barriers the program provides funding to agencies to access to specialist assistance and for capital investment in improving energy efficiency.

The Energy Smart Government has achieved progressive reductions in energy consumption over both years the program has been running. Over the 2003/2004 financial year, agencies covered by the program achieved a net reduction in energy use of 3.3% or 92 TJ. Thus far, reductions in energy consumption has saved \$2.3 million from operating budgets (a 2.2% cost saving) and reduced greenhouse gas emissions from government operations by 509kT CO<sub>2-e</sub>. The improvement in energy efficiency has also largely ameliorated the impact of agencies expanding services and it is worth noting that evidence is starting to show of a change in culture towards energy efficiency within government with larger savings anticipated in coming years. The program aims to meet a target of 12% reduction by 2007.

The Government of Western Australia has also adopted an Office Accommodation Policy that incorporates minimum environmental criteria, including energy efficiency, for all buildings and tenancies occupied by government agencies.

### Business Energy Use

A limited Energy Smart Business program in Western Australia targets business energy use. The program provides technical information to the business community in the form of case studies and technical brochures on a range of topics to promote energy efficiency. The Government has also established a web-based directory to link individuals and businesses with energy efficient technology providers and consultants. The Australian Buildings Greenhouse Rating (ABGR), aimed at encouraging energy efficiency in the commercial building sector is also administered through the program.

### Residential Energy Use

Housing design has a significant influence on the energy performance of housing. For example, the incorporation of passive solar principles into housing design can minimise the need for energy for space heating and cooling, leading to savings in both operational energy costs and greenhouse gas emissions.

Minimum energy efficiency design standards for houses of four stars have been adopted in Western Australia through the Building Code of Australia. This is the first minimum standard for energy efficiency in the housing market in Western Australia. The State Government is also working with housing market industry bodies to develop home financing products that incorporate environmental criteria including energy efficiency.

It should be noted that new houses comprise only 2% of housing stock in Western Australia. Consequently, there is still a requirement to address energy use patterns in existing houses. One such strategy outlined in the State Sustainability Strategy and currently being considered under the National Framework for Energy Efficiency is the requirement for energy efficiency labelling of housing at point of sale or lease. This requirement will raise the profile of energy efficiency for individuals considering purchasing a house and, in doing so, encourage the retrofitting of existing housing for energy efficiency. Energy labelling at point of sale may also address the behaviour of new dwelling occupants. Further, strategies or regulation may also need to be considered to prevent future minor additions or renovations to housing that may not be sympathetic to its original energy efficiency principles.

The Western Australian Government also provides information to the community through the energy smart community program. Information is in the form of public seminars and community forums, a free telephone advisory service and attendance at trade exhibitions, brochures and a website that addresses key areas of energy use in the home. The community program also covers house energy ratings programs in the state and promotes awareness of equipment energy ratings.

### Market Reform

The Western Australian energy market reform process is part of the State's commitment to a national competition policy agreement to establish competitive energy markets. The reform process seeks to improve the economic efficiency, competition and environmental performance of the energy sector. The electricity reform process incorporates a number of measures to improve the sustainability of electricity supply in the state.

A key part of the electricity reform process is the establishment of a wholesale electricity market. This market, which is currently being implemented, has been designed to provide opportunities for demand side management participation in a number of different ways. The Reserve Capacity Mechanism (RCM), which is a market mechanism that ensures adequate generation capacity is available to meet requirements, allows both generation and demand side management options to compete as equal options for the provision of system capacity. The RCM also provides incentives for demand side management options to be implemented by electricity retailers as a means to reduce their obligations under the RCM.

The *Electricity Network Access Code*, which came into effect on 30 November this year, specifically requires the network operator to assess significant network investment proposals against alternative options, such as demand side reductions and embedded generation options. This requirement will ensure that networks are not augmented where more cost effective solutions exist and will provide a stimulus for demand management and distributed generation, including high efficiency cogeneration.

Access to the gas and electricity markets has been enhanced, facilitating the entry of new energy suppliers, improving competition and putting downward pressure on prices. Greater competition should also drive improvements in system and generator efficiency as providers seek to gain an advantage over competitors. Already substantial new large cogeneration systems are under construction or have been committed. It should be noted that although the reform process may improve the efficiency of electricity generation, lower prices potentially reduce incentives to improve energy efficiency.

