



# Keeping Cool

Discussion Paper for an ACT

Medical Cooling Electricity Concession

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## **Executive Summary**

Heat intolerance is a significant medical problem affecting people with MS. As little as 0.5C increase in core body temperature can significantly increase MS symptoms. Heat intolerance also significantly affects some people with a range of other conditions such as Parkinson's Disease, motor neurone disease, post-polio syndrome and spinal cord injury.

Disease and disability-related out-of-pocket costs (about \$3,700 annually for people with MS) along with (a) rising electricity prices; (b) increasing economic pressures on households generally and (c) increasing number of hot days and nights due to climate change, make it more and more difficult for people with MS (and others) on low incomes to afford their medically required cooling.

People with MS, and others with heat intolerant conditions, do not have a choice about turning on their air conditioners.

The ACT government provides much valued financial assistance through its Energy Concession for those on low incomes, and retailers also provide some assistance for people using life support equipment. This however does not address the significant medical need some people on low incomes have to keep cool. NSW, QLD, SA, VIC, and WA all have energy concession schemes in place that assist those on low incomes with a medical need to keep cool.

All of these schemes indicate that this very significant need for a small group of people can be met with minimal costs to government, and make a significant difference to the lives of those who need medical cooling.

Results from the Keeping Cool Survey found that on average people with MS in ACT spend about \$300 (\$0.15/kWhr) operating their air conditioners approximately 1,236 hours in an effort to stay cool. This compares to an annual cost for average ACT households of about \$50 (at \$0.15/kWhr). In the ACT people with MS are paying 6 times more than other households to keep cool, and these are often households that can least afford this extra cost.

It is proposed that the ACT Government implement a Medical Cooling Electricity Concession to cover approximately one-third of this cost: \$100 annually.

Eligibility should be the same as the current Energy Concession, with the additional requirement to have a doctor sign-off on the 'medical need' for cooling.

Administratively the simplest approach would be to structure this concession similarly to the existing Energy Concession. Ideally, this much needed support should be indexed annually to residential electricity tariffs so it is not eroded over time (nationally residential prices have increased an average of 10% annually over the last 5 years). Alternatively, a percentage-based concession could be established and should be set in such a way to ensure that an average of \$165-\$200 annually reaches those who are eligible.

There are approximately 590 people (including 180 with MS) that would be eligible in 2011-2012. But, based on the experiences of other states it will be several years before all those eligible actually receive the concession. Uptake will be gradual, with an estimated first-year cost to the ACT Government of approximately \$15,000, rising to between \$93,000 in five years, and then levelling off as uptake stabilises.

## **Introduction**

Heat intolerance is a significant medical problem affecting people with MS. As little as 0.5C increase in core body temperature creates an increase in MS symptoms for 90% of people with MS in Australia (Summers & Simmons 2009). 'Heat worsens and cooling improves negative symptoms of multiple sclerosis, sometimes dramatically so' (Baker 2002).

There are approximately 500 people with MS in the ACT (Covance & Menzies Research Institute Tasmania 2011), and approximately 52% have personal incomes of less than \$26,000 per annum (Australian MS Longitudinal Study, unpublished data).

Approximately 36% of people with MS are on a government pension, a healthcare card or receiving DVA benefits, which equates to 180 people in the ACT with MS. It is this group that would be included in the proposed Medical Cooling Electricity Concession along with others on low incomes with other heat intolerant conditions such as Parkinson's disease.

Disease related out-of-pocket costs and low incomes, combined with (a) rising electricity costs; (b) the increasing economic pressures on households generally and (c) the increasing number of hot days and nights due to climate change, mean it is more and more difficult for people with MS (and other heat intolerant conditions) on low incomes to keep cool on hot days and nights.

Running air conditioners on hot days and nights is a luxury for many people, but for people with MS it is a medical necessity.

MS is a chronic, progressive and incurable disease that attacks the central nervous system (brain and spinal cord). Most people with MS are of working age (87%) and 75% are women (Covance & Menzies Research Institute Tasmania 2011).

