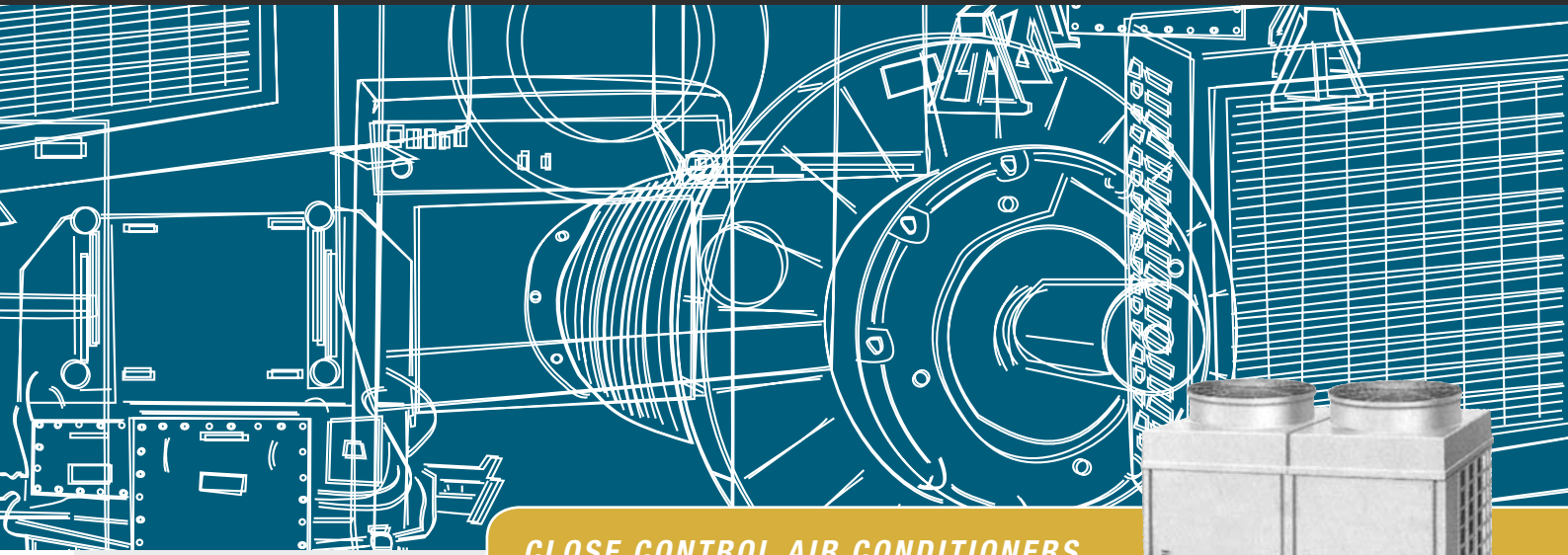
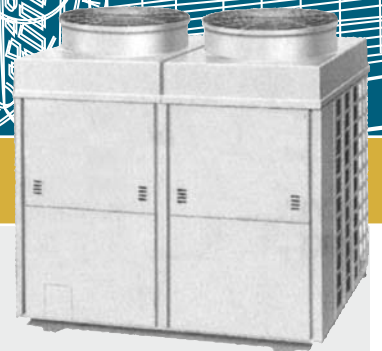


NATIONAL APPLIANCE AND EQUIPMENT ENERGY EFFICIENCY PROGRAM

# Minimum Energy Performance Standards



## *CLOSE CONTROL AIR CONDITIONERS*



PREPARED FOR

THE AUSTRALIAN GREENHOUSE OFFICE UNDER  
THE NATIONAL APPLIANCE & EQUIPMENT ENERGY  
EFFICIENCY PROGRAM



## Minimum Energy Performance Standards - Close Control Air Conditioners

Close control air conditioners are a central air conditioner specifically designed for use in data processing areas. Alternative terms used to describe these unit are “computer room” or “process” air conditioners. These air conditioners are designed to cool equipment rather than people; hence they are specifically designed to remove more sensible heat compared to latent heat. They are typically used to maintain internal temperature of approximately 22°C and a relative humidity of approximately 52 percent. Approximately 500 close control air conditioners are sold per annum, with an average output capacity of 40 kW<sub>r</sub>, representing approximately 15% of sales of packaged air conditioners. Almost all close control air conditioners are imported into Australia.

Close control air conditioners are currently exempted from MEPS and labelling regulations. In 2003, NAEEEEC requested a review of the application of international MEPS to close control air conditioners to enable an informed decision to be made about compliance of these types of air conditioners with the Australia MEPS. This review recommends that the MEPS for close control air conditioners should be considered in the proposed 2007 MEPS for three phase air conditioners.