Further reforms are aimed at enhancing user participation in the electricity market, including improved price signals to consumers through the wholesale market. Improved pricing signals will assist in moderating consumption patterns, potentially deferring investment in generation and transmission infrastructure.

### *Policy Options for Energy Efficiency Improvements*

The low levels of awareness of energy efficiency indicate a clear need to lift its profile. Raising awareness will need to be integrated with other measures to facilitate access to capital and expertise to ensure that other barriers do not then become limiting. Policy can also have a compensatory role as a mechanism for the system wide benefits to flow through to the investor eliminating the “free rider” effect.

The cost of energy to consumers often does not reflect the cost of supply, whether due to the absence of appropriate price structures in the market or because of price externalities. This is notably the case with the peak demand effect of air-conditioning. Conversely, introducing requirements in markets designed to serve different purposes may distort the signals in the market resulting in poor outcomes on all objectives or perverse incentives. Nevertheless, there is an obvious role for carefully considered and targeted policy to intervene where other policy imperatives have diluted the price signals in the market. The Government of Western Australia supports any well-conceived policy that serves to improve energy efficiency.

Policy intervention should be carefully targeted at overcoming identified barriers to energy efficiency. Program design should ensure that other identified impediments don't limit uptake of energy efficiency or that it subsidises investment that would have occurred regardless. One of the objectives of the NFEE is to increase uptake of

projects, technologies and practices that make sound business sense but are not being acted upon. National coordination has been determined to be the best approach to enhance the competitiveness of Australian industry in an equitable manner. Market instruments, with firm targets and requirements but with flexible mechanisms, will allow the market to determine the least cost methods of improving energy efficiency.

Market research engaged by the Western Australian Government sought information from businesses and local government authorities on what policy options they believed would be most effective. Most businesses currently implementing energy efficiency measures considered incentives effective. Information sources were also highly valued but the specific forms of information provision imperatives differed by sector and size of business. Amongst those not implementing energy efficiency measures, incentives and case studies were considered the most effective means to encourage energy efficiency.

### Information, Education and Training

There is clearly a need for ongoing carefully targeted information dissemination programs to counter consumer information deficiencies and asymmetries. A lack of information is a primary impediment for improved demand-side energy efficiency.

One barrier identified as part of the NFEE stakeholder consultation is that while many had general knowledge of energy efficiency, few had detailed knowledge on their particular industry. Additionally, many who have engaged outside expertise to conduct energy audits have found that the projected savings cannot be realised or that they are not convinced of the potential. There is a need for consultants to be able to access improved skills training and capacity building within the profession. Skills development coupled with industry accreditation to maintain standards of competency would improve the confidence of industry in seeking professional advice on energy efficiency.

### Financing Options for Energy Efficiency

Access to capital has been identified as a barrier to improving energy efficiency. Internationally innovative financing schemes such as green funds, government guarantees, revolving funds and soft loans have proved successful in improving energy efficiency. Developing financing options with the finance sector works on two levels; it serves to increase capital availability of energy efficiency and also to improve the level of understanding and reduce the perception of risk associated with energy efficiency in the industry. Working through the finance sector also means that Governments are not directly subsidising investment where a business case already exists, policy is merely facilitating access to capital.

Stage one of the NFEE looks at working with the finance sector to develop green investment packages. For example, where operational costs are reduced through investment on improving energy efficiency, it may be possible to encourage lending institutions to increase the amount loaned to buy or build, on the basis that the borrower would have an improved capacity to repay a higher loan. This might be interfaced with the house energy ratings program for buildings that exceed minimum energy performance standards. Research conducted by the Building Commission found that the modelled costs of energy saved between a four and five star house either met or exceeded the increased cost of a mortgage.

## Incentives

Incentive programs are a mechanism to address issues relating to capital outlay on energy efficiency measures. Programs based on incentives are commonly used to encourage energy efficiency where the actions are economically sound from a community perspective but not necessarily by an individual. Thus incentives can be seen as a compensatory measure to the investor for investing where some of the benefits realised are external to the organisation. Incentives can also be seen as encouraging investment in technologies where the opportunity cost to the organisation favours investment elsewhere. Incentives can also be of use to develop markets for energy efficient technologies.

