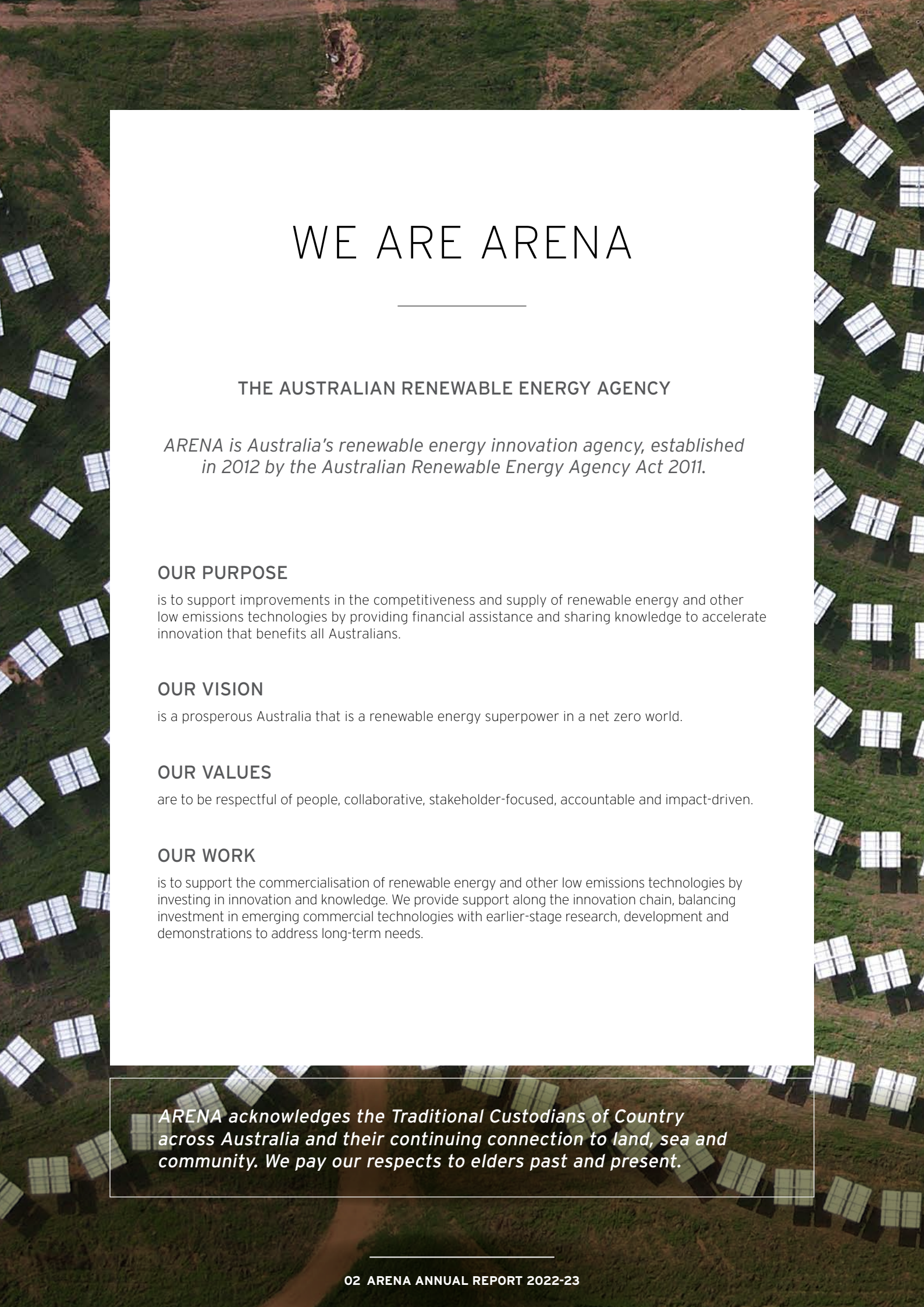
ARENA

ANNUAL REPORT 22-23

Australian Government
Australian Renewable Energy Agency



WE ARE ARENA

THE AUSTRALIAN RENEWABLE ENERGY AGENCY

ARENA is Australia's renewable energy innovation agency, established in 2012 by the Australian Renewable Energy Agency Act 2011.

OUR PURPOSE

is to support improvements in the competitiveness and supply of renewable energy and other low emissions technologies by providing financial assistance and sharing knowledge to accelerate innovation that benefits all Australians.

OUR VISION

is a prosperous Australia that is a renewable energy superpower in a net zero world.

OUR VALUES

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

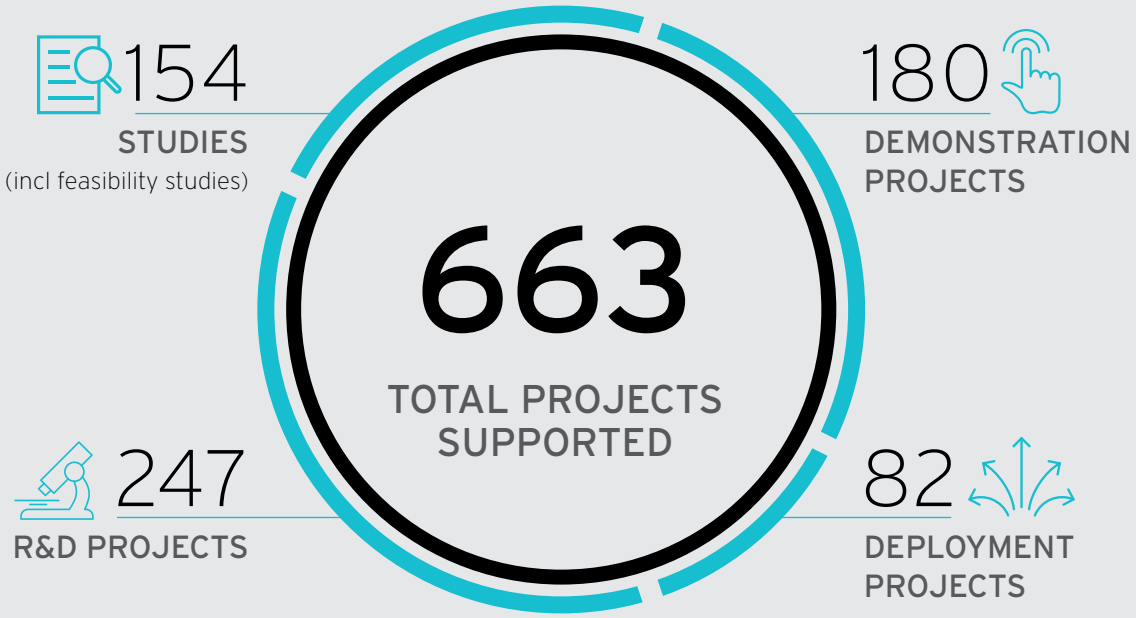
OUR WORK

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.

