Annex D – Measures for Improving Energy Efficiency in Commonwealth Operations

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Measures for Improving Energy Efficiency in Commonwealth Operations

Energy and Environment Division
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Contents

In 1997-98, total energy consumption for Commonwealth operations, was approximately 25 petajoules, roughly equivalent to 2.9 million tonnes of CO_2 emissions. Energy consumption, excluding defence operations, was approximately 9.4 petajoules, roughly equivalent to approximately 1.7 million tonnes of CO_2. By comparison, total electricity and gas consumption for 1997-98 for the ACT amounted to approximately 14.5 petajoules.

Policy Objective

To improve energy efficiency, and consequently reduce the environmental impact of Government operations, and by so doing, lead the community by example.

Contact Information

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Summary of the Policy

- Energy intensity targets to be met by 2002-2003.
- Departmental secretaries and agency heads to report to and be accountable to their Ministers for their performance in improving energy efficiency.
- All departments and agencies to report annual energy consumption and intensity to the Department of Industry, Science and Resources.
- A whole-of-government energy performance report to be prepared and published annually by the Department of Industry, Science and Resources.
- Energy performance contracting accepted and encouraged as a vehicle for achieving energy savings.
- Energy and Environmental Services Team available for specialist energy advice.
- Minimum energy performance standards apply to new buildings (owned and leased).
- New building leases to exclude energy from being recovered as an outgoing.
- All building space to be energy audited regularly and all cost effective recommendations implemented.
- All new office equipment to be US EPA Energy Star compliant, where available.
- All new appliances to have 4-star or better energy rating under the Appliance Energy Efficiency Rating Label Scheme.
- Opportunities to use renewable energy identified, and adopted where cost effective.
- All new houses (owned or leased) to have a NatHERS rating of 4-star or better, where available.
- Assess the potential to upgrade all existing houses to 3-star or better, where NatHERS is applicable.
- Development of fuel consumption targets for the Commonwealth vehicle fleet to apply from 2003.
- Periodic reviews of the program and an independent review after two years, with results and recommendations to be brought to Cabinet.

1. Introduction

In his 20 November 1997 announcement *Safeguarding the Future: Australia's Response to Climate Change*, the Prime Minister set out a number of policies to reduce greenhouse gas emissions. Included in that package was a commitment to lead by example in reducing emissions from the Commonwealth Government's own operations through adopting measures to improve energy efficiency. The requirement and measures are described in this document.

All Commonwealth organisations covered by the energy efficiency policy must meet their annual reporting requirements and achieve performance targets. The reporting process is transparent with both the performance of Commonwealth organisations against the energy efficiency targets and the accuracy and timeliness of reporting subject to public scrutiny.

A number of required efficiency measures considered essential to any energy management program are identified in the policy. These measures must be adopted within the context of accountability of the chief executive officer and the applicability to the agency. Not all requirements are relevant to all agencies and in some cases, there may be practical limitations to their implementation requiring a balance between cost effectiveness and energy savings.

The policy is largely outcomes based; the main goal being to meet required performance levels by 2002-03. Meeting the targets by the due date will be easiest for departments and agencies that have taken a structured approach to energy management which allows them to plan ahead and have adequate time to achieve the targets.

In addition to summarising the policy requirements and administrative structure, this document also identifies the resources and tools that are available to assist organisations improve their energy efficiency. The document has been revised to take account of changes in Commonwealth administrative arrangements and to cover omissions in the April 1998 issue.

1.1 National Greenhouse Strategy

The National Greenhouse Strategy is the primary mechanism through which Australia's international commitments to address the threat of climate change will be met. The Strategy has been developed by the Commonwealth and all State and Territory Governments. The Australian Local Government Association and industry and community consultations have also made important contributions.

The Strategy maintains a comprehensive approach to tackling greenhouse issues. The range of action it encompasses reflects the wide ranging causes of the enhanced greenhouse effect and the pervasive nature of its potential impacts on all aspects of Australian life and the economy.

