National Framework for Energy Efficiency

Consultation Paper

National Framework for Energy Efficiency

Stage Two

Public consultation event: Hilton Melbourne Airport on Tuesday 25 September 2007.
Please RSVP to E2WGSecretariat@industry.gov.au by 15 September 2007

Submissions due close of business 25 September 2007 to E2WGSecretariat@industry.gov.au.

September 2007

1. INTRODUCTION

Increasing energy efficiency is widely accepted as the least-cost approach to reducing greenhouse gas emissions. Modelling by the International Energy Agency shows that as much as half of the savings in greenhouse gas emissions required by 2050 can be achieved by adopting energy efficiency measures. Improvements to energy efficiency can also help to reduce demand on electricity supply systems, such as during peak situations, with consequential savings in capacity requirements. Available energy efficiency measures include technologies and processes to reduce energy use in residential, business, industry and manufacturing applications. Examples include energy-efficient lighting, heating and cooling systems as well as improved energy management practices. In addition to reducing greenhouse gas emissions, improvements to energy efficiency can 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.

In August 2004 the Ministerial Council on Energy (MCE), comprising the Energy Ministers of all Australian governments, agreed to support energy efficiency, productivity and environmental improvements, by agreeing to a comprehensive package of foundation measures comprising Stage 1 of the National Framework for Energy Efficiency (NFEE). NFEE Stage 1 runs from December 2004 through to the end of June 2008. The key measures within NFEE Stage 1 address the barriers to the uptake of energy efficiency in the following areas:

- buildings: including energy efficiency standards and mandatory disclosure;
- appliances and equipment: including minimum energy performance standards (MEPS) and labelling;
- industry: including the Australian Government's Energy Efficiency Opportunities (EEO) scheme; and
- capacity building: including training and accreditation and information provision.

NFEE Stage 1 activities are well advanced and planning is currently underway for NFEE Stage 2, to commence on 1 July 2008. NFEE Stage 2 will comprise the continuation of some existing measures, along with the introduction of new measures.

NFEE activities target demand-side energy efficiency opportunities in the stationary energy area, rather than opportunities in the transport, agriculture or electricity generation sectors. However the importance of these sectors is acknowledged. It is noted that transport energy efficiency is the responsibility of the Australian Transport Council. Increased electricity generation efficiency is dealt with through the Generator Efficiency Standards program delivered by the Commonwealth Department of the Environment and Water Resources.

2. THE CONSULTATION PROCESS FOR NFEE STAGE 2 PROPOSALS

This consultation paper has been prepared by the MCE's Energy Efficiency Working Group (E2WG). The purpose of the paper is to inform stakeholders of the proposed NFEE Stage 2 measures and their rationale, and to seek feedback for the purposes of finalising the measures for MCE endorsement.

Feedback is specifically sought on:

1. the contents of the new measures; and
2. suggestions to improve the implementation of the new measures to maximise the benefits received.

Individuals and organisations will have an opportunity to provide feedback to E2WG at a one-day public consultation at the Hilton Melbourne Airport on Tuesday 25 September 2007. Stakeholders wishing to attend the consultation event are requested to contact the E2WG Secretariat to arrange a timeslot to provide a verbal submission. Stakeholders unable to attend the consultation event may provide concise written submissions to the E2WG Secretariat by close of business on 25 September 2007. The E2WG Secretariat can be contacted at E2WGSecretariat@industry.gov.au.

Stakeholder comments from the consultation event and any written submissions will be used to further develop the proposed NFEE Stage 2 measures. The package of measures is scheduled to be submitted to the MCE for final approval in late 2007, in order to commence from 1 July 2008.

