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Department of Employment, Economic Development and Innovation

Mr Rob Hansen Research Director Environment and Resources Committee Parliament House Brisbane QLD 4000

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Dear Mr Hansen

Thank you for the opportunity to submit a response to the Environment and Resources Committee Inquiry into Energy Efficiency Improvements. Energy efficiency improvements are critical to achieving the Government's greenhouse gas reduction targets, and can also lead to other benefits such as supporting economic development and creating jobs as well as helping to reduce demand on electricity supply networks.

The whole of Queensland Government response (attached) sets out the barriers, existing programs and proposed policy approaches to encourage energy efficiency improvements in Queensland. I look forward to reading the findings of your Inquiry.

Should you have any queries, Ms Clare Hamill, Acting Principal Policy Officer, Office of Clean Energy, will be pleased to assist you and can be contacted on telephone 3227 7611.

Yours sincerely

PETER HENNEKEN Director-General $2 \not\prec l \not\leq l$ 2009

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QUEENSLAND GOVERNMENT SUBMISSION FOR THE PARLIAMENTARY INQUIRY INTO ENERGY EFFICIENCY IMPROVEMENTS



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#### **EXECUTIVE SUMMARY**

On 23 April 2009, Parliament resolved that the Environment and Resources Committee would examine and report on the economic and environmental potential provided by energy efficiency improvements for households, communities, industries and governments. In particular, the Committee is to consider:

- The economic and environmental costs and benefits arising from energy efficiency improvements;
- Potential barriers and impediments to improved energy efficiency;
- Potential policy options for energy efficiency improvements, with an emphasis on initiatives that are cost effective for individual producers and consumers; and
- The role of the Carbon Pollution Reduction Scheme and other Commonwealth Government Initiatives in encouraging energy efficiency.

This is a whole of Queensland Government response to the Inquiry. All Queensland Government departments were invited to provide input, and this response brings together contributions from nine key government departments.

Improving energy efficiency is widely accepted as the most cost effective approach to reducing greenhouse gas emissions. Around the world, governments and business are increasingly targeting energy efficiency as a means of increasing business competitiveness, saving the community money and harnessing cost-effective greenhouse gas emission reduction opportunities. In recent years the Queensland Government has developed many policies and programs relating to energy efficiency in the residential, commercial and industrial, and government sectors.

A summary of the expected or recorded costs and benefits are provided for key government programs including:

- Minimum Energy Performance Standards;
- Queensland demand management initiatives;
- ecoBiz;
- Queensland Sustainable Energy Innovation Fund;
- ClimateSmart Home Service;
- Sustainable Housing Initiative;
- Queensland Solar Hot Water Program;
- Big Light Switch; and
- Other internal Queensland Government initiatives.

While many programs have not been in place for sufficient time to determine their effectiveness, the submission points to several programs that have been particularly effective in promoting energy efficiency improvements, including:

- The National Framework for Energy Efficiency;
- MEPS;
- ecoBiz;
- QSEIF;
- ClimateSmart Home Service; and
- ClimateSmart Living.

The submission also outlines the role of various Commonwealth Government initiatives in encouraging energy efficiency. The Carbon Pollution Reduction Scheme is thought to be a positive measure because it introduces a price signal for carbon that will encourage households and industry to improve their energy efficiency. While competing priorities of businesses and households is a key barrier to investment in energy efficiency improvements, other measures will assist in addressing market failures that do not relate to price. These include the Commonwealth's \$3.9 billion Energy Efficient Homes package as well as Queensland Government programs designed to leverage investment from Commonwealth incentives, including the Queensland Solar Hot Water Program.

Overarching strategies such as the National Framework for Energy Efficiency and the National Strategy for Energy Efficiency include a number of measures addressing barriers and challenges that prevent the realisation of the economic potential of energy efficiency across the industrial, commercial and residential sectors.

The Queensland Government has two key strategies which set the direction for immediate energy efficiency improvements. These are *Towards Q2: Tomorrow's Queensland* and *ClimateQ: toward a greener Queensland*. The Queensland Government also made a number of commitments prior to the March 2009 election which relate to fast-tracking approvals for sustainable development, improved building standards and sub-metering for units and offices, promoting new 'green' skills and jobs and removing barriers to installing energy-efficient facilities and building materials.

Options for new policy approaches will be considered in the Queensland Energy Management Plan to be developed later in 2009.

The barriers and impediments to energy efficiency were found to relate to five broad themes. These are:

- 1. Competing priorities of businesses and households. Electricity costs represent an average of around 2.5 per cent of household expenditure, and although energy efficiency makes good economic sense for households and businesses, other factors are often given a higher priority in decision making and behavioural change.
- Information barriers. There is a lack of information on the potential benefits including cost savings associated with energy efficiency, limiting the demand and willingness to pay for energy efficiency appliances and buildings;
- 3. Capital constraints. While most energy efficiency improvements will provide economic savings, they often require up-front capital expenditure which is a barrier for some households and businesses;
- Incentive barriers. Split incentives mean that the benefit is not always available to the party who makes the decision that will affect energy end use; and
- 5. Skills and capacity barriers. A shortage of professionals with knowledge and skills in sustainable building practices and technologies can lead to less sustainable options being implemented because the expertise can not be sourced within desired timeframes and budgets.

Given the diverse range of barriers and impediments to energy efficiency improvements, a suite of policy approaches is required to increase the uptake of energy efficiency improvements. These policy approaches relate to information and skills development, regulatory measures, and financial incentives and pricing.

Making information regarding energy efficiency improvements more accessible would assist in breaking down some of the barriers discussed in this submission. There are several ways that government can make information on energy efficiency improvements more accessible, for example by:

• enhancing collaboration and communication with industry and stakeholders;

- enhancing coordination across all levels of government and between government agencies;
- building industry partnerships;
- working with education and research institutions;
- establishing an information hub;
- promoting government grants and funding mechanisms; and
- monitoring and evaluating programs and communicating the results.

A number of these approaches are being applied by the Queensland and Commonwealth Governments through projects under the National Framework for Energy Efficiency and the National Strategy on Energy Efficiency. Future policy options and priorities will be investigated as part of the development of an energy efficiency and demand management strategy for Queensland to be released later in 2009.

# LIST OF ACRONYMS

ABCB	Australian Building Codes Board
CBD	Central Business District
CEO	Chief Executive Officer
CO _{2-e}	Carbon Dioxide Equivalent
COAG	Council of Australian Governments
CPRS	Carbon Pollution Reduction Scheme
DEEDI	Department of Employment, Economic Development and Innovation
DET	Department of Education and Training
DIP	Department of Infrastructure and Planning
E3	Equipment Energy Efficiency
EPC	Energy Performance Contract
ESD	Ecologically Sustainable Development
GEMS	Government Energy Management Strategy
GST	Goods and Services Tax
GWh	Gigawatt-hours
HVAC	Heating, Ventilation and Air Conditioning
ICT	Information and Communication Technologies
IEA	International Energy Agency
kWh	Kilowatt Hours
LGIS	Local Government Infrastructure Services
M	Million
MCF	Ministerial Council on Energy
MEPS	Minimum Energy Performance Standards
M.J	Megaioules
MW	Megawatts
MWh	Megawatt-hours
NEM	National Electricity Market
NEEE	National Framework for Energy Efficiency
NSEE	National Strategy on Energy Efficiency
NSSP	National Solar Schools Program
PI	Petaioules
	Oueensland Competition Authority
OPIRE	Queensland Drimary Industries and Fisheries
	Queensland Police Service
	Queensland Sustainable Energy Innovation Fund
	Queensland Substantable Energy Innovation Fund
RUSU	Research Development and Deployment
SEED	Strategic Energy Efficiency Program for Covernment Buildings
SEO	South East Oueensland
	South East Queensiand Regional Plan
	South Last Queensiand Regional Flan
	Solar Hat Water
SHW	Solar Flot Waler Small and Madium Enterprises
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#### **1** INTRODUCTION

Queensland has experienced significant population and economic growth in recent years compared with the rest of Australia, and it is estimated that by 2020, Queensland will have 2.2 million households and six million people¹. Between 1991 and 2006, Queensland's population increased by 25 per cent to four million. Over the same time period, energy use in Queensland increased by more than 50 per cent.

Queensland accounts for almost 30 per cent of the nation's total greenhouse gas emissions, which is one and a half times its population share of 20 per cent². The amount of electricity used in a typical Queensland home has been increasing in recent years, largely due to the trend towards the use of power-intensive appliances such as air conditioners. The proportion of Queensland households with air conditioning has increased from less than 20 per cent in 1990 to 60 per cent in 2005. Currently, the average Queensland household uses 7,882 kilowatt hours (kWh) of electricity each year, generating approximately 8.24 tonnes of greenhouse gas. Electricity use is the dominant source of Queenslanders' greenhouse gas emissions and 28 per cent of the state's electricity is consumed by households³.

In the commercial and industrial sectors, while energy intensity has declined in areas such as construction and manufacturing over the past 20 years, the increased energy intensity associated with mining and agricultural activities has more than overtaken the savings attributed to those industries over the same period of time⁴.

Improving energy efficiency is widely accepted as the most cost effective approach to reducing greenhouse gas emissions. Energy efficiency measures include technologies and processes to reduce energy use in residential, business, industry and manufacturing applications while providing the same service. Examples include lighting, heating and cooling systems that require less energy to run than equivalently sized systems, as well as improved energy management practices, such as operating lighting systems on automatic timers.

Improvements to energy efficiency can also help reduce demand on electricity supply networks, such as during peak demand situations. This can bring about savings in infrastructure requirements through deferred network augmentation and so help limit the upward pressure on electricity prices. Improvements to energy efficiency can also support economic development and create jobs by reducing the amount of money spent on energy, which allows businesses, households and governments to increase their investment in non-energy goods, equipment and services.

The Commonwealth Government's proposed Carbon Pollution Reduction Scheme (CPRS) will introduce a price signal for carbon. This may encourage energy efficiency, however other cost-effective energy efficiency policies will also be required to address market impediments to the uptake of energy efficiency opportunities and to assist households and businesses to adjust to the carbon price.

http://www.dip.qld.gov.au/resources/publication/presentations/pifu/pop-update-no-14.pdf
 Accessed 31
 March 2009
 ² BDO Kendalls (2009), Carbon Reporting in the Queensland Public Sector: The state of play, trends

² BDO Kendalls (2009), Carbon Reporting in the Queensland Public Sector: The state of play, trends and better practices.

³ Premier's Council (2008), Climate Change Report, p. 6.

⁴ ABARE Economics (2008) Trends in energy intensity in Australian industry, December 2008. <u>http://www.abareconomics.com/publications_html/energy/energy_08/EnergyTrends.pdf</u> Accessed: 20 July 2009.

In Australia over the past five years the National Framework for Energy Efficiency (NFEE) has been the primary mechanism for developing and implementing energy efficiency policies collaboratively between Commonwealth, State and Territory governments. On 2 July 2009, the Council of Australian Governments (COAG) agreed to a comprehensive 10 year National Strategy on Energy Efficiency (NSEE) to accelerate energy efficiency improvements for households and businesses across all sectors of the economy.

This agreement recognises that accelerating energy efficiency is critical to combat climate change, reduce the cost of emissions abatement and improve the productivity of the economy. The NSEE will complement the CPRS by addressing the barriers that are preventing the efficient uptake of energy efficient opportunities, such as split incentives and information failures.