We would support the use of incentives, however, they should be carefully targeted to minimise the scope for resources being spent on investment that would have occurred regardless. Incentives also need careful evaluation to prevent adverse outcomes in the market. Incentives are also widely supported by industry as a mechanism to improve end use energy efficiency and can be a useful tool to raise awareness of energy efficiency.

## Penalties

The use of penalties is not supported unless included as part of a carefully considered package of measures that also include incentives. If penalties were used as a mechanism for encouraging energy efficiency they would need to be very carefully evaluated prior to introduction to avoid unreasonably penalising trade exposed markets or energy intensive industries.

## Fiscal Incentives

The Inquiry Issues Paper canvasses the possibility of introducing energy taxes or levies to achieve an energy efficiency target. It would be critical that the compliance burden of an energy or carbon tax or levy be shared equitably between jurisdictions, recognising the varying structure of economies. As with penalties, careful evaluation is necessary to avoid compromising the competitiveness of key industry sectors. The impact of any such potential measures to Western Australia's economy and industry sectors would need to be researched and modelled.

The use of energy taxes or levies as a mechanism to achieve an efficiency target could entail significant risks, as it is almost impossible to accurately determine the level of tax necessary to achieve a desired target. A form of trading system linked to the externality that the system is trying to reduce, as is being considered internationally for greenhouse gas abatement, would seem a more economically efficient approach. As stated previously, industry's preference is quite clearly for the use of incentives to drive action on energy efficiency.

Positive fiscal incentives can adjust the economics of investment in energy efficiency and address sunk capital as an impediment to energy efficiency. Taxation incentives have widespread use in the United Kingdom to improve investment in energy efficiency as a measure to mitigate climate change. The UK program accelerates asset depreciation for eligible investment in specified energy efficiency and low emissions technologies. The Federal Government has previously used accelerated depreciation to facilitate investment in computer equipment supporting the introduction of the GST. The Western Australian Government has highlighted the difficulties caused by the Federal Government's decision to remove the accelerated depreciation provisions as a means of funding a lower company tax rates. This has had an adverse impact on the financial viability of large, long life capital-intensive

projects that characterise the resources sector. This could ultimately lead to sub-optimal levels of investment in energy efficiency improvements in these sectors.

## Demand Management

Demand management is a term used to describe interventions to reduce system demands during peak periods or at times of system stress that might be encountered due to loss of generators. Demand management covers a number of interventions including improving energy efficiency. During peak demand periods, generation plant must be brought on-line to supply the load and provide contingency (spinning reserve) in the event of plant failure. Peaking plant operates for only a short period of time throughout the year and capital costs must be recovered over this brief duration. Consequently the cost of generation is significantly higher during peak periods.

One of the most effective demand management strategies is to reduce demand during peak periods by improving end use energy efficiency. The benefits of reducing peak demand and having a higher load factor are improved economic efficiency and deferred requirements for investment in new generation and network capacity. Improving the load factor increases generation efficiency and reducing system peaks also reduces the average cost of generation. A more cost reflective price regime, such as time of use pricing coupled with accurate metering technology may serve to encourage consumers to moderate their load during peak periods. However, the extent of the benefits would need to be compared with the costs of implementation. The relatively high cost of time of use electricity meters has reduced the adoption of such tariffs in Western Australia with only small penetration rates. This could vary between the different sectors and across the jurisdictions. The capacity to respond to market signals may also differ between sectors.

## National Energy Efficiency Target

It is apparent that considerable gains could be made in energy efficiency and that for the various reasons explored above, the market is failing to capture these benefits. Given this apparent failure, there is a need for Government intervention in the area of energy efficiency.

International experience has found voluntary measures to be more suitable as complementary measures rather than principal policy instruments. The risk with voluntary measures is they may only capture the market segment that would have implemented improvements regardless or that low knowledge levels will reduce participation rates. This is of particular significance in Australia where the low cost of energy, structural factors, level of cultural inertia and general lack of awareness would appear to limit the potential of a voluntary measure.

In relation to a National Energy Efficiency Target (NEET), considerable work needs to be done on the part of Governments to counter the information deficits and misconceptions about energy efficiency among energy consumers. Stage 1 of the NFEE has been established to form the foundation of any national action on energy efficiency and to develop the capacity and information base of industry and the community.