The Strategy details both existing actions and additional measures, and includes the package of measures announced by the Prime Minister in November 1997. The measures to improve energy efficiency in Commonwealth Government operations broadly address the NGS requirements, in particular, NGS 3.1, although there is room in areas for adjustments for the sake of consistency. In the context of Government operations, where energy use contributes more than 95% of greenhouse gas emissions, energy-related emissions are a measurable substitute for greenhouse gas emissions.

NGS 3.1 requires Governments to pursue their responsibilities for greenhouse gas reduction in their own operations by independent action, although there is also strong encouragement under the NGS for jurisdictions to share information and expertise. This is occurring at present through the work of the Government Energy Management Group on which all jurisdictions are represented.

(For more information see *The National Greenhouse Strategy 1998,* or contact the Australian Greenhouse Office (details on page vi).

2. Scope of the Policy

This policy applies to all Commonwealth departments and to Commonwealth agencies and bodies whose operations are substantially budget-dependent.

The policy applies to all departments and agencies covered by the Financial Management and Accountability Act and all agencies and statutory bodies covered by the Commonwealth Authorities and Companies Act and whose operations are substantially budget-dependent. Other organisations, not specifically covered by the policy are encouraged to adopt the measures contained in this document as there are substantial cost savings to be achieved through improved energy efficiency.

Budget dependency is defined as deriving more than half of departmental/agency costs either directly or indirectly from Commonwealth funds.

Example - Agency B derives most of its funding by selling its services to other budget dependent agencies. Agency B is therefore indirectly budget dependent.

2.1 Accountability

The Government expects Commonwealth departments and agencies to lead by example.

Secretaries of departments and heads of budget dependent agencies (CEOs) are accountable to their Ministers for their performance in improving energy efficiency in their own operations and for meeting the performance targets stated in this document.

Good management practice, which results in energy budget savings, reduces the need for savings in operational budgets, allowing your organisation to concentrate on core business.

3. Mandatory Reporting and Energy Intensity Targets

3.1 Energy Consumption Reporting

3.1.1 Aim

The reporting process aims to ensure that departments and agencies are aware of the level of energy consumption of their organisations and the relative efficiency of their energy consumption.

The Department of Industry, Science and Resources (ISR) will aggregate individual reports into an annual whole-of government energy report to produce a simple measure of the total energy consumption of the Commonwealth. The report is a means to monitor the efficiency of energy use and the rate of progress towards improving that efficiency, and provides feedback on the effectiveness of energy management programs.

3.1.2 Reporting to Ministers

Secretaries of departments and heads of budget-dependent agencies will report the energy performance of their organisations to their Minister annually. At a minimum, the report will include total energy use for the previous financial year and the performance of the organisation in improving energy efficiency towards the energy intensity targets described in this document.

3.1.3 Whole-of-Government Energy Report

Each agency covered by the policy will forward summary reports of energy consumption, including key indicators, to ISR. Electronic reporting software, provided by ISR, must be used to facilitate this process.

ISR will aggregate, summarise and analyse the data and produce a whole-of-Government energy consumption report to be tabled in Parliament before the end of December of each year. The report will include estimates of unreported central services energy consumption and total greenhouse gas emissions.

Energy use has to be monitored before it can be managed. Experience in the UK of detailed monitoring and targeting is of savings of between 5% and 25%, with little or no additional capital expenditure. (UK Department of the Environment, Energy Efficiency Office, “Good Practice Guide 31”).

3.1.4 Deadline

Both the report to the Minister and the summary report to ISR must be submitted by the close of business on the last working day of October each year.

Reports to ISR that are not submitted on time will be excluded from the whole-of-Government energy report and the organisations concerned clearly identified in the report.