The NSEE will deliver a nationally-consistent and cooperative approach to energy efficiency, encompassing:

- assistance to households to reduce energy use by providing information and advice, financial assistance and demonstration programs;
- assistance to business and industry to obtain the knowledge, skills and capacity to pursue cost-effective energy efficiency opportunities and therefore meet the challenges of a low carbon economy;
- higher energy efficiency standards to deliver substantial growth in the number of highly energy efficient homes and buildings, and provide a clear road map to assist Australia's residential and commercial building sector to adapt;
- nationally-consistent energy efficiency standards for appliances and equipment and a process to enable industry to adjust to increasingly stringent standards over time;
- new standards for the energy performance of air conditioners in 2010, and a path to increase the standard further in 2011 and 2012;
- addressing potential regulatory impediments to the take up of innovative demand side initiatives and smart grid technologies;
- governments working in partnership to improve the energy efficiency of their own buildings and operations; and
- a detailed assessment of possible vehicle efficiency measures.

The Queensland Parliament's Environment and Resources Committee has been asked to examine and report on the economic and environmental potential provided by energy efficiency improvements for households, communities, industry and government. This Queensland Government submission addresses each of the areas of comment set out in the Committee's June 2009 Discussion Paper as follows:

- 1. What have been the economic and environmental costs and benefits of energy efficiency initiatives affecting households, industries/businesses, governments and communities in Queensland?
- 2. In economic and environmental terms, what energy efficiency initiatives have been effective in Queensland?
- 3. What role do Commonwealth Government initiatives, including the proposed CPRS, play in encouraging energy efficiency?
- 4. What additional policies should the Queensland Government implement to

encourage energy efficiency improvements?

- 5. What barriers and impediments to energy efficiency enhancements exist in Queensland?
- 6. What policies should be considered to overcome these barriers and impediments?
- 7. How can governments make information on energy efficiency improvements more accessible?

This submission is a whole of Queensland Government response to the Inquiry.

#### 2 WHAT HAVE BEEN THE ECONOMIC AND ENVIRONMENTAL COSTS AND BENEFITS OF ENERGY EFFICIENCY INITIATIVES AFFECTING HOUSEHOLDS, INDUSTRIES AND BUSINESSES, GOVERNMENTS AND COMMUNITIES IN QUEENSLAND?

Around the world, governments and business are increasingly targeting energy efficiency as a means of increasing business competitiveness, saving the community money and harnessing cost-effective greenhouse gas emission reduction opportunities. In recent years the Queensland Government has developed many policies and programs relating to energy efficiency in the residential, commercial and industrial, and government sectors. A complete list of these is included at Appendix A.

There is ample research around the environmental and economic costs and benefits of energy efficiency in Australia. In terms of greenhouse gas emissions reductions, the McKinsey and Company report⁵ discusses energy efficiency strategies to mitigate greenhouse gas emissions which are 'cost-negative'. These include heating and lighting efficiency, hot water efficiency and car fuel economy.

Economically, the case for energy efficiency is even clearer. Stage One of NFEE, completed in 2009, is estimated to have established interim measures promoting savings of \$400M per annum in gross domestic product benefits, and 3.6 million tonnes of greenhouse gas by 2015, mainly in appliances, buildings and major industry. The Stage Two NFEE measures are expected to have an additional economic benefit of \$791M and greenhouse gas savings of 14.2 million tonnes per year by 2020 nationally. Further analysis of NFEE projects will be provided below.

While a range of technologies, such as geothermal, solar, wind, biomass and carbon capture and storage will be necessary in moving towards a cleaner energy future, energy efficiency is a cost-effective way of mitigating the need for expensive electricity network augmentation and plant construction.

Targeted energy efficiency programs can reduce the demand for fossil fuels and the need for additional power plants and network augmentation. Modelling by Powerlink, Ergon Energy and ENERGEX undertaken in January 2008 focused on Queensland initiatives relating to air conditioning load control and the management of commercial and industrial demand. The modelling projected that these initiatives had the potential to deliver benefits including the reduction of up to 1,121MW of peak demand; \$4.05 billion in utility capital expenditure reduction, and, greenhouse gas emissions reductions of 23.2 million tonnes by 2020.

A summary of the costs and benefits of some of the Queensland Government programs is provided below.

# 2.1 Minimum Energy Performance Standards

Significant work on the economic costs and benefits of appliance-related energy efficiency has been undertaken by the NFEE Equipment Energy Efficiency (E3) Program through the regulatory impact statements for minimum energy performance standards (MEPS). The continual improvement of the energy performance of household appliances helps reduce emissions associated with electricity use in equipment and appliances as well as consumers' electricity bills.

⁵ McKinsey and Company, 2008. *Australian Cost Curve for Greenhouse Gas Reduction.* www.mckinseyquarterly.com/A_cost_curve_for_greenhouse_gas_reduction_1911

The projected impacts of the E3 program, through initiatives such as MEPS and the associated labelling requirements include:

- Queensland residential energy savings of approximately 5,500 GWh by 2020;
- Total residential greenhouse gas emissions avoided nationally between 2000-2020 are estimated to be 144.4 million tonnes aggregated across a range of major household appliances including refrigerators, freezers, air conditioners, televisions, clothes washers and dryers, dishwashers, and water heaters;
- Lighting initiatives generating savings of more than 4,000 GWh each year nationally by 2020 through the commencement of the phase-out of inefficient incandescent lighting, the introduction of MEPS for compact fluorescent lamps, and staged introduction of MEPS for other lighting technologies; and
- Air conditioning initiatives generating savings of more than 3,500 GWh each year nationally by 2020 as a result of the introduction of MEPS for commercial building cooling towers in 2009, and strengthened MEPS for air conditioners commencing in April 2010,

The range of appliances covered by the MEPS will continue to expand and standards for existing products will be strengthened over time. See Appendix B for the total projected costs and benefits of the E3 Program for Queensland.

### 2.2 ecoBiz Industry Partnership Program

The ecoBiz partnership program supports businesses to identify efficiencies in energy, water, waste and materials for economic and environmental benefits. By participating in the ecoBiz program, Queensland businesses have reaped economic and environmental benefits through resource efficiency improvements. For example, a Gladstone wood processing company called Austicks has been working with the Queensland Government under the ecoBiz Industry Partnership Program. With assistance from ecoBiz, the company invested in best practice technologies and innovative processes, yielding substantial environmental and economic savings and efficiencies.

The figures below are forecast to increase exponentially as more of the 400 participants complete the final stages of the ecoBiz program and become ecoBiz Partners.

Annual environmental and economic benefits to all 43 ecoBiz Partners total:

- 34,686,079 MJ reduction in energy usage;
- 23,106 tonnes CO_{2-e} reduction in greenhouse gas emissions; and
- \$1.38M reduction in energy usage costs.

Total forecast benefits to all ecoBiz rebate recipients:

- \$18.3M total project costs;
- \$2.48M total Queensland Government contribution;
- \$5.8M annual savings to the companies;
- 101,182,927 MJ forecast reduction in annual energy usage; and

• 25,865 tonnes CO_{2-e} forecast reduction in annual greenhouse gas emissions.

# 2.3 Queensland Sustainable Energy Innovation Fund

The Queensland Sustainable Energy Innovation Fund (QSEIF) is a competitive funding program which provides financial assistance of up to \$0.2M to businesses to develop innovative technologies that reduce the use of fossil fuels or water. For example, the Sugar Research Institute received a grant from the QSEIF which enabled them to improve the operation of sugar mill condensers, achieving a 10-12 per cent reduction in cooling water flow with a commensurate reduction in energy consumer for water pumping and cooling tower fans.

Operating on an annual budget of \$1.03M, QSEIF has achieved average savings in greenhouse gas emissions of around 17,850 tonnes each year, per project. To date, there have been 77 projects. The QSEIF has also leveraged significant private venture capital funding and other support.

# 2.4 ClimateSmart Home Service

The ClimateSmart Home Service is a two year program focused on installation of energy saving devices, providing customers with behaviour change tools and offering detailed advice on ways to reduce energy and water use. The ClimateSmart Home Service will invest up to \$60M over three years and is anticipated to reduce greenhouse gas emissions in Queensland homes by an average of 662,500 tonnes each year over the eight year life of the products (based on an uptake of 260,000 households). The Service assists Queensland households to reduce water use and save up to \$250 annually on their electricity bills; and will reduce Queensland's greenhouse gas emissions by up to 5.3 million tonnes over the life of the improvements.

The initiative provides a service worth at least \$450 for \$50 (including GST) and has employed more than 160 electricians and 50 customer service staff.

# 2.5 Sustainable Housing initiative

As Figure 1 below shows, water heating and air conditioning account for the largest proportion of electricity use in a typical Queensland household. The Sustainable Housing Initiative particularly focuses on these electricity-intensive appliances.



Figure 1. Typical Queensland household electricity use⁶

The Sustainable Housing initiative will reduce the energy intensity of residential dwellings through a range of policies as set out below.

- The requirements for a minimum 40 per cent of energy efficient lighting for new houses and units, which were introduced in March 2006, have been estimated to save around 52,000 tonnes of greenhouse gas emissions to date.
- The requirement for greenhouse efficient hot water systems in new houses has been estimated to save around 430,000 tonnes of greenhouse gas emissions to date (equivalent to taking over 100,000 cars off the road) since its introduction in 2006. This initiative is also expected to save a further 7.1 million tonnes of greenhouse gas emissions by 2020.
- The requirement for a minimum 5-star energy equivalence rating for new houses, which was introduced in March 2009, will reduce greenhouse gas emissions by around 85,000 tonnes by 2020.
- The increase from a minimum of 40 per cent energy efficient lighting to a minimum 80 per cent energy efficient lighting, which was introduced in March 2009, could save over 388,000 tonnes of greenhouse gas emissions by 2020.
- The incorporation of covered outdoor living areas into new housing designs (encouraged as part of the Sustainable Housing policy as a means of gaining a credit towards a 5-star energy equivalent rating from March 2009) has been estimated to have potential savings in greenhouse gas emissions of around 940,000 tonnes each year.

The initiative will have the following economic costs and benefits:

• The energy efficiency requirements that were introduced into the Building Code of Australia in 2003 (a minimum energy equivalence rating of between 3.5 and 4-stars for new houses, depending on climate zone) have been estimated to add around \$1,147 to the cost of building a new home by the

⁶ Achieving Early and Affordable Greenhouse Gas Reductions in Queensland, Premier's Council on Climate Change report, June 2008, p.8

Australian Building Codes Board, while savings have been estimated at around \$1,859 (present value) in terms of energy and appliance savings over a three year lifespan⁷.

- The requirement to install an energy efficient hot water system in new homes (solar, heat pump or gas) can increase up-front costs by between \$200 and \$2,500 depending on the type of system installed (although there are ongoing savings of between \$237 and \$340 per year which help offset these costs⁸).
- The new 5-star energy equivalence rating, 4-star toilets, 3-star tap-ware and 80 per cent energy efficient lighting requirements, which were introduced in March 2009, will add approximately \$1,000 to the cost of a new home. However, these costs will be offset by reduced operational costs.
- Use of outdoor living areas (encouraged as part of the Sustainable Housing policy as a means of gaining a credit towards a 5-star energy equivalent rating from March 2009) can reduce artificial cooling requirements by between \$140 and \$315 per household per year.

Stage 2 Sustainable Housing initiatives will include increased MEPS for airconditioners proposed to commence from 1 September 2009, phase-out of electric hot water systems in gas-reticulated areas from 1 January 2010, and a minimum 5star energy equivalence rating for new units from 1 March 2010.

# 2.6 Queensland Solar Hot Water Program

The Queensland Solar Hot Water Program (QSHWP) commenced on 1 July 2009 and will deliver up to 200,000 solar and heat pump hot water systems over three years. Under the QSHWP, eligible participants will have access to a standard installed and warranted solar or heat pump hot water system for a payment of \$100 for eligible pensioners and low income earners and \$500 for other eligible participants. To be eligible for the QSHWP, participants must also be eligible for the Commonwealth's \$1,600 Solar Hot Water Rebate. It is estimated that the impact of 200,000 households switching over to solar hot water will reduce greenhouse gas emissions by 630,000 tonnes over the three year life of the Program and more than 4.9 million tonnes over the life of the systems. It is estimated that the average solar hot water system uses approximately 20 per cent of the energy used by a comparable electric storage heater.

