Delivering Economic Stimulus Through Renewables

Proposal 1: Battery Nation

New Policy Proposal by WWF Australia

Battery Nation will position Australia as a leading global battery manufacturer, leveraging our minerals and industrial capabilities to increase value and jobs rights across the supply chain.

- $500 million Government investment over three years plus $240 million in low cost finance.
- Delivers:
    - 100,000 home battery installs;
    - 5 small battery manufacturing plants;
    - New infrastructure to recycle 6,000 tonnes of waste every year;
    - 2 large-scale battery manufacturing plants;
    - 1 lithium refinery plant.
- Creates 4,500 ongoing manufacturing jobs and 2,300 installer and construction jobs.
- Leverages:
    - $1 billion private investment in home batteries by 2024;
    - $5 billion industry capital investment in heavy industry by 2030.
- Positions Australia as a leading global battery manufacturer ensuring procurement leads to local battery manufacturing and incentives for lithium refining, battery recycling and reprocessing and battery innovation.

The *Battery Nation* program aims are to:

- Create nearly 7,000 jobs by 2030
- Increase the value capture of Australia's lithium resources to 25% by 2030 (up from 0.53% in 2017)
- Increase lithium-ion battery recycling to 25% by 2025
- Lower power bills by accelerating battery uptake across Australia.

Financial Implications: $500 million over three years plus $240 million in low cost finance.

		2020-21	2021-22	2022-23	2023-24	Total
Cost of Proposal ($m)						
1.1a	Home and small business battery scheme – grants ($m)	*100*	*100*	*40*	-	*240*
1.1b	Home and small business battery scheme – loans ($m)	*3*	*4*	*2*	*-4*	*5*
1.2	Battery commercialisation and scaling ($m)	*30*	*30*	*30*	*30*	*120*
1.3	Battery recycling infrastructure grant ($m)	*60*	*40*	*20*	-	*120*
1.4a	CSIRO new battery research projects ($m)	4	4	4	4	16

1.4b	National battery strategy ($m)	2	2	-	-	4

Proposal 1.1

Proposal Title: *Battery Nation: Home and small business battery scheme*

Affected Agency: Department of Industry, Science, Energy and Resources

Clean Energy Finance Corporation

Financial Implications: $245 million over four years

	2020-21	2021-22	2022-23	2023-24	Total
Department of Industry, Science, Energy and Resources					
Home and small business battery scheme – grants ($m)	*100*	*100*	*40*	-	*240*
Clean Energy Finance Corporation					
Home and small business battery scheme – loans ($m)[1]	*3*	*4*	*2*	*-4*	*5*

Outline of proposal:

This package will allocate $480 million:

- $240 million in grants over three years will provide battery subsidies for households and small businesses;
- $240 million in low cost finance over four years will be made available through the Clean Energy Finance Corporation (CEFC).

The subsidises will contribute to 100,000 small battery installations for households and small businesses (under $1 million turnover).

To incentivise rapid uptake in the first year of the program and generate the scale needed to attract new manufacturing plants, the first participating 20,000 households and / or small businesses will receive a $4,000 subsidy.[2] All remaining 80,000 participants will receive a $2,000 subsidy.

Strategic Policy Alignment:

The program aims to create:

- 500 new installer jobs
- 1200 new manufacturing, technical support, and sales jobs
- 300 construction jobs

The increased market demand generated by the subsidies and low interest loans will attract new battery manufacturers to Australia. The program will have a target of attracting at least five new

[1] This costing is based on a similar proposal costed by the Parliamentary Budget Office prior to the 2019 election. It assumes $60 million in loans allocated each year. The costings are rounded to the nearest million. https://www.aph.gov.au/~/media/EAC5EF4A839240C6B45B441A9505FE52.ashx Accessed on 4 August 2020.

[2] This builds on the SA experience, who realised a rapid increase in subsidy applications when it recently signalled it would reduce the subsidy from $6,000 to $4,000.

small battery manufacturers, generating 1,200 direct new jobs in total. Building these new plants will generate at least 300 construction jobs. This package will unlock $1 billion in private investment from households.

Rationale:

Smart Government support that encourages home battery uptake will incentivise battery manufacturers to invest in Australia by creating market demand. This in turn will grow jobs on the factory floor and across the supply chain. The South Australian Government has shown what smart investment and a simple, streamlined program can do. After just 18 months SA has attracted 2 new battery manufacturers to Adelaide, creating 350 jobs. Sonnen has set up in the former Holden Factory and has recruited former Holden workers into their business.

Home batteries will lower power bills, and by using smart technology, can be linked to create virtual power plants that secure energy supply across the grid. The 2020 Australian Battery Market report found that, "Home energy storage systems are still the main game for most battery manufacturers, wholesalers and retailers."[3] In 2019 more than 22,000 small-scale batteries were installed across Australia, providing more than 1 GWh in capacity,[4] and this is projected to grow to 28,000 batteries in 2020.[5]

Implementation:

The package will be administered through the Department of Industry, Science, Energy and Resources. This will ensure a rapid start-up, while also strategically linking the program to aligned industry development programs across the Federal Government. Only the South Australian Government has an extensive home battery program. Consulting with the South Australian Government will ensure the two programs align to offer maximum value for SA residents and battery providers. Other state and territory programs are smaller in scale. Households and small businesses will only be able to access one subsidy program and will not be able to 'double up' by accessing both a federal and state government subsidy.

The program will recruit a panel of approved battery providers, and by using these providers households and small businesses will be able to receive subsidies and access low interest loans.

To become a battery provider for the program, four threshold conditions must be met:

- Demonstration of financial and technical competency;
- Battery must be able to participate in a Virtual Power Plant;
- A Clean Energy Council accredited supplier;
- A demonstrated commitment to install batteries assembled or made in Australia.

Value for Money:

The increased market demand generated by the subsidies and low interest loans will attract new battery manufacturers to Australia. The program will have a target of attracting at least five new small battery manufacturers, generating 1,200 direct new jobs in total. It is also assumed building

[3] *Australian Battery Market Report 2020 (media summary)*, Sunwiz, April 2020.
[4] *Clean Energy Australia Report 2020*, Clean Energy Council, April 2020.
[5] *Australian Battery Market Report 2020 (media summary)*, Sunwiz, April 2020.

these new plants will generate at least 300 construction jobs. This package will unlock $1 billion in private investment from households.

Proposal 1.2

Proposal Title: *Battery Nation: Battery commercialisation and scaling*

Affected Agency: Australian Renewable Energy Agency (ARENA)

Financial Implications: $120 million over four years

	2020-21	2021-22	2022-23	2023-24	Total
Battery commercialisation and scaling ($m)	*30*	*30*	*30*	*30*	*120*

Outline of proposal:

This package provides support for establishing new high value-add lithium industries across Australia. Funding and market incentives will focus on two priorities, mineral refining and battery manufacturing.

This package will provide targeted investment to support the commercialisation and scaling up of large processing and manufacturing facilities. The package aims to create at least one new refinery and two new large-scale battery plants.