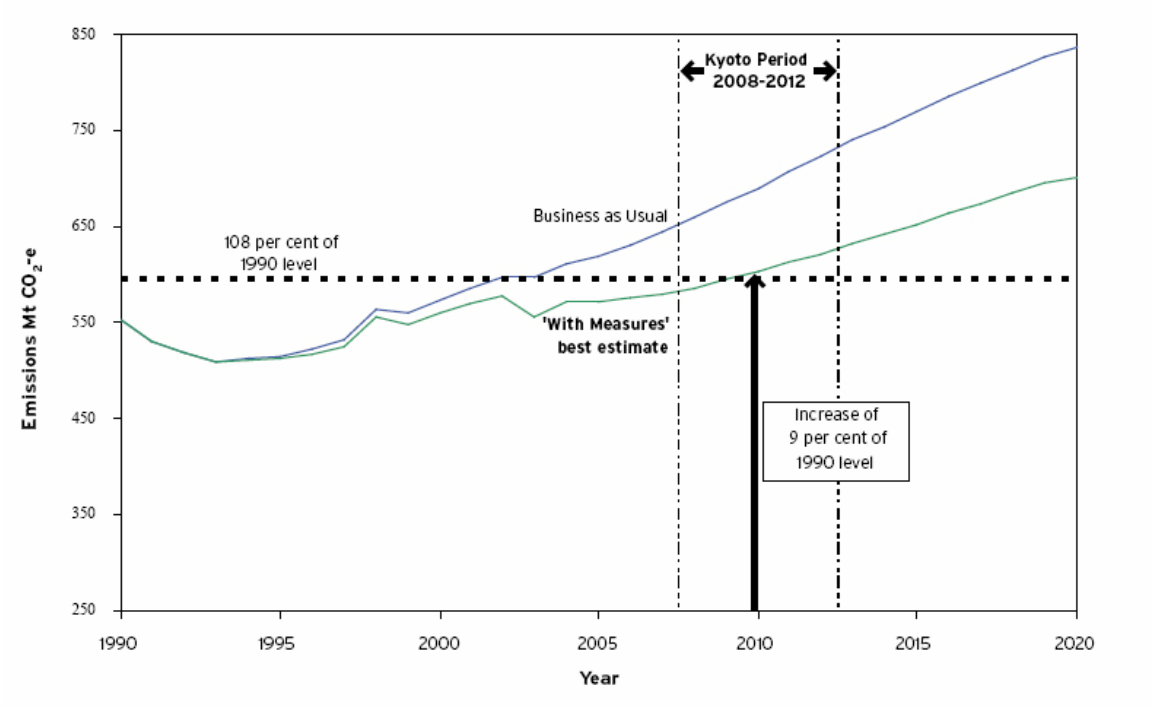
3. CURRENT POLICY ENVIRONMENT

The current policy environment under which energy efficiency programs operate is significantly different to that existing when NFEE was created in 2004. Since that time the Australian and State and Territory governments have committed to the introduction of an emissions trading scheme while State and Territory governments have commenced development and implementation of energy efficiency, greenhouse gas emissions and renewable energy targets.

3.1 Emissions Profile

Without action, Australia's greenhouse gas emissions would have reached an estimated 125 per cent of 1990 levels by 2010. Instead, Australia is tracking towards the Kyoto target of 108 per cent of 1990 levels for the period from 2008 to 2012 (Figure 1). Since 1990, Australia's net greenhouse gas emissions have increased by 2 per cent while our economy has grown by 61 per cent (source: *2005 National Greenhouse Gas Inventory*). However, it needs to be recognised that a significant proportion of the constraint in emissions is due to a one-off effect of the phasing out of broadscale land clearing, and that emissions from the stationary energy sector have not been constrained to the same extent.

Figure 1: Total Australian 'Business as Usual' and 'With Measures' emissions projections.

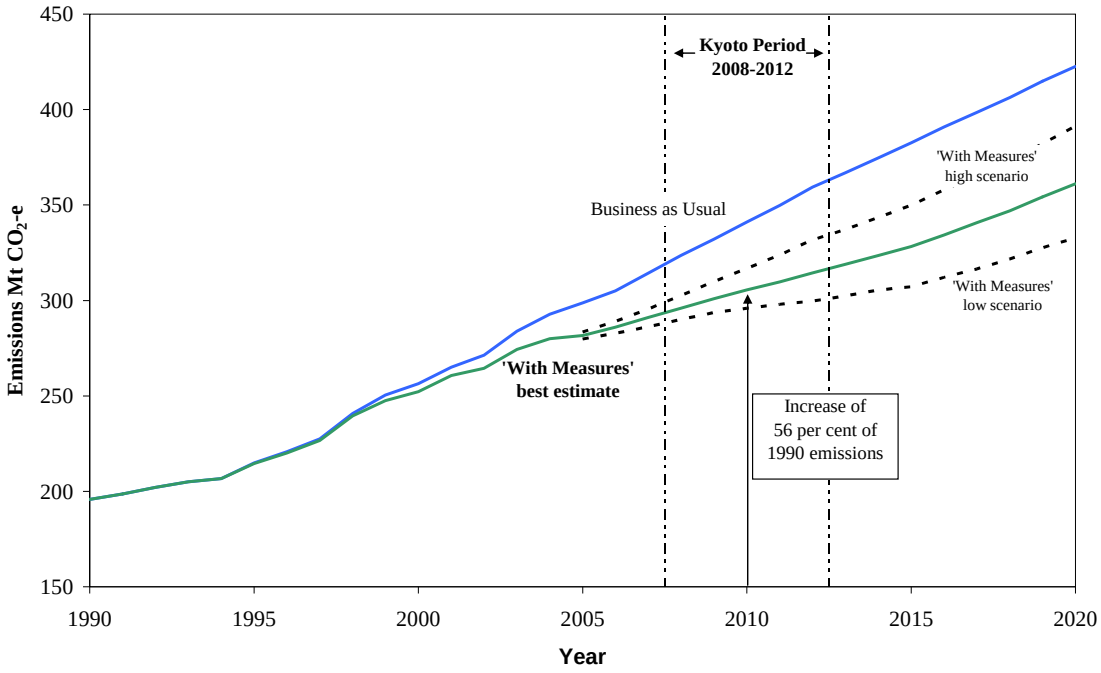


Source: 'Tracking to Kyoto' 2006 AGO

3.2 Growing emissions from the stationary energy sector

The stationary energy sector contributes approximately 50 per cent of Australia's net emissions. From 1990 to 2005, emissions due to electricity generation grew by 50 per cent (source: page 6 *2005 National Greenhouse Gas Inventory*). Current projections indicate that emissions due to electricity generation will continue to grow and that by 2010 they will have increased by 56 per cent on 1990 levels (source: pages 4 and 5 *Tracking to the Kyoto Target*, 2006).

Figure 2: Stationary energy emissions projections to 2020.



