

GREEN STAR INDUSTRIAL V1

FACT SHEET & BUSINESS CASE



The Green Building Council of Australia (GBCA) released the Green Star – Industrial v1 rating tool on 30 April 2010 to support the sustainable planning, design and construction of high-performance industrial buildings.

By investing in sustainable buildings and applying the Green Star - Industrial v1 rating tool, owners and operators of industrial buildings around Australia can:

- minimise the environmental impact of their buildings
- improve their bottom-line business performance
- improve staff productivity and wellbeing
- create long-term shareholder value
- receive recognition for green leadership
- achieve real cost savings.

ABOUT GREEN STAR

The GBCA launched the Green Star environmental rating system for buildings in 2003. Green Star evaluates the green attributes of building projects based on nine categories, including energy and water efficiency, indoor environment quality and materials.

Green Star is a holistic rating tool, evaluating not only environmental attributes, but also features that affect occupant health and wellbeing, such as indoor environment quality and access to transport. Green Star rating tools can be used to rate the environmental attributes of a building at the design phase as well as at the end of construction (known as 'As-Built').

WHY BUILD GREEN?

Green buildings are better for the environment

SOLON is one of Europe's leading manufacturers of solar modules and a supplier of solar power plants. The company's green industrial headquarters in Berlin feature triple-glazed windows for highly effective thermal insulation, natural ventilation via windows and a 210kWp building-integrated photovoltaic system.

Water pipes were integrated into the concrete fabric of the building to achieve energy-saving temperature regulation in a process known as concrete core temperature control. The result? A saving of up to 1 million kilograms of CO₂ each year.

Also in Germany, SMA Solar Technology operates from a carbon neutral factory in Kassel. The factory gains its electrical power from a massive building-integrated 1.1 MW PV system and an onsite biogas plant. In addition to being the world's largest solar inverter manufacturing site, the plant is also pioneering the concept of CO₂ neutral industrial production by utilising a low-energy building concept and renewable energy.



Lot 12, Eagle Farm QLD

4 Star Green Star - Industrial PILOT

Green buildings are cheaper to operate

Because they conserve energy and water, green industrial buildings are cheaper to operate. According to The Costs and Financial Benefits of Green Buildings (October 2003), a minimal 2 per cent upfront cost to support green design can result, on average, in life cycle savings of 20 per cent of total construction costs - more than 10 times the initial investment.

This is certainly true of the Szencorp Building in South Melbourne. Awarded the first 6 Star Green Star – Office Design v1 rating, the Szencorp Building reported major energy and water usage reductions after just two years of operation. With energy savings of 71 per cent and water savings of 94 per cent (compared to the industry average measured by NABERS Water rating of 2.5 stars), the Szencorp Building demonstrates the very real bottom line benefit of green building.

Green makes green

Green buildings also deliver a higher return on investment. The McGraw Hill Construction Report (2007) found that building green increases a property's values by 7.5 per cent and improves the return on investment by 6.6 per cent. The Royal Institution of Chartered Surveyors' report, Green Value: Growing Buildings, Growing Assets (2006) confirms this, revealing that green building practices improve an asset's value by securing tenants more quickly, commanding higher rents or prices, enjoying lower tenant turnover, costing less to operate and maintain, attracting grants, subsidies and other inducements. They also improve business productivity for occupants, which affects churn, renewals, inducements and fitting out costs.

ENVIRONMENTAL BENEFITS:

- Protect ecosystems and biodiversity
- Improve air and water quality
- Reduce solid waste
- Conserve natural resources
- Reduce greenhouse gas emissions

ECONOMIC BENEFITS:

- Reduce running costs
- Enhance asset value
- Optimise life-cycle economic performance
- Increase access to government incentives
- Improve staff retention
- Demonstrate commitment to corporate social responsibility
- Enhance investor opportunities

Green buildings reduce liability and risk

According to the OECD's Environmentally Sustainable Buildings report (2003), illness from indoor air pollution has become one of our most acute building challenges – with building materials, ranging from paints to carpets, leading to occupational health issues.