3.1.5 What must be Reported

All energy used by departments and budget dependent agencies over which they have direct control, must be reported. Reports will be on a financial year basis, by fuel type and by end-use category (see Table 1). Energy consumption by fuel type is required to estimate greenhouse gas emissions. Normalisation factors, such as building floor area, number of people, and kilometres travelled, must also be reported where appropriate. Use net lettable area for all office space.

Departments and agencies should also give reasons for any major changes in energy use.

3.1.6 Energy Intensity

Energy intensity will be calculated by the reporting software using the relevant normalisation factors and will be reported in rates such as MJ/m^2/annum or MJ/km/annum. Energy intensity figures provide a measure of energy efficiency, and are relatively insensitive to changes in the size, or activity levels, of an organisation. There may be more than one indicator of energy intensity for a given end-use category; for example, the energy intensity of buildings might be expressed in terms of MJ/m^2, or MJ/person. There is usually one indicator for each end-use category which best represents its energy efficiency. These key indicators are given in Table 1.

3.1.7 Assumptions

The reporting requirement recognises that detailed information is not always available for all end-use categories. For example, tenants in office space which is leased in privately-owned buildings are unlikely to get access to information regarding the energy consumption of the building's central services (air conditioning, lifts etc.) and are therefore not required to report this consumption. In some cases, even the tenant light and power is not measured.

In Commonwealth-owned office buildings, the total energy use of the building is always available, but it is unusual for central services energy use to be metered separately from tenant light and power energy use.

Tenant light and power energy consumption must always be reported. If this information is not directly available, energy consumption for the space can be estimated per unit area as described in Table 1. Where only the total building consumption is known, estimation formulae are also given to apportion energy consumption from central services and tenant light and power to individual tenants.

The estimated consumption rate is set slightly above the target figures to provide an incentive to install meters to measure actual energy use. Lack of adequate metering presents a significant disincentive to the implementation of energy saving measures and prevents effective energy management.

Central services energy use will, wherever possible, be reported by the organisation that is directly responsible for paying the bill. Central services energy use, for which private sector owners are responsible and which is factored into rent, will not normally be available. However, where a tenant is the sole occupant of a building, and the lease agreement requires the tenant to pay the total energy bill for the building, tenant organisations will report the central services energy use. In Commonwealth-owned buildings, the managing organisation will report the central services energy use.

3.1.8 Changes in Levels of Activity within Organisations

If annual normalisation factors, such as floor area and staff numbers vary throughout the reporting year, they will be averaged to equivalent full year factors. This is achieved by summing the normalisation factors that prevail at the end of each month and then dividing by 12. This calculation applies only to significant changes in normalisation factors and department/agencies should use discretion in deciding when it is to be applied.

Example: An occupancy of 500 people for 9 months and 1000 people for 3 months would have an equivalent full year average of 500×9/12+1000×3/12 equals 625 people. Or, as another example 500m^2 occupied for 3 months is equivalent to 500×3/12 equals 125m^2 for a full year.

3.1.9 Changes in Administrative Responsibilities

Departments and agencies can be created or abolished, or may gain and lose functions or operational units as a result of administrative changes. When reporting energy use, departments and agencies must report on their structure as it exists on 30 June each year as if it had existed for the whole year. The receiving organisation should liase with the organisation that is losing the unit to obtain energy data for the entire year. In some cases energy consumption may be impossible to obtain and will need to be estimated by the receiving organisation.

Under this method, if an operational unit is abolished or sold part way through the year, its energy consumption is unreported; a similar methodology is applied to buildings that are sold during the reporting year. This anomaly is accepted in the interests of reporting simplicity.

Example: Department A may lose an operational unit part way through a financial year but gain two other units from departments B and C. Department A makes no report on the energy use of the unit that it lost but reports on the full year's energy use of the two operational units that it gained. Likewise Departments B and C make no report on the units that they lost.

3.2 Energy Intensity Targets

Energy Intensity targets are applied to key energy intensity indicators as listed in Table 1 and explained below.

