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Dear Committee,

Thank you for the opportunity to comment on the nature and opportunities of fair dinkum electricity in our submission to the Select Committee into Fair Dinkum Power (the Committee).

The Australia Institute has long argued that the decline of fossil fuels in the electricity sector presents great opportunities for consumers, in terms of affordability, reliability and sustainability.

The traditional model of centralised generators with a monopoly on supply is dying. Information and computing technology is providing the capability for consumers to flip the switch and become 'prosumers', able to produce, store, trade and manage electricity.

Everyday Australians are leading this revolution. Australia is the leading rooftop solar nation – recently surpassing 2 million solar households. In the outer reaches of our cities and rural and regional areas, up to 1 in 3 households have their own little power station on the roof, helping lower prices for all consumers.

In this submission, The Australia Institute will highlight our previous submissions and reports from our dedicated Climate & Energy Program, as well as other sources of information that address the Committee's Terms of Reference.

The Committee has a rare opportunity to lead on electricity transition, we wish you well in your efforts to make this transition truly fair dinkum.

Richie Merzian
Dan Cass

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Submission to Select Committee into Fair Dinkum Power

Large-scale fossil fuel generation is in decline

➤ *Terms of Reference a, f, e.iv*

Globally, investment in fossil fuel electricity is in decline. According to the International Energy Agency, 'capital spending on fossil fuel supply [in 2017] remained around two thirds of that for 2014'.¹

For the past six years the majority of global electricity generation investment was in renewable energy.² In 2017, the latest year for which this analysis is available, fossil fuels earned less than half as much investment as clean energy.³

While we cannot know what the future will be like, we can draw on current trends and analyses. We can expect that distributed energy resources such as household PV and storage, demand response, Virtual Power Plants and large scale solar and wind generators, will continue to replace the old, centralised power stations of the past. The question for policy makers and investors, is how these distributed energy resources can be turned from a novel and potentially risky development, into an opportunity to modernise and democratise the electricity system.

A number of corporations have balanced the risk and opportunity and taken up power purchase agreements to source 100% renewable energy for their operations. The RE100 initiative for example includes 162 major multi-national companies that have switched.⁴ According to the consultancy Energetics, 'since 2016 corporate PPAs [in Australia] have supported projects with a combined capacity of nearly 3200MW, of which about 2750MW enabled investment in new projects; more than a third of the required 6400 MW required by the end of 2018 under Australia's Renewable Energy Target (RET).'⁵ This trend should be encouraged for major energy users as well as small businesses. With the conclusion of the RET in 2020, the time is right of a medium to long-term federal climate and energy policy framework to sustain this momentum.

The Australia Institute also draws the Committee's attention to our **Gas & Coal Watch** work that has demonstrated that fossil fuel 'baseload' generation is not as reliable as its

¹ IEA (2018), *World Energy Investment 2018: Executive Summary*, p 3

² Frankfurt School-UNEP Centre/BNEF (2017) *Global Trends in Renewable Energy Investment 2017*, p 5

³ Frankfurt School-UNEP Centre/BNEF (2018) *Global Trends in Renewable Energy Investment 2018*, p 22

⁴ RE100, 'The world's most influential companies, committed to 100% renewable power.', <http://re100.org/> [accessed 13 February 2019]

⁵ Energetics, *Corporate Renewable PPA Deal Tracker* <https://www.energetics.com.au/insights/knowledge-centres/corporate-renewable-ppa-deal-tracker/> [accessed 13 February 2019]

supporters wish to believe. In 2017, there were 135 breakdowns of gas and coal power stations in Australia. That's an average breakdown of once every 2.7 days.⁶ Replacing the aging stations with newer models will not address this problem. Our research shows the new supercritical coal fired power stations in Australia were even more unreliable, per gigawatt than old, subcritical counterparts.⁷

Batteries are on the rise

➤ *Terms of Reference a, b*

The quintessential example of a distributed energy resource is the lithium battery. A battery busts the old electricity paradigm based around 'baseload' coal and shows how much our regulatory system needs to catch up. A battery can dispatch energy into the network, like a generator, take energy from the network, like a consumer device, and it can allow the network operator to invest less in poles and wires, so is also provides a role in managing the network itself.

