



Clean energy benefits for housing developments

How can new Australian housing developments draw on solar, battery storage and energy efficiency technologies to help make family homes more liveable and affordable while cutting energy use and reducing emissions?

Targeted sustainability outcomes*

Annual reduction per home

641

Annual electricity saving



Annual savings per home

~\$1,62

CEFC finance**



*Estimated by Evergen **since repaid

Sustainable approach

Australia's residential construction industry is large and fragmented, involving an estimated 45,000 businesses, according to IBISWorld. By incorporating new approaches to design, construction and planning, the industry has the potential to make a substantial contribution to cutting Australia's carbon emissions. The question is how.

Together with the housing industry, and leading developers such as Mirvac, the CEFC is investing in projects that demonstrate how best-in-class sustainability measures can be implemented at scale.

Delivering long term benefits

The potential gains are significant and long term. Homes are long lasting assets, with efficiencies made now able to deliver benefits for years to come. Residential housing is responsible for some 12 per cent of Australia's emissions which, according to Australia's National Greenhouse Gas Inventory, is only slightly less than Australia's agriculture sector and almost twice the emissions attributed to industrial processes and product use.

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Including clean energy technologies in homes during construction, at no additional cost to the homeowner, will deliver significant ongoing long-term benefits through a lifetime of lower energy costs and lower emissions."

lan Learmonth CEO, CEFC

A master plan for Australian communities

Australian developer Mirvac is delivering its masterplanned community, Woodlea, in Victoria. CEFC finance of \$90 million, has assisted Mirvac in building 76 energy efficient townhouses that will help residents save on their living costs while reducing their emissions. All the homes will boast solar PV and battery storage, as well as smart energy monitoring systems and reverse cycle air conditioning, with the energy efficiency measures incorporated during the planning and construction phases.

Industry insights from Woodlea

With more than half the Woodlea townhouses completed, Mirvac has identified a range of practical measures that may assist the broader residential construction sector in accelerating the transition to more sustainable housing. These are across the important design, procurement and installation phases.



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Mirvac is proud to work with the CEFC as we deliver against our bold target to be net positive in carbon and water by 2030, and provide technology in our homes which helps people towards zero bills living."

Sarah Clarke Group General Manager, Sustainability and Reputation, Mirvac

Design stage thinking

Assess potential solar and battery solutions at the design stage to avoid problems during construction:

- Ensure rooftop features such as mechanical vents do not intrude on optimal solar panel locations
- Switchboards should include provisions for solar PV and battery systems
- Electrification plans should allow for the future installation of EV charging equipment
- Make provisions to install batteries in detached garages, with conduits placed on external walls, to eliminate additional measures around weatherproofing, fire ratings and smoke detectors.

Procurement preparation

Anticipate the particular procurement requirements around sourcing solar and energy storage solutions at scale:

- Recognise that no single provider offers the best overall solution for solar and battery systems as well as smart monitoring devices
- Compare and select the appropriate combination of components and services, factoring in the functional variations of available products and systems
- While bulk tendering for components can achieve better economies of scale, be prepared for the potential for additional price risk associated with exchange rates on imported components, particularly batteries
- Align equipment delivery and installation timeframes to limit preinstallation storage and handling costs, which can erode the cost benefits of the bulk procurement of solar and storage equipment.

Installation efficiencies

Capture installation efficiencies in the approach to both rooftop solar and battery storage equipment:

Housing

- Project electricians who are accredited as solar installers by the Clean Energy Council can complete the bulk of the installation work, with one electrical company then able to sign off on all electrical works
- Incorporate conduits for solar and battery systems alongside other electrical works
- Electrical pre-wiring can support the easy installation and connection of solar and battery systems during the overall construction process
- Consider the location of batteries to avoid the need for impact protection bollards in the garages
- Make the most of energy monitoring systems by specifying the circuiting requirements for the desired metering.



Community housing



Community housing providers SGCH and Housing Plus are delivering highly energy efficient homes for low income families. The homes, in Sydney and regional NSW, offer an increased level of comfort while requiring significantly less energy for day-to-day activities.