Heliostat field at RayGen's solar thermal plant. Image credit: RayGen.

FIGURE 1: ARENA'S IMPACT SO FAR



$2.25B
ARENA FUNDING

$9.75B
TOTAL PROJECT VALUE

PROJECTS BY TECHNOLOGY

Bioenergy **39**

Geothermal **12**

Grid integration **196**

Hybrid **22**

Hydrogen **47**

Ocean **15**

Solar PV **230**

Solar thermal **56**

Storage **46**

AS AT 30 JUNE 2023

ARENA'S IMPACT SO FAR

Since ARENA was established in 2012, we have committed more than $2.25 billion to 663 renewable energy projects across Australia, leveraging more than $7.5 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 foundations 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 renewable energy.

In 2022-23 these priorities were to optimise the electricity transition, commercialise renewable hydrogen, support the transition to low emissions aluminium and steel, and decarbonise land transport.

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 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 organisations such as CSIRO, CEFC, energy sector peak bodies, 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 committed to projects inherited by ARENA in 2012.

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ABOUT THIS REPORT

The ARENA Annual Report 2022-23 provides information about our activities, progress and achievements during the year from 1 July 2022 to 30 June 2023.

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 2022-23 online at arena.gov.au/about/publications/.

ARENA project visit to BlueScope's Port Kembla Steelworks. Image credit: ARENA.

LETTER OF TRANSMITTAL

Australian Government
Australian Renewable Energy Agency

ARENA

OFFICE OF THE CHAIR

26 September 2023

THE HON CHRIS BOWEN MP

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

DEAR MINISTER

ARENA ANNUAL REPORT 2022-23

I am pleased to present to you the Australian Renewable Energy Agency (ARENA) Annual Report for the financial year 2022-23, 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 26 September 2023.

This report incorporates ARENA's Annual Performance Statement (APS) for 2022-23, 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

OUR IMMENSE BUT SOLVABLE CHALLENGE

This year scientists continued to warn about the damage humans are inflicting on our climate through the continued use of fossil fuels. In its March 2023 synthesis report the Intergovernmental Panel on Climate Change stressed the need for us to take urgent action to reduce emissions if we are to have any chance of staying within 1.5°C of warming.

While the emissions reduction challenge is immense, the incredible progress made in Australia over the past decade with renewable energy technologies means that we know the solution to a significant portion of the challenge.

On 1 July 2022 we celebrated the 10-year anniversary of ARENA's establishment. After more than a decade at the forefront of Australia's energy transition, ARENA has growing confidence that technology innovation can solve seemingly intractable problems including the technical challenges of integrating renewables into our energy system, producing affordable green hydrogen, and decarbonising other energy intensive sectors including heavy industry and land transport.

ARENA CONTINUES TO STEP UP TO THE CHALLENGE

ARENA is uniquely placed to find solutions to some of the biggest technology roadblocks on the path to net zero. We are the only national funding agency with the commercial expertise, deep understanding of the energy sector, and willingness to fund innovative and ground-breaking projects at almost any innovation stage. Our support can provide a pathway to commercialisation for new technologies and businesses that might otherwise struggle to get off the ground or potentially be lost to overseas markets.

SOLUTIONS TODAY FOR TOMORROW'S CHALLENGES

ARENA is confident that renewable energy can replace fossil fuels throughout the global economy, and there is growing evidence this can be done at a reasonable cost.

Through our projects we are seeing compelling research and other technological solutions make progress on the path to commercialisation.

We have been instrumental in advancing the technical and commercial readiness of key renewable energy technologies such as solar photovoltaics, lithium-ion batteries, distributed energy resources, green hydrogen production and electric vehicle charging.

2022-23 was a record year for ARENA, in which we approved $544.1 million and committed $358 million in project funding[1] for 35 new projects. To achieve maximum impact, our support was targeted to achieve four strategic priorities:

- optimising the transition to renewable electricity
- commercialising renewable hydrogen
- supporting the transition to low emissions metals
- decarbonising land transport.

OPTIMISING THE TRANSITION TO RENEWABLE ELECTRICITY

Through collaboration, funding and knowledge sharing, ARENA is identifying the best path for Australia to move towards a lower-cost, largely renewable electricity system that is able to meet significantly higher demand, both on and off the grid.

Enabling ultra low-cost solar

Australia has already made good progress in achieving the lower-cost renewable electricity

[1]Approved: 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); Committed: the value of executed funding contracts.

Image credit: Stock.

JUSTIN PUNCH
CHAIR

DARREN MILLER
CHIEF EXECUTIVE OFFICER

that will allow us to further cut emissions from homes and businesses and through greater electrification of sectors such as transport, buildings and industry.

As a result, ARENA's focus has moved to achieving ultra low-cost solar, the key to producing low-cost green hydrogen, decarbonising heavy industries, and producing low emissions energy products.

Projects selected for funding under last year's Ultra Low-Cost Solar PV R&D funding round are now underway, striving to achieve our 30/30/30 vision to improve solar module efficiency to 30 per cent and reduce total construction costs of utility-scale solar farms to 30 cents per watt by 2030.

Improving the economics of energy storage

ARENA remains alert to the challenges that emerge as the adoption of renewables increases, such as ensuring grid stability and reliability, and shaping demand to better match variable generation. To identify solutions to these challenges, we committed funding to projects involving medium to large-scale storage and flexible demand this year.

MGA Thermal's demonstration facility will test the viability of its proprietary system as a cost effective, medium duration thermal energy storage technology. Eight grid-scale battery projects will examine how big batteries perform when equipped with grid-forming inverters. And Shell Energy is establishing smart energy hubs in shopping centres, supermarkets and refrigerated distribution centres to better understand the financial and technical value of flexible demand to energy users and electricity grid managers.

COMMERCIALISING RENEWABLE HYDROGEN

Renewable hydrogen is emerging as a decarbonisation solution for energy uses that are not well suited to electrification; hydrogen and its derivatives, such as ammonia, can be combusted to produce heat, used as chemical feedstock, stored for long periods and transported long distances.