# 2.7 Big Light Switch

During November 2008, the Queensland Government gave away one million energy saving light bulbs as part of The Big Light Switch initiative. The campaign was undertaken to help Queenslanders reduce their carbon footprint by switching to more efficient lighting. The Big Light Switch aimed to assist householders to save up to \$11 per bulb annually on their electricity bills and reduce emissions by approximately 0.75 tonnes per bulb over its life. This is equivalent to savings of approximately 750,000 tonnes of greenhouse gas emissions from the Big Light Switch campaign, assuming all of the one million bulbs are installed.

⁷ ABCB Final Regulatory Impact Statement RIS 2002/04 – Energy Efficiency Measures – BCA Volume Two (Housing Provisions)

⁸ Sustainable Housing Policy (Stage 2) – Consultation Outcomes – Policy Submission (November 2008)

# 2.8 Internal Queensland Government initiatives

The Queensland Government has invested in energy efficiency retrofits, energy performance contracts and building services upgrades which have led to reduced energy costs for government, reduced demand for electricity infrastructure (especially in remote locations), reduced ongoing maintenance or replacement costs for certain plant and equipment and improved working environment for building occupants, for example improved lighting. These changes are important to demonstrate government leadership and commitment to energy efficiency and reducing greenhouse gas emissions.

#### 3 IN ECONOMIC AND ENVIRONMENTAL TERMS, WHAT ENERGY EFFICIENCY INITIATIVES HAVE BEEN EFFECTIVE IN QUEENSLAND?

This section discusses some of the most effective Queensland Government energy efficiency initiatives. Note that this section only discusses initiatives where there is data available to prove the effectiveness, therefore many of Queensland's more recent programs are not included in this section, for example the Big Light Switch was launched in November 2008 and the latest sustainable housing requirements were introduced in March 2009.

# 3.1 National Framework for Energy Efficiency

It is estimated that NFEE Stage One projects will yield 50 PJ of energy savings and 3.6 million tonnes of greenhouse gas by 2015, and gross domestic product benefits of up to \$400M per year nationally by 2015. These significant benefits will be added to by the NFEE Stage Two projects and the NSEE, which is being developed to ensure acceleration of a nationally consistent approach to energy efficiency.

# 3.2 Minimum Energy Performance Standards

NFEE Equipment Energy Efficiency initiatives and regulatory tools, such as MEPS will continue to increase the average energy efficiency of various appliances by stopping the sale of energy inefficient appliances. The benefits of appliance efficiency reduce Queenslanders' household emissions as well as electricity bills. By 2020, the MEPS are estimated to have saved a total of 5,500 GWh of electricity across Queensland.

# 3.3 ecoBiz Industry Partnership Program

The ecoBiz program has proven effective, delivering significant environmental and economic savings to Queensland businesses while operating on an annual budget of approximately \$2.3M. ecoBiz helps businesses to have achieve resource and cost savings through more efficient use of energy, materials and water reducing waste disposal, and improving productivity and staff morale. The program can assist businesses to gain competitive advantage by meeting community expectations for better environmental performance and growing demand for 'environmentally friendly' goods and services.

Businesses which complete the program have reduced their annual greenhouse gas emissions and energy costs by an average of 16 per cent and 12 per cent respectively. A case study for this program is the discount warehouse The Good Guys Capalaba, where they have been refining its processes to reduce waste, and informing customers about the benefits of water- and energy-efficient appliances. As a result, sales of these appliances have risen dramatically, reducing household energy and water consumption and greenhouse gas emissions.

The Queensland Government is able to deliver the ecoBiz program with low operating costs because it empowers businesses to adopt a do-it-yourself approach to identifying opportunities and implementing energy efficiency initiatives through the ecoBiz Toolbox. Free training is also available to participants.

Accredited consultants are available for a fee to guide participants through the program, stimulating demand for green collar jobs. It is anticipated that the fees charged by facilitators are offset by the avoided costs associated with energy and water usage and waste disposal.

Rebates have allowed businesses to invest in innovative technical solutions at reduced cost. Outcomes of these projects have been shared with other businesses in the form of diffusion of best practice. Over the life of the ecoBiz rebate program, a total of \$2.48M has been committed in rebate payments. The total annual  $CO_{2-e}$  reduction attributable to initiatives through ecoBiz is forecast to amount to a total of 25,865 tonnes.

# 3.4 Queensland Sustainable Energy Innovation Fund

The Queensland Sustainable Energy Innovation Fund (QSEIF) assists Queensland based organisations to develop innovative technologies that reduce consumption of fossil fuels, water or greenhouse gas emissions. The program focuses on the development and commercialisation of sustainable technologies and has provided developers of energy efficiency technologies with funding at the beginning of the commercialisation process. A wide range of technologies have already been developed as a result of QSEIF funding projects in a wide range of industry sectors including water supply and waste treatment, bio-fuels, lighting, refrigeration, food drying, solar power, remote area power supply, water heating and road transport.

The QSEIF has proven effective in leveraging additional large scale venture capital investment and ultimately delivering significant post-commercialisation energy usage reduction cost savings and reductions in greenhouse gas emissions. Since 1999, QSEIF has committed \$8.9M in funding to 77 innovative energy and water saving projects in Queensland. QSEIF has achieved average annual savings in greenhouse gas emissions of around 17,850 tonnes each year per project.

# 3.5 ClimateSmart Home Service

The ClimateSmart Home Service provides and installs energy efficient light globes and showerheads to Queensland households. The Service also offers a household energy audit and customised energy and water efficiency plan. The response to the ClimateSmart Home Service has been overwhelmingly positive, with high subscription and satisfaction rates. Part of the ClimateSmart Living initiative, the Service can save participants up to \$250 on energy bills each year and up to 5.3 million tonnes of greenhouse gases over the life of the improvements by providing participating households with energy efficient light bulbs, and a customised Energy and Water Efficiency Plan. As of 4 July 2009, 70,980 households have received their ClimateSmart Home Service.

# 3.6 ClimateSmart Living

ClimateSmart Living encourages households, businesses and community groups to take incremental steps to reduce their carbon footprint, including reducing their energy use. The success of the program is evidenced by four surveys undertaken by AC Nielsen in 2007/08. Overall, as a result of the ClimateSmart Living (phase 1) more than 75,000 Queenslanders pledged to take action resulting in a reduction of

5,000 tonnes of greenhouse gas emissions. ClimateSmart Living (phase 2) has built on the success of phase 1.

# 3.7 Building Efficiency Standards

Raising building energy efficiency standards is a cost-effective way of ensuring greater energy efficiency outcomes at very little cost to government. Regulations for improved housing design, banning electric hot water systems and requiring efficient lighting, have been particularly effective in improving uptake and market expansion. This has flowed on to increased sales of energy-efficient lighting in existing housing.

The Queensland Government is enhancing energy efficiency in government buildings through a formal commitment to energy efficiency through the Strategic Energy Efficiency in Queensland Government Buildings. This has been effective in encouraging agencies that own or occupy buildings to adopt energy efficiency improvements by requiring each agency to provide details of the carbon emissions related to electricity use in its building portfolio in its departmental annual report.

# 3.8 Queensland Environmentally Sustainable Schools Initiative

The Queensland Environmentally Sustainable Schools Initiative is introducing the EnergyWise program in schools. By December 2010, 180 schools will have participated in the EnergyWise program. The first annual report from 2008 for the EnergyWise program has identified an outcome of the delivery of an average of 10 per cent energy reduction in the core participating schools.

#### 4 WHAT ROLE DO COMMONWEALTH INITIATIVES, INCLUDING THE PROPOSED CARBON POLLUTION REDUCTION SCHEME, PLAY IN ENCOURAGING ENERGY EFFICIENCY?

# 4.1 Carbon Pollution Reduction Scheme

From its proposed commencement in July 2011, the CPRS will require Australia's largest emitters of greenhouse gases to surrender an 'Australian Emissions Unit' (AEU) for every tonne of carbon they emit into the atmosphere. The financial cost associated with acquiring or generating AEUs will either be borne by the liable firm, providing an incentive to reduce its emissions, or passed on to consumers, providing an incentive for consumers to reduce their consumption of emissions-intensive goods and services. This will effectively introduce a carbon price signal for consumers, and as energy costs rise, the incentive to purchase and use more energy-efficient products will increase.

The introduction of a price signal for carbon will mean that the cost of electricity, gas and fuel (along with other emissions-intensive inputs and goods) will increase and that these cost increases will flow through the entire economy, affecting all businesses and households. In theory the CPRS has been designed so that these increased costs will cause all businesses and households to assess their direct emissions and the amount of electricity and gas they use and consider ways to mitigate or alleviate the impact of this new cost. If it is assumed that an energy efficient appliance is more expensive than a less efficient alternative (even though this is not always the case), then the extra cost will be recouped in lower energy bills over time. As energy prices continue to increase due to the increasing carbon price, the time it takes to recoup the extra cost (the payback period) will reduce.

The Commonwealth Government has committed to providing a package of direct cash assistance and tax offsets to assist low-and middle-income households to adjust to the impacts of the CPRS from 2011–12.

The Commonwealth Government has also announced the \$75.8M Australian Carbon Trust which will be established to help businesses and households contribute to emissions reductions under the CPRS. Under the Trust, a website will be established to allow households to calculate their energy use and buy and retire carbon permits equivalent to their use. For businesses, the Trust will provide funding to undertake efficiency measures with the funding to be paid back through savings on energy bills. Once the original funding is re-paid, businesses will retain the savings on their energy bills. This essentially reduces the capital cost burden for businesses undertaking energy efficiency initiatives.

# 4.2 Complementary measures

While the CPRS addresses the primary market failure of a lack of price signal for greenhouse gas emissions for large emitters, other additional market failures can prevent individuals and firms from responding effectively to the emissions price. For example, barriers to action such as a lack of information or high upfront costs can prevent the market from implementing the most cost-effective emissions reductions measures such as energy efficiency. The Commonwealth Government's 2008 White

Paper on the CPRS⁹ recognised the need for complementary measures (operating in parallel with the CPRS) in order to drive energy efficiency improvements.

On 3 February 2009, the Commonwealth Government announced the \$3.9 billion Energy Efficient Homes package as part of its Nation Building and Jobs Plan. The package includes:

- the provision of up to \$1,600 for the installation of ceiling insulation for owneroccupiers – benefiting around 2.2 million homes and available until the end of 2011;
- a doubling of the Low Emission Plan for Renters up to \$1,000 for landlords to install insulation in their rental properties benefiting around 500,000 homes and available until 30 June 2011; and
- the removal of the means test and increase to \$1,600 for the Solar Hot Water Rebate available until 30 June 2012.

Queensland has also developed programs which leverage national incentives to encourage greater up-take of energy efficiency measures, for example:

- The Queensland Solar Hot Water Program leverages the Commonwealth solar hot water rebate and Renewable Energy Certificates that will be generated through the Commonwealth's proposed expanded national Renewable Energy Target.
- The Smart Energy Savings Program commenced 1 July 2009. This has built on the reporting requirements under the Energy Efficiency Opportunities program to require that participating businesses undertake an energy audit, develop an Energy Savings Plan and publish their actions for each relevant site, on a five-yearly cycle.

The CPRS does not deliver direct incentives for abatement associated with energyefficient appliances. Rather, it focuses on the emitters and relies on price signals flowing through from that level to affect consumer's behaviour. The price is determined by the cost of meeting an emissions cap set by the Government.

