

Worksheet 1.2B

Environmental benchmarks

Emerging sustainable development benchmarks for commercial office buildings

Performance area	Emerging good or best practice benchmarks	Promoter
Energy efficiency (base building electricity and gas)	Sydney best practice 313 MJ/m² NLA pa	Property Council of Australia 2001
	Melbourne best practice 333 MJ/m² pa	
	Brisbane best practice 385 MJ/m² pa	
	Canberra best practice 369 MJ/m² pa	
	Adelaide best practice 556 MJ/m² pa (whole building)	
	Perth best practice 558 MJ/m² pa (whole building)	
	Australian CBD average 581 MJ/m² pa	Australian Building Codes Board 2004
Greenhouse gas emissions (base building)	NSW/ACT best practice 71 kg CO₂/m²	NABERS (5 star rating)
	Victoria best practice 101 kg CO₂/m²	
	Queensland best practice 77 kg CO₂/m²	
	South Australia best practice 72 kg CO₂/m²	
	Western Australia best practice 70 kg CO₂/m²	
	Northern Territory best practice 31 kg CO₂/m²	
	Tasmania best practice 83 kWh/m² (measured in energy)	
Water efficiency	Best practice 0.8 kL/m² NLA pa Good practice <= 1 kL/m² NLA pa	Sydney Water 2005
	3 Star – 1 kL/m² NLA pa 4 Star – 0.75 kL/m² NLA pa (best practice) 5 Star – 0.35 kL/m² NLA pa	NABERS
	Australian best practice 0.5 kL/m² NLA pa Australian average 1.125 kL/m² NLA pa	Department of the Environment, Water, Heritage and the Arts (DEWHA)
Air quality health goals – pollutant concentrations	Formaldehyde 130 [mu]g/m³ Total VOCs 500 [mu]g/m³ Carbon monoxide 9 ppm (8-hour average) Nitrogen dioxide 225 [mu]g/m³ Fine particules 50 [mu]g/m³ Dust mite allergens 2-10 g/gram house dust	National Health and Medical Research Council (NHMRC)

Performance area	Emerging good or best practice benchmarks	Promoter
Air quality health goals – pollutant concentrations (continued)	NABERS thresholds: Particulate matter (PM ₁₀) 0.05 mg/m³ Formaldehyde 0.10 mg/m³ Carbon monoxide 10 ppm Total VOCs 0.5 mg/m³ Ratio of indoor airborne microbials to outdoor airborne microbials (measured as cfu/m ³) is 1	NABERS
Solid waste	Total waste generated ≤149 grams/person/day Total recycling of the materials generated ≥ 90%	NABERS
PCA – A Guide to Office Building Quality – Environmental Performance	Existing offices Premium NABERS Energy accredited rating (See Note 1) Green Star (or similar) rating (See Note 2) Grade A NABERS Energy accredited rating Green Star (or similar) rating Grade B NABERS Energy accredited rating New offices Premium ≥ 4.5 star NABERS Energy accredited rating (See Note 1) ≥ 4 star Green Star (or similar) rating Grade A ≥ 4.5 star NABERS Energy accredited rating ≥ 4 star Green Star (or similar) rating Grade B ≥ 4 star NABERS Energy accredited rating ≥ 3 star Green Star (or similar) rating	Property Council of Australia
Proximity to public or alternate transport	5% of building occupants have access to secure bicycle storage on the property; 1 on-site shower for every 10 secure bicycle places; 1 km or less walking distance to public transport during peak periods	Green Building Council of Australia

Note 1: Including publishing on NABERS Energy website and supported by a management plan

Note 2: Green Star Existing Office rating tool (or similar rating tool)

Property Council of Australia

The PCA provides a voluntary office building quality grading which includes environmental standards and other aspects of building performance that influence environmental outcomes. The following summarises the PCA's 2006 publication- *A Guide to Office Building Quality*.

Office quality grade matrix – environmental performance														
	NABERS Energy accredited rating (Note 1)	Green Star (or similar) rating (Note 2)	Full BMCS including on-floor control	Main plant BMCS	Lighting power consumption ≤ 12 W/m ²	Lighting power consumption ≤ 15 W/m ²	Full building management team on site	Full building management team on site (> 30,000 m ²)	Remote building monitoring	Water demand submetering	Change room and showers	Waste recycling capability	4 star WELS-rated water fittings	Bicycle parking
Existing offices														
Premium	●	●	●		●		●			●	●			
Grade A	●	●	●			●		●		●	●			
Grade B	●			●		●			●					
New offices														
Premium	≥ 4.5 star	≥ 4 star	●		≤ 10		●			●	●	●	●	●
Grade A	≥ 4 star	≥ 4 star	●		●			●		●	●	●	●	●
Grade B	≥ 4 star	≥ 3 star		●		●			●	●	●	●	●	●

Note 1: Including publishing on NABERS Energy website and supported by a management plan

Note 2: Green Star Existing Office rating tool (or similar rating tool)

The PCA also provides the following listing of benchmarks for office building energy performance that are promoted as best current practice. It should be noted that other industry benchmarks, such as those being promoted by the Green Building Council of Australia, suggest more energy efficient standards are both achievable and desirable.

Best practice existing office building energy benchmarks (2001)				
Location	Building type	Tenancy (MJ/m ² /yr)	Base Building (MJ/m ² /yr)	Whole Building (MJ/m ² /yr)
Sydney	All electric	225	313	538
	Gas heated	225	360	605
Melbourne	All electric	225	333	558
	Gas heated	225	444	669
Canberra	All electric	225	369	594
	Gas heated	225	518	743
Adelaide	All electric	225	331	556
	Gas heated	225	421	646
Hobart	All electric	225	321	546
Perth	All electric	225	333	558
	Gas heated	225	400	625
Brisbane	All electric	225	385	610
	Gas heated	225	430	655
Darwin	All electric	225	445	670

Source: Property Council of Australia's *Energy Efficiency Guidelines* 2001

For a breakdown of best practice energy consumption against key energy consumption area (HVAC, house light and power, lifts, hot water, tenant power etc., refer to PCA *Energy Guidelines* 2001 section 4).

Further information on the PCA's environmental initiatives can be obtained from www.propertyoz.com.au