Source: 'Tracking to Kyoto', 2006, AGO

Most importantly, the 'With Measures' best estimate projected emissions growth in Figure 2 includes the effects of greenhouse gas abatement activities of the Australian, and State and Territory governments active as at 2006. Despite these measures, emissions are projected to continue growing, requiring the implementation of further measures.

3.3 A dynamic domestic environment

As the result of a considerable amount of work performed by the Australian and State and Territory governments in two separate exercises, there appears to be an emerging consensus that an emissions trading scheme should be introduced in Australia.

The Prime Minister's Task Group on Emissions Trading delivered its report on 31 May 2007. The following conclusions were reached:

- it is in Australia's interest to develop a domestic emissions trading scheme that might, over time, be linked to complementary schemes in other countries;
- the key design features of an Australian emissions trading model should be based on a 'cap and trade' model; and
- emissions trading is not a panacea.

In June 2007, the Prime Minister adopted the Task Group's recommendations and announced that Australia will move towards a domestic emissions trading system on a cap and trade model beginning no later than 2012.

Importantly, the Task Group report recognised that an emissions trading system would not address non-price market failures and barriers, and that complementary measures would be required. These included measures that would contribute to improved energy efficiency, where the Task Group noted, "…policies relating to energy efficiency should be designed to complement the price signal generated by an emissions trading scheme to

the maximum possible extent." (Source: *Report of the Task Group on Emissions Trading*, 2007 p.134) This recognises the role of improved energy efficiency in reducing the cost to the economy of a carbon price.

In discussing the complementary role of improvements to energy efficiency, the report also noted:

- an increased role for programs that improve information and awareness to assist consumers to understand the energy and emissions implications of their use of products;
- continuing development of well-designed and consistent regulated minimum energy performance standards for buildings and household appliances;
- the adoption of a national building code by all jurisdictions should be a priority, with ongoing development to ensure that implementation of higher energy standards deliver cost-effective savings;
- the continuing role for industrial assessment and audit programs to improve awareness in large businesses of potential energy and emission savings; and
- the importance of rationalising the policies of the Australian, State and Territory governments that may hinder the operation of an emissions trading scheme.

The States and Territories' National Emission Trading Taskforce (NETT), in its August 2006 Discussion Paper, also recommended the implementation of a scheme based on a cap and trade model. The NETT also recognised the need for energy efficiency measures to provide a complementary role to an emissions trading scheme, especially where energy efficiency measures address non-price barriers to emissions reduction.

On 9 February 2007, the Council for the Australian Federation, representing the State and Territory governments, committed to:

- an emissions trading scheme, commencing no later than 2010;
- Committed to accelerate NFEE with clear actions and timetables (to improve the efficiency of appliances and buildings); and
- Committed to develop a national mandatory energy efficiency system (requiring industry to implement any energy efficient opportunities with less than a 3-year payback).

4. CURRENT ENERGY EFFICIENCY POLICIES BY SECTOR

Commonwealth, State and Territory governments have, individually, implemented or committed to a number of significant energy efficiency policies that extend beyond national initiatives. These include a mix of regulatory and market based measures; and are discussed further in the next three sections covering the residential, commercial and industrial sectors.

4.1 Residential Sector

The residential sector accounts for 21 per cent of stationary energy use nationally, with regional variations according to factors such as climate, energy cost and income. The main use of energy in the residential sector can be attributed to heating water, space heating and cooling, refrigeration, appliance and equipment, lighting and cooking.

Progress to date in improving residential energy efficiency has mainly been through energy efficiency standards for new homes and standards and labelling for appliances. Incentives have largely been product specific (such as solar water heater rebates) or, in the case of NSW, associated with a greenhouse gas abatement scheme. Many States offer audits and education programs to householders to improve their adoption of energy-efficient appliances, water heaters and insulation, for example Western Australia's recently announced scheme.

For new homes, energy efficiency requirements for the thermal performance of the shell of the building are incorporated in the Building Code of Australia, though there is some inconsistency in the way that jurisdictions have adopted these. A number of jurisdictions also have state specific requirements, such as the use of greenhouse efficient water heaters and, in Queensland, energy-efficient lighting. NSW uses an integrated development approval sustainability tool called BASIX that incorporates building shell and fixed appliance energy efficiency.

Minimum Energy Performance Standards (MEPS) have been established for refrigerators and freezers, electric water heaters and refrigerative air conditioners. Over the next three years, MEPS are planned for an expanding range of products, including gas water heaters, lighting, standby power use, home entertainment equipment and external power supplies.

A number of jurisdictions offer rebates for energy efficiency and/or low-greenhouse gas emitting technologies, including solar water heaters and gas appliances. For solar water heaters, the Australian Government and some States and Territories offer rebates to qualifying households; and all households are also able to off-set installation costs through the sale of Renewable Energy Certificates.

Queensland has announced a policy to phase out the installation of electric water heaters in existing homes from 2010, starting with gas-reticulated areas. This policy is an extension of the MEPS approach of regulating product sale.

Victoria is currently developing an energy efficiency trading scheme (VEET), in which energy retailers will be required to meet residential energy efficiency targets, either directly or through the purchase of “white certificates”. This scheme is likely to result in households being offered incentives to implement a range of energy efficiency measures.

Significant opportunities exist for further improvements in the energy efficiency and greenhouse gas emissions performance of fixed appliances and fittings in new homes (such as water heaters, heating and cooling systems and lighting), replacement of water heaters, retrofitting existing homes, and lighting, appliance and equipment energy efficiency upgrades.

