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Title: Thermal Comfort Guidelines and Policy	Doc. No: HSL-POL-HSEEn501	Issue: 0 Rev : 0

## THERMAL COMFORT GUIDELINES AND POLICY

### Purpose:

Achieve a comfortable, healthy and safe working environment whilst conserving the environment and reducing the consumption of electricity from air conditioning.

### 1. Introduction

It is increasingly important to reduce the amount of electricity HSL consumes because electricity prices are rising globally. HSL is committed to improving its energy and environmental performance for the sake of the environment and its ability to operate at least costs. The productivity and comfort of our staff are equally as important and these instructions / guidelines will help staff to operate one of HSL most significant energy users – air conditioning – in a responsible way.

### 2. Definitions and Acronyms

**Thermal comfort:** That condition of mind which expresses satisfaction with the thermal environment.

Thermal comfort is difficult to define because a range of environmental and personal factors need to be taken into account when deciding on the temperatures and ventilation rates that make individuals feel comfortable. The best that can be realistically achieved in any situation is an environment, which satisfies the majority of people.

**Thermal distress:** Excessive temperature, either by itself or in conjunction with humidity and/or poor air circulation and other environmental and personal factors may cause staff and visitors to experience personal distress, such as headaches and drowsiness. Excessive temperature may also affect employee productivity.  
Humidity, by itself, has little effect on comfort if people are not sweating – a wide range of humidity is therefore acceptable.

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### 3. Guidelines

HSL has a general duty of care to ensure, as far as is reasonably practicable, that all employees are safe from injury and risks to health while at work. This should be done through the provision and maintenance of a safe working environment. Maintaining an enclosed workplace at a comfortable temperature is part of providing a safe working environment.

Taking into account the above, the following principles will apply:

- 3.1. A person's comfort is affected by air temperature, air movement or speed, humidity, clothing, activity level, mean radiant temperature (average temperature of the walls, floor, windows etc) and many other factors.
- 3.2. For general office work, 23°C to 26°C is generally comfortable in Singapore when wearing summer clothes. Temperatures a few degrees outside these comfort ranges, while uncomfortable, are unlikely to affect health if people dress suitably.
- 3.3. In HSL, we have determined the temperature to be maintained in the general office to be 24°C. This is in line with the recommendations in Singapore Code of Practice 554: Indoor Air Quality for Air-Conditioned Buildings.
- 3.4. Other options will also be adopted to manage comfort. Air temperatures should not be managed in isolation. For example, the mean radiant temperatures from all surrounding surfaces will be considered in the assessment and solution process.

### 4. Temperature Control Features and Measures

- 4.1. The following local control measures may be implemented to control indoor air temperature within comfortable limits:
  - Open doors or windows or operate the exhaust fan (if installed) to increase air movement and evaporation if it is cooler outside than inside. If windows, doors, and exhaust fans are used, the air conditioning must be turned off first.
  - Install window blinds/curtains or screens to reduce heat gain from the sun
  - Identify and isolate equipment giving off radiant heat
  - Encourage people to drink cool water frequently even if not thirsty
  - Encourage staff to dress appropriately for the weather and in a way that can be adapted to ensure personal comfort.

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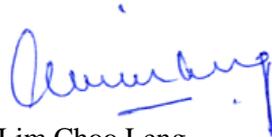
## 5. Implementation

- 5.1. HSL is committed to design future buildings to ensure minimum heat gain and loss of cool air with automatic demand control ventilation where possible.
- 5.2. Where practicable, additional energy metering will be installed to monitor electricity consumption.
- 5.3. Training is to be provided to the occupants of the building on the economical use of the air conditioning system.

### Monitoring, measuring, and reporting

The Office Manager will complete a weekly check of the air conditioning settings and record the results in the air conditioning monitoring form. The results will be measured against the acceptable settings of 23-26 degrees. The percentage of results where the settings deviate from the acceptable range will be recorded in the Variables Affecting SEUs Control Chart. Where more than 25% of checks show settings outside of the acceptable range a non-conformance will be raised to the Energy and Environment Committee.

Signed:



Lim Choo Leng  
Managing Director

**Date:** 1 July 2012