3.2.1 Rationale

The current building energy targets are intended to reflect the previous targets of reducing energy use in Commonwealth occupied buildings by 15% within five years and 25% within ten years, using 1992-93 as the base year. The current targets are given in Table 1, have been converted from reductions in absolute energy to reductions in energy intensity, to minimise the impact of changes in the size and activity levels of organisations. Energy intensity targets are more equitable and recognise that some organisations may have taken steps to achieve significant energy reductions. Targets are set only in end-use categories where there is sufficient energy use information and where a target makes sense.

Targets may be set in remaining end-use categories subject to the findings of the two-year review of the program in 2000. This will be done in consultation with departments and agencies reporting within the category

and will take into account current performance, available benchmarks and the time remaining for implementation. It is not expected that targets will be set in the *Other Transport*, *Defence Operational Fuels* or *Other Uses* categories.

Defence establishments have a target based on aggregate energy consumption, recognising that defence bases, which may contain many buildings of varying types, typically have only a single meter at the front gate. It is expected that metering advances will progressively enable the Department of Defence to establish relevant energy intensity targets for a range of activities in many of its establishments. Because the target for *Defence Establishments* is not set in intensity terms, the effect of outsourcing functions, or base closures, on energy consumption needs to be carefully monitored and the targets adjusted if these actions result in significant changes to energy consumption levels.

Table 1 - Description of End-Use Categories and Energy Intensity Targets

End-Use Category	Description	Key Indicator	Target
Office- Tenant Light and Power	Energy used for tenant operations in buildings whose primary function is office space. It includes tenancy lighting, office equipment, supplementary air conditioners, boiling water units etc. The key indicator recognises that overall energy efficiency is a combination of the efficient use of the space as well as the energy efficiency of the space. If not directly measured, energy consumption is approximately equal to 70% of electricity pro rata with the proportion of total floor area, or 500 MJ/m2 if no other data is available.	MJ/person/annum	10,000 MJ/person/annum
Office – Central Service	Energy used in the provision of services in office buildings common to all tenants. It includes building air conditioning, lifts, security and lobby lights, domestic hot water etc. If not directly measured, energy consumption is approximately equal to 30% of electricity and 100% of gas.	MJ/m²/annum	500 MJ/m²/annum
Public Buildings	Energy consumed in buildings visited by the public in significant numbers. Typical buildings in this category are public libraries, museums or art galleries.	MJ/m²/annum	None set
Law Courts	This category includes all types of court facilities, whether a relatively small space in a larger building, or housed in a specialised building.	MJ/m²/annum	None set
Climate Controlled Stores	Relates to buildings that are required to maintain 24-hour climate controlled conditions for the protection of the goods they house. These include archives, safety equipment stores, art stores etc.	MJ/m²/annum	None set
Laboratories	This category covers all energy use in buildings which, as their primary function, are used as laboratories	MJ/m²/annum	None set

End-Use Category	Description	Key Indicator	Target
Other Buildings	This category is for facility types that do not fit the other building categories, e.g. simple storage shed, radio transmitter buildings. The actual building type must be defined in the report. Additional Other Buildings categories may be added, if required, by contacting ISR.	MJ/m^2/annum	None set
Passenger Vehicles	Energy consumption of passenger cars, light commercial vehicles and mini buses and includes the energy consumption of Senior Executive Service vehicles.	MJ/km/annum	None set
Other Transport	Energy consumption of all forms of transport other than passenger vehicles, including transport systems engaged exclusively for operational purposes, but excluding energy used for general public transport such as airlines, trains and buses.	No key indicator as too diverse a category.	None set
Defence Establishments	Covers all buildings and facilities that are within established Defence bases. It does not include office buildings and stores outside bases that must be reported under the appropriate category.	GJ	2.5 million GJ
Defence Operational Fuels	This category covers the fuel used in Defence Operations for aircraft, tanks, ships, vehicles etc. The energy use is reported, but no targets are set for its use.	No key indicator as too diverse a category.	None set
Other Uses	Energy consumption of facilities that do not fit any of the previously defined categories.	No key indicator as too diverse a category.	None set

3.2.2 Application of Targets

The targets are **not** intended to apply to individual facilities, but to the average consumption of that type of facility throughout an organisation. Typically, efficient facilities will individually perform well under the targets, but it is expected that there will be a wide variation in general facility performance. Individual facility performance will only be measured against recognised performance standards (refer to 4.1).

