



## Green Star

Green Star is an environmental rating system for buildings. It was established in 2003 by the Green Building Council of Australia (GBCA) to promote sustainable development within the building and properties sector of Australia, through green building programs, technologies, design practices and operations. The GBCA is a not-for-profit organisation supported by both the industry and government. However, it is funded by membership fees and sponsorship.

Green Star evaluates the building in terms of the overall impact on the environment and ways in which this is managed. This impact not only looks at the energy usage and emissions but also the materials used in the building's construction and fit-out. This ensures that the processes involved in manufacturing the materials do not impact too strongly on the environment.

Green Star assesses the following categories:

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land Use & Ecology
- Emissions
- Innovation

These categories are divided into credits, each of which addresses an initiative that improves or has the potential to improve environmental performance. Once all claimed credits are assessed a percentage score is calculated and Green Star environmental weighting factors are then applied.

Green Star certifiable ratings are available for:

- 4 stars (45-49 points) – "Best Practice"
- 5 stars (60 – 74 points) – "Australian Excellence"
- 6 stars (75-100 points) – "World Leadership"

We are able to assess a multitude of building types with Green Star (version in parentheses):

- Shopping Centre (Pilot)
- Healthcare (Pilot)
- Education (Pilot)
- Office - Existing Building (Pilot)
- Multi-Unit Residential (Pilot)
- Mixed-Use (Pilot)
- Industrial (Pilot)
- Public Building Design (Pilot)
- Office - Interiors (v1.1)
- Office - Design (v3)
- Office - As Built (v3)

Green Star Certification is a formal process which involves a project using a Green Star Rating Tool to guide the design or construction process during which a documentation-based submission will need to be collated as proof of this achievement. The Green Building Council of Australia will commission a panel of third-party Certified Assessors to validate that the documentation for all claimed credits is in adherence with all of the Compliance Requirements outlined in the Technical Manual for the relevant rating tool. There are two rounds of Assessment available to a project within which to achieve validation of credits claimed. Project teams are notified of their score based on the recommendation of the Assessment Panel. If a Certified Rating is awarded, the project will receive a framed certificate, award letter, Marketing Kit and relevant Green Star logos. If the desired Certified Rating is not achieved, the project may, in limited circumstances, be eligible to Appeal. The certified rating currently has no validity period.

As a conditional requirement the building's predicted greenhouse gas emissions must not exceed 110kgCO<sub>2</sub>/m<sup>2</sup>/annum. This is determined by the use of either the Green Star Energy Calculator (all Green Star ratings) or the ABGR energy calculator (Green Star Office ratings only). To predict the greenhouse gas emissions using the ABGR calculator you must determine the energy use by software such as CAMEL and BEAVER with the use of ABGR default figures. For further information on ABGR please see the ABGR/NABERS section below.

Green Star is a voluntary rating scheme. You do not need to be an accredited Green Star professional to be able to submit a rating however, if one is part of the design team then there are points allocated. *Wayne Benson, Peter Briggs and Alix McLean are accredited professionals.*

[www.gbca.org.au](http://www.gbca.org.au)

# ENVIRONMENTAL AND ENERGY RATINGS FOR BUILDINGS

Current at April 2008



## ABGR/NABERS

The Australian Building Greenhouse Rating (ABGR) scheme was developed by the Federal Government (Department of Environment and Climate Change) to help office building and/or tenants benchmark their greenhouse performance. In comparison to Green Star, ABGR focuses on the total energy consumed annually and calculates the corresponding amount of greenhouse emissions.

Although the term ABGR is still in use today it is to be phased out to become NABERS (National Australian Built Environment Rating Scheme). NABERS ratings allow you to rate both the energy and water consumption of an office building. In the near future it is expected that waste and indoor environment will be assessed as well. Each type of NABERS rating is assessed separately; therefore a building can rate in one or several categories. NABERS/ABGR assesses a 12 month consecutive period of the building actual running with the use of utility bills and testing. There are very strict protocols as to how information is to be collected and assessed.

