

# SUBMISSION TO THE SENATE SELECT COMMITTEE ON FAIR DINKUM POWER

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## INTRODUCTION TO THE CEFC

The Clean Energy Finance Corporation (CEFC) welcomes the opportunity to make a submission to the Fair Dinkum Power inquiry.

The CEFC is an independent Commonwealth statutory authority set up to facilitate increased flows of finance to the clean energy sector. It is not a policy making agency.

The CEFC invests, applying commercial rigor, to increase the flow of finance into the clean energy sector. Since inception to 31 December 2018, the CEFC has committed a total of \$3.0 billion to renewable energy, and \$2.6 billion to energy efficiency and low emissions technologies.

Our mission is to accelerate Australia's transformation towards a more competitive economy in a carbon constrained world, by acting as a catalyst to increase investment in emissions reduction. We do this through an investment strategy focused on cleaner power solutions, including large and small-scale solar, wind and bioenergy; and a better built environment, with investments to drive more energy efficient property, vehicles, infrastructure and industry.

The CEFC's strategic framework supports sectors in the Australian economy that are the largest sources of carbon emissions to reduce their emissions and ultimately to help to transform the economy to achieve net zero emissions in the second half of the century.

The CEFC also invests with co-financiers to develop new sources of capital for the clean energy sector, including climate bonds, equity funds, aggregation facilities and other financial solutions.

In addition, the CEFC is now well established as Australia's largest dedicated investor in clean energy innovation. Through the \$200 million Clean Energy Innovation Fund, we support the growth of an exciting range of innovative clean energy technologies and businesses which are critical to Australia's clean energy transformation. The Innovation Fund invests using CEFC capital and draws on the technical expertise of ARENA. It should be noted that the risk profile of the Innovation Fund is higher, relative to the CEFC's other investments, given its focus on emerging businesses that involve technologies that have passed beyond the research and development stages, but are not yet established or of sufficient maturity to otherwise fully attract private sector investment.

## ABOUT THIS SUBMISSION

In this submission, the CEFC identifies how energy consumers can play a more important role in the National Electricity Market and the types of regulatory reforms that could help to achieve this.

The CEFC would accordingly like to limit its response in this Submission to matters directly relevant to its experiences as an investor in this market and its public purpose, by responding to items (a), (b), & (e) in the terms of reference.

## CONTEXT

Australia's electricity system is seeing significant new investment. Renewable energy is entering the market at increasing scale, replacing ageing generation infrastructure and contributing to meeting Australia's carbon reduction commitments. The cost of producing electricity from renewable resources has declined significantly over recent years and remains on a rapid downward trajectory.

Notwithstanding this strong growth in renewables, Australia still has one of the most emissions-intensive electricity systems amongst advanced economies. Coal, the most carbon-intensive fossil fuel, remains the dominant energy source for Australia's ageing electricity generation fleet. Considerable additional investment in renewables, transmission, energy storage and distributed energy resources is required to reap the benefits of a decarbonised national electricity system.

In addition, retail electricity prices for households and small businesses have increased by 80 to 90 per cent over the past decade, while electricity prices for some medium and large businesses have doubled, or even tripled, in the past two years alone.<sup>1</sup> Evidence indicates that high energy costs can have significant direct financial and health effects on lower-income households, in particular.

As the electricity system continues to transition, it is important that market rules are updated for an electricity grid with a growing share of renewable energy and distributed generation to promote a reliable, affordable and clean electricity service. The CEFC acknowledges the various work streams already being undertaken by regulators in this regard.

## EMPOWERING ENERGY CONSUMERS

Against this backdrop of electricity sector transition, many consumers are turning to rooftop solar photovoltaic systems, battery storage, and demand response technologies to reduce energy bills and carbon emissions. Innovation and economies of scale are enabling these distributed energy technologies to perform smarter and cheaper, making them more accessible to a wider range of users.

These technologies are greatly expanding the choices that consumers - households, farmers, small business and major energy users - have to manage their energy needs. They also have the potential to deliver significant efficiency benefits as well as improvements to the reliability and security of Australia's electricity system, while also contributing to our national emission reduction commitments.

### 1. ENERGY GENERATION

The Australian solar industry achieved a new milestone in December 2018, with the number of households with rooftop solar reaching 2 million. According to the Clean Energy Council, homes with rooftop solar installed are saving on average of about \$540 per year on their electricity bills<sup>2</sup>. In addition to reducing energy costs, rooftop solar is helping consumers to reduce strain on the electricity network when demand is high.

