



CASE STUDY



HOLIDAY INN DARWIN

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the difference between
saving money and
wasting money.**

Introduction

A hotels energy use benchmarking project, a partnership between the Commonwealth's Energy Efficiency Best Practice (EEBP) program and the Australian Hotels Association, has shown how hotels can maximise profits, minimise energy costs and demonstrate leadership by reducing energy use and greenhouse gas emissions—without negatively impacting on the comfort or satisfaction of their guests and customers.

During the project, energy use data was collected from around 50 hotels across Australia and then six of the better performing hotels were examined in depth. The results of the benchmarking exercise have been well documented in a report and series of case studies. This case study is on the Holiday Inn Darwin in the Northern Territory.

Holiday Inn Darwin

The Holiday Inn Darwin has 183 rooms with four wings (facing in all directions) and a floor area of 9 306m². Opened just prior to Cyclone Tracey, the hotel is located in tropical Darwin and experiences seasonal monsoons.

Over the past eight years, the 10-floor hotel has reduced its energy costs by nearly a third, partly compensating for a massive 50 per cent increase in electricity prices. According to Don Wands, Maintenance Manager, this has been possible in part through constant attention to the 'little things': 'When you are paying as much as we are for electricity, every bit helps.'

A General Manager who is fully committed to reducing energy wastage has also helped, as has joining the Federal Government's Greenhouse Challenge Program. 'It provided the impetus for us to establish an Environmental Committee to take charge of our energy management and this has paid off', says Don. The hotel now has a preventative maintenance program and routinely implements energy saving measures through the budget process.

Greenhouse Challenge provides a perfect framework for EEBP's benchmarking study.

Although guest rooms were refurbished between 1997 and 1999, the hotel does not have a digital Building Management System (BMS) to control the central air-conditioning system. The hotel intends to install one when the budget permits, but in the meantime continues to monitor its air-conditioning. 'We are fortunate to have committed staff willing to make daily adjustments', says Don. 'Simple initiatives like this are the difference between saving money and wasting money.'



INDUSTRY
SCIENCE
RESOURCES
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AUSTRALIA



energy efficiency
best practice





Key energy efficiency investments and savings

Item	Capital cost	kWh energy savings p.a.	Energy cost savings p.a.
Compact fluorescent lighting in guest rooms	\$25 740	22 703	\$4 995
Compact fluorescent lighting in hotel corridors	\$16 200	46 358	\$10 199
Solar hot water collectors	\$46 300	105 850	\$11 146
Timers on restaurants and hotel common area air handlers	\$5 600	43 200	\$9 504
Timers on external lighting	\$360	26 280	\$5 782
Variable Speed Drive controls for domestic water pumps	\$3 000	13 140	\$2 891
Total*	\$97 200	257 531	\$44 517

Management system initiatives

- Establishment of an environmental committee to involve staff.
- Regular walk through audits and inspections to identify inefficiencies.
- Operational and preventative maintenance budgets used to implement energy saving initiatives.
- Monthly resource reporting to senior management.
- Energy efficient equipment preferred over standard equipment at time of replacement.
- Participation in EEBP's hotels energy use benchmarking project, and also the Australian Greenhouse Office's Greenhouse Challenge Program.

Key outcomes of energy efficiency investment

Capital investment: \$147 200

Energy savings: 288 191 kWh p.a.

Energy operational savings: \$162 516 p.a.

Greenhouse Gas savings: 147 tonnes CO₂ p.a.