3.2.3 Timing

The date for meeting the current targets is the end of the 2002-03 financial year. Subject to the two-year review of the program in 2000, it is expected that all organisations will be performing at, or below, the target energy intensities in the 2003-04 financial year.

3.2.4 Additional Targets

The Government intends to set challenging, but realistic, fuel consumption targets for the Commonwealth vehicle fleet to apply from 2003 and to investigate and develop further options to strengthen action on fuel consumption in the fleet. These initiatives will be developed by the Australian Greenhouse Office, in consultation with ISR.

3.2.5 Energy End-Use Categories

The number of energy end-use categories has been limited in the interests of simplicity and minimising reporting costs. It is recognised that reporting against this limited range of categories will involve a degree of compromise, however, the size and diversity of most organisations will ensure that anomalies average out and that the performance indicators and associated targets remain statistically valid.

Assistance will be available from the ISR energy reporting help desk if any further clarification is required (see contact details on page vi).

4. Required Efficiency Measures

The reporting requirement is mandatory for each department and agency covered by the policy. There are a number of additional measures which are mandatory if applicable to an organisation. These are listed below.

4.1 Minimum Building Energy Performance Standard
All new and substantially refurbished buildings, whether Commonwealth-owned or where the Commonwealth is the majority tenant, must meet a minimum energy performance standard. The interim standard is the 1994 BOMA Energy Guidelines (with a 20% margin of leniency for substantially refurbished buildings). Because these standards are limited to office buildings in capital cities, they will be replaced shortly by standards being developed by the EEST.

Funding for building construction and refurbishing will be conditional on certification, by suitably qualified persons, that the building will meet required energy standards. This will be arranged through the EEST.

4.2 Lease Agreements
New lease agreements for buildings should not include any provision permitting the recovery from the tenant of the cost of energy used by building central services during normal working hours. This will ensure that building owners have an incentive to improve the energy efficiency of building central services. Designated special purpose buildings may be excluded from this requirement if a case can be demonstrated.

Energy efficiency planning is not simply minimising the unit cost of gas, fuel or electricity supplied to your organisation. This is only part of the equation. Energy efficiency planning is about managing energy consumption more efficiently. The energy consumption component of an energy bill offers the greatest opportunity to reduce energy costs. It also helps reduce the damaging environmental effects of wasteful energy use.

4.3 Energy Audits
All building space must be energy audited within one year of occupancy and thereafter at intervals not exceeding five years. The audit quality must at least comply with the requirements of the relevant Australian Standard, or alternately, the format of the audit may be put forward as a proposal from an energy performance contractor, a post occupancy evaluation or similar.

All cost-effective energy saving measures identified in the audits must be implemented. Measures shall be considered cost effective if they have an internal rate of return of 15% or better when calculated over the estimated remaining period of occupancy, the life of the equipment involved, or seven years, whichever is the lesser.

Audits are not required if they fall due less than one year before the expected end of occupancy

4.4 Housing

4.4.1 Planned New/Leased Housing Acquisitions

All new Commonwealth owned or leased houses shall have a Nationwide House Energy Rating Scheme (NatHERS) 4-star or better, in all regions as it becomes available.

NatHERS is a scheme which allows the energy efficiency of all new and existing housing to be rated on a consistent basis.

4.4.2 Evaluation of Existing Houses

The EEST will evaluate existing owned and leased Commonwealth housing commenced prior to 1999 to assess the potential to upgrade cost effectively (with costs recovered through rent where necessary) to NatHERS 3-star or better where available. The study will assess the potential to upgrade, cost effectively (with costs recovered through rent) to at least three star by 2002.