## **Heat Intolerance**

Increases in the core body temperature slows down already problematic nerve transmission, exacerbating MS symptoms such as blurred vision, extreme fatigue, muscle weakness, pain, tremors, memory problems, loss of balance, bladder and bowel problems, numbness and tingling, decreases in cognitive function, and in severe instances partial or complete paralysis.

In discussions with people with MS regarding what happens to them when they get hot, remarks such as the following are common:

'Once I get hot, I hit the wall and all I can do is go to bed, often for 18 hours at a time because I am so exhausted I can't even think or do anything else.'

'Last time it was hot my vision was blurred and I could hardly see anything. I just had to sit at home in my one room with an air conditioner and try and get cool. It took a few days for the tiredness and my eyes to improve.'

‘It’s really hard to look after my three kids when it’s hot, I can’t keep up.’

Over 80% of Australians with MS report that they require more rest and have less energy when they get hot, and over 60% report an increase in other symptoms. Between 40-50% also report that when they get too hot they cannot undertake their usual social, domestic or work activities, and 3% report having been hospitalised because of heat (Summers & Simmons 2009).

Heat intolerance can also result in GP and other health professional visits (8%) increased use of medications (9.5%), and major impacts on quality of life. Because most people with MS are of working age, and often in the middle of raising families, these impacts can be particularly disruptive in their lives.

Approximately 32% of people with MS have mild symptoms (no or minimal functional disability such as mild walking impairment or visual disturbances), and 46% have moderate symptoms (ranging from incontinence to being unable to undertake a full day of activity). People with severe disabilities from MS (21%) are typically unable to walk unaided over any distance without assistance such as two canes or a wheelchair (Access Economics 2005). Heat intolerance is a significant issue across this spectrum of severity, and can for example, result in those with mild symptoms experiencing severe symptoms.

In short, heat intolerance is a significant and medically serious problem for people with MS. Symptoms usually return to their baseline status when the body temperature returns to normal; however in rare cases symptoms are not reversible.

### **Economic Impact of MS**

There are significant costs associated with having MS. Covance and Menzies Research Institute Tasmania (2011) found that the average annual costs in 2010 to people with MS and their families in Australia was \$10,554 (\$3,697 out-of-pocket and \$6,856 for informal care). Additionally, indirect costs such as lost income are high, averaging over \$23,000 annually. Direct and indirect costs increase with the severity of the MS. All of which makes the additional costs of running an air conditioner difficult for most people with MS, and even more so for those on low incomes.

Additionally, approximately 36% of people with MS are on a Disability or Aged Pension, receiving benefits from DVA and/or holding a Healthcare Card (Summers & Simmons 2009).

These overall economic costs make it more likely that people on low incomes with MS will struggle to cover the additional costs of keeping cool on hot days and nights. One consequence is not using air conditioners as much as they ideally should, resulting in increased health problems. This in turn can lead to increased costs through greater use of medications, visits to GPs, and hospitalisation, and has a significant impact on quality of life.

These very significant economic costs are borne by people with MS and their families across the financial spectrum. However, like other people in the community with

