



ANNUAL REPORT

2021 - 2022

ARENA



Australian Government
Australian Renewable
Energy Agency



WE ARE ARENA

THE AUSTRALIAN RENEWABLE ENERGY AGENCY

ARENA is an Australian Government statutory agency, established in 2012 by the *Australian Renewable Energy Agency Act 2011*.

OUR VISION

is to support the global transition to net zero emissions by accelerating the pace of pre-commercial innovation, to the benefit of Australian consumers, businesses and workers.

OUR VALUES

are to be impact-driven, stakeholder-focused, collaborative, accountable and respectful of people.

OUR WORK

is to support the commercialisation of renewable energy and other low emissions technologies by investing in innovation and knowledge. We provide support along the innovation chain, balancing investment in emerging commercial technologies with earlier-stage research, development and demonstrations to address long-term needs.

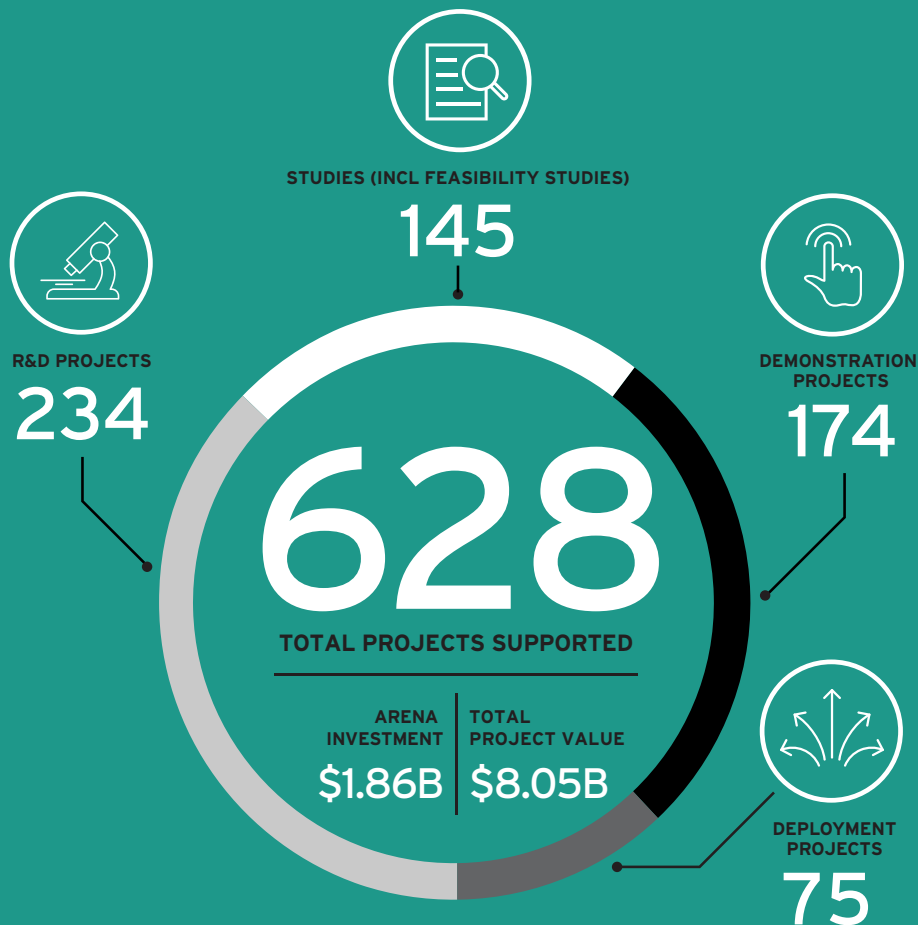
ARENA acknowledges the Traditional Custodians of Country across Australia and their continuing connection to land, sea and community. We pay our respects to elders past and present.



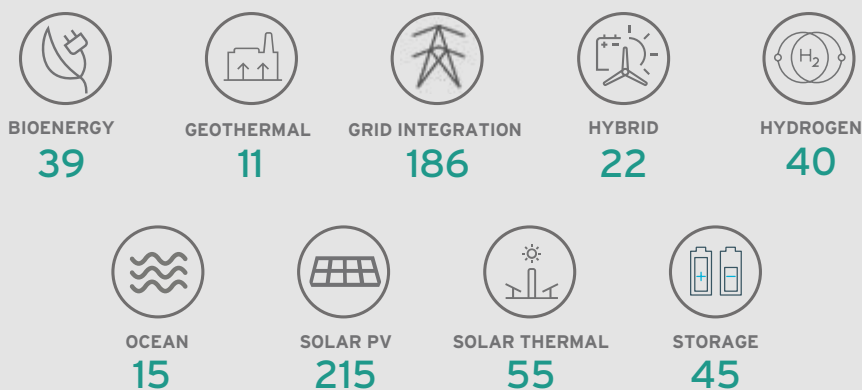


Image credit: EDL.

ARENA'S IMPACT SO FAR



PROJECTS BY TECHNOLOGY



Since ARENA was established in 2012, we have committed more than \$1.86 billion* to 628 renewable energy projects across Australia, leveraging more than \$6 billion in additional private and public sector investment.

Through these projects, strong stakeholder engagement and our knowledge sharing activities, ARENA has been instrumental in building the foundation of the renewable energy ecosystem in Australia.

ARENA's priorities have shifted as technologies have matured, from supporting pure renewable energy generation technologies to supporting the operation of an energy system with ever-increasing shares of variable renewable energy.

In 2021-22 these priorities included optimising the electricity transition, commercialising clean hydrogen, and supporting the transition to low emissions aluminium and steel.

Through our projects, ARENA has been directly responsible for many renewable energy success stories including:



Helping to drive cost reductions in solar generation through world-leading solar PV research including funding of the Australian Centre for Advanced Photovoltaics (ACAP)



Demonstrating how large-scale batteries can provide a range of benefits, including improving grid stability and power quality, and how they can help to integrate more variable renewable energy into grids



Supporting research and development into new ways of producing hydrogen, providing funding to many of Australia's early electrolysis demonstration plants, and studies into larger renewable hydrogen opportunities



Successful distributed energy resources projects and virtual power plant pilots to help maximise the value of customer-generated electricity for all energy users



Supporting electric vehicle projects including fast-charging infrastructure to help prepare the energy and transport sectors for the electrification of transport

Supported by our work with energy sector industry bodies and associations, consumer groups, universities, major energy companies and startup businesses, ARENA's activities continue to assist with the transition to cleaner and cheaper energy.

*Includes \$567 million contributed to projects inherited by ARENA in 2012.



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ABOUT THIS REPORT

**THE ARENA ANNUAL REPORT
2021-22 PROVIDES INFORMATION
ABOUT OUR ACTIVITIES, PROGRESS
AND ACHIEVEMENTS DURING THE
YEAR FROM 1 JULY 2021 TO
30 JUNE 2022.**

This report also details our governance, management and accountability practices, our workforce and financial performance, and provides the audited ARENA financial statements for the reporting period.

You can also read the ARENA Annual Report 2021-22 online at arena.gov.au/about/publications/.

Image credit: Stock.

LETTER OF TRANSMITTAL



Australian Government
Australian Renewable
Energy Agency

ARENA

OFFICE OF THE CHAIR

20 September 2022

THE HON CHRIS BOWEN MP

Minister for Climate Change and Energy
PO Box 6022
Parliament House
CANBERRA ACT 2600

DEAR MINISTER

ARENA ANNUAL REPORT 2021-22

I am pleased to present to you the Australian Renewable Energy Agency (ARENA) Annual Report for the financial year 2021-22, in accordance with the requirements of the *Australian Renewable Energy Agency Act 2011* and the *Public Governance, Performance and Accountability Act 2013* (PGPA Act).

The ARENA Board is responsible for preparing the report and providing it to you in accordance with s46 of the PGPA Act. The report was approved by a resolution of ARENA's Board on 20 September 2022.

This report incorporates ARENA's Annual Performance Statement (APS) for 2021-22, as required by s39 of the PGPA Act. In the opinion of the Board, the APS accurately presents information about ARENA's performance for the reporting period and complies with s39(2) of the PGPA Act.

The report also includes ARENA's audited financial statements prepared according to s42 of the PGPA Act.

Yours sincerely

JUSTIN PUNCH
CHAIR



CHAIR & CEO REVIEW

ARENA'S YEAR IN CONTEXT

In 2021-22 the Australian Government committed to achieving net zero by 2050 and emissions reduction of 43 per cent by 2030, requiring Australia to accelerate progress on decarbonisation across multiple sectors including electricity, transport, industry, mining and agriculture.

Australia is playing an important role in the pursuit of net zero, having already proved to be a significant innovation hub. There are exciting Australian innovators working across a diverse range of technologies including the next generation of renewable energy generation, hydrogen, energy storage, grid-scale batteries and virtual power plants. Local researchers have delivered rapid cost reductions in solar power and bold ideas are being driven by deep technical innovation in homegrown startups.

However, there are unprecedented circumstances and challenges both domestically and internationally. The strong demand for goods and labour in a supply-constrained environment has necessitated the need for greater flexibility by ARENA with respect to project delays and variations. There has been a significantly higher number of contract variation requests in this reporting period compared to previous years. Recent geopolitical events have also influenced a growing number of businesses in their decision to defer or limit capital investment.

ACCELERATING THE PACE OF INNOVATION

ARENA has continued to play an important role in accelerating the pace of Australia's renewable energy transition by providing financial assistance and sharing knowledge. The 2021-22 reporting period was one of the busiest the Agency has had in its ten-year history.

In 2021-22 ARENA approved \$362.7 million of program and project funding. Of this, \$169.2 million was approved in relation to projects that align with ARENA's three strategic priorities:

- > optimise Australia's transition to renewable electricity
- > commercialise clean hydrogen, and
- > support our transition to low emissions metals.

The balance comprises \$103.5 million allocated to the Large Scale Battery Storage Funding Round, \$40 million allocated to the Ultra Low Cost Solar PV R&D Funding Round, and \$50 million allocated to the German-Australian Hydrogen Innovation and Technology Incubator (HyGATE) Funding Round. During the year applications were received and assessed under all three funding rounds and we expect them to result in funding commitments in 2022-23.

During the year ARENA committed \$107 million to 26 projects and paid \$100.2 million to contracted projects. The gap between funds approved on the one hand, and funds committed and paid on the other, reflects the high degree of complexity associated with new and emerging technology areas such as hydrogen, where projects are novel and first-of-a-kind. These projects take time to bring to fruition and have suffered from supply chain issues and COVID-19 disruptions. We expect this gap to progressively narrow and we remain confident that these new technologies will deliver significant impact in the years ahead.

Appetite for knowledge on renewable energy has been strong this year. Readership of the ARENAInsights Newsletter grew by more than 25 per cent and ARENA's open-source library of knowledge sharing resources had a 21 per cent increase in downloads compared to the previous financial year.



**JUSTIN
PUNCH**
—
CHAIR



**DARREN
MILLER**
—
**CHIEF
EXECUTIVE
OFFICER**

OPTIMISING THE TRANSITION TO RENEWABLE ELECTRICITY

ARENA's support is helping Australia move towards a lower-cost, largely renewable electricity system, both on and off the grid, that is able to meet significantly higher domestic and export demand.

A lower-cost, renewable energy dominated electricity grid will enable emissions reduction through higher electrification of sectors such as transport, buildings and industry. Ultra low-cost solar will also be needed to scale up production of low-cost green hydrogen, which is the key to unlocking other decarbonisation pathways for heavy industry. This includes low emissions processing of minerals into commercially competitive materials that are used in our built environment, such as green steel and aluminium.

To support Australia's world-leading researchers and continue to drive down the cost of renewables, this year we announced up to \$40 million in funding to support research and development (R&D) for ultra low-cost solar. This is our fourth funding round specifically in support of solar photovoltaics (PV) R&D.

As the adoption of renewables increases, new challenges have emerged, such as ensuring grid stability and reliability, and shaping demand to better match variable generation.

We committed funding to projects involving battery storage from grid-scale to households this year to identify solutions to these challenges. AGL Energy will build a large-scale battery in the remote city of Broken Hill in NSW to explore how big batteries can strengthen weak sections of an electricity grid, such as regional communities.

Western Power's Project Symphony will 'orchestrate' 900 customer-owned solar panels, home batteries and other distributed energy assets to demonstrate how excess power can be dispatched to the grid in the same way that a traditional power plant could, helping to stabilise the local electricity system and provide benefits for the entire network.

We also committed support to United Energy to explore how pole-mounted batteries can solve the voltage issues in grids that have an increasing share of variable renewable energy.

And to show how an emerging inverter technology performs on a large scale, along with helping to bring down its cost, ARENA announced a \$100 million competitive funding round in December 2021 to demonstrate the performance of grid-scale batteries equipped with grid-forming inverters.

COMMERCIALISING CLEAN HYDROGEN

ARENA has now been leading the push into renewable hydrogen for three years. To date we have committed \$60 million to around 30 hydrogen projects and announced another \$103 million to our three chosen large-scale electrolyser projects.

In 2021-22 we continued to support industry to help Australia establish a viable clean hydrogen industry and realise our potential as a significant exporter of clean energy. Fulfilling that ambition will require innovation across the full hydrogen value chain including cheap, firm renewable electricity, a step change in electrolyser technology and cost, as well as rapid proving and scaling of hydrogen use cases.

To help accelerate this process, ARENA is now funding a range of high-impact innovations aimed at reducing the cost of hydrogen produced from renewable energy, addressing technical challenges along the hydrogen value chain, and fuel switching in industry and transport.

To support the uptake of hydrogen fuel cell electric vehicles (FCEVs) in heavy vehicle fleets, we committed funding to Viva Energy to develop, build and operate Australia's first public hydrogen refuelling facility for one of the first deployments of FCEV fleets in Australia.

Funding was also conditionally approved for Ark Energy to install a 1 MW electrolyser with storage and refuelling infrastructure to fuel five new 140 tonne rated fuel cell electric trucks. The five zero emissions prime movers will replace equivalent diesel-powered trucks and ferry zinc from Sun Metals' Townsville smelter to the Port of Townsville to be shipped around the world.

Export opportunities for Australian green hydrogen are also being explored through several new ARENA projects. The NSW Port of Newcastle and Macquarie's Green Investment Group are developing one proposal, while

coal and gas operator Stanwell Corporation is examining the feasibility of developing an export-scale green hydrogen project in Gladstone, Queensland that could produce up to 36,500 tonnes each year of renewable hydrogen for export to Japan from 2026.

SUPPORTING THE TRANSITION TO LOW EMISSIONS METALS

After being focused for the past few years on supporting industry to reduce emissions, we have now sharpened our focus on accelerating the decarbonisation of the steel and aluminium industries, which are high energy users and emissions intensive.

This year ARENA committed funding for BlueScope Steel to investigate options to decarbonise its operations at the Port Kembla Steelworks in NSW. The study will explore prospective technologies that have the potential to reduce emissions across steel manufacturing including the role Australia's emerging renewable hydrogen industry can play on the pathway to low emissions steel.

We also committed funding for Rio Tinto to investigate the potential use of renewable hydrogen to partially decarbonise its alumina refining operations.

Both projects, along with the others mentioned in this Review, are featured in the Showcase section of this Annual Report.

TARGETED PROGRAMS AND OTHER INITIATIVES

In recognition of our expertise in providing grant funding to improve the competitiveness and supply of renewable energy in Australia, ARENA has received additional funding to deliver targeted programs and other initiatives. Under the Future Fuels Program, a \$250 million initiative to enable the demonstration and deployment of new zero emissions vehicle technologies, we committed funding this year to 19 projects that will add more than 400 new charging stations to Australia's fast-charging network for electric vehicles.

In late 2021 we also launched the \$50 million Regional Australia Microgrid Pilots Program to help improve the resilience and reliability of electricity supply in regional communities and demonstrate solutions to technical, regulatory or commercial barriers to the deployment of microgrid technologies in Australia.

ARENA also released a Bioenergy Roadmap in 2021, which found that by 2030 Australia's bioenergy sector could contribute to around \$10 billion in extra GDP each year and 26,200 new jobs, reduce emissions by about nine per cent, divert an extra six per cent of waste from landfill, and enhance fuel security.

A COLLABORATIVE EFFORT

ARENA's impact is based on our strong partnerships built with industry, regulators, investors and innovators, working collaboratively to maximise the benefits of renewable energy for Australian consumers and the economy. We thank the individuals and organisations that worked with us and supported ARENA's efforts in 2021-22. We also wish to recognise the important

contributions of the ARENA team and our project proponents.

ARENA's Board members made an important contribution to ARENA's efforts, and we thank them for their leadership and governance. We also thank our Portfolio Ministers, the Hon Chris Bowen MP and the Hon Angus Taylor MP, for their support and ongoing interest in ARENA's work.

ARENA'S FUTURE

Getting to net zero in the decades ahead undoubtedly presents a challenge, but also an incredible opportunity for Australia to succeed in a future decarbonised world, just as it has in the past.

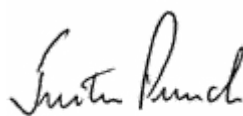
To succeed we must first accelerate the deployment of the things we have answers for – solar, wind, lithium-ion batteries and EVs – proven and available technologies where costs will continue to come down and integration challenges solved as we progress. Nothing should stand in the way of these technologies being deployed at scale and at pace.

Then there are the technologies and sectors where decarbonisation will be hard and expensive, such as the commercialisation of clean hydrogen, the production of green steel and aluminium, and solving long distance transport.

Solving these challenges will require ingenuity and investment, collaboration and commitment - all of which are ARENA's strengths.

We welcome the new regulations introduced in July 2022 that will enable us to provide support to electrification projects and energy efficiency in addition to our core work in renewable energy.

The next 10 years will be critical for Australia's clean energy transition. ARENA stands ready and able to help. Our vision, and the capability, knowledge and networks we have built since 2012 position us uniquely to drive pre-commercial renewable energy innovation and accelerate progress towards net zero.



JUSTIN PUNCH
CHAIR



DARREN MILLER
CHIEF EXECUTIVE OFFICER

ARENA HIGHLIGHTS 2021-22

FIGURE 1 ARENA HIGHLIGHTS 2021-22



Image credit: Stock.



01

ABOUT ARENA

THIS SECTION EXPLAINS WHAT ARENA DOES,
WHY IT WAS CREATED AND HOW IT INVESTS FUNDS
TO BENEFIT THE NATION.



Image credit: Stock.



WHO WE ARE

ARENA, as established by the ARENA Act, has the dual objectives of improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy in Australia.



HISTORY

ARENA was established by the Australian Government on 1 July 2012. At this time, a number of the Government's existing renewable energy programs and projects were also brought together under the ARENA umbrella, including those previously managed by the Australian Centre for Renewable Energy, the Solar Flagships Program and the Australian Solar Institute.

In 2020, our funding was extended to 2032 with \$1.43 billion in baseline funding. Additional funds totalling \$538 million over the five years to 2025-26 has also been provided for targeted programs and other initiatives.

ARENA's mandate was expanded by regulation in 2021-22 to allow us to invest in a broader range of technologies.

In July 2022, outside this reporting period, ARENA was provided with a new mandate to “maximise the take-up of renewable energy” and to focus on electrification and energy efficiency.

VALUES AND PEOPLE

ARENA's values empower our people to take an agile, commercially-oriented and outcome-driven approach to achieving our objectives.

ARENA has a skilled, productive and highly motivated team drawn from diverse backgrounds. Our leadership team and staff have expertise and experience in energy policy, Australia's electricity market, energy technology and project finance. We blend public and private sector expertise, innovation and accountability in the design and delivery of our activities.

A strong culture of mutual support, teamwork and collaboration has been central to our success. As a small organisation we have developed a highly effective team-based way of working that enables us to make best use of complementary skills and Agency resources and to maintain high efficiency in our business activities.

We also bring together innovators, regulators, policy makers, researchers, industry participants and consumer bodies to generate and share the knowledge needed to bring about transformative change.

UNIQUE ROLE

ARENA has a unique role in the transition to a net zero economy. We invest in projects spanning the innovation chain, from research to early-stage deployment, bridging the gap between innovators and investment to help push emerging and early-stage technologies towards commerciality.

We focus on finding and demonstrating first-of-a-kind renewable energy technologies and business models that can reduce technical and commercial risks and grow Australia's renewable energy supply, knowledge and expertise.

Image credit: Stock.

A photograph of four individuals in white full-body protective suits, hoods, and face masks. They are standing in a brightly lit, sterile environment, possibly a laboratory or cleanroom. The person in the center foreground is holding a rectangular solar panel with a grid of blue cells. The other three people are standing slightly behind and to the sides, looking towards the camera. The background shows white walls and ceiling lights.

WHAT WE DO

ARENA provides grant funding to support projects that meet the requirements of our strategic priorities, targeted programs and other initiatives.

Image credit: ARENA.

CORE ACTIVITIES

We apply a rigorous approach when assessing the merit of projects for funding, taking into account risk and value for money. Our assessment and selection processes aim to ensure we do not fund projects that would proceed without ARENA support.

We invest along the innovation chain, balancing investment in emerging commercial technologies with research, development and demonstration to address long-term needs.

We also collaborate with industry and share knowledge to accelerate learning, thereby reducing future costs.

PROJECTS FUNDED TO DATE

The impact of our work is significant. Since 2012, ARENA has committed \$1.86 billion to 628 renewable energy projects, driving innovation in solar photovoltaics, batteries and other forms of energy storage, biofuels, hydrogen, solar thermal, ocean energy, pumped hydro, distributed energy and demand response.

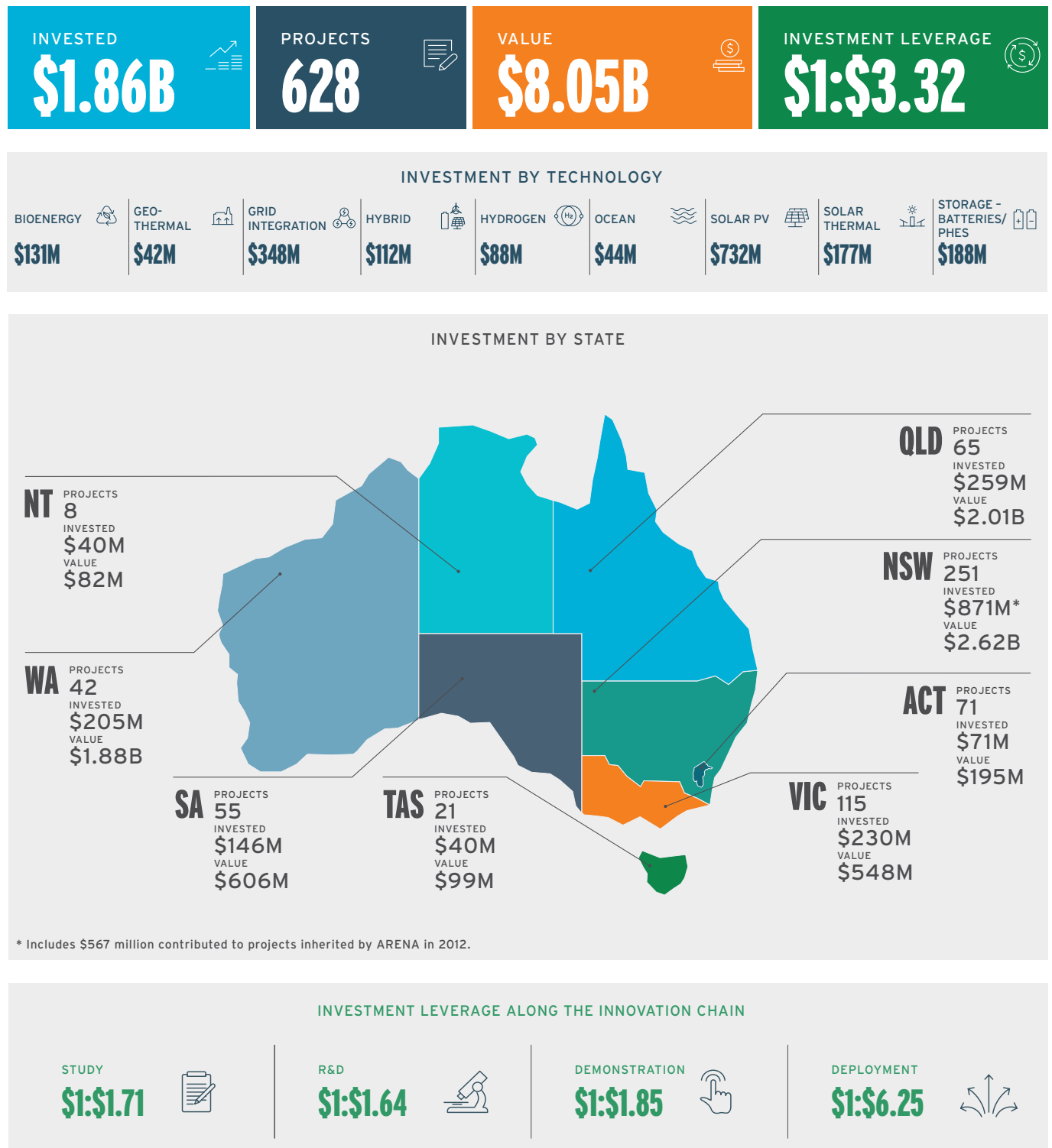
Every dollar of ARENA funding has unlocked an average of \$3.32 of co-funding from the private and public sector for a total project value of \$8.05 billion across Australia (Figure 2).

FUNDING COMMITMENTS IN 2021-22

In 2021-22, ARENA contractually committed \$107.2 million to 26 new projects worth a total of \$327.9 million. Overall, we managed 263 active projects during the period, of which 79 were completed and 4 terminated.

Details of all active projects during 2021-22 are provided in Appendix 1.

FIGURE 2 ARENA AT A GLANCE - FUNDING COMMITMENTS TO PROJECTS 2012-2022





HOW WE WORK

OUR STRATEGIC APPROACH

ARENA strives to achieve maximum impact and value from the projects we fund.

We provide financial assistance to recipients for projects that are aligned with our strategic priorities (see General Funding Strategy). We seek to enable a path to commercialisation and we are prepared to take risks on new ideas and technologies that are not yet proven, while considering whether the solution being tested has the potential to reach commercial maturity.

We have the skills, experience and industry knowledge to invest funds for the greatest impact. We apply commercial rigour to our funding decisions and ensure that each of ARENA's activities is focused on achieving the objectives and performing the functions stated in our legislation, Portfolio Budget Statements and business plans.

Figure 3 demonstrates how we keep a line of sight from the ARENA Act through the Corporate Plan to the Annual Performance Statement in this Annual Report.

GENERAL FUNDING STRATEGY AND INVESTMENT PLAN

ARENA contributes funding to renewable energy projects in accordance with our General Funding Strategy (GFS) and Investment Plan (IP).

The GFS details our strategy (objectives and priorities) for making new investments over the current and upcoming two years. It guides how ARENA provides financial assistance for eligible activities in accordance with the ARENA Act, associated regulations and the requirements of the PGPA Act.

We use the principles in the GFS to identify strategic priorities, which are detailed in the IP along with information on our funding programs and initiatives.

The IP builds on the work, achievements and knowledge we have gained to date. Within each of the strategic priorities, we define focus areas to target investments to achieve specific outcomes. Focus areas also inform our knowledge sharing strategies and the design of the performance measures that enable our stakeholders to assess ARENA's impact.

The ARENA Act requires us to develop and publish a GFS each year. It is provided to the Portfolio Minister for approval and remains in force until a subsequent version is approved by the Minister.

CORPORATE PLAN

Each year ARENA develops and publishes a Corporate Plan, which is required under the PGPA Act and is our primary planning document.

The Corporate Plan sets out:

- ARENA's strategy as a whole, covering the full suite of activities (including making new investments and maximising benefits from existing financial assistance contracts)
- the context within which ARENA operates
- the organisational capability that underpins delivery
- how we assess and report performance
- our identification of strategic risks and how they are managed.

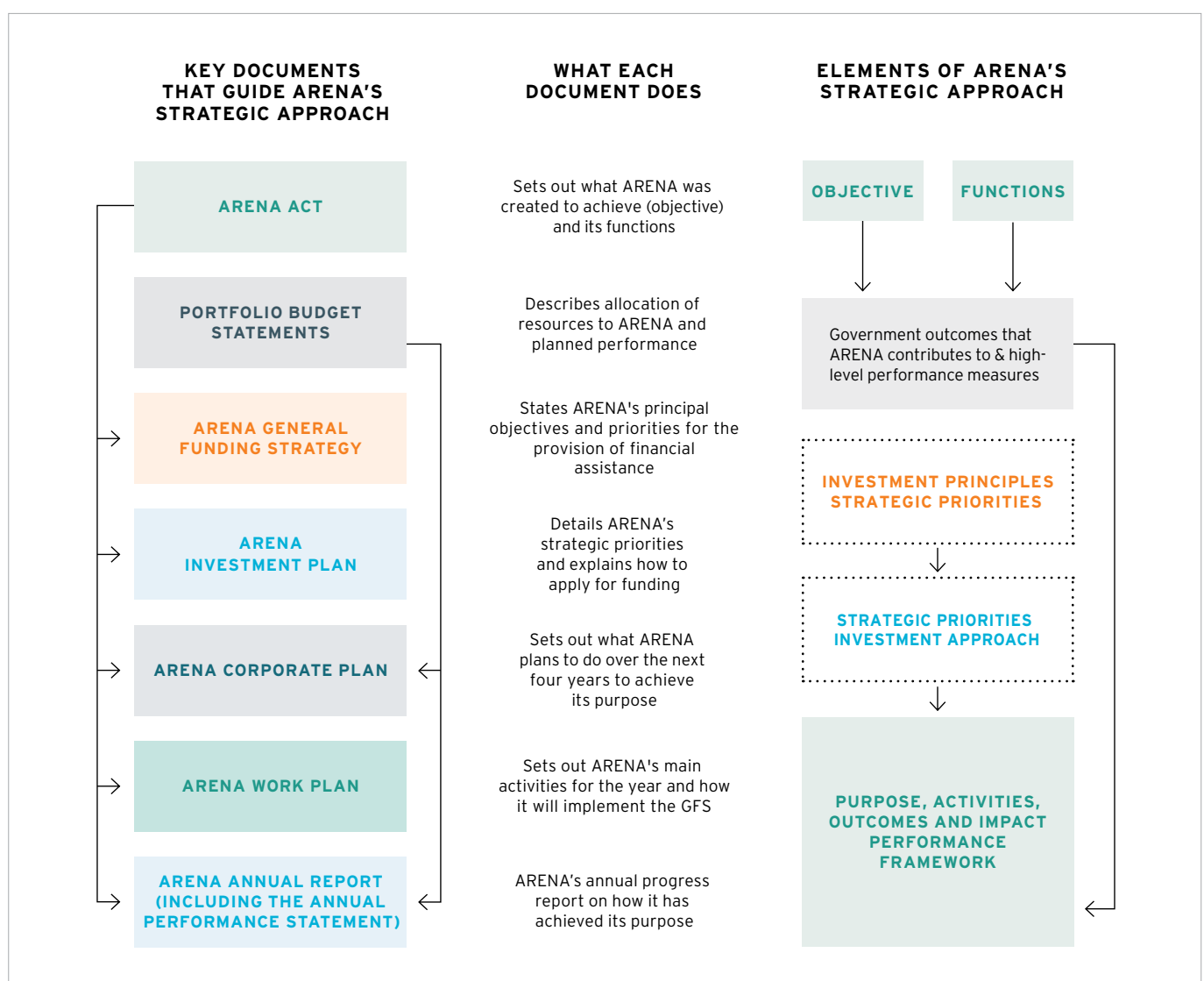
Over time, our Corporate Plans have built upon ARENA's considerable experience, and our priorities have evolved to anticipate and address the longer-term needs of the changing energy system.

Current editions of the GFS, IP and Corporate Plan are available on our website at arena.gov.au.



Image credit: ARENA.

FIGURE 3 LINE OF SIGHT FROM ARENA ACT TO OTHER ELEMENTS OF ARENA'S STRATEGIC APPROACH



PERFORMANCE REPORTING

The Corporate Plan includes a performance framework that outlines our activities and the results they aim to achieve.

In 2021-22, ARENA's performance measures were:

- › ARENA has committed and approved funding that supports renewable energy, enabling technologies and ARENA strategic priorities
- › ARENA funding to private sector funding leverage ratio
- › ARENA-funded projects advance renewable energy and ARENA strategic priorities
- › ARENA-funded projects increase supply of renewable energy
- › ARENA produces and shares new knowledge
- › ARENA's performance, as judged by its stakeholders.

The Annual Performance Statement in this Annual Report provides a detailed report on ARENA's performance against these measures.

GRANT FUNDING

ARENA's financial assistance is generally provided through grants. In certain circumstances we may negotiate a recoupment mechanism that sees some or all of our grant funding returned.

To identify the projects that will make a critical difference, ARENA assesses funding proposals that fit with our objectives and investment focus areas – this forms part of the merit assessment for our funding programs.

ELIGIBLE TECHNOLOGIES

Eligible technologies are indicated by the strategic priorities, targeted programs and other initiatives outlined in the ARENA Investment Plan. We take these into account when assessing funding proposals.



BRINGING PEOPLE AND IDEAS TOGETHER

ARENA brings together the right innovators, regulators, policy makers, researchers, industry participants and consumer bodies to drive change in the energy sector.

Sharing what we learn is a fundamental part of ARENA's functions. We are focused on maximising the benefits from past and ongoing projects through knowledge sharing and collaboration.



Image credit: ARENA.

KNOWLEDGE SHARING

Knowledge sharing through the collection, storage, analysis, curation and sharing of information, experience and know-how gained from ARENA and related projects allows the industry to learn faster and direct efforts and funding to the most important and prospective technologies.

Each project we invest in obliges the funding recipient to share knowledge throughout the life of the project. We build on these project lessons by identifying and communicating portfolio-level trends and insights that, in turn, help to accelerate the pace of pre-commercial innovation in renewable energy and low emissions technologies in Australia.

With extensive networks, established forums and media and social media channels, we share knowledge broadly with the Australian community and energy industry stakeholders to help them navigate the energy transition. These activities are made possible by our strong analytical, engagement and communication capabilities.

Knowledge sharing across the full project lifecycle is critical to success, so we bring together key stakeholders to share knowledge both during the front-end design stage and as projects reveal insights.

ARENA's approach to maximising the value of ongoing projects is already making a positive impact in industry:

- 87 per cent of our funding recipients agree ARENA's knowledge sharing has helped the clean energy sector to grow and mature
- 79 per cent of funding recipients agree ARENA's knowledge sharing has contributed to the adoption of clean energy technologies and helped to improve the performance of these technologies.¹

COLLABORATION

To ensure ARENA's activities have the greatest impact, we collaborate with and strive to complement other organisations across the innovation chain to share critical knowledge and invest in Australia's net zero future.

Those organisations include the Clean Energy Finance Corporation (CEFC), CSIRO, Australian Energy Market Operator (AEMO), Australian Energy Market Commission (AEMC), Australian Energy Regulator (AER), Energy Security Board (ESB) and innovators in industry (Figure 4).

In particular, we work with the CEFC to administer the Clean Energy Innovation Fund (Innovation Fund). ARENA has two representatives on the investment committee of the Innovation Fund and we provide technical and commercial advice as required.

We stay connected with all State and Territory governments, and continuously look for opportunities to collaborate, share knowledge and co-invest in renewable energy innovation.

A-LAB

Through A-Lab, ARENA's innovation program, we have created cross-sector partnerships and world-first projects that draw on a network of people with the expertise and passion to drive systemic change in the energy sector.

While A-Lab's face-to-face events were paused during the COVID pandemic, there is now a strong appetite to re-establish the program so that we can continue to enable breakthrough creative thinking on some of the most exciting and complex challenges facing the energy sector.

DISTRIBUTED ENERGY INTEGRATION PROGRAM

ARENA established the Distributed Energy Integration Program (DEIP) in 2018 alongside other regulatory, industry and consumer bodies.

Collaboration networks such as DEIP create a space for strategic discussion and coordination of complex, multi-stakeholder challenges related to distributed energy resources.

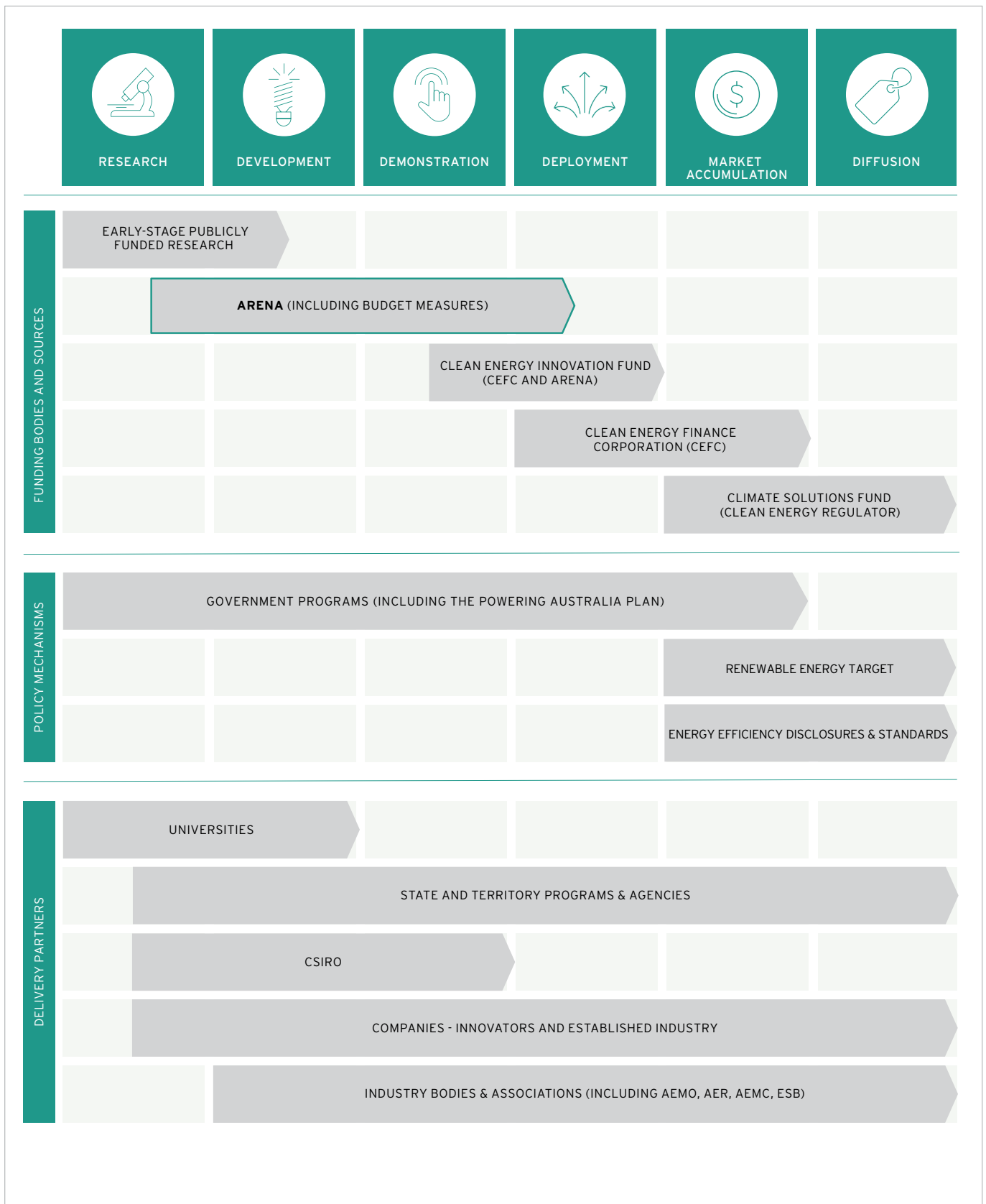
It has been successful in sharing knowledge and understanding and guiding efforts in distributed energy technologies such as rooftop solar, home batteries, electric vehicles and smart appliances.