4.2 Commercial Sector

The commercial sector accounts for 12 per cent of stationary energy use. The use of energy in this sector is related largely to buildings, especially heating, cooling, and lighting.

Progress to date in improving energy efficiency has mainly been through adoption of building energy efficiency standards, lighting equipment and packaged air conditioner energy efficiency standards and government-led demand for higher efficiency buildings. The Energy Efficiency Opportunities (EEO) program also covers large energy users in the commercial sector.

Building standards for new commercial buildings and major refurbishments were introduced into the Building Code of Australia for the first time in 2006, and have been picked up by most jurisdictions in Australia. The estimated benefit-cost ratio of these standards was around 4:1. There is limited post-implementation verification of building performance.

Rating tools exist to measure the environmental and greenhouse performance of buildings both at the design and operational stage. While these are mostly focused on office buildings, work is under way to develop tools for other building types. Private sector builders are increasingly focused on developing more energy-efficient buildings as a point of differentiation in the market.

Significant opportunities exist for improving the energy efficiency of heating, ventilation and air-conditioning (HVAC) systems, retrofitting existing buildings and increasing the energy efficiency of new construction and refurbishments.

4.3 Industrial Sector

The industrial sector accounts for 67 per cent of stationary energy use. Much of the industrial sector's energy use is from key energy-intensive sectors, especially aluminium, steel and cement production.

Large business energy users are already being targeted to assess their energy efficiency potential through the EEO program which mandates rigorous energy assessments, with senior management and board sign-off and reporting of energy efficiency opportunities, to encourage implementation, though action to address identified opportunities is voluntary. The EEO program applies to those corporations and all their sites that use more than half (0.5) a petajoule (PJ) of energy annually.

Industry is also a significant user of appliances and equipment. To date, progress on improving energy efficiency in this area has been mainly through the development of energy efficiency standards for motors, lighting and distribution transformers.

State and Territory governments also mandate particular practices in industry in the energy efficiency field. Victoria has requirements on industries licensed by the Victorian Environment Protection Authority that include obligations to implement energy efficiency measures with paybacks of three years or less. Queensland and Western Australia have announced and the Council for the Australian Federation has agreed to develop a similar scheme. Western Australia is leading a project group of E2WG that is scoping a proposal for mandatory efficiency measures for industry which have a three year payback or less. The Tasmanian Government CleanBiz program provides funding to help organisations to adopt clean, lean and resource-efficient practices through the efficient use of materials, energy and water resources. The NSW Government introduced new water and energy savings initiatives in 2005, including requirements for high water and energy users to prepare Water and Energy Savings Actions Plans. The plans involve assessing current water or energy use and identifying ways to save. The NSW Water and Energy Savings Funds (which are to be rolled into the NSW Climate Change Fund) are also available to provide financial support to implement projects which will save water and/or energy.

5. NFEE STAGE 1 ACHIEVEMENTS

NFEE Stage 1 comprises a broad range of measures and projects delivered by seven implementation groups: appliances and equipment; buildings; commercial and industrial; trade and professional training and accreditation; finance sector; consumer information; and government. The following were achieved through NFEE Stage 1:

Appliances and Equipment

- New MEPS introduced for single-phase air conditioners, fluorescent lamps, self-contained and remote refrigerated cabinets, distribution transformers and miscellaneous electric water heaters;
- More stringent MEPS introduced for refrigerators and freezers, small mains pressure electric water heaters, single-phase air conditioners and three-phase motors;
- 10-year strategies published for lighting (*Greenlight Australia*) and gas appliances and equipment (*Switch on Gas*);
- Completed work to establish standby targets for all products identified under the *National Standby Power Strategy*; and
- Reports published relating to program monitoring and projected impacts of the 2005-06 to 2007-08 work plan; updating *Greening Whitegoods* report; and reports on in-store (new appliances) and in-home (existing appliances) standby surveys.

Buildings (Residential and Commercial)

- In conjunction with the Australian Building Codes Board developed minimum energy efficiency standards for new buildings. Five (5) star performance standards for residential buildings and minimum energy efficiency performance standards for commercial buildings have been included in the Building Code of Australia;
- The Australian Greenhouse Office, on behalf of all jurisdictions, oversaw the development of AccuRate (a computer program that can determine the energy efficiency of buildings), the second generation version of the National House Energy Rating Scheme (NatHERS), and established and launched a national training framework and registration process for AccuRate assessors; and
- Completed an international review of mandatory disclosure for residential and commercial buildings, and scoping studies for residential and commercial disclosure, highlighting the need for further work.

Commercial and Industrial

- The EEO legislative and administrative framework has been implemented, with the *Energy Efficiency Opportunities Act (Cth) 2006* effective from 1 July 2006,
- Designed and constructed an Energy Efficiency Exchange (EEX) website to increase the availability of best practice information and expertise (scheduled for release in late 2007);
- Completed an energy efficiency needs assessment for small to medium enterprises;
- Completed studies to assess the scope for developing nationally consistent energy efficiency research and development networks, energy efficiency demonstration programs and energy efficiency best practice networks; and
- Developed guidelines to assist in designing and implementing energy efficiency demonstration programs.