A study by the Lawrence Berkeley National Laboratory found that buildings with good IEQ can reduce the rate of respiratory disease, allergy, asthma, sick building symptoms, and enhance worker performance. The potential financial benefits of improving IEQ are 8 to 14 times the cost of investment.

Green building lets you walk your talk

Building green is a clear expression of a company's commitment to the environment. When Bendigo Bank decided to build new Green Star certified headquarters, the management team saw it as an opportunity to demonstrate that corporate social responsibility starts at home. The Bendigo Bank's former Managing Director, Rob Hunt, said that green initiatives "are good for customers, good for the environment and good business for our bank."

Green buildings boost productivity

Green buildings consistently outperform non-green buildings in terms of comfort and productivity. An effective, well-ventilated and well-lit environment can positively impact employee performance. Comfortable, bright facilities promote alertness and motivation. The Office Lighting KnowHow report (2008) found that if poorly designed lighting distracts the average worker for only 1 per cent of the time, this is equivalent to a US\$5 per square foot annual loss.

In the post office in Reno, Nevada, USA, a lighting retrofit with a six-year payback increased the number of letters sorted per hour by 6 per cent and decreased the rate of sorting errors to 0.1 per cent making the Reno Post Office the most efficient in the Western US. Energy savings were about US\$22,400 per year, but the increase productivity was worth about US\$400,000 per year (Romm and Browning, 1999, Greening the Building and the Bottom Line, Global Energy Conference, Vancouver, May).

Another study from the Rocky Mountain Institute reported that energy-efficient design and good indoor environment quality (IEQ) could translate into productivity gains of up to 16 per cent from decreased absenteeism and improved quality of work. Since companies spend an average of 70 times as much on employee salaries as on energy, an increase of just 1 per cent in productivity can result in savings that exceed the company's entire energy bill.

Green buildings attract better tenants

Tenants want environmentally sustainable, healthy and productive workspaces that demonstrate their commitment to corporate social responsibility. The BCI Australia Green Building Market Report (2008) found that client demand is one of the primary drivers for committing to green building, with 65 per cent of respondents nominating it as an important factor. In return, owners are rewarded with decreased vacancy periods and a subsequent increase in occupancy ratios of 3.5 per cent.

Green buildings = future proofed assets

Governments and large corporate organisations are increasingly incorporating green principles into their property requirements, and three state governments have already mandated minimum Green Star standards for all government office buildings – with other building types expected to follow suit. By incorporating sustainable features now, owners of industrial facilities are future proofing for changes in the business and regulatory environment, and ensuring they will not be at a competitive disadvantage in the future.

Competitive advantage

By building green, you can differentiate your project in an increasingly crowded marketplace. The Green Building Market Report (2008) revealed that one of the main triggers for committing to green building was the competitive advantage of green projects – with almost half of the respondents nominating it a key driver for going green.

SPONSORS

Development of the Green Star - Industrial v1 rating tool was sponsored by:

Platinum

Goodman Group

Gold

Australand Holdings Ltd

Landcorp (WA)

Investa

VicUrban

Silver

Bluescope Buildings

ING Real Estate

Metroplex Management

St Hilliers

Stockland

KEY ATTRIBUTES

The Green Star - Industrial v1 rating tool assesses the environmental attributes of new and refurbished industrial buildings in every state across Australia. A Green Star rating is assigned to the base building and its services on the basis of design potential. Tenancy fit outs and industrial processes are not rated under this rating tool.

The rating tool is designed to be used by owners, developers and consultants (architects, engineers, quantity surveyors, project managers, ESD consultants etc) to influence the design and construction of industrial buildings.

A Green Star rating is awarded based on accumulating credit points in nine categories.