RENEWABLE ENERGY FOUNDER FORUM

ARENA has also continued to bring promising startups and entrepreneurs in renewable energy and low emissions technologies together with investors as part of our partnership with Innovation Bay to host the Renewable Energy Founder Forum.

¹May 2022 survey of 101 ARENA-funded projects.

FIGURE 4 COLLABORATION ACROSS THE INNOVATION CHAIN



ARENA BOARD

RESPONSIBILITIES

The Board is ARENA's accountable authority, with overall responsibility for our operations. It is a skill-based, decision making body responsible for recommending ARENA's annual General Funding Strategy to the Minister, setting investment priorities, approving investments, overseeing the running of the organisation and approving funding for projects up to \$50 million.

ARENA's Portfolio Minister approves funding of more than \$50 million for projects recommended by the Board, while the ARENA CEO has board-delegated authority to approve funding up to \$1 million.

The Board may also delegate to the CEO specific powers or functions, subject to any directions specified by the Board and any applicable ARENA policies and legislation.

BOARD GOVERNANCE

The Board's business and meetings were conducted during the reporting period in accordance with the requirements of applicable legislation and in line with best practice. Its members regularly review the Board's operation as part of their responsibility to continually improve the efficiency and effectiveness of governance processes.

MEMBERS

The Board consists of up to six appointed members as well as the Secretary of the Portfolio Department (ex officio). With the exception of the ex-officio member, Board members are appointed by the Minister for a term of up to two years, and may be reappointed for a total of up to six continuous years.

APPOINTED MEMBERS

At 30 June 2022, members of the ARENA Board were:

- > Mr Justin Punch (Chair)
- > Mr Justin Butcher
- > Mr John Hirjee
- > Ms Anna Matysek
- > Mr Stephen McIntosh
- > Ms Stephanie Unwin
- > Secretary of the Portfolio Department or nominee (ex officio).

Board members were appointed/re-appointed on 4 April 2022 by the Portfolio Minister as follows:

- > Mr Justin Punch was re-appointed as ARENA Chair from July 2022 for a further two years
- > Mr John Hirjee and Ms Anna Matysek were re-appointed as continuing members from July 2022 for a further two years
- > Ms Elizabeth O'Leary was appointed as a Board member to commence on 23 July 2022 for a two-year term following the completion of Mr Justin Butcher's term on 22 July 2022.

Profiles of Board Members from 1 July 2022 are available on the ARENA website at arena.gov.au.

SECRETARY OF THE PORTFOLIO DEPARTMENT

The Secretary of the Portfolio Department during the reporting period was Mr David Fredericks PSM, Secretary of the Department of Industry, Science, Energy and Resources.

On 22 June 2022, Mr Fredericks was announced as Secretary of the new Department of Climate Change, Energy, the Environment and Water, which will commence on 1 July 2022.

Ms Jo Evans PSM, Deputy Secretary, Department of Climate Change, Energy, the Environment and Water was the nominee for Mr Fredericks during the reporting period.

MEETINGS

The Board formally met nine times during 2021-22. Board member attendance is shown in Table 1.

TABLE 1 DETAILS OF ARENA BOARD 2021-22

NAME	QUALIFICATIONS	EXPERIENCE	POSITION TITLE / POSITION HELD	DATE OF COMMENCEMENT / DATE OF CESSATION	NUMBER OF BOARD MEETINGS ATTENDED
Mr Justin Punch	Bachelor of Commerce, Bachelor of Laws, MBA	Experienced environmental investor focused on decarbonisation and conservation 30-year career working across private equity, line management and management consulting Co-founder, Assembly Climate Capital Director, Tasman Environmental Markets Chairman, Karrkad Kanjdji Trust	Chair, Non-executive ARENA Board member	Commenced 18 July 2020 Re-appointed to July 2024	9/9
Mr Justin Butcher	Bachelor of Education, Master of Education	CEO and Founder, MXA Consulting Entrepreneur and business investor Experienced strategy consultant and advisor to executive leaders in government Specialist in government business cases, business models, design thinking, benefits management, data strategy and technology strategy	Non-executive ARENA Board member	Commenced 24 July 2020	8/9
Mr John Hirjee	Bachelor of Engineering (Chemical Engineering)	Head of Research & Analysis, Resources, Energy & Infrastructure, Australia at ANZ Banking Group Experienced company research analyst, banker and senior adviser, specialising in Australasian energy and utility industries and companies	Non-executive ARENA Board member	Commenced 24 July 2020 Re-appointed to July 2024	9/9
Ms Anna Matyssek	Bachelor of Economics, Master of Environment	Head of Climate Change, BlueScope Steel A lead author for IPCC Council Member of Australian Institute of Marine Science Economist and strategy specialist in the resources, energy and infrastructure sectors	Non-executive ARENA Board member	Commenced 24 July 2020 Re-appointed to July 2024	9/9
Mr Stephen McIntosh	Bachelor of Science, Master of Science	Previous 33-year career with Rio Tinto, latterly as Group Executive Growth & Innovation and Health, Safety & Environment. Led most of Rio Tinto's centrally managed global technical functions Non-executive director AROSE Non-executive director Chalice Mining Chairperson Datarock Holdings	Non-executive ARENA Board member	Commenced 18 July 2021	9/9
Mr Dougal McOmish	Tertiary qualifications in economics	Director, Eco Advisory Former Chief Operating Officer, Sundrop Farms	Non-executive ARENA Board member	Commenced 18 April 2018 Term concluded on 17 July 2021	0/0*
Ms Stephanie Unwin	LLB, E Econ Advanced mgmt program (191) Harvard	CEO, Horizon Power Senate member of Murdoch University Significant experience at executive and board level across a variety of sectors including renewable energy	Non-executive ARENA Board member	Commenced 18 April 2018 Re-appointed to July 2023	9/9
Ms Jo Evans PSM		Nominee of Secretary of the Portfolio Department Deputy Secretary, Department of Climate Change, Energy, the Environment and Water Significant experience in climate change and emissions reduction policy	Ex-officio member		9/9

* No Board meetings were held before the conclusion of Dougal McOmish's term as Board member on 17 July 2021.

BOARD MEMBERS

Members of the ARENA Board must have experience or knowledge in renewable energy technology, commercialisation, business investment or corporate governance.



MR JUSTIN PUNCH

CHAIR / NON-EXECUTIVE MEMBER



MR JUSTIN BUTCHER

NON-EXECUTIVE MEMBER



MR JOHN HIRJEE

NON-EXECUTIVE MEMBER



MS ANNA MATYSEK
NON-EXECUTIVE MEMBER



MR STEPHEN MCINTOSH
NON-EXECUTIVE MEMBER



MS STEPHANIE UNWIN
NON-EXECUTIVE MEMBER



MS JO EVANS PSM
EX-OFFICIO MEMBER



MR JUSTIN PUNCH

CHAIR / NON-EXECUTIVE MEMBER

Term: 18 July 2020 - 17 July 2024
Re-appointed 2022

Justin Punch is an experienced environmental investor focused on decarbonisation and conservation, with a 30-year career in private equity, line management and management consulting. He is a co-founder of Assembly Climate Capital, a Director of Tasman Environmental Markets and a co-founder of biodiversity offset provider Meridolum. He was previously a Partner at Archer Capital, where he led investments across a diverse range of sectors, and has extensive experience in the management of operating businesses as well as consulting experience with the Boston Consulting Group.

Justin serves as the Chairman of the Karrkad Kanjdji Trust. The Trust supports the work of Indigenous ranger groups in Arnhem Land on projects including assisting with landscape-scale carbon abatement programs, conserving endangered landscapes and species, conserving Indigenous knowledge and cultural heritage, and improving education outcomes.

Justin holds Bachelor of Commerce and Bachelor of Laws degrees from the University of NSW and a Master of Business Administration from Harvard Business School.

MR JUSTIN BUTCHER

NON-EXECUTIVE MEMBER

MEMBER, PEOPLE & CULTURE COMMITTEE

Term: 24 July 2020 - 22 July 2022
Appointed 2020

Justin Butcher is CEO of MXA, a strategy consulting firm advising government executives on implementing policy initiatives and managing the complexities of data, information and technology.

Justin's diverse career has spanned science teaching and technology training, software development and systems architecture, business and technology strategy, advice to senior executives of government agencies, and mentoring to business startups.

Justin has helped government agencies identify and implement improvements across a wide range of programs and operational areas.

MR JOHN HIRJEE

NON-EXECUTIVE MEMBER

MEMBER, RISK & AUDIT COMMITTEE
(FROM 25 AUGUST 2020)

Term: 24 July 2020 - 22 July 2024
Re-appointed 2022

John Hirjee is an experienced company research analyst, banker and senior adviser, specialising in Australasian energy and utility industries and companies. He is currently Head of Research & Analysis, Resources, Energy & Infrastructure, Australia at ANZ Banking Group.

John has a significant track record with high-level achievements in equity research, analysing the development of company strategies and financial metrics. John's career has included working with key stakeholders across private and public institutions, and the fostering of strong links with senior executives, professionals and government officials.

John has a Bachelor of Engineering specialising in Chemical Engineering from Monash University.

MS ANNA MATYSEK

NON-EXECUTIVE MEMBER

Term: 24 July 2020 - 22 July 2024
Re-appointed 2022

Anna Matysek is an economist and strategy specialist in the resources, energy and infrastructure sectors, and is currently the Head of Climate Change at BlueScope Steel.

Anna was previously an executive at Rio Tinto and TransGrid, has worked in various consulting firms and government agencies including the Australian Bureau of Agricultural and Resource Economics and the Productivity Commission. She has been a Lead Author for the Intergovernmental Panel on Climate Change (IPCC) and a Council Member of the Australian Institute of Marine Science.

Anna holds a Master of Environment from the University of Melbourne, and a Bachelor of Economics from the University of Tasmania.



Image credit: Stock.

MR STEPHEN MCINTOSH

NON-EXECUTIVE MEMBER

MEMBER, RISK & AUDIT COMMITTEE
(FROM 12 AUGUST 2021)

Term: 18 July 2021 - 17 July 2023
Appointed 2021

Stephen McIntosh has more than 36 years of global experience in the resources sector. He spent 33 years with the Rio Tinto Group culminating in the role as Group Executive Growth & Innovation. In that role he had accountability for most of Rio Tinto's global technical functions including exploration, studies, construction, technical services, information technology, data science, robotics and automation, R&D, asset closure and for the last year he also led the global Health, Safety, Environment, and Security function. This accountability also included areas such as mineral processing, energy projects and latterly climate change.

Stephen holds a Master in Science from the University of Auckland, and is a geophysicist by training. He is a non-executive director of Australian Remote Operations for Space and Earth (AROSE), a non-executive director of Chalice Mining, and a director and chairperson of Datarock Holdings. He is also an advisor to the Monash University led Critical Minerals Consortium.

MS STEPHANIE UNWIN

NON-EXECUTIVE MEMBER

CHAIR, PEOPLE & CULTURE COMMITTEE

Term: 18 April 2018 - 17 July 2023
Re-appointed in 2020 and 2021

Stephanie Unwin is Chief Executive Officer of Horizon Power. She was previously General Manager Transformation and Technology of CBH Group, where she was responsible for information technology and overseeing the transformation of CBH to a low-cost, efficient supply chain from paddock to port. Prior to that she was Chief Executive Officer of Phylogica, a biotech and medical devices company in Western Australia.

Stephanie has significant executive and board-level experience across a variety of sectors, and is a former General Manager Commercial at energy generator and retailer Synergy. During her time at Synergy, Stephanie was responsible for strategy and innovation, modelling

and analytics, corporate affairs and communication, policy and regulation, corporate development and continuous improvement.

Stephanie has considerable experience with renewable energy, including being a key negotiator at Synergy and then the General Manager with oversight for the construction and commissioning of the Greenough River Solar Farm and Mumbida Wind Farm. She also conceived of and developed a renewables infrastructure fund to initial commercial close, took the Alkimos Beach Community Battery Storage project through funding to commissioning and into delivery, and developed the company's forward strategy for innovation and renewables.

She was also the Chair and operational Board member for the joint venture companies supplying renewable energy from the solar and wind farms.

MS JO EVANS PSM

EX-OFFICIO MEMBER

MEMBER, PEOPLE & CULTURE COMMITTEE

(Nominee for Secretary of Portfolio Department)

Jo Evans is a Deputy Secretary at the Department of Climate Change, Energy, the Environment and Water and the nominee for the Secretary on the ARENA Board.

Jo has worked in a number of portfolios including the Department of Industry, Science, Energy and Resources, the Department of Agriculture and Water Resources, the Department of the Prime Minister and Cabinet and the Department of the Environment and Energy. Prior to joining the Australian Public Service in 2000, Jo worked for management consultants McKinsey & Company.

Jo has a Masters of Public Policy from the Woodrow Wilson School of Public and International Affairs, Princeton University; a Masters in Environmental Science from the University of Melbourne; and a combined bachelor degree in Asian Studies and Economics (Honours) from the Australian National University.

BOARD COMMITTEES

RISK AND AUDIT COMMITTEE

The Board's Risk and Audit Committee (RAC) was established as a Committee of the Board in compliance with section 45 of the PGPA Act. The RAC Charter is available on the ARENA website at arena.gov.au/charter.

The RAC is responsible and accountable to the ARENA Board for the performance of its functions, which are to review and provide written advice as assurance to the Board about the appropriateness of ARENA's financial reporting, performance reporting, system of risk oversight and management, and system of internal control.

RAC members are expected to understand and observe the requirements of the PGPA Act and PGPA Rules.

The Committee also provides a forum for communication between the Board and the internal auditor (PricewaterhouseCoopers), as well as the external auditor (Australian National Audit Office).

The Board has authorised the RAC, within the scope of its responsibilities, to:

- seek any information that it requires from an ARENA official, consultant or external party (subject to any legal obligation to protect information)
- discuss any matters with the external auditor or other external parties (subject to confidentiality considerations)

- obtain legal or other independent professional advice, as considered necessary to meet its responsibilities, at ARENA's expense and in accordance with its Charter.

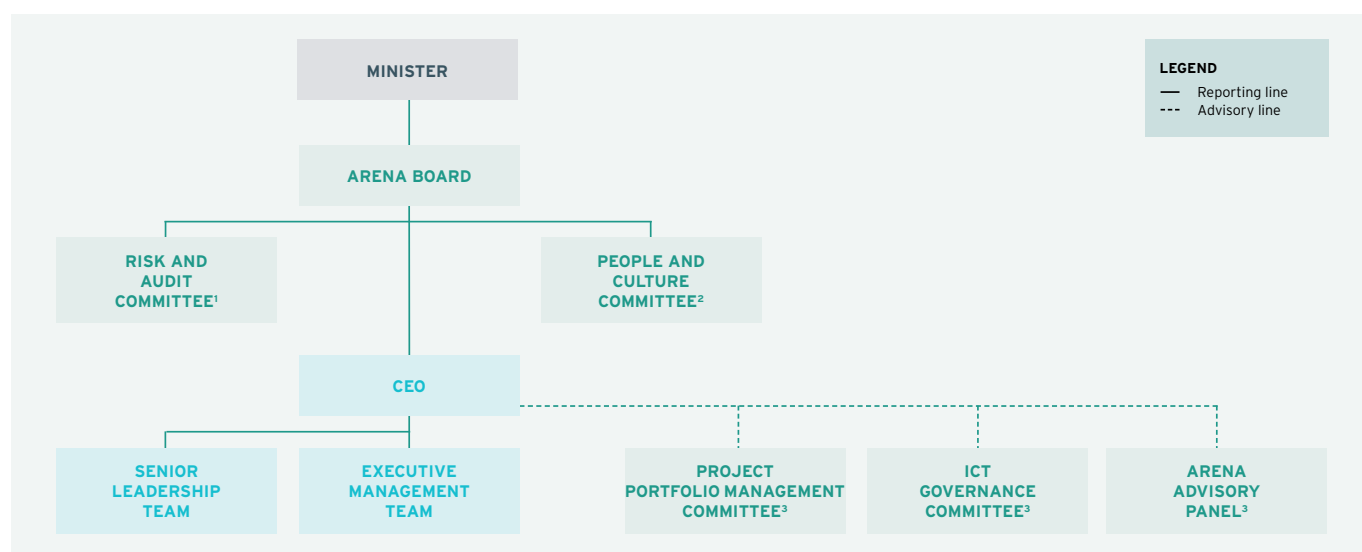
Members of the RAC during 2021-22 were:

- Mrs Jenny Morison AM (RAC Chair and Independent member - concluded RAC membership on 15 October 2021)
- Ms Karen Hogan (Independent member - commenced as RAC Chair on 26 October 2021)
- Mr Stephen Sheehan (Independent member - appointed by the Board on 29 October 2021)
- Mr John Hirjee
- Mr Dougal McOmish (concluded RAC membership on 17 July 2021)
- Mr Stephen McIntosh (appointed by the Board to RAC on 12 August 2021).

During the reporting period, the RAC formally met five times. Meeting attendance is provided in Table 2.

Refer to Board Member Profiles and Board Committee Independent Member Profiles for details of each RAC Member's experience and qualifications.

FIGURE 5 ARENA BOARD AND MANAGEMENT COMMITTEES 2021-22



¹Committee of the Board, established in accordance with section 45 of PGPA Act. ²Committee of the Board, established under section 48 of ARENA Act to advise and assist in the performance of the Board's functions. ³Established or appointed by the CEO to provide advice on, or assist in, the performance of ARENA's functions.



Image credit: Stock.

TABLE 2 DETAILS OF ARENA RISK AND AUDIT COMMITTEE (RAC) 2021-22

NAME	QUALIFICATIONS, KNOWLEDGE, SKILLS OR EXPERIENCE OF RAC MEMBERS	POSITION TITLE / POSITION HELD	NUMBER OF RAC MEETINGS ATTENDED
Mrs Jenny Morison AM	FCA, BEC 38 years of broad experience in the accounting profession, commerce and government	RAC Chair, Independent Committee member to 15 October 2021	2/2
Ms Karen Hogan	Bachelor of Commerce (Accounting) Fellow CPA Australia, GAICD More than 30 years' experience in governance with expertise in Finance, Human Resources and Information and Communication Technology	Independent Committee member RAC Chair from 26 October 2021	5/5
Mr Stephen Sheehan	Bachelor of Commerce Fellow CPA Australia 40 years' experience in financial management and reporting, accounting and financial operations, performance reporting and organisational management, and grants management	Independent Committee member from 10 November 2021	3/3
Mr John Hirjee	Bachelor of Engineering (Chemical Engineering) Head of Research & Analysis, Resources, Energy & Infrastructure, Australia at ANZ Banking Group Experienced company research analyst, banker and senior adviser, specialising in Australasian energy and utility industries and companies	Non-executive ARENA Board member	5/5
Mr Dougal McOmish	Tertiary qualifications in economics Director, Eco Advisory Former Chief Operating Officer, Sundrop Farms	Non-executive ARENA Board member to 17 July 2021	0/0*
Mr Stephen McIntosh	Master of Science (Geology & Physics), Fellow AusIMM, GAICD Previous 33-year career with Rio Tinto, latterly as Group Executive Growth & Innovation and Health, Safety, Environment and Security	Non-executive ARENA Board member	4/4

*No RAC meetings were held before the conclusion of Dougal McOmish's Board term on 17 July 2021.

PEOPLE AND CULTURE COMMITTEE

The People and Culture Committee (PCC) was created as a Board Committee under section 48 of the ARENA Act to assist the Board by reviewing, reporting on and, if required, making recommendations to the Board or management on matters relating to human resources, culture and diversity, including the representation of women, compensation policy, and continuity and development of senior management for the Agency.

Members of the PCC during 2021-22 were:

- > Ms Stephanie Unwin (PCC Chair)
- > Mr Justin Butcher
- > Secretary of the Portfolio Department or nominee (ex officio).

The PCC met three times during the reporting period. Meeting attendance is provided in Table 3.

Refer to Board Member Profiles for details of each PCC Member's experience and qualifications.

TABLE 3 DETAILS OF ARENA PEOPLE AND CULTURE COMMITTEE (PCC) 2021-22

NAME	POSITION TITLE / POSITION HELD	NUMBER OF PCC MEETINGS ATTENDED
Ms Stephanie Unwin	PCC Chair, non-executive Board member	3/3
Mr Justin Butcher	Non-executive Board member	3/3
Ms Jo Evans PSM	Ex-officio member	3/3*

*A proxy for Ms Evans attended one meeting of the PCC.





BOARD COMMITTEE INDEPENDENT MEMBERS

MRS JENNY MORISON AM

RAC CHAIR / INDEPENDENT COMMITTEE MEMBER (TO 15 OCTOBER 2021)

Jenny Morison AM FCA, BEc (Sydney University) has 38 years of broad experience in the accounting profession, commerce and government.

She was a National Board Member of the Chartered Accountants of Australia and New Zealand for four years, CFO of a public company, and has held senior positions in the major international accounting firms.

Jenny founded Morison Consulting Pty Limited in 1996, specialising in government financial reforms, governance and consulting. She was awarded a Centenary Medal in 2000 for services to women and accounting, and an Order of Australia on 26 January 2022.

Jenny brought a wealth of experience having held roles as an independent member and chair of Commonwealth audit and risk committees and financial statement sub-committees for large and small government entities for the past 17 years.

MS KAREN HOGAN

RAC CHAIR (FROM 26 OCTOBER 2021) / RAC INDEPENDENT COMMITTEE MEMBER

Karen Hogan has more than 30 years' experience in governance with expertise in Finance, Human Resources and Information and Communication Technology. Karen has held roles in a variety of sectors such as fast moving consumer products, manufacturing, tourism, government regulation, agriculture and cultural institutions.

Karen was the Chief Financial Officer at the Museum of Australian Democracy, Old Parliament House from 2009 until 2015. She is now a Director of EGA Insights and provides strategic consulting advice on governance, accounting, internal controls and business improvement opportunities.

Karen is an independent member of several public sector Audit and Risk Committees. In addition to being a member of the ARENA RAC, she is Deputy Chair of the Murray Darling Basin Authority (MDBA) and Chair of the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS).

Karen has a Bachelor of Commerce (Accounting), is a Fellow of CPA Australia and a graduate of the Institute of Company Directors.

MR STEPHEN SHEEHAN

INDEPENDENT COMMITTEE MEMBER (FROM 10 NOVEMBER 2021)

Stephen Sheehan has a career spanning 40 years across the public and private sectors, with expertise in financial management and reporting, accounting and financial operations, performance reporting and organisational management, and grants management.

Stephen's Australian Public Service (APS) senior executive career included roles as the Chief Financial Officer of the Department of Immigration and Citizenship, the Department of Health and Ageing and CRS Australia. Prior to retirement from the APS in 2020, Stephen led the Department of Social Services' Financial Services Branch.

Earlier in his career, Stephen undertook various financial management and accounting roles with companies including Shell UK, Cascade Brewery and the Hobart chartered accounting firm Malcolm Gray.

Stephen is an audit committee member with the Murray Darling Basin Authority, Comcare, National Capital Authority and the Department of the House of Representatives.

Stephen has a Bachelor of Commerce from the University of Tasmania and is a Fellow of CPA Australia.



Image credit: Stock.

SENIOR LEADERSHIP TEAM

MR DARREN MILLER

CHIEF EXECUTIVE OFFICER

Darren Miller commenced as ARENA's CEO on 27 August 2018, and was re-appointed for an additional three-year term in July 2021.

He has more than 25 years' experience across a range of sectors including renewable energy, electricity retail, technology, finance, media and entertainment.

Since becoming CEO, Darren has overseen the commitment of almost \$500 million to nearly 200 projects, the launch of new investment priorities in 2021, and the continuation of ARENA to 2032 with additional funding of \$1.92 billion.

Prior to joining ARENA, Darren was co-founder and CEO of Mojo Power, an innovative electricity retailer. He was also previously the Director of Asset Finance at Sungevity Australia, and co-founder and CEO of Sumwise, a technology and services company.

Darren's experience also includes managing investments for Publishing and Broadcasting Limited and Consolidated Press Holdings as well as in corporate finance and advisory at Ernst & Young.

Darren is a Graduate of the Australian Institute of Company Directors, and is a Chartered Accountant with a Bachelor of Commerce (Hons) from the University of New South Wales.

MR IAN KAY

CHIEF FINANCIAL OFFICER

As Chief Financial Officer, Ian Kay leads ARENA's business development and transactions teams. His focus is on optimising the use of ARENA's grant money to help project proponents secure the sponsor equity, third party equity and project finance debt needed to bring projects to financial close.

Ian possesses 27 years' experience leading investment in infrastructure, development and commercialisation of renewable energy projects, including at Origin Energy and Macquarie Group.

He has particular skill in managing joint venture partnerships and a track record of designing innovative transaction structures. Ian brings a depth of experience to ARENA and has originated, developed and led projects totalling more than \$12 billion in enterprise value and \$3.7 billion total required equity commitment. He has experience of a broad range of renewable energy projects.

Ian holds a Master of Arts (Honours) in Economic Science from Aberdeen University and is a member of the Institute of Chartered Accountants (England and Wales).

MR CHRIS FARIS

CHIEF OPERATING OFFICER

Chris Faris brings a diverse range of experience to the role of Chief Operating Officer, which he took up at ARENA in 2021.

Chris has worked in and around climate and innovation policy since 2000, and has more than eight years' experience at senior executive level across a number of government departments.

His public sector experience includes international climate talks, portfolio agency oversight, intergovernmental negotiations, and regional development. Chris has led Government teams working on the Barkly Regional Deal, international postal negotiations, and international crime cooperation.

In addition to his public service, Chris' previous experience includes corporate law, the non-government sector and working with the United Nations in Egypt, Bhutan and Sudan.

Chris holds Bachelor of Laws and Bachelor of Arts degrees (University of Melbourne), and Masters Degrees in International Law (Australian National University) and Public Administration (New York University).

MS RACHELE WILLIAMS

GENERAL MANAGER, PROJECT DELIVERY

Rachele Williams has over 20 years' experience working in the electricity industry, within both industry and government.

Rachele has expert knowledge of the electricity sector developed as a power system engineer working across a range of portfolios in technical, commercial, policy and regulatory settings.

Specialising in innovation and with extensive experience in emerging technologies, Rachele has worked on distributed energy and storage projects, installing and operating fuel cells, small-scale wind turbines, and a variety of energy storage systems such as flow batteries and lithium-ion grid based battery systems.

In addition, Rachele's career has also included international work for the distribution network supplying London, as well as consulting on the delivery of the electrical infrastructure for the 2012 London Olympic Games.

Rachele has a Bachelor's degree in Electrical Engineering from The University of Wollongong, and a Master's degree in Engineering Management from the University of Technology, Sydney.

MR DHRUV VISHRANI

GENERAL MANAGER, STRATEGY

Dhruv Vishrani leads Strategy and Planning at ARENA where he helps to identify, review and prioritise ARENA's strategic and investment objectives, keeping an eye on long-term impact and helping teams to deliver against those objectives.

Dhruv has more than 10 years of experience at McKinsey & Company where he served clients and coached executives to deliver sustainable transformative change. He has extensive strategy and execution experience across a range of sectors, especially heavy industries such as mining, cement and energy, across Australia, South East Asia and India.

Dhruv holds a Bachelor's degree in Mechanical Engineering from the Birla Institute of Technology and Science (BITS), Pilani, and a Post Graduate Diploma in Management from the Indian Institute of Management (IIM) Lucknow.

MS ANNA WHITELAW

GENERAL MANAGER, CORPORATE AFFAIRS

Anna Whitelaw leads ARENA's Corporate Affairs team responsible for strategic communications and engagement both externally and internally.

Anna has more than 15 years' experience in journalism, communications and corporate affairs gained in government, public sector, the arts and in agency. Working across a range of sectors including technology, arts, infrastructure and energy, she has extensive experience in media relations, reputation management, stakeholder engagement, social media, digital content strategy and government relations.

Since joining ARENA in 2017, Anna has managed media and public affairs for the Agency, and overseen the development of ARENA's virtual content platform, ARENAWIRE, and ReWired podcast.

Anna is a former Fairfax journalist for The Age and The Sunday Age. She holds a Bachelor of Laws and Bachelor of Arts from the University of Melbourne. For more than 10 years, she has also run large-scale LGBTIQ community events.



02

FINANCIAL PERFORMANCE

THIS SECTION PROVIDES AN OVERVIEW OF ARENA'S FINANCIAL PERFORMANCE. ARENA'S AUDITED FINANCIAL STATEMENTS FOR THE YEAR ENDED 30 JUNE 2022 ARE PROVIDED IN THE FINANCIAL STATEMENTS SECTION.



Image credit: Horizon Power.

ARENA reports an operating surplus of \$303.3 million for the year, with a lower level of grant spending, \$100.2 million compared to last year's \$164.5 million.

Grant expenditure was 39 per cent lower than the prior year and less than the budget. The COVID-19 pandemic has impacted existing grant projects, resulting in delays in completion of milestones throughout the year.

Administration expenses in 2021-22 were below budget but six per cent higher than the previous year. Some business activity was interrupted by the COVID-19 pandemic, however ARENA has prepared for the workload associated with new measures, with increased expenditure on the recruitment of workers, delivery of IT projects to gain future efficiencies, and increased advisory panel activity on the assessment and subsequent approval of projects. Part of the administration expenses was funded by the Portfolio Department through the secondment of departmental staff to ARENA. This funding is included in the table below as Resources received free of charge.

During 2021-22 ARENA was appropriated \$345 million in funding for new policy initiatives to be delivered by 2025-26. At 30 June 2022 all funding available under the ARENA Act had been drawn from the official public account. Cash and cash equivalents held at 30 June 2022 totalled \$457.5 million. This cash is available to meet contracted commitments of \$304.6 million and Board approved projects and funding rounds totalling \$366 million, for which contracts have yet to be executed and which will be met from current and future funding.

ARENA invested \$3.9 million into the Renewable Energy Venture Capital Fund during the financial year. On 30 June 2022, the investment recorded a fair value gain of \$45.4 million, which is reported in the Other Comprehensive Income section of the financial statements. The carrying value of the investment at 30 June 2022 was \$80.9 million.

TABLE 4 KEY FINANCIAL RESULTS

	2017-18	2018-19	2019-20	2020-21	2021-22
	\$M	\$M	\$M	\$M	\$M
Revenue from Government	209.1	174	231.4	227.5	422
Resources Received Free of Charge	6.7	5.5	4.9	4.9	5.1
Return of Grants	0	5.1	3.1	9.7	2.5
Interest and Other Income	1.5	1.6	1.6	1	1.8
Grant Expenses	-176.3	-138.7	-193.3	-164.5	-100.2
Administration Expenses	-30.9	-30.7	-29.2	-26.2	-27.9
Operating Surplus	10.1	16.8	18.5	52.4	303.3
Cash and Term Deposits	56.4	85.6	87.8	139	457.5
Investments	30.6	29.3	29.8	31.6	80.9
Total Equity	89	103.3	119.2	173.2	524.2



Image credit: Stock.



03

ARENA SHOWCASE

EACH YEAR, THE ARENA SHOWCASE FEATURES A SELECTION OF OUR NEWEST PROJECTS TO DEMONSTRATE THE CRITICAL ROLE THAT ARENA PLAYS IN:

- › increasing the supply of Australia's renewable energy, and
- › delivering significant improvements in the competitiveness of renewable energy technologies.

Image credit: Chargefox.

FOCUSED ON MAXIMUM IMPACTS AND VALUE

ARENA is committed to achieving maximum impact and value from the projects we fund. To do this, we set strategic priorities, which guide our funding decisions.

Strategic priorities

ARENA funding is directed to projects that best deliver on our strategic priorities. In 2021-22, those priorities were to:

- > optimise the electricity transition, including energy storage, large-scale grid integration, flexible demand and further reducing the cost of renewable electricity generation
- > commercialise clean hydrogen for both domestic and export applications
- > support the transition to low emissions aluminium and steel.

Targeted programs and other initiatives


ARENA has also been provided with funding to support projects through targeted programs and other initiatives.



PRIORITY 1

OPTIMISE THE TRANSITION TO RENEWABLE ELECTRICITY





This year ARENA committed funding support to projects designed to help optimise Australia's transition to renewable electricity.

We particularly focused on projects that will help to:

- > enable ultra low-cost renewable generation
- > support flexible demand
- > improve the economics of energy storage
- > optimise the integration of large-scale renewable energy into the electricity system.

WHY IS THIS A PRIORITY FOR ARENA?

By directing funding to projects that best deliver on this priority, ARENA is helping Australia move towards a lower-cost, largely renewable electricity system, both on and off the grid, that is able to meet significantly higher domestic and export demand.

Image credit: Stock.

CASE STUDY

BIG BATTERIES TO STRENGTHEN THE GRID FOR REMOTE COMMUNITIES



PROJECT NAME

AGL Broken Hill Grid-Forming Battery

LEAD ORGANISATION

AGL Energy

ARENA FUNDING

\$14.84 million

TOTAL PROJECT COST

\$43.2 million

LOCATION

New South Wales

Image credit: Stock.

This year ARENA commenced funding a project that will explore how big batteries can strengthen weak sections of an electricity grid, such as regional communities located on the fringes of Australia's national grid.

We committed \$14.84 million in funding to AGL Energy to build a large-scale battery storage system in the remote city of Broken Hill in west NSW.

The 50 MW / 50 MWh system will demonstrate an advanced technology known as grid-forming inverters, which have the ability to quickly respond to large fluctuations on the power grid and provide grid stability services traditionally delivered by coal and gas. The battery system will also support the uptake of renewable energy in the region and be capable of providing short-term backup power to Broken Hill if the electricity supply is interrupted.

Energy storage technology provider Fluence and its consortium partner Valmec have been engaged by AGL to supply the batteries for the \$43.2 million project.

Broken Hill is considered an ideal candidate site for testing the grid-forming inverters due to its fringe-of-grid location, where the grid can be prone to voltage instability. The city is connected to the national grid by a single 260 km transmission line from Mildura.

A report released by the Australian Electricity Market Operator in 2021 identified an urgent need for advanced inverter technology to support the grid as more renewable generation enters the National Electricity Market (NEM). While coal and gas traditionally provided services to strengthen the electricity grid, the transition to inverter-based sources like wind and solar energy requires new solutions.

Large-scale batteries equipped with advanced inverters with grid-forming capabilities offer a solution to this problem.

In addition to this project, Edify's 25 MW / 50 MWh Darlington Point battery project reached financial close in May 2022. This project was supported by a \$6.6 million grant from ARENA and \$6.5 million from the NSW Government. ARENA's support helped Edify expand the project to 150 MW / 300 MWh (with the expansion known as the Riverina Energy Storage System). ARENA also announced a \$100 million funding round to support the deployment of grid-forming batteries in Australia.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

The next step for large-scale batteries is to show their capabilities in strengthening the grid as more renewables come online. Big batteries are already becoming critical to our electricity system, but we know with grid-forming inverters they can provide system strength services traditionally provided by thermal (coal and gas) and hydroelectric generation.

This and other projects will allow us to see how advanced inverter technology can provide support in a weaker section of the electricity grid and accelerate the commercialisation of big batteries.

"Broken Hill's unique edge-of-grid environment provides an ideal location for this advanced inverter technology to demonstrate how it can facilitate further penetration of renewable energy generation and add to the stability of the wider electricity network."

Markus Brokhof
AGL Chief Operating Officer

WHAT IS A GRID-FORMING INVERTER?

Inverters provide an interface between the grid and renewable energy sources such as solar panels, wind turbines, and battery storage. When there is a large disturbance in weak grids, conventional inverters can be unstable, causing voltage instability in the region.

As solar and wind account for increasing shares of the overall electricity supply, it is becoming impractical to depend on synchronous generators (such as coal and gas) to provide the necessary system strength and stability services.

Grid-forming inverters are an emerging technology that allows big batteries to provide the required system strength stability to ensure that other inverter-based energy sources such as wind and solar can maintain stable operations even as synchronous generators withdraw from the system.

CASE STUDY

COORDINATING HOME-GENERATED ENERGY TO KEEP THE GRID STRONGER IN THE WEST



PROJECT NAME

Western Australia Distributed Energy Resources
Orchestration Pilot (Project Symphony)

LEAD ORGANISATION

Electricity Networks Corporation (Western Power)

ARENA FUNDING

\$8.55 million

TOTAL PROJECT COST

\$35.44 million

LOCATION

Western Australia

Image credit: Western Power.

With one in three households in Western Australia (WA) having already installed rooftop solar, growth in consumer-owned distributed energy resources (DER) such as rooftop solar and integrated battery storage is expected to continue in the years ahead.

An increasing share of solar energy in the grid creates challenges for the delivery of electricity. When an excess of local rooftop solar generation greatly exceeds the demand for electricity at certain times of the day, it could pose a risk to the stability of the grid.

ARENA is focused on finding ways to address this challenge. In 2021-22 we committed funding to support Project Symphony, a pilot project designed to 'orchestrate' 900 customer-owned DER assets across 500 homes and businesses in the Southern River area of WA into a Virtual Power Plant (VPP). The area was chosen for the pilot due to the high uptake of solar with almost half of all homes in the area having installed rooftop systems.

Orchestration schemes provide incentives to encourage solar households to participate, usually through payments for energy supplied or credits on power bills.

By aggregating the electricity generated by the households through a VPP, excess power can be dispatched to the grid in the same way as a traditional power plant, helping to stabilise the local electricity system and provide benefits for the entire network. The project will increase understanding of how the innovative use of DER can provide benefits to customer affordability and network security, reduce emissions, and help strengthen the economy.

Project Symphony is a collaboration between Western Power, Synergy and the Australian Energy Market Operator (AEMO). The WA Government and AEMO have committed \$26.9 million to the project, which is a critical component of the State Government's DER Roadmap.

ARENA's other work on DER includes providing support of more than \$120 million to DER projects, and establishing the Distributed Energy Integration Program (DEIP), a collaboration of government agencies, market authorities, industry and consumer associations aimed at maximising the value of customers' DER for all energy users.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Households across Australia are rapidly taking up the advantages offered by new technologies to store and manage energy. By improving the way a grid is managed, DER presents an opportunity to increase customer value and reduce costs for all consumers.

Successful integration of DER across the WA electricity grid (which is separate from the national grid), will allow for the further expansion of renewable energy generation across the State, leading to cleaner and cheaper energy for all electricity customers, not just those with solar and battery systems. It may also reduce the need for investment in traditional baseload power supply, such as large-scale coal or gas-fired power plants.

The project will also help to identify the investment required to further expand the role of DER in WA's electricity network while supporting its ongoing reliability and security.

WHAT IS A VIRTUAL POWER PLANT?

A VPP is a collection of distributed energy resources, such as home rooftop solar and battery systems, that are connected and can all work together, creating a single virtual power generator. A VPP can sometimes match or even exceed the amount of energy generated by a traditional power station.

CASE STUDY

TRANSFORMING THE GRID WITH POLE-MOUNTED BATTERIES



PROJECT NAME

United Energy Low Voltage Battery Trial

LEAD ORGANISATION

United Energy

ARENA FUNDING

\$4 million

TOTAL PROJECT COST

\$10.98 million

LOCATION

Victoria

On sunny days in places where there are many installations of rooftop solar, the owners of those solar panels may encounter restrictions on the amount of renewable energy they can export to the grid. High levels of renewables can cause voltage issues, which impact the amount of renewable energy that can be exported to the grid.

This year ARENA committed \$4 million in funding to United Energy to demonstrate whether pole-mounted batteries can solve this voltage problem. The \$10.98 million project is the first of its kind, involving the manufacture of 40 custom-built batteries, which are to be mounted to electricity poles across United Energy's distribution network.