ARENA has been leading the push to establish renewable hydrogen in Australia, and since 2017 we have committed more than $255 million to more than 40 renewable hydrogen projects. We are also playing a key role in developing the Government's $2 billion Hydrogen Headstart initiative to underwrite the biggest green hydrogen projects to be built in Australia.

Innovation across the full hydrogen value chain is required to unlock the solutions that will help Australia establish a viable renewable hydrogen industry and realise our potential as a significant exporter of clean energy. Solutions include cheap, firmed renewable electricity, a significant improvement in electrolyser technology, and rapid proving and scaling of hydrogen use cases.

This year we approved funding for ENGIE's electrolyser in Western Australia's remote Pilbara region, currently the largest electrolyser being constructed in Australia. We also committed funds to the Australian Gas Infrastructure Group's electrolyser to produce renewable hydrogen in Victoria, announced $25 million for hydrogen research and development funding, and announced $50 million for four hydrogen projects supported as part of the joint Australian-German HyGATE initiative.

SUPPORTING THE TRANSITION TO LOW EMISSIONS METALS

Global demand for low emissions materials and end products has presented Australia with both a challenge and an opportunity to meet that demand. ARENA is confident that Australia can lower emissions by decarbonising the aluminium and steel value chains through technological innovation including through electrification and the use of hydrogen, and by reducing barriers to the use of renewable energy in metal production processes.

To create momentum and a shared understanding of the innovation required, this year we collaborated with Australia's biggest aluminium producers to release a roadmap for decarbonising Australian alumina refining. The roadmap provides a framework for future policy and investment decisions, serving as a call to action for public and private sectors to collaboratively transition the sector into an industry at the forefront of the transition to net zero.

Building on one of the findings of the roadmap, we announced $32.1 million in support for Rio Tinto's hydrogen calcination pilot demonstration project at the Yarwun Alumina Refinery, which will be the first of its kind in the world.

A complementary series of reports was also published this year by the Australian Industry Energy Transitions Initiative, which is supported with ARENA funding. The reports identified decarbonisation pathways for five high emissions supply chains: iron and steel, aluminium, other metals, chemicals and liquified natural gas. The reports are the product of collaboration between business, finance, government and the not-for-profit sector.

DECARBONISING LAND TRANSPORT

Contributing around 20 per cent of Australia's emissions, the transport sector is an essential part of our economy that is also challenging to decarbonise. Australia is seeing a significant increase in the use of battery electric vehicles and zero emissions heavy road transport is showing promise, although significant innovation and testing are still required before its adoption becomes widespread.

Since 2015, ARENA has announced more than $146 million in funding to projects that will decarbonise the transport sector, including fast charging stations, hydrogen refuelling and household smart charging. This year we expanded our support for heavy vehicle fleet operators, such as Team Global Express' Depot of the Future project, which includes Australia's largest order of electric trucks to date.

BUILDING ON ARENA'S EXPERTISE

ARENA also plays a broader role in Australia's emissions reduction journey. We are using our expertise in grant funding to support renewable energy, energy efficiency and electrification projects under the Budget programs the Government has entrusted to us, including Driving the Nation, Community Batteries, and the Regional Microgrids Program including funds specifically allocated for First Nations Microgrids.

We also welcome the trust placed in ARENA to deliver the Industrial Transformation Stream of the Powering the Regions Fund, and to support the design of the Hydrogen Headstart initiative working closely with the Department of Climate Change, Energy, the Environment and Water.

A COLLABORATIVE EFFORT

ARENA's impact is based on collaboration, funding and knowledge sharing. An essential part of that working model is our strong partnerships built with industry, regulators, investors and innovators, working together 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 2022-23. We also wish to recognise the important contributions of the ARENA team and our project proponents.

ARENA's Board members continued to make an important contribution to our efforts, and we thank them for their leadership and governance. We also thank our Portfolio Minister, the Hon Chris Bowen MP, and Assistant Minister, Senator the Hon Jenny McAllister, for their support and ongoing interest in ARENA's work.

We also acknowledge that Australia's path towards clean energy traverses the lands and waters of First Nations peoples. We understand the importance of respectfully navigating this path in recognition of the unceded connection to land and water, the rights of Native Title holders, and the importance of Country in preserving, expressing and evolving these living cultures. ARENA has commenced work on its first Reflect Reconciliation Action Plan, will explore opportunities to address energy poverty, and improve engagement with First Nations organisations and communities on clean energy projects.

UNLOCKING THE TECHNOLOGIES TO REACH NET ZERO

Having celebrated ARENA's first decade of achievement, we look forward to the next.

As ARENA moves towards supporting even harder to abate sectors, we recognise that the decarbonisation goal becomes more challenging, and that ARENA's role becomes even more important. With our experience and excellent track record, ARENA is ideally placed to help Australia reach net zero by unlocking the technologies needed for the next phase of the energy transition.

JUSTIN PUNCH
CHAIR

DARREN MILLER
CHIEF EXECUTIVE OFFICER

ARENA HIGHLIGHTS 2022-23

$544M
APPROVED FOR NEW PROJECTS

$358M
COMMITTED TO NEW PROJECTS

$1.23B
OF THIRD-PARTY FUNDS UNLOCKED FOR NEW PROJECTS

35
NEW PROJECTS

44
PROJECTS COMPLETED

215
ACTIVE PROJECTS MANAGED

$176M
FUNDING ROUND FOR LARGE SCALE BATTERY STORAGE

$41.5M
FUNDING ROUND FOR ULTRA LOW-COST SOLAR

Image credit: Stock.

MARKET HIGHLIGHTS 2022-23

RENEWABLE CAPACITY ADDED: + 2966 MW

21% INCREASE*

BATTERY CAPACITY ADDED: + 392 MW

63% INCREASE*

RENEWABLES AS % OF ELECTRICITY GENERATION:

33% →37%*

ELECTRIC VEHICLES AS % OF NEW CAR SALES:

3.8% →8.4%**

LARGEST COMMITTED ELECTROLYSER:

2.5 MW →10 MW

* Data is for the National Electricity Market (NEM) only; renewable capacity added includes scheduled and semi-scheduled renewable only; renewable and battery capacity added includes projects in service and in commissioning; renewables % represents average of the financial years
** Based on 2022 compared to H1 2023.

Market Highlights sources:
Clean Energy Council, 'Clean Energy Australia' 2023.
OpenNEM 2023.
AEMO Forecasting and Planning Data 2023.

01

ABOUT ARENA

This section explains what ARENA does, why it was created and how it invests funds to benefit the nation.

WHO WE ARE

ARENA is Australia's renewable energy innovation agency.