While voluntary measures are likely to be insufficient to tackle the barriers to improvements identified, the use of a target would ideally allow the market to determine the lowest cost mechanisms to improve energy efficiency. Market forces cannot always be relied upon to meet any target in isolation and will require the widespread and coordinated support of governments with an integrated suite of

packages. Packages might include financial incentives, linkages with expertise and technology providers, flexible innovative funding and financing options and information and training opportunities to counter identified barriers and impediments. This is one basis for stage one of the NFEE.

Mandatory targets are usually less popular with industry than voluntary ones. It would be worth investigating participation rates of voluntary programs such as the Greenhouse Challenge and the relative cost to government to induce participation. It is also worth investigating the efficiency of voluntary targets by comparing the beyond business as usual performance against the expected performance of mandatory requirement. An alternative approach is to jointly package voluntary and mandatory aspects into a program. Programs where firms participate at their discretion, but must agree to implement any actions that meet a predetermined payback in order to receive any financial assistance, have proven relatively successful in leveraging private investment from organisations that participate in the program. It should be noted however, that there is little evidence that these programs have had any impact in encouraging investment in energy efficiency in non-participating organisations.

A NEET has the capacity to elevate the public profile of energy efficiency in much the same way as the MRET has for renewable energy. However, and critically, a NEET would have the effect of ultimately saving individuals and business money as well as improving the performance of the economy and reducing greenhouse gas emissions. The structure and coverage of a NEET would require careful analysis to assess the relative merits and impacts of such a program. Inflexible mandatory programs can have considerable adverse impacts on trade exposed and energy intensive industries and on smaller participants in the market. Compliance costs can also impact severely on smaller businesses. Before considering the introduction of a national energy efficiency target, considerable attention will need to be given to analysis of issues such as:

- What sectors should be covered (which sectors have the most to gain from a target);
- The appropriate level of any target;
- How compliance with the target will be induced or enforced;
- Mechanisms to manage any potential adverse impacts (on individuals, industry sectors and jurisdictions);
- Any adjustments for energy efficiency measures already taken, to ensure that organisations with initiative are not penalised; and
- Monitoring and verification requirements to evaluate target performance.

### *Policy Coordination*

National policy coordination can allow more efficient application of resources and efforts where there are common desired outcomes and where similar barriers and impediments to achieving those outcomes exist.

The development of the NFEE recognises that energy efficiency policies and programs are being pursued at all levels of government. It also reflects the movement toward a national energy market. With energy efficiency becoming an essential component of climate change strategies, and business increasingly operating across state boundaries and exposed to greater international competition, it is important that energy efficiency policies and programs be given strategic guidance via a national framework.

This is the aim of the NFEE, to draw together those elements where a nationally coordinated approach has merit. It is about identifying where the biggest opportunities are, and where co-ordination of policies and measures can enhance the effectiveness of the resources governments collectively apply to energy efficiency activities. Policy coordination allows governments to avoid overlap and duplication. As mentioned earlier in the NFEE stakeholder consultation, different reporting requirements and formats have reduced the willingness of some large consumers to participate in some programs. Policy coordination has the potential to reduce the compliance impost to industry of energy efficiency initiatives.

## **Role of Government**

Governments at all levels are accountable for ensuring that community resources are managed responsibly. They also have a key role to play in providing leadership on the issue of energy efficiency and climate change. This leadership should ensure that governments use resources in a manner that provides an example to the community and industry.

Governments are in a unique position to bridge the gap between economic viability from a community wide perspective and the more focussed economic imperatives of private industry. Recent research identifies a lack of mechanisms in the market to transfer some of the economy wide social and environmental gains of energy efficiency investment to the investor in Western Australia's small market. Consequently energy efficiency gains are likely to remain the responsibility of the Government to encourage.

There is also a clear identified need to address the issue of resistance to change in terms of behaviour and in adopting new business practices and technologies. Government can facilitate this cultural change through providing training opportunities, developing information dissemination networks, linking potential users of new technologies with vendors and supporting research and development in energy efficiency.

The issue of climate change, although excluded from the scope of the Inquiry, is perhaps the single most prominent price externality. The issue of energy efficiency may provide an excellent opportunity for governments to provide leadership and a modicum of investment certainty to industry in relation to carbon costs.