The batteries will be connected and operate as a virtual power plant (VPP) that can respond to peak demand across the low-voltage distribution network in south-eastern Melbourne and the Mornington Peninsula. The batteries will be able to regulate voltage and increase the amount of solar energy able to be hosted by the local grid.

Each of the 30 kW batteries can provide at least two hours of energy storage and will be installed at strategic locations across the network. They will be manufactured locally by Thycon in Melbourne's north and mirror the design of existing distribution transformers that are already mounted to poles across United Energy's network in Melbourne's bayside area.

The VPP will be operated by United Energy and Simply Energy to demonstrate how networks and retailers can share value streams to provide benefits to customers and the wider energy system. When the batteries are not required by United Energy, Simply Energy will operate them to provide wholesale power and frequency control ancillary services (FCAS), which help to keep the grid stable.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

As more and more renewable generation comes online, we must address the challenges of a changing energy mix and build the grid of the future. This innovative approach to battery storage provides benefits to current and future solar customers, reduces network costs, and makes it possible to increase the level of dispatchable renewable energy in the power system.

United Energy's world-first pole-mounted technology could change the way renewable energy is integrated into the system. When connected near customers, distribution connected batteries have enormous potential to facilitate higher levels of rooftop solar while keeping costs under control for all customers.

FUNDING ROUND

ULTRA LOW-COST SOLAR PV R&D ROUND



FUNDING ROUND

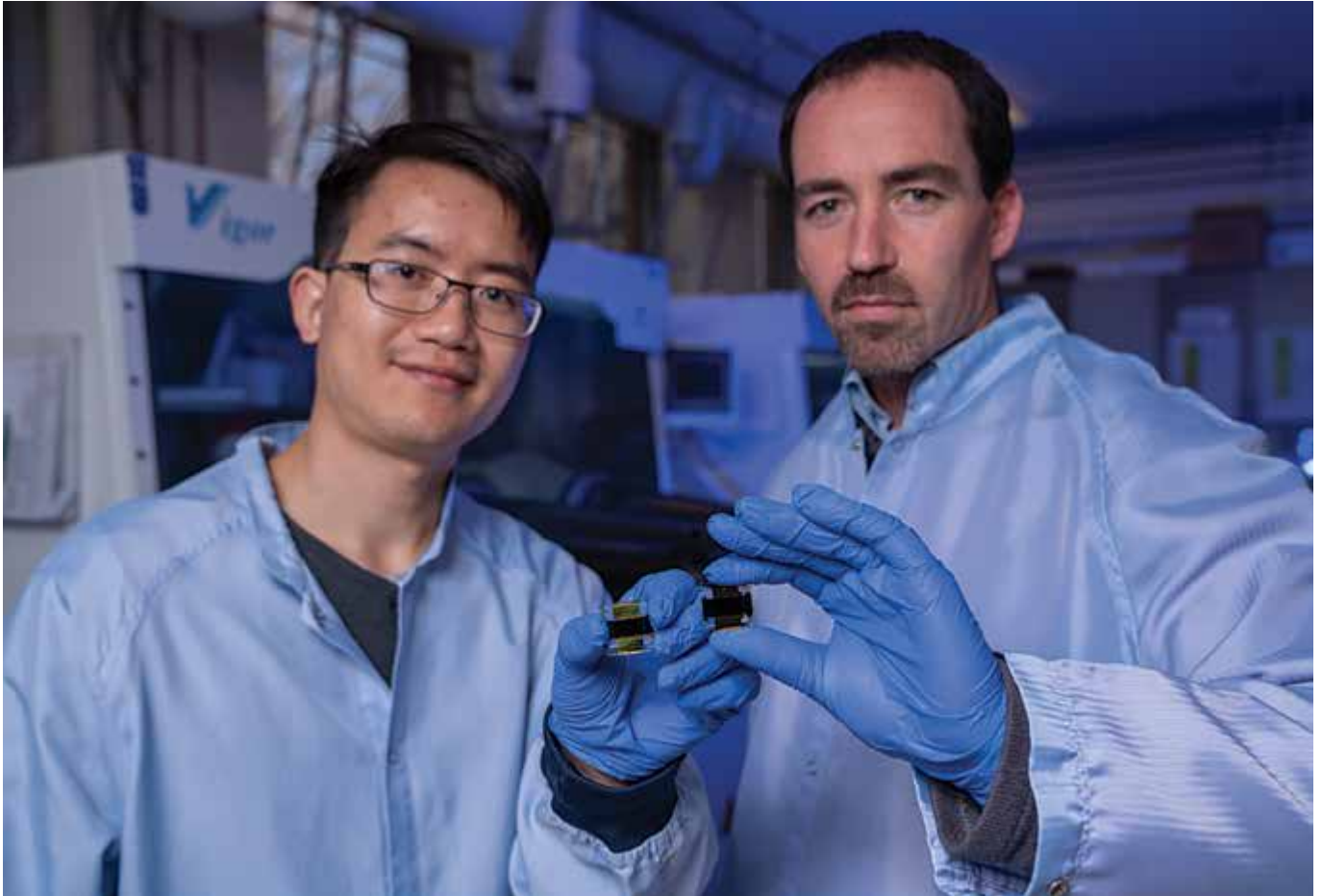
Transformative Research Accelerating
Commercialisation Program Round 1

ARENA FUNDING

up to \$40 million



Image credit: Stock.



With support from a previous ARENA R&D funding round, Dr Jun Peng and Associate Professor Thomas White from the ANU College of Engineering and Computer Science developed their record breaking perovskite solar cells. Image credit: Lannon Harley/ANU.

Australian solar researchers have led the world for decades and will continue to play an integral role in driving down the cost of solar energy and improving solar cell efficiency.

To support those researchers and continue to drive innovation, ARENA announced up to \$40 million in funding this year to support research and development (R&D) for ultra low-cost solar.

Ultra low-cost solar will be needed to scale up production of low-cost green hydrogen, and is the key to unlocking other decarbonisation pathways for heavy industry including low emissions materials such as green steel and aluminium.

We opened the funding round for expressions of interest in February 2022, inviting projects that can significantly reduce the cost of solar PV by 2030 across two streams:

- > **cells and modules:**
building on Australia's leading track record of R&D and innovation in solar cells and modules
- > **balance of system, operations and maintenance:**
seeking to broaden the approach to accelerate innovation that can drive down the upfront and ongoing costs of utility-scale solar PV in the field.

Short-listed projects will be invited to submit a full application by August, and successful projects will be announced later in 2022.

This is ARENA's fourth funding round specifically in support of solar PV R&D.

CASE STUDY

EASIER GRID CONNECTION FOR RENEWABLE GENERATORS



PROJECT NAME

AEMO Connections Tool Project

LEAD ORGANISATION

Australian Energy Market Operator (AEMO)

ARENA FUNDING

\$2.22 million

TOTAL PROJECT COST

\$4.26 million

LOCATION

New South Wales

Image credit: Stock.

This year ARENA committed \$2.22 million to the Australian Energy Market Operator (AEMO) to develop a new online tool to help streamline the grid-connection process for proposed renewable energy generators.

Australia's energy system is evolving rapidly with most of the growth in generation coming from rooftop solar and large-scale solar and wind. Obtaining approval to connect new weather-dependent wind and solar generators to the grid is increasingly challenging, particularly when they are planned for weaker parts of the electricity network that are less able to accommodate increased amounts of renewable energy.

AEMO's Next Generation Connections Tool will be a cloud-based resource that allows renewable energy project developers to test their proposals using data and modelling that historically have only been available to AEMO. Collaborating with Network Service Providers and AEMO, project developers will be able to use the Tool to rapidly verify whether their proposed renewable energy generator can safely be connected to the electricity network.

By providing project developers with a detailed source of energy data and modelling, the Tool will help them to accelerate development of their projects and manage potential risk before going through the formal grid connection approval process. This will help to fast-track the addition of new renewable energy projects into the energy system.

The Connections Tool will be developed and rolled out in three phases to progressively larger numbers of users. During each phase, AEMO will engage with users and incorporate stakeholder feedback into successive releases.

The Connections Tool Project, combined with the development of an in-house operations simulator, is the first step in AEMO's plan to deliver an Australian Energy Simulation Centre (AESC).

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Once finalised, renewable energy project developers will be able to use the Tool to perform studies that incorporate new plant models with the same large-scale power system model that is used internally by AEMO to assess grid connection applications. This will help project developers to better design their generating systems and have increased levels of confidence that their proposals will meet the required acceptance criteria.

This is expected to significantly streamline the application process, reducing risk, costs, and the time usually required to obtain connections approval.

CASE STUDY

5B MAVERICK AUTOMATING THE FUTURE OF SOLAR



PROJECT NAME

5B Maverick Solar PV Automated Assembly & Deployment

LEAD ORGANISATION

5B Holdings

ARENA FUNDING

\$14 million

TOTAL PROJECT COST

\$33.4 million

LOCATION

New South Wales

Image credit: ARENA.

This year ARENA committed \$14 million to Australian solar manufacturer 5B to improve production and delivery of its innovative low-cost solar product, the 5B Maverick. The \$33.4 million project aims to automate the manufacturing and setup of the prefabricated system, reducing the cost of the solar technology and speeding up installation times.

With ARENA's support, 5B will design and implement a high-volume, scalable and predominantly automated manufacturing line at its headquarters in Mascot, Sydney. A GPS Guided Deployment (GGD) field robotic system will also be developed to automate the process of installing the Maverick system, to improve speed and help ensure reliability and safety.

Launched in 2017, Maverick is a prefabricated, modular solar array (a collection of solar panels that generates electricity as a system), built and pre-wired in a factory to make it quicker and safer to install on site. To date it has been used in 62 projects, with a total capacity of 48.7 MW installed in Australia, the United States, Latin America and India.

The project aims to reduce the total capital cost of delivering a complete solar farm by 35 per cent by 2023 and 70 per cent by 2030, to 30 cents per watt. As part of our Investment Plan, ARENA last year set the ambitious new target of 'Solar 30 30 30' to improve solar efficiency to 30 per cent, and reduce the cost of solar to 30 cents a watt installed, by 2030.

ARENA continues to be a significant supporter of Australian innovation in the solar PV industry. This year we announced up to \$40 million in a funding round to support solar PV research and development that aims to support the sector to develop ultra low-cost solar technologies (see page 54).

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

While solar PV and wind are recognised as the lowest-cost forms of generation in Australia today, further cost reductions are required to optimise Australia's transition to renewable electricity and help emerging industries such as renewable hydrogen and low emissions metals.


5B is an Australian success story at the forefront of solar innovation. Established in 2013, they are now becoming leaders in locally-manufactured ultra low-cost solar products that could reshape our solar industry and achieve our important aim of 30 cents per installed watt at utility scale by 2030.

"The world needs massive scale, ultra low-cost solar power fast and ARENA's funding will accelerate the delivery of that. It gives us the opportunity to build Australia's reputation as a clean energy superpower, exporting cutting edge clean technology to the world."

Nicole Kuepper-Russell
5B Deputy Chief Executive Officer



PRIORITY 2 COMMERCIALISE CLEAN HYDROGEN



This year ARENA committed funding support to projects designed to help commercialise clean hydrogen.

We particularly focused on:

- > projects that will help to reduce the cost of hydrogen produced from renewable energy
- > research and development to demonstrate technologies that address technical challenges along the hydrogen value chain.

WHY IS THIS A PRIORITY FOR ARENA?

By directing funding to projects that best deliver on this priority, we are supporting industry to find innovative solutions that can help Australia to establish a viable clean hydrogen industry and realise our potential as a significant exporter of clean energy.

This will require innovation across the full hydrogen value chain, including investigating new forms of low-cost production, scaling up the supply side of the industry, and demonstrating a variety of end uses in the domestic and export sectors.

Image credit: Stock.

CASE STUDY

NEXT-GENERATION HYDROGEN SERVICE STATION FOR HEAVY VEHICLE FLEETS



PROJECT NAME

New Energies Service
Station Geelong
Demonstration Project

LEAD ORGANISATION

Viva Energy Australia

ARENA FUNDING

\$22.8 million

TOTAL PROJECT COST

\$43.3 million

LOCATION

Victoria

Image credit: Viva Energy.

While battery electric vehicles are fast becoming a popular choice for passenger vehicles, hydrogen fuel cell vehicles (FCEVs) provide a zero emissions alternative for heavy and long distance vehicles.

This year ARENA helped to support the uptake of hydrogen FCEVs in heavy vehicle fleets by committing \$22.8 million to Viva Energy to develop, build and operate Australia's first public hydrogen refuelling facility in Geelong, Victoria.

The \$43.3 million demonstration project will be one of the first deployments of FCEV fleets in Australia, serviced by commercial hydrogen supply contracts and embedded into the existing operations of some of Australia's most well-known commercial road transport businesses.

The New Energies Service Station will be built adjacent to Viva Energy's petroleum refinery, and will incorporate a 2 MW renewable-powered electrolyser to produce hydrogen. It will also include facilities for hydrogen compression, storage and dispensing, along with fast-charging stations for battery electric vehicles.

The renewable hydrogen will be used initially to fuel a fleet of 15 FCEVs, owned and operated by project partners. Toll Group, ComfortDelGro Corporation, Cleanaway and Barwon Water have signed on to purchase the hydrogen-powered vehicles, which will include commuter buses, prime movers and municipal waste collections vehicles.

The project will put these hydrogen-powered vehicles on the road to prove their value in day-to-day commercial operations while reducing the carbon footprint of heavy vehicle transport. By driving a demand for hydrogen at the same time as developing the refuelling facility, the project aims to overcome the chicken-and-egg challenge that traditionally has been a hurdle for the hydrogen sector.

The service station will begin as a back-to-base model, however, Viva Energy aims for it to be the first of a network of hydrogen refuelling outlets located on key transport routes along Australia's east coast connecting Melbourne, Sydney and Brisbane.

The New Energies Service Station will build on ARENA's existing work to decarbonise the transport sector with battery and FCEV technologies.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

The experiences of Viva Energy and the fleet vehicles using the renewable hydrogen produced on site will provide valuable insights into the operation of different types of hydrogen FCEV heavy vehicles.

By demonstrating the potential of FCEVs to complement - and eventually replace - diesel prime movers, waste trucks and buses in existing back-to-base transport applications, the project will help to accelerate the commercialisation pathway for FCEV fleets in Australia.

“This funding from ARENA has opened the door for Viva Energy to work with long-term customers to demonstrate the important role that hydrogen will play in the future of transportation in Australia.”

Scott Wyatt
Viva Energy CEO

CASE STUDY

HYDROGEN HUB FLAGGED FOR AUSTRALIA'S LARGEST COAL PORT



PROJECT NAME

Port of Newcastle Hydrogen Hub Feasibility Study

LEAD ORGANISATION

Macquarie Group's Green Investment Group,
Port of Newcastle

ARENA FUNDING

\$1.5 million

TOTAL PROJECT COST

\$3 million

LOCATION

New South Wales

Image credit: Port of Newcastle.

Green hydrogen could be exported from the central coast of New South Wales under a proposal led by the Port of Newcastle and Macquarie's Green Investment Group. ARENA committed \$1.5 million this year to a \$3 million study that will examine the feasibility of the proposal.

Under the plan, a 40 MW renewable-powered electrolyser would supply hydrogen for use in a range of applications, including energy production, mobility and industrial uses such as ammonia production. The hydrogen production hub would be situated at the Port of Newcastle, a natural deep water port that began exporting coal more than 200 years ago.

As Australia's largest east coast port, Newcastle is well positioned to supply a growing global demand for low emissions sources of energy. The port handles around 4400 annual ship movements using just half of the capacity of the shipping channel, with established trading routes to growing hydrogen markets in Japan and Korea.

Work on the feasibility study will be led by Port of Newcastle and Macquarie's Green Investment Group and supported by project partners Idemitsu, Keolis Downer, Lake Macquarie City Council, Snowy Hydro, Jemena and project collaborators Macquarie Agriculture and University of Newcastle. The project will benefit from the deep expertise of these joint developers, project partners, collaborators and globally recognised specialist consultants.

While stage one of the project involves a 40 MW electrolyser, the study will also consider a staged scale up of an electrolyser to around 1 GW with the ability to produce up to 150,000 tonnes of hydrogen each year for domestic and export use. Potential uses for green hydrogen will also be identified by the study, using customer-led research into mobility, bunkering, energy production, and industrial applications such as renewable ammonia at scale for domestic fertiliser use.

The project is ARENA's second feasibility study for a large-scale hydrogen production project. Funding was also announced this year for Stanwell to complete a feasibility study for a proposed hydrogen export market located in Gladstone, Queensland.

As part of our effort to commercialise hydrogen electrolyzers, we announced \$103 million in funding to support three 10 MW electrolyser projects through the Renewable Hydrogen Deployment Funding Round in May 2021. The electrolyzers are expected to be amongst the largest in the world when construction begins in 2022.

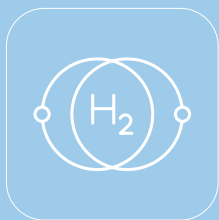
HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

If proven to be feasible, this proposal could transform Newcastle into a major player in producing clean hydrogen.

The hydrogen hub aims to progress the commercialisation of renewable hydrogen and renewable ammonia for the domestic market and, as the opportunity emerges, to realise the export opportunities for these and other green products produced out of the Port of Newcastle.

CASE STUDY

HYDROGEN POWERED PRIME MOVERS FOR NORTH QUEENSLAND



PROJECT NAME

Renewable Hydrogen Demonstration
for Heavy Transport

LEAD ORGANISATION

Ark Energy H2

ARENA FUNDING

\$3.02 million

TOTAL PROJECT COST

\$12.97 million

LOCATION

Queensland



Image credit: Ark Energy.

Replacing diesel vehicles with renewable hydrogen alternatives is a key opportunity for the early uptake of commercially viable hydrogen due to the relatively high cost of diesel.

With a focus on this opportunity, ARENA conditionally approved \$3.02 million in funding this year to Ark Energy for the installation of a 1 MW electrolyser with storage and refuelling infrastructure to fuel five new 140 tonne rated fuel cell electric trucks.

The \$12.97 million first-of-a-kind project will be located at the Sun Metals' zinc refinery in Townsville, which is owned by Ark's sister company Sun Metals Corporation (SMC). The electrolyser will be powered by renewable energy from the 124 MW solar farm located at the zinc refinery, which is also owned by SMC.

The five zero emissions prime movers will replace equivalent diesel-powered trucks and avoid 1300 tonnes of CO₂ emissions each year. They will be supplied by Hyzon Motors and will ferry zinc from Sun Metals' refinery to the Port of Townsville to be shipped around the world.

The trucks are expected to become the largest road-going fuel cell electric trucks in the world at the time of their deployment. Ark will lease the trucks to another sister company, Townsville Logistics, which will operate them in road train triple trailer configuration and incorporate them into its short haul fleet currently transporting zinc concentrate and ingots between the Port of Townsville and the zinc refinery.

ARENA's funds will be paid upon the commissioning of the refuelling facility and delivery of the five trucks, which are expected to arrive in December 2022.

The project is also supported by a \$12.5 million debt finance facility from the Clean Energy Finance Corporation, and has also been awarded \$5 million from the Queensland State Government's Hydrogen Industry Development Fund.

ARENA has previously funded two hydrogen light vehicle transport projects. The project with BOC will install a hydrogen refuelling station in Brisbane to fuel a passenger fleet of Hydrogen FCEVs and another project with Toyota has seen refuelling infrastructure installed in Melbourne to support passenger vehicles and forklifts.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

As Australia pushes towards net zero emissions, we must continue to find renewable and clean solutions for hard-to-abate sectors now so that alternatives to fossil fuels can be implemented as soon as possible.

Heavy vehicles make up approximately four per cent of road vehicles in Australia, but account for around 23 per cent of all road transport fuel consumed. This project could offer up a valuable pathway towards achieving net zero emissions in the heavy transport and mining sectors.

SMC's zinc refinery is currently the second largest single-site consumer of electricity in Queensland. The introduction of fuel cell electric trucks will assist the company in helping to reduce its overall emissions, starting with the transport supply chain.

Ark's first-of-a-kind deployment is a great opportunity to highlight the potential of ultra-heavy fuel cell electric trucks in Australia, which has significant replication potential and could fast track the reduction of emissions by using renewable hydrogen not only in heavy transport, but the entire resources supply chain domestically.

CASE STUDY

OPENING UP RENEWABLE HYDROGEN EXPORT OPPORTUNITIES WITH JAPAN



PROJECT NAME

Stanwell Central Queensland Hydrogen
Project Feasibility Study

LEAD ORGANISATION

Stanwell Corporation

ARENA FUNDING

\$2.17 million

TOTAL PROJECT COST

\$10.4 million

LOCATION

Queensland

Australia holds a competitive advantage in the emerging hydrogen export market due to its existing expertise and infrastructure in energy export supply chains, proximity to key emerging hydrogen import markets in Asia with established trade relationships, and an abundance of renewable energy resources.

However, a key challenge of producing cost-competitive green hydrogen by electrolysis is the high capital costs of equipment. Large export-scale projects have the potential to improve cost competitiveness through economies of scale.

With this potential cost reduction in mind, ARENA committed \$2.17 million in 2021-22 for Queensland coal and gas operator Stanwell Corporation to examine the feasibility of developing an export-scale green hydrogen project in Gladstone, Queensland.

The \$10.4 million study was delivered in partnership with Japan's largest hydrogen supplier Iwatani Corporation. It investigated the feasibility of developing a hydrogen production facility capable of producing up to 100 tonnes each day of renewable hydrogen for export to Japan from 2026.

The feasibility study is supported by a broad consortium of Japanese and domestic partners including Kansai Electric Power Corporation, Marubeni Corporation, Kawasaki Heavy Industries and APA Group, as well as funding support from the Japanese Ministry of Economy, Trade and Industry.

It examined the complete hydrogen supply chain including electrolysis, storage, handling, liquefaction, transportation and shipping. The Consortium's long-term plan is to scale up hydrogen production to 800 tonnes per day in 2031 to meet forecast Japanese demand. The hydrogen will be shipped to Japan in liquid form using purpose-built carriers, in a similar way to Australia's current liquified natural gas exports.

An earlier concept study conducted by Stanwell and Iwatani found a green hydrogen industry could create significant investment, job opportunities and energy load growth in Central Queensland. At its peak, a proposed Central Queensland Hydrogen Project would provide more than 8900 new jobs and deliver \$417.2 billion in hydrogen exports over its 30-year life as well as benefiting construction, utilities, heavy manufacturing and a range of local service industries.

ARENA has previously provided \$913,667 in funding to Stanwell to investigate the feasibility of a 10 MW electrolyser deployment project at the Stanwell Power Station near Rockhampton, Queensland, to supply domestic hydrogen.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?


Australia's vast solar and wind resources and our proven ability to export energy products mean we are well placed to build a large-scale competitive hydrogen export industry in the future. Feasibility studies are a necessary and crucial step to build the case to attract the finance required for large impactful projects.

If feasible, the project would encourage the growth of a green hydrogen export industry in Central Queensland and support the growth of renewable energy in the region. It will also help reduce barriers to renewable energy uptake by increasing international engagement with Japan and building relationships with major commercial Japanese partners.

The background image shows a large industrial facility, possibly a refinery or chemical plant, at night. The structure is illuminated with warm yellow and orange lights, creating a complex network of pipes, scaffolding, and storage tanks. In the foreground, two large, dark, cylindrical storage tanks are visible. Overlaid on the image are stylized graphic elements: a teal triangle on the left, a series of blue chevrons pointing right at the top, and a network of thin purple and red lines with circular nodes connecting different parts of the scene.

PRIORITY 3

SUPPORT THE TRANSITION
TO LOW EMISSIONS METALS



This year ARENA committed funding support to projects designed to support the transition to low emissions metals.

We particularly focused on projects that will help to:

- > accelerate the transition to a low emissions steel value chain
- > accelerate the transition to a low emissions aluminium value chain.

WHY IS THIS A PRIORITY FOR ARENA?

We are supporting Australian industry by investing in innovative and replicable technologies, processes and commercial models that have the potential to lower industry emissions.

Image credit: Alcoa.

CASE STUDY

INVESTIGATING LOW EMISSIONS STEEL PRODUCTION AT PORT KEMBLA



PROJECT NAME

Port Kembla Steelworks Renewables
and Emissions Reduction Study

LEAD ORGANISATION

Bluescope Steel

ARENA FUNDING

\$924,784

TOTAL PROJECT COST

\$1.86 million

LOCATION

New South Wales

Image credit: Stock.

To meet our net zero targets, Australia needs to reduce emissions from the iron ore mining sector and steel industry. More than seven per cent of the world's emissions come from steelmaking and these emissions are considered hard to abate.

This year ARENA committed \$924,784 in funding for BlueScope Steel to investigate options to decarbonise operations at the Port Kembla Steelworks in New South Wales.

BlueScope's Australian operations emitted 7.3 million tonnes of CO₂e in 2019, contributing about 1.3 per cent of Australia's total greenhouse gas emissions. BlueScope has published its medium-term target to reduce steelmaking emissions intensity by 12 per cent between 2018 and 2030 and a net zero by 2050 goal. To achieve this, innovative low emissions steelmaking processes need to be investigated.

The \$1.86 million Port Kembla Steelworks Renewables and Emissions Reduction Study will consider the technical and economic viability of several decarbonisation options for the plant. It will explore two main pathways to lowering emissions at Port Kembla: Smart Carbon Usage and Direct Carbon Avoidance.

Smart Carbon Usage refers to opportunities to substitute coal with renewable carbon sources in the steel production process. The study includes a series of plant trials where BlueScope will investigate the potential to partially replace the coal usually injected into the blast furnace with renewable biochar.

Direct Carbon Avoidance refers to longer-term opportunities to decarbonise steelmaking, including through the use of renewable hydrogen, in combination with a Direct Reduced Iron process.

The study will provide valuable insights into potential pathways to decarbonise steel production at the steelworks. BlueScope will publicly release its initial insights from the study to maximise benefits for a wider set of stakeholders.

BlueScope has engaged the University of Wollongong and the Future Fuels Cooperative Research Centre to assist in delivering the study. The partners will provide expertise in steelmaking technologies, process, modelling and pneumatic conveying of raw materials.

ARENA has identified the steel and aluminium value chains as priority areas where it aims to support innovative and replicable technologies, processes and commercial models that can help to lower emissions.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Reducing emissions from steelmaking is a priority for Australia.

This study will explore prospective technologies that have the potential to reduce emissions across steel manufacturing at Port Kembla Steelworks, including the role Australia's emerging renewable hydrogen industry can play on the pathway to low emissions steel.

CASE STUDY

USING RENEWABLE HYDROGEN TO REDUCE EMISSIONS IN ALUMINA REFINING



PROJECT NAME

Rio Tinto Pacific Operations Hydrogen Program

LEAD ORGANISATION

Rio Tinto Aluminium

ARENA FUNDING

up to \$579,787

TOTAL PROJECT COST

\$1.16 million

LOCATION

Queensland

Image credit: Stock.

This year we committed up to \$579,787 in funding for Rio Tinto to investigate the potential use of renewable hydrogen to partially decarbonise its alumina refining operations.

Rio Tinto accounts for approximately a third of Australia's total alumina production capacity and is aiming to reach net zero emissions across its operations by 2050.

Conventional alumina refining combusts natural gas to achieve the high temperatures necessary in the calcination process. Rio Tinto will investigate the technical implications of replacing the natural gas with renewable hydrogen at its Yarwun alumina refinery in Gladstone, Queensland.

The \$1.16 million study, funded equally by ARENA and Rio Tinto, involves two distinct work packages:

- > simulating the calcination process using a lab-scale reactor at Rio Tinto's Bundoora Technical Development Centre in Melbourne, Victoria
- > preliminary engineering and design study conducted at Rio Tinto Yarwun to understand the construction and operational requirements of a potential demonstration project at the refinery.

Australia is the world's largest producer of bauxite and the largest exporter of alumina, accounting for 15 per cent of global alumina refining capacity. Alumina refining is an energy intensive process that uses high pressure steam to produce the heat required to process the bauxite into alumina. Alumina can then be converted to aluminium in a smelting process.

ARENA has identified the alumina sector as a key target in its strategy to support industry to reduce emissions due to the potential size of emissions abatement. In 2019, alumina refining accounted for more than 14 million tonnes of carbon dioxide in Australia, which represents approximately 24 per cent of Australia's scope 1 manufacturing emissions.

We also committed \$8.6 million in funding for Alcoa to investigate and trial electric calcination in the alumina refining process. Alcoa's main objective for the \$19.7 million project is to demonstrate the technical and commercial feasibility of using electric calciners powered by renewable energy to decarbonise the alumina refining process. This project will inform the commercialisation and technology development pathway for electric calcination technology and accelerate the decarbonisation of a hard-to-abate sector.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Replacing fossil fuels with green hydrogen in the refining process for alumina would reduce emissions in the energy and emissions intensive refining stage of the aluminium supply chain. Exploring these new clean energy technologies and methods is a crucial step towards producing green aluminium.

This study will investigate a potential technology that can contribute to the decarbonisation of the Australian alumina industry. If successful, the technical and commercial lessons from Rio Tinto's study could lead to the implementation of hydrogen calcination technology, not only in Australia, but also internationally.

"We see the ARENA and Rio Tinto-funded study as a step towards reducing refinery emissions and one that has the potential to play an important part in Rio Tinto's commitment to decarbonisation ... We recognise we are on a long road towards reducing emissions across our operations and there is clearly more work to be done. But projects such as this are an important part of helping us get there."

Daniel van der Westhuizen
Rio Tinto Aluminium Pacific Operations
Acting Managing Director



TARGETED PROGRAMS AND OTHER INITIATIVES

From time to time, ARENA is provided with additional funding to support projects through targeted programs and other initiatives.

In 2021-22 we announced support for projects through two targeted programs:

- > Future Fuels Program
- > Regional Australia Microgrid Pilots Program.

We also received funds to support implementation of the Bioenergy Roadmap, which aims to further support and advance Australia's bioenergy sector through co-funding additional research, development and deployment of advanced sustainable aviation and marine biofuels.



Image credit: EDL.

TARGETED PROGRAM

FUTURE FUELS PROGRAM



FUNDING ROUND

Future Fuels Program Round 1

ARENA FUNDING

\$24.55 million

TOTAL PROJECT COST

\$79.9 milion

Image credit: Stock.

As the costs of electric vehicles (EVs) come down, more consumers and fleet users are looking to go electric. Expanding the fast-charging network will make it easier than ever to drive an EV in Australia.

This year ARENA committed \$24.55 million in funding to five applicants for 19 projects that will add more than 400 new charging stations to Australia's fast-charging network for battery EVs.

The funding was allocated through the first funding round of the Future Fuels Program.

We increased the initial allocation of \$16.5 million for the funding round to \$24.55 million after being impressed by the strength and number of applicants.

Together, the five applicants will deliver 403 new fast-charging stations, at a total cost of \$79.9 million. Each charging station will be capable of charging at least two vehicles at the same time at 50 kW or above.

Fast-charging stations will be built across eight geographic regions, covering 14 of Australia's most populous cities. In addition to expanding capital city networks in every state and territory, the regional centres of Geelong, Newcastle, Wollongong and the Sunshine Coast will each receive a minimum of eight new stations to drive the uptake of EVs in regional locations.

The projects will deliver a seven-fold increase in the number of fast-charging stations across Australia's most populated cities and regions.

The Future Fuels Program is a \$250 million initiative to enable the demonstration and deployment of new zero emissions vehicle technologies. Funding Round 1 aimed to support the growing number of Australian motorists who drive EVs with a charging network across regional and capital cities.

**TABLE 5 FUTURE FUELS PROGRAM ROUND 1
SUCCESSFUL APPLICANTS**

LEAD ORGANISATION

Evie Networks (Fast Cities Australia)

ARENA FUNDING

\$8.85 million

PROJECTS

158 public fast-charging stations across eight regions

LEAD ORGANISATION

Ampol Australia Petroleum

ARENA FUNDING

\$7.05 million

PROJECTS

121 public fast-charging stations across four regions

LEAD ORGANISATION

Engie (IPAH Client Solutions Australia)

ARENA FUNDING

\$6.85 million

PROJECTS

103 public fast-charging stations across four regions

LEAD ORGANISATION

Chargefox

ARENA FUNDING

\$1.4 million

PROJECTS

16 public fast-charging stations across two regions

LEAD ORGANISATION

Electric Highways Tasmania

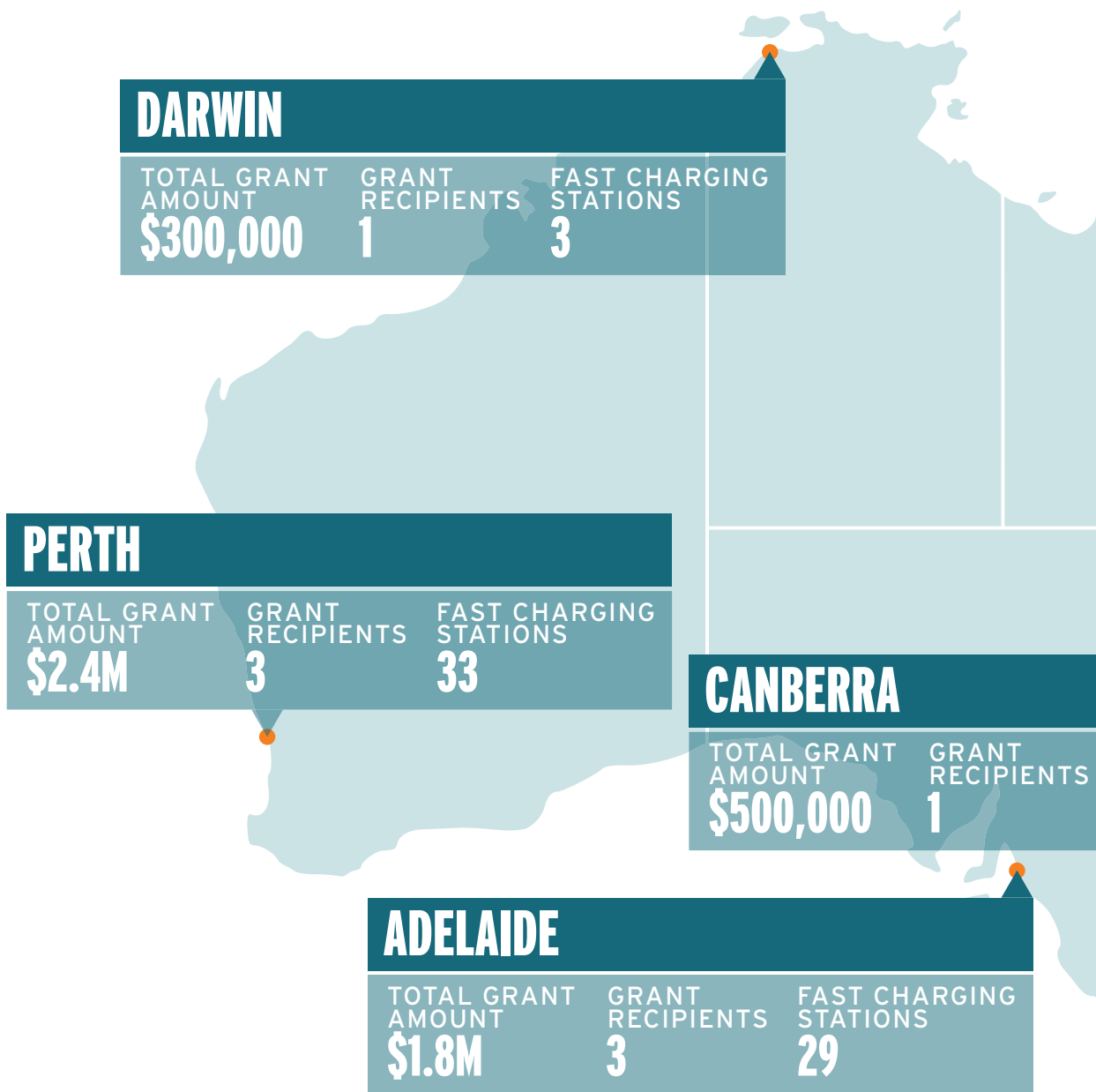
ARENA FUNDING

\$400,000

PROJECTS

5 public fast-charging stations across one region

FIGURE 6 FUTURE FUELS PROGRAM ROUND 1 - FAST-CHARGING STATION LOCATION MAP



TOTAL GRANT
FUNDING**\$24.55M**TOTAL PROJECT
COST**\$79.9M**FAST CHARGING
STATIONS**403**GRANT
RECIPIENTS**5****BRISBANE, GOLD COAST
AND SUNSHINE COAST**TOTAL GRANT
AMOUNT**\$4.5M**GRANT
RECIPIENTS**3**FAST CHARGING
STATIONS**86****SYDNEY, WOLLONGONG,
CENTRAL COAST AND NEWCASTLE**TOTAL GRANT
AMOUNT**\$7.5M**GRANT
RECIPIENTS**3**FAST CHARGING
STATIONS**127**FAST CHARGING
STATIONS**9****MELBOURNE AND GEELONG**TOTAL GRANT
AMOUNT**\$6.75M**GRANT
RECIPIENTS**3**FAST CHARGING
STATIONS**106****HOBART**TOTAL GRANT
AMOUNT**\$800,000**GRANT
RECIPIENTS**2**FAST CHARGING
STATIONS**10**

TARGETED PROGRAM

REGIONAL AUSTRALIA MICROGRID PILOTS PROGRAM




TARGETED PROGRAM

Regional Australia Microgrid Pilots Program

ARENA FUNDING

\$50 million

A large-scale solar panel installation in a dry, arid landscape under a cloudy sky. The solar panels are arranged in rows, reflecting the light. The ground is reddish-brown and cracked, indicating dry conditions. The sky is filled with soft, white clouds.

In late 2021 ARENA launched the \$50 million Regional Australia Microgrid Pilots Program (RAMPP) to support microgrid pilot projects across regional Australia.

RAMPP aims to improve the resilience and reliability of electricity supply in regional and remote communities and demonstrate solutions to technical, regulatory or commercial barriers to the deployment of microgrid technologies in Australia.

Microgrids are small-scale electricity systems that can coordinate local energy resources such as solar panels, battery storage and other distributed infrastructure to provide secure and reliable electricity within the 'micro' grid as well as optimising renewable energy generation and usage. They may also provide services back to a major grid, or operate independently.

Coordinating local electricity resources in a microgrid can bolster the resilience and reliability of supply in the event of a natural disaster, making microgrid technologies a particularly appealing option for communities prone to bushfires, floods or cyclones.

For remote communities, microgrids offer a pathway to switch to renewable energy, reduce emissions, costs and fuel security issues and improve reliability and security for remote communities with weak grids or grids that are reliant on diesel generation.

They also help to increase renewable energy uptake and value through coordination of resources and provision of services from distributed energy resources.

RAMPP funding is available to projects that have been proven to be viable through a feasibility study. ARENA has invited applications from projects that demonstrate grid-connected microgrids, standalone power systems, and remote isolated microgrids.

Microgrids provide an exciting opportunity to integrate renewables into regional communities. By providing funding support through RAMPP, ARENA is helping to demonstrate the real world potential and community benefit of microgrids.

ARENA has previously supported remote microgrid projects to reduce diesel consumption such as SETuP in the Northern Territory, and on Lord Howe Island, Flinders Island, Garden Island and Rottnest Island. Last year, ARENA also provided funding to Horizon Power's Denham Hydrogen Demonstration Plant, the first remote microgrid system in Australia to integrate hydrogen generation.

Image credit: EDL

BIOENERGY ROADMAP





Over the past two years, ARENA invested in the development of a roadmap to identify economic and emissions reduction opportunities from the bioenergy sector.

Following a competitive process in 2020, we appointed Enea Consulting and Deloitte Australia to assist in developing the report.

The Bioenergy Roadmap was published in November 2021, following stakeholder consultation, data collection and evaluation, scenario analysis and modelling of economic impacts.