### INTERNATIONAL HARMONISATION

Internationally, the Californian Energy Commission (CEC) is the only jurisdiction that regulates the efficiency of close control air conditioners. The USA Department of Energy have assessed computer room air conditioners as not being a “covered” product under Energy Policy and Conservation Act (EPCA), primarily due to their exclusion from the de-facto USA building code – ASHRAE Standard 90.1. However, ASHRAE have developed a specific test standard for computer room air conditioners under Standard 127-2001. In addition ASHRAE have specifically included computer rooms under the general requirements for 90.1-1999, but ASHRAE have not set minimum efficiency levels for computer room air conditioners.

The MEPS for computer room air conditioners specified by the CEC have been in place since 1998 and regularly increased until 2006. The 2004 CEC MEPS for computer room air conditioners will be effectively more stringent than the USA MEPS applied to commercial unitary air conditioners from 2004.

As utilised in the USA, the method of measuring energy efficiency should take into consideration the specialised operating requirements of close control air conditioners. In Australia, it is considered that AS 3823 be modified to include specific test conditions for close control air conditioners. The testing conditions suggested

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### STAKEHOLDER COMMENT

*NAEEEEC invites comments from any interested person or organisation on the measures proposed in this study. Comments should be directed to [energy.rating@greenhouse.gov.au](mailto:energy.rating@greenhouse.gov.au) by 31 December 2004. Information sessions for industry participants can be arranged during the comment period if requested.*

*Electronic copies of profiles and full reports released for public discussion can be obtained from [www.energyrating.gov.au](http://www.energyrating.gov.au)*

are those specified in the ASHRAE standard 127-2001, as this is the only published method and all units rated for USA conditions are required to be tested to this standard.

Australia proposes to adopt the Californian Energy Commission approach as the basis for the MEPS program. This will ensure that Australia matches worlds best regulatory practice in relation to these products.

### NAEEEC PLAN

NAEEEC proposes to introduce minimum energy performance (MEPS) regulations for close control air conditioners. The key components of these regulations will be as follows:

1. That a MEPS for close control air conditioners be implemented to ensure that the worst performing products are removed from the Australian market.
2. The suggested MEPS levels are based on the Californian Energy Commission MEPS levels for 2004.
3. The MEPS be introduced in October 2007, in line with the revised MEPS levels for three phase packaged air conditioners.

4. The testing conditions for close control air conditioners be inserted into AS 3823 as an amendment, and based on the conditions in ASHRAE Standard 127-2001.
5. The Part 2 standard of AS 3823 be amended to include the MEPS requirements for close control air conditioners.
6. The verification and compliance processes used for three phase air conditioner MEPS program will be expanded to include close control air conditioners.

The proposed Australian MEPS levels are shown in Table 1 and are based on the CEC MEPS and testing methodology.

The recommend MEPS levels are should be introduced in 2007, concurrent with the 2007 MEPS levels for all three-phase air conditioners, which is three years after the MEPS are introduced in California. A high efficiency level is usually provided in the Australian Standard as a tool for use by suppliers to identify and market those chillers that exceed the minimum standard. The proposed high efficiency levels for COP are shown in Table 1, and are based on the CEC 2006 MEPS levels.

**TABLE 1: RECOMMENDED CLOSE CONTROL MEPS AND HIGH EFFICIENCY LEVELS: MINIMUM COOLING EER (W/W) BY SIZE**

Output kW	MEPS: Min Cooling EER	High Efficiency: Min Cooling EER
<19.05	3.14	3.22
<=19.05 <39.5	3.05	3.22
<=39.5 <70.3	2.99	3.22



**TABLE 2: TIMETABLE FOR IMPLEMENTATION OF PROPOSED MEPS**

October 2004	Government publication of MEPS proposals for close control air conditioners
October 2004 - December 2005	Consultation on the MEPS with stakeholders
December 2005 – March 2006	Consultation on Draft Amendments to AS 3823 Standard by Standards Australia
March 2006	Publication of amended Standard by Standards Australia
October 2007	Introduce MEPS

Table 2 shows the timetable for implementation of MEPS. The Part 2 Standard will be amended at least 12 months in advance of the date in which the MEPS come into force, in order to provide industry with sufficient time to make the necessary purchasing decisions. As these amendments are incremental to the existing air conditioning MEPS, no Regulatory Impact Statement is required.

### **IMPACT OF MEPS**

Since the MEPS criteria apply only to new products entering the market, it will be a number of years before these measures impact on the stock of existing products. By 2012, the proposed MEPS criteria is estimated to reduce annual energy consumption by 60 GWh, and by 2020 the annual savings will total approximately 140 GWh. This is equivalent to reducing annual greenhouse emissions by 54 kt CO<sub>2</sub>-e and 125 kt CO<sub>2</sub>-e respectively. The total cumulative savings in emissions by these dates are approximately 190 Kt CO<sub>2</sub>-e and 940 kt CO<sub>2</sub>-e.