An expert panel of industry leaders will be formed to advise Government on high-value industry ventures to support, and to provide on-going advice and facilitation for funded projects to ensure long-term success.

Strategic Policy Alignment:

The critical parts of advanced battery manufacturing can all be made in Australia. The Australian Trade and Investment Commission has identified that the current lack of advanced battery manufacturing is a critical gap in the Australian lithium supply chain.[6] Accelerating the uptake of home batteries is the key to establishing Australian battery manufacturing plants that can quickly scale up and generate high quality manufacturing jobs.

In turn, this growing market will generate demand for downstream lithium processing, boosting the business case for investing in new refinery plants. In line with the Commonwealth Government's Critical Minerals Strategy and a commitment to "*promoting investment in Australia's critical minerals sector and downstream processing*",[7] Australia should aim to capture between 15 to 25% of the anticipated $662 billion global lithium market growth by 2040. Targeted Government support now will unleash a global battery powerhouse that drives investment and jobs right across the value chain from mining, refining, making, and recycling.

Rationale:

Global energy storage is set to boom by 2040 and this represents a $662 billion investment opportunity.[8] Experts anticipate that Australia is one of only ten countries able to secure three-

[6] *Australian Battery Market Report 2020 (media summary)*, Sunwiz, April 2020.

[7] https://www.industry.gov.au/data-and-publications/australias-critical-minerals-strategy

[8] *Energy Storage Investments Boom As Battery Costs Halve in the Next Decade*, Bloomberg New Energy Finance, 31 July 2019, https://about.bnef.com/blog/energy-storage-investments-boom-battery-costs-halve-next-decade/, Accessed 3 May 2020.

quarters of this global market.[9] The global electric vehicle market alone is predicted to consume 2.7 million tonnes of lithium by 2025. For context, the world currently makes around half a million tonnes, and new lithium refining capacity currently planned for Australia will only double world supply to 1 million tonnes.[10]

Now is the time to assertively position Australia as the world's leading battery nation. Australia has all the pre-conditions to capture the full value of the battery supply chain: minerals, an excellent investment destination, outstanding industrial capacity, an attractive market for small and big scale batteries, world-class infrastructure, and proximity to Asia. But we are not doing enough to make sure that the full economic value of our resources benefits Australia. While we have outstanding reserves of lithium most of our activity is limited to mining and exporting. This is a problem because most of lithium's economic value is in refining, processing, and battery manufacturing. In 2017 Australian lithium realised $213 billion in the global market, but only 0.53% ($1.13 billion) of this wealth stayed in Australia.[11] Most of Australia's lithium (spodumene) is exported to China for processing. After that it is sent to Japan and Korea where it is transformed into battery packs, which are then imported to Australia and other countries.[12]

Implementation:

ARENA will deliver investment in battery commercialisation and scaling and will convene the expert panel of industry leaders to advise on funding allocation.

This package should be designed and delivered in partnership with the Future Battery Industries Cooperative Research Centre, the Chief Scientist, the Battery Stewardship Council, industry leaders and state and territory governments.

All investors, new market entrants and manufacturers set to benefit from federal government investment support and grant funding must demonstrate that their proposal:

- Supports local content procurement, to maximise the value of investment into regional economies;
- Complies with the National Battery Stewardship Scheme;
- Creates new job opportunities for Australians;
- Excellence in environmental management;
- Supports strong economic empowerment for Traditional Owners, including trade opportunities with Aboriginal owned enterprises and job opportunities.

Value for Money:

Scaling up lithium refining, processing and battery manufacturing will keep the high value parts of the battery supply chain in Australia. Increasing our lithium value capture from 0.53% to 25% would boost the annual economic value from $1 billion, to $54 billion.

[9] Ibid

[10] *A bubble or the next big thing,* resourceful, Issue 15, 15 October 2018.

[11] *The Lithium-Ion Battery Value Chain – New Economic Opportunities for Australia,* Australian Trade and Investment Commission, 2018.

[12] *The Lithium-Ion Battery Value Chain – New Economic Opportunities for Australia,* Australian Trade and Investment Commission, 2018.

Proposal 1.3

Proposal Title: *Battery Nation: Battery recycling infrastructure grant*

Affected Agency: Department of Infrastructure, Transport, Regional Development and Communications

Financial Implications: $120 million over three years

	2020-21	2021-22	2022-23	2023-24	Total
Battery recycling infrastructure grant ($m)	*60*	*40*	*20*	-	*120*

Outline of proposal:

This package proposes a three-year infrastructure grant program to increase domestic battery recycling infrastructure and processing. This is a key support package to ensure the success of the Battery Product Stewardship Scheme. For the battery recycling grant, it is recommended that a design of 25% federal funding, 25% state funding and 50% commercial funding be adopted.

This package will provide targeted investment to support the commercialisation and scaling up of large processing and manufacturing facilities. The package aims to create new battery recycling infrastructure that recycles 5,000 tonnes (25% of annual battery waste) within 5 years.

Strategic Policy Alignment:

The critical parts of advanced battery manufacturing can all be made in Australia. The Australian Trade and Investment Commission has identified that the current lack of advanced battery manufacturing is a critical gap in the Australian lithium supply chain.[13] Accelerating the uptake of home batteries is the key to establishing Australian battery manufacturing plants that can quickly scale up and generate high quality manufacturing jobs.

In turn, this growing market will generate demand for downstream lithium processing, boosting the business case for investing in new refinery plants. In line with the Commonwealth Government's Critical Minerals Strategy and a commitment to "*promoting investment in Australia's critical minerals sector and downstream processing*",[14] Australia should aim to capture between 15 to 25% of the anticipated $662 billion global lithium market growth by 2040. Targeted Government support now will unleash a global battery powerhouse that drives investment and jobs right across the value chain from mining, refining, making, and recycling.

Rationale:

Global energy storage is set to boom by 2040 and this represents a $662 billion investment opportunity.[15] Experts anticipate that Australia is one of only ten countries able to secure three-

[13] *Australian Battery Market Report 2020 (media summary)*, Sunwiz, April 2020.

[14] https://www.industry.gov.au/data-and-publications/australias-critical-minerals-strategy

[15] *Energy Storage Investments Boom As Battery Costs Halve in the Next Decade*, Bloomberg New Energy Finance, 31 July 2019, https://about.bnef.com/blog/energy-storage-investments-boom-battery-costs-halve-next-decade/, Accessed 3 May 2020.

quarters of this global market.[16] The global electric vehicle market alone is predicted to consume 2.7 million tonnes of lithium by 2025. For context, the world currently makes around half a million tonnes, and new lithium refining capacity currently planned for Australia will only double world supply to 1 million tonnes.[17]

The Battery Stewardship Council of Australia has developed an industry-led battery stewardship scheme, which will drive responsible management across the entire battery supply chain, importantly increasing recycling rates[18]. The scheme is currently awaiting approval from the A Australian Competition and Consumer Commission. There are positive developments in lithium refining and battery manufacturing, but they need to be scaled up and coordinated to ensure we build a competitive and world leading industry.

Implementation:

The Department of Industry, Science, Energy and Resources will administer the battery recycling grants.