ARENA also sought views from a cross-section of Australian businesses, research groups, industry associations, community groups, governments and individuals.

The Bioenergy Roadmap reveals that by the start of the next decade, Australia's bioenergy sector could contribute to around \$10 billion in extra GDP per annum, create 26,200 new jobs, reduce emissions by about nine per cent, divert an extra six per cent of waste from landfill, and enhance fuel security.

The Roadmap highlights the opportunities bioenergy offers for regional development. Many of the bioenergy feedstocks come from agricultural activities, such as sugarcane waste and the livestock industries.

As a majority of these industries are regional, bioenergy investment will support long-term regional employment, provide additional revenue streams for farmers and ultimately national economic growth.

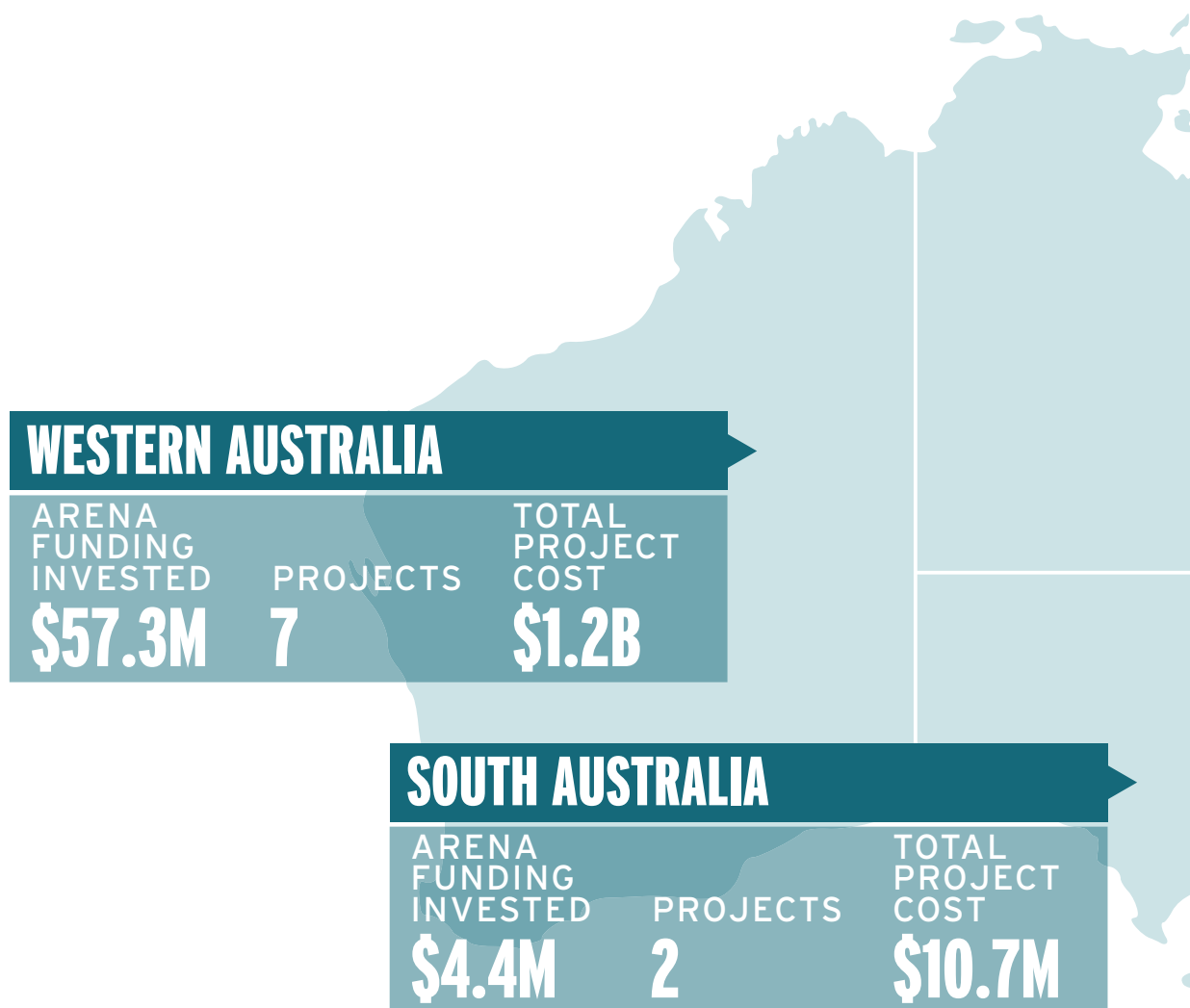
The Bioenergy Roadmap has four key themes:

- **Enabling market opportunities in hard-to-abate sectors:** in renewable industrial heat, sustainable aviation fuel and renewable gas grid injection. These opportunities currently have limited low emissions alternatives.
- **Enabling market opportunities where bioenergy can complement other low emissions alternatives:** in the road transport and electricity markets.
- **Developing our resources:** Australia has a significant bioenergy resource potential. However, there is insufficient clarity and detail over the viability and sustainability of these resources.
- **Building supportive ecosystems:** An enduring and successful bioenergy industry will require concerted efforts beyond those relating to markets and feedstocks. It will be necessary to harness an ecosystem that links the diverse parts of the bioenergy industry to facilitate its growth.

The Bioenergy Roadmap can be downloaded from the ARENA website: arena.gov.au/bioenergy-roadmap.

Image credit: Stock.

FIGURE 7 TOTAL ARENA FUNDING FOR BIOENERGY RELATED PROJECTS BY STATE AND TERRITORY (AS AT 30 SEPTEMBER 2021)



QUEENSLAND

ARENA FUNDING INVESTED	PROJECTS	TOTAL PROJECT COST
\$34.3M	11	\$100M

NEW SOUTH WALES

ARENA FUNDING INVESTED	PROJECTS	TOTAL PROJECT COST
\$28.9M	13	\$59.7M

VICTORIA

ARENA FUNDING INVESTED	PROJECTS	TOTAL PROJECT COST
\$1.8M	3	\$5.7M

TASMANIA

ARENA FUNDING INVESTED	PROJECTS	TOTAL PROJECT COST
\$4.1M	2	\$8.7M



04

GOVERNANCE

THIS SECTION EXPLAINS ARENA'S GOVERNANCE ARRANGEMENTS.



Image credit: RayGen.

KEY GOVERNANCE EVENTS IN 2021-22

ARENA's mandate was expanded by regulation in 2021-22 to allow us to invest in a broader range of technologies.

New administrative arrangements were issued on 1 June 2022, making ARENA's portfolio Department from 1 July 2022 the Department of Climate Change, Energy, the Environment and Water.

RISK MANAGEMENT

We have embedded risk management into our culture to support well-informed decision-making and project management. As a taxpayer-funded entity, we seek to maximise the value of the financial assistance that we provide. Value is maximised when our activities strike the optimal balance between risks and opportunities, and when we can effectively and efficiently deploy resources towards achieving our Vision.

RISK MANAGEMENT FRAMEWORK

ARENA's Risk Management Framework, principles and processes are based on the International Standard for Risk Management (ISO 31000:2018).

We apply five principles to our risk management activities to create and protect value for all Australians. The principles test if our risk management activities are:

- > proportionate to the level of risk faced by the organisation
- > aligned with other activities in the organisation
- > embedded within the organisation
- > comprehensive in order to be fully effective
- > dynamic and responsive to emerging and changing risks.

RISK IDENTIFICATION AND REPORTING

ARENA's risks are identified and assessed through a consistently applied and replicable methodology. This follows a structured approach that encompasses the context, identification, assessment, analysis and

treatment of risks. The framework also features effective communication and monitoring of the portfolio risk profile and risk management activities.

Our strategic risk reporting addresses the highest level of risk that would impact us achieving ARENA's Vision. In line with risk management practices, these risks are monitored throughout the year by the Board and its Risk and Audit Committee (see below).

ARENA's risk appetite (the total impact of risk an organisation is prepared to accept in pursuit of its strategic priorities) is reviewed annually. ARENA currently has three identified strategic risks:

- > ARENA does not maximise its impact
- > ARENA experiences a loss of effectiveness or efficiency
- > ARENA is not aligned with stakeholders.

Refer to the Corporate Plan for more information.

BOARD OVERSIGHT, MANAGEMENT AND CONTROL OF RISK

ARENA's Board has a duty to establish and maintain systems relating to risk and control. It is responsible for the appropriateness of ARENA's system of risk oversight and management, and systems of internal control. The Risk and Audit Committee, a committee of the Board, provides oversight of these systems of risk and control.

The Board also has overall responsibility for the identification, analysis and evaluation of ARENA's strategic risks. Corporate risks are managed by the Senior Leadership Team, while operational risks are managed by line areas.



Image credit: Evie Networks.

CONFLICT OF INTEREST

CONFLICT OF INTEREST POLICY

In 2021-22, the Board continued to manage any conflicts in accordance with its Conflict of Interest Policy, which sets out:

- the duties in respect to the disclosure of actual or potential conflicts applying to:
 - **all ARENA workers, including the Chief Executive Officer and the Chief Financial Officer, consultants, contractors, external service providers and employees of the Department who are made available to ARENA**
 - **the Board (including its sub-committees such as the Risk and Audit Committee) and the ARENA Advisory Panel)**
- how individuals are to discharge their duties under the Policy, how conflict of interest declarations are made and material conflicts managed.

DECLARATION OF CONFLICT OF INTEREST

In accordance with the requirements of ARENA's Conflict of Interest policy, all Board and Committee members are required to complete a conflict of interest declaration upon appointment and on an annual basis. Advisory Panel members are required to submit a declaration prior to involvement with a funding proposal. All members are also required to provide updated declarations in the event that new conflicts arise or the circumstances of their original notification changes.

PROCESS TO MANAGE CONFLICTS OF INTEREST

The declaration of conflicts is a standing item at all Board and Committee meetings. At least two days prior to the meeting date, the Secretariat circulates to members a list of all entities to be discussed in a material manner in the upcoming meeting. If the member notifies the Secretariat that he or she has a conflict of interest with one of the entities then the declaration is referred to the delegate (ARENA Chair) to determine materiality and, if so, how such a conflict will be managed.

Conflicts related to Board or Committee members are typically managed by excluding the conflicted member from discussions and decisions relating to the paper dealing with the entity with which they have notified a conflict. The ARENA Chair determines the materiality of any conflicts of interests notified by Board members. The other Board members (who are not conflicted) determine the materiality and management of conflicts of the Chair.

If a conflict arises during the meeting, the matter will be similarly referred to the Chair in order that it can be managed. Probity advice is procured as required as part of this process.

CONFLICT OF INTEREST REGISTER

All conflict declarations, including any management action agreed, are recorded in a conflict of interest register maintained by ARENA's Legal, Governance and Secretariat team. Conflicts declared by ARENA workers are managed via a software management system, ConvergePoint.

FRAUD CONTROL

The Agency's fraud control arrangements comply with section 10 of the PGPA Rule.

ARENA's Fraud Control Plan is regularly reviewed by the Board to ensure that ARENA has in place appropriate mechanisms for preventing, detecting incidents of, investigating and otherwise dealing with, and recording of fraud. ARENA has taken all reasonable measures to minimise the incidence of fraud. ARENA's ongoing adherence to the Plan encompasses regular fraud risk assessments. In addition, reporting on fraud is a standard item at all Board and RAC meetings.

Annual fraud awareness training and conflict of interest training is a mandatory requirement for all of ARENA's workers as part of ARENA's governance training, which is conducted each quarter.

INDEMNITIES AND INSURANCE PREMIUMS OF OFFICERS

During 2021-22, ARENA was a member of the Comcover self-managed fund, which includes cover for directors and officers against liability claims. The premium paid for ARENA's insurance policy was \$191,183 (excluding GST).


REMUNERATION

Details of the ARENA Board, Board Committee and Executive Remuneration is provided in Note 3.2 of the Financial Statements and Tables 17-18 of Appendix 3.





Image credit: Stock.



05

LEGISLATIVE, GOVERNMENT AND OTHER INFORMATION

THIS SECTION CONTAINS ADDITIONAL INFORMATION
THAT ARENA IS REQUIRED TO REPORT.



Image credit: Stock.

ENABLING LEGISLATION

Our enabling legislation is the *Australian Renewable Energy Agency Act 2011* (ARENA Act).

ARENA, as established by the ARENA Act, has the dual objectives of improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy in Australia.

ARENA's functions are to:

- > provide financial assistance for:
 - **research into renewable energy technologies**
 - **the development, demonstration, commercialisation or deployment of renewable energy technologies**
 - **the storing and sharing of information and knowledge about renewable energy technologies**
- > collect, analyse, interpret and disseminate information and knowledge on renewable energy technologies
- > provide advice to the Portfolio Minister on renewable energy and related technologies including:
 - **improving the competitiveness of renewable energy technologies**
 - **increasing the supply of renewable energy in Australia**
 - **improving the development of skills in the renewable energy technology sector**
 - **increasing the use of renewable energy technologies**
- > liaise with State and Territory governments and other authorities to facilitate ARENA renewable energy projects
- > any other functions prescribed by regulations or contained in the ARENA Act or other Commonwealth law.

PORTFOLIO MINISTER ENGAGEMENT

ARENA's Portfolio Ministers for the reporting period were:

- > the Hon Chris Bowen MP, Minister for Climate Change and Energy (from 30 May 2022)
- > the Hon Angus Taylor MP, Minister for Energy and Emissions Reduction (to 21 May 2022).

MINISTERIAL APPROVAL

The Australian Government included safeguards in the ARENA Act to ensure that we are transparent and accountable in our funding decisions.

Accordingly, the Portfolio Minister must approve ARENA's General Funding Strategy and any guidelines for programs that could grant funding in excess of \$15 million for a particular project. The Minister is the delegate for approving grants of more than \$50 million to individual projects.

During the reporting period, the Portfolio Minister approved the ARENA General Funding Strategy 2021-22 to 2023-24.

MINISTERIAL REQUESTS AND DIRECTIONS

In 2021-22 the Minister did not issue a request under section 11 of the Act or make a direction under section 13 of the Act.

Under section 22 of the PGPA Act, the Finance Minister may make a government policy order that specifies a policy of the Government that is to apply to an agency. No such orders were made that apply to ARENA during 2021-22.

REPORTS TO THE MINISTER

ARENA kept the Minister informed about its operations during the year by providing updates on the Agency's progress towards meeting the objectives of the ARENA Act.

It also provided the Minister with reports following each ARENA Board meeting, including key deliberations, meeting outcomes, any material conflicts of Board members and ARENA employees and significant correspondence.

There were no significant issues reported to the Minister under paragraph 19(1)(e) of the PGPA Act, which includes compliance with Finance law.

ENGAGEMENT WITH OUR STAKEHOLDERS

ARENA SERVICE CHARTER

ARENA aims to provide a high standard of service to all our stakeholders, focusing on the achievement of honest and ethical working relationships that are underpinned by genuine consultation and feedback. As the Agency continues to help drive the development and deployment of renewable energy in Australia, it anticipates an increase in the volume of contact with stakeholders. ARENA aims to continue to deliver professional and timely services to an expanded customer base.

COMPLAINTS HANDLING

ARENA has an established internal complaints and review process. Our complaints policy is published on the ARENA website, and provides for reviews of ARENA decisions and complaints about service quality to be resolved fairly. Information on the complaints and review process is available at arena.gov.au/making-a-complaint.

FREEDOM OF INFORMATION

Australian Government entities that are subject to the *Freedom of Information Act 1982* (FOI Act) are required to publicly publish information as part of the Information Publication Scheme.

All ARENA publications covered by the scheme are accessible from the ARENA website at arena.gov.au.

There was one request for information related to ARENA under the FOI Act received in 2021-22.

Information on how to make a request under the FOI Act is available on the Department of Climate Change, Energy, the Environment and Water's website at dcceew.gov.au/about/reporting/freedom-of-information.

PUBLIC INTEREST DISCLOSURE

ARENA has a Public Interest Disclosure Procedure to address disclosures under the *Public Interest Disclosure Act 2013*. Visit the ARENA website for more information. No disclosures were made in 2021-22.

RECONCILIATION

This year, ARENA has matured its approach to Reconciliation. We marked Reconciliation Week and NAIDOC Week with events to help build our understanding of First Nations issues in the clean energy transition and to build our in-house cultural competency.

The Senior Leadership Team has agreed to ARENA developing its first Reconciliation Action Plan, and has established a Working Group to lead this work.

ENVIRONMENTAL PERFORMANCE

Section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires Commonwealth entities and Commonwealth companies such as ARENA to report on:

- > how the activities of, and the administration (if any) of legislation by, ARENA during the reporting period accorded with the principles of ecologically sustainable development (ESD)
- > how the outcomes (if any) specified for ARENA in an Appropriations Act relating to the reporting period contribute to ESD

- > the effect of ARENA's activities on the environment
- > any measures ARENA is taking to minimise the impact of its activities on the environment
- > the mechanisms, if any, for reviewing and increasing the effectiveness of those measures.

Table 6 provides this information.

TABLE 6 ARENA'S ENVIRONMENTAL PERFORMANCE

REPORTING CRITERIA	PERFORMANCE
Accordance with and contribution to ecologically sustainable development (ESD), including the development and implementation of policies, plans, programs and legislation	<p>ARENA is specifically tasked with facilitating research, development, demonstration and deployment of renewable energy technologies with a view to driving the commercialisation and reducing the cost of renewable energy.</p> <p>ARENA's policies, plans and programs all accord with and contribute to the ESD principles by:</p> <ul style="list-style-type: none"> > helping to foster the long-term sustainability of Australia's energy sector while promoting the reduction of energy-related greenhouse gas emissions > taking into account economic, environmental and social considerations when developing renewable energy measures.
Environmental performance, including the impact of the agency's activities on the natural environment, how any impacts are mitigated and how they will be managed	<p>ARENA meets our property and security obligations within government (i.e. whole-of-government property changes from the Department of Finance) or through regulatory processes (e.g. changes to the <i>Building Code 2016</i>).</p> <p>For the duration of 2020-21, ARENA's Canberra offices were located in the NewActon Nishi Building. The offices in the Nishi Building have a six-star Green Star Design rating and NewActon Nishi is considered to be Canberra's most sustainable mixed use building complex.</p> <p>Some renewable energy projects may have environmental impacts. ARENA takes a risk-based approach to identifying and managing potential environmental impacts from the projects that it funds.</p>

MODERN SLAVERY STATEMENT

As a leading government agency providing financial assistance to the renewable energy sector, ARENA is committed to upholding the highest standards in all our Agency's functions. We are proud to play our part in driving accountability with respect to modern slavery by submitting our Modern Slavery Statement each financial year under the *Modern Slavery Act 2018* (see modernslaveryregister.gov.au/statements/7355/).

ARENA's Modern Slavery Statement describes our structure, operations and supply chains and the risks of modern slavery practices in those operations and supply chains. The statement sets out the steps we have taken to identify, assess and address the risks.

We will build on our statement over coming years and continue to work with our stakeholders, including recipients of funding from ARENA and our suppliers of goods and services.

JUDICIAL DECISIONS AND REVIEWS BY OUTSIDE BODIES

During 2021-22 ARENA was not subject to any judicial decisions or reviews by administrative tribunals, the Australian National Audit Office, the Commonwealth Ombudsman or the Office of the Australian Information Commissioner.

The Senate Standing Committee for the Scrutiny of Delegated Legislation issued reports on ARENA regulations (11 August and 29 September 2021) and the General Funding Strategy 2021/22 – 2023/24 (21 October 2021 and 10 March 2022).

FINANCIAL AUDIT

ARENA received an unqualified audit report on its financial statements for 2021-22. The Auditor-General's independent report is presented in the Financial Statements section of this Annual Report.

LEGAL EXPENDITURE

Legal services are provided by a small team of lawyers provided from a law firm and sole practitioner firms. Legal services are generally only outsourced where transactions involve complex project finance arrangements, with the process managed by the General Counsel.

During 2021-22 ARENA incurred \$1,252,261 (excluding GST) in external legal services expenditure. ARENA has reported the expenditure to the Office of Legal Services Coordination in accordance with the *Legal Services Directions 2017*.

MATERIAL MATTERS

ARENA did not have any 'material' matters disclosed in the financial statements as defined in paragraph 7 of the Public Governance, Performance and Accountability (Financial Reporting) Rule 2015.

RELATED ENTITY TRANSACTIONS

Refer to Note 3.3 in the Financial Statements.

SERVICE LEVEL AGREEMENT

The Portfolio Department provides corporate support for ARENA's day-to-day operations, with a service level agreement setting out the services to be provided by the Department to ARENA along with the applicable services standard.

SUBSIDIARIES

Refer to Note 3.3 in the Financial Statements.

OUR WORKFORCE

ARENA is a dynamic, adaptable and outcomes-oriented agency, with a highly qualified and experienced workforce. Our aim is to be agile, with the ability to respond quickly to any changes in our operating environment.

VALUES

The Agency has a strong commitment to modelling our values and significant efforts have been made in the reporting period to embed them into ARENA's organisational culture. This has been accomplished through a variety of initiatives such as values-based recognition awards and through regular ARENA-wide communication.

FIGURE 8 ARENA VALUES



1. IMPACT-DRIVEN

We make a significant positive impact on Australia's energy sector, economy, environment and society. We take a bold, innovative approach to give us the best chance of achieving our goals.



2. STAKEHOLDER-FOCUSED

We deliver excellent service. Our approach is marked by responsiveness, clarity and flexibility.



3. COLLABORATIVE

We collaborate across teams and with our partners to achieve our goals.



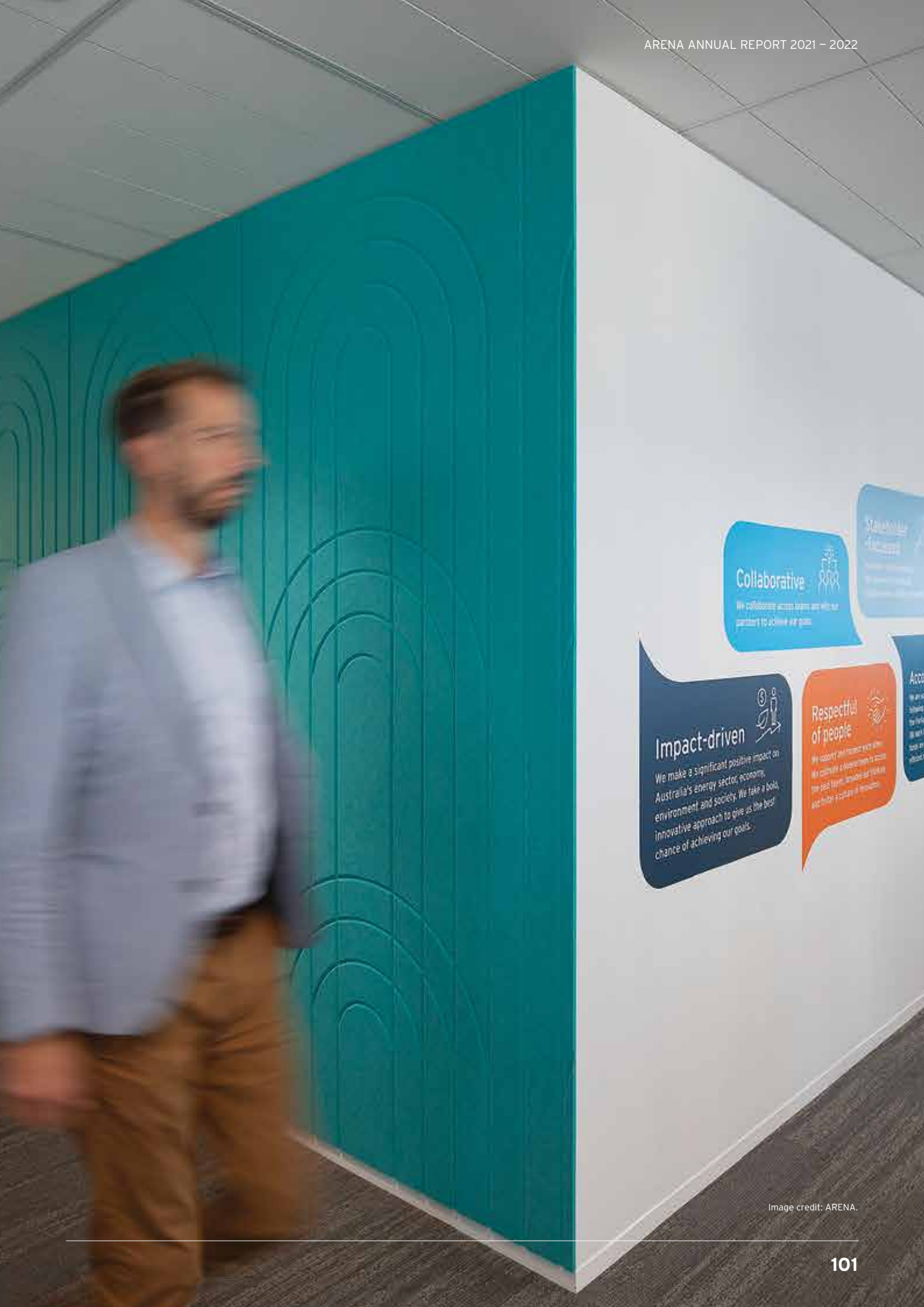
4. ACCOUNTABLE

We are accountable to each other and, in following our processes, to the Minister, the Parliament and the Australian public. We work transparently to ensure public funds are spent in a responsible and efficient manner.



5. RESPECTFUL OF PEOPLE

We support and respect each other. We cultivate a diverse team to access the best talent, broaden our thinking and foster a culture of innovation.



Collaborative
We collaborate across sectors and with our partners to achieve our goals.

Impact-driven
We make a significant positive impact on Australia's energy sector, economy, environment and society. We take a bold, innovative approach to give us the best chance of achieving our goals.

Respectful of people
We support our people and partners to create a positive and sustainable future for all. We foster a culture of innovation and excellence.

Image credit: ARENA.

EMPLOYEES AND OTHER STAFF

ARENA has two employees, as stipulated by the ARENA Act. These are the Chief Executive Officer (CEO) and Chief Financial Officer (CFO). Other ARENA workers are employed by the Portfolio Department under the *Public Service Act 1999* and made available to ARENA by the Secretary of the Department. The Agency also engages specialist and technical consultants, contractors and service providers as necessary.

At 30 June 2022, ARENA had two employees (CEO and CFO) and 25 departmental staff (23.9 FTE) including staff in non-ongoing positions.

DIVERSITY

For the reporting period, the gender ratio for the ARENA Board and senior personnel within ARENA was:

- > of the seven Board members, two were female
- > of the six members of the Senior Leadership Team, two are female and four are male
- > of the fourteen personnel in ARENA's Executive Management Team, there is now an even split of male and female.

ENGAGEMENT

Engagement initiatives continued throughout the year with a significant focus on health and wellbeing and morale. The Agency has maintained a flexible and adaptable approach to working arrangements in response to COVID-19.

The 2021 People Pulse survey demonstrated that worker engagement is positive, especially in regards to workplace flexibility, work-life balance and commitment to delivering on agency priorities.

PLANNING

ARENA's Workforce Plan was updated to reflect the increased funding and changes to priorities and strategic objectives. This work also included a review of the skills and capabilities ARENA will need in the future to ensure the organisation is ready to implement and deliver on legislative requirements.

Our People & Culture team has also been reviewing our internal people practices to ensure they are contemporary and contribute to a work environment that retains the talent we have and attracts the talent we need. This work will continue in 2022-23.

WORK HEALTH AND SAFETY

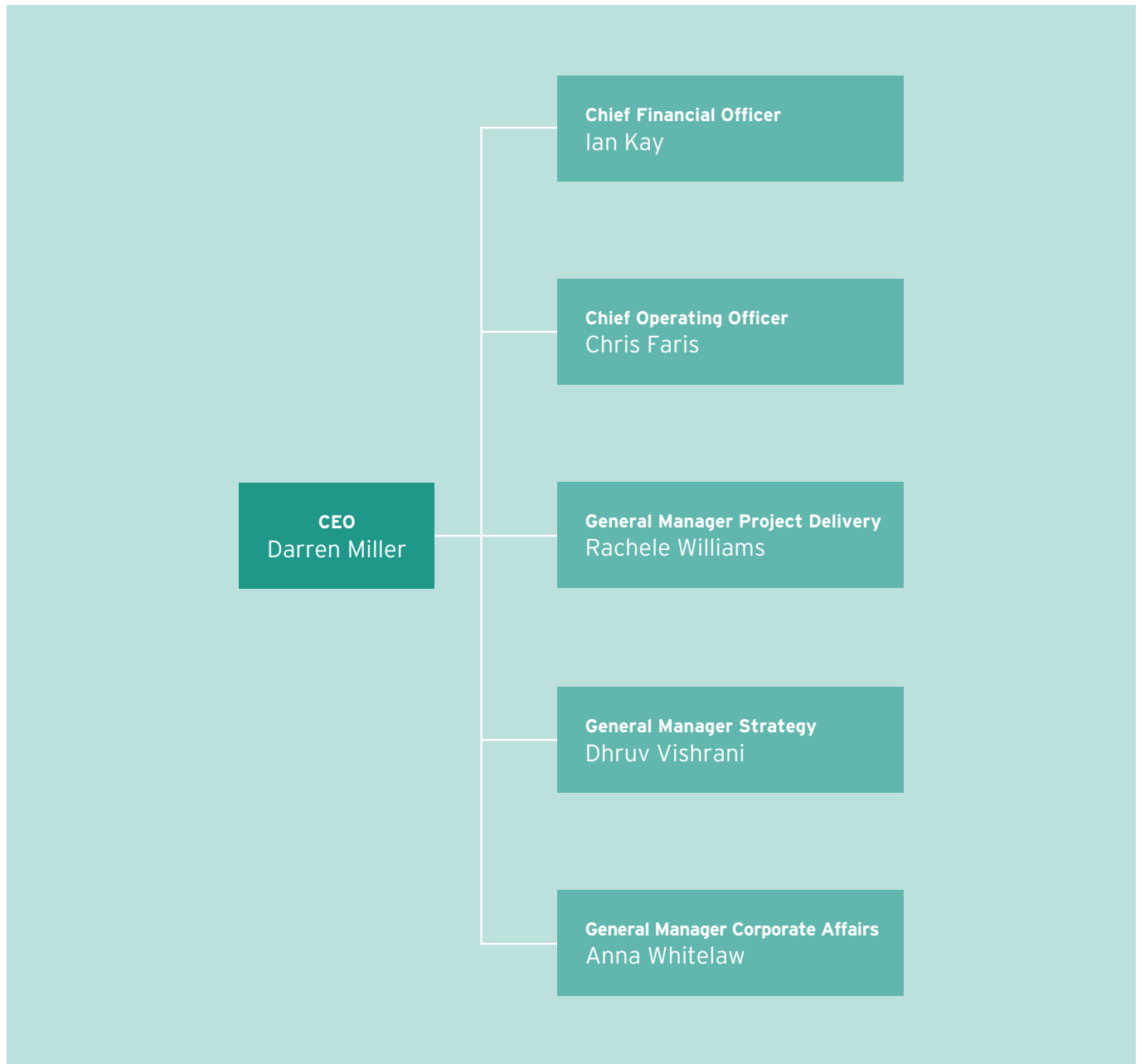
In accordance with the *Work Health and Safety Act 2011* (WHS Act), ARENA aims to ensure - so far as reasonably practicable - the health and safety of the workforce (who are engaged by us or whose work is influenced or directed by us).

The Board closely monitors health and safety in ARENA workplaces. ARENA considers health and safety throughout the lifecycle of the funding process and our officials promote a positive safety culture at ARENA.

The health and safety of ARENA's workforce during day-to-day operations is safeguarded through ARENA's Work Health and Safety Management System, while also supported by the Portfolio Department. This year there has been a strong focus on the impact of COVID-19 on the workforce, with a taskforce guiding the Agency's response.

In respect of ARENA workers, no WHS investigations were conducted and no notifiable WHS incidents were reported during 2021-22. Reporting in respect of Departmental staff made available to ARENA is covered in the Portfolio Department's annual report for 2021-22.

FIGURE 9 ARENA ORGANISATIONAL STRUCTURE AT 30 JUNE 2022



An aerial photograph of a desert landscape. In the foreground, there are several large, rectangular solar panel arrays arranged in rows. The ground is sandy and sparsely covered with small green shrubs. In the background, there are some small buildings and more vegetation. The overall color palette is warm, with shades of orange, brown, and green.

06

FINANCIAL STATEMENTS



Image credit: Degussa Solar Project.



INDEPENDENT AUDITOR'S REPORT

To the Minister for Climate Change and Energy

Opinion

In my opinion, the financial statements of the Australian Renewable Energy Agency (the Entity) for the year ended 30 June 2022:

- (a) comply with Australian Accounting Standards – Simplified Disclosures and the *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015*; and
- (b) present fairly the financial position of the Entity as at 30 June 2022 and its financial performance and cash flows for the year then ended.

The financial statements of the Entity, which I have audited, comprise the following as at 30 June 2022 and for the year then ended:

- Statement by the Board, Chief Executive and Chief Financial Officer;
- Statement of Comprehensive Income;
- Statement of Financial Position;
- Statement of Changes in Equity;
- Cash Flow Statement; and
- Notes to the financial statements, comprising a summary of significant accounting policies and other explanatory information.

Basis for opinion

I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of my report. I am independent of the Entity in accordance with the relevant ethical requirements for financial statement audits conducted by the Auditor-General and his delegates. These include the relevant independence requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* (the Code) to the extent that they are not in conflict with the *Auditor-General Act 1997*. I have also fulfilled my other responsibilities in accordance with the Code. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Accountable Authority's responsibility for the financial statements

As the Accountable Authority of the Entity, the Board is responsible under the *Public Governance, Performance and Accountability Act 2013* (the Act) for the preparation and fair presentation of annual financial statements that comply with Australian Accounting Standards – Simplified Disclosures and the rules made under the Act. The Board is also responsible for such internal control as the Board determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board is responsible for assessing the ability of the Entity to continue as a going concern, taking into account whether the Entity's operations will cease as a result of an administrative restructure or for any other reason. The Board is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless the assessment indicates that it is not appropriate.

GPO Box 707, Canberra ACT 2601
38 Sydney Avenue, Forrest ACT 2603
Phone (02) 6203 7300

Auditor's responsibilities for the audit of the financial statements

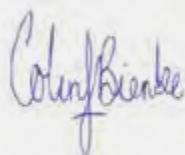
My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian National Audit Office Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with the Australian National Audit Office Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Accountable Authority;
- conclude on the appropriateness of the Accountable Authority's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern; and
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with the Accountable Authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Australian National Audit Office



Colin Bienke
Audit Principal

Delegate of the Auditor-General

Canberra
23 September 2022

Australian Renewable Energy Agency

STATEMENT BY THE BOARD, CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2022 comply with subsection 42(2) of the Public Governance, Performance and Accountability Act 2013 (PGPA Act), and are based on properly maintained financial records as per subsection 41(2) of the PGPA Act.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Australian Renewable Energy Agency will be able to pay its debts as and when these amounts fall due.

This statement is made in accordance with a resolution of the directors.



Justin Punch
Chair of the Board

20 September 2022



Darren Miller
Chief Executive Officer

20 September 2022



Ian Kay
Chief Financial Officer

20 September 2022

Statement of Comprehensive Income*for the period ended 30 June 2022*

		2022	2021	Original ¹
	Notes	\$'000	\$'000	Budget \$'000
NET COST OF SERVICES				
Expenses				
Employee benefits	1.1A	1,301	1,150	1,207
Suppliers	1.1B	24,937	23,397	32,027
Grants	1.1C	100,170	164,474	247,566
Depreciation and amortisation	2.2	1,658	1,651	1,453
Finance costs		-	10	12
Total expenses		128,066	190,682	282,265
Own-source revenue				
Interest	1.2A	1,617	836	600
Other revenue	1.2B	7,777	14,733	5,293
Total own-source revenue		9,394	15,569	5,893
Net cost of services		(118,672)	(175,113)	(276,372)
Revenue from Government	1.2C	422,009	227,535	359,174
Surplus on continuing operations		303,337	52,422	82,802
OTHER COMPREHENSIVE INCOME				
Items not subject to subsequent reclassification to net cost of services				
(Increase) / decrease in asset revaluation reserve	2.2	(1,926)	(9)	-
Items subject to subsequent reclassification to net cost of services				
(Increase) / decrease unwinding of make-good	2.4	(343)	-	-
(Increase) / decrease in the value of investment	2.1C	(45,427)	(1,565)	2,157
Total other comprehensive income		(47,696)	(1,574)	2,157
Total comprehensive income		351,033	53,996	80,645

The above statement should be read in conjunction with the accompanying notes. Refer to Note 5.3 for explanations of major variations to the Original Budget.

¹ ARENA's budget as published in the 2021-22 Portfolio Budget Statements.

Statement of Financial Position

as at 30 June 2022

		2022	2021	Original ¹
	Notes	\$'000	\$'000	Budget \$'000
ASSETS				
Financial assets				
Cash and cash equivalents	2.1A	457,452	139,033	185,738
Trade and other receivables	2.1B	2,133	5,507	1,291
Investments	2.1C	80,939	31,611	39,215
Total financial assets		540,524	176,151	226,244
Non-financial assets				
Buildings - right of use assets	2.2	-	1,032	5,000
Leasehold improvements	2.2	2,066	500	-
Plant and equipment	2.2	156	231	191
Prepayments		608	201	141
Total non-financial assets		2,830	1,964	5,332
Total assets		543,354	178,115	231,576
LIABILITIES				
Payables				
Suppliers	2.3A	1,930	1,634	623
Grants	2.3B	16,826	1,291	500
Other payables	2.3C	20	57	61
Total payables		18,776	2,982	1,184
Interest bearing liabilities				
Leases	2.5	-	998	5,000
Total interest bearing liabilities		-	998	5,000
Provisions				
Employee provisions	3.1	370	309	159
Other provisions	2.4	-	651	14
Total provisions		370	960	173
Total liabilities		19,146	4,940	6,357
Net Assets		524,208	173,175	225,219
EQUITY				
Asset revaluation reserve		2,173	247	238
Retained surplus		522,035	172,928	224,981
Total equity		524,208	173,175	225,219

The above statement should be read in conjunction with the accompanying notes. Refer to Note 5.3 for explanations of major variations to the Original Budget.

¹ ARENA's budget as published in the 2021-22 Portfolio Budget Statements.

Statement of Changes in Equity*for the period ended 30 June 2022*

	Retained earnings			Asset revaluation reserve			Total equity		
	2022	2021	Original Budget ¹	2022	2021	Original Budget ¹	2022	2021	Original Budget ¹
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Opening balance									
Balance carried forward from previous period	172,928	118,941	144,336	247	238	238	173,175	119,179	144,574
Adjustment on initial application of AASB 16	-	-	-	-	-	-	-	-	-
Adjusted opening balance	172,928	118,941	144,336	247	238	238	173,175	119,179	144,574
Comprehensive income									
Surplus for the period	303,337	52,422	80,645	-	-	-	303,337	52,422	80,645
Other comprehensive income & revaluation	45,770	1,565	-	1,926 ²	9	-	47,696	1,574	-
Total comprehensive income	349,107	53,987	80,645	1,926	9	-	351,033	53,996	80,645
Closing balance as at 30 June	522,035	172,928	224,981	2,173	247	238	524,208	173,175	225,219

The above statement should be read in conjunction with the accompanying notes. Refer to Note 5.3 for explanations of major variations to the Original Budget.

¹ ARENA's budget as published in the 2021-22 Portfolio Budget Statements.

