



Australian Government



Clean energy and B and C grade office buildings

How can cost effective clean energy technologies help rejuvenate existing B and C grade office buildings, turning them into high performance, energy efficient commercial office spaces?



“
For our cities to be competitive and dynamic business centres in the future, we need to act now to transform existing buildings into energy efficient performers that support Australia’s transition to lower emissions.”
Ian Learmonth
CEO, CEFC

Delivering better building outcomes

Energy efficient buildings using proven clean energy technologies reduce stress on the electricity network, lower electricity consumption and support a least-cost pathway to lower emissions, improving health and resilience outcomes for households and businesses.

The CEFC commitment to HISOT reflects a strong focus on driving clean energy investments in the property sector by demonstrating the commercial potential of various technologies to reduce emissions.

The investment

Four B and C grade Australian office assets are being repositioned as energy efficient performers through a fund designed to attract leading investors focused on sustainability.

Investment manager and real estate developer EG operates the High Income Sustainable Office Trust (HISOT) which has \$110 million in gross assets at 30 September 2020.

EG is working to achieve an average National Australian Built Environmental Rating System (NABERS) Energy rating of 4.5 stars across the HISOT portfolio, while achieving a commercial return in line with similar funds.

The Clean Energy Finance Corporation (CEFC) has a \$25 million cornerstone investment in HISOT which has also attracted investment from Uniting Financial Services, Deakin University and Tasplan.

B and C grade office buildings and energy efficiency

According to the Green Building Council of Australia, about 80 per cent of the net lettable area of Australia's commercial building stock is in mid-tier buildings.¹

These mid-tier, or B and C grade buildings, are generally less energy efficient than new premium or A grade properties due to a range of factors including building age, ownership profile, passive management and tenant expectations.

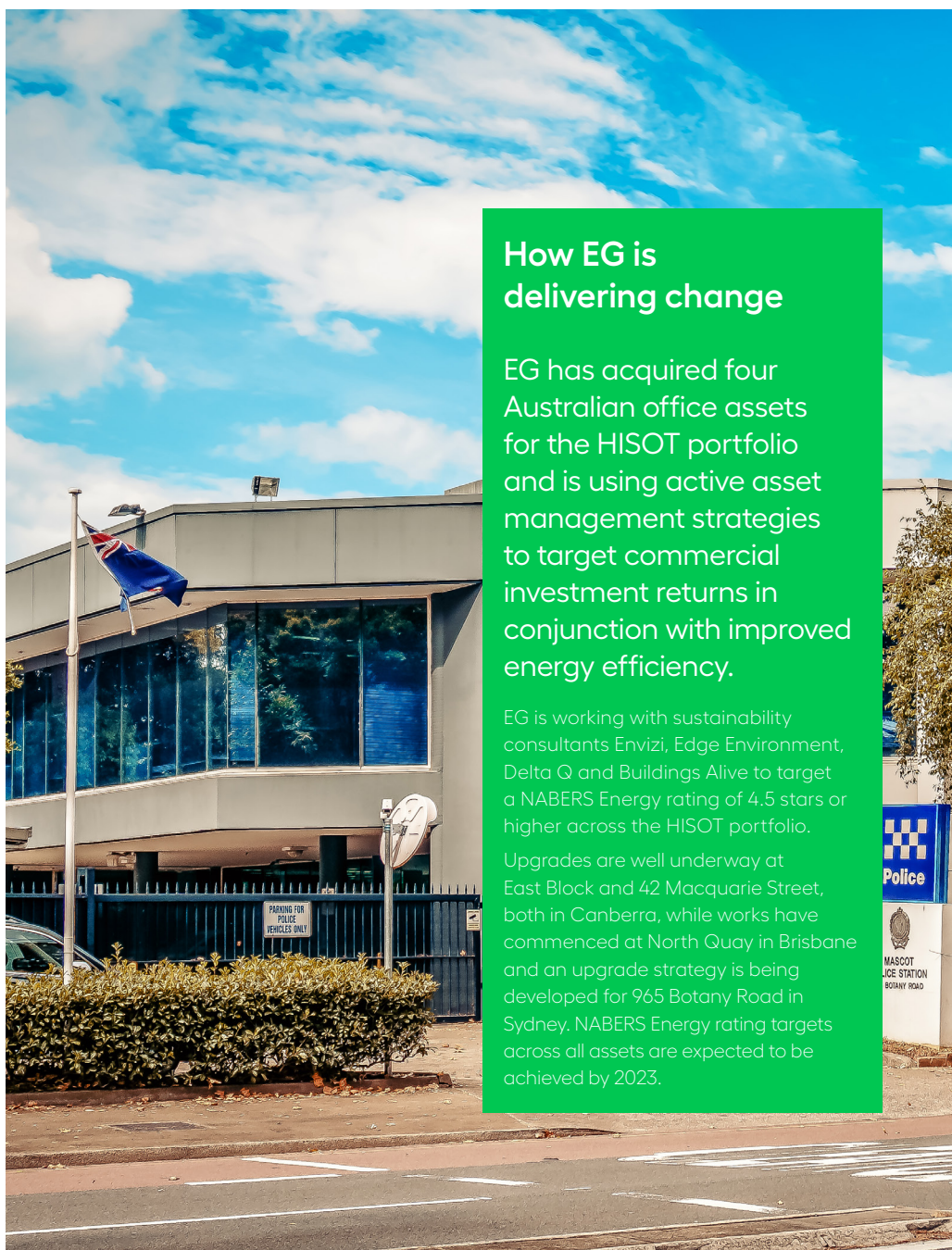
Improving building energy efficiency performance is widely regarded as one of the most cost-effective ways of delivering reductions in carbon emissions and lowering energy use.²