Trade and Professional Training and Accreditation

- Completed research to identify current availability of energy efficiency training and demand for energy efficiency accreditation by service providers and consumers and to identify gaps in training and accreditation;
- Training courses and accreditation systems are at various stages of development: some are almost completed such as for electricians, HVAC installers, facility managers and engineers with further work under consideration with respect to plumbers; and
- Completed development of accreditation guidelines.

Finance Sector

- Established an Industry Advisory Group and completed a study on how the finance sector currently views energy efficiency.

Consumer Information

- Completed a scoping study and consumer/retailer market research for Energy Bill Benchmarking;
- Completed a review of consumer programs and energy efficiency information coordination; and
- Completed a scoping and gap analysis examining energy efficiency in the school curriculum.

Government

- Developed a framework for consistent energy use reporting by government agencies across Australia; and
- Undertook a review of finance and budgetary provisions used to provide incentives for government agencies to adopt energy efficiency measures requiring capital expenditure.

6. NFEE STAGE 1 BENEFITS

Assessment of the NFEE measures implemented to date demonstrate clear progress towards achieving the goals set out in the 2004 MCE Communiqué. Estimates of the impact in 2015 of the MEPS, EEO and commercial and residential building code regulation programs show projected savings of approximately 7.8 Mt CO_2-e and net GDP benefits of $380 million, and savings of 42 PJ of energy per year. When primary energy savings are considered the overall energy impact rises to approximately 66 PJ. These estimates indicate that NFEE Stage 1 is on track to deliver the projected savings.

Table 1: Summary projected impacts of NFEE Stage 1 measures in 2015 (as at August 2006)

Impact	Announced in 2004 MCE Communiqué	Projected impact of three NFEE Stage 1 measures
GDP benefits ($m/annum)	400	380
Greenhouse gas benefits (Mt CO_2-e /annum)	3.6	7.8
Energy savings (PJ/annum)	50	42

Sources:
GDP estimates were derived from original modelling by the Allen Consulting Group.
Greenhouse benefits were compiled from reference to the Australian Greenhouse Office's National Emission Projections (2004).
Energy benefits were determined from individual activity Regulatory Impact Statements (RIS).

Note:
Conservative estimates were used where conflicts existed between sources.
Estimates for MEPS included only appliance standards regulated after July 2004.
Differences in projected savings of energy and greenhouse gas emissions are due to improved calculation methods.

Highlights of NFEE Stage 1 include the following measures.

6.1 Appliance and Equipment Efficiency

Energy consumed by appliances and equipment is a major source of greenhouse gas emissions in Australia and New Zealand. Improving the energy efficiency of appliances and equipment is an objective for all Australian governments and the New Zealand Government. Performance codes and standards are key measures to reduce energy use of equipment and appliances and associated greenhouse gas emissions. Key outcomes projected by 2020 (Source: Equipment Energy Efficiency Programme, *Achievements 2006*, July 2007, p.7) include:

- economic benefits to Australia - with a total estimated value of $4.8 billion by 2020;
- economic benefits to New Zealand - with a total estimated value of $0.8 billion by 2020 (excluding CO_2 benefits);
- environmental benefits to Australia – with over 200 Mt CO_2-e of abatement projected by 2020; and

- environmental benefits to New Zealand – with over 6.4 Mt CO_2-e of abatement projected by 2020.

These economic and environmental benefits are delivered at a consumer benefit, not cost. Measured in terms of greenhouse gas emission reductions, the community cost is minus $23/tonne of CO_2-e reduced (net present value).

6.2 Energy Efficiency Opportunities

The *Energy Efficiency Opportunities Act (Commonwealth) 2006* creates a regulatory program that requires mandatory assessments and public reporting of energy efficiency opportunities those corporations and all their sites that use more than 0.5 petajoules of energy each year. The measure covers businesses that consume 60 per cent of Australia's business energy end use and 45 per cent of Australian energy end use. A key goal is to encourage companies to deal with energy efficiency as a core business activity, with appropriate resources and recognition from senior management.

Following the 2007 registration process, the EEO program has captured over 200 corporations including more than 290 sites using greater than 0.5 petajoules and many thousands of smaller sites and subsidiaries. By the end of 2007 corporations subject to EEO are required to provide information on how they intend to assess and report on their corporation. First assessments must be completed by mid 2008 with public and government reports on those assessments due by end of 2008. Following this, corporations are required to finish assessing 80 per cent of their total energy use and all sites greater than 0.5 petajoule by 2011 and to report publicly on an annual basis the cumulative results of those assessments. A final more detailed report to the Australian Government is due in 2011.

Four leading Australian companies doing trial assessments across three manufacturing and eight mining sites have now identified potential opportunities that will save significant amounts of energy and reduce greenhouse gas emissions by a total of 50,000 tonnes per year. One company site is expecting to save well over $1 million each year from this assessment alone. Information on these case studies is available from http://www.energyefficiencyopportunities.gov.au/.

6.3 Building Efficiency

Minimum energy efficiency design standards for residential buildings were introduced into the Building Code of Australia (BCA) in January 2003 and stringency was increased to five (5) Star in May 2006. Energy standards were introduced for hotels and apartments in May 2005 and further extended in May 2006 to cover all other commercial buildings. The BCA is a model national code implemented through adoption by individual jurisdictions. Regulatory Impact Statements (RIS) for these measures project total net benefits of $2.8 billion, based on the costs of a 10 year measure implementation and energy saving benefits over the life of the relevant buildings. Building standards have a net public benefit of $30 (residential) to over $100 (commercial) per tonne of CO_2-e abated.