4.5 Appliances and Office Equipment

4.5.1 Appliances

Departments and agencies are required to purchase appliances and equipment labelled as 4-star or better, under the appliance energy efficiency rating label, where available and fit for the purpose.

Industry will be consulted with a view to lifting the requirement from a minimum 4-star to the 5-star level in 2000.

Some electrical equipment has features such as ‘standby’ or ‘energy saving’ mode. However these may not save much energy and as a general rule ‘switch off’ when not in use. In fact, computers and monitors have a finite life and may fail prematurely if operating time is increased.

4.5.2 Office Equipment

Departments and agencies are required to purchase only office equipment that complies with the US Environment Protection Agency "Energy Star" standard, where it is available and fit for purpose. A key feature of Energy Star compliance is that equipment has power management features allowing it to meet a minimum energy performance standard. These power management features should be enabled at the time of supply.

It is a fallacy that turning fluorescent lights on and off uses more energy than leaving the lights on. Generally, if there is no operational or safety requirement for the lights to be left on, switch them off if you are going to be away from your area for more than 10 minutes.

4.6 Renewables

While many energy suppliers are offering "green energy" options for their customers these are rarely, if at all, cost effective in grid connected applications. However, passive solar technologies, involving building design and orientation are normally cost effective in most locations. Active solar technologies, such as solar hot water and photovoltaic arrays may be cost effective in certain sites, particularly in remote areas where conventional energy sources may be relatively expensive. Departments and agencies must identify opportunities to apply these technologies and seek to adopt them wherever it can be demonstrated they are cost effective.

5 Energy Management Resources

5.1 Energy and Environmental Services Team (EEST)

The Energy and Environmental Services Team (EEST) is located in the Australian Greenhouse Office (contact details on page vi). It is available to advise and assist departments/agencies as follows:

- provide an energy procurement advisory service and represent Commonwealth interests in the deregulated energy market;
- investigate opportunities for collaborative government energy procurement;
- assist departments/agencies in the assessment of financial and contractual risks in the evaluation of tenders for energy supply and develop risk management and minimisation strategies;
- develop best practice energy performance contract documentation and methodology;
- establish pre-qualified panels of energy service providers;
- assist in the evaluation of energy performance contract tenders;
- identify suitable Commonwealth-owned premises for pilot projects in energy performance contracting and monitor contract performance;
- review and update energy guidelines for Commonwealth-owned and leased buildings;
- report on energy aspects of proposed major construction projects;
- develop Commonwealth resource materials, management tools and training packages;
- organise forums, training events and workshops;
- assist agencies in the development and implementation of energy management action plans;
- conduct energy efficiency evaluation of existing Commonwealth-owned and leased housing to assess potential to upgrade cost-effectively to NatHERS 3 star or better;
- evaluate specifications for planned new/leased housing acquisitions to ensure that they meet 4 star;
- develop best practice methodologies for evaluating building performance, addressing energy performance targets in the construction/public works function.

5.2 Energy Performance Contracting

Energy performance contracting is a form of contracting for energy efficiency services, or more general facilities improvement. The contractor guarantees a level of energy consumption savings, upgrades the facility using plant at its own expense to achieve the consumption targets and is repaid over a number of years from the resulting stream of energy cost savings. Energy performance contracting provides access to private sector capital, technology and technical expertise at minimal up-front cost to the Commonwealth.

The use of energy performance contractors as an option in the process of meeting energy performance targets is strongly encouraged.

To maintain a consistent Commonwealth approach to the performance contracting industry, departments and agencies are encouraged to refer proposals to the EEST.

Good energy management does not mean 'freezing in the dark' or 'going without' : good energy management is about providing the same, or better energy service by using less or the same amount of energy.