## NAEEEC MEMBERS

The Commonwealth, New Zealand, and all State and Territory governments are part of NAEEEC. Representatives are senior officials from various government agencies and statutory authorities or persons appointed to represent those bodies.

The *Australian Greenhouse Office (AGO)* is the Australian Government agency responsible for monitoring the National Greenhouse Strategy in cooperation with State and Territory Governments and with the support of local government, industry and the community. The AGO chairs NAEEEC and other members provide support for its activities.

The NSW *Ministry of Energy and Utilities* (incorporated within the Department of Energy, Utilities and Sustainability since 1 January 2004) provides policy advice to the NSW Government and operates a regulatory framework aimed at facilitating environmentally responsible appliance and equipment energy use. The Ministry is represented on the Energy Efficiency and Greenhouse Working Group, through which the appliance and equipment related elements of the National Greenhouse Strategy are being progressed.

The NSW *Sustainable Energy Development Authority* was established in February 1996 with a mission to reduce the level of greenhouse emissions in New South Wales by investing in the commercialisation and use of sustainable energy technologies.

The *Office of the Chief Electrical Inspector* is the Victorian technical regulator responsible for electrical safety and equipment efficiency. Its mission is to ensure the safety of electricity supply and use throughout the State. The corporate vision of the Office is to demonstrate national leadership in electrical safety matters and to improve the superior electrical safety record in Victoria. The Office's strategic focus is to ensure a high level of compliance is sustained by industry with equipment efficiency labelling and associated regulations.

The *Sustainable Energy Authority* was established in 2000 by the Victorian Government to provide a focus for sustainable energy in Victoria. The Authority's objective is to accelerate progress towards a sustainable energy future by bringing together the best available knowledge and expertise to stimulate innovation and provide Victorians with greater choice in how they can take action to significantly improve energy sustainability.

The *Electrical Safety Office*, Department of Industrial Relations, is the Queensland technical regulator responsible for electrical safety and appliance and equipment energy efficiency. The office ensures compliance with electrical safety and efficiency regulations throughout Queensland.

The *Department of Energy* is the lead agency with regard to sustainable development within the

Queensland energy sector and is involved in a range of activities that reflect the importance of a sustainable approach. These activities involve developing and evaluating policies and initiatives through flexible and responsible decision making that allows economic, environmental and social outcomes from the energy sector to be maximised.

The Western Australian electricity regulator *Energy Safety* (a Division of the Department of Consumer and Employment Protection) is responsible for the technical and safety regulation of the electrical industry in WA. This includes the safety of consumers' electrical installations and appliances and the auditing of appliances and equipment to check compliance with energy efficiency and prescribed safety requirements.

The Western Australian *Sustainable Energy Development Office* promotes more efficient energy use and increased use of renewable energy to help reduce greenhouse gas emissions and increase jobs in related industries.

The *Office of the Technical Regulator* seeks to ensure the coordinated development and implementation of policies and regulatory responsibilities for the safe, efficient and responsible provision and use of energy for the benefit of the South Australian community.

The Tasmanian Government's interest is managed by the Department of Infrastructure, Energy and Resources' *Office of Energy, Planning and Conservation (OEPC)*. The OEPC provides policy advice on energy related matters including energy efficiency. Its web site is [www.dier.tas.gov.au/energy/index.html](http://www.dier.tas.gov.au/energy/index.html).

*Electricity Standards and Safety* is the technical regulator responsible for electrical safety throughout Tasmania. Regulatory responsibilities include electrical licensing, appliance approval and equipment energy efficiency.

The Australian Capital Territory's interest is managed by the *Energy Policy Unit, Economic Management Branch*, Department of Treasury. The primary function of this Unit is to provide the ACT Government with advice on National and Territory energy related matters including energy efficiency.

The *Department of Infrastructure, Planning and Environment* is responsible for the administration of regulations in the Northern Territory regarding various aspects of safety, performance and licensing for goods and services including electrical appliances.

The *Energy Efficiency and Conservation Authority (EECA)* is the principal body responsible for delivering New Zealand's National Energy Efficiency and Conservation Strategy (NEECS). EECA's function is to encourage, promote and support energy efficiency, energy conservation and the use of renewable energy sources.