6.4 Trades training courses

Energy efficiency training courses for electricians, HVAC installers, facility managers and engineers are being developed to ensure that these key trades and professions have the skills to deliver energy efficiency outcomes and reduce the risks for investors in energy efficiency projects, including consumers, by ensuring work is undertaken by competent and independently accredited professionals. These trades were chosen to fill important gaps in training and accreditation. Additionally, work is being done to assist trades and professions to recognise and promote the new market opportunities associated with energy efficiency.

For electricians, course content has been developed and pilots run in Melbourne and Sydney. An accompanying accreditation system for the trained electricians has been developed and the course is now ready for national rollout. For HVAC, both the Air Conditioning and Mechanical Contractors' Association (AMCA) and the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) have been contracted to develop training courses. The AMCA courses will be piloted and completed by September 2007, with the AIRAH courses on track for completion in February 2008.

Certificate IV level and Graduate Certificate level courses for facility managers are to be piloted in March 2008 with an accreditation system established by mid 2008. A Graduate Certificate in Building Energy Analysis is under joint development by the Business Council for Sustainable Energy, and RMIT and Swinburne Universities and will be piloted in March 2008, with a subsequent accreditation system to be completed by June 2008.

7. NFEE STAGE 2 POLICY CONSIDERATIONS

In developing new measures for NFEE Stage 2, the MCE has directed that the measures should:

1. deliver net public benefit;
2. deliver least cost greenhouse gas abatement that does not exceed the cost of alternate measures being undertaken across the economy; and
3. ensure ongoing national co-ordination of energy efficiency action.

7.1 Energy efficiency data

Fundamental to the development and successful implementation of any new measures under the NFEE will be a comprehensive set of energy efficiency data. Currently energy efficiency data is limited, with little information available about energy use in important parts of the economy, for example commercial buildings.

A program to identify, collect and analyse energy efficiency data will therefore be established over coming months to support the implementation of agreed NFEE Stage 2 proposals. This work program will continue as part of NFEE Stage 2.

As part of the data group's work program, an assessment tool will be developed to identify the net benefits of both regulatory and/or information measures.

8. PROPOSED NFEE STAGE 2 MEASURES

NFEE Stage 2 will consist of both new measures and continuing Stage 1 measures. Some NFEE Stage 2 measures build upon the foundations laid in Stage 1 measures. For example, the HVAC strategy would create a demand for suitably qualified tradespeople who undertook the HVAC training.

8.1 Continuing Measures

Stage 1 measures that will continue include:

- EEO;
- EEX;
- Consumer bill benchmarking;
- Energy Efficiency in School Curricula;
- Mandatory disclosure of building energy performance; and
- Equipment Energy Efficiency (E3) program, including MEPS and energy labelling (for electricity and gas appliances and equipment).

8.2 New Measures

Five new measures have been developed for MCE consideration in late 2007, based on the achievements of NFEE Stage 1 and the current policy environment. The new measures have been developed based on the experience of NFEE Stage 1, which has resulted in a technology-based approach. A range of possible measures were initially identified and evaluated for inclusion. Those presented here are those considered by the E2WG to require nationally consistent delivery and to have the capacity to deliver large scale energy and greenhouse savings.

The following five measures have been recommended for further development:

1. Strengthened and expanded MEPS;
2. Incandescent lighting phase-out strategy
3. Government leadership through green leases;
4. HVAC high efficiency systems strategy; and
5. National water heater strategy.

Further information on these five measures is provided below.

Further work

While it is recognised that there is significant potential for further improvements in the energy efficiency of buildings, implementation of such measures requires coordination across many agencies that have responsibilities within the building sector. Therefore, as part of the further development of building-related energy efficiency measures under NFEE Stage 2, these agencies will be consulted to ensure integrated policy development and effective implementation.

The following measures will be raised during these discussions before going to MCE for decision:

A. Development of tools for measuring building energy performance in new sectors; and

B. Additional residential measures.

8.3 Mandatory Implementation

As noted previously, work is under way to define and examine a proposal for a measure that would require large and medium energy using sites to identify energy efficiency opportunities and implement those that have a payback period of less than three years. MCE will consider this proposal in late 2007. This proposed measure is not, as yet, part of the NFEE Stage 2 package.

1) MINIMUM ENERGY PERFORMANCE STANDARDS AND E3 PROGRAM

Objective
To expand and strengthen the existing Minimum Energy Performance Standards (MEPS) and Equipment Energy Efficiency (E3) Program.

Rationale
The principal means by which Australian and New Zealand jurisdictions improve end-use product energy efficiency is MEPS, implemented under the Equipment Energy Efficiency (E3) program. The E3 program removes worst practice through mandated standards and rewards best practice through product labelling. Actions already in train from the MEPS program are projected to deliver 24 Mt of emissions reduction per year by 2020, with a net public benefit of around $23 per tonne.

Description of measure
This measure builds on successful work undertaken to date, expanding the range of products currently covered by the MEPS program and strengthening standards for existing products. Categories of electrical and gas appliances and equipment to be targeted are set out in the table below.