# 4.3 National Framework for Energy Efficiency

Since 2004, the Queensland Government has worked with the Commonwealth and other States and Territories to implement energy efficiency programs through the NFEE. The NFEE includes a number of measures addressing barriers and challenges that prevent the realisation of the economic potential of energy efficiency across industrial, commercial and residential sectors.

Stage One of NFEE included eight implementation plans relating to:

- Residential and commercial buildings;
- Commercial & industrial energy efficiency;
- Commercial & industrial sector capacity building;
- Government energy efficiency;
- Appliance & equipment energy efficiency;
- Trade and professional training & accreditation;
- General consumer awareness; and
- Finance sector awareness.

⁹ http://www.climatechange.gov.au/whitepaper/report/index.html

The most tangible achievements of NFEE Stage One include the development of MEPS, the Energy Efficiency Opportunities Program for large (mainly industrial) energy users, and the commercial and residential building code regulation programs. It is estimated that Stage One projects will yield annual energy savings of 50 PJ and gross domestic product benefits of up to \$400M per year, by 2015.

In addition to the original eight programs, five new initiatives were included in 2007 for NFEE Stage Two:

- Heating, ventilation and air conditioning high efficiency systems strategy;
- Phase-out of inefficient incandescent lighting;
- Government leadership though green leases;
- Development of measures for a national hot water strategy; and
- Energy efficiency data gathering and analysis project.

Also included in the Stage Two plan was direction to expand and enhance the MEPS program to cover more product types and make existing regulation more stringent. This responsibility was conferred on the existing Equipment Energy Efficiency Committee. It is estimated that the Stage Two energy efficiency measures will have an additional economic benefit of \$791M and greenhouse gas savings of 14.2 million tonnes per year by 2020 nationally.

To date, the majority of the national energy efficiency measures have been developed and implemented under the Ministerial Council on Energy (MCE) through the auspices of the NFEE. However, to accelerate energy efficiency measures across the Australian economy, the NSEE has been developed to accelerate and broaden the scope of energy efficiency initiatives. The initiatives and funding under the NFEE will now be incorporated into the NSEE.

# 4.4 National Strategy on Energy Efficiency

A National Partnership Agreement on Energy Efficiency was agreed by COAG on 2 July 2009, providing Commonwealth funding of \$88.3M over four years for the delivery of the joint activities under the NSEE. The NSEE will deliver a nationallyconsistent and cooperative approach to accelerate energy efficiency efforts and complement the CPRS by addressing barriers that are preventing the uptake of energy efficiency opportunities, such as split incentives and information failures. The mandates goes beyond the MCE and includes and expands the work of all Ministerial Council's involved in energy efficiency including the Local Government and Planning Ministers Council; the Building Ministers Forum; the Australian Transport Council; and the Environmental Protection and Heritage Council.

The Queensland Government will continue to work collaboratively with the Commonwealth, States and Territories to implement a range of initiatives under the Strategy that will deliver a nationally-consistent and cooperative approach to accelerate energy efficiency efforts. The NSEE is comprised of a suite of new and existing energy efficiency measures, including:

- improving the energy efficiency of households and businesses e.g. by maximising the potential for the application of commercial co-generation, and implementing benchmarking in consumer energy bills;
- addressing market failures in the uptake of energy efficiency e.g. by accelerating and expanding the current MEPS and labelling program for appliances;

- making buildings more energy efficient e.g. by improvement in minimum energy efficiency standards;
- committing to the phase-out of electric hot water systems from 2010 onwards; and
- improving energy efficiency of government operations e.g. by significantly improving the environmental performance of government buildings and reducing travel relating to government business and its related greenhouse gas emissions.

### 4.5 The National Solar Schools Program

A partnership has been established between the Queensland Government and the Commonwealth Government to develop the National Solar Schools Program (NSSP).

NSSP gives Australian schools the opportunity to access grants of up to \$50 000 (GST exclusive) to install solar power systems and a range of renewable energy and energy efficiency measures. A partnership agreement has been established between the Department of Education and Training (DET) and the Federal Department of Environment, Water and the Arts. This agreement has enabled both the State and National programs to have solar panels installed simultaneously, thereby realising better value for money outcomes and reducing the disruption to schools. The NSSP is being administered by DET in Queensland in 2009-10.

#### 5 WHAT ADDITIONAL POLICIES SHOULD THE QUEENSLAND GOVERNMENT IMPLEMENT TO ENCOURAGE ENERGY EFFICIENCY IMPROVEMENTS?

Broadly, there are two strategies which set the direction for Queensland Government's energy efficiency programs. The first is the *Towards Q2: Tomorrow*'s *Queensland* plan, which sets out a series of targets for the community, industry and government to achieve by 2020. One of the targets is to protect our lifestyle by cutting Queenslanders' carbon footprint by one third with reduced car and electricity use.

The second overarching strategy is *ClimateQ: toward a greener Queensland*, which sets out the next crucial steps for Queensland's transition to a lower carbon future. ClimateQ consolidates and updates the approaches taken in ClimateSmart 2050 and ClimateSmart Adaptation 2007-12, and takes into account the latest national and international science and policy. Together with the Government's Toward Q2 plan, the new strategy provides a suite of new initiatives and investments to take Queensland's long term response to climate change into a new phase.

Additionally, a state-wide energy efficiency and demand management strategy, the Queensland Energy Management Plan, will be developed by the Queensland Government in the second half of 2009. This will set out the Government's strategic direction and priorities and will draw from the findings of this Inquiry and complement the recently released Queensland Renewable Energy Plan¹⁰.

Further, during the March 2009 election the Queensland Government committed to accelerating sustainable development through its 'Cleaner, Greener Buildings' policy which aims to:

- develop a 'Green Door' fast-tracked assessment process for sustainable development, using dedicated case managers and expanded Ministerial powers to speed up development decisions;
- raise the minimum energy equivalence rating for all new houses to 6-star by the end of 2010 and 5-star for new units from 1 March 2010;
- invest \$500,000 in a 'Green Building Skills Fund' to boost sustainability expertise within Queensland's building and construction industry by partnering with peak industry bodies to deliver accredited training courses, with a particular emphasis on training in regional Queensland;
- prevent Bodies Corporate and developers from prohibiting energy efficient building practices and materials like lighter roofs and solar hot water systems; and
- require new units and office buildings to provide electricity sub-metering which will give office tenants and unit owners an incentive to reduce their individual energy consumption and cut power bills and greenhouse gas emissions.

Options for new policy approaches will be considered in the development of the Queensland Energy Management Plan.

¹⁰ http://www.cleanenergy.qld.gov.au/zone_files/Renewable_Energy/oce_rep_11_web_final.pdf

#### 6 WHAT BARRIERS AND IMPEDIMENTS TO ENERGY EFFICIENCY ENHANCEMENTS EXIST IN QUEENSLAND?

While the introduction of the CPRS will create a price signal for carbon emissions, other impediments to the adoption of energy efficiency improvements are likely to remain due to a range of market and information failures affecting businesses and individuals. These market failures are likely to be particularly pronounced when the economy is transitioning to higher energy prices as a result of the introduction of a price on carbon.

The barriers to energy efficiency enhancements are discussed within these broad themes:

- Competing priorities of households and businesses energy costs generally represent only 2.5 per cent of household expenditure and often only a small percentage of business expenditure, therefore it can be difficult to compete with other priorities for investment or action in energy efficiency measures;
- Information barriers there is a lack of information on the potential benefits including cost savings associated with energy efficiency, limiting the demand and willingness to pay for energy efficiency appliances and buildings;
- III. Capital constraints while most energy efficiency improvements will provide economic savings, they often require up-front capital expenditure which is a barrier for many households and businesses;
- IV. Incentive barriers split incentives mean that the benefit is not always available to the party who makes the decision that will affect energy end use; and
- V. Skills and capacity barriers a shortage of professionals with knowledge and skills in sustainable building practices and technologies can lead to less sustainable options being implemented because the expertise can not be sourced within desired timeframes and budgets.

# 6.1 Competing priorities of households and businesses

Competing priorities for investment in households and businesses means consumers are less likely to adopt energy efficient practices and purchase energy-efficient products. Electricity costs represent an average of around 2.5 per cent of household expenditure, and although energy efficiency makes good economic sense for households and businesses, other factors are often given a higher priority in decision making and behavioural change. For example, unless the business is a large, energy-intensive facility, staffing costs are generally proportionally far higher than the cost of energy. In such cases, businesses and households make investment decisions according to other priorities.

The price consumers pay for electricity is derived from a number of factors, including generation costs, network costs (including transmission and distribution) and retail costs. Currently Queensland has the lowest wholesale electricity price of all Australian states participating in the National Electricity Market (NEM), at around \$31.42/MWh in 2009. In terms of retail prices, for the last two years Queensland has had the 4th and 3rd lowest retail electricity prices in Australia (see Table 1)

# Table 1. Increases in Residential Regulated Retail Electricity Prices across Australian States 2008-09 to 2009-10

Financial Year	ACT	WA	QLD	NT	VIC	NSW	TAS	SA
Annual average household bill	\$1,147	\$1,228	\$1,278	\$1,285	\$1,291	\$1431	\$1,481	\$1,519
(est) 2009-10 7,000kWh	Lowest	2 nd lowest	3 rd Iowest	4th	5th	6th	7th	Highest

Financial Year	WA	ACT	NT	QLD	VIC	NSW	TAS	SA
Annual average household bill (est) 2008-09 7,000kWh	\$972 Lowest	\$1,075 2 nd Iowest	\$1,089 3 rd lowest	\$1.105 4th	\$1,162 5th	\$1,183 6th	\$1,378 7th	\$1,444 Highest

Notes:

- 1. Prices quoted are **GST Exclusive**.
- 2. Tariffs are based on standard domestic tariffs, with no controlled load.
- 3. ACT prices are based on the domestic non-direct debit plan.
- 4. Victorian prices are Examples Only. Victoria deregulated its retail electricity prices on 1 July 2008. Price increases for market contracts will vary between retailers. Prices are based AGL domestic tariff GD/GR for the Citipower distribution region (Melbourne and surrounding areas) for 2009-10 and TRUenergy residential GD/GR tariff for 2008-09.
- 5. NSW prices are an average of the Standard Retailers (Energy Australia, Integral Energy and Country Australia) annual average household bills.

### 6.2 Information failures

There are a number of impediments to energy efficiency improvements relating to information and data. Lack of accessible information and data is a key barrier to those businesses unaware of their energy inefficiencies, or those looking to make improvements. Businesses require this information to make informed decisions on energy efficiency actions. For example, there is a lack of accessible information and data to help create an understanding of the supply and applications of energy efficiency and conservation leads to a failure of individuals to properly trade-off upfront costs against the benefits from lower energy costs in the future.

According to the 2007 Business Sustainability Survey into the barriers to adoption of eco-efficiency actions among small and medium enterprises (SMEs) in Queensland, a perception that eco-efficiency was not relevant to their activities or operations emerged as the most significant barrier. The survey found that many industries with the potential to operate more efficiently did not seem to be aware of the advantages or relevance to them.

A report commissioned by NFEE's Energy Efficiency Data Project identified the key information and data failures in relation to energy efficiency as:

- an absence of consistent definitions and common understanding;
- inconsistent data access, awareness and communication;
- data relating to energy consumption by small users (those below the National Greenhouse and Energy Reporting System threshold) will not be available unless it is collected by a complementary business survey;

- energy consumption data can not be compared internationally as it is not available to a sufficient level of disaggregation i.e. it cannot be broken down to the same degree as data from other countries;
- activity data such as building floor area in the commercial sector and production output data for many of the manufacturing sub-sectors is not available;
- an understanding of how energy is used by technology and process in the industrial sector is lacking; and
- more robust information is needed on barriers (given many energy efficiency polices are based on these) and on attitudes, behaviours and skills/capability in all sectors.