*Analysis of the Potential Policy Option:*

# *Close Control Air Conditioners*

*Prepared for*

*The Australian Greenhouse Office:  
National Appliance & Equipment Energy  
Efficiency Program*

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## Contents

<i>Introduction</i>	1
Background of Air Conditioner Efficiency Regulation	1
Scope	2
<i>Product Description</i>	3
<i>Close Control Air Conditioning Systems</i>	3
<i>Australian Market Characteristics</i>	4
<i>Relevant Standards – Australia and International</i>	5
Australia	5
USA	5
Europe	5
Summary	5
<i>Review of International Approaches</i>	7
USA	7
<i>ASHRAE – 90.1 Standard</i>	7
<i>DOE – EPCA</i>	7
<i>CEC – Appliance Standards</i>	7
<i>Hawaii – Model Energy Code</i>	8
<i>Oregon – Non-Residential Energy Code</i>	9
Europe	9
<i>UK – Market Transformation Programme (MTP)</i>	9
<i>Eurovent – Certification Programme (EU)</i>	9
<i>Testing Standard CEN: prEN 14511-2</i>	9
Summary	10
<i>Recommended MEPS levels</i>	11
<i>Impact of MEPS</i>	13
<i>Recommendations</i>	14
<i>References</i>	15

## List of Tables

Table 1: CEC MEPS: Minimum EER(Btu/h / w) by Size	8
Table 2: CEC MEPS: Minimum EER(w/w) by Size	8
Table 3: Recommended Close Control MEPS and High Efficiency Levels: Minimum Cooling EER (w/w) by Size	12
Table 4: Timetable for Implementation of Proposed MEPS	14

## List of Figures

Figure 1: CEC MEPS levels for Computer Room AC and Package AC Units	11
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## *Introduction*

The purpose of this report is to provide an analysis of the policy options, primarily their suitability for Minimum Energy Efficiency Standards (MEPS), for product types identified in the National Appliance & Equipment Energy Efficiency Program for calendar year 2003. This report covers close control or “computer room” air conditioning systems. The primary purpose of this analysis is to investigate this product type for suitability to MEPS.

## *Background of Air Conditioner Efficiency Regulation*

The National Appliance and Equipment Energy Efficiency Program (NAEEEP) is part of the National Greenhouse Strategy that targets the energy efficiency of consumer appliances and, industrial and commercial equipment. The main tools of the Program are mandatory energy efficiency labelling and minimum energy performance standards, and voluntary measures including endorsement labelling, training and support to promote the best available products. Mandatory minimum energy efficiency performance standards (MEPS) are needed to overcome the market failure regarding whole-of-life costs and to meet the objectives of both increasing energy efficiency and reducing greenhouse gas emissions.

National product regulation can only be justified where the benefits outweigh the costs to the community; and the cost of improving appliance efficiency is outweighed by the energy savings made over the lifetime of the product.

Close control air conditioners are currently exempted from MEPS and labelling regulations. Single phase room air conditioners (except ducted models) for household use are regulated for energy labelling in Australia. The cooling mode of three phase air conditioners up to 65kW cooling capacity is regulated for MEPS. Manufacturers can choose to label three phase air conditioners, but this is not mandatory. MEPS requirements for the cooling mode of three phase air conditioners will be revised in 2007 while MEPS for the cooling mode of all single phase units will be introduced in 2004 and revised in 2007. The 2007 revised MEPS for certain types of single phase units – including non-ducted split units of less than 7.5kW capacity – is currently being proposed to be introduced in April 2006. MEPS details are set out in Australian and New Zealand Standard 3823.2-2003.

In 2003, NAEDEC requested a review of the application of international MEPS for close control air conditioners to enable an informed decision to be made about compliance of these types of airconditioners with the Australia MEPS. This review recommended that the MEPS for close control airconditioners should be considered in the proposed 2007 MEPS for three phase air conditioners.

## *Scope*

This report considers the application of MEPS and labelling to close control air conditioners. Close control airconditioners are also known as “computer room air-conditioners” in the USA or “process cooling” in some regions. These terms are used when appropriate to the region being considered in the report.

## *Product Description*

### *Close Control Air Conditioning Systems*

Close control air conditioners operate under different conditions to those air conditioners generally providing comfort for persons. Close control air conditioners are a central air conditioner specifically designed for use in data processing areas, typically maintaining an internal temperature of approximately 22°C and a relative humidity of approximately 52 percent. These air conditioners are designed to cool equipment rather than people; hence they are specifically designed to remove more sensible heat compared to latent heat. Air conditioners used for cooling spaces which are predominately occupied by people are usually termed “comfort” air conditioners.

In some countries, close control air conditioners are termed “process” air conditioners, or “computer room” air conditioners. In Australia, the use of the term “close control” air conditioner is more common, as it is in Europe, while in North America; “computer room” air conditioner is more commonly used.