6 Responsibilities for Policy Administration

Overall responsibility for the policy on energy efficiency in Commonwealth operations rests with the Department of Industry, Science and Resources. Responsibility for the implementation of the policy is split between ISR and the Energy and Environmental Services Team in the Australian Greenhouse Office.

Energy efficiency planning as an activity should be treated no differently from planning for other resources (personnel, budgets and information technology equipment) considered essential for the operation of an organisation.

6.1 Department of Industry Science & Resources (ISR)

The Government Operations Section (ISR) has responsibility for the following:

- policy formulation;
- reviewing energy intensity targets;
- disseminating core policy information;
- provide general advice to departments/agencies on interpretation of decisions;
- regular reviews of the policy, especially the reporting process and targets, and commissioning an external review early 2000; and
- collation of energy consumption data for preparation of the annual whole-of-government energy report.

6.2 Australian Greenhouse Office (AGO)

The AGO has responsibility for vehicle policy.

6.2.1 Energy and Environmental Services Team (EEST)

The EEST, located in the AGO, has implementation responsibilities as outlined in 5.1.

6.3 Joint Working Party on Improving Energy Efficiency in Commonwealth Operations (JWP)

The Joint Working Party provides a broadly representative and responsive co-ordinating body to oversee implementation and review of the Government's policy and evaluate developments and progress towards meeting the Government's energy objectives. The JWP:

- co-ordinates planning and program development;
- develops plans, systems and procedures for conducting regular reviews and evaluation of the program, including the two year review, to maintain currency and ensure that the main features are functioning effectively;
- ensures adequate and constructive communication between stakeholders;
- encourages departments and agencies to participate fully in the program;
- oversees formulation and promotion of programs such as Energy Star and purchase of efficient appliances by Commonwealth agencies;
- identifies opportunities for alternative approaches to improving energy efficiency; and
- communicates the role, functions and membership of the JWP to the stakeholders.

Recommendations and feedback will not be given by the JWP directly to departments and agencies, but will be communicated via ISR, the EEST and AGO.

The core members of the JWP are the Departments of Industry, Science and Resources, Finance and Administration and Defence and the Australian Greenhouse Office. Temporary membership of the JWP is also offered to other major energy using departments and agencies on a rotating basis. Meetings of the JWP are held about every two months.

Glossary of Terms

Agencies - Commonwealth organisations agencies bound by the Financial Management and Accountability Act (see FMA Act Part 3, section 5) and those covered by the Commonwealth Authorities and Companies Act (see the CAC Act Part 3, Division 1,Section 7) whose operations are substantially budget-dependent.

Appliance Energy Efficiency Rating Label - Appliance 'Star' Ratings provide a means by which consumers can make informed decisions about appliances based on energy efficiency. Ratings currently apply to refrigerators, freezers, dishwashers, air conditioners, washing machines, clothes dryers and gas appliances. In the future, ratings may apply to electric water heaters and electric cookers. Labelled appliances may vary between States and Territories. Appliance are rated according to how much electricity they use under standardised operating conditions and are awarded a star rating from one to six, with six being the most energy efficient.

BOMA Energy Guidelines - The 1994 BOMA Energy Guidelines were prepared by the Victorian Division of the former Building Owners and Managers Association of Australia Limited (BOMA). BOMA has since been reconstituted as the Property Council of Australia (PCA).

Budget Dependent Agency – A budget dependent department/agency is defined as deriving more than half of Departmental costs either directly, or indirectly, from Commonwealth funds.

Chief Executive Officers - Secretaries of departments of state and heads of agencies.

Energy Audit - An energy audit is a periodic examination of an energy system (or part of the system) to identify where energy is being used and in what proportions, to ensure the most appropriate sources of energy are employed, and that this energy is used as efficiently as possible.

Energy and Environmental Services Team – A specialist energy and environmental advisory unit within the AGO. It sponsors best practice by advising and assisting departments/agencies on building related energy matters and developing model contracts for energy supply and performance contracts.