Note that many of these gaps are currently being addressed through the NFEE Stage Two projects.

Other information barriers include:

- Lack of reliable and clear information on the type, availability, comparative features, potential benefits and appropriateness of sustainable technology and energy efficiency measures. This can be a significant obstacle where up-front investment is required, for example, a lack of information about the lifecycle costs, particularly the annual energy savings, of solar hot water systems can lead purchasers to buy a cheaper electric system which will cost more to run over its lifespan.
- Bounded rationality influencing energy efficiency decisions. This is where
  individuals and businesses are limited in their ability to use, store and analyse
  vast quantities of data and are not always able to make optimum choices. For
  example, a building manager may be assessing priorities for a major retrofit of
  a building. Due to the large number of decisions needed and their individual
  capacity to access and interpret information about technologies, the manager
  may not incorporate the best or most cost-effective measures.
- Lack of visibility and ready access to timely energy consumption data from energy retailers (e.g. difficulty in obtaining consolidated billing), and of readily available energy-consumption benchmarks for different types of buildings or operations.
- Poor understanding of how much total energy is used in the production of different agricultural commodities (i.e. energy budgeting). For example bulk transport over long distances might be more energy-efficient than systems that require long-term storage of produce.
- Difficulty in readily identifying innovative and new technologies that are tried and tested and 'market-ready'.
- Related to the above, an aversion to the risk of adopting new or ill-understood technology, systems and practices.

#### 6.3 Capital constraints

While most energy efficiency improvements will provide economic savings over time, they often require significant up-front capital expenditure, for example purchasing more efficient appliances or developing more efficient processes, which is a barrier for many households and businesses. Capital constraints are particularly apparent

for low-income households, but are also relevant to higher-income households and businesses when energy efficiency investments are not a high priority in the budget.

For Government agencies, sourcing funding for energy efficiency initiatives from within an already tight budget remains a significant barrier. The ability of the borrowing agency to service the loan, particularly during the current financial climate may be an impediment.

Low-income households and small businesses may trade off lower capital costs now for higher ongoing operating costs due to the relatively large opportunity costs these groups may face in accessing funds.

Many businesses base decisions on internal rates of return or the payback period for their investments, and energy efficiency improvements may have a longer pay-back period than alternative investments that deliver productivity or profit gains.

According to the 2007 Business Sustainability Survey into the barriers to adoption of eco-efficiency actions among SMEs in Queensland, the most frequently cited barriers to eco-efficiency identified from the overall sample relate to a lack of internal capacity of the business to carry out the changes required to implement energy efficiency actions.

Capital constrains also affect households. In particular, socially-disadvantaged households (including Indigenous people, unemployed people, sole parents and pensioners) may be unable to afford energy efficient appliances. Similarly, tenants in public housing are unable to access some government initiatives such as the Solar Hot Water Program.

#### 6.4 Incentive barriers

Theoretically, the opportunity to save money provides an incentive for households and businesses to take steps to improve their energy efficiency. However, contracted arrangements including tenancies may mean that the benefit is not available to the party who makes the decision that will affect energy end use. An example of such divergent interests, or 'split incentives' is in rental accommodation where landlords or developers have little incentive to invest in energy efficiency if it is the tenants who are likely to save money on their energy bills. Similarly, package builders have little incentive to build more energy-efficient buildings, when the purchaser will benefit (in the absence of clear market recognition of the value of energy efficiency). This means that developers or landlords may choose to install less efficient technologies that have lower upfront costs rather than install more expensive, more efficient ones that deliver benefits to tenants.

Disincentives can also occur in some situations, for example most office buildings and large shopping centres have a single meter and tenants share the cost of electricity on the basis of floor area, creating a disincentive for individual tenants to reduce their energy consumption. In this same case landlords may also be discouraged from promoting energy-efficient behaviours by tenants due to the profits being made in on-selling electricity to tenants at a higher rate than the wholesale price.

Research, development and deployment (RD&D) of new energy efficiency technologies and practices will be crucial if Australia is to achieve large-scale

improvements in its energy productivity. However, investing in RD&D presents a degree of risk for businesses, because the benefits are often shared by competitors and the community as a whole, therefore creating a barrier to the private sector investing in "public good" RD&D.

# 6.5 Skills and capacity barriers

There is a widespread skills shortage across the energy efficiency sector. A shortage of professionals with knowledge and skills in sustainable building practices and technologies can lead to less sustainable options being implemented because the expertise can not be sourced within desired timeframes and budgets. A related effect is that, with fewer providers skilled in energy-efficient services, there is less market promotion of energy efficiency.

The 2007 Business Sustainability Survey also identified that Queensland based developers of innovative sustainable technologies and services experience significant difficulties accessing markets as the result of limited marketing skills, knowledge and resources.

Skills shortages within the energy efficiency sector are not simply due to insufficient training but other issues, including:

- a lack of career paths in some occupations;
- a lack of knowledge of the sustainable energy industry;
- the nature of some jobs offered in the industry;
- geographical remoteness;
- some work not being compatible with desired lifestyles; and
- the context of skills shortages in the broader energy industry.

The energy efficiency services industry is aware of these skills shortages and is looking to address them through a variety of initiatives. In particular, Energy Skills Queensland has formed the Queensland Energy Efficiency Industry Leaders Group which is developing a series of action plans to address skills shortages in key sustainability industries. It is understood that Energy Skills Queensland will be preparing a separate submission to this Inquiry. In addition, a key NFEE initiative is to seek to coordinate, develop and implement training and accreditation for key trades and professions.

#### 7 WHAT POLICIES SHOULD BE CONSIDERED TO OVERCOME THESE BARRIERS AND IMPEDIMENTS?

The Queensland Government is committed to ongoing policy development to improve energy efficiency across all sectors and overcome the barriers identified earlier in this submission. Many of the policies and programs outlined elsewhere in the submission have been targeted to overcome barriers and impediments to energy efficiency. This section highlights some ideas for new or improved policies for the Queensland Government.. Note that options for new policy approaches discussed in this section will be considered in the development of the Queensland Energy Management Plan later in 2009.

Given the diverse range of barriers and impediments to energy efficiency improvements, a suite of policy approaches is required to improve the uptake of energy efficiency improvements. These policy approaches are discussed broadly under three themes:

- I. Information and skills development;
- II. Regulatory measures; and
- III. Financial incentives and pricing.

#### 7.1 Information and skills development

Policies relating to information and skills development can include improving access to information, education and training.

#### Access to information

Statistics obtained from the 2008 Queensland Household Survey indicate that 80 per cent of adults would be motivated to use less electricity if their bill showed their consumption was above average for the area. To promote the efficient use of energy, information is required that motivates, facilitates and reinforces rational and responsible behaviour by businesses and consumers. Information and education is important to encourage a broader understanding of energy use, so consumers can look beyond the cost of their power bill and understand the impacts of their consumer choices.

The NSEE is designed to ensure Australians have access to clear, consistent and credible information on energy efficient products and services. The jurisdictions have agreed to collaborate when developing communication campaigns designed to change community attitudes and behaviours in relation to energy efficiency, and consumers will be given energy use benchmarking information. Governments will support the uptake of new technologies by showcasing and promoting energy efficient technologies and energy conservation measures.

The industry and business component of the NSEE will assist companies and smaller businesses to address market impediments to energy efficiency uptake. Initiatives will help ensure that businesses have adequate knowledge, skills and capacity to operate in a low carbon economy. The NSEE has a strong focus on assisting businesses to make informed choices to improve their energy efficiency. Targeted outreach information, support to identify and implement projects with high energy savings potential, and help to assess and prioritise energy efficiency opportunities will be part of the NSEE. Additionally, there will be measures targeted at SMEs.

#### Energy efficiency labelling

Energy efficiency labelling assists consumers by providing information, allowing them to make rational choices having regard to likely operating costs. Energy efficiency labelling creates market pull for efficient products by providing clear and objective information on energy efficiency to consumers. Energy labelling aims to:

- encourage consumers to select the appliance that uses the least energy and which meets their energy service needs;
- enable consumers to take account of the operating costs of appliances and to minimise the total life cycle cost of the appliance where possible; and
- encourage manufacturers and importers to improve the energy efficiency of the products that they supply to the market.

Further increasing the range of products where information on energy efficiency is available will assist in promoting the features and potential benefits of energy efficient design, fixtures and fittings.

#### Education and training

There is a need to identify gaps and to support the development of the skills and capacity of the energy services sector, particularly in the area of energy efficiency advice, audit and assessment. Developing these skills will assist the transition to a low carbon economy and help build the jobs of the future. By 2010 the National Vocational Education and Training Sustainability Policy and Action Plan will facilitate the following:

- all new Queensland training products will integrate sustainable principles and practices; and
- the uptake of green skills within apprenticeships and traineeship will increase.

This is a key focus of Stage Two of NFEE, which aims to enhance education and training by:

- continuing to incorporate energy efficiency into formal qualification training curricula and ongoing professional development courses for relevant trades and professions;
- developing an accreditation protocol that ensures consistent standards;
- developing specific accreditation schemes for identified trades and professions; and
- encouraging recognition by professional organisations and government agencies for accreditation and related training.

The increase in the number of trades and professions trained in energy efficiency will itself assist in expanding demand for such services, especially if accompanied by a system of accreditation to provide consumers reassurance about the quality of the services.

Under the NSEE, actions will also be taken to identify skills gaps and support development of the skills and capacity of the energy services sector, particularly in the area of energy efficiency advice, audit and assessment.

# 7.2 Regulatory measures

Regulatory changes are sometimes required to set the benchmark for practices relating to energy efficiency. Regulatory measures include:

- MEPS and building codes;
- energy savings targets for retailers; and
- removing regulatory impediments.

#### Minimum Energy Performance Standards and Building codes

By supporting and implementing approaches such as MEPS, Queensland can help to overcome barriers to energy efficiency in households and business. Introducing MEPS mean that governments do not allow manufacturers, importers and retailers to lawfully supply products that do not meet predetermined efficiency levels. Building energy efficiency standards have been set out in the Building Code of Australia, requiring a 5-star standard for detached residences and a 4-star performance for commercial buildings, and the NSEE includes commitments to tighten those requirements.

Mandatory performance standards in the building and appliance sectors are likely to provide a particularly useful contribution to the energy efficiency policy mix in the transition period to the CPRS, and are supported in Queensland.

The proposed measures in the NSEE include an acceleration of Australia's current MEPS and labelling program through the Equipment Energy Efficiency (E3) program. The program includes implementation of new and revised standards in the E3 work plan which was developed through stakeholder engagement and a review of international best practice.

Subject to a regulatory impact analysis, national legislation will be established to provide a nationally consistent policy framework covering appliance and equipment MEPS and labelling, streamlining governance arrangements and regulatory processes, simplifying compliance and enforcement responsibilities for all stakeholders, and reducing transaction costs for business.

Mandatory disclosure of residential building energy, water and greenhouse performance at the time of sale or lease will be phased in around Australia over the next few years. This will commence with energy efficiency by May 2011, to complement the Commonwealth's Energy Efficient Homes program and encourage the transformation of Australia's building stock.

The Queensland Government's Smart Energy Savings Program (SESP) which commenced on 1 July 2009 aims to drive energy saving improvements in Queensland businesses through requiring participating businesses to undertake an energy audit, develop an Energy Savings Plan and publish their actions on a fiveyearly cycle. While the SESP does not mandate the implementation of identified measures this may be considered at a later stage.