² Revaluation undertaken as at 30 June 2022, refer Note 2.2

Cash Flow Statement

for the period ended 30 June 2022

		2022	2021	Original ¹
	Notes	\$'000	\$'000	Budget
				\$'000
OPERATING ACTIVITIES				
Cash received				
Receipts from Government		422,009	227,535	359,174
Interest		747	1,022	700
Net GST received		14,667	14,271	25,299
Return of grant funds from prior years		2,765	10,638	-
Other		188	199	100
Total cash received		440,376	253,665	385,273
Cash used				
Employees		(1,277)	(1,084)	(1,307)
Suppliers		(22,100)	(20,244)	(29,608)
Grants		(93,034)	(179,785)	(270,317)
Interest paid		-	(10)	(12)
Total cash used		(116,411)	(201,123)	(301,244)
Net cash from operating activities		323,965	52,542	84,029
INVESTING ACTIVITIES				
Cash received				
Proceeds from sales of assets		-	1	-
Proceeds from sales of investments	2.1C	942	2,198	-
Total cash received		942	2,199	-
Cash used				
Purchase of property, plant and equipment		(549)	(72)	-
Investments	2.1C	(4,843)	(2,431)	(8,066)
Total cash used		(5,392)	(2,503)	(8,066)
Net cash used by investing activities		(4,450)	(304)	(8,066)
FINANCING ACTIVITIES				
Cash used				
Principal payments of lease liabilities		(1,096)	(1,037)	(1,003)
Total cash used		(1,096)	(1,037)	(1,003)
Net cash from/(used by) financing activities		(1,096)	(1,037)	(1,003)
Net increase in cash held		318,419	51,201	74,960
Cash and cash equivalents at the beginning of the reporting period		139,033	87,832	110,778
Cash and cash equivalents at the end of the reporting period	2.1A	457,452	139,033	185,738

The above statement should be read in conjunction with the accompanying notes. Refer to Note 5.3 for explanations of major variations to the Original Budget.

¹ ARENA's budget as published in the 2021-22 Portfolio Budget Statements.

Overview

Objectives of the Australian Renewable Energy Agency

The Australian Renewable Energy Agency (ARENA) is an Australian Government controlled entity under the *Public Governance, Performance and Accountability Act 2013* (PGPA Act). It is a not-for-profit entity. The objective of ARENA is to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia.

The registered office of ARENA is Level 8, 2 Phillip Law St, NewActon ACT 2601.

ARENA is structured to meet the following outcome:

Outcome 1: To support improvements in the competitiveness of renewable energy and related technologies and the supply of renewable energy by administering financial assistance, developing analysis and advice about and sharing information and knowledge with regard to renewable energy and related technologies.

ARENA operates under the following legislation:

- *Australian Renewable Energy Agency Act 2011 (as amended);*
- *Australian Renewable Energy Agency (Consequential Amendments and Transitional Provisions) Act 2011;*
- *Australian Renewable Energy Agency (Consequential Amendments and Transitional Provisions) Act 2012;*
- *Australian Renewable Energy Agency Determination No 1 of 2013; and*
- *Australian Renewable Energy Agency Regulation 2016.*
- *Australian Renewable Energy Agency Regulation 2022.*

ARENA is governed by an independent, decision-making Board. The members of the Board draw together skills in renewable energy technology, commercialisation, business investment and corporate governance to provide expert administration of ARENA funds.

Basis of preparation

The financial statements are general purpose financial statements and are required by section 42 of the PGPA Act.

The financial statements have been prepared in accordance with:

- a) *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015* (FRR); and
- b) Australian Accounting Standards and Interpretations - including simplified disclosures for Tier 2 Entities under AASB 1060 issued by the Australian Accounting Standard Board that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention, except for certain assets and liabilities that are reported at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position. The financial statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless otherwise specified.

Impact of COVID and Cash Balance

ARENA has assessed the impact of the pandemic on its economic activity. Projects funded by ARENA grant expenditure have been assessed with variations delaying milestone payments and extending projects beyond their original expected completion dates. The impact on the operating expenditure caused reductions in workforce engagements, travel, meetings and industry engagement related expenditure.

During 2021-22 ARENA was appropriated \$345 million in funding for new policy initiatives to be delivered by 2025-26. At the 30 June 2022 all funding available under the ARENA Act had been drawn from the official public account. Cash and cash equivalents held at 30 June 2022 totalled \$457.5 million. This cash is available to meet contracted commitments of \$304.6 million and Board approved projects and funding rounds totalling \$366 million for which contracts have yet to be executed and which will be met from current and future funding.

New Australian Accounting Standards

All new and revised standards and interpretations that were issued prior to the sign-off date and are applicable to the current reporting period did not have a material effect, and are not expected to have a material effect, on ARENA's financial statements for the current and future reporting periods.

Standard/ Interpretation	Nature of change in accounting policy, transitional provisions, and adjustment to financial statements
AASB 1060 General Purpose Financial Statements – Simplified Disclosures for For-Profit and Not-for-Profit Tier 2 Entities	AASB 1060 applies to annual reporting periods beginning on or after 1 July 2021 and replaces the reduced disclosure requirements (RDR) framework. The application of AASB 1060 involves some reduction in disclosure compared to the RDR with no impact on the reported financial position, financial performance and cash flows of the entity.

Taxation

ARENA is exempt from all forms of taxation except Fringe Benefits Tax (FBT) and the Goods and Services Tax (GST).

Events after the reporting period

There are no subsequent events that have a potential to significantly affect its ongoing structure or financial activities.

Financial Performance

This section analyses the financial performance of ARENA for the period ended 2022.

1.1 Expenses

	2022 \$'000	2021 \$'000
1.1A: Employee Benefits		
Board remuneration fees	310	215
Salaries and wages	848	788
Superannuation - defined contribution plans	83	70
Leave and other entitlements	60	77
Total employee benefits	1,301	1,150

Accounting Policy
Accounting policies for employee related expenses are contained in the People and Relationships section.

1.1B: Suppliers

Goods and services supplied or rendered

Audit fees	89	82
Consultants	15,811	15,030
Department support costs (resources received free of charge) ¹	5,123	4,865
IT services	1,445	1,202
Legal fees	1,144	1,265
Travel	139	129
Other	1,183	820
Total goods and services supplied or rendered	24,934	23,393

Other suppliers

Workers compensation expenses	3	4
Total other suppliers	3	4
Total suppliers	24,937	23,397

¹ Department support costs represent the cost of staff and associated costs made available by the Secretary of the Portfolio Department (also refer to resources received free of charge in note 1.2B).

1.1 Expenses (contd.)

	2022	2021
	\$'000	\$'000
1.1C: Grants		
Public sector		
Australian Government entities	7,610	10,804
Private and Non Government sector		
Australian companies	82,211	123,767
Australian not-for-profit entities	310	591
Other entities ¹	10,039	29,312
Total grants	100,170	164,474

¹ This includes grants to Australian universities and the Australian Government's contribution to the International Renewable Energy Agency.

Accounting Policy

Grants are recognised to the extent that services required to be performed by the grantee have been performed or the grant eligibility criteria has been satisfied. A commitment is recorded when ARENA has a binding agreement to make these grants but services have not been performed or criteria satisfied. Where grant monies are paid in advance of performance or eligibility, a prepayment is recognised.

Certain grants include the potential for ARENA to recoup all, or part, of its grant expenditure. The amount of any future recoupment may in some instances exceed that of the initial grant expense depending on the realisation of specified future events and/or other commercial indicators, and in some cases Ministerial approval.

Recoverability will in certain instances be predicated on formulae that have been agreed as part of the terms and conditions of the relevant grant funding agreement.

Locked Box Arrangements

ARENA's Locked Box funding arrangements relate to grant funding agreements whereby ARENA deposits the total amount of the grant into a prescribed bank account, in the recipient's name, after the execution of a legally binding funding agreement. ARENA retains sole control of the Locked Box until the withdrawal conditions precedent (WCP) have been satisfied.

At the time of payment by ARENA into the prescribed bank account, the transaction is recorded as a Prepayment in the Statement of Financial Position. After all WCPs have been met, ARENA relinquishes sole control over the Locked Box and the recipient is able to withdraw money from the Locked Box in accordance with the funding agreement. At this point, the Prepayment is expensed as a Grant in the Statement of Comprehensive Income.

Withdrawals from Locked Boxes require joint signatures of the recipient and ARENA. ARENA can only refuse the release of funds if there is a breach of conditions in the funding agreement. ARENA continues to be responsible and accountable for ensuring that the funds are only released from the Locked Boxes when conditions specified in the grant funding agreement have been met. Accordingly, the value of Locked Boxes at balance date is deemed to be held by ARENA in trust and is disclosed under Note 5.2: Assets Held in Trust.

1.2 Own-Source Revenue and Gains

	2022	2021
	\$'000	\$'000

Own-Source Revenue**1.2A: Interest**

Interest on bank deposits	1,617	836
Total interest	1,617	836

Accounting Policy

Interest revenue is recognised using the effective interest method.

1.2B: Other Revenue

Resources received free of charge - Department of Industry, Science, Energy and Resources	5,123	4,865
Return of grant funding	2,468	9,671
Other	186	197
Total other revenue	7,777	14,733

Accounting Policy**Resources Received Free of Charge**

Resources received free of charge are recognised as revenue when, and only when, a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense (see Note 1.1B: Suppliers). Resources received free of charge are recorded as either revenue or gains depending on their nature.

Return of Grants

Return of grant funding is reported as other revenue if the grant was fully expensed in previous financial year(s).

1.2C: Other Gains**1.2C: Revenue from Government**

Payments from Portfolio Department - Department of Industry, Science, Energy and Resources	422,009	227,535
Total revenue from Government	422,009	227,535

Accounting Policy

Revenue from Government is recognised when ARENA receives the cash from the Portfolio Department.

Financial Position

This section analyses the ARENA's assets used to conduct its operations and the operating liabilities incurred as a result. Employee related information is disclosed in the People and Relationships section.

2.1 Financial Assets

	2022	2021
	\$'000	\$'000
2.1A: Cash and Cash Equivalents		
Cash at bank	2,329	3,180
Cash on deposit	455,123	135,853
Total cash and cash equivalents	457,452	139,033

Accounting Policy

Cash is recognised at its nominal amount. Cash and cash equivalents include:

- a) cash on hand; and
- b) demand deposits in bank accounts with an original maturity of 12 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

2.1B: Trade and Other Receivables

GST receivable from the Australian Taxation Office	958	5,157
Interest receivable	1,082	211
Other	93	139
Total other receivables	2,133	5,507
Total trade and other receivables	2,133	5,507

There is no impairment allowance for receivables as at 30 June 2022 (2021: nil).

2.1C: Investments

Opening balance	31,611	29,813
Investment distributions	(942)	-
Investment calls and management fees	4,843	233
Increase / (Decrease) in value of investment at 30 June	45,427	1,565
Total investments - REVC Fund Commonwealth Participation Trust	80,939	31,611

Accounting Policy

Investments are expected to be recovered in more than 12 months.

At 30 June 2022 ARENA held 51,639,253 (2021: 47,738,392) fully paid "A" class units in the Renewable Energy Venture Capital (REVC) Fund Commonwealth Participation Trust (Trust).

The Trust is an investor pursuant to the REVC Co-Investment Arrangement. The principal activity of the REVC Co-Investment Arrangement, which is independently managed, is investing in early stage technology companies consistent with governing documents, including the Co-Investment Deed signed in 2011.

The investments of the REVC Co-Investment Arrangement comprise traded debt, equity and unlisted equity investments; these are valued in accordance with the guidelines published by the Australian and Venture Capital Association Limited (AVCAL).

The valuation is assessed to be materially consistent with AASB 13 Fair Value Measurement as the AVCAL methodology adopts market-based and observable inputs to the maximum extent possible in arriving at the values for the investments shown.

The REVC Co-Investment Arrangement recognises investments on the date it becomes party to the underlying contractual agreement and recognises any changes in value from this date. The value of ARENA's share of the investment at 30 June 2022 is based on annual audited financial statements of the REVC Co-Investment Arrangement at that reporting date.

2.2 Non-Financial Assets

2.2: Reconciliation of the Opening and Closing Balances of Buildings, Leasehold Improvements and Plant and Equipment

	Buildings (ROU assets) \$'000	Leasehold Improvements \$'000	Plant and Equipment \$'000	Total \$'000
As at 1 July 2021				
Gross book value	3,098	500	231	3,829
Accumulated depreciation, amortisation and impairment	(2,066)	-	-	(2,066)
Total as at 1 July 2021	1,032	500	231	1,763
Additions:				
Purchases	-	154	37	191
Revaluations recognised in other comprehensive income ¹	-	1,926	-	1,926
Depreciation and amortisation	(1,032)	(514)	(112)	(1,658)
Total as at 30 June 2022	-	2,066	156	2,222
Total as at 30 June 2022 represented by				
Gross book value	3,098	3,500	268	6,866
Accumulated depreciation, amortisation and impairment	(3,098)	(1,434)	(112)	(4,644)
Total as at 30 June 2022	-	2,066	156	2,222

No indicators of impairment were found for property, plant and equipment.

¹ A valuation of the office leaseholds was undertaken by an independent valuer, Jones Lang LaSalle, for the purpose of the financial reporting ending 30 June 2022. The valuation of new leaseholds determined the replacement cost at \$3,500,000, with a fair value on the remaining useful life at 30 June at \$2,066,000. A previous revaluation of these assets was undertaken by ARENA at 30 June 2021.

Accounting Policy

Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Buildings - Right-of-Use Assets

Leased ROU assets are capitalised at the commencement date of the lease and comprise the initial lease liability amount, initial direct costs incurred when entering into the lease, less any lease incentives received. These assets are accounted for by Commonwealth lessees as separate asset classes to corresponding assets owned outright, but included in the same column as where the corresponding underlying assets would be presented if they were owned.

On initial adoption of AASB 16, ARENA did not identify any onerous leases and no adjustment to the ROU assets was required. Following initial application, an impairment review is undertaken for any right of use lease asset that shows indicators of impairment and an impairment loss is recognised against any right of use lease asset that is impaired. Lease ROU assets continue to be measured at cost after initial recognition in Commonwealth agency, GGS and Whole of Government financial statements.

Leasehold Improvements

Leasehold improvements are carried at fair value.

Plant and Equipment

Plant and equipment are valued at cost in accordance with the FRR.

Impairment

All assets are assessed for impairment at the end of each reporting period. When indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

Revaluations

Following initial recognition at cost, all asset classes except for Intangibles are carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are

conducted with sufficient frequency to ensure that the carrying amounts of assets did not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depended upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of Asset Revaluation Reserve except to the extent that it reversed a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit except to the extent that they reversed a previous revaluation increment for that class. Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated the current replacement cost which is then depreciated.

Depreciation

Depreciable plant and equipment assets are written off to their estimated residual values over the estimated useful lives to ARENA, using, in all cases, the straight-line method of depreciation.

Leasehold improvements are depreciated over the lease term.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2022	2021
Leasehold improvements	Lease term	Lease term
Plant and equipment	3 years	3 years

The depreciation rates for ROU assets are based on the commencement date to the earlier of the end of the useful life of the ROU asset or the end of the lease term.

2.3 Payables

	2022	2021
	\$'000	\$'000

2.3A Suppliers

Trade creditors and accrued expenditure	1,930	1,634
	1,930	1,634

Settlement of supplier invoices is made with 30 days, consistent with the supplier terms of trade.

2.3B: Grants**Private sector**

Australian companies	15,900	1,291
Other entities	926	-
Total grants	16,826	1,291

2.3C: Other payables

Accrued salaries and pay as you go tax withheld	20	57
Total other payables	20	57

2.4 Other Provisions**Provision for restoration**

	\$'000
Opening balance as at 1 July 2021	651
Additional provisions made	
Amounts paid on existing lease obligations	(308)
Unwinding make-good on completion of leases	(343)
Total as at 30 June 2022	-

ARENA entered into three new office leases, effective from 1 July 2022. The new lease arrangements do not contain make-good obligations at the end of the lease term.

2.5 Interest Bearing Liabilities

	2022	2021
	\$'000	\$'000
1. [Provide relevant details of loans]		
2.5 Leases		
Lease liabilities	-	998
Total leases	-	998

Total cash outflow for leases for the year ended 30 June 2022 was \$1,095,956 (2021 \$1,046,478)

Maturity analysis - contractual undiscounted cash flows

Within 1 year	1,054	998
Between 1 to 5 years	4,814	-
More than 5 years	1,701	-
Total leases	7,569	998

ARENA has entered into three new leases for office accommodation in Canberra, Melbourne and Sydney. These leases take effect from 1 July 2022 at which point ARENA will recognise the right-of-use asset and lease liabilities as required under AASB 16 Leases.

Accounting Policy

For all new contracts entered into, ARENA considers whether the contract is, or contains a lease. A lease is defined as 'a contract, or part of a contract, that conveys the right to use an asset (the underlying asset) for a period of time in exchange for consideration'.

Once it has been determined that a contract is, or contains a lease, the lease liability is initially measured at the present value of the lease payments unpaid at the commencement date, discounted using the interest rate implicit in the lease, if that rate is readily determinable, or the incremental borrowing rate as published by the Department of Finance.

Subsequent to initial measurement, the liability will be reduced for payments made and increased for interest. It is remeasured to reflect any reassessment or modification to the lease. When the lease liability is remeasured, the corresponding adjustment is reflected in the right-of-use asset or profit and loss depending on the nature of the reassessment or modification.

People and Relationships

This section describes a range of employment and post employment benefits provided to our people and our relationships with other key people.

3.1 Employee Provisions

	2022 \$'000	2021 \$'000
Employee provisions		
Leave and other entitlements	370	309
Total employee provisions	370	309

Accounting policy

Employee related expenses are recognised in the period that employee services are received.

Liabilities for short-term employee benefits and termination benefits expected within twelve months of the end of the reporting period are measured at their nominal amounts. Other long-term employee benefits are measured as the net total of the present value of the defined benefit obligation at the end of the reporting period.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. Changes in the measurement of the liability are recognised in the Statement of Comprehensive Income.

The leave and other entitlements liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will be applied at the time the leave is taken, including the entity's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the 'short hand method' as per the FRR. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

3.2 Key Management Personnel Remuneration

Key management personnel (KMP) are those persons having authority and responsibility for planning, directing and controlling the activities of an entity, directly or indirectly, including any director (whether executive or otherwise) of that entity. ARENA has determined the KMP to be the Directors, the Chief Executive Officer, Chief Financial Officer, Chief Operating Officer and the General Manager Project Delivery. The Chief Operating Officer and the General Manager Project Delivery are seconded from the Portfolio Department.

	2022 \$	2021 \$
Short-term employee benefits	1,194,292	1,064,451
Post-employment benefits	83,464	70,577
Other long-term employee benefits	23,273	14,721
Total KMP remuneration expenses, paid by ARENA, as per Note 1.1	1,301,029	1,149,749
Add KMP provided by the Portfolio Department, resources received free of charge	498,855	261,817
Total KMP remuneration expenses as per Executive Remuneration Disclosure table	1,799,884	1,411,566

The total number of KMP that are included in the above table are 11 individuals (2021: 12) and includes 7 ARENA Directors (2021: 9). In July 2021 there was a change in the Board membership, with one member departing and one new member appointed. The outgoing Board member did not claim fees during the year.

The above KMP remuneration excludes the remuneration and other benefits of the Portfolio Minister. The Portfolio Minister's remuneration and other benefits are set by the Remuneration Tribunal and are not paid by ARENA.

3.3 Related Party Disclosures

Related party relationships:

ARENA is an Australian Government controlled entity. Related parties of ARENA include:

- i) Key Management Personnel (See Note 3.2: KMP)
- ii) Portfolio and Cabinet Ministers;
- iii) Close family members of the persons identified in (i) and (ii) above; and
- iv) An entity which is controlled or jointly controlled by a member of the KMP.

Transactions with related parties:

Given the breadth of Government activities, related parties may transact with the Government sector in the same capacity as ordinary citizens. Such transactions include payment of taxes, use of public infrastructure and public services that are available to all citizens. These transactions have not been separately disclosed in this note.

Related party transactions are managed in accordance with ARENA's conflict of interest policy with regular use of independent probity advice services during major grant and procurement processes.

Giving consideration to relationships with related entities, and transactions entered into, it has been determined that ARENA entered into five (2021: five) transactions with related parties during the reporting period. It should be noted that in all transactions the KMP affected by a relationship excluded themselves from all decision processes and/or management of the contract or arrangement. All transactions were on normal business terms and conditions.

An ARENA Board Member, who retired from the Board on 17 July 2021, was the Chief Investment Officer for 5 Pillars Capital. During the reporting period ARENA conducted the following transactions with which 5 Pillars Capital has a financial relationship. ARENA committed to these transactions prior to the ARENA Board Member commencing the role with 5 Pillars Capital.

In 2021-22 no grant payments were made to Greensync Pty Ltd for the purpose of developing a decentralised energy exchange project. In December 2018 the ARENA Board approved funding for this program of \$11,000,000. At 30 June 2022 the remaining balance due on the project is \$1,851,906.

In 2021-22 grant payments totalling \$870,595 were made to Energy Saving Networks Group Pty Ltd for the purpose of developing the 'My Energy Marketplace' (MEM) platform to securely accept consumer energy data from multiple energy meter devices. In March 2019 the ARENA Board approved total ARENA funding for this project of \$2,970,000. At 30 June 2022 the remaining balance available for the project is \$937,503.

In 2021-22 no grant payments were made to The Trustee for Sustainable Australia Fund for the purpose of developing a new finance product, Environmental Upgrade Agreements. In March 2019 the CEO approved total approved funding for this project of \$693,000. At 30 June 2022 the remaining balance available for the project is \$5,500.

An ARENA Board Member is the CEO of Horizon Power. During the reporting period ARENA conducted the following business:

In 2021-22 no grants payments were made to Horizon Power for the purpose of developing the Denham Hydrogen Demonstration project which is to provide renewable energy sources to remote areas of Western Australia. In May 2020 the ARENA Board approved funding for this project of \$2,830,378. At 30 June 2022 the remaining balance available for the project is \$2,830,378.

An ARENA Board Member is a Senior Executive for BlueScope Steel (AIS) Pty Ltd. During the reporting period ARENA conducted the following business:

In 2021-22 no grants payments were made to BlueScope Steel (AIS) Pty Ltd for the purpose of the Port Kembla Steelworks Renewables and Emissions Reduction Study project. In September 2021 the CEO approved funding for this project of \$1,017,262. At 30 June 2022 the remaining balance available for the project is \$1,017,262.

All amounts reported above in Note 3.3 are GST inclusive.

Managing Uncertainties

This section analyses how ARENA manages financial risks within its operating environment.

4.1 Contingent Assets and Liabilities

ARENA did not have any contingent assets or liabilities at 30 June 2022 (2021: nil).

Quantifiable Contingencies

The contingent assets are in respect of recoupment of grants from ARENA funded projects. Certain ARENA funded projects have funding agreements that include the potential for ARENA to recoup all, or part, of its funding provided to the grant recipient. Recoupment is generally tied to the success of a project and determined by formulas agreed as part of the terms and conditions of the funding agreement. ARENA is not expecting any project to meet the recoupment conditions in 2022-23 (2021-22: nil). The estimate of the recoupable amount is based on an assessment of the recoupment conditions of each relevant project and the probability of a recoupment occurring within the next financial year.

Accounting Policy

Contingent assets and contingent liabilities are not recognised in the statement of financial position but are reported in this section. They may arise from uncertainty as to the existence of an asset or liability or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is assessed as greater than remote.

Grant Recoupment

ARENA assesses the likelihood of recoupment on a project by project basis and estimates the amount recoupable within the next 12 months. The estimate is based on interpretation of the relevant market conditions and the probability of the recoupment trigger occurring under the circumstances.

4.2 Financial Instruments

	2022 \$'000	2021 \$'000
Financial Assets		
Financial assets at amortised cost		
Cash and cash equivalents	457,452	139,033
Trade and other receivables	1,175	350
Total financial assets at amortised cost	458,627	139,383
Financial assets at fair value through other comprehensive income		
Investments	80,939	31,611
Total available-for-sale financial assets	80,939	31,611
Total financial assets	539,566	170,994
Financial liabilities		
Trade creditors and accrued expenditure	1,950	1,691
Grant payables	16,826	1,291
Total financial liabilities measured at amortised cost	18,776	2,982
Total financial liabilities	18,776	2,982

4.2 Financial Instruments (contd.)

Accounting Policy

Financial Assets

ARENA classifies its financial assets in the following categories:

- financial assets at fair value through other comprehensive income; and
- financial assets measured at amortised cost.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition. Financial assets are recognised and derecognised upon trade date.

Financial Assets at Amortised Cost

Financial assets included in this category need to meet two criteria:

- the financial asset is held in order to collect the contractual cash flows; and
- the cash flows are solely payments of principal and interest (SPPI) on the principal outstanding amount.

Amortised cost is determined using the effective interest rate.

Effective Interest Method

Income is recognised on an effective interest rate basis for financial assets that are recognised at amortised cost.

Financial Assets at Fair Value Through Other Comprehensive Income (FVOCI)

Financial assets measured at fair value through other comprehensive income are held with the objective of both collecting contractual cash flows and selling the financial assets and the cash flows meet the SPPI test.

Any gains or losses as a result of fair value measurement or the recognition of an impairment loss allowance are recognised in

other comprehensive income.

Impairment of Financial Assets

Financial assets are assessed for impairment at the end of each reporting period based on expected credit losses, using the general approach which measures the loss allowance based on an amount equal to lifetime expected credit losses where risk has significantly increased, or an amount equal to 12-month expected credit losses if risk has not increased.

The simplified approach for trade, contract and lease receivables is used. This approach always measures the loss allowance as the amount equal to the lifetime expected credit losses.

A write-off constitutes a derecognition event where the write-off directly reduces the gross carrying amount of the financial asset.

Financial liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities. Financial liabilities are recognised and derecognised upon 'trade date'.

Financial liabilities at Amortised Cost

Trade creditors and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

	2022	2021
	\$'000	\$'000
4.2B Net Gains or Losses on Financial Assets		
Financial assets at amortised cost		
Interest revenue	1,617	836
Net gains on financial assets at amortised cost	1,617	836
Financial assets at fair value through other comprehensive income		
Fair value changes	45,427	1,565
Net losses on available-for-sale financial assets	45,427	1,565
Net gains/(losses) on financial assets	47,044	2,401

4.3 Fair Value Measurement

ARENA conducts an annual assessment to determine whether the carrying amount of the assets is materially different from the fair value. Independent valuations are carried out at least once every three years with a valuation of all tangible property, plant and equipment.

The methods utilised to determine and substantiate the unobservable inputs are derived and evaluated as follows:

Physical depreciation and obsolescence - assets that do not transact with sufficient frequency or transparency to develop objective opinions of value from observable market evidence have been measured utilising the Depreciation Replacement Cost approach. Under this approach the estimated cost to replace the asset is calculated and then adjusted to take into account physical depreciation and obsolescence. Physical depreciation and obsolescence has been determined based on professional judgement regarding the physical, economic and external obsolescence factors relevant to the asset consideration. For all leasehold improvement assets, the consumed economic benefit / asset obsolescence deduction is determined based on the term of the associated lease. The policy of ARENA is to recognise transfers into and transfer out of fair value hierarchy levels as at the end of the reporting period. There have been no transfer during the year (2021: nil).

Other Information

5.1 Aggregate Assets and Liabilities

	2022 \$'000	2021 \$'000
Assets expected to be recovered in:		
No more than 12 months		
Cash and cash equivalents	457,452	139,033
Taxation receivables	958	5,157
Trade and other receivables	1,175	350
Prepayments	608	201
No more than 12 months	460,193	144,741
More than 12 months		
Investments	80,939	31,611
Buildings - right of use assets	-	1,032
Leasehold improvements	2,066	500
Plant and equipment	156	231
More than 12 months	83,161	33,374
Total assets	543,354	178,115
Liabilities expected to be settled in:		
No more than 12 months		
Suppliers	(1,930)	(1,634)
Grants	(16,826)	(1,291)
Employee entitlements	(271)	(271)
Leases	-	(998)
No more than 12 months	(19,027)	(4,193)
More than 12 months		
Employee Entitlements	(119)	(96)
Make-good provision	-	(651)
More than 12 months	(119)	(747)
Total liabilities	(19,146)	(4,940)

5.2 Assets Held in Trust

	2022 \$'000	2021 \$'000
Cash held in Locked Boxes		
Balance as at 1 July	29,493	16,998
Receipts ¹	47	30,867
Payments ²	(14,240)	(18,372)
Balance as at 30 June	15,300	29,493
Total monetary assets held in trust	15,300	29,493

This note should be read in conjunction with Note 1.1C : Grants. The transaction values reported above are not linked to any other Statement or Note within these documents.

This note has been included in these financial statements for information purposes only. It provides the reader with the balance of Locked Box funding levels where ARENA continues to be responsible and accountable for ensuring that the funds are only released when conditions specified in the grant funding agreement have been met.

¹ Receipts are the amounts paid into Locked Boxes by ARENA. These amounts include interest received from the balances of the Locked Boxes.

² Payments are those amounts which have been withdrawn by the projects in accordance with the achievement of milestones.

Note 5.3: Budget Variance Commentary

ARENA's financial performance is measured against its original budget as published in the 2021-22 Portfolio Budget Statements and the 2022 financial statements are presented in accordance with Australian Accounting Standards.

Variances are considered to be 'major' if these are core to ARENA's activities and based on the following criteria:

- the variance between budget and actual is greater than +/- 10% of the original budget for a line item; and
- the variance between budget and actual is greater than \$1,000,000; or
- an item is below this threshold but is considered important for the reader's understanding or is relevant to an assessment of the discharge of accountability and to an analysis of the ARENA's performance.

Budget Variance Explanations and Commentary	Affected financial statements and line items
<p>Due to the complex nature of ARENA's projects, which deal with emerging and developing technologies, approval of new projects has taken longer than originally forecast and there are regular variations to contracted projects. These variations are difficult to predict and therefore material variances to budget are possible.</p> <p>The variance in grants expenditure is also partly due to the impact of the pandemic, including supply chain and personnel disruptions for funding recipients. In some cases this meant that project milestones could not be met by the recipients.</p> <p>ARENA executed a higher than usual number of Funding Agreement variations, extending the expected project completion into future years.</p> <p>The pandemic also impacted supplier expenses, with lower travel costs, meeting expenses, industry engagement and worker expenses.</p> <p>Trade and other receivables exceeded budget due to higher than expected accrued interest. Payables and Grants liabilities were higher than budget due to the timing and receipt of invoices.</p>	<p>Statement of Comprehensive Income:</p> <ul style="list-style-type: none"> - Suppliers - Grants <p>Statement of Financial Position:</p> <ul style="list-style-type: none"> - Trade and other payables - Payables - Grants <p>Cash Flow Statement:</p> <ul style="list-style-type: none"> - Grants cash used
<p>Revenue from Government is accounted for on a cash basis. Cash and cash equivalents includes cash held in the operating bank accounts and surplus cash placed, in accordance with s59 of the PGPA Act, in demand deposits in Australian bank accounts.</p> <p>In 2021-22 the balance of funding available under the ARENA Act was drawn down. This was to ensure that ARENA had the funds available to make payments on contracted and Board approved funding agreements and other supplier contracts when they fall due.</p> <p>Cash and cash equivalents increased by \$318 million partially due to this draw down of funds and was contributed to by the aforementioned delays in project milestones and lower expenses.</p> <p>Additional funding for new Measures was also received in the Portfolio Additional Estimates process, which had not been included in the budget.</p>	<p>Statement of Comprehensive Income:</p> <ul style="list-style-type: none"> - Revenue from Government <p>Statement of Financial Position:</p> <ul style="list-style-type: none"> - Cash and cash equivalents <p>Cash Flow Statement:</p> <ul style="list-style-type: none"> - Receipts from Government - Grants cash used
<p>In 2022 ARENA negotiated lease contracts for office accommodation.</p> <p>These leases became effective from 01 July 2022 and resulted in a timing difference between the Budget for Land and Buildings and Leases.</p> <p>No significant work was required on the new fit-outs accessed under the new leaseholds. ARENA undertook a revaluation of the leasehold fit-out's, which was not included in the Budget.</p> <p>Make-good activities on the previous premises incurred expenses less than the amount provided, and this was recognised as a gain, which was not expected or included at the time of Budget.</p>	<p>Statement of Comprehensive Income:</p> <ul style="list-style-type: none"> - Revaluation of leasehold - Unwinding of make-good <p>Statement of Financial Position:</p> <ul style="list-style-type: none"> - Land and Buildings - Leases
<p>ARENA invested \$3.9 million into the Renewable Energy Venture Capital Fund during the financial year. The principal activity of the Fund is to invest in the early stage renewable energy technology companies.</p> <p>Movement in the fair value of the investment is driven by the market. A gain of \$45.4 million in the fair value of the investment was recorded at 30 June 2022.</p> <p>All investment decisions are to be made by the Fund Manager within an agreed timeframe ending in 2024.</p>	<p>Statement of Comprehensive Income:</p> <ul style="list-style-type: none"> - Increase in the value of investment <p>Statement of Financial Position:</p> <ul style="list-style-type: none"> - Other Investments <p>Cash Flow Statement:</p> <ul style="list-style-type: none"> - Proceeds from the sale of investments - Investments
<p>Net GST received was lower than expected due to the lower expenses.</p>	<p>Cash Flow Statement:</p> <ul style="list-style-type: none"> - Net GST received

A photograph of a wind farm on a grassy hill under a clear blue sky. Several white wind turbines are visible, with one in the foreground on the left and others receding into the distance. A large, light blue arrow points from the left edge towards the center, partially overlapping the large number '0'.

07

ANNUAL PERFORMANCE STATEMENT 2021-22



Image credit: Musselroe Wind Farm.



INTRODUCTION

STATEMENT OF PREPARATION

The Board, as the accountable authority of the Australian Renewable Energy Agency, presents the Annual Performance Statement of the Agency covering the 2021-22 financial year as required under paragraph 39(1)(a) of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act).

In our opinion, the Annual Performance Statement is based on properly maintained records, accurately reflects the performance of the entity, and complies with subsection 39(2) of the PGPA Act.

ARENA PURPOSE

ARENA was established by the *Australian Renewable Energy Agency Act 2011* (ARENA Act) to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia.

Our Purpose is to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy through innovation that benefits Australian consumers and businesses.

PERFORMANCE FRAMEWORK

ARENA's performance is assessed against the measures published in the Portfolio Budget Statements and Corporate Plan. This Annual Performance Statement provides performance results for each measure and an analysis of what these results indicate about ARENA's performance in achieving its Purpose.

ANNUAL PERFORMANCE STATEMENT

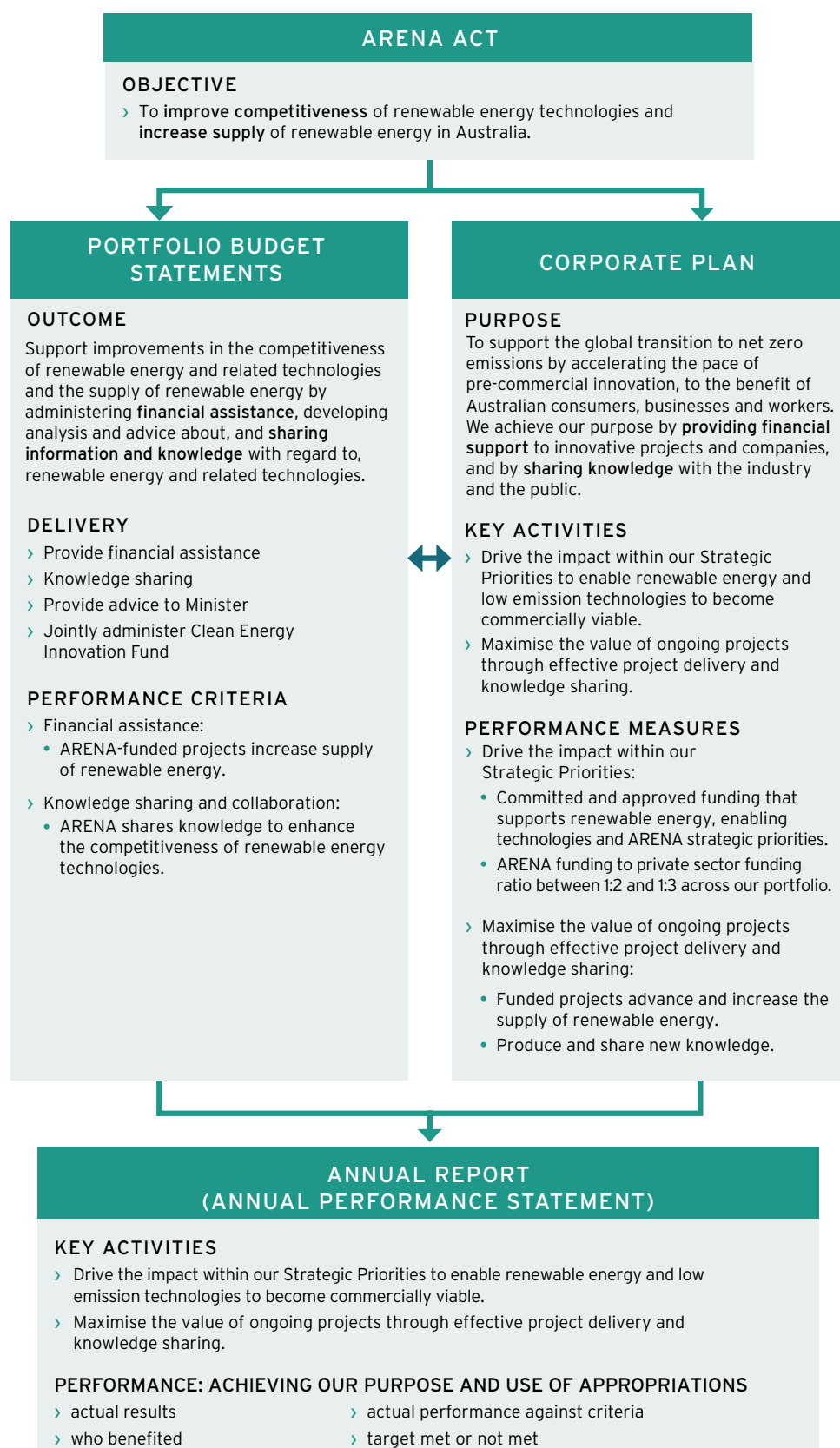
This Annual Performance Statement is presented in three sections. The first section presents ARENA's performance against the performance measures and targets set out in the 2021-22 to 2024-25 Corporate Plan. These comprise measures of output, effectiveness and efficiency.

The second section presents the findings of the evaluations that were scheduled to be conducted in 2021-22. The findings report the results achieved on a program or project portfolio basis.

The third section analyses the performance data and explains how the results achieved contributed to ARENA's Purpose and legislative objectives.

Figure 10 shows how the results presented in this Annual Performance Statement enable a clear read between the ARENA Act, 2021-22 Portfolio Budget Statements and 2021-22 to 2024-25 Corporate Plan. The results presented below use baselines to provide a clear read across time. Reporting performance using technology and commercial readiness indicators aims to enable a clear read across entities that contribute to renewable energy technology development.

FIGURE 10 HOW PERFORMANCE INFORMATION FITS TOGETHER ACROSS ARENA'S CORPORATE PLAN, PORTFOLIO BUDGET STATEMENTS, AND THE ANNUAL PERFORMANCE STATEMENT



RESULTS ACHIEVED

THIS SECTION PRESENTS ARENA'S PERFORMANCE AGAINST THE MEASURES SET OUT IN THE 2021-22 TO 2024-25 CORPORATE PLAN. THESE COMPRISE MEASURES OF OUTPUT, EFFECTIVENESS AND EFFICIENCY.



Image credit: Laing O'Rourke.

1. ACTIVITY: DRIVE IMPACT WITHIN OUR STRATEGIC PRIORITIES.

EXPECTED RESULTS:

More solutions for delivering value through lower cost renewable energy to Australian consumers and businesses.