Through collaboration, funding and shared knowledge, we are transforming Australia's world-leading research into real-world solutions that drive down the cost and increase the use of renewable energy.

HISTORY

ARENA was established in 2012 by the *Australian Renewable Energy Agency Act 2011* (ARENA Act).

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.

The object of the ARENA Act was expanded in September 2022 by the *Climate Change (Consequential Amendments) Act 2022* (Cth) to 'facilitate the achievement of Australia's greenhouse gas emissions reduction targets'.

The main object of the ARENA Act is now to:

- improve the competitiveness of renewable energy technologies
- increase the supply of renewable energy in Australia
- facilitate the achievement of Australia's greenhouse gas emissions reduction targets.

The ARENA Act is supported by the Australian Renewable Energy Agency Regulation 2016, which was amended in 2022 to expand our mandate to allow ARENA to support energy efficiency and electrification technologies that can reduce emissions.

In 2020, ARENA's funding was extended to 2032 with $1.43 billion in baseline funding. We have also received additional funding to deliver Budget programs including Driving the Nation, Community Batteries, the Regional Microgrids Program, and the Industrial Transformation Stream of the Powering the Regions Fund.

Image credit: Stock.

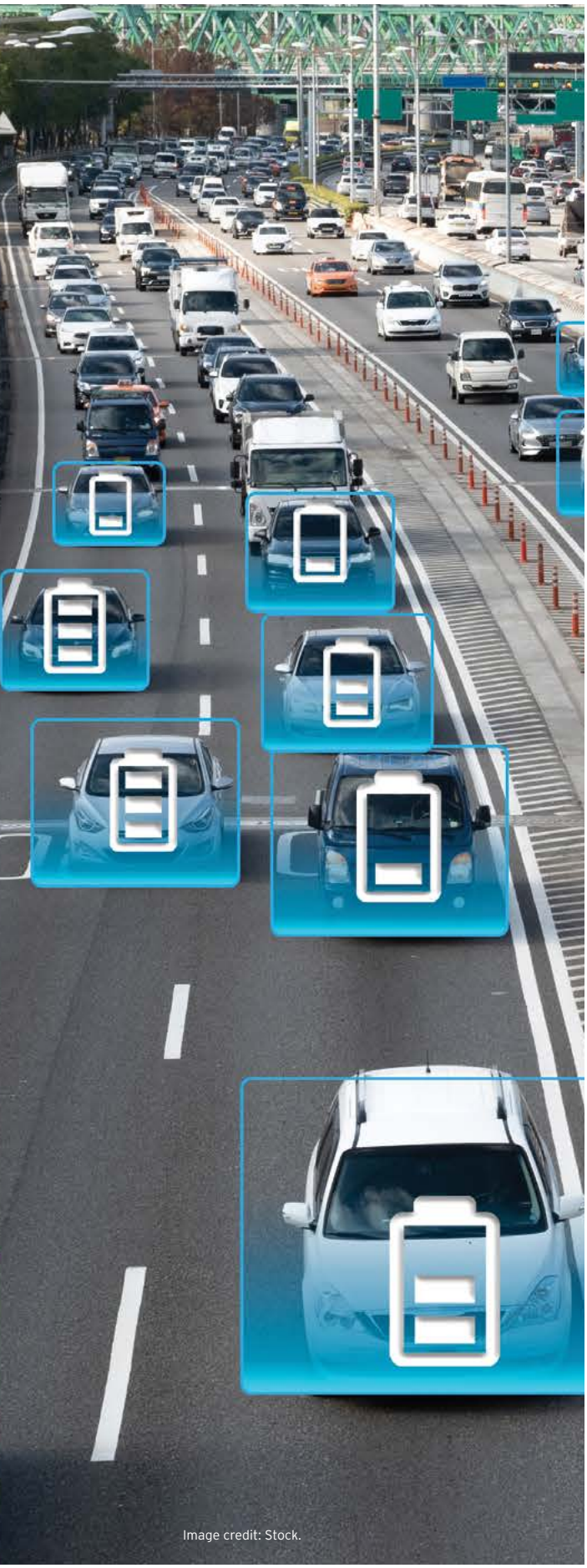


Image credit: Stock.

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 the knowledge needed to bring about transformative change.

RECONCILIATION

This year, ARENA has matured its approach to Reconciliation, and is working towards its first Reflect Reconciliation Action Plan. We marked Reconciliation Week and NAIDOC Week with events to help build our understanding of issues important to First Nations communities in the clean energy transition and to build our in-house cultural competency. We are supporting industry and First Nations-led work to establish best practices for engaging with First Nations peoples on clean energy projects, and have updated our funding agreement template to encourage our project applications to improve their engagement with First Nations peoples.

INTEGRITY

As a granting agency responsible for the allocation of Commonwealth funds, ARENA recognises that it is critical our processes and decision-making are fair, transparent, robust and defensible from an integrity perspective.

Integrity, probity and professionalism have always been critical to our work, and these values are reinforced under our Integrity Framework.

A strong integrity approach supports our accountability to the Minister, the Parliament and the Australian public.

UNIQUE ROLE

ARENA has a unique role in the transition to a net zero economy. We provide funding support for 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.

WHAT WE DO

CORE ACTIVITIES

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

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 $2.25 billion to 663 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 $9.75 billion across Australia (Figure 2).

FUNDING COMMITMENTS IN 2022-23

In 2022-23, ARENA contractually committed $358 million to 35 new projects with a total cost of $1.59 billion. Overall, we managed 215 active projects during the period, of which 44 were completed and seven terminated.

Details of all active projects during 2022-23 are provided in Appendix 1.

FIGURE 2: ARENA AT A GLANCE - FUNDING COMMITMENTS TO PROJECTS 2012-2023.

