

Factsheet

Building Rating Tools

Green Building Rating Tools

Green building rating tools benchmark buildings on their environmental sustainability, and convey that information to a diverse audience in an intuitive, consistent manner. Rating tools typically assess a variety of sustainability categories, including energy and water efficiency, Indoor Environment Quality (IEQ), management practices, environmentally harmful emissions, resource consumption, and waste generation.

Most rating tools assign a high value or weighting to energy efficiency measures. As Heating Ventilation and Air Conditioning (HVAC) typically accounts for approximately 40% of energy used in office buildings¹, HVAC design, commissioning and operation represents significant potential to maximise a building's energy efficiency and green building rating.

There are numerous rating tools throughout the world designed to assess buildings against the same broad categories. Each tool has unique benchmarks and assessment criteria, though the objectives are similar. Tools are generally either design based or performance based.

These rating tools are becoming increasingly adopted by the building sector.

Design Based Rating Tools

Design based rating tools assess the potential environmental impact of new buildings and retrofit buildings based on their design attributes.

These ratings are assessed based on design documents, or as-built documentation, and are often referred to as 'Design' and 'As-built' ratings.

Green Star, developed and administered by the Green Building Council of Australia (GBCA), is currently the major Australian rating tool for assessing design elements in new buildings. LEED² and BREEAM³ are the dominant Green Star equivalents in the US and UK respectively.

The Green Star tool for Offices comprises 62 initiatives called 'credits', across nine sustainability categories that define the

building elements rewarded by the tool. A large number of these credits are relevant to HVAC system design, due to energy and water consumption, ozone depleting or global warming refrigerants, legionella risk, and impact on occupant comfort and wellbeing.

The Green Star process typically runs for many months, from early schematic, to concept and detailed design. Once tender documentation is available, a large set of documentation is issued to the GBCA for review. The documentation is reviewed in up to two rounds, to afford design teams an opportunity to resubmit documentation in response to comments by the GBCA assessors. The same process occurs for an as-built rating, after practical completion.

Green Star uses a star rating system of whole stars, with 4, 5 and 6 star certification available.

Achieving a certified rating generally requires engagement of a consultant with suitable experience and qualifications, recognised by the GBCA as a Green Star Accredited Professional (GSAP). The GSAP ensures the design is consistent with achieving the targeted rating, and compiles and submits the documentary evidence to the GBCA. For more information see: www.gbca.org.au.

Performance Based Rating Tools

Performance based tools assess the actual performance of a building in operation. The National Australian Built Environmental Rating System (NABERS) Energy for Offices tool, managed by the NSW Office of Environment and Heritage (OEH), is the principal Australian performance based rating tool for offices and is mandated under the Commercial Building Disclosure Program. OEH report (www.nabers.gov.au) that 66% of Australia's office space has now been NABERS rated.

NABERS tools can be used to rate a building's energy, water, IEQ, and waste performance. NABERS can be applied to commercial buildings including offices, retail buildings, data centres and hotels. Ratings can be obtained for Base Building, Tenancies or Whole Building. A star rating scale is also used, but in half-star increments from 0 to 6 stars. Building ratings must also be renewed annually.

¹ *Guide to Best Practice Maintenance and Operation of HVAC Systems for Energy Efficiency (January 2012)*, Section 6, page 36.

² Leadership in Energy and Environmental Design (LEED)
www.usgbc.org/leed

³ Building Research Establishment Environmental Assessment Method (BREEAM) www.breeam.org

NABERS ratings are also used in the CitySwitch program, and are typically included in Green Lease Schedules.

For all NABERS rating tools, rating certification is undertaken by accredited NABERS assessors. The certification process must involve a site inspection by the assessor. Although assessments are audited by OEH, NABERS assessors have a higher level of authority and responsibility than Green Star's GSAPs. Accredited assessors can be found via the NABERS website (www.nabers.com.au).

NABERS Energy ratings are based on actual energy use. Accordingly, it is important to have adequate electrical, gas, and thermal metering. Sub-metering system accuracy and data logging systems should, therefore, be regularly inspected and validated. BMS temperature log data is also important for NABERS Indoor Environment Quality ratings.

The Living Building Challenge (living-future.org/lbc) is another emerging international performance based rating tool, and the GBCA is also developing the Green Star Performance tool, the pilot version of which is likely to be launched in October 2013 (www.gbca.org.au).

Mandatory Disclosure

The Commercial Building Disclosure (CBD) Program is an initiative within the National Strategy on Energy Efficiency which is founded on the Commonwealth's *Building Energy Efficiency Disclosure Act 2010*.

The aim of the CBD Program (www.cbd.gov.au) is to improve the energy efficiency of Australia's large office buildings and to ensure prospective buyers and tenants are informed of the energy efficiency of buildings offered for sale or lease.

The CBD Program requires energy efficiency information in the form of a Building Energy Efficiency Certificate (BEEC) to be provided in most cases when commercial office space of 2,000 square metres or more is offered for sale or lease. BEECs are valid for up to 12 months and include a building's NABERS Energy star rating which must be displayed on all advertisements for the sale, lease or sublease of the office space.

Benefits

Recent studies have shown buildings with high NABERS and Green Star ratings attract higher rental and resale values⁴. In addition to improved marketability, high rated buildings offer reduced operation and maintenance costs, and have been

shown to boost productivity and improve occupant health and wellbeing⁵.

Staff salary costs are typically 100 to 200 times the energy costs for a building⁶, so even moderate productivity gains can offset the capital cost of improving IEQ.

The Property Council of Australia's Guide to Office Building Quality⁷ now recognises NABERS ratings (including Energy, Water, IEQ and Waste) as indicators of a building's Grade. The Guide also recognises Green Star ratings as an indicator of building quality in new builds.

HVAC HESS

The Heating, Ventilation and Air-Conditioning High Efficiency Systems Strategy (HVAC HESS) is a ten year strategy under the National Strategy on Energy Efficiency that aims to drive long term improvements in energy efficiency of HVAC systems Australia wide. Under The Energy Efficiency Working Group, the Buildings Committee manages the implementation of the HVAC Strategy. This committee is comprised of representatives from Australian, State and Territory Governments.

The Strategy takes a whole of life perspective in targeting HVAC efficiency improvement, encompassing the design, manufacture, installation, operation and maintenance stages of the HVAC lifecycle. The Strategy consists of a number of complementary measures that fall under three broad initiatives – People, Practices and Systems. This Green Building Rating Tools factsheet relates to Practices. It is one of a suite of factsheets developed to provide a quick overview and reference to inform, educate, and encourage energy efficiency in the HVAC industry.

A series of HVAC HESS factsheets can be found at:

<http://ee.ret.gov.au/>

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⁴ Australian Property Institute (API) & Property Funds Association of Australia (PFA), 2011. *Building Better Returns: A Study of the Financial Performance of Green Office Buildings in Australia*. www.api.org.au

⁵ Sustainability Victoria, 2009. *Employee Productivity in a Sustainable Building, Pre and Post Occupancy Studies in 500 Collins Street*.

⁶ Energy Strategies Pty Ltd, 2007. *The Measures, HVAC High Efficiency Systems Strategy*.

⁷ Property Council of Australia, 2012. *A Guide to Office Building Quality 2nd Edition*.