This package should be designed and delivered in partnership with the Future Battery Industries Cooperative Research Centre, the Chief Scientist, the Battery Stewardship Council, industry leaders and state and territory governments.

All investors, new market entrants and manufacturers set to benefit from federal government grant funding must demonstrate that their proposal:

- Supports local content procurement, to maximise the value of investment into regional economies;
- Complies with the National Battery Stewardship Scheme;
- Creates new job opportunities for Australians;
- Excellence in environmental management;
- Supports strong economic empowerment for Traditional Owners, including trade opportunities with Aboriginal owned enterprises and job opportunities.

Value for Money:

Ramping up battery recycling will maximise the value of our lithium. CSIRO estimates that today's lack of battery recycling represents a lost economic opportunity of $813 million to $3 billion.[19]

[16] Ibid

[17] *A bubble or the next big thing,* resourceful, Issue 15, 15 October 2018.

[18] *Proposed Stewardship Scheme for Batteries*, Battery Stewardship Council, November 2020.

[19] *Lithium battery recycling in Australia; Current status and opportunities for developing a new industry,* CSIRO, April 2018.

Proposal 1.4

Proposal Title: *Battery Nation: Battery innovation*

Affected Agency: Commonwealth Science and Industrial Research Organisation (CSIRO)

Office of the Chief Scientist

Financial Implications: $20 million over four years

	2020-21	2021-22	2022-23	2023-24	Total
CSIRO					
CSIRO new battery research projects ($m)	5	5	5	5	20
Office of the Chief Scientist					
National battery strategy ($m)	2	2	-	-	4

Outline of proposal:

The package boosts CSIRO's capacity to deliver research and commercialisation of new battery technologies. It also funds the Chief Scientist to develop a national battery strategy.

The national battery strategy should consider:

- how to maximise Australian lithium value capture across the full supply chain
- the target scale and size of the industry, including full investment, jobs, and export potential
- a series of incentives to attract new metal refineries, small- and large-scale battery manufacturers and recyclers to Australia.

Strategic Policy Alignment:

This package will ensure Australia is a global leader in advanced manufacturing and battery innovation though developing a national battery strategy and supporting innovation across the battery supply chain.

Rationale:

The Federal Government's recently announced *National Hydrogen Strategy* and aligned funding packages have excited industry and generated investor interest. Australia can also be at the forefront of battery storage, exporting its batteries and expertise to the world. Exciting innovations include light-weighting batteries to power electric buses that hold more passengers, electric planes, and electric road trains, and, graphene batteries in a car which could be refuelled while stopped at traffic lights.[20] Developing a national battery strategy and supporting Australian innovation will position us at the forefront of global battery economy.

Implementation:

[20] *A graphene breakthrough hints at the future of battery power*, Wired UK, 16 August 2018, Accessed at https://www.wired.co.uk/article/graphene-batteries-supercapacitors on 2 May 2020.

The CSIRO will deliver new battery research projects.

The COAG Energy Council will commission the strategy, which will be delivered by the Chief Scientist.

Both programs should be delivered in partnership with the Future Battery Industries Cooperative Research Centre.

Value for Money:

The CSIRO has a long history of investment in the development of battery technology, including successful launch for the commercialisation for patented intellectual property technology. Further investment in this research has significant ongoing opportunity for the development of new business opportunities in Australia.

In addition, this package will support long term job creation highlighted in Proposal 1.2 by ensuring the right market incentives are in place to grow Australia's manufacturing and battery export potential.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

Delivering Economic Stimulus Through Renewables

Proposal 2: Local Solar

New Policy Proposal by WWF Australia

Local Solar will cut the cost of energy for thousands of community organisations, freeing up funds to spend on core services. Kindergartens, country fire stations, Aboriginal communities, public halls, sports clubs, schools, hospitals, and Councils will all benefit from the biggest local solar roll-out Australia has ever seen.

- $500 million in Government investment, with $400 million in low cost finance.
- Up to 22,000 community and public buildings fitted with solar, cutting energy costs right around Australia.
- Up to 5,000 jobs created.
- Potential to leverage up to $1 billion in community and private investment.

The *Local Solar* program aims are to:

- Create 5,000 jobs;
- Reduce power bills for community organisations and state and local governments delivering public services.

Financial Implications: $500 million over two years plus $400 million in low cost finance

		2020-21	2021-22	2022-23	2023-24	Total
Cost of Proposal ($m)		*345*	*167*	4	-7	*509*
2.1	Community solar grant extension ($m)	*280*	*120*	-	-	*400*
2.2a	Large rooftop solar and solar farms – grants ($m)	*60*	*40*	-	-	*100*
2.2b	Large rooftop solar and solar farms – loans ($m)	*5*	*7*	4	-7	*9*

Proposal 2.1

Proposal Title: *Local Solar: Community solar grant extension*

Affected Agency: Department of Industry, Science, Energy and Resources

Financial Implications: $400 million over two years

	2020-21	2021-22	2022-23	2023-24	Total
Community solar grant extension ($m)	*280*	*120*	-	-	*400*

Outline of proposal:

This package provides funding from $1,000 to $20,000 to not for profit groups to install solar panels on the roofs of community buildings. While the program can fund up to 100% of the project costs, we recommend that the grant round encourages and prioritises applications that install medium size systems (around 30kw) and contribute funding to the project.

The package also sets aside $70 million to ensure remote Aboriginal and Torres Strait communities benefit from this grant round. This will include resourcing a steering group to support overall program design and outreach. The funding will cover feasibility, capacity building and capital works for Aboriginal and Torres Strait community solar projects.

Strategic Policy Alignment:

This package extends and scales the current *Energy Efficient Communities Program – Community Energy Efficiency and Solar Grants 2020*.

The current *Solar Grants* program offers funding to install two energy efficient projects in each Federal electorate. The available grant of $12,500 for up to 100% of costs could be expected install a small, 10kw system. By leveraging this existing program Government could quickly deploy 130 solar projects in every electorate - big enough to power a small community building such as a kindergarten, community hall, rural fire station or library.

Rationale:

Solar is also a great economic stimulator. Last year, roof-top solar systems accounted for 13,070 jobs, while large-scale solar accounted for 4,740 jobs.[1] Solar projects can be delivered quickly, with systems under 100 kw delivered in four to 5 months, and megawatt projects delivered in eight to ten months.[2] Local solar projects also generate demand in the local economy, with the Reserve Bank of Australia identifying spill-over top domestic firms, citing some contracts suggesting local content

[1] *4631.0 – Employment in Renewable Energy Activities, Australia 2018-19*, Australian Bureau of Statistics, 6 April 2020, https://www.abs.gov.au/ausstats/abs@.nsf/mf/4631.0, Accessed 13 May 2020.

[2] *Smart energy webinar: Solar and storage on all public buildings*, Smart Energy Council (speaker: Landon Kahn, Todae Solar), 1 May 2020, https://smartenergy.org.au/solar-storage-webinar-series#PublicBldngs , Accessed 13 May 2020.

accounts for 25 - 40% of total costs.[3] Installing local solar right across Australia will bring the benefits of solar to local communities and create much needed jobs over the next two years.