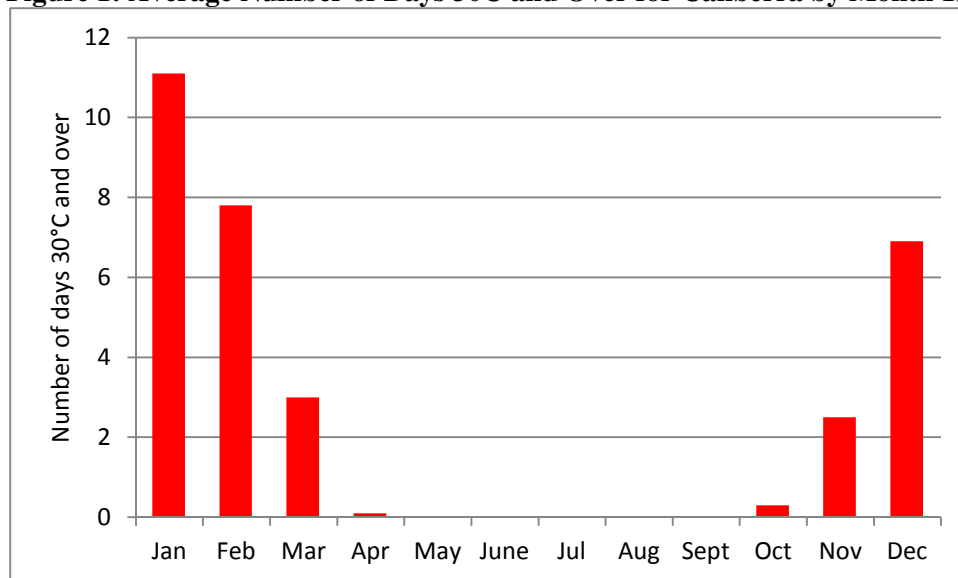
chronic illnesses, overall people with MS have lower income levels than the general community. Although 87% of people with MS are of working age, and most people with MS are employed when first diagnosed, 80% are not employed 10 years after diagnosis (Access Economics 2005).

## Climate

As the number of hot days and nights increase, the use of electricity increases for people with MS in their efforts to keep cool, pushing up costs to a group already under considerable economic pressure. Moderate to high levels of humidity, coupled with hot days and nights, also makes it much more difficult for people to keep cool.

Between 1939 and 2010 there was an average of 31.7 days 30°C and higher in Canberra. According to the Keeping Cool Survey, 60% of people in the ACT with MS turn on their air conditioners before the temperature reaches 30°C. Figure 1 illustrates the monthly distribution of these hot days. In comparison, on average there are 28 hot days 30°C or higher in Sydney, 29 in Brisbane, 30 in Melbourne and 70 in Perth.

**Figure 1: Average Number of Days 30C and Over for Canberra by Month 1939-2010**



Source: [http://www.bom.gov.au/climate/averages/tables/cw\\_070014\\_All.shtml](http://www.bom.gov.au/climate/averages/tables/cw_070014_All.shtml)

Climate change data compiled by the Australian Bureau of Meteorology demonstrates a national trend towards more hot days and nights in recent years (see figures A1 and A2 in the appendix). As the temperatures climb demand for cooling will increase, which further emphasises the need to ensure that people who cannot forgo the need to keep cool have access to energy efficient air conditioners and house modifications to keep the heat out.

One of the problems of only considering air temperature is that it does not take into account the impact of humidity on the body's capacity to keep cool. When reviewing information on air temperature it is important to consider the additional impact of

humidity in some parts of the state during the warmer months. Figure A3 in the Appendix compares each state's average maximum 'apparent temperature' which combines humidity and air temperature into a single measure.

### Medical Cooling Electricity Concessions in Australia

NSW, QLD, SA, VIC and WA, all have medical energy concessions in place. With the exception of VIC, they all cover both heating and cooling, see Table 1 for details.

**Table 1: Medical Energy Concessions in Australia**

	<b>Annual Amount</b>	<b>Budget Allocation</b>
<b>WA</b>	\$502 (June 2010)	unknown
<b>QLD</b>	\$230 (July 2011)	\$1.4m annually (\$6.7m over 4 years in 2010-11 budget)
<b>NSW</b>	\$200 (July 2011)	\$2m annually (\$10m over 5 years in 2009-10 budget)
<b>SA</b>	\$158 (rising to \$165 on 1 July 2012)	unknown
<b>VIC</b>	17.5% discount Nov-April (6 months)	\$480,000 annually (\$2.4m over 5 years in 2008-09 budget)

While details vary, overall these programs have similar eligibility requirements and are (a) typically limited to Pensioners, Healthcare Card holders and DVA Gold Card holders, and (b) require sign-off by a medical practitioner.

Also, in each of these states eligibility and receipt of this concession is in addition to existing pensioner/low income energy concessions.