#### Energy savings targets for retailers

The Victorian, South Australian and NSW Governments have introduced separate market based instruments to promote energy efficiency measures, namely the:

• Energy Savings Scheme (formerly known as the Greenhouse Gas Reduction

Scheme) operates in New South Wales and the Australian Capital Territory;

- Energy Saver Incentive Scheme in Victoria; and
- Residential Energy Efficiency Scheme operating in South Australia.

These schemes aim to help cut electricity use in households and businesses by setting an energy savings target for electricity retailers. Retailers meet their target by surrendering energy saving certificates which they obtain through demonstrating energy consumption reductions by their customers. This requirement results in an incentive on the retailers to promote energy efficiency in their customers' premises or operations, through providing incentives to customers. It effectively creates a market for consumers to generate energy savings. This style of policy can have flow on benefits by creating new industries in the area of energy savings products and services—where companies provide an energy savings service to consumers (at a fee) that may involve doing analysis and design, procurement of more efficient equipment at cheaper prices using bulk purchase arrangements or providing an auditing and reporting service.

There are key similarities between these instruments, broadly known as 'white certificate' or tradeable energy efficiency certificate schemes, and the three jurisdictions have committed to work together to achieve a greater degree of continuity to simplify operations in multiple states. The Queensland government will be closely observing the outcomes of a review currently being undertaken by these States.

#### Removing regulatory impediments

Unintentional regulatory barriers may be created where regulation is developed for an unrelated purpose. Some regulations can favour higher energy consumption and provide a perverse incentive to adopt inefficient technology, and should be reviewed and removed. Examples include, community covenants that regulate black roofs and restrict the use of solar technologies, or where body corporate provisions impede entry into energy performance contracts.

A review of existing regulations and government interventions to remove unnecessary barriers to energy efficiency improvements and perverse incentives with respect to energy use will be investigated as part of the development of the Queensland Energy Management Plan.

# 7.3 Financial incentives and pricing

#### Prioritising investment in energy efficiency

Electricity costs represent an average of around 2.5 per cent of household expenditure. Although energy efficiency makes good economic sense for households and businesses, savings are often pursued in other areas of household or business expenditure (such as staffing and travel). Creating a price signal on carbon will help to take into account the full cost of production and distribution, as well as externalities relating to carbon emissions. This is particularly relevant for large energy users who are most likely to respond to changes in the energy price. Through the work of the Queensland Government's carbon industry analysis project, Carbon Outlook, it is clear that businesses are concerned about the impacts of the CPRS but know little about the likely impacts, including the impact on electricity prices. The project is undertaking industry analysis of the impacts of the CPRS on Queensland businesses.

Energy prices are expected to rise in the future as a result of the price of carbon under the proposed CPRS, the expanded national Renewable Energy Target and increasing expenditure on infrastructure to meet peak demand growth.

Providing customers with more detailed information on their energy use, together with information on energy efficient equipment and behaviours would help customers to make energy-efficient consumption choices, while direct load control is expected to assist the management of peak demand growth. Queensland's electricity distributors are currently preparing to trial 'smart meters' and load control technology to determine the most cost-effective way to achieve network benefits. As information becomes available on the different types of technology, the Government will consider the role of these technologies coupled with other strategies such as regulatory reform, in delivering energy efficiency and peak demand improvements.

Further, Queensland's retail electricity pricing regime and tariff structures are currently under review by the independent Queensland Competition Authority (QCA). The review aims to:

- examine the current electricity pricing methodology and alternative methodologies for reflecting the costs of supplying electricity, including network costs and accounting for all State and Commonwealth environmental obligations; and
- 2. examine Queensland's existing retail electricity tariffs and alternative tariff structures which may assist in the long-term management of peak electricity demand and provide an incentive for customers to use electricity more efficiently.

The QCA has been asked to report to government by 31 August 2009. The outcomes of the pricing review will inform the Government's consideration of any amendment to the process for determining the 2010-11 electricity prices.

#### Subsidies and incentives

Statistics obtained from the 2009 Queensland Household Survey indicate that approximately 25 per cent of adults would be motivated by financial incentives to install more efficient appliances and around 25 per cent would be motivated by the possibility of reducing their electricity bill.

Policies or programs to facilitate the purchase of energy efficiency improvements by low income households (including smart financing and well targeted rebates), subsidies for energy efficiency research, development and deployment, and public sector investment in energy efficiency improvements would be likely to reduce the net cost of emissions abatement in the economy.

Energy Performance Contracts (EPCs), where the costs of adopting new energy efficiency measures are paid out of the savings made over time are a useful tool. Queensland has a strong history in establishing EPCs, although there is now an opportunity to streamline their implementation to make them a more attractive option for businesses. For these to work, it's important to target businesses at the appropriate stage of their investment cycle, for example prior to major refurbishments or setting of annual budget priorities.

The NSEE aims to provide incentives for residential building owners to undertake energy efficiency improvements through the continuation of Commonwealth Government Programs such as the Energy Efficient Homes Package which includes the Low Emission Assistance Plan for Renters, the Homeowner Insulation Program, and the Solar Hot Water Rebate.

It will be important to address barriers to the uptake of subsidies and incentives, for example the split benefits disincentive. To do this, specific incentives could be created either through obligations to achieve energy efficiency targets or by removing impediments through targeted regulatory measures.

#### 8 HOW CAN GOVERNMENTS MAKE INFORMATION ON ENERGY EFFICIENCY IMPROVEMENTS MORE ACCESSIBLE?

Making information regarding energy efficiency improvements more accessible would assist in breaking down some of the barriers discussed in this submission. There are several ways that government can make information on energy efficiency improvements more accessible, for example by:

- enhancing engagement and communication with industry and stakeholders;
- enhancing coordination across all levels of government and between government agencies;
- building industry partnerships;
- working with education and research institutions;
- establishing an information hub;
- promoting government grants and funding mechanisms; and
- monitoring and evaluating programs and communicating the results.

Potential strategies to be investigated to deliver on these areas are briefly outlined below. All options for new policy approaches discussed in this section will be considered in the Queensland Energy Management Plan to be developed later in 2009.

# 8.1 Enhancing engagement and communication with industry and stakeholders

Reaching regional audiences: for example the Queensland Water and Energy Sustainable Technologies Network pilot project has experienced marked success in improving accessibility of information on resource efficiency improvements to businesses. There is scope for the regional expansion of the pilot project to facilitate communication with businesses and industries outside of the Brisbane area and increase the accessibility of climatically relevant energy efficiency information throughout the State.

Reaching more business types: for example, expansion of the ClimateSmart Business Associations program could enable a greater number of industry sectors to be targeted, thus increasing the accessibility of information on energy efficiency improvements to the Queensland industry sector. Also Queensland's 'How-to Guides' program has scope to expand the production of best practice guides to address knowledge gaps in industry sectors where no best practice exists currently and energy efficiency awareness is low."

*Improving consumer information:* for example, providing comparative energy use information on energy bills. This is usually in the form of a graph that compares a customer's average energy consumption with a local area average. This has the effect of assisting customers to identify if they are a high energy user, information that is not presently available to the majority of Queensland energy customers. The NFEE has tasked one of its implementation committees to investigate mandating at the national level that all energy retailers provide bill benchmarking information on their customers' energy bills. A Regulatory Impact Statement will be released later in 2009 for public consultation.

Ergon Energy is currently trialling the provision of energy bill benchmarking and comparative information in the Mackay area with approximately 40,000 customers. Ergon Energy plans to expand this program to all their Queensland customers over the coming months.

The NFEE Stage Two project with oversight of the phase-out of inefficient lighting will focus on engagement and education programs to allow consumers to make informed decisions when choosing energy-efficient lighting. The project aims to provide information, education and training to those stakeholders whose decisions and influence are critical to support the phase out of inefficient lighting, including suppliers, retailers, electricians and consumers in all sectors of the economy.

# 8.2 Enhancing coordination across all levels of government and between government agencies

National coordination: can be enhanced by the Queensland Government continuing its involvement in initiatives such as the NFEE and NSEE and sitting on the Australian Building Codes Board. Involvement at the Commonwealth level is important for the Queensland Government to continue to build and improve on developing networks and opening up the channels of communication and information between different levels of Government.

*Delivering a common message:* the proposed Queensland Energy Management Plan will help to clarify roles and responsibilities of Government agencies in relation to energy efficiency and ensure there is a strategic view across all programs.

# 8.3 Building industry partnerships

Demonstrating the benefits of energy efficiency: the Queensland Government could further develop partnerships with industry to create demonstration projects and case studies to showcase energy-efficient buildings, households and businesses. For example, under NFEE's Energy Efficiency Opportunities program, several industry case studies have been developed and made available on the Commonwealth Government's website. Xstrata Copper's Townsville refinery has participated as a trial company in the program, working with Government to highlight the business benefits achieved through energy efficiency improvements, including information relating to productivity gains and financial savings. The assessment identified a number of cost-effective energy efficiency opportunities, many of which have been implemented and are now yielding total annual savings of \$0.2M and reducing onsite energy costs by three per cent.

*Work with education and research institutions:* The Queensland Government is working as part of the National Vocational Education and Training Sustainability Policy and Action Plan which aims to integrate sustainable principles and practices and promote the uptake of green skills within apprenticeships and traineeship. Also, NFEE Stage Two includes a project which will continue to position trades and professions to be able to deliver energy-efficient services and outcomes, and to incorporate materials into existing training courses to address gaps. In doing so, the Queensland Government will be looking to enhance partnerships with education and research institutions to embed energy efficiency concepts and training into trades training, undergraduate and postgraduate study programs and short-term courses and workshops. Under the Queensland Government's Environmentally Sustainable

Schools Initiative, which is introducing the EnergyWise program in 180 schools across the state, Bulimba State School has been established as a demonstration project and is available for teachers to visit and obtain information on energy efficiency initiatives that could be implemented in other schools.

# 8.4 Establishing an information hub

*Providing a single point for information:* further develop existing resources to establish a central government information directory to host information and links relating to energy efficiency technical guidelines, design, science, research, fact sheets and statistics. This could include a register of pre-qualified professionals, tradespersons and industry experts (e.g. consultants, contractors, suppliers, manufacturers, installers) and training courses. Under the NSEE, the Queensland Government will be working with the Commonwealth and other jurisdictions to develop an energy efficiency element in the Commonwealth Government's web portal. This portal will be accessible to the public and will provide a central point for linking relevant energy efficiency information.

Providing a forum for discussion and information exchange: for users to exchange knowledge and participate in forums and discussions on energy-efficient design, fixtures and fittings. An example of this is being developed by the Commercial and Industrial Implementation Committee within the NFEE, which is currently finalising a website for commercial and industrial businesses called the Energy Efficiency Exchange (EEX). The aim of the EEX is to provide information to businesses and individuals either within or servicing the commercial and industrial sector with the intention of increasing the uptake of energy efficiency technologies and processes. Information to be provided is intended for a range of audiences within both the commercial and industrial sectors including energy managers, process managers / engineers, purchasing managers, commercial property managers, executives, technical specialists and other relevant people.

It is intended that over time with industry and business input, this site will be the premier information portal for all businesses in the industrial and commercial sectors wanting to find out about energy efficiency. It contains information on a wide variety of topics and in different forms including:

- Why manage energy?;
- Setting up an Energy Management Program;
- Technologies;
- Best practices and benchmarking;
- Tools and resources;
- Getting assistance;
- Information resources by sector;
- Case studies;
- Government regulations and programs;
- Finance;
- Useful links; and
- News.

# 8.5 Monitoring and evaluating programs and communicating the results

*Communicate learnings from programs:* ensure monitoring, evaluation and reporting of government energy efficiency initiatives so that learnings can be incorporated into future energy efficiency programs and initiatives.