Not-for-profit community organisations are the backbone of Australia, bringing Australians together to form communities that look out for each other, while offering vital services.

The Not-for-Profit service providers that are set to benefit from this program include:

- Children's services, such as Kindergartens, day-care, maternal and child health centres, playgroups, Scouts, and toy libraries
- Religious organisations
- Community support, such as Senior Citizen Centres, women's support services, Men's sheds, multicultural services and community and neighbourhood houses
- Cultural services, such as community galleries, University of the Third Age, libraries, dance schools and theatre groups
- RSL and other service clubs
- Country fire stations
- Sports clubs like surf lifesaving clubs, netball, football and cricket clubs, community gyms
- Environment groups, like conservation volunteers and indigenous plant nurseries

Implementation:

This package will be delivered by establishing a special new funding round of the *Energy Efficient Communities Program – Community Energy Efficiency and Solar Grants 2020* (administered by the Department of Industry, Science, Energy and Resources). There may be opportunities to refine the grant program design to reduce the administration burden for grant seekers and grantees based on feedback from the current community grant round (closing 18 May 2020).

The Department of Industry, Science, Energy and Resources, should seek the advice of the National Indigenous Australians Agency in establishing the steering group and program design and delivery. The steering group will also work with Aboriginal and Torres Strait communities to design a longer-term remote solar program that incorporates the knowledge and experience gathered during this grant round.

Value for Money:

This package has the potential to generate up to $390 million in community investment. The initiative will create up to 3,000 installer jobs for tradespeople spread across ever electorate in the nation.

Solar cuts the cost of energy. For community facilities that operate during the day, like kindergartens, health care centres, country fire authorities and clubs, solar can make a big difference to the bottom line, freeing up funds for core activities. A total of 160kW of solar photovoltaic systems installed across six Aboriginal communities in the west Kimberley will save each community up to $40,000 a year.[4]

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[3] *Renewable Energy Investment in Australia*, Reserve Bank of Australia, 19 March 2020, https://www.rba.gov.au/publications/bulletin/2020/mar/renewable-energy-investment-in-australia.html, Accessed 15 May 2020.

[4] *Harnessing the sun in remote communities*, https://horizonpower.com.au/our-community/projevcts/solar-incentives-scheme/, Accessed 13 May 2020.

Small megawatt solar farms can reduce the power bills of local governments. The $8 million Newcastle solar farm makes good use of a closed landfill and will save Council around $9 million over its 25-year lifespan.[5]

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

[5] *City powers into sustainable new era*, City of Newcastle, 4 December 2020, https://www.newcastle.nsw.gov.au/Council?News?Latest-News/City-powers-into-sustainable-new-era, Accessed 13 May 2020.

Proposal 2.2

Proposal Title: *Local Solar: Large rooftop solar and solar farms*

Affected Agencies: Department of Industry, Science, Energy and Resources

Clean Energy Finance Corporation (CEFC)

Financial Implications: Total Budget Impact - $100 million over two years.

In addition, it is proposed to provide $400 million in finance through the Clean Energy Finance Corporation's Sustainable Cities Investment Program.

	2020-21	2021-22	2022-23	2023-24	Total
Department of Industry, Science, Energy and Resources					
Large rooftop solar and solar farms – grants ($m)	*60*	*40*	-	-	*100*
Clean Energy Finance Corporation					
Large rooftop solar and solar farms – loans ($m)[6]	*5*	*7*	4	-7	*9*

Outline of proposal:

This package will incentivise landowners and developers to install larger scale local solar. We have assumed the package would result in 2,000 large (100kw) roof systems and 180 small (1- 15 MW) solar farms. Up to $100 million in grant funding will be offered, covering up to 10% of a project's development and capital cost. The grant design will ensure developers and building owners have maximum flexibility to deliver a business model that works for their community. Solar systems can be developed and owned by the property owner or can be developed and owned by a third party.

A purpose-built asset fund will be established by the CEFC to offer a competitive financing option. It is assumed around half of all projects would access this option.

Strategic Policy Alignment:

It is recommended that regions hardest hit by COVID19 shutdowns be prioritised for funding and finance. Organisations that provide vital services can access this large solar program, including public and privately owned:

- Hospitals and health centres
- Schools, TAFE and Tertiary institutions
- Retirement centres
- Train, tram, and bus depots
- Retail centres
- Large sports centres like swimming pools and gyms
- Councils

[6] This costing is based on a similar proposal costed by the Parliamentary Budget Office prior to the 2019 election. It assumes $100 million in loans allocated each year. The costings are rounded to the nearest million. https://www.aph.gov.au/~/media/EAC5EF4A839240C6B45B441A9505FE52.ashx Accessed on 4 August 2020

Rationale:

Important community assets like schools, hospitals, closed landfills, car-parks, shopping centres and retail can be transformed into solar farms, providing competitively priced energy where it is needed and avoiding short-term grid congestion issues.

Implementation:

This package will be administered by the Department of Industry, Science, Energy and Resources, who will administer the grant funding, and work with the CEFC to engage a finance partner to deliver the purpose-built asset fund.

To be eligible for funding, participants:

- Must be delivering either a commercial rooftop solar array greater than 100kWs or a solar farm between 1-15MWs;
- Must be a state, local government or not-for-profit in ownership of the asset;
- Can be a private developer that demonstrates they have:
    - the approval of government and/or not-for-profit asset owner, and/or
    - secured the partnership of a major community leader (for example, a Council or Chamber of Commerce), and that the energy offtake will be offered at a competitive rate for use by government and/or not-for-profit asset owners
- Must demonstrate that the project will generate direct local jobs and indirect jobs through local procurement;
- must demonstrate compliance with regulatory requirements and use installers certified by the Clean Energy Council.

Value for Money:

The initiative will create up to 2,000 construction jobs and reduce power bills for community organisations and state and local governments delivering public services.

This program has the potential to unlock $8 billion in community and private investment. If the asset fund is 100% subscribed, around $400 million in private/state and local government investment can be unlocked. The grant has the potential of incentivising projects that would add an additional $400 million in investment.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

Delivering Economic Stimulus Through Renewables

Proposal 3: Electric Bus Revolution

New Policy Proposal by WWF Australia

Electric Bus Revolution will fast-track electric buses in our cities and build a national manufacturing sector that supplies electric buses to the world.

- $240 million Government investment over three years that puts 500 new, Australian made buses on the road.
- Leverages $233 million of industry investment in electric buses and depots.
- Grant funding puts 500 new electric buses on the road and builds associated charging infrastructure.
- More than doubles Australia's existing bus manufacturing workforce of 10,000 people by 2030 with a two-pronged approach – a grant program and innovation fund - to create:
    - 3,000 new jobs by 2023 through public transport bus procurement and depot upgrades;
    - 8,000 new jobs by 2030 through kickstarting an e-bus export industry.

The Electric Bus program aims are:

- More than double Australia's existing bus manufacturing workforce, reaching over 20,000 by 2030;
- Deploy at least 500 Australian made electric buses across our major cities within three years;
- Develop an electric bus manufacturing strategy that aims to supply 5% of anticipated global electric bus sales by 2030.