WHO BENEFITS:

Direct beneficiaries are grant recipients such as scientists, researchers, technology developers, businesses and innovators.

In the long term, Australian consumers and businesses will benefit from cost-effective options to meet their future energy needs. Australians will also benefit through more options to reduce emissions and grow the economy in a low emissions global context.

1.1 PERFORMANCE MEASURE

ARENA has committed and approved funding that supports renewable energy, enabling technologies and ARENA strategic priorities.

\$m ARENA funds approved²

TARGET: \$245 million in 2021-22

\$m ARENA funds committed³

TARGET: \$264.5 million in 2021-22

SOURCE

ARENA Corporate Plan 2021-22 to 2024-25 p13. Please see the Corporate Plan for data sources and/or methodology of measurement.

RATIONALE FOR MEASURE

ARENA's ability to provide financial assistance and fully utilise its appropriation is seen by key stakeholders including Parliament, Minister and Department as a key indicator of effectiveness.

This is a short-term indicator of the level of financial assistance. A breakdown by investment priority shows that grant funds are going towards the investment priorities approved by the Minister. It aligns with the Portfolio Budget Statement performance measure to 'provide assistance to new projects across the Agency's approved priority areas'.

² The value of ARENA funds that the Board or CEO has approved to be offered to an applicant subject to successful negotiation of a contract.

³ The value of funds in executed funding contracts.

RESULT

FUNDS APPROVED

NOT ACHIEVED: In 2021-22 ARENA approved a total of \$169.2 million.

FUNDS COMMITTED

NOT ACHIEVED: In 2021-22 ARENA committed a total of \$107.2 million

During the year a strong pipeline of projects has developed, including the launch of a number of new funding programs, which we anticipate will translate into higher funds approved and committed in the next financial year.

This year's shortfall in approved and committed funding is reflective of the unique operating environment faced by ARENA and project proponents.

Domestic and geopolitical economic conditions have heavily influenced business investment decisions as well as the pace of applications and project execution.

Projects in clean hydrogen, one of ARENA's key investment areas, have been particularly impacted by such conditions. As an emerging technology, the industry is building supply chains, capability and capacity. ARENA-funded projects are first-of-a-kind and complex, making them vulnerable to delays and disruption. These projects account for approximately \$125 million in shortfall against the commitment target.

The macroeconomic environment will continue to present challenges to delivering complex projects, we anticipate a need to continue to increase the pace of funding to support the innovative projects needed for the transition to net zero.

1.2 PERFORMANCE MEASURE

ARENA funding to private sector funding ratio.

TARGET: Leverage falls between 1:2 and 1:3 across the portfolio.

SOURCE

ARENA Corporate Plan 2021-22 to 2024-25 p13.
Please see the Corporate Plan for data sources
and/or methodology of measurement.

RATIONALE FOR MEASURE

Private sector capital contributes to ARENA's Purpose,
and shows genuine interest in commercialising
technologies in the longer term.

The expected leverage ratio varies by innovation stage,
so leverage is reported for each stage and across
newly active projects in a year.

ARENA's leverage target is lower than the
Government's overall target of between \$3 and \$5
under the First Low Emissions Technology Statement
because ARENA is the early-stage investor.

RESULT

ACHIEVED: In 2021-22 ARENA's overall investment
leverage was 1:2.06. That is, for every dollar of ARENA
funding provided to new projects, third parties
contributed \$2.06.

The overall investment leverage of \$2.06 of third-party
funds for every dollar of ARENA funds achieved in 2021-
22 was lower than that achieved in 2020-21. The largest
reductions were in Study and Deployment Projects (note:
Study includes Feasibility Studies).

The reduction was not unexpected as 2020-21 data was
driven by two project outliers (Genex Kidston Pumped
Hydro Storage Project and the Centennial Pumped Hydro
Energy Storage Project).

Table 7 shows investment leverage in 2020-21 by
innovation stage.

TABLE 7 INVESTMENT LEVERAGE BY INNOVATION STAGE

INNOVATION STAGE	INVESTMENT LEVERAGE
R&D projects	N/A
Demonstration projects	1.84
Deployment projects	2.88
Studies	2.16
All projects	2.06

1.3 PERFORMANCE MEASURE

ARENA-funded projects advance renewable energy and ARENA strategic priorities.

TARGET: 80 per cent of completed projects achieve an advance in Technology Readiness Level or Commercial Readiness Index indicators over the life of the project.

SOURCE

ARENA Corporate Plan 2021-22 to 2024-25 p13.
Please see the Corporate Plan for data sources
and/or methodology of measurement.

RATIONALE FOR MEASURE

This medium-term measure indicates progress
along the innovation pathway towards improved
competitiveness.

The Technology Readiness Level (TRL) tracks progress
from blue sky research to technical maturity. It applies
to research, development and demonstration projects.

The Commercial Readiness Index (CRI) measures
progress towards commercial viability. It assesses
the commercial maturity of a technology or business
models on the basis of eight indicators.

RESULT

ACHIEVED: In 2021-22, 100 per cent of the 25
completed projects that were independently assessed by
Aurecon achieved an advance in TRL or CRI indicators
over the life of the project. This exceeded the target by
20 percentage points.

- 80 per cent of projects that set out to improve
technological readiness succeeded in improving
Technology Readiness by one or more levels
- 60 per cent of projects improved technological
readiness by two or more levels
- 88 per cent of projects were able to achieve system
prototyping in an operational environment (TRL5)
- all but five of the projects advanced the CRI summary
status level. Six projects advanced the CRI summary
status by two levels.

1.4 PERFORMANCE MEASURE

ARENA-funded projects increase the supply of renewable energy.

TARGET: Each year ARENA contractually commits to at least five deployment and demonstration projects that increase the supply of renewable energy or renewable energy storage.

TARGET: Total nominal annual electricity generation from ARENA-funded demonstration and deployment projects matches the output intended at time of commitment.

SOURCE

ARENA Corporate Plan 2021-22 to 2024-25 p13.
Please see the Corporate Plan for data sources
and/or methodology of measurement.

2021-22 Portfolio Budget Statements.

RATIONALE FOR MEASURE

ARENA-funded demonstration and deployment projects build renewable energy capacity to support industry learning in emerging technology areas. Because the primary objective of demonstration and deployment-stage projects is to build industry experience, leading to increases in supply through follow-on projects, ARENA does not provide an overall target in advance of project commitments.

RESULT

DEPLOYMENT AND DEMONSTRATION PROJECTS

ACHIEVED: ARENA contractually committed to 20 Demonstration and Deployment Projects in 2021-22. Projects included Shell Energy's Western Sydney Smart Battery, AGL's Broken Hill Grid-Forming Battery and MGA Thermals Energy Storage Project.

Other projects that joined the ARENA portfolio in 2021-22 include Ground Source Systems Yanderra Shallow Geothermal-Solar Systems Demonstration. The Project will install a 100-200 kW(th) ground source heat pump system (GSHP) to replace in full or in part LPG as a fuel for heating and evaporative cooling for a commercial poultry breeding facility in Yanderra, NSW.

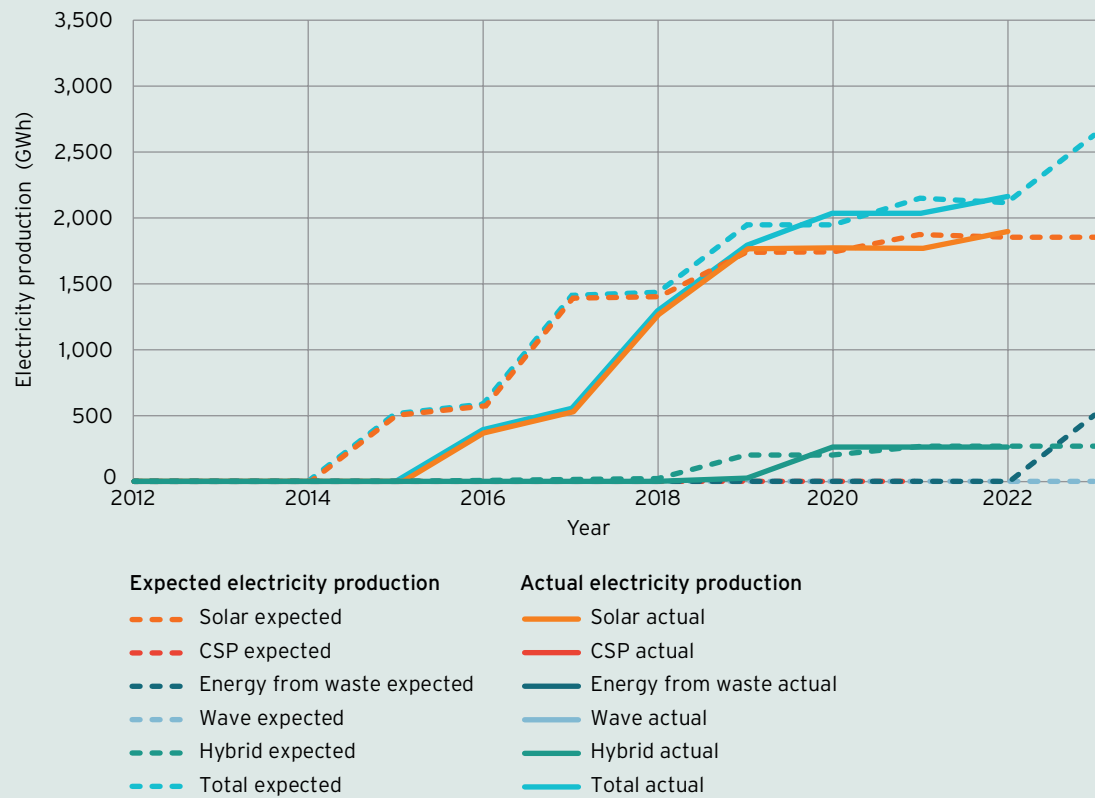
The Alcoa Renewable Powered Electric Calcination Pilot will trial technology that would electrify the calcining process to demonstrate the technical and commercial feasibility of using electric calciners powered by renewable energy. The project will be delivered at the Pinjarra Alumina Refinery in Western Australia and comprises feasibility, engineering, and pilot activities.

ELECTRICITY GENERATION

ACHIEVED: Overall, nominal annual electricity generation at 30 June 2022 was tracking in line with expectations at the time of commitment.

Note: The methodology for 2020-21 is based on nominal annual electricity production with key variables being plant start date, capacity and an assumed capacity factor. The scope includes only the 45 projects that directly produce electricity.

FIGURE 11 NOMINAL ENERGY PRODUCTION - EXPECTED VS ACTUAL



2. ACTIVITY: MAXIMISE THE VALUE OF ONGOING PROJECTS THROUGH EFFECTIVE PROJECT DELIVERY AND KNOWLEDGE SHARING.

EXPECTED RESULTS:

Industry learns more quickly. Government, regulatory bodies and the public are better informed to navigate the energy transition.

2.1 PERFORMANCE MEASURE	
ARENA produces and shares new knowledge.	
TARGET: Significant project outcomes and lessons learned disseminated.	
<ul style="list-style-type: none">> ARENA publishes at least eight Insights newsletters and delivers at least four knowledge sharing events> At least 75 per cent of stakeholders surveyed report that knowledge shared by ARENA has informed part of their decision making processes> 4 per cent increase in visitor traffic (unique page views) to ARENA website	
SOURCE	RATIONALE FOR MEASURE
ARENA Corporate Plan 2021-22 to 2024-25 p13. Please see the Corporate Plan for data sources and/or methodology of measurement.	The dissemination of significant project outcomes and lessons learned is an indicator of the success of ARENA's contract management processes and capabilities. It shows that projects have been managed so that they can succeed, generate and share knowledge.

RESULT

ARENA PUBLISHES AT LEAST EIGHT INSIGHTS NEWSLETTERS AND DELIVERS AT LEAST FOUR KNOWLEDGE SHARING EVENTS

ACHIEVED: ARENA was able to achieve its targets. In the last year ARENA delivered 10 Insights newsletters and seven knowledge sharing events (webinars, roundtables and workshops). Readership of the Insights newsletters grew by more than 28 per cent in 2021-22 to 2771 total subscribers.

RESULT

AT LEAST 75 PER CENT OF STAKEHOLDERS SURVEYED REPORT THAT KNOWLEDGE SHARED BY ARENA HAS INFORMED PART OF THEIR DECISION MAKING PROCESSES

ACHIEVED: 81 per cent of stakeholders surveyed used ARENA resources and information to support decision making within their organisation.

METHODOLOGY

ARENA engaged independent researchers, EY Sweeney to conduct a quantitative stakeholder survey and provide aggregate data to ARENA. Data gathering was completed during July and August 2022. The total sample size was 166.

RESULT

4 PER CENT INCREASE IN VISITOR TRAFFIC (UNIQUE PAGE VIEWS) TO ARENA WEBSITE

NOT ACHIEVED: Unique views to the ARENA website increased by less than one per cent. This was a result of fewer funding and project announcements than previous years and an extended caretaker period.

While unique hits to the website were lower than anticipated, ARENA's digital performance was strong. Readership of the ARENAWIRE online newsletter grew by 17 per cent to 15,189 subscribers in the reporting period. Knowledge Bank, ARENA's online open-source library of knowledge sharing resources, also received 61,553 downloads, a 21 per cent increase compared to last year.

These insights will be taken into consideration for the online strategy for the forthcoming period.

2.2 PERFORMANCE MEASURE

ARENA's performance, as judged by its stakeholders.

TARGET: 85 per cent of survey respondents rate ARENA's performance as 'good' or better.

SOURCE

ARENA Corporate Plan 2021-22 to 2024-25 p13. Please see the Corporate Plan for data sources and/or methodology of measurement.

RATIONALE FOR MEASURE

Positive feedback and tangible outcomes demonstrate that collaboration is relevant and useful and that it is facilitated effectively.

RESULT

ACHIEVED: 87 per cent of respondents to ARENA's external stakeholder survey rated ARENA's performance as good or better.

ARENA's overall performance is supported by its funding, knowledge sharing and collaboration activities. ARENA engages with a diverse range of stakeholders from various sectors including all levels of government, industry associations, finance providers, university researchers, media, think tanks, funding recipients and service providers, workshop attendees and online subscribers.

METHODOLOGY

ARENA engaged independent researchers, EY Sweeney to conduct a quantitative stakeholder survey and provide aggregate data to ARENA. Data gathering was completed during July and August 2022. The total sample size was 166.



FINDINGS OF EVALUATIONS

Image credit: ARENA.



In 2021-22, ARENA commissioned evaluations on two topics identified in the evaluation schedule published in the Corporate Plan.

Below are the evaluation findings as they relate to ARENA's purpose. The objective of the evaluation was to assess whether, and to what extent, the projects and funding programs have contributed to improvements in the competitiveness of renewable energy technologies and an increase in the supply of renewable energy.

EVALUATION OF ARENA'S 2017 SOLAR RESEARCH AND DEVELOPMENT COMPETITIVE ROUND

CONDUCTED BY ITP RENEWABLES

ABOUT THE PROGRAM

Under the 2017 ARENA Investment Plan, the Accelerating Solar Photovoltaic (PV) Innovation investment priority aimed to reduce the future cost of solar PV deployment. In October 2017, after projects were ranked from a competitive call, the ARENA Board approved 20 solar PV Research and Development (R&D) projects aimed at reducing the future cost of solar PV deployment through R&D on established and emerging solar cell and module technologies, including lower cost materials, and improved efficiency, stability, reliability, manufacturing scalability, or durability.

The program included a range of different PV technology types: silicon, perovskites, kesterites, polymers, various tandem cells, bi-facial cells and micro-concentrators. Within this, projects focussed on different aspects: advanced characterisation from ingots through cells and modules, and including deposition techniques, encapsulants, passivation, doping and printing. There was significant innovation across the projects, with project outcomes resulting in scientific publications, patents and commercial development.

FINDINGS

ARENA's funding of these solar R&D projects was appropriate, effective and efficient.

ARENA's funding of \$29 million leveraged a further \$64 million from research organisations and industry, while researchers indicated that technology development would have been slower, or not proceeded without ARENA support.

The Round was well targeted to fill the gap between early stage research and industry uptake. The competitiveness of PV will be increased if these technologies are adopted and costs will be reduced.

Technology Readiness Levels were increased as were the local skills and knowledge around PV technology, including a high level of industry-relevant training of researchers.

The Round contributed to improved PV competitiveness by bringing new, lower cost and more efficient technologies closer to market development, with some already incorporated into production lines. Several projects anticipate advances in efficiency and bifaciality significantly ahead of current international industry

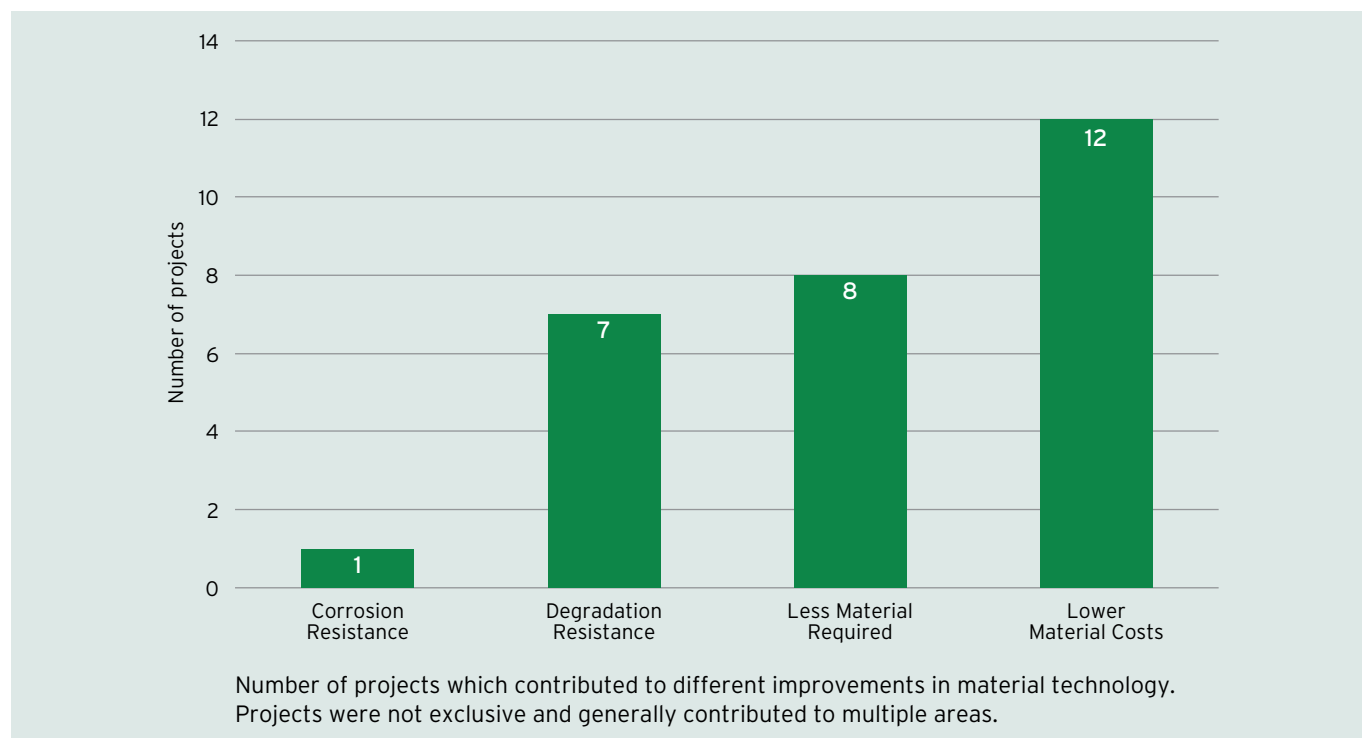
projections. Projects also explored the replacement of scarce or expensive materials with more abundant materials and more socially sustainable processing, which will facilitate the significant increases in PV production needed to take the technology from Gigawatt to Terrawatt scale over coming decades and increase the proportion of PV in the energy market.

Modelling of the National Electricity Market shows that plausible cost reductions in PV technology potentially stemming from this Round of research can lead to material year-on-year reductions in wholesale electricity costs. More PV is built as it gets cheaper, along with more batteries.

DISCLOSURE

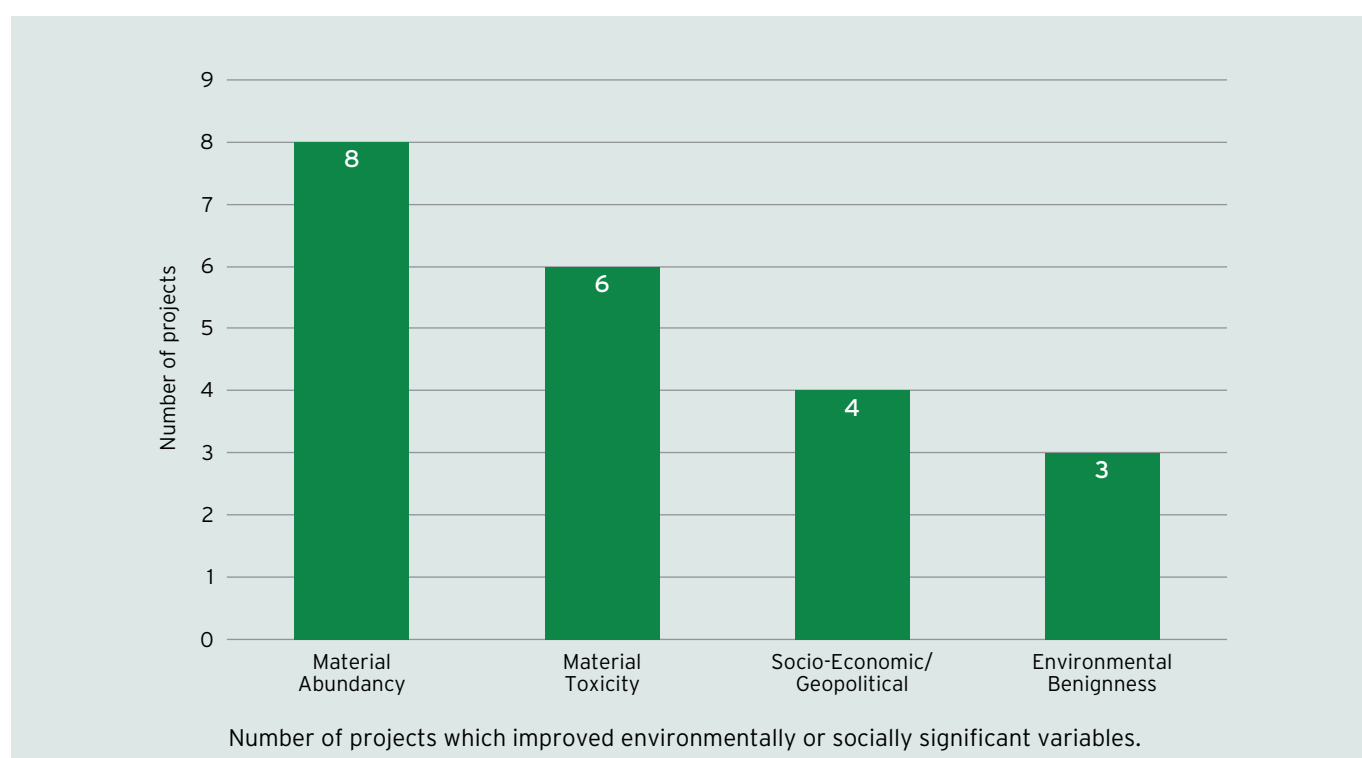
Any conflicts of interest that arose and deemed material were managed in accordance with ARENA's Conflict of Interest Policy. ITP has previously conducted reports, evaluations and other work for ARENA and also received grant funding from ARENA for several projects, none of which formed part of this evaluation.

FIGURE 12 NUMBER OF PROJECTS THAT CONTRIBUTED TO DIFFERENT IMPROVEMENTS IN MATERIAL TECHNOLOGY*



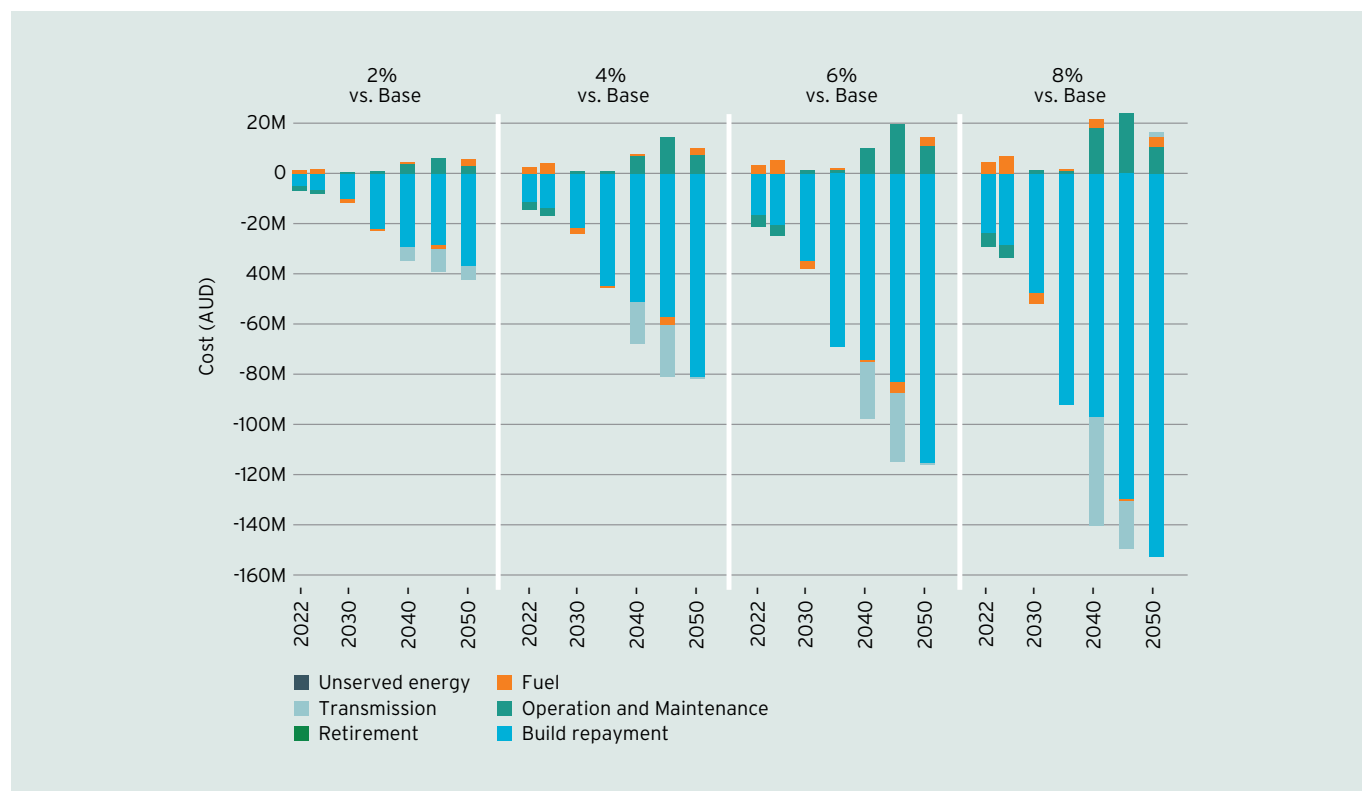
*Projects were not exclusive and generally contributed to multiple areas.

FIGURE 13 NUMBER OF PROJECTS THAT IMPROVED ENVIRONMENTALLY OR SOCIALLY SIGNIFICANT VARIABLES*



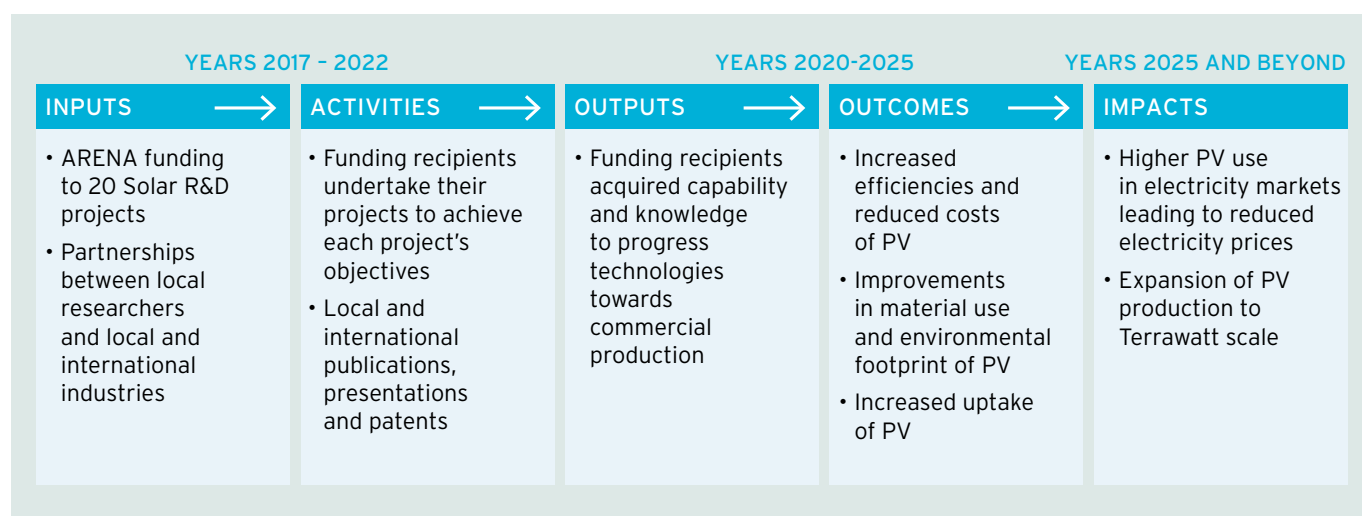
*Number of projects which improved environmentally or socially significant variables.

FIGURE 14 COST COMPARISON BETWEEN 2%, 4%, 6% AND 8% HIGHER PV COST REDUCTIONS AND THE ISP BASE CASE (STEP CHANGE SCENARIO)*



*Values below zero are money saved, whereas values above zero are extra money spent.

FIGURE 15 SOLAR R&D ROUND 3 PROGRAM LOGIC



EVALUATION OF ARENA'S HYDROGEN RESEARCH AND DEVELOPMENT FUNDING ROUND

CONDUCTED BY AURECON

ABOUT THE PROGRAM

The 2017 ARENA R&D Program Round 4: Renewable Hydrogen for Export funding round (the Program) represented the first national strategic activity supporting technological and commercial maturity of technology across the hydrogen supply chain.

The Program granted a total of \$22.1 million shared between 16 separate research projects (the Projects) each focusing on an element of the renewable hydrogen supply chain.

The Program focussed mainly on targeting low Technology Readiness Level (TRL) technologies for potential innovative breakthrough, but also included several Projects which target an incremental improvement on existing technology.

The Program was initially intended to be completed by March 2022. Due to the impact of COVID-19 on Project proponents (including but not limited to lack of access to research facilities due to lockdown laws, key staff absences due to illness, and supply chain delays), timeline extensions were granted for many Projects to beyond July 2022. The result was that at the time of this evaluation (April to June 2022), most Projects were still ongoing.

FINDINGS

The Program was found to be appropriate, and ARENA's management of the Program was generally judged to be good by funding recipients, particularly in light of COVID-19 setbacks.

At the time of this evaluation, most Projects were approaching completion. Without finalised Project results, the Program was only found to partially meet criteria for effectiveness and efficiency, however, all Projects have met or are on track to meet the majority of their objectives by the end of the updated Program timeline.

ARENA is considering a minor update to this evaluation following completion of all Projects to capture final progress activities and artefacts for reflection in the overall Program evaluation.

ARENA's funding at such an early state of industry development was critical to generating activity in the industry and providing a basis for real, practical learnings to be made and key assumptions to be validated.

Several Projects have demonstrated potential for impact across all aspects of the hydrogen supply chain. Other projects have potential for impact in niche markets or industrial applications where they have a natural strategic alignment.

The Program has identified good commercialisation potential for hydrogen technologies both in Australia and international markets. Three notable startups have stemmed from the R&D funding (Hysata, Jupiter Ionics, and HydGene Renewables), and 88 per cent of Projects have identified next steps and 63 per cent have secured further funding.

The Program has allowed for clear identification of barriers in supply chain, regulatory environment, and workforce, validating the supply chain - moving beyond feasibility studies and thought pieces on how hydrogen will work.

The Program has strengthened Australia's position as a research leader in hydrogen, resulting in clear knowledge sharing outcomes (at least seven patents, 68 papers, 46 conference appearances so far).

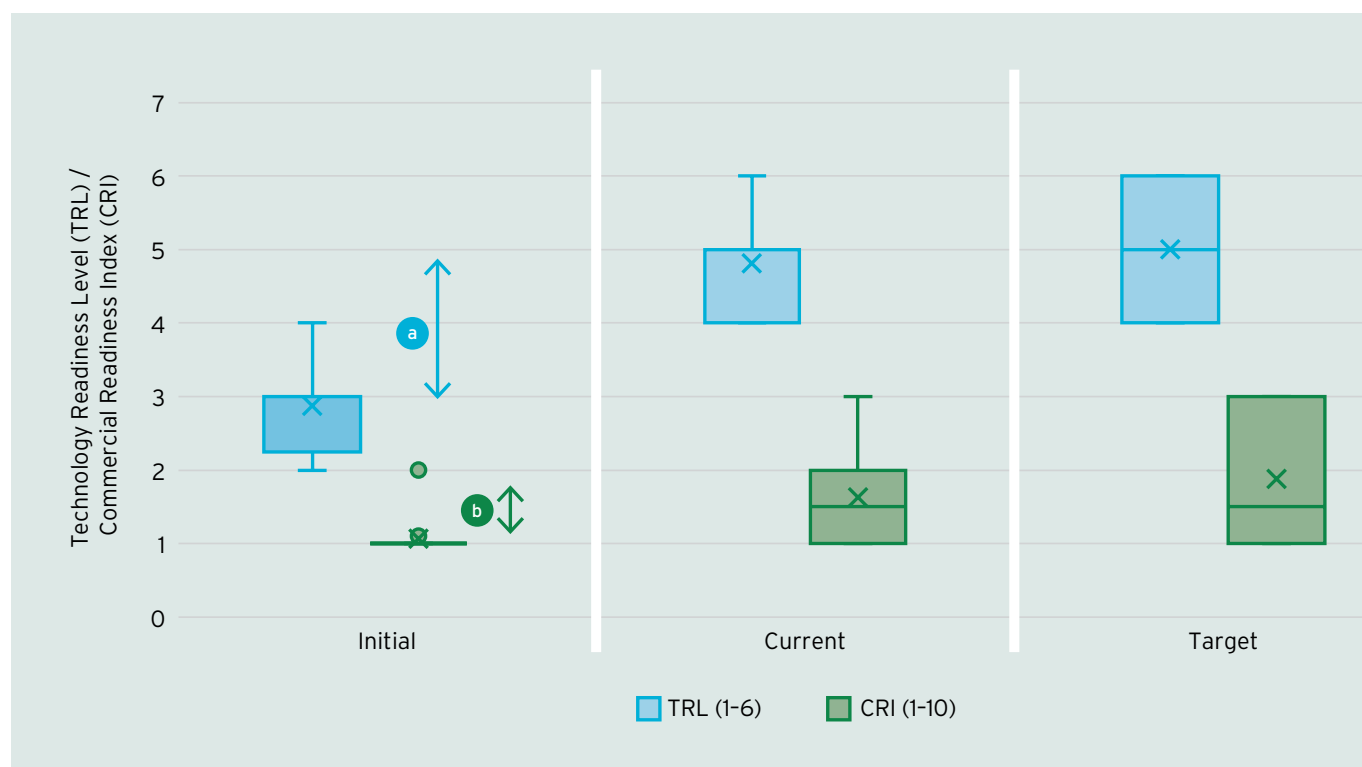
ARENA's funding has been industry leading: ARENA's hydrogen funding rounds have pivoted as the industry vision has emerged in Australia, focusing more on demonstration and commercialisation which is more critical to success. Further R&D funding rounds should be more targeted and less open-ended to focus on the gaps that we can now see in the supply chain.

IMPROVEMENT IN TRL AND CRI

As the funding round was aimed at R&D or low TRL hydrogen technologies, the limited results for CRI advance are not surprising. The TRL and CRI results are based on proponent feedback only, final reports will provide data that will validate and support this rating, which is a next step for ARENA.

Figure 16 presents the Program's initial, current, and target Technology Readiness Level (TRL) and Commercial Readiness Index (CRI).

FIGURE 16 PROGRAM TECHNOLOGY READINESS LEVEL (TRL) AND COMMERCIAL READINESS INDEX (CRI)



a) Across the Program, ARENA's investment resulted in an average TRL improvement of 2.0 so far, with potential TRL increase of ~2.1 by Program close.
b) Across the Program, ARENA's investment resulted in an average CRI improvement of 0.6.

TIMELINE OF HYDROGEN FUNDING IN AUSTRALIA

The ARENA 2017 R&D Program Round 4: Renewable hydrogen for export funding round represented some of the first Federal funding support for hydrogen industry development in Australia, which was a key step in supporting technological and commercial maturity of hydrogen technology across the supply chain.

In the time that this Program has been underway, multiple state and national-level strategies and roadmaps have been developed, plotting a path to industry development.

DISCLOSURE

Any conflicts of interest that arose and deemed material were managed in accordance with ARENA's Conflict of Interest Policy. To the best of ARENA's knowledge, no conflict of interest arose during the course of preparing this report. Aurecon has previously conducted reports, evaluations and other work for ARENA, none of which formed part of this evaluation.

CASE STUDY

PATHWAYS TO \$2/KG HYDROGEN WITH HYSATA

Image credit: Hysata.

UNEXPECTED POSITIVE OUTCOMES ARISING FROM ARENA-FUNDED COLLABORATION BETWEEN RESEARCH INSTITUTIONS

As part of the work developing novel e-Ammonia electrolysis processes with Monash University, co-investigators at the University of Wollongong, headed by Professor Gerry Swiegers, were supporting Monash to maximise electrolyser efficiency, focusing on reducing electrical resistance of the cells.

The plan was for two PhD students supported by ARENA funding at the University of Wollongong to work on improving the electrolyser design, using water electrolysis as an easier way to measure the efficiency of the cell. However, early delays due to contamination of Monash ammonia measurements from use of nitrile gloves presented the Wollongong team with an unexpected time extension from their planned program of work with Monash.

The additional time granted by these delays was used to great effect, with the students achieving remarkable levels of efficiency for water electrolysis. A key focus of technology development was on optimising the use and composition of a separator material between the electrodes and water in the cells.

These innovations were passed on to the Monash team and contributed to the development of the novel e-Ammonia production process. However, recognising

the record-breaking hydrogen production improvement potential from the advances, the Wollongong team also chose to progress their work in this space, leading to the spin-off of electrolyser start-up Hysata.

PATHWAYS TO \$2/KG CREATED BY HIGH EFFICIENCY TECHNOLOGY ADVANCE AND WHOLE OF PLANT OPTIMISATION

Hysata has generated national and global interest and investment due to its potential to put green hydrogen at under \$2/kg in reach.

One of the key limiting factors in reaching this vaunted target price is the energy efficiency of electrolysis and the related cost of electricity. The Wollongong team has been able to improve their alkaline electrolyser technology to above 95 per cent efficiency, which is an improvement of around 20 per cent compared to commercial electrolysers. Crucially, this improvement results in less waste heat generation, further lowering the auxiliary power and capex requirements for cooling and ventilation systems. Alongside these significant advances, improved cell degradation projections, a modular design, simplified balance of plant, and declining renewable energy price forecasts contribute to a forecast price of hydrogen under \$2/kg with Hysata's technology.



ANALYSIS

This section outlines how significant events during the year affected ARENA's operations, funded projects and results.