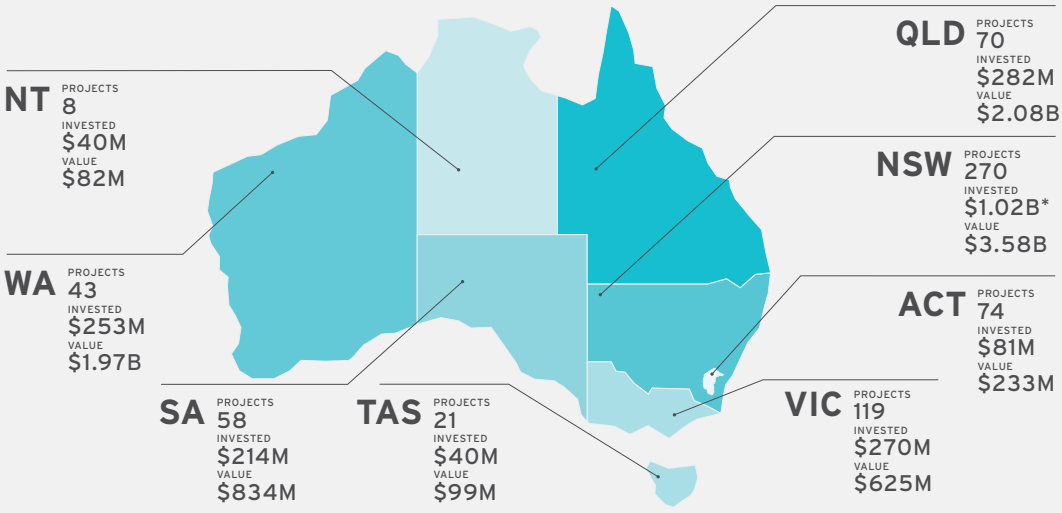
KEY STATISTICS 2012-2023

INVESTED BY ARENA	PROJECTS	TOTAL PROJECT VALUE	INVESTMENT LEVERAGE
$2.25B	663	$9.75B	$1 : $3.32

INVESTMENT BY TECHNOLOGY

$131M	$42M	$386M	$112M	$247M	$44M	$818M	$242M	$231M
Bioenergy	Geothermal	Grid Integration	Hybrid	Hydrogen	Ocean	Solar PV	Solar Thermal	Storage Batteries/ PHES

INVESTMENT BY STATE



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

INVESTMENT LEVERAGE ALONG THE INNOVATION CHAIN

STUDY	R&D	DEMONSTRATION	DEPLOYMENT
$1 : $2.07	$1 : $1.76	$1 : $1.87	$1 : $5.67

AS AT 30 JUNE 2023

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 *Public Governance, Performance and Accountability Act 2013* (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.

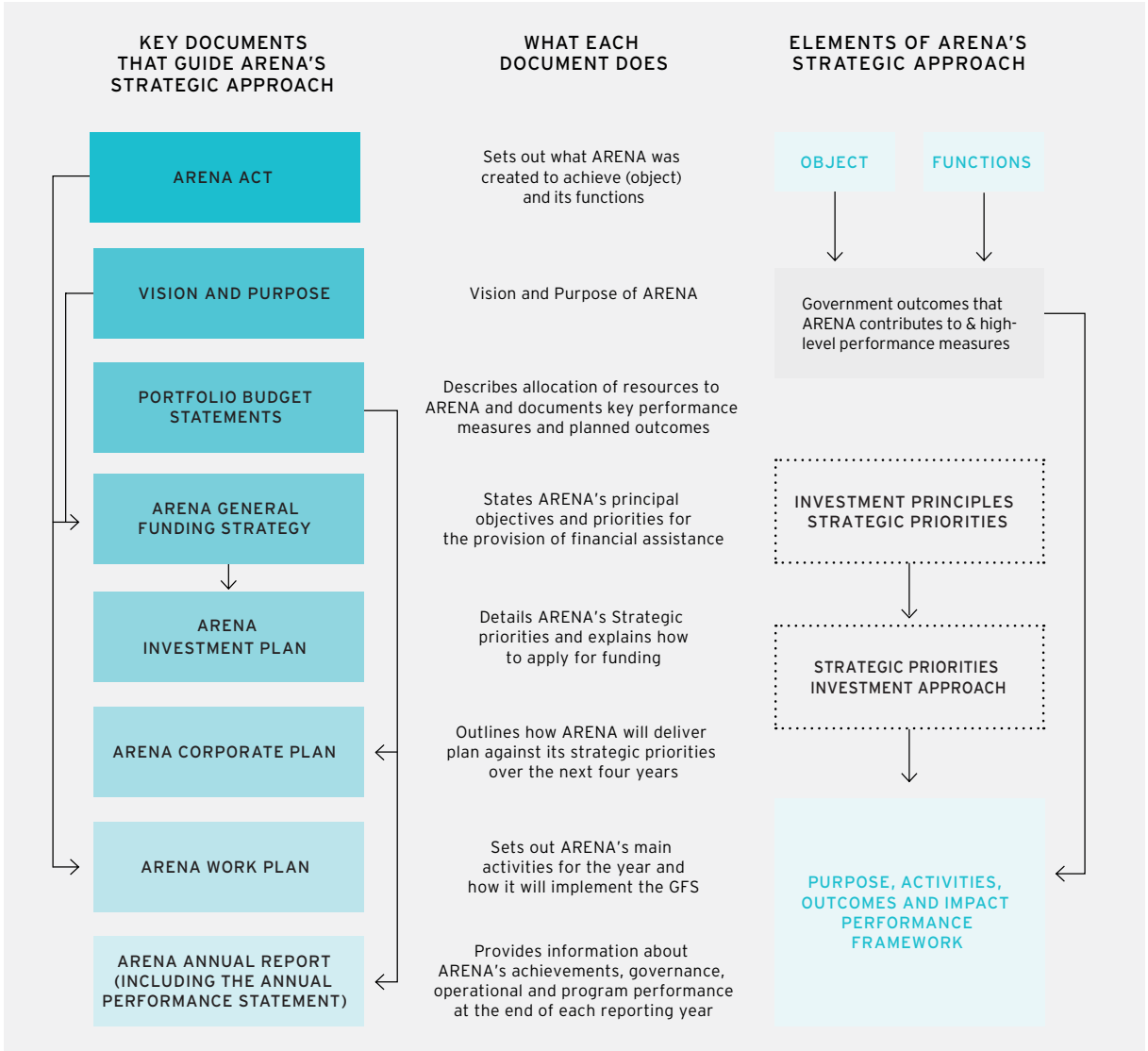
The Corporate Plan sets out:

- 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.

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



UNSW Solar Industrial Research Facility (SIRF). Image credit: ARENA.

PERFORMANCE REPORTING

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

In 2022-23, ARENA's performance measures were:

- ARENA commits and approves funding that supports renewable energy technologies
- ARENA funding catalyses increased private sector and other third-party investment in renewable energy technologies
- ARENA-funded projects increase the supply of renewable energy in Australia
- ARENA-funded projects advance the technological and commercial readiness of renewable energy technologies
- ARENA produces and shares knowledge to enhance the competitiveness of renewable energy technologies
- ARENA performs its functions to a high standard, 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 limited 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.

