GREEN STAR HEALTHCARE v1 TOOL FACT SHEET & BUSINESS CASE

VERSION 1 (V1) RELEASED JUNE 2009

green star™ environmental rating system for buildings — Healthcare v1

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INTRODUCTION

The Green Building Council of Australia (GBCA) released the Green Star – Healthcare v1 rating tool in June 2009 to support sustainable planning, design and construction for high-performance healthcare facilities.

The Green Star – Healthcare v1 rating tool can help owners and operators of healthcare facilities around Australia to:

- minimise the environmental impact of their buildings
- improve patient health outcomes and staff productivity
- receive recognition for green leadership
- achieve real cost savings.

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, which address key issues including energy and water efficiency, indoor environment quality and resource conservation.

Green Star is an holistic 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 tools can be used to rate the environmental merits of a building at the design phase as well as post-construction phase (known as 'As-Built').

WHY BUILD GREEN?

Green buildings are cheaper to operate

Because they conserve energy and water, green buildings are cheaper to operate. The Ochsner Health System in New Orleans, for example, saved:

- $350,000 a year and reduced the hospital's energy footprint by replacing thousands of pump and suction motors with variable speed motors
- $3 million a year in electricity by using water directly from the Mississippi River in place of traditional cooling towers for air conditioning
- $1.2 million a year in electricity and reduced energy consumption by 20 per cent by replacing 60,000 fluorescent lighting fixtures with newer energy-efficient bulbs.

Green buildings improve patient outcomes

A number of international studies have confirmed that green healthcare facilities enable better patient care and reduce the length of stay required in hospital. Studies include:

- The Mackenzie Health Sciences Centre in Canada found that depressed patients in sunny rooms recovered 15 per cent faster than those in darker rooms
- The Bronson Methodist Hospital in Michigan found that applying green design principles such as improved ventilation, private rooms, music, light and nature in its redevelopment project led to an 11 per cent reduction in secondary infections and a decrease in nursing turnover rates to below 7 per cent
- The Inha University Hospital in Korea found a 41 per cent reduction in average length of stay for gynaecology patients in sunlit rooms over patients in dull rooms. The study found a 26 per cent reduction similarly for surgery ward patients.

Green buildings reduce staff turnover

Green buildings are healthier and happier places for staff, reducing staff sick leave and turnover rates, and boosting morale.

- A study from the Hackensack University Medical Center in New Jersey revealed that "the cleaning products we were using before caused the employees to call in sick a lot." After implementing their *Greening the Cleaning* program, "it all went away, and our workers' compensation claims went down."
- A report by Robin Guenther, Principal at Perkins + Will in New York and author of *Sustainable Healthcare Architecture*, found a "consistent, positive correlation between green building, staff recruitment, retention and performance."

Green buildings provide healthier indoor environment quality

Thousands of chemicals and biological pollutants are found indoors. The known health effects of some of these pollutants include asthma, cancer, developmental defects and delays, plus effects on vision, hearing, growth, intelligence, learning and the cardiovascular system. Green construction can greatly reduce the effects of sick-building syndrome.

What's more, green buildings can benefit from better ventilation and indoor environment quality, which affects both patient and staff health. For example:

- A study of 17 hospitals in Canada examined tuberculin conversion (a positive tuberculin test result) among employees working in patient rooms. The researchers concluded that "tuberculin conversion among health-care workers was strongly associated with inadequate ventilation in general patient rooms." They found a 71 per cent reduction in risk for workers in rooms with ventilation rates greater that two air changes per hour.

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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
- Save 20-30 per cent on energy and water costs
- Enhance asset value
- Optimise life-cycle economic performance
- Increase access to philanthropy and government incentives
- Improve staff retention
- Demonstrate commitment to corporate social responsibility
- Enhance investor opportunities

HEALTH AND COMMUNITY BENEFITS:

- Improve patient and staff health and safety
- Improve patient recovery times
- Reduce the psychological impact on patients
- Prevent harmful emissions from chemicals and VOCs
- Deliver better treatment outcomes
- Improve air, thermal and acoustic environments
- Minimise strain on local infrastructure by providing access to transport
- Generate a positive impact on broader community through implementation of green practices.

KEY ATTRIBUTES

The Green Star – Healthcare v1 rating tool evaluates the environmental potential of health and aged care facilities. It also assesses major refurbishments of existing facilities. The tool can be used to rate the environmental merits of a healthcare facility at the design phase as well as post-construction phase (known as 'As-Built').

Projects are awarded a Green Star rating based on accumulating credit points in nine categories. A number of credits specific to healthcare facilities are included in the Green Star - Healthcare v1 rating tool:

- Building Management Systems
- Maintainability
- Construction Indoor Air Quality Plan
- Sustainable Procurement Guide
- Air Distribution System
- Outdoor Pollutant Source Control
- Places of Respite
- Car Park Ventilation
- Efficient External Lighting
- Transport Design and Planning
- Potable Water Use for Equipment
- Ceilings, Walls and Partitions
- Trade Waste Pollution

The Green Star – Healthcare 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 NABERS energy tool, an equivalent modelling protocol did not exist for the healthcare sector. The customised greenhouse gas emissions calculator was developed in consultation with tool sponsors, the Technical Working Group and other industry stakeholders, and assesses all healthcare facilities equitably - independent of size or location - on their predicted greenhouse gas emissions during operation.

The 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 property developers can use to demonstrate their developments' green credentials.

Certification

Green Star ratings will be 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 – Healthcare v1 project will demonstrate a similar level of industry leadership as 5 Star Green Star – Office v3 project.