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<sup>1</sup> Australian Competition and Consumer Commission (ACCC) (2017). Retail Electricity Pricing Inquiry - Preliminary Report,

<sup>2</sup> <https://www.cleanenergycouncil.org.au/news/number-of-australian-homes-with-rooftop-solar-tops-2-million-and-counting>

As the cost of solar panels and battery storage continues to decline, there is increasing potential for individual households and consumers to generate their own renewable electricity, becoming less reliant on consumption from the power grid. Bloomberg New Energy Finance says that, by 2050, Australia will have one of the most decentralised electricity systems in the world, with consumer solar PV and behind-the-meter batteries making up more than 40 per cent of all capacity.<sup>3</sup>

The CEFC also believes that there is significant potential for renewable electricity generation to be sourced from office, retail and industrial property assets to further support the decarbonisation of the electricity grid.

To help deliver the benefits of generating clean energy to energy users - whether on farm, in households, on the road, in an office or in a factory - the CEFC has developed asset co-finance programs with the major banks, specialised lenders and funds. These programs are enabled by the wholesale debt facilities we provide to our co-financiers, who use that capital to provide low cost finance to borrowers investing in smaller-scale clean energy assets around the country.

Projects range from \$10,000 to \$5 million, with an average investment of \$125,000. Eligible projects range from small-scale rooftop solar and battery storage, to energy efficient manufacturing and farm equipment, as well as improved building insulation, heating and cooling, demand management systems and low emissions or electric light vehicles.

Since inception, the CEFC has made more than \$1 billion in finance available to smaller-scale projects through these asset finance programs. This has helped finance more than 8,600 individual projects, involving farmers, small businesses, manufacturers, building owners and community facilities. This includes over 3,500 projects, worth almost \$100m, to install solar PV and battery solutions.

While we expect the finance for some programs to be fully deployed during 2018-19, others will continue. We see an important ongoing role for CEFC finance to support smaller-scale investments in clean energy assets and are exploring additional opportunities with co-financiers to continue to incentivise energy consumers to purchase best in class clean energy generation assets when considering new equipment purchases and property fit outs.

## 2. ENERGY EFFICIENCY

Improving the energy efficiency of Australian homes and businesses has the potential to reduce energy bills by \$7.7 billion a year and create the equivalent of 120,000 full time jobs, according to the recent '[Energy Efficiency Employment in Australia](#)' report. This report also finds that better energy efficiency would cut household gas use by 640 million gigajoules over a decade, the equivalent of a huge gas field.

From the CEFC's perspective, the benefits of improving energy efficiency offers not only offer the economic advantage of an energy bill saving, but can also reduce stress on the electricity network, lower electricity consumption, and support a least-cost pathway to a net zero carbon built environment, improving health and resilience outcomes for households and businesses.

Recognising the potential, the CEFC has invested \$2.6 billion in energy efficiency and low emissions technologies, since inception. This includes investments in market leading projects and investment funds to demonstrate how energy efficiency can reduce emissions and deliver higher quality buildings, processes, infrastructure, products and services.

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<sup>3</sup> Bloomberg New Energy Finance, *New Energy Outlook: Australia Seminar*, 11 July 2018

Poor building energy efficiency and high energy costs can also have significant direct financial and health effects on low-income households and those in community housing. To address this, CEFC finance has helped households in community housing. For example, the CEFC has committed up to \$170 million in debt finance to St George Community Housing (SGCH) to deliver 500 high-performing energy efficient homes.

The new dwellings will be a mix of social and affordable housing units in south and south-western Sydney delivering more sustainable, affordable housing for low to moderate income families. Improved insulation, LED lighting, energy efficient appliances, smart meters and solar installations are some of the features likely to be included in the high performing buildings. The marginal additional cost of the energy efficiency investment will have long term and ongoing benefits for the tenants, particularly through lower energy bills.

Through these investments, it is evident that, while energy efficiency improvements involve upfront costs, more energy efficient houses and commercial buildings not only lower energy bills but also increase thermal comfort, improve households' financial and social outcomes, reduce carbon emissions and support the resilience of the grid.