Systems are usually air cooled direct expansion type air conditioners, however water cooled and glycol cooled computer room air conditioners are available. The latter type is generally more expansive than air cooled, however they are inherently more efficient.

## *Australian Market Characteristics*

No published data is available on the characteristics of the Australian market for close control air conditioners; however industry sources suggest the following:

- Approximately 500 units sold per annum in Australia
- Average size is approximately 40kW<sub>r</sub>
- Units generally operate at close to full load for 24 hours/day, all year
- Many units (approximately 50%) are installed as standby units, i.e. they are only used if the primary cooling unit fails or inside temperature conditions are exceeded (by extreme outside temperature conditions).

The general information provided by industry suggested the average efficiency (EER) of close control air conditioners was an EER of 2.6, when operating at the design conditions.

It is estimated that approximately 3000 roof top packaged air conditioners are sold each year in Australia (over 18kW<sub>r</sub>), with the average size of 60 kW<sub>r</sub>. Hence the market for close control air conditioners is approximately 15% of this total market. This makes close control air conditioners relatively significant in terms of energy usage as the average utilisation of close control air conditioners is typically 2 to 4 times more than comfort air conditioners. Hence, energy consumption from close control air conditioners could be 10 to 20 % of the energy usage attributed to package air conditioners.

## *Relevant Standards – Australia and International*

Close control air conditioners are expected to operate under different conditions to those air conditioners providing comfort for persons. Hence, separate test conditions are either under development or established internationally for close control air conditioners. These test conditions require close control air conditioners to operate with lower indoor air temperatures compared to standard air conditioner tests, which generally translates into lower EERs.

### *Australia*

In Australia, the current testing standard is the AS/NZS 3823 series for *Performance of electrical appliances— Airconditioners and heat pumps*. This series includes methods of testing and rating air conditioners for MEPS and energy labelling. The series is primarily based on the ISO test standards for comfort air conditioners. In general, the standard rating conditions used for AS 3823 are ISO T1 conditions, where the air conditioners is required to maintain indoor conditions of 27°C dry-bulb and 19°C wet-bulb.

In addition, the required climate conditions for computer rooms are specified in the Australian Standard 2834 -1995 Computer Accommodation. This standard specifies that computer rooms should be maintained at an optimum temperature of 23 °C (range from 18 -26°C) with a relative humidity of 50% ( $\pm 5\%$ ).

### *USA*

The ASHREA standard used in North America is *Standard 127-2001 -- Method of Testing for Rating Computer and Data Processing Room Unitary Air-Conditioners (ANSI Approved)*. The ASHREA standard specifies the indoor conditions required for computer room air conditioners of 72oF (~22oC) dry bulb and 60oF (~16oC) wet bulb. The outdoor conditions are the same as the ISO and AS 3823 test conditions.

### *Europe*

The European test method is still in draft, and not expected to be published before the end of 2004. The European test method is CEN: prEN 14511-2. The test conditions specified for close control air conditioners are the same as those of EUROVENT certification directory of outdoor 35°C dry-bulb and 24°C wet-bulb and indoor air at 24°C dry-bulb and 17°C wet-bulb.

### *Summary*

The European method uses standard rating conditions that are slightly higher than the ASHRAE method. Internationally, it is recognised that the testing and rating of close control air conditioners requires different testing conditions, however there is some minor differences between the USA method and the proposed European method. In

Australia, it is considered that AS 3823 should be modified to include specific test conditions for close control air conditioners. The testing conditions suggested are those specified in the ASHRAE standard 127-2001, as this is the only published method and all units rated for USA conditions are required to be tested to this standard.

## *Review of International Approaches*

This section reviews international practices related to specific energy efficiency requirements for close control air conditioner systems.

### *USA*

#### *ASHRAE – 90.1 Standard*

The American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE) publish standards and tests methods for many USA jurisdictions. Of greatest importance is the ASHRAE Standard 90.1 – 1999 (now up to revision SI 90.1 – 2001), which provides the minimum requirements for energy-efficiency design of non-residential buildings.

In the most recent revision (1999), the standard was widened to include space that is conditioned for use by computer rooms and other specialised purposes. Previously, computer rooms were exempt from the 1989 standard, however now they are required to meet the various sections of the standard, except for explicit exceptions (such as time controls). However, a minimum requirement for the efficiency of the mechanical cooling equipment was NOT specified in the 1999 revision. The efficiency of computer room air conditioners is not explicitly stated in the standard, as for other categories of HVAC equipment. (ASHRAE 2001)

#### *DOE – EPCA*

The US has specified the minimum efficiency requirements of various categories of equipment under the power of the Energy Policy Conservation Act (EPCA). In the most recent examination of the coverage of this Act of Computer Room Airconditioners, the DOE have assessed computer room air conditioners as not being a “covered” product under EPCA (DOE 2000). They have dedicated two pages of discussion on this matter in the *Proposed Rule: Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures and Efficiency Standards for Commercial Air Conditioners and Heat Pumps, August 9, 2000*.