The cost of renewable energy and of lithium battery storage has fallen rapidly, making these technologies increasingly competitive. Our research report, *Securing Renewables* shows lithium battery prices fell by 93% between 1995 and 2014.⁸ There are also opportunities to tap into the (inevitable) rise of electric vehicles (EVs).

The Senate Committee on Electric Vehicles covers these overlapping opportunities in detail (and we note the chair of the EV Committee is also on the Fair Dinkum Committee).⁹ We will only mention two opportunities – the first goes to Australia's competitive advantage as a lithium (and rare earth) rich country to also manufacture batteries, as recommended by the EV Committee, which can serve both homes and EVs. The second, to use EVs to support the grid, through vehicle-to-grid ('V2G') services, in which the battery is a grid support resource.¹⁰

Demand response to the rescue

➤ *Terms of Reference a.ii, c*

Prosumers are able to not just generate electricity on-site, with solar PV, they are also able to turn their energy consumption into a critical resource. Queensland is one of the world-leading jurisdictions in this regard, with over 55% of consumers providing 'demand response' or 'negawatts' to the grid.

⁶ Ogge (2019) Gas & Coal Watch 2018 <http://www.tai.org.au/content/gas-coal-power-plants-135-breakdowns-2018>

⁷ Ibid

⁸ Cass (2016) *Securing Renewables: How Batteries Solve the Problem of Clean Electricity*

⁹ Select Committee on Electric Vehicles (2019) *Electric Vehicles Report*

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Report

¹⁰ Cass (2018) *Select Committee on Electric Vehicles – General Submission*, pp 12-15

Demand response simply means consuming less electricity, when this is easier and cheaper than generating more.¹¹ These demand response systems are an integral element of Queensland's *Summer Preparedness Plan*¹² and are credited with helping keep the grid stable during heatwaves over the past two summers.¹³

The Australia Institute is a co-sponsor of a rule change currently before the Australian Energy Market Commission, that would open up the wholesale market to demand response.¹⁴ This would allow negawatts of saved energy to compete against megawatts of generation, in the market. It is uncertain if electricity retailers would support this change because it would compete against their business model.¹⁵

The first high-level policy proposal for this reform was by Warwick Parer, who had been Energy Minister under Liberal PM John Howard. In 2002 Parer conducted a review for COAG in which he recommended wholesale demand response.¹⁶

The Committee should both recommend this overdue reform and also inquire into why it and other reforms that benefit consumers have suffered long delays and how this can be remedied.

Need for faster reform of the NEM

➤ *Terms of Reference e*

The main obstacle standing in the way of consumers playing a greater role in the NEM, is regulatory. If the National Electricity Market is redesigned around emerging technologies, then innovative companies will present new product offerings.¹⁷

Prosumers can help solve the energy trilemma: helping build new sources of reliability, control prices and reduce emissions.¹⁸ Susan B Jacobs has written about this in the American context and she puts the policy challenge clearly when she says 'developments on the ground are occurring more quickly than regulatory structures are evolving'.¹⁹

¹¹ Cass (2017) *Saving Mega Bucks with Negawatts*

¹² Ergon/Energex (2018) *2018-19 Demand Management Plan*, p 10

¹³ Potter (2018) 'Demand Response Worth Half a Liddell to Energy Queensland' *Australian Financial Review* (7 April), p 6

¹⁴ The Australia Institute, Public Interest Advocacy Centre, Total Environment Centre (2018) *Wholesale demand response energy market mechanism : rule change request*

¹⁵ McDonald-Smith (2019) 'BlueScope Aligns with ACCC, Tesla to Argue for Demand Response' *Australian Financial Review* (4 February), p 17

¹⁶ Commonwealth of Australia (2002) *Towards a Truly National and Efficient Energy Market: Council of Australian Governments Energy Market Review*

¹⁷ Van Kemenade (2018) *Submission to Australian Energy Market Commission Wholesale Demand Response Rule Change Mechanism*