### 3. DEMAND RESPONSE AND GRID STABILITY AND RELIABILITY SERVICES

New technologies that use smart controls to optimise the use of energy resources in electricity grids are important for boosting the resilience of the electricity system and putting downward pressure on energy costs. As well as providing flexibility to smooth demand in response to variations in renewable energy output, demand response technologies can reduce the need for peaking generation and network assets that are oversized to cope with infrequent episodes of peak demand, and potentially avert crises during periods of system-wide high demand.

The CEFC is supporting a number of innovative Australian companies that are developing the technologies needed to support the transformation of the electricity system, through its Innovation Fund. Having reviewed many hundreds of high quality clean energy innovation opportunities, we have committed venture capital of more than \$58 million to nine companies in the 18 months since the Innovation Fund began investing. Together, these companies have raised more than \$140 million of new capital for clean energy projects, a welcome injection of capital to this emerging sector. Many of these companies are developing technologies that empower consumers to better manage electricity and provide grid services.

Below is a snapshot of the companies and smart technologies that are supported by the Innovation Fund.

#### **Innovation Fund Investments**

##### **Wattwatchers**

The CEFC has invested \$2 million in Wattwatchers' \$4 million 2016-17 Series A capital raising. Wattwatchers is expanding production of its award-winning measurement technology that helps better manage energy use and costs.

Wattwatchers' clamp-on internet device, advanced control analytics and cloud-hosted management interface provide data that shows where and when energy is being consumed in real time. The multi-channel auditor device can be used to inform unaware customers of energy usage and identify energy waste or poor performance.

Wattwatchers' technology can be used across residential, commercial, industrial and utility services because it works with a wide range of software applications. It potentially works alongside other smart technology applications, battery storage and microgrids to reduce energy consumption, encourage better energy saving habits and increase the ability to tap into locally generated rooftop solar.

### **Zen Energy**

The CEFC has made a \$5 million cornerstone equity investment in Zen Ecosystems' \$12 million 2018 capital raise. Zen's technology is designed for small to medium footprint businesses as a low cost, easy-to-use cloud platform for managing energy-intensive assets across single and multiple sites, simply by checking in on a desktop or phone. Retailers, hotels and motels, schools, universities, car dealerships and fast food outlets are among businesses that are saving on energy costs using the Zen technology. Zen is now exporting this Australian technology to global markets, in particular the US.

### **GreenSync**

In 2017, the CEFC committed \$5 million, with a further \$2m in 2018, to Greensync an innovative Melbourne-based company, aiming to bring smart technology solutions to optimise the use of energy resources in electricity grids.

GreenSync is part of a new generation of energy innovators using smart software controls and coordination to enable more renewable resources and battery storage systems to be integrated into the grid, extending the benefits to more businesses and consumers. The Innovation Fund's \$7 million investment is part of \$16.5 million raised by GreenSync to enable it to scale up its operations.

GreenSync's clients include many of Australia's largest energy companies, supermarket chains, manufacturers, airports, resorts and universities. In February 2019 GreenSync was named as the only Australian company in the prestigious 2018 Global Cleantech top 100 list.

### **Redback**

The CEFC has committed US\$5.5 million to Queensland-based, Redback. The Innovation Fund's equity commitment is part of Redback's US\$7 million Series A-2 capital raising round, which has also secured a US\$2 million investment from RightClick Capital. Queensland-based Redback Technologies has developed a Smart Hybrid System that optimises solar generation, storage and management of energy for households and businesses.

Redback's system uses machine learning to predict solar generation and customer usage. It then makes intelligent decisions to optimise energy usage, driving down energy costs for end users and reducing fossil fuel reliance. Redback's software also enables systems to be aggregated to form a virtual power plant, to provide grid services and support increased integration of renewables into the grid.

The investment will allow Redback to expand its R&D capabilities, accelerate development of its smart software suite and strengthen its technical and professional workforce. It will enable Redback to further develop its next generation energy intelligence platform and devices and further cement its vision to ensure Australian households and businesses are entirely powered by renewables.

#### 4. NETWORK INVESTMENT AND PEER-TO-PEER TRADING

To date, the development of electricity networks, has focused on distribution network businesses providing sufficient network capacity to safely and reliably meet consumer demand. In light of the increasing uptake of distributed energy resources and the range of services these technologies are capable of providing, there is potential for networks to allow more consumers to buy and sell energy (i.e. peer-to-peer trading) in a dynamic way in response to price signals.