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 that 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), Northern Australia Infrastructure Facility (NAIF) and innovators in industry (see 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 are also working with the new National Reconstruction Fund and the Net Zero Economy Agency to share our learnings and help them maximise their impact.

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.

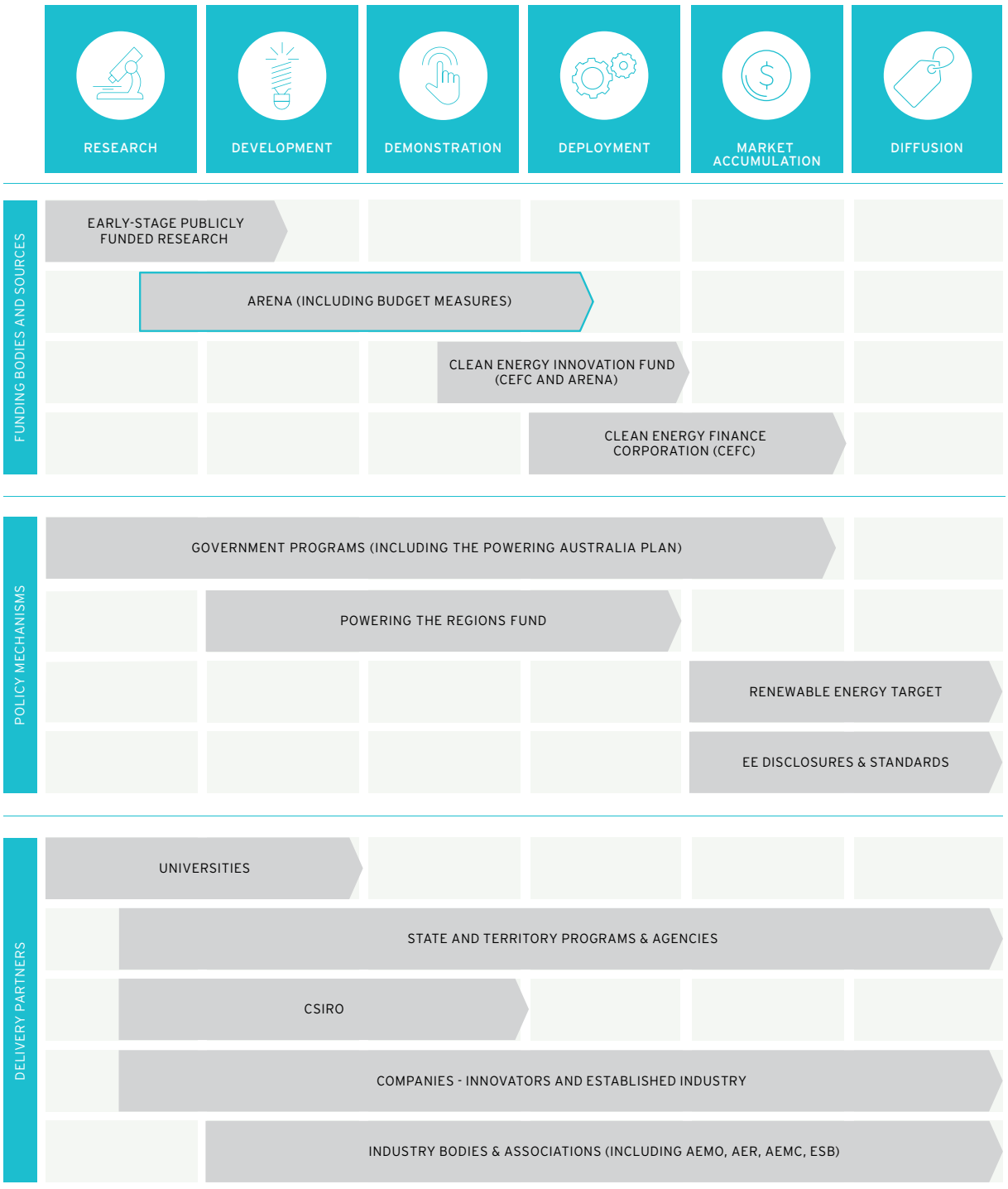
RENEWABLE ENERGY FOUNDER FORUM

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

[1] May 2022 survey of 101 ARENA-funded projects.

ARENA EV and DER Market Integration DEIP Dive session. Image credit: ARENA.