If the ASHRAE Standard 90.1 is modified to explicitly include this equipment, a test method and MEPS levels to cover it, then the DOE states they will reconsider their inclusion.

#### *CEC – Appliance Standards*

The California Energy Commission (CEC) regulates the sale of new appliances (and equipment) under the Title 20: Appliance Efficiency Regulations. In general, the CEC utilises the minimum requirements for efficiency specified under the US DOE EPCA, however where they consider greater stringency is required or the equipment is not

covered by EPCA, the CEC specifies the minimum efficiency and testing standard. The new Appliance Standards are effective from the 27 November 2002 and include recent amendments that specifically state the new MEPS and test standards for Computer Room airconditioners (CEC 2002). These new standards are shown in Table 1 and converted to EERs and size in w/w and kW in Table 2.

**Table 1: CEC MEPS: Minimum EER(Btu/h / w) by Size**

<b>Effective Date</b> <b>Btulh output -</b>	<b>1/01/1998</b>	<b>1/03/2003</b>	<b>1/01/2004</b>	<b>1/01/2006</b>
<65000	8.3	9.3	10.7	11
<=65000 <135000	7.7	8.3	10.4	10.4
<=135000 <240000		7.9	10.2	10.2

**Table 2: CEC MEPS: Minimum EER(w/w) by Size**

<b>Effective Date</b> <b>kW output</b>	<b>1/01/1998</b>	<b>1/03/2003</b>	<b>1/01/2004</b>	<b>1/01/2006</b>
<19.05	2.43	2.73	3.14	3.22
<=19.05 <39.5	2.26	2.43	3.05	3.05
<=39.5 <70.3	-	2.32	2.99	2.99

**Testing Standard:** ANSI/ASHRAE 127-2001

The MEPS prescribed by the CEC are based on tests to the ASHRAE 127-2001, which has different test conditions to the conditions specified for commercial air conditioning equipment (ARI Standard 210/240-1994). The conditions in ARI 210/240 are close to the ISO T1 conditions for “Point A” of the test, which is commonly reported in the manufacturer data and used for determining the EER. The indoor air test conditions for ASHRAE 127-2001 are 72°F (~22°C) dry bulb and 60°F (~16°C) wet bulb, compared to the ISO T1 conditions of 27°C and 19°C respectively. Other differences between the test standards do exist including:

- ARI 210/240 limits indoor-side air quantity to 37.5 scfm per 1000 Btu/h, while the ASHRAE 127-2001 does not
- ASHRAE 127-2001 and ARI 210/240 prescribe different external static pressures.

According to the US DOE (DOE 2000), the dominating effect is the difference in specified indoor dry bulb temperatures which result in the EERs from the ASHRAE standard having lower EERs compared to a test from the ARI standard.

### *Hawaii – Model Energy Code*

The Hawaii Model Energy Code provides explicit exemptions for computer room conditioned space. (<http://www.hawaii.gov/dbedt/ert/mec/ex4s.html>)

There are no state specific MEPS for computer room airconditioners, only those prescribed federally by the DOE.

Source: [http://www.hawaii.gov/dbedt/ert/mec/mec\\_toc.html](http://www.hawaii.gov/dbedt/ert/mec/mec_toc.html)

### ***Oregon – Non-Residential Energy Code***

The Oregon Office of Energy administers the Non-Residential code, which recently changed the scope of the code limit exemptions. Previously all computer rooms were exempt, however in line with changes to the ASHRAE 90.1 –1999, exemptions were changed to specific areas, such as economizer requirements, VAV requirements, and restrictions against simultaneous heating and cooling. (OOE 2002)

### ***Europe***

#### ***UK – Market Transformation Programme (MTP)***

The UK implements a number of programmes to encourage efficiency, including the Climate Change Levy and associated tax concessions. As part of these programmes, suppliers list products and their characteristics according to various tests. The UK MTP has explicitly exempted close control airconditioners from these programmes. (UK MTP 2002)

No MEPS is in place for close control airconditioners in the UK.

#### ***Eurovent – Certification Programme (EU)***

The purpose of the Eurovent Certification Programmes is to create a common set of criteria for rating products. Through specification of certified products, the engineer's tasks are made easier, since there is no need for carrying out detailed comparison and performance qualification testing.