At the same time, improvements can potentially increase the value of building assets, attract better tenant covenants, deliver operational savings and reduce the risk of future obsolescence.

The GBCA has found that green buildings attract a 4.3 per cent premium in value as well as a 13.4 per cent increase in net income.³

1, 2 GBCA, "Mid-tier commercial office buildings in Australia: A national pathway to improving energy productivity," November 2015.

3 GBCA, "Green Star in focus: The business case," March 2020.



How EG is delivering change

EG has acquired four Australian office assets for the HISOT portfolio and is using active asset management strategies to target commercial investment returns in conjunction with improved energy efficiency.

EG is working with sustainability consultants Envizi, Edge Environment, Delta Q and Buildings Alive to target a NABERS Energy rating of 4.5 stars or higher across the HISOT portfolio.

Upgrades are well underway at East Block and 42 Macquarie Street, both in Canberra, while works have commenced at North Quay in Brisbane and an upgrade strategy is being developed for 965 Botany Road in Sydney. NABERS Energy rating targets across all assets are expected to be achieved by 2023.

HISOT assets at a glance

Asset	Major tenant	NABERS Energy rating at acquisition	NABERS Energy rating target after upgrade
East Block 1 Queen Street Victoria Terrace, Parkes, Canberra ACT Acquired in 2018 for \$15.47 million	National Archives Australia	1 star	4.5 stars
42 Macquarie Street, Barton, Canberra ACT Acquired in 2018 for \$15.6 million	Australian Medical Association	3 stars	5 stars
95 North Quay, Brisbane, Qld Acquired in 2018 for \$46.7 million	Multiple legal tenants	2 stars	4.5 stars
965 Botany Road, Rosebery, NSW Acquired in 2020 for \$19.25 million	NSW Police Station	3.5 stars*	Up to 5.5 stars

* Self assessed rating due to tenant confidentiality



HISOT demonstrates power of investing in building upgrades

The process of purchasing and upgrading HISOT assets is providing insights into effective ways to reduce emissions and improve energy ratings.

1 Assessing assets at purchase

As part of a due diligence process for property acquisition, reviewing historical energy data has helped EG determine the opportunity to add value through active asset management strategies. EG has found that assets which need upgrades in the near term provide an opportunity to greatly improve their environmental and operational performance, reduce operational outgoings and increase net revenue, which can improve a property's value.

2 Working with industry experts

EG has worked with a select number of consultants to identify, scope and deliver capital and operational performance upgrades. EG emphasises the importance of clearly defining sustainability objectives and choosing industry experts who can effectively scope and implement strategies in conjunction with building owners.

3 The importance of facilities management

EG has found that an informed facilities management team with training and active feedback can unlock potential energy savings of up to 20 per cent. Proactive facilities management across the HISOT portfolio has involved:

- Tracking performance against targets and NABERS trajectories, using Envizi analytics software to collect and collate energy data and enable EG to analyse energy usage, water consumption, waste and emissions.
- Implementing the Buildings Alive asset monitoring and feedback system to provide facilities management with tools to monitor and improve energy usage.