ARENA'S PURPOSE AND PERFORMANCE FRAMEWORK

Following the Auditor General's Performance Audit Report no. 35 of 2019-2020 into Grant Program Management by the Australian Renewable Energy Agency, the Agency has implemented three recommendations that relate to ARENA's Performance Framework:

- > That the Australian Renewable Energy Agency improves the reliability and completeness of its performance measurement and reporting framework.
- > That the Australian Renewable Energy Agency implements policies and processes to provide effective assurance that its performance measurement framework and reporting is fully consistent with the Commonwealth performance framework.
- > That the Australian Renewable Energy Agency assesses and actively manages conflicts of interests of organisations engaged to conduct its evaluations and disclose, where relevant, any conflicts in evaluation reports and material provided to decision-makers.

ARENA sought independent assurance that the actions it has undertaken have addressed the underlying findings which led to the recommendations contained in the Auditor General's Report.

ARENA is working diligently to implement one remaining recommendation from the Report, that the Australian Renewable Energy Agency continues the integration of its assessment and grant management processes with its information systems to strengthen its assurance over its grant management activities.

The implementation of this final recommendation will further increase the level of assurances over performance data and information, and will lead to greater efficiencies in business processes.

KEY DEVELOPMENTS AFFECTING PROGRAM IMPLEMENTATION AND PROJECT DELIVERY

Describe ensuring that key content set out in relevant guidance (eg RMG 134) is covered

Throughout 2021-22 the implementation of new programs and ARENA's portfolio of active projects continued to be impacted by COVID-19. Most notably, the effects were on project schedules, supply chain and COVID-19 continuing to take priority. Fifty-one per cent of projects surveyed in May indicated they were impacted by supply chain issues. The major causes of supply chain issues were international shipping delays, staff shortages, and main product shortages such as batteries.

ARENA continues to support its portfolio of projects impacted by COVID-19, in line with its policies and the terms of its grant funding agreements. ARENA collaborates pragmatically with its grant recipients with the aim of achieving relevant project outcomes.



Image credit: Stock.



08

APPENDICES



Image credit: Stock.

APPENDIX 1: FINANCIAL ASSISTANCE AGREEMENTS AND PROGRESS

ARENA is required under the ARENA Act to publish details of financial assistance agreements and an assessment of the extent to which these agreements have progressed, or are expected to progress, the principal objectives and priorities as stated in the general funding strategy in force for the year.

The *Australian Renewable Energy Agency (Consequential Amendments and Transitional Provisions) Act 2011* also requires ARENA to report details of people to whom financial assistance is provided under a transferred Australian Government funding agreement or Australian Solar Institute agreement.

During the reporting period, 263 active projects were managed by ARENA. Of those projects, 79 were completed in 2021-22 and four were terminated during the course of the year.

ARENA contractually committed funds to 26 new projects in 2021-22 (Table 8). As with previous years, some of the projects contractually committed during 2021-22 were approved by the Board in the previous financial year, while other projects approved by the Board during 2021-22 will be contractually committed in 2022-23. This is reflective of ARENA's approval processes.

Details of all active projects (including new commitments) during 2021-22 are provided in Table 9.

ARENA invested funds in 10 organisations under the Renewable Energy Venture Capital Fund Program (REVC) in 2021-22. Details of those investments are provided in Table 10.

TABLE 8 ARENA FUNDS CONTRACTUALLY COMMITTED TO NEW PROJECTS IN 2021-22

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
5B Holdings Pty Ltd	Active	5B Maverick Solar PV Automated Assembly & Deployment Project	\$14,000,000	NSW	Optimising the transition to renewable electricity	Solar PV	Demonstration
AGL Energy Limited	Active	AGL Broken Hill Grid-Forming Battery	\$14,839,000	NSW	Integrating renewables into the electricity system	Battery Storage	Demonstration
Alcoa of Australia Limited	Active	Alcoa Renewable Powered Electric Calcination Pilot	\$8,621,168	WA	Supporting the transition to low emissions metals	Enabling	Demonstration
Ampol Australia Petroleum Pty Ltd	Active	Brisbane, Gold Coast and Sunshine Coast, Addressing Blackspots Fast Charging Project	\$1,500,000	QLD	Future Fuels	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Melbourne and Geelong, Addressing Blackspots Fast Charging Project	\$2,250,000	VIC	Future Fuels	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Perth, Addressing Blackspots Fast Charging Project	\$800,000	WA	Future Fuels	Electric vehicles	Deployment

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Ampol Australia Petroleum Pty Ltd	Active	Sydney, Wollongong, Central Coast and Newcastle, Addressing Blackspots Fast Charging Project	\$2,500,000	NSW	Future Fuels	Electric vehicles	Deployment
Ark Energy H2 Pty Ltd	Active	SunHQ Phase 1: Renewable Hydrogen Demonstration for Heavy Transport	\$3,023,797	QLD	Commercialising clean hydrogen	Hydrogen	Deployment
Australian Energy Market Operator	Active	AEMO Connections Tool Project	\$2,227,273	NSW	Integrating renewables into the electricity system	Enabling	Deployment
Australian National University	Active	DEIP Interoperability Steering Committee Resourcing Project	\$439,452	ACT	Integrating renewables into the electricity system	Distributed Energy	Study
Bluescope Steel (AIS) Pty Ltd	Active	BlueScope Port Kembla Steelworks Renewables/ Emissions Reduction Study	\$924,784	NSW	Supporting the transition to low emissions metals	Hydrogen	Study
Elxsys Energy Pty Ltd	Active	Planet Ark Power Elxsys DER Hosting Capacity Demonstration Project	\$451,167	QLD	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Evoenergy	Active	ACT Distributed Energy Resources Demonstration Pilot (Project Converge)	\$2,852,118	ACT	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Ground Source Systems Pty Ltd	Active	Ground Source Systems Yanderra Shallow Geothermal-Solar Systems Demonstration	\$318,556	NSW	Supporting industry to reduce emissions	Geothermal	Demonstration
Hardwick Processors Proprietary Limited	Active	Hardwick Meat Works Installation of Heat Pump and Power Upgrade Demonstration	\$838,000	VIC	Supporting industry to reduce emissions	Enabling	Demonstration
Intellihub Australia Pty Ltd	Active	Intellihub Street Light Pole EV Charger with Grid Integration Project	\$871,000	NSW	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Macquarie Corporate Holdings Pty Limited	Active	H2 Newcastle Hydrogen Hub at the Port of Newcastle Feasibility Study	\$1,500,000	NSW	Accelerating hydrogen	Hydrogen	Study
MGA Thermal Pty Ltd	Active	Thermal Energy Storage Project	\$1,267,500	NSW	Optimising the transition to renewable electricity	Battery Storage	Demonstration
Monash University	Active	Integrating Energy Storage into the NEM Study	\$495,000	VIC	Integrating renewables into the electricity system	Battery Storage	Study

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Shell Energy BESS 1 Pty Ltd	Active	Western Sydney Smart Battery Project	\$6,980,000	NSW	Integrating renewables into the electricity system	Battery Storage	Deployment
Spinifex Offshore Wind Farm Pty Ltd	Active	Spinifex Offshore Wind Farm Phase 1 Development Activities	\$1,500,000	VIC	Optimising the transition to renewable electricity	Wind	Deployment
Stanwell Corporation Limited	Active	Stanwell Central Queensland Hydrogen Project	\$2,168,229	QLD	Accelerating hydrogen	Hydrogen	Study
The University of Queensland	Active	Platform for Solar Farm Pre-commissioning	\$498,000	QLD	Integrating renewables into the electricity system	Solar PV	Study
Viva Energy Australia Pty Ltd	Active	New Energies Service Station Geelong Demonstration Project	\$22,800,000	VIC	Accelerating hydrogen	Hydrogen	Demonstration
Western Power	Active	Western Australia Distributed Energy Resources Orchestration Pilot (Project Symphony)	\$8,557,027	WA	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Zenobe Australia Pty Ltd	Active	Next generation electric bus depot	\$5,000,000	NSW	Integrating renewables into the electricity system	Electric vehicles	Demonstration
TOTAL		26	\$107,222,071				

TABLE 9 ALL ACTIVE PROJECTS MANAGED BY ARENA IN 2021-22 (INCLUDING NEW PROJECTS LISTED IN TABLE 8)

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
5B Holdings Pty Ltd	Active	5B Maverick Solar PV Automated Assembly & Deployment Project	\$14,000,000	\$1,800,000	NSW	Optimising the transition to renewable electricity	Solar PV	Demonstration
Advanced Energy Resources on behalf of PGWF Pty Ltd ATF PGWF Unit Trust	Active	Fringe of Grid Battery Microgrid for Port Gregory (WA) Wind & Solar Farm	\$3,000,000	\$150,000	WA	Integrating renewables into the electricity system	Battery storage	Demonstration
Advisian Pty Ltd	Closed	Advisian Wind and Solar Forecasting for the NEM Project	\$499,722		QLD	Integrating renewables into the electricity system	Market data and information	Demonstration
Aeolius Wind Systems Pty Ltd	Active	Aeolius Wind Systems Wind Forecasting Demonstration Project	\$1,899,000	\$624,100	VIC	Integrating renewables into the electricity system	Market data and information	Demonstration
AGL Energy Limited	Active	AGL Broken Hill Grid-Forming Battery	\$14,839,000	\$3,600,000	NSW	Integrating renewables into the electricity system	Enabling	Demonstration
AGL Energy Services Pty Limited	Active	5MW Virtual Power Plant in South Australia (VPP-SA) Project	\$5,300,000		SA	Integrating renewables into the electricity system	Enabling	Deployment
AGL Energy Services Pty Limited	Active	AGL Electric Vehicle Orchestration Trial	\$2,893,638	\$859,317	VIC	Integrating renewables into the electricity system	Enabling	Deployment
AGL Energy Services Pty Limited	Closed	AGL Energy Application for Demand Response in NSW	\$2,624,019		NSW	Integrating renewables into the electricity system	Enabling	Demonstration
Alcoa of Australia Limited	Active	Mechanical Vapour Recompression for Low Carbon Alumina Refining Project	\$11,285,293		WA	Supporting industry to reduce emissions	Enabling	Demonstration
Alcoa of Australia Limited	Active	Alcoa Renewable Powered Electric Calcination Pilot	\$8,621,168		WA	Supporting the transition to low emissions metals	Enabling	Demonstration
Alinta Energy Pilbara Finance Pty Ltd	Active	Alinta Solar Gas Hybrid Project	\$24,200,000		WA	Supporting industry to reduce emissions	Solar PV	Deployment

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Allume Energy Pty Ltd	Terminated	Allume Rooftop Solar Salvation Army Pilot Demonstration Project	\$78,000		TAS	Integrating renewables into the electricity system	Solar PV	Demonstration
Ampol Australia Petroleum Pty Ltd	Active	Brisbane, Gold Coast and Sunshine Coast, Addressing Blackspots Fast Charging Project	\$1,500,000	\$300,000	QLD	Future Fuels	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Melbourne and Geelong, Addressing Blackspots Fast Charging Project	\$2,250,000	\$450,000	VIC	Future Fuels	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Perth, Addressing Blackspots Fast Charging Project	\$800,000	\$160,000	WA	Future Fuels	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Sydney, Wollongong, Central Coast and Newcastle, Addressing Blackspots Fast Charging Project	\$2,500,000	\$500,000	NSW	Future Fuels	Electric vehicles	Deployment
Applied Electric Vehicles Pty Ltd	Closed	Energy Freedom Solar Electric Vehicle Pilot Project	\$2,000,000		VIC	Integrating renewables into the electricity system	Electric vehicles	Demonstration
APT Facility Management Pty Limited	Active	APA Renewable Methane Demonstration Project	\$1,100,000		QLD	Accelerating hydrogen	Hydrogen	Demonstration
APT Management Services Pty Limited	Closed	Darling Downs Solar Farm	\$20,000,000		QLD	Foundation portfolios	Large-scale solar	Deployment
APT Management Services Pty Limited	Closed	Emu Downs Solar Farm Project	\$5,500,000		WA	Integrating renewables into the electricity system	Large-scale solar	Deployment
Ark Energy H2 Pty Ltd	Active	SunHQ Phase 1: Renewable Hydrogen Demonstration for Heavy Transport	\$3,023,797		QLD	Commercialising clean hydrogen	Hydrogen	Deployment
Australand Residential Edmondson Park Pty Limited	Active	Fraser's Property Australia Net Zero Energy Homes	\$708,910	\$94,750	NSW	Integrating renewables into the electricity system	Solar PV	Deployment
Australian Alliance for Energy Productivity Limited	Closed	A2EP & Climate-KIC renewable energy for process heat opportunity study (phase 2)	\$482,896		NSW	Supporting industry to reduce emissions	Industrial heating and cooling	Study

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Australian Association for Hydrogen Energy	Active	IEA Hydrogen Technology Collaboration Program	\$494,000	\$177,600	WA	Accelerating hydrogen	Hydrogen	Study
Australian Energy Council Limited	Closed	Double-sided Causer Pays Study	\$164,550	\$164,550	NSW	Integrating renewables into the electricity system	Enabling	Study
Australian Energy Market Operator	Active	AEMO Project EDGE (Energy Demand & Generation Exchange)	\$12,927,065	\$3,620,000	VIC	Integrating renewables into the electricity system	Enabling	Demonstration
Australian Energy Market Operator	Active	AEMO Connections Tool Project	\$2,227,273	\$118,024	NSW	Integrating renewables into the electricity system	Enabling	Deployment
Australian Energy Market Operator	Closed	AEMO Virtual Power Plant (VPP) Demonstrations	\$3,465,140	\$340,140	VIC	Integrating renewables into the electricity system	Enabling	Demonstration
Australian Gas Networks Limited	Active	Blending Hydrogen into Victorian and South Australian Gas Infrastructure	\$1,280,000	\$545,380	SA	Accelerating hydrogen	Hydrogen	Study
Australian Institute of Refrigeration Airconditioning and Heating	Active	AIRAH - The Affordable Heating and Cooling Innovation Hub (i-Hub)	\$6,480,872		VIC	Supporting industry to reduce emissions	Enabling	Deployment
Australian National University	Active	DEIP Interoperability Steering Committee Resourcing Project	\$439,452		ACT	Integrating renewables into the electricity system	Distributed Energy	Study
Australian National University	Active	Direct Water Electrolysis R&D Project	\$1,310,407		ACT	Accelerating hydrogen	Hydrogen	R&D
Australian National University	Active	Hydrogen Generation by Electro-Catalytic Systems R&D Project	\$615,682	\$123,136	ACT	Accelerating hydrogen	Hydrogen	R&D
Australian National University	Active	Short Term Off-River Energy Storage Stage 2 (STORES 2) Study	\$308,736		ACT	Integrating renewables into the electricity system	Pumped hydro energy storage	Study
Australian National University	Active	Advanced silicon, Advanced multifunctional dielectric layers enabling simplified production of high-efficiency silicon solar cells	\$455,322	\$136,597	ACT	Integrating renewables into the electricity system	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Australian National University	Active	Advanced silicon, Heterocontact-Polysilicon Hybrid IBC Solar Cells	\$507,819	\$152,346	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Active	Advanced silicon, Physical vapour deposited passivating contacts for high efficiency silicon solar cells	\$404,177	\$121,253	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Active	Tandem-Silicon, Monolithic Si/ perovskite tandem solar cell: advanced designs towards high-efficiency at low-cost	\$1,130,542	\$339,163	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Active	New Materials, Perovskite modules that are stable under real-world conditions	\$735,288	\$220,586	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Active	Driving Increased Efficiency and Reliability in Silicon Photovoltaics - from ingots to modules	\$2,399,392		ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Active	Solar Hydrogen Generation R&D Project	\$1,712,303		ACT	Accelerating hydrogen	Hydrogen	R&D
Australian National University	Closed	Advanced Silicon Solar Cells by DESIJN (Deposited Silicon Junctions)	\$1,116,142	\$223,228	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Closed	Development of Stable Electrodes for Perovskite Solar Cells	\$936,732	\$187,346	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Closed	Monolithic perovskite - silicon Tandem Cells: Towards Commercial Reality	\$672,841	\$134,568	ACT	Integrating renewables into the electricity system	Solar PV	R&D
Australian National University	Closed	Next Generation Industrial Bifacial Silicon Solar Cells	\$1,977,845	\$394,568	ACT	Integrating renewables into the electricity system	Solar PV	R&D

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Australian PV Institute Limited	Active	IEA Technology Collaboration Programme - PV Power Systems	\$668,000	\$141,250	NSW	Integrating renewables into the electricity system	Solar PV	Study
Australian PV Institute Limited		IEA Technology Collaboration Programme - Solar Heating and Cooling	\$383,500	\$63,700	NSW	Supporting industry to reduce emissions	Solar thermal	Study
BP Australia Pty Ltd	Closed	Project GERI Feasibility Study	\$1,568,368	\$756,118	WA	Accelerating hydrogen	Hydrogen	Study
Barcaldine Remote Community Solar Farm	Closed	Barcaldine Remote Community Solar Project	\$22,800,000		QLD	Foundation portfolios	Large-scale solar	Demonstration
Bioenergy Australia	Active	Participation in the IEA Technology Collaboration Programme on Bioenergy	\$885,733	\$141,072	ACT	Foundation portfolios	Bioenergy	Study
Bluescope Steel (AIS) Pty Ltd	Active	Port Kembla Steelworks Renewables/ Emissions Reduction Study	\$924,784		NSW	Supporting industry to reduce emissions	Hydrogen	Study
BOC Ltd	Active	Bulwer Island, Queensland, Renewable Hydrogen Production and Refuelling Project	\$1,137,000		QLD	Accelerating hydrogen	Hydrogen	Demonstration
Brimbank City Council	Active	St Albans Leisure Centre Replacement - Carbon Neutral Deployment Project	\$1,530,000	\$200,000	VIC	Supporting industry to reduce emissions	Enabling	Deployment
BT Imaging Pty Ltd	Active	Solar Module Inspection System Project	\$999,999		NSW	Integrating renewables into the electricity system	Solar PV	Deployment
BTPS 1 Pty Ltd	Closed	Transforming Industrial Rooftops with the Bright Thinkers Power Station (BTPS)	\$496,857		NSW	Integrating renewables into the electricity system	Solar PV	Demonstration
Canadian Solar	Closed	Longreach Solar Farm	\$1,300,000		QLD	Foundation portfolios	Large-scale solar	Deployment
Canadian Solar	Closed	Oakey Solar Farm	\$2,162,000		QLD	Foundation portfolios	Large-scale solar	Deployment
Canadian Solar (Australia) Pty Limited	Active	Canadian Solar connection studies at Carwarp Solar Farm	\$270,500	\$70,000	QLD	Integrating renewables into the electricity system	Battery storage	Demonstration

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Centennial Newstan Pty Limited	Active	Centennial Pumped Hydro Energy Storage Project	\$995,000		NSW	Integrating renewables into the electricity system	Pumped hydro energy storage	Study
Chargefox Pty Ltd	Active	Electric Vehicle Charging Network Project	\$6,000,000		VIC	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Chargefox Pty Ltd	Active	Future Fuels Public Fast Charging Adelaide Project	\$600,000		SA	Future Fuels	Electric vehicles	Deployment
Chargefox Pty Ltd	Active	Future Fuels Public Fast Charging Perth Project	\$800,000	\$160,000	WA	Future Fuels	Electric vehicles	Deployment
Climate-KIC Australia Ltd	Active	Residential heat pump study	\$500,000	\$40,000	NSW	Integrating renewables into the electricity system	Geothermal	Study
Climate-KIC Australia Ltd	Closed	Business Renewables Centre Australia	\$500,000	\$75,000	NSW	Foundation portfolios	Market data and information	Study
CSIRO	Active	Missions Innovation Challenge - Smart Grids	\$113,750		NSW	Integrating renewables into the electricity system	Enabling	Study
CSIRO	Active	Hydrogen to Ammonia R&D Project	\$1,175,000	\$235,000	VIC	Accelerating hydrogen	Hydrogen	R&D
CSIRO	Active	Solar Thermochemical Hydrogen R&D Project	\$2,007,676		NSW	Accelerating hydrogen	Hydrogen	R&D
CSIRO	Active	Australian Solar Thermal Research Institute (ASTRI)	\$49,958,747	\$6,000,000	NSW	Integrating renewables into the electricity system	Solar thermal	R&D
CSIRO	Active	IEA SolarPACES (Solar Power and Chemical Energy Systems) Technology Collaboration Program	\$364,000		NSW	Integrating renewables into the electricity system	Solar thermal	Study
CSIRO	Active	IEA Ocean Energy Systems Technology Collaboration Program	\$283,500	\$18,500	TAS	Foundation portfolios	Marine	Study

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CSIRO	Closed	Feasibility study into dispatchable, cost effective power from forest and mill waste using the direct injection carbon engine (bioDICE)	\$432,000		NSW	Foundation portfolios	Bioenergy	Study
CSIRO	Closed	National Low-Voltage Feeder Taxonomy Study	\$485,025	\$194,009	NSW	Integrating renewables into the electricity system	DER Integration	Study
CSIRO	Closed	Liquid Fuel Carrier R&D Project	\$1,010,021	\$202,004	VIC	Accelerating hydrogen	Hydrogen	R&D
CSIRO	Closed	Methane Fuel Carrier R&D Project	\$1,085,553	\$217,111	NSW	Accelerating hydrogen	Hydrogen	R&D
CSIRO	Closed	Manufacturing of Printed Perovskite PV Modules	\$3,310,248	\$662,050	VIC	Integrating renewables into the electricity system	Solar PV	R&D
Desert Knowledge Research Institute Ltd	Active	Alice Springs Future Grid Project	\$2,171,917	\$434,864	NT	Integrating renewables into the electricity system	Enabling	Deployment
Diffuse Energy Pty Ltd	Active	Diffuse Energy Resilient Wind Energy for Telecommunications Sites	\$341,990	\$75,812	NSW	Foundation portfolios	Wind	Demonstration
DNV GL	Closed	Multi-Model and Machine Learning Wind Forecast Project	\$270,941	\$49,959	VIC	Integrating renewables into the electricity system	Market data and information	Demonstration
Dynamic Limits	Closed	DER Feasibility Study	\$292,213		NSW	Integrating renewables into the electricity system	DER Integration	Study
East Rockingham RRF Project Co Pty Ltd	Active	Waste to Energy Project	\$18,000,000		WA	Foundation portfolios	Bioenergy	Deployment
Echuca Regional Health	Closed	Rooftop Concentrated Solar Thermal for Hospital Heating/Cooling Demonstration Project	\$136,000	\$36,000	VIC	Integrating renewables into the electricity system	Solar thermal	Demonstration
Edify Energy Pty Ltd	Active	Darlington Point Energy Storage System	\$6,600,000	\$6,600,000	NSW	Integrating renewables into the electricity system	Battery storage	Deployment

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EDL Group Operations Pty Ltd	Active	Coober Pedy Renewable Diesel Hybrid	\$18,410,879		SA	Foundation portfolios	Hybrid	Demonstration
Electric Highway Tasmania Proprietary Limited	Active	Hobart EHT Fast Charger Network Project	\$400,000	\$80,000	TAS	Future Fuels	Electric vehicles	Deployment
Electricity Generation and Retail Corporation	Closed	Alkimos Beach Energy Storage Project	\$2,786,374		WA	Integrating renewables into the electricity system	Enabling	Demonstration
Element 25 Limited	Closed	Intermittent Dynamic Electrowinning using renewable energy for The Butcherbird Project to produce high purity EMM and MnSO4	\$266,905	\$125,365	WA	Supporting industry to reduce emissions	Enabling	Study
Elexsys Energy Pty Ltd	Active	Planet Ark Power EleXsys DER Hosting Capacity Demonstration Project	\$451,167	\$60,000	QLD	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Enova Energy Pty Ltd	Terminated	Community Battery Storage and Peer to Peer Trading Platform	\$0		NSW	Integrating renewables into the electricity system	Battery storage	Demonstration
Entura	Closed	Participation in IEA Hydropower Technology Collaboration Program	\$252,000		TAS	Foundation portfolios	Enabling	Study
ERM Power Retail Pty Ltd	Active	ERM Power advancing renewables in the manufacturing sector project	\$250,000	\$230,000	QLD	Supporting industry to reduce emissions	Enabling	Study
Ethanol Technologies Pty Limited	Active	Ethtec Cellulosic Ethanol Pilot Plant	\$11,960,000	\$4,205,000	NSW	Foundation portfolios	Bioenergy	Demonstration
Everergi Pty Ltd	Closed	Charge Together Australia - Phase 2	\$469,380		NSW	Integrating renewables into the electricity system	Electric vehicles	Deployment
Evie Networks	Active	Fast Cities - Creating a National Ultrafast EV Charging Infrastructure Network	\$15,000,000	\$2,000,000	QLD	Integrating renewables into the electricity system	Electric vehicles	Demonstration

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Evie Networks	Active	Future Fuels Public Fast Charging Adelaide	\$600,000	\$120,000	SA	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Brisbane	\$1,500,000	\$300,000	QLD	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Canberra	\$500,000	\$100,000	ACT	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Darwin	\$300,000	\$60,000	NT	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Hobart	\$400,000	\$80,000	TAS	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Melbourne	\$2,250,000	\$450,000	VIC	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Perth	\$800,000	\$160,000	WA	Future Fuels	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Sydney	\$2,500,000	\$500,000	NSW	Future Fuels	Electric vehicles	Deployment
Evoenergy	Active	Distributed Energy Resources Demonstration Pilot (Project Converge)	\$2,852,118	\$806,072	ACT	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Evoenergy	Closed	DER integration and automation project	\$2,056,292		ACT	Integrating renewables into the electricity system	DER Integration	Demonstration
Flow Power	Closed	Flow Power Demand Response NSW	\$1,318,250		NSW	Integrating renewables into the electricity system	Enabling	Demonstration
Genex Power Limited	Active	Genex Kidston Pumped Hydro Energy Storage Project	\$47,000,000		QLD	Integrating renewables into the electricity system	Pumped hydro energy storage	Deployment
Genex Power Limited	Closed	Kidston Solar Project	\$8,850,000		QLD	Foundation portfolios	Large-scale solar	Deployment
Genex Power Limited	Closed	Kidston Stage 2 Project	\$5,000,000	\$441,541	QLD	Integrating renewables into the electricity system	Pumped hydro energy storage	Study

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Gess Devco Pty Ltd	Active	Gannawarra Energy Storage System (GESS)	\$22,735,000		VIC	Integrating renewables into the electricity system	Battery storage	Demonstration
Glaciem Cooling Technologies Pty Ltd	Active	Advancing Renewables with PCM Thermal Energy Storage Project	\$1,962,037		SA	Supporting industry to reduce emissions	Enabling	Demonstration
Goldwind Australia Pty Ltd	Active	Gold Fields Demonstration of a high penetration renewable microgrid on an operating mine in WA	\$13,500,000		WA	Foundation portfolios	Off grid	Deployment
Goldwind Australia Pty Ltd	Closed	White Rock Solar Farm, co-located with White Rock Wind Farm	\$5,400,000		NSW	Foundation portfolios	Large-scale solar	Deployment
Goldwind Australia Pty Ltd	Closed	Field Study of Virtual Synchronous Generator at Gullen Range Wind Farm	\$271,450		NSW	Integrating renewables into the electricity system	System security	Demonstration
GreenSync Pty Ltd	Closed	Decentralised Energy Exchange (deX) Program: scaling common platform requirements for decentralised energy exchanges across Australia	\$8,316,449		VIC	Integrating renewables into the electricity system	Enabling	Deployment
Ground Source Systems Pty Ltd	Active	Yanderra Shallow Geothermal-Solar Systems Demonstration	\$318,556	\$77,222	NSW	Supporting industry to reduce emissions	Geothermal	Demonstration
Gullen Solar	Closed	Gullen Range Solar Farm - co-located with Gullen Range Wind Farm	\$9,900,000		NSW	Foundation portfolios	Large-scale solar	Deployment
Hardwick Processors Proprietary Limited	Active	Hardwick Meat Works Installation of Heat Pump and Power Upgrade Demonstration	\$838,000	\$100,000	VIC	Supporting industry to reduce emissions	Enabling	Demonstration
Hazer Group Limited	Active	Hazer Process Demonstration Plant	\$9,410,000		WA	Accelerating hydrogen	Hydrogen	Demonstration
Hivve Technology Pty Ltd	Closed	HIVVE - Sustainable Modular Classrooms	\$334,650		NSW	Integrating renewables into the electricity system	Enabling	Demonstration

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Icon Retail Investments Limited And AGL ACT Retail Investments Pty Ltd	Active	ActewAGL Realising Electric Vehicle-to-grid Services Project	\$2,738,648	\$1,035,260	ACT	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Indigenous Essential Services Pty Ltd	Active	Northern Territory Solar Energy Transformation Program (SETuP)	\$35,000,000	\$92,489	NT	Foundation portfolios	Hybrid	Demonstration
Indra Australia Pty Ltd	Active	Monash Smart Microgrid Project	\$2,974,162	\$744,271	VIC	Integrating renewables into the electricity system	DER Integration	Demonstration
Industrial Monitoring & Control Pty Ltd	Closed	Skycam and Multi-Model Solar Forecasting Project	\$1,247,841		NSW	Integrating renewables into the electricity system	Market data and information	Demonstration
Intellihub Australia Pty Ltd	Active	Intellihub Street Light Pole EV Charger with Grid Integration Project	\$871,000		NSW	Integrating renewables into the electricity system	Enabling	Demonstration
IPAH Client Solutions Australia Pty Ltd	Active	Engie Future Fuels Public Fast Charging Adelaide	\$600,000	\$120,000	SA	Future Fuels	Electric vehicles	Deployment
IPAH Client Solutions Australia Pty Ltd	Active	Engie Future Fuels Public Fast Charging Brisbane	\$1,500,000	\$300,000	QLD	Future Fuels	Electric vehicles	Deployment
IPAH Client Solutions Australia Pty Ltd	Active	Engie Future Fuels Public Fast Charging Melbourne	\$2,250,000	\$450,000	VIC	Future Fuels	Electric vehicles	Deployment
IPAH Client Solutions Australia Pty Ltd	Active	Engie Future Fuels Public Fast Charging Sydney	\$2,500,000	\$500,000	NSW	Future Fuels	Electric vehicles	Deployment
IT Power (Australia) Pty Limited	Active	Testing the performance of lithium-ion batteries	\$1,290,000	\$30,000	ACT	Integrating renewables into the electricity system	Battery storage	R&D
IT Power (Australia) Pty Limited	Active	Open Source Grid Integration Model for the National Electricity Market	\$624,940	\$9,500	ACT	Integrating renewables into the electricity system	Enabling	Study
Jemalong JSS Project No 1 Pty Limited	Active	Concentrating Solar Thermal power plant with thermal energy storage	\$39,500,000		NSW	Integrating renewables into the electricity system	Solar thermal	Demonstration
Jemena	Active	Power to Gas Demonstration	\$7,500,000	\$1,860,000	NSW	Accelerating hydrogen	Hydrogen	Demonstration

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Jemena	Closed	Demonstration projects of innovative grid-based power electronics technology applications to increase network DER hosting capacity and improve the quality of customer electricity supplies	\$1,061,312	\$244,228	VIC	Integrating renewables into the electricity system	DER Integration	Demonstration
Jemena Electricity Networks (VIC) Ltd	Active	Dynamic Electric Vehicle Charging Trial Project	\$1,558,590		VIC	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Jemena Gas Networks (NSW) Ltd	Active	Biomethane Injection Demonstration	\$5,900,000		NSW	Accelerating hydrogen	Bioenergy	Demonstration
Jolt Charge Pty Ltd	Active	Metro Advertising Revenue Funded Electric Vehicle Charging Trial Project	\$983,776	\$161,744	NSW	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Kennedy Energy Park	Active	Kennedy Energy Park (KEP)	\$18,000,000		QLD	Integrating renewables into the electricity system	Hybrid	Demonstration
Lake Bonney Bess Pty Ltd	Active	Lake Bonney BESS	\$5,000,000		SA	Integrating renewables into the electricity system	Battery storage	Demonstration
Lakeland Solar & Storage Pty Limited	Active	Lakeland Solar & Storage Project	\$17,419,000		QLD	Foundation portfolios	Large-scale solar	Demonstration
Lastek Pty Ltd	Closed	Measurement guidelines for multi-junction solar cells with perovskite layers, CSIRO PV Performance Laboratory	\$732,038	\$146,408	SA	Integrating renewables into the electricity system	Solar PV	Demonstration
Logan City Council	Active	Loganholme Wastewater Treatment Plant Gasification Facility Demonstration Project	\$6,220,898	\$2,617,653	QLD	Foundation portfolios	Bioenergy	Demonstration
Lord Howe Island Board	Active	Lord Howe Island Hybrid Renewable Project	\$4,500,000	\$925,020	NSW	Foundation portfolios	Hybrid	Demonstration

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Macquarie Capital (Australia) Limited	Active	Kwinana Waste to Energy	\$23,000,000		WA	Foundation portfolios	Bioenergy	Deployment
Macquarie Corporate Holdings Pty Limited	Active	H2 Newcastle Hydrogen Hub at the Port of Newcastle Feasibility Study	\$1,500,000		NSW	Accelerating hydrogen	Hydrogen	Study
Macquarie University	Active	Biological Hydrogen Production R&D Project	\$1,148,455		NSW	Accelerating hydrogen	Hydrogen	R&D
Macquarie University	Active	Substitution of niche-market PV production tools with cost-effective consumer-electronics technology	\$420,000	\$50,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D
Manildra Solar Farm Pty Ltd	Closed	Manildra Solar Farm	\$9,810,000		NSW	Foundation portfolios	Large-scale solar	Deployment
Meridian Energy Australia	Active	Wind Forecasting Demonstration Project	\$2,180,155		VIC	Integrating renewables into the electricity system	Market data and information	Demonstration
MGA Thermal Pty Ltd	Active	Thermal Energy Storage Project	\$1,267,500		NSW	Optimising the transition to renewable electricity	Battery Storage	Demonstration
Mirvac	Active	Net Zero Energy Homes	\$784,000	\$150,000	VIC	Integrating renewables into the electricity system	Hybrid	Deployment
Monash University	Active	Integrating Energy Storage into the NEM Study	\$495,000		VIC	Integrating renewables into the electricity system	Battery Storage	Study
Monash University	Active	ClimateWorks Australia, The Australian Industry ETI Delivery Stage Project	\$2,000,000	\$891,220	VIC	Supporting industry to reduce emissions	Enabling	Study
Monash University	Active	Stability-Enhancing Measures for Weak Grids Study	\$559,376	\$146,650	VIC	Integrating renewables into the electricity system	Enabling	Study
Monash University	Active	Production from renewables R&D Project	\$913,848		VIC	Accelerating hydrogen	Hydrogen	R&D
Monash University	Active	Water splitting electrodes R&D Project	\$1,054,209		VIC	Accelerating hydrogen	Hydrogen	R&D

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Monash University	Closed	Participation in IEA Technology Collaboration Program for Demand Side Management	\$450,450		VIC	Integrating renewables into the electricity system	Enabling	Study
Monash University	Closed	Bringing All-Polymer Solar Cells Closer to Commercialization	\$840,000	\$168,000	VIC	Integrating renewables into the electricity system	Solar PV	R&D
Monash University	Closed	Developing a New Type of High Efficiency Building Integrated PV Cell R&D Project	\$744,661	\$148,932	VIC	Integrating renewables into the electricity system	Solar PV	R&D
Musselroe Wind Farm Pty Ltd	Active	Musselroe Wind Farm FCAS Trial	\$477,124	\$233,304	TAS	Integrating renewables into the electricity system	Wind	Study
Nectar Farms Management Pty Ltd	Terminated	Nectar Farms High Efficiency Off Grid Glasshouse Project	\$814,839		VIC	Supporting industry to reduce emissions	Enabling	Study
Neoen Australia Pty Ltd	Active	Hornsedale Power Reserve Upgrade Project	\$8,000,000		SA	Integrating renewables into the electricity system	Battery storage	Deployment
Neoen Australia Pty Ltd	Closed	Dubbo Solar Hub	\$4,950,000		NSW	Foundation portfolios	Large-scale solar	Deployment
Neoen Australia Pty Ltd	Closed	Griffith Solar Farm	\$4,500,000		NSW	Foundation portfolios	Large-scale solar	Deployment
Neoen Australia Pty Ltd	Closed	Parkes Solar Farm	\$6,750,000		NSW	Foundation portfolios	Large-scale solar	Deployment
NEV Power Pty Ltd	Active	Narara Ecovillage smart grid	\$1,388,660		NSW	Integrating renewables into the electricity system	Hybrid	Deployment
NOJA Power Switchgear Pty Ltd	Closed	NOJA Power Intelligent Switchgear Project	\$5,000,000	\$156,755	QLD	Integrating renewables into the electricity system	Enabling	Demonstration
Normanton Solar Farm	Closed	Normanton Solar Farm	\$8,380,000		QLD	Foundation portfolios	Large-scale solar	Demonstration
OMPS Pty Ltd	Active	New England PHES Benefits Study	\$951,000	\$317,000	NSW	Integrating renewables into the electricity system	Pumped hydro energy storage	Study

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Origin Energy Limited	Active	Sydney Electric Vehicle Smart Charging Trial	\$838,400	\$150,000	NSW	Integrating renewables into the electricity system	Electric vehicles	Demonstration
Pooled Energy	Active	Pooled Energy Demand Management and Modulation.	\$2,500,000	\$100,000	NSW	Integrating renewables into the electricity system	Enabling	Demonstration
Powershop Australia Pty Ltd	Closed	Behavioural demand response program utilising a bespoke mobile app notification system directed to Victorian residential retail customers	\$1,113,269		VIC	Integrating renewables into the electricity system	Enabling	Demonstration
Proa Analytics Pty Ltd	Closed	Solar Forecasts Project	\$773,536		QLD	Integrating renewables into the electricity system	Market data and information	Demonstration
Queensland Electricity Transmission Corporation Limited	Closed	Cost-effective system strength in North Queensland study	\$491,629		QLD	Integrating renewables into the electricity system	Enabling	Study
Queensland University of Technology	Active	Hydrogen process R&D Project	\$3,650,000		QLD	Accelerating hydrogen	Hydrogen	R&D
RATCH - Australia Corporation Limited	Closed	Collinsville Solar PV Power Station Stage 1	\$9,500,000		QLD	Foundation portfolios	Large-scale solar	Deployment
Raygen Resources Pty Ltd	Active	RayGen Solar Power Plant Demonstration Project	\$15,000,000	\$6,000,000	VIC	Integrating renewables into the electricity system	Solar thermal	Deployment
Re.Group Pty Ltd	Active	Mt Piper Energy Recovery Project, Financial Investment Decision Study	\$1,061,362		NSW	Foundation portfolios	Bioenergy	Study
Reactive Technologies Pty Ltd	Active	System Inertia Measurement Demonstration	\$1,430,000		VIC	Integrating renewables into the electricity system	Enabling	Demonstration
Redback Operations Pty Ltd	Active	SHIELD - Synchronising Heterogeneous Information (to) Evaluate Limits (for) DNSPs Project	\$2,629,500	\$930,000	QLD	Integrating renewables into the electricity system	Enabling	Demonstration