#### APPENDIX A: EXISTING AND PLANNED ENERGY EFFICIENCY RELATED INITIATIVES UNDERTAKEN BY QUEENSLAND GOVERNMENT

#### Queensland energy efficiency and demand management strategy

The Queensland Government is developing a state-wide energy efficiency and demand management strategy called the Queensland Energy Management Plan in the second half of 2009. This will set out the Government's strategic direction and priorities, will draw from the learnings from this Inquiry, and will complement the recently released Queensland Renewable Energy Plan.

#### Whole of Government Energy Efficiency Initiatives

The Queensland Government has instituted a range of actions within government in order to reduce energy consumption and increase energy efficiency. Initiatives that have considerable impacts for all Queensland Government departments include:

- the Strategic Energy Efficiency Policy for Government Buildings (SEEP), which requires departments to develop Energy Management Plans to reduce energy consumption in their buildings, in line with mandated reduction targets and associated timeframes.
- the annual reporting of sustainable procurement targets and initiatives in each agency's Corporate Procurement Plan.
- *QFleet ClimateSmart Action Plan 2007-2010*, in which annual emissions from the QFleet fleet will be reduced by 15 per cent by 31 December 2010, 25 per cent by 2012 and 50 per cent by 2017 compared with the 30 June 2007 baseline.
- each agency is required to develop a waste management strategic plan to provide the framework and direction that the agency has chosen to adopt as its commitment to resource management, which may include energy efficiency measures. This Plan is reported against in the Agencies' Annual Report.
- all Cabinet and Cabinet Budget Review Committee Submissions are required to include a Climate Change Impact Statement regarding proposed actions.

The Strategic Energy Efficiency Policy for Queensland Government Buildings is a whole of Government policy which, in part, requires each agency to:

- meet minimum energy consumption reduction targets of 5 per cent by 2010 and 20 per cent by 2015;
- develop and implement a Strategic Energy Management Plan for its building portfolio;
- report building-related energy consumption in a central register;
- incorporate energy conservation principles into new and refurbished buildings; and
- implement educational and training programs for staff to promote energy conservation.

The Carbon Reduction Strategy for Government Office Buildings is a whole of Government strategy to meet a commitment to achieve 'carbon-neutral' government-owned office buildings by 2020. This involves:

- minimising energy usage in these buildings;
- making these buildings more energy-efficient
- optimising the use of renewable energy for the buildings; and
- offsetting unavoidable linked emissions using accredited carbon-offsets.

Each year the Department of Public Works undertakes a whole of Government centralised or 'bulk' purchase of renewable energy to support the Government's commitment to using at least five per cent renewable energy in government buildings. The majority of the renewable energy is sourced from Queensland-based renewable energy sites. The continuing need for this type of purchase will be reviewed after 2009-10, once the national expanded National Renewable Energy Target and the CPRS are introduced.

The Energy Smart Buildings Program is a multi-facetted program managed by the Department of Public Works that promotes higher energy-efficiency and lower energy usage in government buildings, thus reducing the resultant greenhouse gas emissions linked to this energy use. The program supports agencies in achieving their energy management efficiency responsibilities under the Government's Strategic Energy Efficiency Policy for Government Buildings. Activities carried out include: lighting retrofit projects, trials of new technology, undertaking applied research (including a solar photovoltaic trial on a CBD building) and developing a central register for electricity consumption.

The *State Procurement Policy* requires agencies to integrate the practice of sustainability into the procurement of goods, services and construction and progressively increase the proportion of their procurement expended on sustainable goods and services from year to year. In order to achieve this, budget sector agencies must set sustainable procurement targets and measure and report annually to the Queensland Government Chief Procurement Office (QGCPO) on their sustainable procurement targets. Some areas of sustainable procurement relate to energy efficiency.

QGCPO supports agencies by providing information, training and advice to assist in the integration of sustainability into procurement processes; the development of sustainability criteria and minimum specifications; provision of training and other forums on sustainable procurement, and the provision of advice and guidance to agencies on sustainable procurement.

The *Green ICT Strategy* is a whole of government strategy being jointly developed by the Queensland Government Chief Information Office and the Queensland Government Chief Technology Office. Among other things, it aims to:

- reduce the environmental footprint of the government's personal computer and laptop fleet;
- utilise information and communication technologies to help 'green' government business unit services and processes through promoting telecommuting;
- enhance online service delivery;
- promote best practices relating to printers and printing; and

• implement a "smart-metering" pilot to explore web-based energy and environmental dashboards to actively engage government employees in reducing environmental impacts.

In regard to smart metering, a pilot program investigating web-based environmental dashboards will explore how to encourage government staff to engage in positive behaviour changes in energy-usage. For example, the dashboards could provide high level information on energy usage per floor. This presents an opportunity for Government to collaborate with industry to help solve a contemporary challenge. The concept is similar to the water shortage newspaper advertisements which displayed dam levels and encouraged water efficiency.

### **Agency Specific Initiatives**

Many Queensland Government Departments undertake energy efficiency actions above legislative or policy requirements; or, additional initiatives and projects that provide energy efficiency benefits to their business.

There are several areas where Departments have focussed their initiatives: Building design and retrofitting; incorporating energy efficiency requirements in business cases that seek government funding and education.

Many departments are looking to improve the energy efficiency of their work environments through best-practice design, as evidenced in the new Queensland Emergency Operations Centre, under construction at Kedron and the leasing of the newly refurbished building 63 George Street, Brisbane, which incorporates numerous sustainable design elements, such as rainwater harvesting, water and energy efficient air conditioning and smart lighting.

Additionally, some Departments require specific consideration of environmental and energy efficiency benefits for proposals that seek Government funding. For example, business cases for all of Department of Infrastructure and Planning's proposed infrastructure require specific consideration of greenhouse gas emissions for the proposed project. The program guidelines for Department of Communities' *Major Facilities Program* require that proposals incorporate energy efficient measures.

The Department of Education and Training (DET) are investing significantly in a range of energy efficiency and conservation measures across the areas of energy efficient design, use, and education. These measures include:

- the DET Ecologically Sustainable Development (ESD) Design Requirements for State Schools includes several aspects of energy efficiency in the design and construction of schools;
- the construction of seven new schools through a Public Private Partnership will meet the DET ecologically sustainable development guidelines and will meet a 4-star green-star Green Building Council of Australia rating which establishes these schools as best practice education facilities for all elements of ecologically sustainable development including energy management;
- the upgrading of lighting at TAFE Queensland campuses;
- the \$60m Solar and Energy Efficiency in State Schools Program, which includes the installation of a two kilowatt solar system in all eligible schools, IT energy monitoring package and energy efficient lighting upgrades to general classrooms and high use areas;

- working with the Department of Public Works in studies of new technologies in energy management including air-conditioning and lighting; and
- adopting the policy to install solar hot water in all new constructions to reduce the energy used in water heating.

DET is also developing environmental sustainable goals and targets for improved energy management practice through the establishment of school environmental management plans. By 2010, 315 schools will have participated in the *Earth Smart Schools Program*, awareness of the DET Statement on Sustainability - "Enough for all forever" will be increased, leading to increased capability of teachers and principles to implement environmental education and management initiatives with flow on benefits to students and communities.

Queensland Health implemented an *Eco Efficiency Program* in 2004 which has demonstrated significant energy savings by retrofitting facilities with lighting and controls, heating and air conditioning (HVAC), building management systems and renewable energy sources but not limited to these energy conservation measures.

The preferred methodology to manage these projects has been a Performance Contract which eliminated the technical and financial risk to Queensland Health

Queensland Health was the recipient of the Premiers Awards for excellence in Public Sector Management in the category of Sustainable Environment in 2006.

Queensland Primary Industries and Fisheries (QPI&F) provides \$80,000 funding to energy efficiency projects in primary production. These are mainly embedded in projects looking at broader issues and include: efficiencies in irrigation systems for horticultural industries and cotton, testing a more efficient drying system in hardwood timber processing and improving efficiency of cropping systems.

Many existing QPI&F projects and initiatives that do not directly targeting energy efficiency have outcomes that lead to increases in energy efficiency. An example may be a project that encourages more efficient or sustainable production systems, such as reduced tillage or no tillage crop ploughing systems, to protect soil from erosion, and lead to reduced fuel use. More efficient use of fertiliser also reduces fossil fuel use.

# Government Initiatives to support household and community energy efficiency

The Queensland Government is taking meaningful action to reduce the state's greenhouse gas emissions on a range of fronts and has set a target of reducing Queenslanders' carbon footprint by one-third by 2020. Energy efficiency will play a significant role in achieving this target.

Significant energy savings will be made through the DEEDI's *Queensland Solar Hot Water Program* (QSHWP). The QSHWP commenced on 1 July 2009 and will deliver up to 200,000 solar and heat pump hot water systems over three years. Under the QSHWP, eligible participants will have access to a standard installed and warranted, solar or heat pump hot water system for a payment of \$100 for eligible pensioners and low income earners, and \$500 for other eligible participants. It is estimated that the impact of 200,000 households switching over to SHW will reduce greenhouse

gas emissions by 630,000 tonnes over the three year life of the QSHWP and more than 4.9 million tonnes over the life of the 200,000 greenhouse efficient systems.

The *ClimateSmart Home Service* aims to reduce Queensland households' greenhouse gas emissions and improve energy efficiency. About 260,000 homes state wide will receive the Service and contribute to achieving the Q2 carbon footprint target. The Service only costs \$50 and provides the householder with:

- an energy audit from a licensed electrician;
- installation of a wireless energy monitor;
- up to 15 free energy efficient light globes supplied and installed;
- a free water and energy efficient shower head supplied and installed;
- a customised energy and water efficiency plan; and
- *My ClimateSmart Home*, a customised on line resource package.

The program will run from 1 January 2009 to December 2010.

The DEEDI's *Home EnergyWise kit* contains energy efficiency information and do-ityourself auditing tools to help households identify energy use patterns and take positive steps to reduce energy consumption and lower energy bills. The kit contains no-cost, low-cost and added-cost energy saving ideas grouped according to how and where energy is used in the home keeping cool and keeping warm, lighting, kitchen, bathroom and laundry, outdoors and standby power.

The DEEDI's *Clean Energy Strategy for Queensland's Isolated Communities* will change the way electricity is supplied and used within 33 isolated electricity networks across Western Queensland, Cape York and Torres Strait Islands for the next five years and beyond. Initial funding of \$5M will be provided to Ergon Energy to undertake a one year trial of energy efficiency and conservation initiatives at select locations. The trial aims to reduce household electricity consumption by 20 per cent at each of the trial centres, translating into customer savings of up to \$200 annually.

A key purpose for undertaking the trial is to determine cost-effectiveness of the investment in energy conservation measures in isolated communities, as the cost of supplying electricity to these customers is considerably greater than for other parts of the State. Based on outcomes from the trial, a submission will be developed to recommend whether energy conservation measures should be provided to the remaining isolated communities.

The Queensland Government has also allocated \$5M to support the delivery of the *Townsville Solar City initiative* under the Commonwealth Government's *Solar Cities Program.* The main focus of the Townsville Solar City project is the transformation of Magnetic Island into a solar suburb through proactive energy conservation programs and the installation of solar photovoltaic panels in a concentrated regional area. During the seven year life of the project, Ergon Energy will conduct around 1,700 free energy assessments and install around 500 solar photovoltaic systems and 2,500 smart electricity meters.