There is a very wide range of medical conditions that relate to heat (and cold) intolerance. The best available data is from Victoria as that scheme has been operating the longest (over 10 years). In 2007-08 the Victorian Medical Cooling Concession assisted 4,313 people. It is estimated that approximately 1500 of these are people with MS. Some of the many other conditions receiving the concession include:

Parkinson's Disease	Cerebral Palsy
Motor Neurone Disease	Quadriplegia
Muscular Dystrophy	Lymph Oedema
Fibromyalgia	Poliomyelitis and Post Polio Syndrome
Systemic Lupus Erythematosus	Acquired Brain Injury

## **Costs of Running Air Conditioners in Canberra for Medical Cooling**

One of the key issues in relation to determining the appropriate funding level for an ACT Medical Cooling Electricity Concession is the annual running cost of air conditioners for people who require medical cooling. The national Keeping Cool Survey, conducted in late 2008 – early 2009 with 2,385 respondents is the best source of information on this issue for people with MS (see Summers & Simmons 2009).

Nationally the survey found that on average people with MS ran their air conditioners for approximately 1,557 hours annually, at a cost of between \$693 and \$867 (note that this data does not include Northern Territory). This compares with average household cooling costs nationally of between \$156 and \$195 with electricity priced at between \$0.20 and \$0.25 kWhr which approximates residential pricing nationally in 2011 (see Table 6 in Summers & Simmons 2009). Therefore on average nationally people with MS spend approximately 4.4 times more than average households to keep cool.

For the ACT, the Keeping Cool Survey found that the average hours of air conditioner use for people with MS in 2007-08 was 1,236 (with the highest being Queensland at 1,857). In 2011 this equated to \$292 at \$0.15 per kWhr. This is a relatively low price for electricity compared to other jurisdictions, for example in VIC were around \$0.25/kWhr in 2011. For average ACT households at \$0.15/kWhr annual cooling costs are approximately \$50 annually (see Department of the Environment, Water, Heritage and the Arts 2008). Also for comparison, average hours of household air conditioner use for cooling in Canberra is estimated at 150 hours annually, but this data was collected in 1986 (Energy Efficient Strategies 2009).

The cost of keeping cool for people with MS represents a major financial burden, particularly for those on low and fixed incomes.

Other useful results from the Keeping Cool Survey of people with MS in the ACT include:

- On average, people with MS in the ACT turned on their air conditioners at 29.0°C (marginally below the national average at 29.2°C)
- People with MS in the ACT have the second highest proportion of new air conditioners in the nation with 44% of air conditioners 3 or less years old (these are at least 25-30% more efficient than older air conditioners)
- 26% cool only one room (the second lowest proportion of ‘single room’ cooling nationally), 37% two rooms and 37% 4 or more rooms
- People with MS in the ACT are more likely than others in the ACT to have have insulation in the ceiling (86% vs 78%) and the walls (53% vs 34%), and ACT households have higher levels of insulation overall nationally
- 61% of air conditioners used for cooling in ACT by people with MS use heat pumps (compared to 71% in all ACT households), and with 39% using evaporative (29% in all ACT households)

Importantly, nationally the survey also found no differences in air conditioner ownership or usage patterns between those who are likely to be concession-eligible and those who are not. This is a strong indication that air conditioner use by people with MS is primarily a product of their illness, and not related to income. That is,

those on low incomes find they must use their air conditioners as much as those on higher incomes (who can presumably more easily afford the costs).

### **An ACT Medical Cooling Electricity Concession**

As part of its community service obligations framework, the ACT Government already has in place a relatively generous low income \$266.20, with an additional payment of \$80 to offset rising utility (including water) costs for people on low incomes. Those eligible include people with Pensioner Concession Cards, DVA Gold Cards and Health Care Cards. ACT energy retailers, at their discretion, also provide some assistance to people who require life support equipment at home, details vary across retailers and across the type of equipment utilised.