Financial Implications: $240 million over three years

		2020-21	2021-22	2022-23	2023-24	Total
Cost of Proposal ($m)		*105*	*95*	40	-	*240*
3.1a	Bus Grant Program ($m)	*80*	*80*	*40*	-	*200*
3.1b	E-Bus Strategy ($m)	3	2	-	-	5
3.2	Electric bus innovation fund ($m)	*20*	*15*	-	-	*35*

Proposal 3.1:

Proposal Title: *Electric Bus Revolution: Electric Bus Grant Program and E-Bus Strategy*

Affected Agency: Department of Infrastructure, Transport, Regional Development and Communications

Financial Implications: $205 million over three years

	2020-21	2021-22	2022-23	2023-24	Total
Bus Grant Program ($m)	*80*	*80*	*40*	-	*200*
E-Bus Strategy ($m)	3	2	-	-	5

Outline of proposal:

This package allocates $205 million in grant funding over three years.

Electric Bus Grant Program

The Electric Bus Grant Program will provide $200 million in grants to public transport authorities to incentivise them to go to market for service contracts that use Australian made electric buses. Funding will support early uptake of up to 500 electric buses, contributing to the current cost difference between diesel and electric buses. Funding can also be used to support depot upgrades and charging equipment.

E-Bus Strategy

$5 million will be allocated to develop a national e-bus manufacturing strategy and implementation plan. Electric buses are proven technologies, but to ensure Australia gets the maximum value from electrifying buses and building new manufacturing industries a strategy and coordinated approach is needed.

Strategic Policy Alignment:

This has the potential to create nearly 3,000 jobs:

- 300 new manufacturing jobs, by establishing three new electric chassis manufacturing plants
- 1,700 manufacturing jobs in bus body manufacturing
- 900 construction jobs to build electric charging depots.

It could also create at least 50 construction jobs created to construct 40MW solar or wind farms to power the 500 buses.

Bus manufacturing is an important Australian industry with a workforce of around 10,000 people.[1] There is a need to support industry to ensure the switch to electric buses maintains and grows these jobs. Bus industry experts advise that strong policy support for electric buses combined with procurement will incentivise local manufacturing and assembly of electric buses in Australia.

[1] *The Economy and the Bus Industry*, OzeBus, https://www.bic.asn.au/information-for-moving-people/economy-and-the-bus-industry/ Accessed on 29 April 2020.

Rationale:

While global demand for electric buses is growing, markets outside of China are still small. Transitioning Australia's bus manufacturing sector to electric bus manufacturing will help ensure Australia is shovel ready to sell high quality buses to the world when the expected price tipping point is achieved in 2025.

The drivers for making the switch to e-buses include:

- *Healthier cities* – diesel buses release harmful pollutants. New York City is transitioning its fleet of 5,700 buses to electric, and it is estimated that each electric bus will save $150,000 per year in reduced health care costs.[2]
- *Cheaper to run* – electric buses have much lower operating costs (based on total cost ownership) than conventional buses.[3] Even the most expensive 350 kWh electric bus can realise around $130,000 in savings over a 15-year lifetime.[4]
- *Cost parity* – By 2030 it is projected that electric buses will reach upfront cost parity with diesel buses. Accelerated demand could bring this forward to 2025.[5]

Today, there are around 425,000 electric buses worldwide. Bloomberg New Energy Finance projects that by 2040, 81% of all municipal (public transport) bus sales will be electric.[6] Twenty-six global cities have committed to only buy electric buses by 2025 –a procurement potential of 80,000 buses.[7]

In Australia, NSW has committed to a fully electric bus fleet, is currently trialling e-buses on four busy routes and is set to expand this with a recent call for expressions of interest to run more trials as part of their plan for a wider switch. Brisbane City Council recently entered into contract for 60 electric buses, and the Victorian and ACT Governments each are trialling an e-bus with success.

Nexport currently imports electric bus chassis. They are working to set up an electric chassis manufacturing plant in Australia that would create 100 jobs but need a minimum order of 150 buses (delivered over three years) to make it viable.[8] Transit Systems operates 830 diesel and CNG buses in Sydney. Switching just 10% of Sydney's fleet would be enough to attract commercial opportunities

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[2] ClimateWorks Australia submission to inquiry into Electric buses in regional and metropolitan public transport networks in NSW, ClimateWorks Australia, 19 December 2019, https://www.climateworksaustralia.org/wp-content/uploads/2020/01/ClimateWorks-sabmission-NSW-electric-bus-inquiry.pdf, Accessed on 28 April 2020.

[3] *Electric Buses in Cities: Driving Towards Cleaners Air and Lower CO2*, Bloomberg New Energy Finance, 10 April 2018, https://about.bnef.com/blog/electric-buses-cities-driving-towards-cleaner-air-lower-co2/ Accessed on 29 April 2020.

[4] Ibid

[5] Ibid

[6] *Electric Transport Revolution Set to Spread Rapidly Into Light and Medium Commercial Vehicle Market,* Bloomberg New Energy Finance, 15 May 2019, https://www.about.bnef/blog/electric-transport-revolution-set-spread-rapidly-light-medium-commercial-vehicle-market/ Accessed 28 April 2020.

[7] *Zero Emission Vehicles*, C40 CITIES, c40.org, Accessed on 28 April 2020.

[8] *Nexport submission to inquiry into Electric buses in regional and metropolitan public transport networks in NSW (submission 26),* Nextport, 20 December 2019, https://www.parliament.nsw.gov.au/ladocs/submissions/66990/Submission%20-%2026.pdf Accessed on 29 April 2020.

for bus manufacturers and equipment suppliers.[9] Making electric buses for Australian cities is just the first step to growing manufacturing jobs.

Australia can leverage its existing industry to scale-up and provide electric buses for the global market. If Australia aimed to supply just 5% of the anticipated global market by 2025, more than 8,000 new jobs could be created.

Implementation:

Electric Bus Grant Program

The grant program will be administered by the Department of Infrastructure, Transport, Regional Development and Communications. Two funding rounds will be offered over 2 years, which will provide flexibility for different bus service contracts and end dates. Funding rounds will also be allocated proportionality across states and territories.

To win grant funding, state and local government public transport authorities must:

- Go to market for at least 50 new electric buses per contract;
- Include local content and manufacturing requirements in their tenders;
- Demonstrate that mechanisms will be put in place to run the buses with renewable electricity;
- Demonstrate that state bus service contracts have been updated to reflect new technologies;
- Demonstrate they have been partnering with the bus operators to design a bus network with the capability of accommodating new technologies and service practices;
- Demonstrate how they will provide practical support for investors and commercial operators looking to establish local manufacturing operations;
- Accelerate bus replacement program, bringing the contract life of service buses down to 15 years (from current 25 years) and prioritising the replacement of high floor buses (elderly and mobility impaired people cannot use these services).