¹⁸ Cass (2017) *Submission to Climate Change Authority / Australian Energy Market Commission Special Review on Power System Security, Electricity Prices and Emission Reductions*

¹⁹ Jacobs (2016) 'The Energy Prosumer' *Ecology Law Quarterly* 43(3), p. 519

As baseload power stations are replaced by distributed energy resources, software in the form of mobile device applications (apps) will become an important part of the electricity network. Prosumers need to be fully empowered to have control of their distributed energy resources and to have the information on hand to make the most efficient use of them. Apps will be the key to this. The Australia Institute collaborated with Neo, a human-centred design company, to produce a short video explainer to show how these energy apps could work.²⁰

It is not surprising that millennial consumers are interested in the prosumer paradigm. According to research from the US Federal Energy Regulatory Commission, “millennials are particularly interested” in prosumer programs that pay them to consume in ways that are economically efficient for the electricity network as a whole.²¹

The Committee could seek the views of younger Australians regarding how they see the future of energy and what role they would like to play, as prosumers.

Farmers want to be prosumers too

➤ *Terms of Reference e.ii*

The empowerment of distributed electricity is not limited to major energy users or millennials. There are also great examples in rural Australia.

Tasmanian farmers have formed an Agri-Energy Alliance which is essentially arguing the case for regulatory reform that will empower farmers to be energy prosumers.²²

One of the key services that farmers can provide to electricity distribution networks is demand response. For example, pumps can be remotely controlled to switch off at peak demand times, if this does not interfere with irrigation. And solar-tied battery systems can be discharged at times when the local network requires power support.

Farmers face particular disincentives to invest in self-generation. For example, if they have a property with solar power and want to use that power in a neighbouring, but separately titled property, they may get paid \$0.05 for the electricity they export then pay the retailer \$0.30 to buy it back, 100 metres down the road. This is clearly a disincentive and reforms are required to give farmers a fair go for the power they seek to generate and use.

²⁰ The Australia Institute & Neo (2017) *My Energy*
<https://www.youtube.com/watch?v=4YRgkKe5vgk> [accessed 12 February 2019]

²¹ Federal Energy Regulatory Commission, (2018) *2018 Assessment of Demand Response and Advanced Metering*, p 33

²² Bailey (2019) ‘Tasmanian Farmers Form Energy Alliance’ *The Advocate* (6 February)
<https://www.theadvocate.com.au/story/5891567/tasmanian-farmers-form-energy-alliance/?cs=12>

Moving forward

➤ *Terms of Reference d*

The Committee's work is well timed. Australia's Energy Security Board recently acknowledged that 'the National Electricity Market is not in the best of health'. For consumers who have faced escalating power prices, and never-ending uncertainty about the security and sustainability of electricity supply, that statement surely ranks as a gross understatement. Electricity and other utilities constitute the worst-performing industry grouping in the whole economy, according to productivity growth.

The electricity sector is still recovering from decades of privatisation that has not assisted in addressing the energy trilemma. Our research shows that real output per employee in the electricity sector has fallen by 37% between 2000 and 2018, due to the excessive allocation of labour to advertising, sales, contract administration and other activities associated with privatisation. The number of sales staff employed by electricity companies has grown almost 400% since the industry began to be privatised in the mid-1990s and the number of managers has grown over 200%. Over the same period, the number of electrical tradespeople and other workers involved in actual production has grown just 21%.²³

The electricity sector now spends more on finance and banking costs than the actual fossil fuels that power electricity generation.

Further fracturing of the electricity sector (through the Big Stick bill²⁴) or burdening of the sector with additional fossil fuel generation (through the Underwriting New Generation Investment program²⁵) will only add to the woes of privatisation.

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²³ Richardson (2019) *The Costs of Market Experiments: Electricity Consumers Pay the Price for Competition, Privatisation, Corporatisation and Marketization*, pp 4, 26, 37

²⁴ <https://www.theguardian.com/australia-news/2019/feb/14/coalition-shelves-big-stick-energy-bill-to-avoid-anti-coal-amendment>

²⁵ <http://www.environment.gov.au/energy/underwritingnewgeneration>