The Green Star – Industrial v1 rating tool takes into consideration the unique development requirements and impacts of the industrial sector. As such, the number of credits within categories and the category weightings vary from other Green Star rating tools. Credits specific to industrial facilities include: air distribution systems, noise pollution and small occupied spaces.

The Green Star – Industrial v1 rating tool also includes a customised greenhouse gas emissions calculator. While the Green Star – Office suite of rating tools incorporates energy modelling consistent with the National Australian Built Environment Rating System (NABERS Energy), an equivalent modelling protocol does not exist for the industrial sector. The customised greenhouse gas emissions calculator was developed in consultation with rating tool sponsors, the Technical Working Group and other industry stakeholders, and assesses all industrial buildings equitably - independent of size or location - on their predicted greenhouse gas emissions during operation.

The rating tool has undergone a rigorous assessment period after a pilot phase, and refinements to the calculators and credits have already received positive feedback from industry.

The result is a single third party certification that the market can understand and trust, and that developers can use to demonstrate their industrial developments' green credentials.

CERTIFICATION

Green Star ratings are awarded as outlined below:



4 Star Green Star Certified Rating
Weighted score of 45-59
Signifies 'Best Practice'



5 Star Green Star Certified Rating
Weighted score of 60-74
Signifies 'Australian Excellence'



6 Star Green Star Certified Rating
Weighted score of 75-100
Signifies 'World Leadership'

The rating tools have been developed to be equitable across building sectors. This means a 5 Star Green Star – Industrial v1 project will demonstrate a similar level of industry leadership as 5 Star Green Star – Office v3 project.

Projects with ratings of 1, 2 or 3 Stars cannot receive certification, as these ratings represent minimum, average and good practice, whereas Green Star aims to recognise and reward best practice and above.

CATEGORIES AND CREDITS IN GREEN STAR INDUSTRIAL V1



Management

- Green Star Accredited Professional
- Commissioning
- Building Tuning
- Independent Commissioning Agent
- Building Users' Guides
- Environmental Management
- Waste Management
- Metering



Indoor Environment Quality

- Ventilation Rates
- Air Change Effectiveness
- Indoor Pollutant Monitoring and Control
- Daylight
- Thermal Comfort
- Hazardous Materials
- Internal Noise Levels
- Volatile Organic Compounds
- Formaldehyde Minimisation
- Daylight Glare Control
- Electric Lighting Levels
- External Views
- Air Distribution System*
- Breakout Spaces
- Small Occupied Spaces*



Energy

- Energy - Conditional Requirement
- Greenhouse Gas Emissions
- Peak Energy Demand Reduction



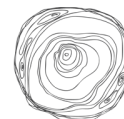
Transport

- Provision of Car Parking
- Fuel-efficient Transport
- Cyclist Facilities
- Commuting Mass Transport
- Trip Reduction - Mixed Use



Water

- Occupant Amenity Water
- Landscape Irrigation
- Heat Rejection Water
- Fire System Water



Materials

- Recycling Waste Storage
- Building Re-use
- Recycled Content & Re-used Products and Materials
- Concrete
- Steel
- PVC
- Timber
- Dematerialisation



Land Use & Ecology

- Ecology – Conditional Requirement
- Topsoil
- Re-use of Land
- Reclaimed Contaminated Land
- Change of Ecological Value



Emissions

- Refrigerant ODP
- Refrigerant GWP
- Refrigerant Leaks
- Insulant ODP
- Stormwater
- Discharge to Sewer
- Light Pollution
- Legionella
- Noise Pollution*



Innovation

- Innovative Strategies and Technologies
- Exceeding Green Star Benchmarks
- Environmental Design Initiatives