E-Bus Strategy

The e-bus strategy will be delivered by the Transport and Infrastructure Council and will nominate a state to lead the strategy on behalf of the Council. It will focus on:

- Designing the retrofit of urban bus networks to fully electric services, exploring how proven, advanced technologies can be best adopted and adapted to existing bus networks;
- Bus and battery innovation, manufacturing, and deployment, to put Australia at the forefront of technology and advanced manufacturing across the entire bus supply chain;

[9] *Transit Systems submission to inquiry into Electric buses in regional and metropolitan public transport networks in NSW (submission 11),* Transit Systems, 19 December 2019, https://www.parliament.nsw.gov.au/ladocs/submissions/66975/Submission%20-%2026.pdf Accessed on 29 April 2020.

- Vehicle to grid optimisation, to ensure electric bus roll-out provides strategic grid benefits such as demand management and storage.

Value for Money:

An investment of $200 million of federal government funding will leverage an additional $233 million investment in buses and charging depots by public transit authorities and commercial operators. This investment will also reduce operating costs for public transport operators and contribute to better air quality and amenity for our cities.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

Proposal 3.2:

Proposal Title: *Electric Bus Revolution: Electric bus innovation fund*

Affected Agency: Australian Renewable Energy Agency

Financial Implications: $35 million over two years

	2020-21	2021-22	2022-23	2023-24	Total
Electric bus innovation fund ($m)	*20*	*15*	-	-	*35*

Outline of proposal:
This package will invest $35 million over two years in zero emission innovation and investment. This innovation fund will support bus operators and manufacturers to commercialise Australian e-bus innovation and to strategically scale up manufacturing to target the international market.

Strategic Policy Alignment:

This will build industry capacity to make and export electric buses, targeting 4,000 buses and 8,000 new jobs by 2030. It is designed to complement the investment in the *Electric Bus Grants Program* to stimulate innovation in the bus manufacturing industry to be export ready for the expected global expansion of demand by 2025.

Rationale:

Electric buses are proven technologies, but to ensure Australia gets the maximum value from electrifying buses and building new manufacturing industries alongside investing in domestic procurement and an industry strategy (outlined in Proposal 3.1) there needs to be ongoing industry innovation.

The fund is modelled on the New Zealand *Low Emission Vehicle Contestable Fund,*[10] where key objectives are to:

- Increase the supply and variety of electric and other zero emission buses;
- Improve the availability of charging and servicing infrastructure;
- Increase demand for low emission vehicles;
- Develop innovative products and systems for vehicles.

Implementation:

The Electric Bus Innovation Fund will be administered by ARENA.

Industry funding recipients must demonstrate how their project will create jobs and significantly upscale bus manufacturing.

[10] https://www.eeca.govt.nz/funding-and-support/low-emission-vehicles-contestable-fund/ Accessed on 31 July 2020.

Value for Money:

This investment will also reduce operating costs for public transport operators and contribute to better air quality and amenity for our cities. $35 million is a modest investment to stimulate innovation in an industry which is seeing growth in domestic demand and significant export potential which could support 8,000 new manufacturing jobs by 2030.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

Delivering Economic Stimulus Through Renewables

Proposal 4: Modernise Critical Manufacturing

New Policy Proposal by WWF Australia

Modernising Critical Manufacturing will boost the competitiveness and resilience of our critical manufacturing sector by slashing costs and creating new jobs. The program will position Australian manufacturers as global leaders in the renewable, advanced manufacturing revolution.

- $520 million Commonwealth investment over three years
- $1 billion of industry investment in energy modernisation
- More than 22,000 jobs created
- Energy costs of manufacturers slashed through tax investment incentives, grant funding for critical industries, and increasing the energy knowledge and capabilities of manufacturers.

The *Modernising Critical Manufacturing* program aims are to:

- Significantly improve the energy productivity of Australian manufacturers, reducing their costs, boosting profits, and creating jobs;
- Build domestic manufacturing capacity and resilience across supply chains;
- Accelerate the uptake of clean technology and renewable energy across the manufacturing sector;
- Strategically position Australia as a global clean energy manufacturing hub that leverages climate aligned investment.

This program will invest $520 million to protect our existing 914,000 jobs in manufacturing and create 22,000 more.

Total Financial Implications: $520 million over three years

		2020-21	2021-22	2022-23	2023-24	Total
Cost of Proposal ($m)		*400*	*76*	44	-	*20*
4.1	Large rooftop solar and solar farms ($m)	*110*	*66*	*44*	-	*220*
4.2	Asset write-offs to support energy upgrade investment ($m)	-	*280*	-	-	*280*
4.3	Capacity building programs ($m)	*8*	*8*	-	-	*16*
4.4	Energy productivity strategy ($m)	*2*	*2*	-	-	*4*

Proposal 4.1

Proposal Title: *Modernising critical manufacturing: Asset write-offs to support energy upgrade investment*

Affected Agency: Australian Taxation Office (ATO)

Financial Implications: $280 million over one year

	2020-21	2021-22	2022-23	2023-24	Total
Asset write-offs to support energy upgrade investment ($m)	-	*280*	-	-	*280*

Outline of proposal:

This proposal is to extend the COVID-19 instant asset write-off threshold of $150,000 (for an annual turnover of less than $500 million) for through to 2021-22 targeted at the purchase energy modernisation equipment, for example, energy productivity measures, electrical heating technologies like industrial heat pumps, solar panels and battery storage. Instant cash write-offs deliver immediate investment support for businesses.

Strategic Policy Alignment:

Write-offs are streamlined, easy to access and significantly reduce the time and administrative burden of grant funding support. Instant asset write-offs provide quick and uncomplicated investment support for businesses, and the current program has been warmly welcomed by peak groups including the Australian Industry Group and the Australian Chamber of Commerce and Industry. This package also complements the Federal Government's generous *Backing Business Investment* initiative.

Rationale:

There are proven and commercialised energy efficiency and fuel switching technologies, but the capital investment cost can be a disincentive to investment. Extending the instant asset write-off program for energy upgrades will support businesses to invest in new equipment that will deliver immediate cost savings.

Implementation:

Instant assets write-offs will be delivered through the 2021-22 budget process by the ATO.

To be eligible for instant tax write-offs, businesses need to provide evidence of purchasing energy modernisation equipment. To ensure clarity, an approved list of equipment should be prepared and published by the ATO.

The Australian Industry Group has developed a proposed list including:

- Electrification of processes :
    - Heat pumps;
    - Electric induction furnaces;
    - Renewable heat such as solar thermal.
- Energy management systems:
    - Sub metering and data analysis;

- Data acquisition system integration;
- Technology that enables demand response.