4 Minimising tenant disruption and maximising results

Energy efficiency improvements should be considered when refurbishments are undertaken to address functional obsolescence issues. EG has used the upgrade process to engage with tenants and improve leasing outcomes.

5 Climate risk disclosure

EG has noted that responsible investment has progressed substantially in recent years and now pays greater consideration to broader climate and social impacts. Adopting a more holistic approach to responsible investing ensures the best outcomes for all stakeholders. Since launching HISOT, EG has engaged Edge Environment to undertake a climate change exposure assessment across its broader portfolio, to achieve alignment with the Taskforce on Climate Related Disclosures and the Global Real Estate Sustainability Benchmark (GRESB) Resilience Module. All open ended funds managed by EG became GRESB Participant Members in 2019.

NABERS star ratings and performance

One of Australia's leading building rating tools, NABERS provides a rating from one to six stars for building efficiency across energy, water, waste and indoor environment categories.

NABERS ratings, which are based on operational data, provide a comparison for environmental performance of buildings and tenancies. NABERS ratings are helping building owners understand the performance of their portfolios, and to attract and retain quality tenants.

National Archives Australia reaps rejuvenation benefits

The landmark heritage-listed East Block building in the historic Parliamentary Triangle in Canberra was acquired in January 2018. National Archives Australia leases East Block, which was built in 1926 and includes nearly 5,000 square metres of net lettable area over three levels.

Improving the energy efficiency of East Block presents challenges not usually seen in standard office upgrades. As well as preserving the heritage status of the building, upgrades must support the conservation of archival documents, while providing attractive and comfortable working spaces and a functional public gallery space.

Delta Q has produced a NABERS roadmap to improve the energy rating to 4.5 stars, which is the minimum requirement for government tenants.

EG has already undertaken upgrade works that include a new entrance, café and public space and at 30 June 2020 the property had achieved a 30 per cent improvement in value since acquisition. The upgrade works have helped EG negotiate an extended lease of 12 years with National Archives Australia.

Approximately \$1.1 million in improvements are planned to lift the NABERS Energy rating of East Block from 1 star to 4.5 stars. These improvements are expected to deliver an annual energy saving of 36 per cent and an annual emissions reduction of 460 tCO₂e.

Among technologies yet to be installed, sub-metering is expected to provide a major NABERS Energy rating improvement by helping to separate base building energy use from the public gallery space and improving the monitoring of energy use to maximise efficiency.



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The HISOT philosophy is based on an impact investing approach whereby the objective is to generate a financial return consistent with the market, while delivering a positive environmental outcome by way of improved energy efficiency.”

Michael Noblet
Fund Manager, EG

Major initiatives and predicted outcomes

Technology	Upgrade cost	Annual operating savings	Energy savings	NABERS impact	Payback in years
BMS upgrade and HVAC tuning	\$408,500	\$34,500	8.3% electricity 13.6% gas	0.6 stars	11.8
LED lighting upgrades and controls	\$210,000	\$38,100	13.6% electricity	0.68 stars	5.5
100kW rooftop solar	\$143,700	\$23,200	13.5% electricity	0.66 stars	6.2
Metering and monitoring	\$230,000	N/A	N/A	2.02 stars	N/A



Proven technologies delivering energy efficiency solutions

The CEFC, through its work with EG and other property sector investors, has identified mainstream technologies commonly deployed in energy efficiency upgrades which can cut emissions and improve energy performance. A number of these initiatives have been considered for HISOT asset upgrades.

The suitability of initiatives can vary significantly between assets and any proposed initiative should be evaluated through detailed cost analysis to fully understand potential benefits.



HVAC system

Optimising heating, ventilation and air conditioning (HVAC) performance can provide material savings of up to 50 per cent, especially when there is aged equipment which commonly operates inefficiently.¹ Improving HVAC systems can also increase NABERS ratings and improve occupant thermal comfort and tenant satisfaction. Improving HVAC performance can involve:

- Upgrading or replacing key plant and equipment, such as chillers and cooling towers
- HVAC tuning, recommissioning or re-configuration. For example, tuning equipment to operate in harmony with other components, adjusting temperature setpoints or setting wider control bands
- Installation of a Building Management System (BMS) and supporting sensors.