Energy Performance Contracting (EPC) - A form of contracting for energy efficiency services or broader facilities improvement. The contractor guarantees a level of energy consumption savings, modifies the energy

using plant at its own expense to achieve the consumption targets, and is repaid over a number of years from the resulting stream of energy cost savings. EPC provides access to private sector capital, technology and technical expertise at minimal up-front cost to the client.

Nationwide House Energy Rating Scheme (NatHERS) - A scheme which allows the potential energy efficiency of housing to be rated on a consistent basis so one house may be more easily compared with another based on its heating and cooling needs.

Organisation – Any department or agency covered by the policy set out in this document.

Post Occupancy Evaluation (POE) - A systematic evaluation of the overall performance of a building undertaken 12 months after occupation or the completion of the full cycle of seasons.

Post Occupancy Energy Evaluation (POEE) - A combination of Post Occupancy Evaluation and energy audit methodology.

Recoverable outgoings - Building expenses which cannot be directly attributed to any tenant and which are recovered from all tenants in a proportional way; for example, the cost of operating lifts, the cost of heating and lighting common use areas and maintenance of the building air conditioning units.

US Environment Protection Agency Energy Star Compliant - Introduced in the United States in 1992, the US Environment Protection Agency Energy Star Standard defines energy savings specifications for personal computers, monitors, faxes, laser printers and photocopiers. The key specification is that the equipment has power management features which, if enabled, provide the ability for the equipment to automatically reduce power consumption at idle to a minimum performance level. There is a difference, in energy consumption, of up to 75 per cent between when the Energy Star features are enabled and when they are not enabled.

The volume of a tonne of CO_2 is roughly equivalent to the volume of an average three bedroom house.

Table 2 - Measurement Units

Unit	Abbreviation	Measures	Equals
megajoule	MJ	energy	10^6 joules
gigajoule	GJ	energy	10^9 joules
petajoules	PJ	energy	10^{15} joules
metre	m	length	
kilogram	kg	mass	
tonne	t	mass	1000 kg
litre	L	volume	0.001m^3

Table 3 - Energy Conversion Factors

Energy Type	Typical Measured Units	Abbreviation	To convert to Gigajoules, multiply by	CO_2 Intensity kg/GJ
Electricity	kilowatt hour	kWh	0.0036	260.0
Natural gas	megajoule	MJ	0.001	54.4
Natural gas	cubic metre	m^3	0.039 approximate	54.4
LPG (Liquefied Petroleum Gas)	tonnes	t	50.0	59.4
LPG	litre	L	0.0257	59.4
LPG	kilogram	kg	0.05	59.4
Heating Oil/Fuel Oil	litre	L	0.0408	69.7
Automotive Diesel	litre	L	0.0386	69.7
Petrol	litre	L	0.0342	66.0
Aviation Turbine Fuel	litre	L	0.0368	69.7
AVGAS	litre	L	0.0331	68.0
Greenpower	kilowatt hour	kWh	0.0036	0.0
Gas Oil	tonnes	t	44.6976	70.0
Special Antarctic Blend	tonnes	t	46.2584	70.0

Table 4 - Who to Contact on Various Issues

Task	Contact Agency	Reference Section
Building Leases	ISR	4.2
Minimum Building Energy Performance Standards	EEST	4.1
Energy Audits	EEST	4.3
Energy Intensity Targets	ISR, AGO (vehicles)	3.2
Energy Management Plans	EEST	5.1
Energy Performance Contracting	EEST	5.2
Energy Procurement	EEST	5.1
Energy Reporting	ISR	3.1
Forums, Training Events and Forums	EEST	5.1
Nationwide House Energy Ratings Scheme	EEST	4.4
Appliances and Office Equipment	ISR	4.5
Policy Formulation, Dissemination and General Advice	ISR	6.1
Renewable Energy	ISR	4.6
Resource Materials, Training Packages, Management Tools	EEST	5.1
Policy Review	ISR	6.1
Vehicles	AGO	3.2.4