Value for Money:

It is assumed this package would realise $1 billion in industry investment, saving businesses $280 million.[1]

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

[1] Extending the $700 million net cost (for approximately one quarter) to an entire year would be a net cost of $2.8 Billion. This assumes that 10% of the uptake of the Covid19 $150,000 instant write off will be for energy equipment. Therefore, the budget impact of offering $150,000 instant asset write-offs for energy equipment is assumed to be 10% of $2.8 Billion. See http://treasury.gov.au/sites/default/files/2020-03/Fact_sheet-Support_for_business_investment.pdf

Proposal 4.2

Proposal Title: *Modernising critical manufacturing: Energy fit program for critical supply chains*

Affected Agency: Department of Industry, Science, Energy and Resources

Financial Implications: $220 million over three years

	2020-21	2021-22	2022-23	2023-24	Total
Energy fit program for critical supply chains ($m)	*110*	*66*	*44*	-	*220*

Outline of proposal:

This investment will provide grants for up to 1,000 manufacturers in industries identified by the Government as critical for sovereign industrial capability. The grants will support manufacturers to modernise energy processes. Grant recipients can access grant funding for capital upgrades that increases energy productivity and fuel switches to renewable electricity (for example, industrial heat pumps, refrigeration upgrades, solar and battery storage, waste avoidance and recovery to reduce energy costs associated with waste). Grant recipients can use grant funds for developmental costs, installation of equipment and associated staff training. The program will also fund program leaders and outreach officers to ensure this national building investment is strategically deployed to achieve long-term growth and resilience of these industries. The grant program can be matched by innovative finance options, such as the Sustainable Finance Fund (underwritten by Bank Australia) that provides low cost, long-term finance for environmental and building upgrade projects.[2]

Strategic Policy Alignment:

COVID-19 has highlighted the risks of international interdependence across supply chains. The Australian Government has signalled plans for increasing Australia's economic sovereignty, and Australian businesses are forecast to increasingly place greater value on domestically manufactured production inputs across all supply chains. Ensuring production output in these critical industries are matched with energy upgrades and fuel switching will maximise the productivity and resilience across supply chains.

Rationale:

Building energy productivity and renewable energy into expanded manufacturing for critical supplies - like food and pharmaceuticals - will build an energy fit supply chain that cuts energy costs, freeing up funds for innovation and job creation. Supporting targeted, strategic sectors over the long-term will deliver productivity gains across an entire national supply chain as the lessons learnt, user experience with energy fit processes and supply of equipment is mainstreamed across an entire sector (and not limited to sporadic case studies). The Federal Government's recent support for the newly established Reliable Affordable Clean Energy for 2030 Cooperative Research Centre (RACE for 2030 CRC) provides the perfect catalyst for this national building initiative.

[2] See sustainableaustraliafund.com.au

"…it is so important that we work together with industry and researchers to deploy the right technology when and where it is needed for cheaper bills and lower emissions."

The Hon Angus Taylor,
Minister for Minister for Energy and Emissions Reduction
Launch of RACE for 2030 CRC[3]

Implementation:

The Department of Industry, Science, Energy and Resources' successful *Modernising Manufacturing Fund* can be extended to deliver the Energy Fit program.

To be considered for a grant, businesses will need to demonstrate that the investment will increase energy productivity and lead to job creation. Businesses must also demonstrate that they will prioritise local procurement of equipment, where available.

Energy transformation outcomes and outputs of the grant should be co-designed with leaders of the nominated critical industries, energy productivity experts and peak groups, and the RACE for 2030 CRC. Slight adjustments to co-funding requirements and milestone payments may be needed to ensure grant funding can unlock private investment. This adjustment should be developed in close consultation with industry peak groups. The implementation should be steered by an expert advisory committee. It should also be coupled with a supply chain capacity program to ensure the grants achieve long-term gains in energy productivity.

Value for Money:

Levering existing program grant infrastructure will save administrative costs and time. Following the recent *Modernising Manufacturing Fund* grant round structure, small projects could receive 50% of project costs up to $100,000, and large projects between $100,000 and $1 million could access funding for 25% of project costs.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

[3] *Race for 2030 Funding Announced: Supporting affordable clean energy*, 22 April 2020, racefor2030.net.au, Accessed 6 May 2020

Proposal 4.3

Proposal Title: *Modernising Critical Manufacturing: Industry energy knowledge and capacity building*

Affected Agency: Department of Industry, Science, Energy and Resources

Financial Implications: $20 million over two years

	2020-21	2021-22	2022-23	2023-24	Total
Capacity building programs ($m)	*8*	*8*	-	-	*16*
Manufacturing energy productivity strategy ($m)	*2*	*2*	-	-	*4*

Outline of proposal:

This package will scale the leadership and capacity of state and territory governments, industry groups and other training providers to deliver knowledge and capacity building programs for industry. Entities seeking funding will be encouraged to put forward program proposals that can quickly leverage existing program infrastructure and industry relationships to ensure programs can add value to businesses in the short-term.

The package also provides funding to develop a national strategy for increasing the energy literacy of manufacturers. This is an essential precondition for Australia to move from being the most energy inefficient, to one of the most competitive and productive sectors in the world.

Strategic Policy Alignment:

The doubling of energy prices since 2014 has made energy use and procurement a complex and strategic business decision. Manufacturers (from executives, workers, engineering consultants to electricians and plumbers) don't always have all the knowledge they need to transform energy use. They are also time poor, making it a challenge to invest in new energy skills and capacity building.

The Government's recent JobMaker program includes a strong focus on skills development and driving greater alignment of skill with business and industry needs. This initiative aligns with the skill required for a modern manufacturing sector.

Rationale:

Successful state government programs show that energy mentoring and capacity building can make a positive difference for businesses.

Existing initiatives that could be scaled include:

- Capacity building projects like NSW's *Sustainable Advantage*[4] program and the Australian Industry Group's *Energy efficiency mentoring program.*[5]

[4] *Sustainable Advantage*, NSW Department of Planning, Industry and Environment, http://www.environment.nsw.gov.au/sustainabilityadvantage/, accessed on 8 May 2020.
[5] *Energy Efficiency Capability Program*, The Australian Industry Group, http//:www.aigroup.com.au/policy-and-research/businesspolicy/energy/energy-efficiency-capability-program/ Accessed on 8 May 2020.

- Circular economy programs that reduce energy via recycling, like the ASPIRE program that uses an online marketplace to match businesses with potential remanufacturer, purchases or recyclers of waste materials.[6]
- Learning and networking events, such as those convened by the Australian Alliance for Energy Productivity, industry groups like Diary Australia and the Energy Efficiency Council.
- Developing and delivering TAFE programs for energy efficiency and electrical heating technology, like the Victorian *Advanced Diploma of Engineering* Technology[7]and the Certificate IV in *Energy Management and Control*.

Implementation:

The funding opportunity for capacity building programs will be administered by the Federal Department of Industry, Science, Energy and Resources, who will call for proposals and allocate program funding to providers.

The energy productivity strategy will be led by the Department of Industry, Science, Energy and Resources in partnership with the Energy Efficiency Council, Australian Industry Group, RACE for 2030 CRC, State and Territories, and other industry peak groups.

Program providers must be able to demonstrate that their proposals:

- Leverages existing program infrastructure, capabilities, and relationships, and can be scaled and delivered quickly;
- Will involve business and industry groups to ensure content and delivery will add value for businesses;
- Will use energy experts that are suitably experienced and qualified (for example, are certified to deliver energy audits).