Energy source	Category to be targeted
Electrical Appliances and Equipment	Whitegoods Home entertainment equipment Water heaters Air conditioners (including chillers) Computer equipment Lighting Commercial and industrial equipment One-watt standby power
Gas Appliances and Equipment	Water heaters Ducted / space heating Pools / spas Outdoor heaters

Key outcomes
At this point in time it is not possible to specify the exact impacts of the proposed measure. All MEPS recommendations require individual Regulatory Impact Statements. No products are subject to MEPS unless the proposed standards achieve a net positive benefit.

2) INCANDESCENT LIGHTING PHASE OUT STRATEGY

Objective

To phase out inefficient lighting in the residential sector as part of the delivery of the Green Light Australia strategy.

Rationale

The Australian Bureau of Statistics reports that approximately 113 million incandescent lamps were sold in Australia during 2006. In addition, almost 40 million fluorescent lamps were supplied in 2006 (comprising sales of 25 million tubular and more than 12 million compact fluorescent lamps (CFLs) with several million CFLs given away through promotional programs). The average Australian home contains approximately 20 mains-connected and plug-in lights. On average, twelve of these lamps are General Lamp Service (GLS) which result in the emission of around 5.6 million tonnes of $CO_{2\text{-}e}$ per annum.

Description of measure

The incandescent phase-out strategy combines a MEPS program and a series of complementary activities. The MEPS will be phased in over time to ensure that efficient replacements are available for all types of incandescent lights before they are phased out. The complementary activities necessary to make the phase out effective include:

Information provision to increase understanding of the GLS phase out and address industry and consumer stakeholder concerns and questions such as:

- guidance to help consumers select the most efficient replacement lights when incandescent lamps are no longer available;
- information concerning the safe disposal of lights if they break in use or when they reach end of life;
- guidance for retailers and lighting system designers to help them explain changes to customers; and
- a web based information site including a database of high efficiency products.

Educational activities focused on key occupations including illumination engineers, builders, electricians, architects and specialist lighting outfitters.
Demonstration projects to showcase alternative approaches and substitutes, along with innovative technologies such as LEDs.
Product development to increase domestic and international testing capabilities.
Research to address specific community and industry concerns.

Key outcomes

Converting all future sales of GLS lamps to CFLs (or equivalent efficient technology) would result in greenhouse gas abatement of at least 4 million tonnes $CO_{2\text{-}e}$ per annum. Expected energy cost savings, for the average household, would be over $50 per annum. This full potential energy saving of the phase-out strategy can not be accessed by the MEPS programme alone and the complementary activities are essential to maximise the impact of the phase-out strategy.

3) GOVERNMENT LEADERSHIP THROUGH GREEN LEASES

Objective

To generate energy and greenhouse gas savings by increasing the operational performance of buildings within the commercial office market by:

1. adopting nationally consistent commercial office policy frameworks covering building energy performance standards and green leasing requirements for all new or refurbished Government leased / owned buildings greater than 2000 m^2 from 2009/10;
2. accelerating private sector uptake of green leases within the commercial office market through promotion to:
   - Government decision makers of their obligations / benefits; and
   - the investment and building / construction sector of the new Government policy and broader benefits from green leases; and
3. improving the availability of tools and information to facilitate the integration of green leases into building management activities in order to ensure buildings are operated and maintained as designed.

Rationale

This proposal addresses the following impediments:

- Split incentives under which buildings are constructed with minimum thermal performance as the developer/owner is not responsible for paying energy costs.
- Lack of a policy driver for Government decision makers to consider energy efficiency when considering leasing options.
- Poor information transfer from building designers to building operators / facility managers.
- Lack of awareness/ knowledge amongst building operators / lessees as to how to operate the buildings to the original design.
- Potential for inconsistent approaches between jurisdictions.

Description of measure

This measure comprises two components:

1. Agreement that all new and refurbished Government owned / leased commercial office buildings above 2000 m^2 will adopt green lease schedules, including the standard principles covering:
   - An Australian Building Greenhouse Rating (ABGR) energy performance requirement determined by each Government
   - An energy management plan
   - Separate metering for particular building elements
   - A building management committee
   - Remedial action / dispute resolution clauses

2. Capacity building activities to facilitate the integration of an agreed national energy rating policy and green lease schedule, including:
   - Communications materials on obligations / benefits for Government decision makers;
   - Communication material and activities to inform the construction industry of the new policy requirements; and
   - Assessment and development of additional tools to assist facility managers and tenants to meet their green lease requirements.

4) HVAC HIGH EFFICIENCY SYSTEMS STRATEGY

Objective

To implement a ten year strategy designed to improve the energy performance of heating, ventilation and air-conditioning (HVAC) systems.

Rationale

The installed base of non–residential HVAC systems in Australia is estimated to:

- Consume 9% of electricity produced in Australia and so cause more than 3.6% of total Australian greenhouse gas emissions (>21Mt CO_2-e per annum);
- Depending on the building type and use, be responsible for between 40% and 60% of all energy used in non-residential buildings;
- On average create more than 55% of electrical demand recorded in CBD buildings during peak demand periods;
- Involve cooling towers that consume billions of litres of water per annum across Australia;
- Service approximately 120 million m^2 of buildings; and
- Represent an industry worth about $7 billion per annum and employing at least 95,000 people.