Return on capital invested in efficiency using energy savings: 110%

Net Present Value: \$851 389 (discount rate 10%, life 10 years)

Energy benchmarks: 1 015 MJ per square metre

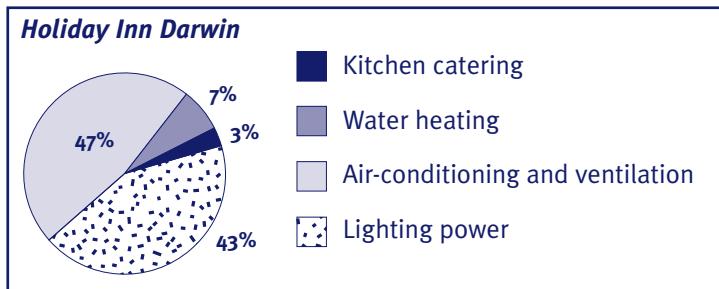
Energy use—industry benchmark for business hotel: 1 000 to 1 100 MJ per square metre

Energy planning goals for 2001

1. Investigate a waste heat recovery system to use waste heat from air-conditioning condensers for preheating of domestic water.
2. Refurbish guest rooms on levels three and four.
3. Evaluate retrofitting guest rooms with air-conditioning controllers.
4. Install energy efficient external floodlights on the hotel's façade.

Key energy use areas

Total energy use for the year 2000 was 9 449 513 MJ. A breakdown of usage into key service areas indicates that air-conditioning, general power and lighting are the hotel's primary energy drivers. This is fairly typical of most hotels.



Energy use in service areas by percentage

Key efficiency initiatives

Management practices

1. Housekeepers turn off lights and air-conditioning after daily room servicing.
2. Extensive preventative maintenance program in place to ensure equipment operates efficiently.
3. Thermostats on guest rooms calibrated in 2000 and temperatures adjusted to 24°C.

Lighting initiatives since construction

1. Timer controls installed on external lighting and entries.
2. Compact fluorescent lamps fitted in guest room standing lamps.
3. Compact fluorescent lamps fitted in three wall sconce fittings in guest rooms (completed during refurbishments between 1997 and 1999).
4. Fluorescent lights installed over guest room vanity mirrors (replacing two incandescent).
5. 75 Watt incandescent lights replaced with 150 Watt incandescent lights in restaurant.

Energy Management Controls

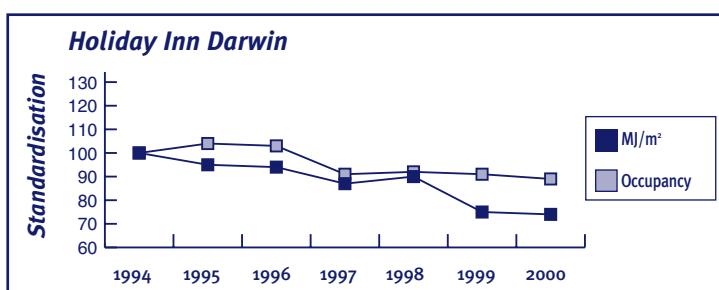
1. Variable speed drives fitted on domestic water pumps.
2. Power factor correction installed on main and utilities switchboards.
3. Digital controls installed on air-conditioning chillers.
4. Adjustable temperature thermostats installed on solar/gas water heating.

Water heating

Replaced the hotel's gas water heating system in 1994 with two 27-panel solar water heaters, which saves more than 105 850 kWh annually. The heaters are boosted by gas and supply the laundry and domestic hot water.

Overall hotel performance

The overall energy performance for the Holiday Inn Darwin for the years 1994 to 2000 is charted below. The chart shows a downward trend in total energy use per room, per night, over the past six years.



More information

The hotels energy use benchmarking project concluded that best practice hotels always have systems in place to regularly monitor, record, analyse and report on hot water, gas and electricity use. They often have full time engineers on site and continually seek ways to optimise energy performance. Best practice hotels also understand the importance of incorporating efficiencies into day-to-day operations and into the planning of renovations and retrofits.

EEBP supports industry sectors to identify and implement cost-effective solutions for a more sustainable and competitive future. The program has a combined focus on innovation, training and benchmarking and offers practical tools, information and assistance. EEBP is working with a growing list of industry sectors, which includes aluminium production, beverage and containers manufacturing, bread baking and milling, dairy processing, wine making, and fleet management.

The hotel benchmarking case studies are available without charge from:

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