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Regional Power Corporation	Active	Horizon Power Denham Hydrogen Demonstration	\$2,573,071		WA	Accelerating hydrogen	Hydrogen	Demonstration
Regional Power Corporation	Closed	Horizon Power Business Model Pilot Project - Phase 1 (Highgarden)	\$1,906,816		WA	Integrating renewables into the electricity system	Enabling	Deployment
Relectrify Holdings Pty Ltd	Active	Second-Life Battery Trial	\$1,488,560		VIC	Foundation portfolios	Battery storage	Demonstration
Renergi Pty Ltd	Active	Waste to Energy through Pyrolysis	\$4,300,000	\$1,978,581	WA	Foundation portfolios	Bioenergy	Demonstration
Renewable Developments Australia	Closed	Investment Case for the Pentland Integrated Biofuels Project	\$3,000,000		QLD	Foundation portfolios	Bioenergy	Study
Rheem Australia	Active	Bringing South Australia's Hot Water Load Under Active Control	\$1,981,000	\$191,600	SA	Integrating renewables into the electricity system	Enabling	Demonstration
Rio Tinto Aluminium Limited	Active	Rio Tinto Pacific Operations Hydrogen Program	\$579,787		QLD	Accelerating hydrogen	Hydrogen	Study
RMIT University	Active	Building Integrated Photovoltaics (BIPV) Enabler	\$100,614		VIC	Integrating renewables into the electricity system	Enabling	R&D
RMIT University	Closed	Hydrogen Storage and Transport R&D Project	\$805,026	\$161,005	VIC	Accelerating hydrogen	Hydrogen	R&D
Rural Industries Research & Development Corporation	Closed	Australian Biomass for Bioenergy Assessment (ABBA)	\$3,160,669		ACT	Foundation portfolios	Bioenergy	Study
SA Power Networks	Active	SA Power Networks; flexible exports for solar PV; trial	\$2,085,337	\$1,240,357	SA	Integrating renewables into the electricity system	Solar PV	Demonstration
Santos	Closed	Conversion of remote crude oil beam pumps to solar & battery project	\$4,200,000	\$2,550,000	SA	Foundation portfolios	Solar PV	Demonstration
Shell Energy BESS 1 Pty Ltd	Active	Western Sydney Smart Battery Project	\$6,980,000		NSW	Integrating renewables into the electricity system	Battery Storage	Deployment

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Simply Energy Solutions Pty Ltd	Active	Simply Energy Virtual Power Plant (VPPX) Project	\$7,700,000	\$562,812	SA	Integrating renewables into the electricity system	Solar PV	Deployment
Solar Analytics	Closed	Enhanced Reliability through Short Time Resolution Data around Voltage Disturbances	\$491,725		NSW	Integrating renewables into the electricity system	DER Integration	Demonstration
Solar Analytics	Closed	Accelerating the growth development of energy monitoring for solar households and small businesses	\$1,160,000		NSW	Integrating renewables into the electricity system	Enabling	Deployment
Solar and Storage Modelling Pty Ltd	Active	Gridded Renewables Nowcasting Demonstration over South Australia	\$994,685	\$386,343	NSW	Integrating renewables into the electricity system	Enabling	Demonstration
Southern Cross REVC Trusco	Active	Southern Cross Renewable Energy Fund	\$60,000,000		NSW	Foundation portfolios	Enabling	Demonstration
Spinifex Offshore Wind Farm Pty Ltd	Active	Spinifex Offshore Wind Farm Phase 1 Development Activities	\$1,500,000		VIC	Supporting industry to reduce emissions	Wind	Deployment
Spotless Sustainability Services	Active	Ballarat Terminal Station Battery Energy Storage System (BESS)	\$2,265,000		VIC	Integrating renewables into the electricity system	Battery storage	Demonstration
Stanwell Corporation Limited	Active	Stanwell Central Queensland Hydrogen Project	\$2,168,229		QLD	Accelerating hydrogen	Hydrogen	Study
Stanwell Corporation Limited	Closed	Stanwell Hydrogen Mid/ Large Scale Electrolysis	\$913,423	\$45,439	QLD	Accelerating hydrogen	Hydrogen	Study
Sundrive Solar Pty Ltd	Active	SunDrive Copper Metallisation Demonstration Project	\$3,000,000	\$1,000,000	NSW	Integrating renewables into the electricity system	Solar PV	Demonstration
Swinburne University of Technology	Active	End-of-life, Electrically-Enhanced Recycling Process for EoL Si PV-Cells	\$404,000		VIC	Integrating renewables into the electricity system	Solar PV	R&D
The Climate Council of Australia	Closed	Climate Council Cities Power Partnership	\$493,150	\$113,150	VIC	Integrating renewables into the electricity system	Other	Study

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
The Renewable Energy Hub Pty Ltd	Closed	Wholesale Renewable Energy Firming Marketplace Demonstration Project	\$845,552	\$42,277	VIC	Integrating renewables into the electricity system	Enabling	Deployment
The Trustee for Sustainable Melbourne Fund	Active	Scaling up Environmental Upgrade Agreements (EUAs) across Australia	\$755,000		NSW	Supporting industry to reduce emissions	Enabling	Deployment
The Trustee for Transgrid Services Trust	Active	New England Renewable Energy Zone - Pilot for commercial development of transmission structure	\$995,000	\$345,000	NSW	Integrating renewables into the electricity system	Enabling	Demonstration
The Trustee for Yadlamalka Land Trust	Active	Co-located Vanadium redox battery storage solar project	\$5,695,000		SA	Integrating renewables into the electricity system	Battery storage	Demonstration
The University of Adelaide	Active	Integrating Concentrating Solar Thermal Energy into the Bayer Alumina Process	\$4,490,752	\$655,848	SA	Integrating renewables into the electricity system	Solar thermal	R&D
The University of Adelaide	Closed	Participation in Mission Innovation - Converting Sunlight Innovation Challenge	\$354,404	\$32,954	SA	Foundation portfolios	Solar thermal	Study
The University of Queensland	Active	Platform for Solar Farm Pre-commissioning	\$498,000		QLD	Integrating renewables into the electricity system	Solar PV	Study
The University of Wollongong	Active	Investigation of the Impact and Management of Harmonic Distortion for Large Renewable Generators	\$146,400	\$136,400	NSW	Integrating renewables into the electricity system	Enabling	Study
The University of Wollongong	Closed	Smart Sodium Storage System for Renewable Energy Storage	\$2,707,000	\$123,798	NSW	Supporting industry to reduce emissions	Battery storage	R&D
Toyota Motor Corporation Australia Ltd	Active	Toyota Ecopark Hydrogen Demonstration	\$3,378,295	\$544,229	VIC	Accelerating hydrogen	Hydrogen	Demonstration
TransGrid	Active	Wallgrove Battery	\$10,147,919	\$6,199,999	NSW	Integrating renewables into the electricity system	Battery storage	Deployment

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
TransGrid	Active	Central West NSW Energy Zone Detailed Scoping Study	\$5,000,000		NSW	Integrating renewables into the electricity system	Enabling	Study
United Energy Distribution Pty Limited	Active	LV Battery Trial	\$4,000,000		VIC	Integrating renewables into the electricity system	Battery storage	Demonstration
University of Melbourne	Active	Hydrogen Fuelled Reciprocating Engines R&D Project	\$2,594,747		VIC	Accelerating hydrogen	Hydrogen	R&D
University of Melbourne	Active	New Materials Singlet Fission enhanced silicon solar cells	\$1,290,333		VIC	Integrating renewables into the electricity system	Solar PV	R&D
University of Melbourne	Closed	Advanced Planning of PV-Rich Distribution Networks Study	\$203,867		VIC	Integrating renewables into the electricity system	DER Integration	Study
University of New South Wales	Active	Launch of a photothermal absorption spectrometer for cost reduction in PV materials	\$100,000		NSW	Integrating renewables into the electricity system	Enabling	R&D
University of New South Wales	Active	Project MATCH - Distributed energy resources	\$981,241	\$300,000	NSW	Integrating renewables into the electricity system	Enabling	Study
University of New South Wales	Active	Mission Innovation Challenge - Off-Grid Access to Electricity	\$228,000		NSW	Foundation portfolios	Enabling	Study
University of New South Wales	Active	UNSW Sydney Photovoltaic Electrolysis to Generate Hydrogen R&D Project	\$1,319,105		NSW	Accelerating hydrogen	Hydrogen	R&D
University of New South Wales	Active	Waste Biomass to Renewable Hydrogen R&D Project	\$1,045,770		NSW	Accelerating hydrogen	Hydrogen	R&D
University of New South Wales	Active	Development and Commercialisation of High Efficiency Silicon Solar Cell Technology	\$5,791,980		NSW	Integrating renewables into the electricity system	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
University of New South Wales	Active	Accelerating industrial solar cells efficiency by development of plasma-enhanced chemical vapour deposition (PECVD) - based metal oxides	\$503,389		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Advanced high-efficiency silicon solar cells employing innovative atomic scale engineered surface and contact passivation layers	\$2,019,456	\$403,891	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Development of Beyond 20% Efficiency Kesterite (CZTSSe) Solar Cells	\$1,331,098	\$266,220	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Development of novel hydrogen trapping techniques for breakthrough Si casting and wafering technologies	\$1,968,000	\$787,200	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Efficient Adamantine Thin-Film on Silicon Tandem Cells	\$3,184,166	\$636,833	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Improving World-Record Commercial High-Efficiency n-type Solar Cells through Recombination Analysis and Innovative Passivation	\$1,785,000		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Metallised Encapsulant for Silicon PV Modules	\$1,160,000	\$232,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Next Generation Silicon sub-cells for high efficiency III-V/ Si multi-junction solar cells	\$1,144,628	\$228,926	NSW	Integrating renewables into the electricity system	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
University of New South Wales	Active	New Materials: Earth-abundant, RoHS-compliant antimony chalcogenide: top cell alternative for silicon tandem cells	\$693,388	\$208,016	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Advanced Silicon, Reduced Solar Module Temperature R&D project	\$1,767,730	\$530,319	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Advanced silicon, Lower PV cost by a combination of luminescence images and machine-learning	\$694,224	\$208,267	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Advanced Silicon, Next-generation selective-emitters for commercial PERC and TOPCon solar panels	\$1,232,429	\$369,729	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	End-of-Life, Highly efficient, low-cost and eco-friendly recycling technology for silicon photovoltaic panels	\$1,360,000		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Australia-US Institute for Advanced Photovoltaics (AUSIAPV)	\$83,999,005	\$3,955,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Active	Hydrogenated bifacial PERL Silicon PV Cells with laser doping and plated contacts R&D Project	\$1,100,000		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Closed	Addressing barriers to efficient renewable integration	\$832,587	\$290,865	NSW	Integrating renewables into the electricity system	Enabling	Study
University of New South Wales	Closed	Low-cost, high-efficiency Copper-Zinc-Tin-Sulphide (CZTS) on silicon multi-junction solar cells	\$2,612,358	\$120,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
University of New South Wales	Closed	Hydrogenated and Hybrid Heterojunction p-type Silicon PV Cells R&D Project	\$1,735,000	\$173,500	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Closed	Integrating industrial black silicon with high efficiency multicrystalline solar cells	\$499,576	\$100,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Closed	Module Design for Lower Field Operating Temperature and Improved Yield	\$285,816		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Closed	Prototyping a Photoluminescence Imaging Tool for Testing of Fielded Solar Modules	\$100,000	\$50,000	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of New South Wales	Terminated	End-of-life, Closed-loop recycling & remanufacturing end-of-life silicon photovoltaic modules: towards a circular economy	\$46,875		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of South Australia	Closed	Displacement of Gas by Thermal Energy Storage	\$103,500	\$53,500	SA	Supporting industry to reduce emissions	Enabling	R&D
University of Sydney	Active	Tandem silicon, Durable Silicon Perovskite Tandem Photovoltaics	\$987,285	\$296,186	NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of Sydney	Active	Tandem silicon, Triple Junction Silicon-Perovskite-Perovskite Tandem Photovoltaics	\$1,494,340		NSW	Integrating renewables into the electricity system	Solar PV	R&D
University of Tasmania	Closed	Optimal DER Scheduling for Frequency Stability Study	\$527,582	\$211,032	TAS	Integrating renewables into the electricity system	DER Integration	Study
University of Western Australia	Active	Methanol from Syngas R&D Project	\$1,032,783		WA	Accelerating hydrogen	Hydrogen	R&D
University of Western Australia	Closed	From single to multiple wave energy converters: Cost reduction through location and configuration optimisation	\$994,198	\$199,956	WA	Foundation portfolios	Marine	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2021-22 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Upowr Pty Ltd	Active	Customer focused design for DER participation	\$446,000		VIC	Integrating renewables into the electricity system	Battery storage	Demonstration
Viva Energy Australia Pty Ltd	Active	New Energies Service Station Geelong Demonstration Project	\$22,800,000		VIC	Accelerating hydrogen	Hydrogen	Demonstration
VPP Project 1 (SA) Pty Ltd	Active	South Australia's Virtual Power Plant - Phase 3A, Tesla Motors Australia	\$8,200,000	\$5,500,000	SA	Integrating renewables into the electricity system	Battery storage	Deployment
Wattwatchers	Active	My Energy Marketplace Deployment Project	\$2,703,134	\$791,450	NSW	Integrating renewables into the electricity system	Enabling	Demonstration
Wave Swell Energy Limited	Active	UniWave200 King Island Project	\$4,035,628	\$75,000	TAS	Foundation portfolios	Marine	Demonstration
Western Power	Active	Western Australia Distributed Energy Resources Orchestration Pilot (Project Symphony)	\$8,557,027	\$3,472,460	WA	Integrating renewables into the electricity system	Distributed Energy	Demonstration
Whitsunday Solar Farm	Closed	Whitsunday Solar Farm	\$5,359,706		QLD	Foundation portfolios	Large-scale solar	Deployment
Yara Pilbara Fertilisers Pty Ltd	Closed	Yara Pilbara Renewable Ammonia Feasibility Study	\$945,250		WA	Accelerating hydrogen	Hydrogen	Study
Zenobe Australia Pty Ltd	Active	Next generation electric bus depot	\$5,000,000	\$3,420,959	NSW	Supporting industry to reduce emissions	Battery storage	Demonstration
Zeppelin Bend Pty Ltd	Active	Publishing operating envelopes to the node to support the integration, orchestration and coordination of high-penetration DER in electricity distribution networks	\$4,292,632	\$835,975	ACT	Integrating renewables into the electricity system	DER Integration	Demonstration
TOTAL		263	\$1,134,279,277	\$100,169,869				

TABLE 10 ARENA INVESTMENT IN REVC PROJECTS 2021-22

INVESTMENT	COMPANY	INVESTMENT	STATUS
Commercialisation of high-performance anti-reflective coatings to be applied to solar panels to make them more efficient	Brisbane Materials Holdings Inc	\$3,833,266	Exited
Commercialisation of a hydrogen storage technology which will enable a new renewable energy storage solution	Hydrexia Pty Ltd	\$10,481,644	Active
Deployment of solar integration system into the Australian market	Sunverge Energy	\$18,096,316	Active
Development of a new cost effective liquid battery technology to enable 24/7 renewable electricity	Boulder Ionics	\$528,320	Exited
Development of a competitive cost position in PV manufacturing, sales and distribution in the Australian market	UCT Australia	\$5,344,638	Exited
Development of advanced lithium-ion battery storage solutions for Australian and global markets	Octillion Power Systems Australia	\$6,423,550	Active
Development of an innovative electricity retailing business model	Mojo Power Holdings Pty Ltd	\$7,317,494	Active
Deployment into the Australian market of software for the design, integration and operation of network-connected energy storage and microgrid systems	Growing Energy Labs, Inc	\$5,438,454	Exited
Provision of software solutions to Distribution Systems Operators at the utility scale and microgrid	Greensync Holdings Pty Ltd	\$5,200,000	Exited
Development of an energy measurement technology that helps better manage energy use and costs.	Energy Saving Networks (Wattwatchers)	\$2,000,000	Active
Development of intellectual property, knowledge and experience for manufacturing a cost effective, reliable and environmentally friendly sodium-ion battery.	BenAn Energy	\$8,629,050	Active
Development of an innovative glass-free lightweight flexible solar panel called eArche which can be fitted on any surface including curved surfaces.	Sunman Energy Co Ltd	\$13,446,740	Active

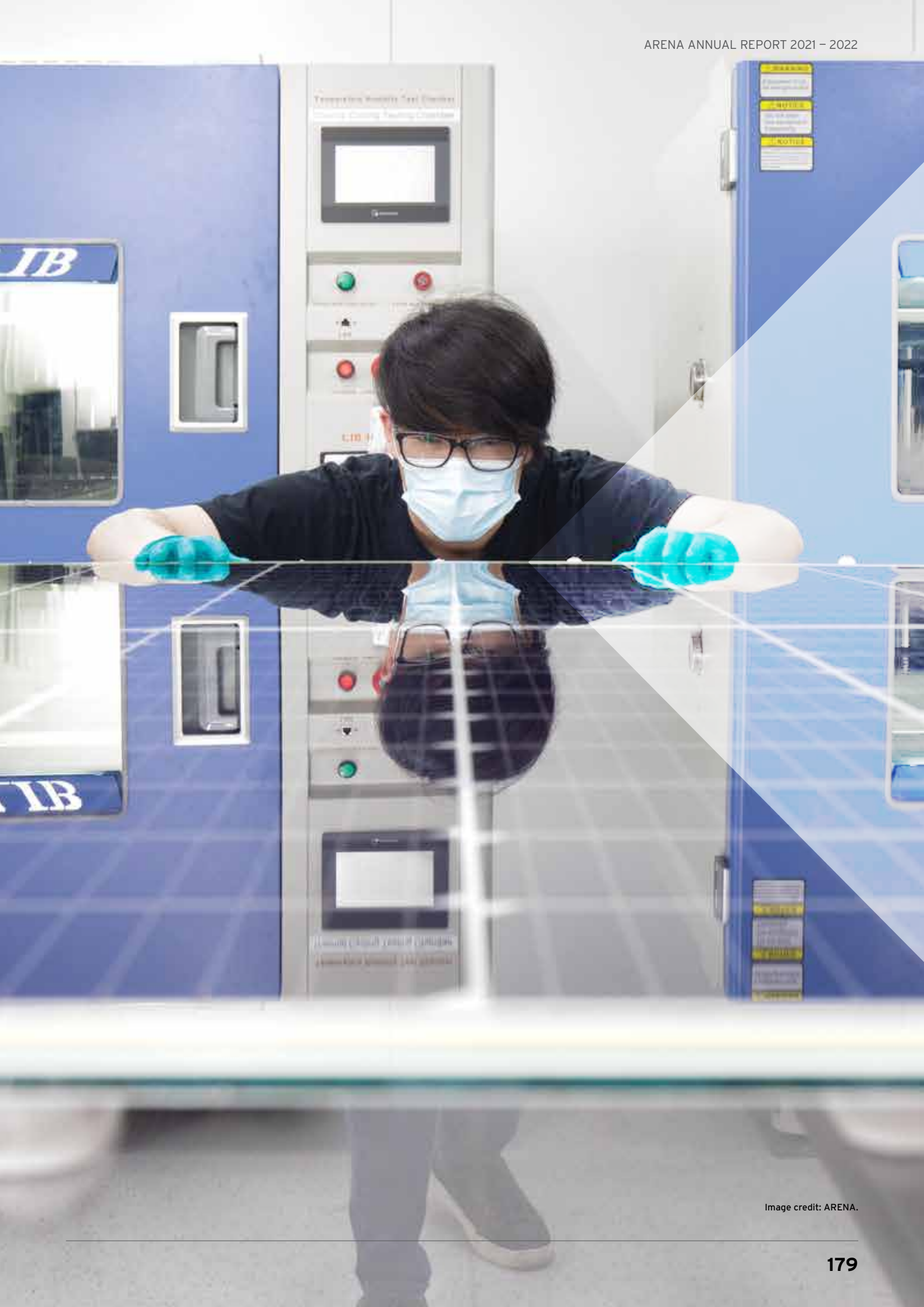


Image credit: ARENA.

APPENDIX 2: INDEX OF COMPLIANCE WITH ANNUAL REPORT REQUIREMENTS

The following table lists the information ARENA is required by law to include in this report, and where in the report the information is located.

TABLE 11 INDEX OF COMPLIANCE WITH ANNUAL REPORT REQUIREMENTS

LEGISLATION	ANNUAL REPORT PAGE	REQUIREMENT
Australian Renewable Energy Agency Act 2011 (ARENA Act) (section 70)	152-178 128-149	Funding provided under ARENA Act Provide particulars of each person to whom financial assistance was provided or committed during the year: <ul style="list-style-type: none"> > name of the person > nature and amount of the financial assistance > renewable energy technology or technologies to which the assistance relates Provide an assessment of the extent to which agreements for the provision of financial assistance entered into during the year have progressed, or are expected to progress, the principal objectives and priorities as stated in the general funding strategy in force for the year
ARENA Act (section 11)	96	Ministerial requests Provide details of each request made by the Minister under s11 asking ARENA to consider providing financial assistance for a specified project
ARENA Act (section 13)	96	Ministerial directions Provide details of each direction made by the Minister under s13 requiring ARENA to provide advice
Australian Renewable Energy Agency (Consequential Amendments and Transitional Provisions) Act 2011 (Schedule 2, Part 2, section 28)	152-178	Funding provided under a transferred agreement Provide particulars of each person to whom financial assistance has been provided during the year under a transferred Commonwealth funding agreement, or a transferred ASI Limited funding agreement: <ul style="list-style-type: none"> > name of the person > nature and amount of the financial assistance > renewable energy technology or technologies to which the assistance relates
Public Governance, Performance and Accountability Act 2013 (PGPA Act) (section 46)	Yes	Overarching requirements After the end of each reporting period, the accountable authority of the entity (ARENA Board) must prepare and give an annual report to the entity's responsible Minister, for presentation to the Parliament, on the entity's activity during the period The annual report must include the entity's annual performance statement and financial statements The annual report must be given to the Minister by: <ul style="list-style-type: none"> > the 15th day of the fourth month after the reporting period for the entity (namely 15 October), or > the end of any further period granted under the <i>Acts Interpretation Act 1901</i>
PGPA Act (section 46), Public Governance, Performance and Accountability Rule 2014 (PGPA Rule) (section 17BB)	9	Approval of annual report by accountable authority (ARENA Board) Be approved by the ARENA Board Be signed by the Board, or a member of the Board Include details of how and when approval of the annual report was given State that the Board is responsible for preparing and giving the annual report to ARENA's responsible minister in accordance with s46 of the Act
PGPA Act (section 46), PGPA Rule 2014 (section 17BC)	Yes	Parliamentary standards of presentation Comply with the guidelines for presenting documents to the Parliament

LEGISLATION	ANNUAL REPORT PAGE	REQUIREMENT
PGPA Act (section 46), PGPA Rule 2014 (section 17BCA)	Yes	Digital reporting tool As soon as practicable after the annual report has been presented to the Parliament, the annual report must be published using the digital reporting tool administered by the Finance Minister
PGPA Act (section 46), PGPA Rule 2014 (section 17BD)	Yes	Plain English and clear design The annual report must be prepared having regard to the interests of the Parliament and any other persons who are interested in the annual report Provide information that is relevant, reliable, concise, understandable and balanced Use clear design Define acronyms and technical terms Use tables, graphs, diagrams and charts Include any additional matters as appropriate
PGPA Act (section 46), PGPA Rule 2014 (section 17BE)	96	Contents of annual report Details of the legislation that established ARENA
	96	Summary of ARENA's objects and functions as set out in the legislation
	21, 130	ARENA's Purpose as set out in the Corporate Plan for the reporting period
	96	Name and title of the responsible Minister(s) during the reporting period
	96	Directions given to ARENA by the Minister under an Act or instrument during the reporting period
	96	Any government policy order that applied to ARENA during the reporting period under section 22 of the Act
	96	Particulars of any non-compliance with ministerial directions or government policy orders
	128-149	Annual performance statement for ARENA for the reporting period in accordance with paragraph 39(1)(b) of the Act and section 16F of the Rule
	96	Statement of significant issues reported to the Minister under paragraph 19(1)(e) of the Act that relate to non-compliance with finance law and action taken to remedy non-compliance
	27	Information on each member of the ARENA Board during the reporting period
	103	Outline of ARENA's organisational structure
	184	Statistics on ARENA's employees on an ongoing and non-ongoing basis, including full-time employees, part-time employees, gender and staff location
	Inside back cover	Outline of the location of ARENA's major activities or facilities
	88	Main corporate governance practices used by ARENA during the reporting period
	99 + Note 3.3 in Financials	Information on related entity transactions where the value of the transaction, or if there is more than one transaction, the aggregate of those transactions, is more than \$10,000 (inclusive of GST): <ul style="list-style-type: none"> > the decision-making process undertaken by the ARENA Board to approve ARENA paying for a good or service from, or providing a grant to, the related entity, and > the value of the transaction, or if there is more than one transaction, the number of transactions and the aggregate value of the transactions
	90	Any significant activities and changes that affected ARENA's operations or structure during the reporting period
	99	Particulars of judicial decisions or decisions of administrative tribunals that may have a significant effect on the operations of ARENA
	99	Particulars of any reports on ARENA given by: <ul style="list-style-type: none"> > the Auditor-General > a Parliamentary Committee > the Commonwealth Ombudsman > the Office of the Australian Information Commissioner
	99	Explanation of information not obtained from an ARENA subsidiary and the effect of not having the information in the annual report
	92	Details of any indemnity that applied during the reporting period to the ARENA Board, any member of the Board or officer of ARENA against a liability (including premiums paid, or agreed to be paid, for insurance against the Board, Board member or officer's liability for legal costs)

LEGISLATION	ANNUAL REPORT PAGE	REQUIREMENT
	186-187	Information about the ARENA audit committee: <ul style="list-style-type: none"> > direct electronic address of the charter determining the functions of the audit committee > name and qualifications, knowledge, skills or experience of each member > number of meetings attended by each member > remuneration of each member
	186 + Note 3.2 of Financials	Information about executive remuneration
PGPA Act (section 39), PGPA Rule (section 16F)	128-149	Annual performance statement Statement of preparation Results achieved Analysis of performance
PGPA Act (section 42), PGPA Rule 2015	104-127	Financial statements Financial statements are prepared as soon as practicable after the end of the reporting period, and then provided to the Auditor-General as soon as practicable Statements comply with the accounting standards and any other requirements prescribed by the rules, and fairly present ARENA's financial position, financial performance and cash flows Written confirmation from the Board that statements meet these requirements
<i>Environment Protection and Biodiversity Conservation Act 1999 (section 516A)</i>	98	Environmental performance Information on: <ul style="list-style-type: none"> > accord between ARENA's activities and ecologically sustainable development (ESD) principles > ARENA's contribution of outcomes to ESD > effects of these activities on the environment > measures to review and minimise effects on the environment
<i>Freedom of Information Act 1982 (Part II)</i>	97	Information Publication Scheme Actions taken to comply



Image credit: ARENA.

APPENDIX 3: MANDATORY INFORMATION FOR TRANSPARENCY PORTAL

The tables provided in this appendix, along with other tables found elsewhere in this annual report (Tables 1 and 2), are mandatory and have been prepared for use in the Australian Government's Transparency Portal at transparency.gov.au.

TABLE 12 ALL ONGOING EMPLOYEES CURRENT REPORTING PERIOD (2021-22)

	MALE			FEMALE			INDETERMINATE			TOTAL
	FULLTIME	PART TIME	TOTAL MALE	FULLTIME	PART TIME	TOTAL FEMALE	FULLTIME	PART TIME	TOTAL INDETERMINATE	
NSW	2	-	2	-	-	-	-	-	-	2
Total	2	-	2	-	-	-	-	-	-	2

TABLE 13 ALL NON-ONGOING EMPLOYEES CURRENT REPORTING PERIOD (2021-22)

	MALE			FEMALE			INDETERMINATE			TOTAL
	FULLTIME	PART TIME	TOTAL MALE	FULLTIME	PART TIME	TOTAL FEMALE	FULLTIME	PART TIME	TOTAL INDETERMINATE	
Total	-	-	-	-	-	-	-	-	-	-

TABLE 14 ALL ONGOING EMPLOYEES PREVIOUS REPORTING PERIOD (2020-21)

	MALE			FEMALE			INDETERMINATE			TOTAL
	FULLTIME	PART TIME	TOTAL MALE	FULLTIME	PART TIME	TOTAL FEMALE	FULLTIME	PART TIME	TOTAL INDETERMINATE	
NSW	2	-	2	-	-	-	-	-	-	2
Total	2	-	2	-	-	-	-	-	-	2

TABLE 15 ALL NON-ONGOING EMPLOYEES PREVIOUS REPORTING PERIOD (2020-21)

	MALE			FEMALE			INDETERMINATE			TOTAL
	FULLTIME	PART TIME	TOTAL MALE	FULLTIME	PART TIME	TOTAL FEMALE	FULLTIME	PART TIME	TOTAL INDETERMINATE	
Total	-	-	-	-	-	-	-	-	-	-

TABLE 16 SIGNIFICANT NON-COMPLIANCE WITH FINANCE LAW

DESCRIPTION OF NON-COMPLIANCE	REMEDIAL ACTION
N/A	N/A



Image credit: Lord Howe Island Board.

BOARD AND COMMITTEE MEMBER REMUNERATION

All Board Directors of ARENA are appointed by the Australian Government through our Minister. The Board is governed by the provisions of the ARENA Act.

Fees for the Board members (other than the ex-officio member) are set and paid according to the relevant Remuneration Tribunal Determinations. Statutory superannuation is paid in addition to the fees set by the Tribunal.

Fees for independent Board sub-committee members, including Risk and Audit Committee members, are paid on a fee for service basis under a service contract. Such service is procured on normal business terms and conditions.

EXECUTIVE REMUNERATION

The salary for the ARENA CEO is determined by the Remuneration Tribunal and the role is currently classified as a Full-time Public Officer (FPO) and gazetted in the listing of Government positions.

The salary of the ARENA CFO is guided by the principles set out in our Remuneration Guidelines (the Guidelines), which are monitored and endorsed by the People and Culture Committee, which is a committee of the Board.

Under these guidelines, a transparent process is taken to attract and retain specialist skills at a competitive cost. The process involves using industry surveys and specialists (such as the Financial Institutions Remuneration Group) to review market data and determine benchmarks. This is then considered in the context of public service roles and compensation bands and remuneration is approved by the Board.

The Chief Operating Officer and General Manager Project Delivery are employees of ARENA's Portfolio Department, where remuneration is determined by the Secretary in accordance with relevant policies of the Department. Executives and other highly-paid staff are remunerated in accordance with their contracts of employment and relevant governing provisions. They are seconded to ARENA free of charge in accordance with section 62 of the ARENA Act.

Details of the ARENA Board and Executive remuneration is provided in Note 3.2 of the Financial Statements and Tables 18 and 19 on the next page.

TABLE 17 EXECUTIVE REMUNERATION DISCLOSURES 2021-22

SHORT-TERM BENEFITS					POST-EMPLOYMENT BENEFITS	OTHER LONG-TERM BENEFITS		TERMINATION BENEFITS	TOTAL REMU-NERATION
NAME	POSITION	BASE SALARY	BONUSES	OTHER BENEFITS AND ALLOWA NCES	SUPERANNUA-TION CONTRI-BUTIONS	LONG SERVICE LEAVE	OTHER LONG-TERM BENEFITS	TERMINATION BENEFITS	TOTAL REMU-NERATION
Key Management Personnel									
Mr Justin Punch	Chair	84,810	-	-	8,481	-	-	-	93,291
Mr Justin Butcher	Board member	40,883	-	-	4,088	-	-	-	44,971
Mr John Hirjee	Board member	50,345	-	-	5,034	-	-	-	55,379
Ms Anna Matysek	Board member	41,096	-	-	4,110	-	-	-	45,206
Mr Stephen McIntosh	Board member (from 18 July 2021)	52,050	-	-	5,205	-	-	-	57,255
Mr Dougal McOmish	Board member (to 17 July 2021)	-	-	-	-	-	-	-	-
Ms Stephanie Unwin	Board member	40,456	-	-	4,046	-	-	-	44,502
Mr Darren Miller	Chief Executive Officer	458,341	-	-	25,000	11,650	-	-	494,991
Mr Ian Kay	Chief Financial Officer	426,311	-	-	27,500	11,6249	-	-	465,435
Mr Chris Faris	Chief Operating Officer	219,288	-	-	31,413	5,926	-	-	256,627
Ms Rachele Williams	General Manager Project Delivery	209,381			29,569	3,277			242,227
TOTAL		1,622,961	-	-	144,446	32,477	-	-	1,799,884

Note 1: Figures in the table are reported on an accrual basis. Base salary includes movements in annual leave liabilities.

Note 2: ARENA does not provide benefits or allowances (such as car parking, motor vehicle benefits, housing and health benefits and the associated fringe benefits tax) resulting in nil consideration for the reporting period.

Note 3: ARENA does not provide bonuses, performance pay or incentives to employees and therefore no salary is deemed to be at risk.

Note 4: Board members fees also include the Risk and Audit Committee member fees, which are disclosed in the Risk and Audit Committee in Table 18

Note 5: The CEO salary and the Board fees are determined by the Remuneration Tribunal. Effective from 1 October 2021 the Remuneration Tribunal revised the salary of the CEO and Board member fees.

Note 6: During the year acting arrangements for the CEO, COO and General Manager Project Delivery positions were either for cover of leave periods or for caretaker purpose before a permanent replacement could be found. ARENA has determined to exclude acting persons from the Executive Remuneration Disclosures.

Note 7: The COO and the General Manager Project Delivery are an employee of the Portfolio Department, on secondment to ARENA. Salary these secondments is provided in the resources Salary information is provided by the Portfolio Department.

TABLE 18 REMUNERATION OF ARENA RISK AND AUDIT COMMITTEE MEMBERS (RAC) 2021-22

NAME	POSITION	SHORT-TERM BENEFITS			POST-EMPLOYMENT BENEFITS	OTHER LONG-TERM BENEFITS		TERMINATION BENEFITS	TOTAL REMUNERATION
		BASE SALARY	BONUSES	OTHER BENEFITS AND ALLOWANCES		LONG SERVICE LEAVE	OTHER LONG-TERM BENEFITS	TERMINATION BENEFITS	TOTAL REMUNERATION
Mrs Jenny Morison	Chair, Independent Member, RAC (to 15 October 2021)	-	-	5,250	-	-	-	-	5,250
Ms Karen Hogan	Chair (from 26 October 2021) Independent Member, RAC	-	-	16,209	-	-	-	-	16,209
Mr Stephen Sheehan	Independent Member, RAC (from 10 November 2021)	-	-	6,675	-	-	-	-	6,675
Mr John Hirjee	Board Member	3,705	-	-	371	-	-	-	4,076
Mr Dougal McOmish	Board Member (to 17 July 2021)	-	-	-	-	-	-	-	-
Mr Stephen McIntosh	Board Member	3,705	-	-	371	-	-	-	4,076
TOTAL		7,410	-	28,134	742	-	-	-	36,286

Note 1: Independent RAC members are engaged on fee for service basis; amounts reported are GST exclusive.

Note 2: Board member payments are fees in respect of Risk and Audit Committee meetings. These amounts are included in the total fees reported in Table 17.

SENIOR EXECUTIVE REMUNERATION DISCLOSURES 2021-22

ARENA does not have any other senior executives other than those already included within the Executive Remuneration disclosures in Table 17.

INFORMATION ABOUT REMUNERATION FOR OTHER HIGHLY-PAID STAFF

For the reporting period 2021-22, the threshold for other highly-paid staff was \$235,000. ARENA did not employ any staff whose salary was equal to or greater than the threshold during the reporting period.

APPENDIX 4: LIST OF FIGURES AND TABLES

The following table lists the figures/diagrams and tables provided in this report, as well as their location.

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Image credit: ARENA.

APPENDIX 5: GLOSSARY

This is an alphabetical index that explains the acronyms, abbreviations and technical terms used in this Annual Report.

ACAP	Australian Centre for Advanced Photovoltaics
AEMO	Australian Energy Market Operator
ANAO	Australian National Audit Office
approved funds	The amount that ARENA's Board or CEO has approved to be offered to a funding applicant (subject to successful negotiation of a contract, or subject to a final assessment process).
approved projects	Projects that the Board or CEO has approved to be offered ARENA funds subject to successful negotiation of a contract.
APS	Annual Performance Statement
ARENA	Australian Renewable Energy Agency
ARENA Act	<i>Australian Renewable Energy Agency Act 2011</i>
ASI	Australian Solar Institute
CEFC	Clean Energy Finance Corporation
committed funds	The value of executed funding contracts.
DER	Distributed energy resources: renewable energy units or systems commonly located at houses or businesses. Includes rooftop solar, home batteries, inverters, electric vehicle charging points, smart appliances and systems, and relevant enablers such as smart meters and data services.
de-risk	To reduce the likelihood and/or consequence of an event impacting on an objective. This may make an innovation less risky, or an investment less likely to involve a financial loss.
dispatchable energy	Energy that can be quickly sent - or dispatched - by a power generator or energy system whenever it is needed. This rapid response is used to keep electricity supply and demand in balance, which keeps the grid stable and strong. Dispatchable renewable energy includes hydropower and PHES, large-scale and home batteries storing renewable energy, and potentially renewable hydrogen.
distributed energy	Renewable energy devices or systems commonly located at houses or businesses. These include rooftop solar, home batteries, inverters, electric vehicle charging points, smart appliances and systems, and relevant enablers such as smart meters and data services.
EE	Energy efficiency
energy efficiency	Using less energy to achieve the same outcome - includes energy conservation and demand management technologies.
energy productivity	Output or value created per unit of energy used.
EOI	Expression of interest
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESD	Ecologically sustainable development
EV	Electric vehicle
FCAS	Frequency Control Ancillary Services: services that help to stabilise the grid by either injecting or absorbing power to compensate for excessive drops or rises in frequency.
flexible capacity	Energy storage, demand response, and generation that can be quickly drawn upon to help balance energy supply and demand.
Flow battery	Batteries that use liquid chemicals, which are pumped through the device to release energy.
FOI Act	<i>Freedom of Information Act 1982</i>
fringe-of-grid	Areas at the edges of an electricity grid.
FTE	Full-time equivalent
GFS	General Funding Strategy

GST	Goods and services tax
GW	Gigawatt: 1000 million watts (a 40 W light globe uses 40 watts of electricity)
H2	Hydrogen
Hydrogen (green, renewable)	Hydrogen produced using renewable energy.
Innovation chain	A framework for describing the stages involved in bringing an idea to the market (R&D, study, demonstration and deployment).
Innovation stage	A position along the innovation chain (i.e. R&D, study, demonstration or deployment).
Investment leverage	Ratio of ARENA funds committed to third party funds invested.
IP	Investment Plan
investment priority	An area that ARENA wishes to focus its funding and activities on. Investment priorities are described in ARENA's Investment Plan and help guide funding assessments.
knowledge sharing	To collect, analyse, interpret and disseminate information and knowledge.
microgrid	A stand-alone power system that combines energy resources such as solar, diesel, wind and batteries. A microgrid may be able to connect and disconnect from the larger grid, operating in either grid-connected or island mode.
MW	Megawatt: 1 million watts (a 40 W light globe uses 40 watts of electricity).
NEM	National Electricity Market
off grid	Not connected to the electricity grid, such as in remote areas.
PGPA Act	<i>Public Governance, Performance and Accountability Act 2013</i>
PGPA Rule(s)	The Public Governance, Performance and Accountability Rule 2014. A legislative instrument made under section 101 of the PGPA Act to prescribe matters giving effect to the Act.
PBS	Portfolio Budget Statements
PCC	People and Culture Committee
PHES	Pumped hydro energy storage
PV	Photovoltaic: a type of technology that converts energy from the sun into electricity.
R&D	Research and development
RAC	Risk and Audit Committee
reliable (grid or power system)	A reliable grid or power system has enough generation, demand response and network capacity to supply customers with the energy that they demand with a very high degree of confidence.
secure (grid or power system)	The ability of the grid or power system to continue operating even in the event of the unexpected disruption
variable (energy, generation)	Types of energy generation with output that varies based on the weather.
VPP	Virtual power plant: a collection of batteries or other distributed energy resources, managed individually or in unison to support the local or regional electricity grid.
WHS	Work health and safety
WHS Act	<i>Work Health and Safety Act 2011</i>

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