Description of measure

This strategy will address many non-technical barriers to HVAC energy efficiency while also identifying and promoting highly efficient technical solutions and systems optimisation processes and creating an environment in which energy efficiency gains are valued, measurable and sustainable. This strategy will complement chiller MEPS that are currently under development.

More than 20 separate but complementary measures are proposed across eight priority areas, grouped under the following four broad strategic initiatives:

Practices – creating nationally standard cradle-to-grave systems of documentation and data capture that allow trained climate control professionals to most effectively commission, operate, and maintain the performance of HVAC systems.

Systems – Identifying, demonstrating, analysing and promoting best practice, sustainable efficiency gains and technological advances, systems and tools across the entire spectrum of climate control industry participants and stakeholders.

People – creating nationally standardised, recognised and transferable qualifications and certificates built on effective multi-disciplinary training modules that provide numerous entry points for industry participants and stakeholders to access material that improves their understanding of HVAC systems and their skills as climate control professionals.

Standards development – first time standards for chillers and close control units to be implemented.

Key outcomes

The strategy has a target of improving the energy efficiency of the installed base of systems by 20% over the life of the strategy. If that target is achieved it would reduce greenhouse gas emissions by approximately 4 Mt CO_2-e per annum and save as much as $350 million in energy costs per annum.

5) NATIONAL WATER HEATER STRATEGY

Objectives

- To reduce energy use and associated greenhouse gas emissions from domestic hot water systems.
- To transform the market for water heaters away from conventional electric resistive water heaters and towards low emission alternatives.

Rationale

Hot water use is, for most households, the largest consumer of energy, typically around 30 per cent of a household's energy use. As such, it is a large contributor to household greenhouse gas emissions, especially where storage resistive electric water heaters are used. Annual emissions for a larger household's hot water use may exceed those for their car. Nationally, household water heating contributes around three per cent of Australia's national greenhouse emissions.

The technology exists to make dramatic cuts in water heating energy use and associated greenhouse gas emissions. The challenge is to overcome the barriers to the delivery of more efficient, lower greenhouse gas emitting hot water systems, primarily solar, gas and heat pump.

It is important to target both new and replacement water heaters in this strategy. Over the next 10 years it is expected that approaching 6 million hot water units will be installed as replacements for failed systems compared with almost 1.5 million units installed in new homes over this period.

Description of the measure

Development of a national water heater strategy that:

- improves the energy efficiency of water heaters;
- develops a national greenhouse rating methodology to underpin national and state-based performance standards;
- establishes a national greenhouse gas performance requirement for water heaters installed into new homes and major renovations; and
- facilitates state/territory greenhouse gas performance requirements for replacement water heaters in existing homes.

As part of developing the strategy, it will be necessary to determine the most effective implementation method for each element, noting available options would include plumbing regulations or the Building Code of Australia.

Key outcomes

- Replacement of electric storage hot water systems with more greenhouse friendly systems could result in national energy savings of 21.6 PJ/yr (6000 GWh/yr) and greenhouse gas savings of 6 Mt CO_2-e per annum in 2020.

- Improved uptake of greenhouse friendly hot water systems.

Further work

As discussed above, discussions will be held on building energy efficiency measures over coming months. As part of these discussions, the following two measures will be raised for future consideration by MCE.

A. DEVELOPMENT OF TOOLS FOR MEASURING BUILDING ENERGY PERFORMANCE IN NEW SECTORS

The National Australian Built Environment Rating System (NABERS) and its predecessor the Australian Building Greenhouse Rating (ABGR) scheme provide a proven methodology for determining energy efficiency performance in existing buildings. The development of benchmarks for commercial buildings provides a basis for comparing the energy efficiency performance of existing buildings for both mandatory and voluntary disclosure purposes.

This proposal would expand NABERS Energy (ABGR) to cover retail centres, retail tenancies, hotels and other commercial buildings identified as priorities. The measure will require:

1. agreement of priority building types with industry;
2. development of energy performance benchmarks for priority building types; and
3. development of a NABERS tool for each building type.

B. ADDITIONAL RESIDENTIAL MEASURES

Subject to consultation between energy, building and planning portfolios within each level of government, assessment of the potential for minimum energy and greenhouse building and planning standards with respect to hot water, fixed appliances and lighting in new residential buildings. In developing the strategy it will be necessary to consider the impact of any change to existing standards in particular jurisdictions.

9. NEXT STEPS

This consultation paper has been prepared by E2WG to inform stakeholders of the proposed NFEE Stage 2 measures and their rationale, and to seek feedback for the purposes of finalising the measures for MCE endorsement.

Feedback is specifically sought on:

1. the contents of the new measures; and
2. suggestions to improve the implementation of the new measures to maximise the benefits received.

Individuals and organisations will have an opportunity to provide feedback to E2WG at a one-day public consultation at the Hilton Melbourne Airport on Tuesday 25 September 2007. Stakeholders wishing to attend the consultation event are requested to contact the E2WG Secretariat to arrange a timeslot to provide a verbal submission. Stakeholders unable to attend the consultation event may provide concise written submissions to the E2WG Secretariat by close of business 25 September 2007. The E2WG Secretariat can be contacted at E2WGSecretariat@industry.gov.au.

Stakeholder comments from the consultation event and any written submissions will be used to further develop the proposed NFEE Stage 2 measures. The package of measures is scheduled to be submitted to the MCE for final approval in late 2007, in order to commence from 1 July 2008.