* Indicates credits unique to Green Star Industrial v1

CATEGORY WEIGHTINGS

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Management	10%	10%	10%	10%	10%	10%	10%	10%
IEQ	17%	17%	17%	17%	17%	17%	17%	17%
Energy	24%	24%	24%	24%	24%	19%	24%	24%
Transport	8%	8%	8%	8%	8%	8%	8%	8%
Water	11%	11%	9%	9%	14%	14%	14%	11%
Materials	15%	15%	15%	15%	15%	15%	15%	15%
Land Use & Ecology	6%	6%	8%	8%	3%	8%	3%	6%
Emissions	9%	9%	9%	9%	9%	9%	9%	9%

NEXT STEPS

- Download the Green Star – Industrial v1 rating tool. This is freely available for self-assessment and can be downloaded from the GBCA website: www.gbca.org.au
- Join the GBCA. Demonstrate your company's commitment to sustainability, actively influence the future direction of green building and gain access to green building education, training and resources, as well as significant member discounts on certification. Find out more at: www.gbca.org.au/membership/
- Register your project for independent third party accredited assessment. This process costs between \$16,500 and \$27,500 for members, or \$22,000 and \$33,000 for non members, depending on the project. Find out more about the certification process and how to register: www.gbca.org.au/green-star/certification/
- Purchase additional technical manuals. As part of your certification fee you will receive 2 free Green Star - Industrial v1 Technical Manuals. You may like additional manuals for your team, which can be purchased from our online store: www.gbca.org.au/shop/
- Attend a workshop. The GBCA holds regular workshops on the Green Star rating tools. As part of your certification fee you receive one free In- House Certification Workshop. There are also introductory and advanced classes on Green Star for industrial facilities; register online: www.gbca.org.au/courses.asp
- Train your entire project team on the tool. The GBCA can organise in-house training so that all your project team and sub-contractors are aware of the implications of developing a Green Star project. To obtain an in-house quote please email education@gbca.org.au

CONTACT

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CASE STUDY

At the Henry Ford Rouge Factory in Michigan in the US, production lines of workers breathing in polluted air is a thing of the past.

While Ford Motor Company's collection of foundries, factories and mills was considered the embodiment of world industry in the early twentieth century, by the end of the century the soil had become contaminated, the air polluted and the adjacent Rouge River that gave the complex its name was putrid.

In 2003, Ford opened its new headquarters – a leading-edge example of environmentally friendly industrial design – within its historic 600-acre Rouge complex.

The new assembly plant features a 10.4 acre 'living roof' which acts like a sponge for rainfall. Composed of drought-resistant sedum, it is the largest such roof in the world. Almost maintenance-free, it can absorb more than 15 million litres of rainwater annually and is part of a broader storm-water runoff management system. In addition to absorbing water and carbon dioxide, the green roof produces oxygen, insulates the building from the freezing Detroit winters and reduces the temperature by 10 degrees in summer – saving on thermal costs by up to 5 per cent. It is also expected to last twice as long as a traditional roof.

The building has natural ventilation, improving worker productivity and saving on energy bills. Skylights disperse light throughout the facility, enabling lights to be switched off on sunny days, increasing worker comfort and productivity. Energy efficient glass has been used in the factory to prevent sun glare and heat from entering the building.

In addition to the living roof, sunflowers and other plants are featured throughout the grounds to eliminate soil contaminants; vines shade buildings, porous paving filters water through underground beds of crushed stone, plant-lined 'swales' further improve stormwater management, and more than 1,000 new trees clean the air. Renewable energy sources such as fuel cells and solar arrays augment the complex's power grid.

More than 500,000 people, including school groups, have toured the Rouge since its transformation in 2003. A tour of the environmentally friendly facility begins at the Rouge Factory Tour Visitor Center, which earned LEED Gold certification by the US Green Building Council, the equivalent to Australia's Green Star. The visitor centre features energy-generating solar cells, a grey water recycling system and insulating vertical landscaping on its exterior walls.

A US\$222 million package of tax breaks and incentives from local, county and state government has helped to fund the transformation. According to company vice president Tim O'Brien, "environmental initiatives we're implementing are cost effective. Year after year they will save us money as well as conserve resources."