FIGURE 4: COLLABORATION ACROSS THE INNOVATION CHAIN



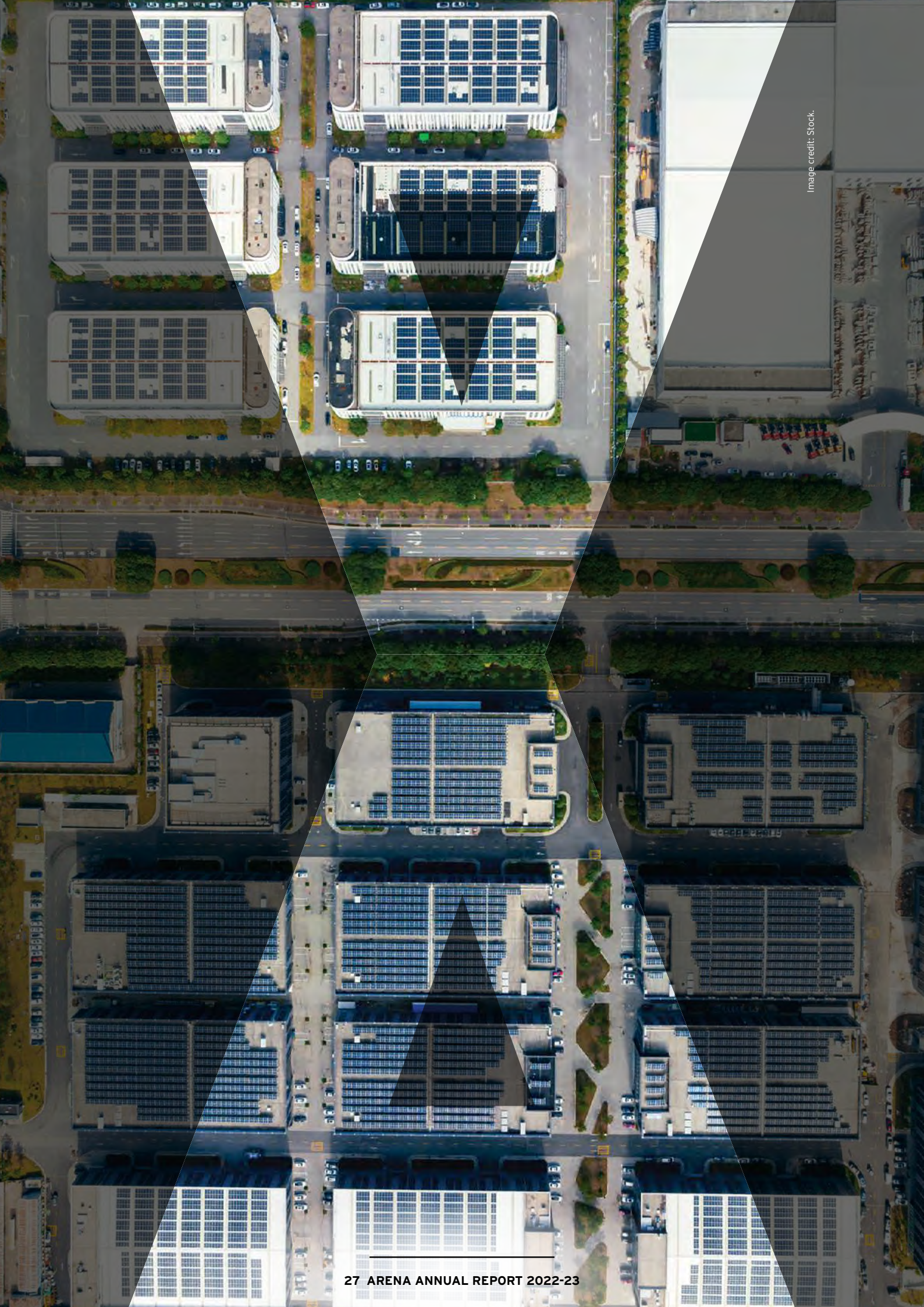


Image credit: Stock.

ARENA Board members (from left): Jo Evans, Justin Punch, Stephanie Unwin, John Hirjee, Elizabeth O'Leary, Stephen McIntosh. Not present: Justin Butcher and Anna Matysek. Image credit: ARENA.

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, overseeing the running of the organisation and approving funding for projects.

ARENA's Portfolio Minister approves funding of more than $50 million for particular projects recommended by the Board, while the ARENA CEO has board-delegated authority to approve funding up to $2 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

During 2022-23, members of the ARENA Board were:

- Mr Justin Punch (Chair)
- Mr Justin Butcher (until 22 July 2022)
- Mr John Hirjee
- Ms Anna Matysek
- Mr Stephen McIntosh
- Ms Elizabeth O'Leary (from 23 July 2022)
- Ms Stephanie Unwin
- Secretary of the Portfolio Department or nominee (ex officio).

After the end of the reporting period, Ms Stephanie Unwin's term expired on 17 July 2023 and Ms Marianna O'Gorman commenced her term on the Board from 18 July 2023.

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 Climate Change, Energy, the Environment and Water (DCCEEW).

Ms Jo Evans PSM, Deputy Secretary, DCCEEW was the nominee for Mr Fredericks during the reporting period.

MEETINGS

The Board formally met 11 times during 2022-23. Board member attendance is shown in Table 1.

TABLE 1: DETAILS OF ARENA BOARD 2022-23

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 Co-Chair, Karrkad Kanjdji Trust	Chair Non-executive ARENA Board member	Commenced on 18 July 2020 Re-appointed to July 2024	11/11
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 on 24 July 2020 Term concluded on 22 July 2022	0/0*
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 on 24 July 2020 Re-appointed to July 2024	11/11
Ms Anna Matysek	Bachelor of Economics Master of Environment	Head of Climate Change, BlueScope Steel A lead author for IPCC Council Member, Australian Institute of Marine Science Economist and strategy specialist in the resources, energy and infrastructure sectors	Non-executive ARENA Board member	Commenced on 24 July 2020 Re-appointed to July 2024	9/11
Mr Stephen McIntosh	Bachelor of Science Master of Science (Geology & Physics) Hons	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 Chalice Mining Chairperson Datarock Holdings	Non-executive ARENA Board member	Commenced on 18 July 2021 Re-appointed to July 2025	11/11
Ms Elizabeth O'Leary		Senior Managing Director, Macquarie Asset Management (MAM) Real Assets. Leads MAM's Agriculture & Natural Asset's platform encompassing large-scale specialised funds and related investment vehicles A member of various boards in the natural assets sector Member of the Taskforce on Nature-related Financial Disclosures (TNFD)	Non-executive ARENA Board member	Commenced on 23 July 2022	11/11
Ms Stephanie Unwin	LLB, E Econ	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 on 18 April 2018 Re-appointed to July 2023	11/11
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		11/11

*No Board meetings were held before the conclusion of Justin Butcher's term as Board member on 22 July 2022.

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

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 and a Director of Tasman Environmental Markets. 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 Co-Chair 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.

Image credit: Stock.

MR JOHN HIRJEE

NON-EXECUTIVE MEMBER

MEMBER, RISK AND AUDIT COMMITTEE
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, and 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.

MR STEPHEN MCINTOSH
NON-EXECUTIVE MEMBER

MEMBER, RISK AND AUDIT COMMITTEE
Term: 18 July 2021 - 17 July 2025
Re-appointed 2023

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 Chalice Mining and is a director and chairperson of Datarock Holdings. He is an adviser to the Clean Energy Finance Corporation, EMR Capital and also to the Monash University led Critical Minerals Consortium.

MS ELIZABETH O'LEARY
NON-EXECUTIVE MEMBER

MEMBER, PEOPLE AND CULTURE COMMITTEE
(FROM 23 JULY 2022)
Term: 23 July 2022 – 22 July 2024
Appointed 2022

Elizabeth O'Leary is a Senior Managing Director in Macquarie Asset Management (MAM) Real Assets. Elizabeth leads MAM's Agriculture & Natural Asset's platform encompassing large-scale specialised funds and related investment vehicles.

Elizabeth is committed to developing the natural assets sector into a mature and attractive asset class with growing institutional investment. Under Elizabeth's leadership, MAM Agriculture & Natural Assets has taken a leadership position in the development of methods of measuring, reducing and removing greenhouse gas emissions across its farming operations.

Elizabeth is a keen participant in the natural assets sector as a member of various boards. Elizabeth is a regular speaker and an industry contributor including as a current Member of the Taskforce on Nature-related Financial Disclosures (TNFD).