An ABGR/NABERS rating is assessed by an accredited ABGR assessor using real-life performance data, such as: electricity bills, water bills (from meter readings), survey of office workers comfort conditions, chemical analysis of air quality, manually counting and recording of waste. A building can be assessed as:

- Base building – does not include items specific to a tenant such as lighting and equipment. However does include AC
- Whole building – entire building including tenancy items
- Tenancy – tenancy equipment, lighting and supplementary AC.

An ABGR/NABERS accreditation is only valid for 12 months and must be reassessed every year.

ABGR/NABERS is a voluntary scheme. You must be an accredited ABGR assessor to be able to complete a rating and submission. *Brian Kenny and Alix McLean are accredited assessors.*

[www.abgr.com.au](http://www.abgr.com.au)  
[www.nabers.com.au](http://www.nabers.com.au)

## BERS



BERS (Building Energy Rating Scheme) is used to assess the thermal comfort of a Class 1, 2 or 4 residential building ONLY in accordance with the BCA (JV1). The other software packages available to do the equivalent are AccuRate (formerly NatHERS) and FirstRate. These software packages use the AccuRate engine created by CSIRO to assess the thermal performance of a building.

The current BCA allows the use of both first and second generation BERS however it is anticipated that the use of second generation only will be allowed for BCA 2009. The BCA 2007 states that climate zones 1 – 3 must achieve 3.5 stars whilst climate zones 4-8 must achieve 4 stars.

BERS is a requirement for the BCA. To be able to submit a BERS assessment you must be qualified in the state in which the building is in - in Queensland you must have completed a BERS course, whilst in other states you must have completed the Association of Building Sustainability Assessors (ABSA) test.

For Class 1, 2 and 4 residential buildings only, in NSW, a BASIX (Building Sustainability Index) certificate is also required to comply with Part J of the BCA (see NSW Section J of the BCA). A BASIX certificate lists all the commitments the user has agreed to, and the Certifying Authority will check these at various stages of construction. The BASIX Certificate must be attached to the development application before it can be processed.

*Brian Kenny and Alix McLean are able to assess Queensland buildings with second generation software at the present time.*



## Section J Energy Efficiency

To comply with BCA Section J a building must

1. Comply with the Deemed-To-Satisfy (DTS) provisions Part J1-J7 ("Building Solution") **or**
2. Verify compliance by Verification method JV1, JV2 or JV3 ("Alternative Solution")

Below is a brief overview of the verification methods. For further details please refer to the BCA.

### Verification Method JV1

As mentioned in the BERS section above, for a class 2 or 4 building compliance must be proved by assessing the thermal performance of a building using either BERS, FirstRate or Accurate software. The BCA 2007 states that climate zones 1 – 3 must achieve 3.5 stars whilst climate zones 4-8 must achieve 4 stars. Also, each sole-occupancy unit must have an energy rating not less than 3 stars.

*Ashburner Francis use software program BERS Pro to assess JV1*

### Verification Method JV2

For a class 3, 5, 6, 8, 9a, 9b and 9c building compliance must be proved by thermal calculation method, that the annual energy consumption of the proposed building with the proposed services AND the annual energy consumption of the proposed building with the DTS services are no more than the annual energy consumption allowance in Table JV2.

Please note Verification Method JV2 has been removed from the BCA 2008 therefore any buildings to be assessed for BA after April 30 will require verification by method JV3

*Ashburner Francis use software program CAMEL and BEAVER to assess JV2*

### Verification Method JV3

For a class 3, 5, 6, 8, 9a, 9b and 9c building compliance must be proved by thermal calculation method, that the annual energy consumption of the proposed building is not more than the annual energy consumption of a reference building when—

- the proposed building is modeled with the proposed services; and
- the proposed building is modeled with the same services as the reference building

The annual energy consumption must be calculated for the reference building, using:

- the Deemed-to-Satisfy Provisions J1-J7; and
- a solar absorptance of 0.7 for the external walls and roofs; and
- the maximum lamp power density or maximum illumination power density without any increase for a motion detector, corridor lighting timer, manual dimming system, programmable dimming system, dynamic dimming system, fixed dimming system, daylight sensor or dynamic lighting control device

For further details please refer to pages 424 and 425 of BCA 2007.

*Ashburner Francis use software program CAMEL and BEAVER to assess JV3*