The likely costs to the ACT Government for a Medical Cooling Electricity Concession are modest in relation to cost minimisation and prevention regarding the ability of people to carry on their usual day-to-day social and domestic activities, their capacity to maintain employment and reduced demands on disability, community care and health care systems.

#### **Eligibility**

It is proposed that, at a minimum, eligibility would be the same as the current Energy Concession - people with a Pension Concession Card issued by Centrelink or the Department of Veterans Affairs, or a Centrelink Health Care Card.

Eligibility should have the additional requirement of having a doctor sign-off on the 'medical need' for cooling. This is a requirement in all other similar schemes, and appears to be an effective means to restricting this assistance to those who really do need it.

#### **Payment Structures and Costs**

Data from the Keeping Cool Survey indicate that people in the ACT with MS spend approximately \$300 annually (with electricity costs at \$0.15/kWhr, and the actual figure is \$296 which has been rounded up to \$300) for electricity to keep cool as a consequence of their MS.

It is proposed that the ACT Government implement a new Medical Cooling Electricity Concession to cover one-third of this cost: \$100 annually.

Given that this is an additional burden that these low income households face, it is also proposed that this should be in addition to the existing Energy Concession.

This new concession should be indexed annually to actual residential electricity prices. Given that ACT currently has relatively low electricity prices, and that nationally prices have been rising at 10% annually for the last 5 years, this will more effectively maintain the value of the concession than indexation to the CPI.

Administratively the simplest way forward would be to structure this concession similarly to the existing Energy Concession. The feasibility of paying this concession over the 6 warmest months (Nov-Apr) should also be considered, as this is when the assistance is most needed.

The other option, which has been used in NSW, QLD, SA and WA has been to make the concession available for both medically required heating and cooling, and spread payments across the year. Given that many people with heat intolerance also have difficulty with the cold, and that for some groups such as those with Parkinson's are especially sensitive to the cold, this alternative also warrants consideration.

Using the Victorian figure of 4,313 households receiving the Medical Energy Concession in 2007-08, it is estimated that in 2011-2012 approximately 590 ACT households would be eligible for and take up a similar concession here. Numbers would increase beyond this if medically required heating is included in the scheme.

However, it took many years for the Victorian scheme to reach its current capacity, and experiences elsewhere with more recent schemes confirm this. The cost estimates below assume that it will take 5 years to reach maximum uptake levels.

Assuming that the new Medical Cooling Electricity Concession is well publicised to its target group and administratively straightforward for eligible recipients, Table 2 below outlines possible costs to Government over the next 5 years. Uptake levels and costs would be expected to level off after this.

As can be seen in Table 2, initially the scheme would cost approximately \$14,750 in the first year assuming uptake by 25% of those eligible, and rising over time to just under \$93,000 in 5 years. This is a very modest investment, given the day-to-day impact it would have on those that really need the assistance as a consequence of their medical need to keep cool, and their low incomes.

**Table 2: Estimated Costs Over 5 Years**

Year	Total Eligible	Uptake %	Uptake Total	Concession @ \$100	Total costs
2011-12	590	25%	148	\$100	\$14,750
2012-13	601	40%	240	\$110	\$26,426
2013-14	611	60%	367	\$121	\$44,387
2014-15	622	80%	498	\$133	\$66,270
2015-16	634	100%	634	\$146	\$92,759

**NOTE:** Growth in eligibility is based on annual ACT population growth which has averaged 1.8% annually between 2005 and 2010. Increases in the concession amount is based on 10% annual indexation based on national price trends.

The other administrative option is to make the concession a proportion of the electricity bill. This would provide some administrative challenges because existing mechanisms and frameworks are already in place based on flat rates. However, using a proportional structure may be the most economically efficient and fairest option as it is more sensitive to local climatic variations, differing requirements for the amount of space cooled and variable thermal efficiency of housing. It also avoids the need for annual reviews of the concession level and indexation. A cap could be set to minimise excessive use.