Sustainable lifestyles

\$75m CEFC commitment

Property developer Ingenia Communities is upgrading its portfolio of new and existing lifestyle villages and holiday parks with market-leading sustainability measures, as part of its plan to cut its carbon emissions by 30 per cent in the next five years.



Clean Energy Home Loan

\$120m

The Bank Australia Clean Energy Home Loan is spearheading construction of market leading, energy efficient housing. It is the first Australian green home loan to use energy efficiency measurement tools to determine eligibility for a discounted home finance rate.



Woodlea sustainability inclusions

By using widely available and proven technologies, accompanied by up-front planning, the residential construction industry can build properties that make better use of the sun, energy storage and good planning. The benefits will help residents cut their energy use, reduce their emissions and contribute to lower living costs. The Woodleg townhouses will include a range of in-built sustainability features to achieve these goals.

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5.3 kW rooftop solar system

- Provides clean energy to households
- Reduces reliance on grid electricity
- Enables households with lower energy consumption to sell excess electricity to energy providers

ר (ז'ן ז') 10 kWh battery storage

 Can meet most of an average household's peak evening electricity consumption, when power is most expensive to purchase from the grid

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Electric dual zone reverse cycle ducted air conditioning

- Can be operated using solar energy generated onsite
- Provides flexibility in temperature control throughout the home, resulting in more energy efficient use of air conditioning

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System optimisation software

- Takes advantage of the best electricity prices by determining when to draw from mains power and when to maximise behind-the-meter solar energy consumption
- Uses two-day weather forecast and household consumption patterns to optimise battery energy use
- Can use data on household electricity tariffs to maximise energy cost savings

Energy management device

- Provides real time data on electricity generation and consumption across various appliances
- Data accessible via smart phone



Second life for office park

\$60m

A Canberra office park is getting a second life as a state-of-the art energy efficient seniors' village, in a project led by Cromwell Property and senior living operator Aspire. Recycling existing buildings avoids the carbon and financial cost of demolition and new construction.



Build-to-Rent

\$125m

The Qualitas Build-to-Rent Impact Fund is Australia's first property debt fund to elevate minimum sustainability standards into its investment criteria. Lifting the energy efficiency of purposebuilt rental accommodation benefits residents and owners.



Virtual power plant

\$30m CEFC commitment

Australia's largest virtual power plant is being created for social housing tenants in Adelaide. The centrally controlled group of solar-powered, battery-backed homes will act as a single "power plant" with the ability to send excess lower cost renewable energy to the grid.

High performance sustainability

Woodlea is the largest masterplanned community in Australia to achieve accreditation in all six of the sustainability categories identified through the EnviroDevelopment scheme, which assesses high-level performance across ecosystems, water, energy, waste, materials and community.



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Pathway to cleaner, greener homes

The average family home has a 50-year lifespan, which means that new homes with built-in sustainability features can make a positive long-term contribution to cutting Australia's emissions. Energy Consumers Australia reports that while 60 per cent of home buyers say they consider energy efficiency when buying a home, only one in four households say their home is energy efficient.

CEFC finance is working to close this gap. We have a strong track record of investing in a diverse range of cleaner, greener residential options, including finance for green home loans, build-to-rent, seniors living and student accommodation.

Best-practice energy performance initiatives give property owners and managers the opportunity to unlock substantial energy savings, reduce emissions and potentially improve liveability for residents. Australian homeowners and tenants can benefit from the adoption of a range of emerging best practice initiatives for cleaner, greener homes. These include:

- Incorporating information on energy efficiency ratings in new and existing homes at the time of sale
- Developing a national whole-of-building energy efficiency measurement tool, to help create a common approach to low emissions housing for home buyers, builders and renovators

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- Adopting energy efficiency building design and construction
- Supporting the widespread inclusion of renewable energy and energy storage solutions.

About the CEFC

The CEFC has a unique mission to 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 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.