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

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CATEGORIES AND CREDITS IN GREEN STAR – HEALTHCARE V1

Management
- Green Star Accredited Professional
- Commissioning - Clauses
- Building Tuning
- Independent Commissioning Agent
- Building Guides
- Environmental Management
- Waste Management
- Building Management Systems
- Maintainability
- Construction Indoor Air Quality Plan
- Sustainable Procurement Guide

Indoor Environment Quality
- Ventilation Rates
- Air Change Effectiveness
- CO_2 Monitoring and Control and VOC Monitoring
- Daylight
- Thermal Comfort
- Hazardous Materials
- Internal Noise Levels
- Volatile Organic Compounds
- Formaldehyde Minimisation
- Mould Prevention
- Daylight Glare Control
- High Frequency Ballasts
- Electric Lighting Levels
- External Views
- Individual Thermal Comfort Control
- Exhaust Riser
- Air Distribution System
- Outdoor Pollutant Source Control
- Places of Respite

Energy
- Energy - Conditional Requirement
- Greenhouse Gas Emissions
- Energy Sub-metering
- Peak Energy Demand Reduction
- Lighting Zoning
- Car Park Ventilation
- Efficient External Lighting

Transport
- Provision of Car Parking
- Fuel Efficient Transport
- Cyclist Facilities
- Commuting Mass Transport
- Transport Design and Planning

Water
- Occupant Amenity Water
- Water Meters
- Landscape Irrigation
- Heat Rejection Water
- Fire System Water
- Potable Water Use for Equipment

Materials
- Recycling Waste Storage
- Building Reuse
- Recycled-Content & Reused Products and Materials
- Concrete
- Steel
- PVC Minimisation
- Sustainable Timber
- Design for Disassembly
- Dematerialisation
- Flooring
- Joinery
- Loose Furniture
- Ceilings, Walls and Partitions

Land Use & Ecology
- Ecology – Conditional Requirement
- Topsoil
- Reuse of Land
- Reclaimed Contaminated Land
- Change of Ecological Value

Emissions
- Refrigerant ODP
- Refrigerant GWP
- Refrigerant Leaks
- Insulant ODP
- Watercourse Pollution
- Discharge to Sewer
- Light Pollution
- Legionella
- Trade Waste Pollution

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

Category Weightings

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Management	9%	9%	9%	9%	9%	9%	9%	9%
IEQ	20%	20%	20%	20%	20%	20%	20%	20%
Energy	24%	24%	24%	24%	24%	19%	24%	24%
Transport	7%	7%	7%	7%	7%	7%	7%	7%
Water	12%	12%	10%	10%	15%	15%	15%	12%
Materials	17%	17%	17%	17%	17%	17%	17%	17%
Land Use & Ecology	8%	8%	10%	10%	5%	10%	5%	8%
Emissions	3%	3%	3%	3%	3%	3%	3%	3%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

PLATINUM SPONSOR

The development of Green Star – Healthcare v1 rating tool was sponsored by the Government of South Australia, Department of Administrative and Information Services.

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NEXT STEPS

- Download the Green Star – Healthcare v1 rating tool. This is freely available for self-assessment and can be downloaded from the GBCA website: www.gbca.org.au
- Register your project for independent third party accredited assessment. This process costs between $5,000 and $30,000, depending on the project. Find out more about the certification process and how to register: www.gbca.org.au/green-star/certification/
- Join the GBCA. Demonstrate your company's commitment to sustainability, actively influence the future direction of green healthcare and gain access to green building education, training and resources. Find out more at: www.gbca.org.au/membership/
- Purchase a technical manual. You'll find detailed information about the Green Star – Healthcare v1 rating tool, 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. To take an introductory or advanced class on the Green Star – Healthcare v1 rating tool, 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

CASE STUDY

The Boulder Community Foothills Hospital (BCFH) in Colorado was the first healthcare facility to achieve Leadership in Energy and Environment Design (LEED) certification from the US Green Building Council. LEED is the equivalent of Australia's Green Star.

BCFH is a 20,624-m², comprehensive 60-bed hospital that includes 24-hour emergency care services, an intensive care unit, as well as surgery, radiology and laboratory services. Maternity care and paediatrics also are major components of the new facility, and two medical office buildings adjoin the hospital. The hospital opened to the public in September 2003.

The decision to pursue a high standard of green building for the new hospital was in line with a long-term commitment to environmental sustainability. The hospital has an active reduce, recycle, reuse program that has saved more than 17 million litres of water and 2,848,400 kilowatt hours of electricity since 1990.

The hospital also provides free bus passes to all its 3,000 employees, has purchased wind power for its facilities and has a full-time environmental coordinator on staff. During May 2001, the BCFH board of directors recommitted itself to a set of environmental principles that include actions to "protect and preserve the environment."

The new BCFH facility certainly reflects the Board's commitment. The hospital's energy efficiency features alone have reduced energy consumption by 30 per cent when compared with traditional buildings, saving around US$95,000 year. Waste was minimised during the building phase with 62 per cent of construction waste diverted from landfill, and recycled content materials were chosen where possible.

Indoor environment quality (IEQ) was a priority, including formaldehyde-free MDF casework and insulation, low-VOC wood stains, paints and adhesives and a two-week building 'flush-out' to ensure the hospital had high IEQ before occupation.

The overall project cost, excluding land costs, was $45.6 million (or $452 per square metre), and the outlay for achieving LEED certification was estimated at 2 per cent of construction costs. With an expected development life of 50 to 75 years, the hospital's 12-year payback for green features is well and truly worthwhile.

CONTACT

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