If a percentage-based option is utilised it needs to ensure that average concession payments are similar to those outlined above starting with a concession of \$100 annually.

## **Conclusion**

There is a pressing need to fill this existing gap in the ACT energy concession structure for people who require cooling as a result of conditions such as MS, spinal cord injury and Parkinson's Disease. Evidence from similar schemes in other Australian jurisdictions demonstrates that this can be done effectively and fairly without excessive costs to government, and at the same time improve the quality of life for those affected and reduce risks associated with increased medical costs.

While most of us have a choice about whether or not we turn on the air conditioner, this group does not.

This is a real opportunity for the ACT Government to provide much needed and well targeted assistance to a small group of people who are finding it increasingly difficult to maintain their everyday domestic activities on hot days and nights.

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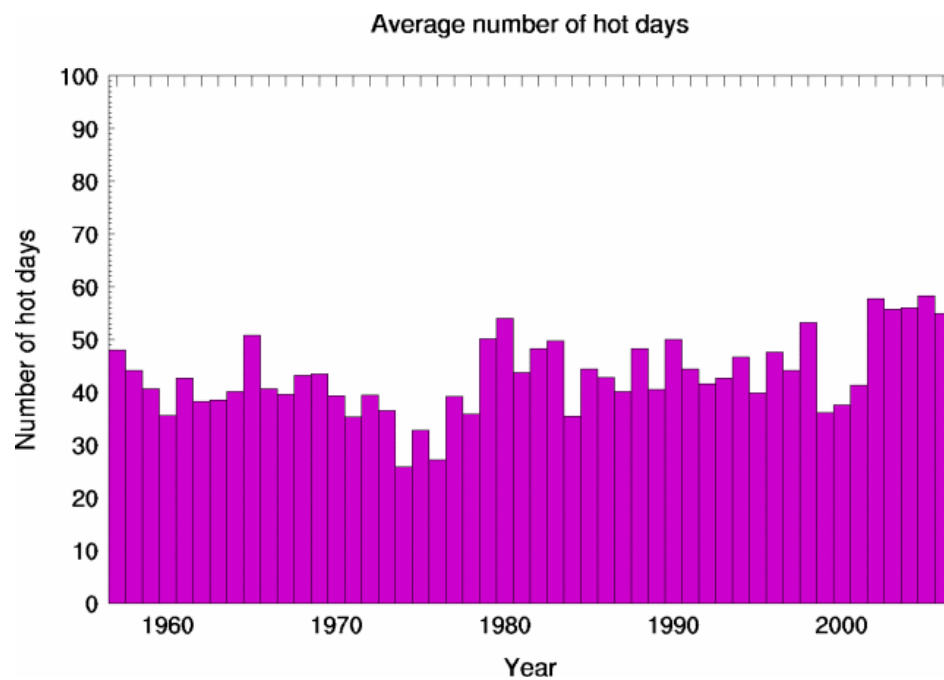
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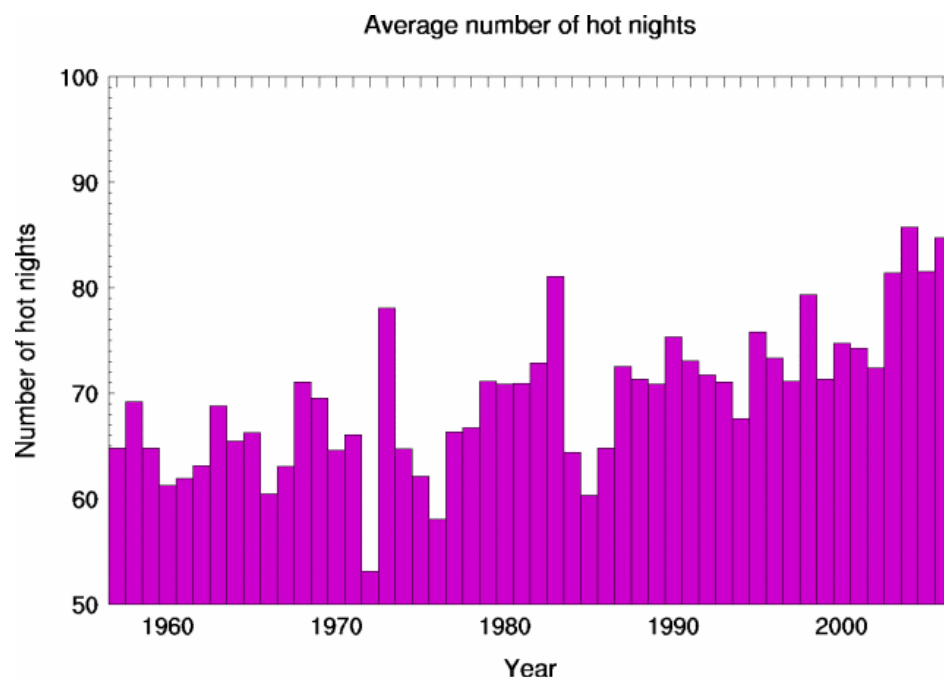
## Appendix

