# Calculating Cool

## Australia's first HVAC rating tool

Find out how to save on your building's HVAC energy costs! Compare your HVAC system and identify areas for improvement with this first-of-a-kind online tool.

# HVAC energy costs can be cut by up to 40% with an efficient system

Research has identified that heating ventilation and air-conditioning (HVAC) systems account for the majority of energy consumption in commercial and office buildings.

By using an energy efficient HVAC system, inefficient buildings can expect to save up to 40 percent of their HVAC energy costs. Even HVAC systems and procedures in modern high-end commercial buildings can be improved, potentially resulting in substantial savings.

## Calculating Cool – Australia's first HVAC rating tool

Calculating Cool is an innovative, new online benchmarking tool that has been developed to provide building owners, managers, and HVAC professionals with a mechanism for assessing the energy efficiency of their HVAC systems. The tool also provides users with an overview of potential opportunities for improvement through tuning, upgrades, behaviour change, or monitoring.

Calculating Cool uses a combination of quantitative and qualitative (or attribute) data to measure HVAC energy consumption along with factors such as maintenance, documentation, user satisfaction, commissioning and tuning.

Five Australian commercial buildings took part in a pilot of the Calculating Cool tool to benchmark their HVAC energy performance and identify opportunities for improvement:

- all buildings between 6000m$^2$ to 37000m$^2$
- ranging from 5 star NABERS energy rating to none
- Property Council of Australia (PCA) grade Premium - C
- commercial office buildings
- three buildings in Sydney and two in Melbourne.

# Key findings – the Calculating Cool pilot

Results from the five piloted buildings indicated that even buildings with high NABERS energy ratings can improve their HVAC performance, potentially saving energy and money, increasing tenant satisfaction, and improving energy and other ratings.

The quantitative results from the five pilot buildings showed:

- quantitative ratings from 'poor' to 'good'
- the best performing piloted building consumed 39% more than a building rated 'excellent'
- the lowest performing piloted building consumed 265% more than a building rated 'excellent'.

The qualitative categories provide valuable insights into where improvements can be made and complements the quantitative inputs.

**"There are always opportunities to improve a building's operations and efficiency and Calculating Cool has shown how our building compares and the areas where there is particular potential to improve the efficiency of our HVAC system."**

**Wayne McManus – Associate Director, CBRE**

The qualitative – or 'attribute' – results from the five piloted buildings showed:

- 'User satisfaction' rated 'poor' in all the buildings reflecting a widespread absence of independent third party tenant surveying.
- 'Commissioning' presented another opportunity for improvements with three out of the five piloted buildings having never carried out commissioning in accordance with verifiable guidelines.
- While tuning had taken place in most the piloted buildings, this category highlighted opportunities for improvements in ongoing management of tuning processes.
- 'Maintenance' achieved the highest qualitative rating in nearly all the piloted buildings with a scoring between 'average' and 'best practice'.

An example quantitative rating results table produced by Calculating Cool

QUANTITATIVE RATING

| POOR | AVERAGE | GOOD | BEST PRACTICE | EXCELLENT |
|---|---|---|---|---|
| | | ✔ | | |

An example attribute – or qualitative – results table produced by Calculating Cool

ATTRIBUTE RATINGS

| ATTRIBUTES | POOR | AVERAGE | GOOD | BEST PRACTICE | EXCELLENT | ATTRIBUTE SCORE |
|---|---|---|---|---|---|---|
| Commissioning | | | ✔ | | | 63% |
| Maintenance | | | | ✔ | | 83% |
| Tuning | | | ✔ | | | 71% |
| Documentation | | ✔ | | | | 50% |
| User Satisfaction | ✔ | | | | | 0% |
| Design | | | ✔ | | | 54% |

> **"Mirvac Facility Management has a strong operational focus and we are excited by the opportunities Calculating Cool offers, especially for education and enhancing operational performance."**
>
> **David Palin, Sustainability Manager, Mirvac Facility Management**

## Calculating Cool – the rating system

Development of the Calculating Cool tool involved close collaboration with industry bodies, and the incorporation of data from approximately 60 buildings across Australia. Calculating Cool utilises both quantitative data and qualitative information relating to HVAC design, installation and operation to benchmark energy efficiency performance and help identify potential areas for improvement.

For more information on Calculating Cool please visit www.calculatingcool.com.au

## Test your building with Calculating Cool for free!

The Calculating Cool tool is now available for use for free at www.calculatingcool.com.au. Building owners and managers are encouraged to use it to assess their HVAC performance and identify opportunities to improve comfort, and for improvements which save energy and money.

Calculating Cool has been designed to be used alongside national programs such as Green Star and NABERS and can be used to help identify areas to improve the NABERS and GreenStar Ratings. The calculator can be used throughout all stages of the lifecycle of a heating, ventilation and air-conditioning system - initial design, commissioning, operation and decommissioning.

## Acknowledgements

Calculating Cool was developed in collaboration with industry bodies including the Australian Institute of Refrigeration, Air-conditioning and Heating (AIRAH), the Property Council of Australia (PCA), the Facilities Management Association of Australia (FMAA), and the Air-conditioning and Mechanical Contractors' Association (AMCA).

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The Calculating Cool project forms part of the Council of Australian Governments (COAG) Building Committee funded Heating Ventilation and Air-Conditioning High Efficiency Systems Strategy (HVAC HESS). The funding was administered by the Australian Department of Industry, and the project is managed by Sustainability Victoria. Team Catalyst was contracted to produce the calculator. The project was governed by a steering group consisting of representatives from government jurisdictions from WA, Vic, Qld, SA, NSW and the federal government and a Technical Advisory Group including representatives from the state and federal government jurisdictions, AIRAH, PCA, FMA(A), AMCA and AG Coombs.

### Further information

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