Electricity and thermal sub-metering

Sub-metering allows visibility of energy use and enables wastage to be identified and managed. In older B and C grade buildings, the NABERS Energy rating can be negatively impacted if there is inadequate sub-metering of tenancies. Sub-metering can enable building owners to recover costs from tenants with high energy consumption, such as retail, cafés and gyms. It also enables tenants to see their own energy consumption, which may incentivise them to reduce demand and contribute towards their own corporate sustainability aspirations.



BMS

A BMS controls building services equipment and collects energy data and other performance metrics, to achieve energy efficiency potential. A BMS can:

- Identify system equipment that may be in conflict with each other and alert a maintenance team to resolve
- Limit heating and cooling in unoccupied zones
- Implement HVAC economy cycles for direct outside air use or night purge
- Use carbon monoxide sensors in car park fans to modulate exhaust rates.



BMS analytics

BMS analytics platforms can determine when equipment is not operating as expected, alert for unusual energy consumption and can optimise building controls based on inputs such as weather forecasts. For best results, implementation of BMS analytics should be considered when undertaking BMS and HVAC upgrades.



Lighting upgrades and controls

Under the Australian Government Commercial Building Disclosure Program, sellers and lessors of office space of 1,000 square metres or more must have a Building Energy Efficiency Certificate where office spaces are rated based on their NABERS Energy rating and Tenancy Lighting Assessment (TLA). The TLA result can be improved by increasing the energy efficiency and control of lighting systems. Lighting efficiency can be improved by:

- Replacing T8 tubes and fittings with efficient LED lighting. This can yield a 70 per cent energy saving
- Using daylight-linked occupancy sensors, which dim lights when natural light is available and match lighting operation to occupancy
- Creating smaller lighting zones to allow for greater lighting control.



Rooftop solar PV

The installation of rooftop solar PV allows owners to get value from unused roof space, use cleaner, cheaper energy, improve their sustainability and rely less on grid power. The energy generated from an installed system can be used for base building consumption or can provide energy to tenants through embedded networks.

¹ NSW Office Of Environment and Heritage, "I am your optimisation guide – Heating, ventilation and air conditioning systems," July 2015.



A sustainability booster for the AMA

The Australian Medical Association (AMA) is the major tenant of the 4,025 square metre four-storey multi-tenanted office building at 42 Macquarie Street, Barton ACT.

This property was acquired with a NABERS Energy rating of 3 stars in March 2018. The first stage of upgrade work helped achieve a 4 star rating by September 2020.

EG refurbished the lobby and vacant office floors, improved facilities management and modified existing building controls. To avoid tenant disruption, EG is progressively replacing older style light fittings with LED lighting and motion sensor controls as new tenancies are leased.

Approximately \$156,100 in planned improvements to 42 Macquarie Street is expected to deliver a further 1 star increase in the NABERS Energy rating, achieve an annual energy saving of 30 per cent and reduce emissions by 98 tCO₂e each year.

EG is investigating making the property carbon neutral by June 2021.

42 Macquarie Street initiatives and predicted outcomes

Technology	Upgrade cost	Annual operating savings	Energy savings	NABERS impact	Payback in years
HVAC tuning and optimisation	\$19,800	\$5,700	9.2% electricity 9.3% gas	0.18 stars	3.5
LED lighting upgrades and controls	\$6,900	\$1,000	1.9% electricity	0.04 stars	6.9
99.6kW rooftop solar	\$129,400	\$19,400	56.8% electricity	0.92 stars	6.7

About the CEFC

The CEFC has a unique mission to accelerate investment in Australia's transition to net zero emissions. We invest to lead the market, operating with commercial rigour to address some of Australia's toughest emissions challenges. We're working with our co-investors across renewable energy generation and energy storage, as well as agriculture, infrastructure, property, transport and waste. Through the Advancing Hydrogen Fund, we're supporting the growth of a clean, innovative, safe and competitive hydrogen industry. And as Australia's largest dedicated cleantech investor, we continue to back cleantech entrepreneurs through the Clean Energy Innovation Fund. With \$10 billion to invest on behalf of the Australian Government, we work to deliver a positive return for taxpayers across our portfolio.