**Figure A1: Average Number of Hot Days in Australia**



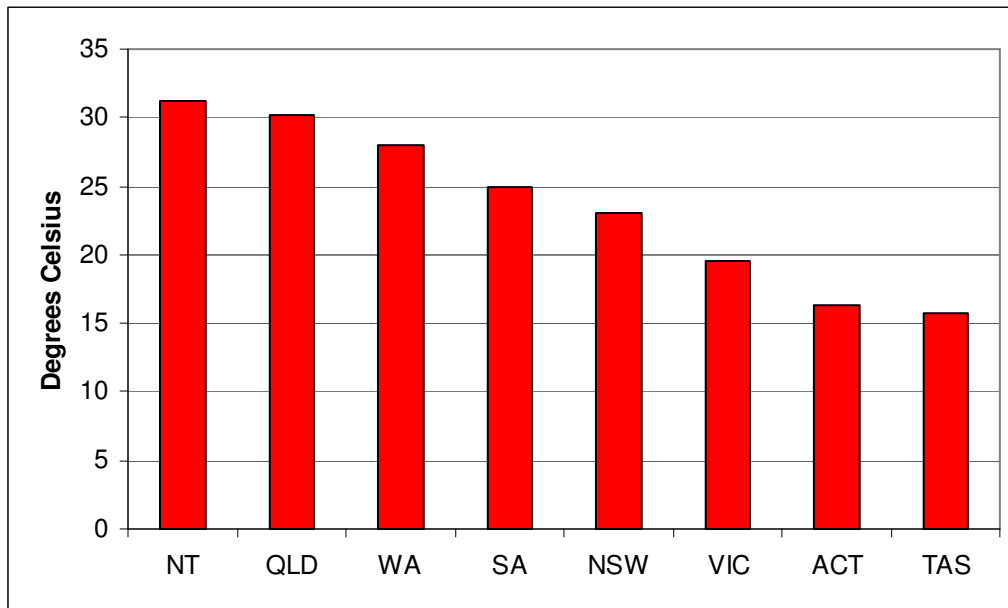
Note: Hot days are those days greater than 35C. Source: [http://www.bom.gov.au/cgi-bin/silo/reg/cli\\_chg/extreme\\_timeseries.cgi](http://www.bom.gov.au/cgi-bin/silo/reg/cli_chg/extreme_timeseries.cgi)

**Figure A2: Average Number of Hot Nights in Australia**



Note: Hot nights are those greater than 20C. Source: [http://www.bom.gov.au/cgi-bin/silo/reg/cli\\_chg/extreme\\_timeseries.cgi](http://www.bom.gov.au/cgi-bin/silo/reg/cli_chg/extreme_timeseries.cgi)

**Figure A3: Average Maximum Apparent Temperature by State 1977-2007**



Source: Data supplied by Bureau of Meteorology, Climate Division, Melbourne. Note that apparent temperature is a combined measure that takes into account the impact of humidity.