A competitive distribution market would enable consumers to optimise the value of their investments in distributed energy resources. It would also enable increased uptake of distributed energy resources, triggering further innovation, increase the number of parties selling distributed energy resources and associated technologies, and increase the range of products and services available to consumers.

Network regulatory frameworks will need to adapt to emerging competition to ensure that new technologies that reduce costs for consumers can flourish.

The CEFC is aware that the Australian Energy Markets Commission (AEMC) is currently examining how the regulatory framework could evolve to support a grid with more decentralised, local generation and storage. This 2019 review is assessing how financial incentives for network businesses could change to encourage networks to embrace new technology where it is the cheapest way to help manage the grid. From the CEFC's perspective, the evolution should balance the benefits from the customer-led roll out of these technologies, with the needs of networks to manage the system impacts.

### POTENTIAL REGULATORY CHANGES

There is an opportunity for regulatory frameworks to adapt to the new opportunities and to take account of the widening options for energy supply and use. As described throughout this Submission, regulatory changes could benefit a wide range of users including:

- Households - for Australia's household sector, factors such as the evolving nature of clean energy technologies, a lack of understanding of their features, and split incentives between owners and tenants have presented barriers. These barriers affect low-income households and renters, in particular.
- Farms – agribusinesses are ideally-suited to capitalise on the growing wave of energy efficient and clean energy technology. This is especially important as agriculture emissions are projected to grow as Australia's population grows and we export food and fibre to our region and beyond.
- Business owners - recent analysis has found that by implementing energy efficiency measures and switching from gas to other clean energy sources, Australian industry can reduce gas consumption by at least 25 per cent on current levels, or 201 petajoules (PJ)/year This would represent an estimated emissions reduction of 10 MtCO<sub>2</sub>e/year based on current levels. The evolving nature of clean energy technologies, a lack of understanding of their features, have presented barriers.



With this in mind, the CEFC welcomes the *Trajectory for Low Energy Buildings* agreed to by the Energy Ministers on 1 February 2019. It also endorses the recent ASBEC and ClimateWorks Australia's *Built to Perform - Zero-Carbon Ready Building Code* report (July 2018). The report presents a compelling business case that governments can adopt in moving regulations towards net-zero carbon buildings, for residential and commercial buildings.

The report finds that setting stronger energy standards for new buildings would reduce stress on the electricity network, offering bill savings, supporting a least-cost pathway to a zero carbon built environment, and improving health and resilience outcomes for households and businesses. It also finds that changes to the National Construction Code could, between now and 2050, reduce energy bills by up to \$27 billion, cut energy network costs by up to \$7 billion and deliver at least 78 million tonnes of cumulative emissions savings'.

The Report also recognises the value of complementary policies. These include:

- Energy market reforms to provide appropriate financial incentives for distributed energy and energy efficiency
- Expanding mandatory disclosure of energy performance to sectors beyond large commercial buildings, including housing
- Strengthening energy standards for equipment and appliances and establishing long-term targets and processes to support ongoing improvements as technology improves
- Investigating the introduction of minimum standards for existing buildings and rental properties

The CEFC's experience strongly supports the 'Accelerated deployment scenario' promoted in the *Built to Perform* report. The evidence suggested by our record of experience as an active sustainable property investor is that the measures required to lift building standards in Australia can be done at profit and are typically immaterial against whole of project cost.

Another area in which further policy development would have benefit, is in facilitating the creation of a market for discounted 'green' mortgages. Properties which have a certified basic level of environmental sustainability performance could attract a lower interest rate than neighboring properties.

The experience in the commercial building market and the broader green bond market indicates there is strong demand from the capital markets to lend to bona fide low-carbon developments.

The CEFC is in active discussions with financiers who are willing to offer discounted residential mortgage interest rates in exchange for a certified level of sustainable performance.

Key to unlocking this, is a government endorsed certification scheme (preferably national), that verifies and quantifies energy efficiency performance. This scheme needs to be capable of being used by financiers to create products which will influence the standards of construction of residential buildings, similar to schemes in the UK and Netherlands.

The scheme could be - but does not need to be - based on mandatory disclosure. At present, there is a patchwork of different tools and fragmented regulatory approaches for measuring residential energy efficiency performance, both within States and between them.