The Eurovent programme has a specific programme for certification of Close Control Airconditioners and specifies the test conditions. The test conditions for close control airconditioners are close to the ASHRAE conditions used by the CEC with their MEPS, with indoor air at 24 °C dry bulb and 17°C wet bulb (compared to ~22°C wb and ~16°C db in ASHRAE 127-2001). (EUROVENT 2003)

#### ***Testing Standard CEN: prEN 14511-2***

A draft standard is being prepared by the CEN for European use. The draft standard is called prEN 14511, Air conditioners, Liquid Chilling Packages and Heat Pumps with Electrically Driven Compressors for Space Heating and Cooling. Part 2: Test Conditions is of most interest. The standard is still in draft stage, however, the test conditions for Close Control Airconditioners are the same as those of EUROVENT (outdoor 35°C dry bulb and 24°C wet bulb and indoor air at 24 °C dry bulb and 17°C wet bulb). (CEN 2002)

## Summary

Internationally, the Californian Energy Commission (CEC) is the only jurisdiction that regulates the efficiency of close control air conditioners. The USA Department of Energy have assessed computer room air conditioners as not being a “covered” product under Energy Policy and Conservation Act (EPCA), primarily due to their exclusion from the defacto USA building code – ASHREA Standard 90.1. However, ASHRAE have developed a specific test standard for computer room air conditioners under Standard 127-2001. In addition ASHRAE have specifically included computer rooms under the general requirements for 90.1-1999, but ASHRAE have not set minimum efficiency levels for computer room air conditioners.

The MEPS for computer room air conditioners specified by the CEC have been in place since 1998 and increased until 2006. The CEC MEPS for computer room air conditioners will be effectively as stringent or more stringent than the USA MEPS applied to commercial unitary air conditioners from 2004.

The test conditions specified internationally for rating close control air conditioners are typically different to comfort air conditioners. The inside conditions specified by the ASHREA Standard 127-2001 and the draft European standard are 22°Cdb/16°Cwb and 24°Cdb/17°Cwb respectively, which will cause slightly different results for EER. The standard ISO conditions for comfort air conditioners are generally 27°Cdb/19°Cwb.

A summary of the situation in each of these jurisdictions is shown below:

<b>Region</b>	<b>MEPS</b>	<b>Certification/ Other Compliance</b>
USA – All	Yes, Some States	
California	Yes from 1998	Yes – ANSI/ASHRAE 127-2001 for equipment / ASHRAE 90.1 –1999
Hawaii	No	No/ Model Building Code provides exemption to Computer Room airconditioners
Oregon	No	No/ All commercial must comply with ASHRAE 90.1-1999
Europe	No	
UK	No	MTP does not apply to Computer Room airconditioners
EU - All	No	Yes to EUROVENT, with CEN developing a common Standard for Close Control airconditioners

## Recommended MEPS levels

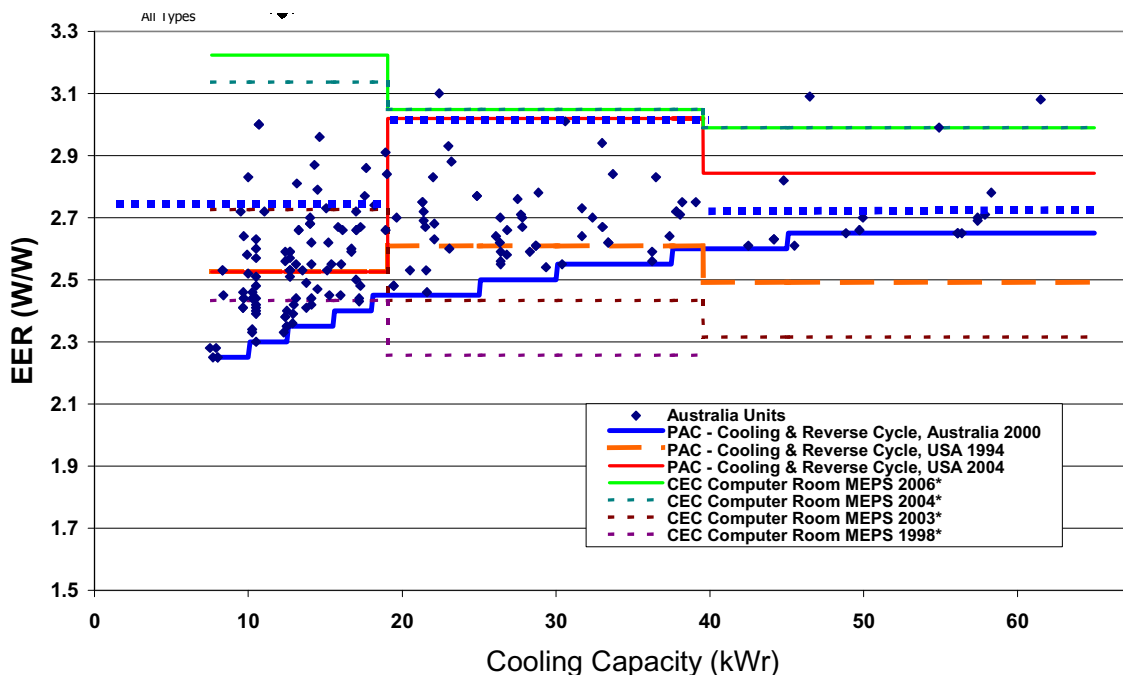
In summary, the MEPS levels set by the CEC post 2004 are more stringent than the USA DOE specified levels for commercial unitary airconditioners, as:

- the minimum EER is higher than those set by the DOE; and
- the test conditions (ASHRAE 127) result in lower EERs

Figure 1 shows the various MEPS levels of the Australian, USA DOE and CEC in comparison. The proposed Australian MEPS levels for 2007 are shown as a dotted blue line. The “Australian Units” shown on the graph are all packaged air conditioners, not close control air conditioners.

Although the test for computer room air conditioners produces lower EERs (compared to the ISO test standard for comfort air conditioners), the CEC is implementing MEPS in 2004 that will be approximately equal to those proposed by Australia in 2007. The \* indicates that the test for the CEC Computer Room MEPS is not based on the same test conditions.

**Figure 1: CEC MEPS levels for Computer Room AC and Package AC Units**



Note: The \* indicates that the test for the CEC Computer Room MEPS is not based on the same test conditions

Based on the findings presented in Australian Market Characteristics and Review of International Approaches, MEPS are recommended for close control air conditioners. The Californian MEPS now in place are just as stringent as the general MEPS in the USA for all unitary commercial air conditioners from 2004.

The proposed Australian MEPS levels are shown in Table 3 and are based on the CEC MEPS and testing methodology.

**Table 3: Recommended Close Control MEPS and High Efficiency Levels: Minimum Cooling EER (w/w) by Size**

<b>Output kW</b>	<b>MEPS: Min Cooling EER</b>	<b>High Efficiency: Min Cooling EER</b>
<19.05	3.14	3.22
<=19.05 <39.5	3.05	3.22
<=39.5 <70.3	2.99	3.22

The recommend MEPS levels should be introduced in 2007, concurrent with the 2007 MEPS levels for all three-phase air conditioners, which is three years after the MEPS are introduced in California. A high efficiency level is usually provided in the Australian Standard as a tool for suppliers to identify and market those chillers that exceed the minimum standard. The proposed high efficiency levels for COP are shown in Table 3, and are based on the CEC 2006 MEPS levels.

## *Impact of MEPS*

Since the MEPS criteria apply only to new products entering the market, it will be a number of years before these measures impact on the stock of existing products. By 2012, the proposed MEPS criteria are estimated to reduce annual energy consumption by 60 GWh, and by 2020 the annual savings will total approximately 140 GWh. This is equivalent to reducing annual greenhouse emissions by 54 kt CO<sub>2</sub>-e and 125 kt CO<sub>2</sub>-e respectively. The total cumulative savings in emissions by these dates are approximately 190 Kt CO<sub>2</sub>-e and 940 kt CO<sub>2</sub>-e.

## Recommendations

NAEEEC proposes to introduce minimum energy performance standard (MEPS) regulations for close control air conditioners. The key components of these regulations will be as follows:

1. That a MEPS for close control air conditioners be implemented to ensure that the worst performing products are removed from the Australian market.
2. The suggested MEPS levels are based on the Californian Energy Commission (CEC) MEPS levels for 2004.
3. The MEPS be introduced in October 2007, in line with the revised MEPS levels for three phase packaged air conditioners.
4. The testing conditions for close control air conditioners be inserted into AS 3823 as an amendment, and based on the conditions in ASHRAE Standard 127-2001.
5. The Part 2 standard of AS 3823 be amended to include the MEPS requirements for close control air conditioners.
6. The verification and compliance processes used for three phase air conditioner MEPS program will be expanded to include close control air conditioners.

Table 4 shows the timetable for implementation of MEPS. The Part 2 Standard will be amended at least 24 months in advance of the date in which the MEPS come into force. This will provide industry with sufficient time to make the necessary purchasing decisions. As these amendments are incremental to the existing air conditioning MEPS, no Regulatory Impact Statement is required.

*Table 4: Timetable for Implementation of Proposed MEPS*

October 2004	Government publication of MEPS proposals for close control air conditioners
October 2004 - March 2005	Consultation on the MEPS with stakeholders
March 2005 – October 2005	Consultation on Draft Amendments to AS 3823 Standard by Standards Australia
October 2005	Publication of amended Standard by Standards Australia
October 2007	Introduce MEPS

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