Value for Money:

Supporting state and territory governments and peak groups to expand their capacity building programs will quickly add value for manufacturers by leveraging existing relationships, program infrastructure and aligned grants. The NSW Sustainable Advantage program has engaged 500 businesses, and their combined actions are saving $95 million every year.[8]

There is also the opportunity to deliver sector-wide, long-term energy capacity by partnering with peak groups to develop and deliver a strategic reform project that lifts the energy productivity of Australian manufacturers.

[6] *ASPIRE*, http://www.aspiresme.com, Accessed 6 May 2020.
[7] *22478VIC Diploma of Engineering Technology and 22479VIC Advanced Diploma of Engineering Technology*, Victorian Department of Education and Training, 2018.
[8] *Sustainable Advantage*, NSW Department of Planning, Industry and Environment, https://www.environment.nsw.gov.au/sustainabilityadvantage/, Accessed 5 May 2020.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.

Delivering Economic Stimulus Through Renewables

Proposal 5: Accelerating Renewable Hydrogen

New Policy Proposal by WWF Australia

Accelerating Renewable Hydrogen will increase Australian fuel security, increase energy reliability, and position Australia at the forefront of an expanding global hydrogen market, capitalising on our world-leading renewable resources.

- $225 million in Commonwealth investment over three years to unlock short-term renewable hydrogen jobs and opportunities;
- This will leverage $731 million in private sector investment over two years;
- At least 1200 jobs created;
- Accelerating Renewable Hydrogen would be delivered by the Australian Renewable Energy Agency (ARENA).

Proposal Title: *Accelerating Renewable Hydrogen*

Affected Agency: Australian Renewable Energy Agency (ARENA)

Financial Implications: $225 million over three years

		2020-21	2021-22	2022-23	2023-24	Total
Cost of Proposal ($m)		*400*	*76*	44	-	*20*
5a	Renewable hydrogen for trucking ($m)	*12.5*	*12.5*	-	-	*25*
5b	Establishing renewable hydrogen hubs ($m)	40	80	80	-	200

Outline of proposal:

The *Accelerating Renewable Hydrogen* program aims are to:

- Unlock demand for renewable hydrogen
- Accelerate renewable hydrogen down the cost curve (below $2/kg)
- Position Australia as a global leader in sectors such as green steel, hydrogen exports and low-carbon shipping
- Ensure Australian businesses are well positioned to benefit from a global renewable hydrogen industry
- Upskill Australia's renewable hydrogen workforce.

Renewable hydrogen for trucking

The Renewable Hydrogen for Trucking program would provide $25 million in matched grants through ARENA for mining and trucking companies for renewable hydrogen powered mining truck and on-road truck demonstration projects. This will create jobs in the construction of the hydrogen

production facilities, renewable generation and the retooling or assembly of hydrogen trucks in Australia.

This project in turn would help kick-start a renewable hydrogen trucking industry in Australia and decrease our reliance on diesel fuel imports which currently pose a threat to fuel security.

Establishing renewable hydrogen hubs

This proposal would establishment of a $200 million Renewable Hydrogen Hub seed fund over two years. This would be used to take renewable hydrogen projects from feasibility to implementation and in the process use these projects as anchor projects for a Renewable Hydrogen Hub.

Funding would also be provided for targeted training and skills development in the likely locations of the Hubs.

This Renewable Hydrogen Hub fund should work to leverage maximum impact by funding synergistically with state government hydrogen programs.

Strategic Policy Alignment:

Due to the work already delivered by ARENA and the CEFC there are several advance development projects in Australia. These can be converted into near term investment opportunities. Specifically, Australia must unlock short-term demand for renewable hydrogen, helping to accelerate it down the cost curve.

Based on a market sounding it is estimated that at least 1,200 jobs will be created in the construction of hydrogen production facilities and installation of electrolysers, the construction of associated renewable generation and the retooling of existing industries such as mining trucks to use renewable hydrogen. Where new industry is attracted to a renewable hydrogen hub created through this program, more jobs will be unlocked.

Rationale:

As the world moves to a low-carbon future, countries with the best renewable resources have a comparative advantage. Renewable hydrogen is a critical energy pathway for unlocking this comparative advantage.

Australia must also position itself as a global leader in the most promising long-term market applications for renewable hydrogen, namely those traditionally 'hard-to-decarbonise' sectors such as steel production and shipping.

A recent report by Bloomberg New Energy Finance (BNEF) found that if the world is to keep warming to below 1.5 degrees, renewable hydrogen will be needed to meet between 7% and 24% of global energy needs by 2050. This percentage could be higher if all the unlikely to electrify sectors in the economy substitute fossil fuels with renewable hydrogen.

Under the Bloomberg New Energy Finance strong policy scenario an additional 11TWs of wind and solar capacity will also be required just for hydrogen production over the next 30 years. To put this in perspective this is more electricity than is currently generated globally from all sources for all applications. If the world can unlock this opportunity BNEF projects US$11 trillion in hydrogen production, storage and transport infrastructure investment will be required.

Australia can be at the forefront of this renewable hydrogen market and strong progress is already being made through:

- The National Hydrogen Strategy;
- ARENA's $70 million hydrogen round;
- A commitment of $300 million for hydrogen finance by the CEFC;
- Renewable hydrogen strategies and programs by all state and territory governments;
- A range of feasibility, research, and demonstration projects around the country.

Renewable hydrogen for trucking

The National Hydrogen Strategy acknowledges that renewable hydrogen production is still expensive and as such most Government initiatives in Australia are helping to reduce the cost of renewable hydrogen to below $2/kg.

However, energy insiders suggest that renewable hydrogen production is nearly cost-competitive with expensive diesel for trucks in remote mines in Australia where the wind and solar resources are excellent.

Establishing renewable hydrogen hubs

The National Hydrogen Strategy identifies the establishment of hydrogen hubs as critical to the success of an Australian renewable hydrogen industry. These hubs would co-locate hydrogen businesses, supply chains and end users into a geographic location to better achieve economies of scale.

There is significant activity around renewable hydrogen and hydrogen hubs, including:

- A COAG Energy Council Hydrogen Hub Study,
- Hydrogen industry development work through NERA,
- A number of ARENA co-funded renewable hydrogen feasibility studies by some of Australia's largest existing hydrogen users and
- Federal and state-based funding programs.

However, none of these has yet targeted the establishment of physical renewable hydrogen hubs, nor prioritised skill development in the potential location for these hubs that would help ensure local businesses and local people are able to secure jobs in this emerging industry.

Implementation:

The Accelerate Renewable Hydrogen package will be delivered by providing additional funding to ARENA.

It is recommended that the renewable hydrogen funding proposed in this stimulus measure, be additional to a broader budget recommitment that would see the life of ARENA extended to 2030 or beyond.

Industry participants will need to comply with ARENA's usual funding guidelines and processes.

Value for Money:

This will include providing matching funding. To date, ARENA has leveraged $3.4 per $1 of matched investment. Based on these figures the additional $215 million proposed in this program will leverage $731 million in private sector investment over three years.

For More Information:

Australia renewable export COVID-19 recovery package, WWF-Australia, June 2020.

Delivering economic stimulus through renewables, WWF-Australia, June 2020.