

# Energy Efficiency

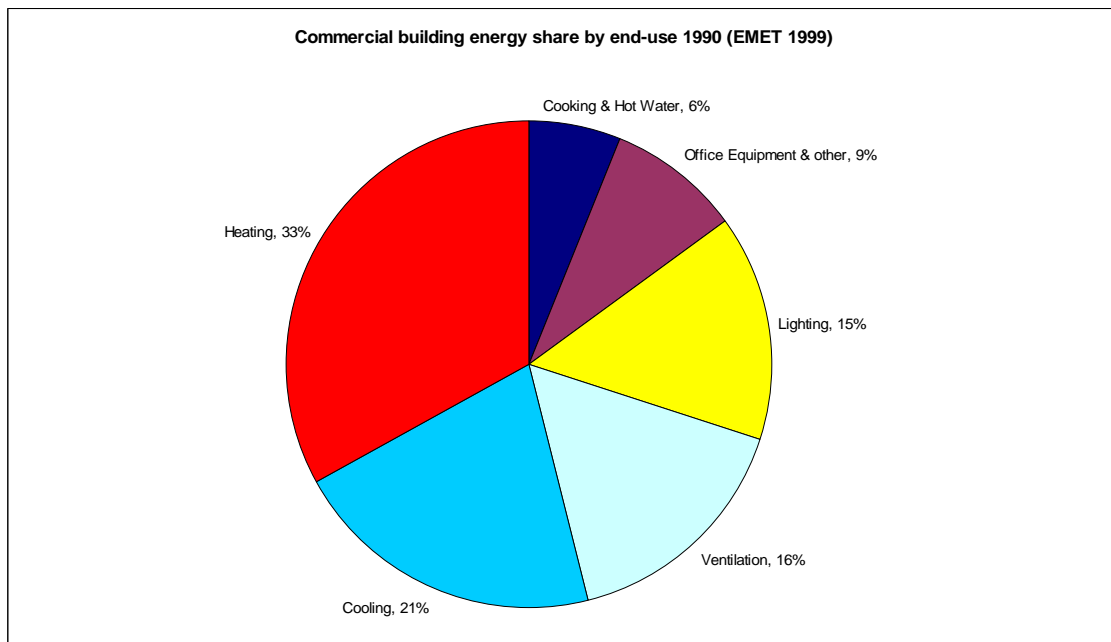
## Submission to Productivity Commission

15<sup>th</sup> November 2004 Sydney  
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### Introduction

Buildings consume more than half of the energy used worldwide with office buildings among the worst offenders.

According to the Australian Greenhouse Office (AGO), mechanical systems that deliver air conditioning, heating and ventilation, and lighting systems - account for the majority of the total energy consumption in the commercial building sector.



It is difficult to get information on Australian buildings however examination of data from a number of UK buildings shows avoidable waste levels in the range 25% to 50%. In a well-managed building, avoidable waste levels of below 15% are achievable. There is an obvious opportunity to achieve significant improvements in buildings.

I would now like to outline the major barrier towards improving energy efficiency in commercial buildings and then outline recommendations to overcome this barrier.

## **Barrier to Improving Energy Efficiency - De-Skilled Industry**

The operating costs of a building over its life time can be hundreds of times more than the original cost of constructing the building. However the construction industry generally prefers to focus on lowest cost tendering for construction without appreciating the lifetime value of energy efficiency.

There is no incentive for clients – government, investment houses and business to buy into energy efficient systems in commercial buildings. They have mostly turned away from getting involved with the construction industry.

These factors have led to a de-skilling of the industry in engineering energy efficient building services.

## **Recommendations for improving energy efficiency**

The testing and commissioning of building services systems should be prescribed in statutory requirements and buildings codes. Commissioning is vitally important for the safe and energy efficient operation of buildings, and should be certified by suitably qualified persons. Every building is unique and its services systems consist of many parts that must be co-ordinated and configured to achieve energy efficiency.

In addition, I would endorse the following considerations recommended by the Productivity Commission's as priorities for achieving energy efficiencies in buildings, and have commented on their direct relevance to the construction industry.

- **More efficient cost-reflective price signalling at peak times**  
Air conditioning is often the major source of peak electrical demand and there are a number of building strategies which can “level” the load at peak and expensive times. Price signalling would also help people appreciate that energy efficiency is an important day to day activity.
- **Minimum energy efficiency standards for buildings**  
Minimum energy efficiency standards should be extended to include individual ratings for mechanical systems (air-conditioning, heating & ventilation), lighting and hot water systems so they can be better targeted to reduce energy costs.
- **Improved financial information on energy efficiency to firms' internal and external investors**
- **Improved energy efficiency information**  
Occupants, visitors and buyers should be familiar with a building's energy efficiency rating and should also be aware of future improvements as part of the ongoing maintenance of the building.
- **Improved operational practices**

There has to be incentives for facility managers and building operators to achieve energy efficiency outcomes by improving their day to day practices.

It is time that building owners are made more aware of the financial and environmental benefits of energy efficiency in buildings and that they are provided with incentives to bring about these efficiency gains.

**General reference books**

*Ashford C.J.*, Avoidable waste/base energy budgeting BRESCU Workshop Document (Watford: Building Research Establishment (1997)

*Australian Greenhouse Office*, Australian Commercial Building Sector Greenhouse Gas Emissions 1990-2010 – executive summary report 1999

*Gissen David*, Big & Green: Toward sustainable architecture in the 21<sup>st</sup> century, 2002

**Image credits**

Commercial building energy use by end use 1990 (EMET 1999) chart courtesy of Australian Greenhouse Office.

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