Department of Infrastructure and Planning has a range of policies which will contribute to improving household and community energy efficiency through land-use and infrastructure planning. These include:

• South East Queensland Regional Plan (SEQRP) 2009-2010: Various

strategies addressing energy efficiency and climate change are contained within the *South East Queensland Regional Plan 2009-2031*. The strategies include:

- o greenhouse gas monitoring and mitigation;
- establishment of the SEQ Climate Change Management Plan (see below);
- o planning consolidated and integrated urban development;
- o protect the region's highly valued green space;
- o reducing car dependence; and
- o improving development in SEQ to respond to climate change risks.
- SEQ Climate Change Management Plan: As part of the SEQRP 2009-2031 DIP is developing a SEQ Climate Change Management Plan to align actions to reduce greenhouse gas emissions (including energy efficiency measures) and build resilience to the impacts of climate change. It will establish the greenhouse gas emissions trend and emission reduction goals for land use and urban development in the region, and establish climate change adaptation priorities that can be influenced through land use planning and infrastructure decisions.
- Far North Queensland Regional Plan 2025: This plan addresses climate change issues (including energy efficiency) by:
  - establishing a preferred settlement pattern that avoids new urban development in areas at risk from sea level rise and storm tide inundation;
  - o maintaining 99 per cent of the region as 'green space';
  - o promoting urban consolidation and self-sustaining communities;
  - encouraging alternative forms of transport, such as walking, cycling and public transport;
  - promoting good urban design that results in energy efficiencies and reduction in greenhouse gas emissions.
- Land-use planning including *Transit Oriented Developments* (TODs): Land-use planning can offer dividends to energy conservation as well as energy efficiency gains. For example initiatives such as TODs create an urban form that requires fewer car trips or shorter trips.
- State Planning Policy on Climate Change: The Queensland Government is continuing to work in the context of the release of the SEQRP on reviewing a number of options for a climate change planning instrument with the view to drafting early in 2010. The climate change planning instrument will ensure climate change risks and issues (including energy efficiency measures) are incorporated into Queensland's planning and development system.
- Local Government Grants for Greenhouse Gas Reduction and Climate Change Adaptation: Local Government and Service Delivery Group are already working with the Office of Climate Change to ensure that by mid-2011, when the new Local Government Grants & Subsidies program commences, greenhouse gas emission reduction and climate change adaptation considerations are a key factor in the criteria used to assess which Councils are successful in receiving funding.
- Department of Environment and Resources Management's ClimateSmart Home Service – a two year program focussed on installation of energy saving devices, providing customers with behaviour change tools and offering detailed advice on ways to reduce energy and water use. Local

Government Infrastructure Services has been contracted to implement the program.

DERM ClimateSmart Living (phase 2) – focuses on large scale behavioural change. It includes the Low Carbon Diet, Low Carbon Diet Community Funding Program, the Premier's Awards for Climate Change and the ClimateSmart Living website. The ClimateSmart Living (phase 2) began in June 2008 as an outcome of the Premier's Council on Climate Change. It is a \$3M dollar program over two years focused on a range of communication and program elements to engage individuals, households, and communities to effect behavioural change to reduce greenhouse gas emissions. Some of the key community based activities include:

- '1 Million Women' campaign Queensland target has been set to account for one quarter of the national target, that is 250,000 women, equalling a potential saving of 250,000 tonnes of greenhouse gas. The Queensland Government has contributed \$44,000 cash sponsorship as well as in-kind support to the value of \$50,000.
- *Keep Australia Beautiful* is a key partner and their expertise and networks within the school community will greatly assist the ClimateSmart Living to connect within school communities.
- Low Carbon Diet and Low Carbon Diet Community Funding Program will be implemented over two years with a goal to have 500,000 Queenslanders take the Low Carbon Diet by June 2010. As at 25 June 2009 120,000 proposed Queenslanders are engaged in the Low Carbon Diet equalling a total saving of approximately 85,810 tonnes of Greenhouse gas. On 1 July 2009, the second round funding of more that \$153,000 was allocated to 18 organisations. This round alone aims to involve 61,065 Queenslanders in the program, which is expected to save approximately 43,618 tonnes of greenhouse gas (based on 2.8 people per household) and will have a potential flow-on effect to approximately 142,000 Queenslanders through awareness-building programs undertaken by these organisations.

*DERM Queensland Solar Homes Program* is a Queensland Government initiative to make solar power systems more accessible to Queenslanders by reducing up-front costs. The Department has an agreement with the contractor, eco-Kinetics to secure a "guaranteed bulk purchase" price for up to 1000 one-kilowatt solar power systems. These systems are being installed in up to 1,000 homes in south-east Queensland, Toowoomba, Cairns, Rockhampton and the Fraser Coast.

*The Queensland Solar Bonus Scheme* is a feed-in tariff paid to residential and small business customers. Customers are paid for the surplus electricity generated from roof-top solar photovoltaic systems that is exported into the Queensland grid after the household load is met. The Solar Bonus of 44 cents per kWh is paid for the surplus electricity that is fed into the grid.

The Cool Change – Energy Smart Suburbs Trial is being undertaken by ENERGEX to help manage demand for electricity in households operating air conditioners and/or swimming pools. ENERGEX seeks to fit energy-saving devices on certain household appliances in eligible participating homes, enabling the appliances to be remotely cycled by ENERGEX over the few hours of peak demand. The aim is to reduce energy use in peak times without impacting on customer convenience. The trial is limited to approximately 1,800 homes in the trial area – Albany Creek, Arana Hills, Bridgeman Downs, Bunya, Everton Hills, Everton Park, Ferny Hills, Ferny Grove and McDowall.

# Government Initiatives to support commercial and industrial energy efficiency

Government has also implemented a range of initiatives that support Queensland industry and businesses adopt more energy efficient behaviours.

The Queensland Government's *Smart Energy Savings Program* is a legislative initiative effective from 1 July 2009 introduced through the *Clean Energy Act 2008*. The program aims to drive energy saving improvements in Queensland businesses. The program will require participating businesses to undertake an energy audit, develop an Energy Savings Plan and publish their actions for each relevant site, on a five-yearly cycle.

The Smart Energy Savings Program seeks to:

- increase the adoption of energy efficient technologies and practices by business drive organisational behaviour change towards positive energy management practices;
- improve business competitiveness by reducing energy costs;
- reduce growth in Queensland's electricity demand; and
- reduce greenhouse gas emissions from Queensland's commercial and industrial sectors.

To complete the Smart Energy Savings Program process, businesses will be required to:

- verify their energy use;
- register to participate in the program;
- audit energy use and identify energy savings measures;
- produce an Energy Savings Plan of measures to implement;
- publish a public commitment on the actions to be taken;
- annually update the public commitment;
- in the third year, review progress and report; and
- in the fifth year, collect baseline data for the next cycle.

The recently announced *ClimateSmart Business Service* will assist Queensland's small to medium size enterprises reduce their emissions and prepare for the introduction of carbon costs coming from the *Carbon Pollution Reduction Scheme*. DEEDI will lead and administrate this project and has been allocated \$15M over four years to deliver.

*DERM ecoBiz Program* - a holistic program supporting business to identify efficiencies in energy, water, waste and materials for economic and environmental benefits. Rebates of up to \$150,000 per project are provided for participants in the ecoBiz program to undertake innovative or best practice eco-efficient initiatives. *DERM Queensland Sustainable Energy Innovation Fund (QSEIF)* - the QSEIF provides financial assistance of up to \$200,000 to businesses to develop innovative technologies that reduce the use of fossil fuels or water.

DERM ClimateSmart Retail is expected to benefit both retailers and households with 40 white goods retailers currently in partnership with the DERM program. Through training and educating sales staff of the benefits or energy efficiency, and interpreting energy labelling information, the program is anticipated to bolster sales of energy efficient whitegoods and consequently reduce household greenhouse gas emissions. Consumers will benefit considerably in economic terms through avoided energy costs. Higher up-front costs to consumers for energy efficient products are anticipated to be offset by the resultant avoided energy costs. It is also expected that the program will influence households to undertake other energy efficiency initiatives.

Operating on an annual budget of \$0.632M, the four year program is anticipated to deliver greenhouse gas savings of 172,713 tonnes over the life of the products, based on retailer uptake of 10 per cent across Queensland and a 10 per cent increase in sales of energy efficient whitegoods, ClimateSmart Retail is anticipated to deliver greenhouse gas savings of 172,713 tonnes over the life spans of the products.

*ClimateSmart Business Clusters* - It is anticipated that implementing eco-efficiency improvements among business clusters will reap considerable economic and environmental benefits. Under this initiative, businesses can organise themselves to form a 'cluster', with a 'cluster leader' who receives resource efficiency training from the Queensland Government. The cluster group is then eligible for grants of up to \$10,000 to implement a specific resource efficiency initiative; and the cluster leader shares the training and information received from the Government to all participating businesses. The Queensland Government expects that more than 400 companies will take part in the program and as a result it is expected that the resultant benefits are likely to be significant.

Queensland Water and Energy Sustainable Technology Network (QWESTNet) by providing a platform to showcase and broker energy efficiency technologies, QWESTNet forums have contributed to enhancing business profitability and a reduction in energy usage costs. QWESTNet has also bolstered uptake of other government initiatives such as ecoBiz and QSEIF. As indicated in the November 2008 QWESTNet Survey, the forums have been successful in brokering energy efficient technology, encouraging partnerships, increasing sales growth and encouraging change in resource efficiency practices.

*ClimateSmart Business – Associations -* By targeting industry associations and driving the diffusion and implementation of resource efficiency best practice from the top down it is expected that energy efficiency improvements will be achieved across entire industry sectors. Furthermore, it is envisaged that the program will provide opportunities to capitalise on other DERM programs, for example, by brokering the uptake of technologies supported through QSEIF funding and diffusing best practice case studies developed through the ecoBiz program.

*DERM Business Carbon Guide* – provides the basic information required by small and medium enterprises on how to manage greenhouse gas emissions and reduce their costs.

*DERM Sustainable Industry Awards* – an annual event showcasing the achievements of a range of Queensland industry sectors and champions.

The Queensland Energy Efficient Street Lighting Trial - is a multi-stakeholder group including five local councils working in partnership with the Queensland Government and energy distribution businesses, ENERGEX and Ergon Energy. The Trial is testing various lighting products to identify the most efficient and cost effective street lighting options. In 2006, the Queensland Government committed energy distributors Ergon Energy and ENERGEX to test various lamp products to identify the most efficient street lighting options in a range of environment and network conditions in both South East Queensland and regional Queensland.

The three year trial will involve a world-first monitoring device that measures the performance of 400 new types of energy efficient lighting in "real world" climatic and network conditions. To demonstrate its support, the Commonwealth Government has now committed \$240,000 to the trial. In September 2008, full deployment of all lighting technologies was completed in the South East Queensland Trial.

#### APPENDIX B: THE NATIONAL FRAMEWORK FOR ENERGY EFFICIENCY – EQUIPMENT ENERGY EFFICIENCY PROGRAM

	Million tonnes CO _{2-e} avoided		\$M (0% discount rate)			\$M (5% discount rate)				\$M (10% discount rate)					
	2009-20	2009-24	ln 2020	Saving	Cost	Benefit	B/C	Saving	Cost	Benefit	B/C	Saving	Cost	Benefit	B/C
Resid ential	31.2	50.7	3.6	9,540	3,929	5,611	2.4	5,949	2,587	3,362	2.3	3,931	1,811	2,120	2.2
Other	16.8	18.5	1.7	4,826	950	3,876	5.1	3,084	616	2,468	5.0	2,087	425	1,662	4.9
Total	47.9	69.2	5.3	14,367	4,879	9,487	2.9	9,033	3,202	5,830	2.8	6,018	2,236	3,782	2.7

Projected costs and benefits of the E3 Program for Queensland 2009-2024¹¹

#### Figure 29 Projected emissions avoided by State and Territory – no emissions cap



#### Figure 30 Projected emissions avoided by State and Territory – with emissions cap



¹¹ Prevention is Cheaper than Cure – Avoiding Carbon Emissions through Energy Efficiency <u>http://www.energyrating.gov.au/library/pubs/200901-projected-impacts.pdf</u>