MS STEPHANIE UNWIN
NON-EXECUTIVE MEMBER

CHAIR, PEOPLE AND 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 AND 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 Master of Public Policy from the Woodrow Wilson School of Public and International Affairs, Princeton University, a Master in Environmental Science from the University of Melbourne, and a combined Bachelor degree in Asian Studies and Economics (Honours) from the Australian National University.

MR JUSTIN BUTCHER
NON-EXECUTIVE MEMBER

MEMBER, PEOPLE AND CULTURE COMMITTEE
(To 22 July 2022)
Term: 24 July 2020 - 22 July 2022
Appointed 2020

Image credit: Stock.

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 and 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, 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 2022-23 were:

- Ms Karen Hogan (RAC Chair and Independent member)
- Mr Stephen Sheehan (Independent member)
- Mr John Hirjee
- Mr Stephen McIntosh.

During the reporting period, the RAC formally met four 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.

TABLE 2: DETAILS OF ARENA RISK AND AUDIT COMMITTEE (RAC) 2022-23

NAME	QUALIFICATIONS, KNOWLEDGE, SKILLS OR EXPERIENCE OF RAC MEMBERS	POSITION TITLE / POSITION HELD	NUMBER OF RAC MEETINGS ATTENDED
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	RAC Chair, Independent Committee member	4/4
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	4/4
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	4/4
Mr Stephen McIntosh	Master of Science (Geology & Physics) Hons, 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

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 2022-23 were:

- Ms Stephanie Unwin (PCC Chair)
- Mr Justin Butcher (until 22 July 2022)
- Ms Elizabeth O'Leary (from 23 July 2022)
- Ms Jo Evans PSM (nominee of the Secretary of the Portfolio Department) (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) 2022-23

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	0/0*
Ms Elizabeth O'Leary	Non-executive Board member	3/3
Ms Jo Evans PSM	Ex-officio member	3/3

*No PCC meetings were held before the conclusion of Justin Butcher's Board term on 22 July 2022.

BOARD COMMITTEE INDEPENDENT MEMBERS

MS KAREN HOGAN

RAC CHAIR / 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.

She is 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 the Chair of the ARENA RAC, she is the Chair of the Murray Darling Basin Authority (MDBA) Audit Committee and a member of two other government Audit and Risk Committees.

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

MR STEPHEN SHEEHAN

INDEPENDENT COMMITTEE MEMBER

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 independent audit committee member and chair of Commonwealth audit and risk committees for small and medium government entities.

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

DeGrussa Solar Project at the DeGrussa Copper Mine. Image credit: Sandfire Resources.

SENIOR LEADERSHIP TEAM

MR DARREN MILLER
CHIEF EXECUTIVE OFFICER

Darren Miller has been the Chief Executive Officer of ARENA since 2018. Darren has led ARENA though a period of change and renewal in which the Agency has been provided over $2.6 billion over an additional 10 years to drive impact in renewable energy technology development and emissions reduction. Since his appointment, ARENA has committed $890 million to 239 projects and is viewed as a pillar of Australia's emissions reduction and renewable energy innovation efforts. Darren was reappointed as CEO for a further three-year term in 2021 by the Australian Government.

With 30 years' experience across renewable energy, electricity retail, technology, finance, media and entertainment, Darren has led ARENA into new strategic areas. With a focus on optimising Australia's electricity transition, commercialising renewable hydrogen, supporting the transition to low emissions metals and decarbonising transport, Darren's leadership has given clear and defined purpose to ARENA in meeting Australia's net zero targets and setting Australia up as a potential renewable energy superpower.

Prior to 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. His breadth of experience includes managing investments for Publishing and Broadcasting Limited and Consolidated Press Holdings, as well as in corporate finance and advisory at Ernst & Young.

He 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 28 years' experience leading investment in infrastructure, development and commercialisation of renewable energy projects, including at Origin Energy and Macquarie Group.

He is skilled in managing joint venture partnerships and has 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 August 2021. Chris oversees ARENA's legal, people and culture, ICT, risk, government relations and corporate reporting functions.

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 Commonwealth government departments.

His public sector experience includes international climate negotiations, 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, and represented Australia on the Executive Board of the Kyoto Protocol's Clean Development Mechanism.

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 *(TO JUNE 2023)*

Rachele Williams has more than 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.

MS ALICIA BARNES

GENERAL MANAGER, PROJECT DELIVERY *(FROM JUNE 2023)*

Alicia Barnes is a proud Wiradjuri yinaa (woman) from Western NSW. She has more than ten years' experience in both the public and private sectors, and across a range of Australian Government agencies.

Alicia has built a broad range of skills and experience leading teams across program management and delivery, having worked on whole of APS policy and programs and on delivery of the Federal Budget.

During that time Alicia was twice seconded to non-profit organisations to pursue her passion for continuous learning and contributing to positive change for Australia's First Nations peoples.

Alicia joined ARENA from Reconciliation Australia, where she served as its Chief Operating Officer focused on building people and organisational capability.

As General Manager, Project Delivery, Alicia is responsible for ARENA's project portfolio of more than 150 projects with more than $2 billion in total project costs.

Alicia has a double degree, Bachelor of Public Relations and Bachelor of Arts (Legal Studies and Government and Politics) and is currently studying Wiradjuri Language, Culture and Heritage at Charles Sturt University.

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 ten 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 STEPHANIE PURCELL

GENERAL MANAGER, PEOPLE AND CULTURE

Stephanie Purcell leads ARENA's People and Culture team responsible for delivering workforce strategies and programs that support the achievement of organisation goals. Since joining ARENA in 2021 she has led the rebuilding of the People and Culture team's capability and the delivery of programs in recruitment, culture, remuneration and capability.

Stephanie has more than 10 years' experience in senior leadership roles where she has coached executives to achieve effective, values-based leadership and create great places to work.

She holds a Master of Human Resources from Charles Sturt University and is certified by the Australian Human Resources Institute.

MS ANNA WHITELAW

GENERAL MANAGER, CORPORATE AFFAIRS *(TO JULY 2023)*

Anna Whitelaw led 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.

Anna managed media and public affairs for the agency and oversaw 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 2023 are provided in the Financial Statements section.

5B Maverick redeployable solar modules being rolled out at Port Bonython. Image credit: 5B.

ARENA reports an operating surplus of $117.5 million for the year, with a higher level of grant spending at $187.0 million compared to last year's $100.2 million.

Administration expenses in 2022-23 were within budget and 21 per cent higher than the previous year.

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 2022-23 ARENA was appropriated $312.6 million in funding for new policy initiatives to be delivered by 2026-27.

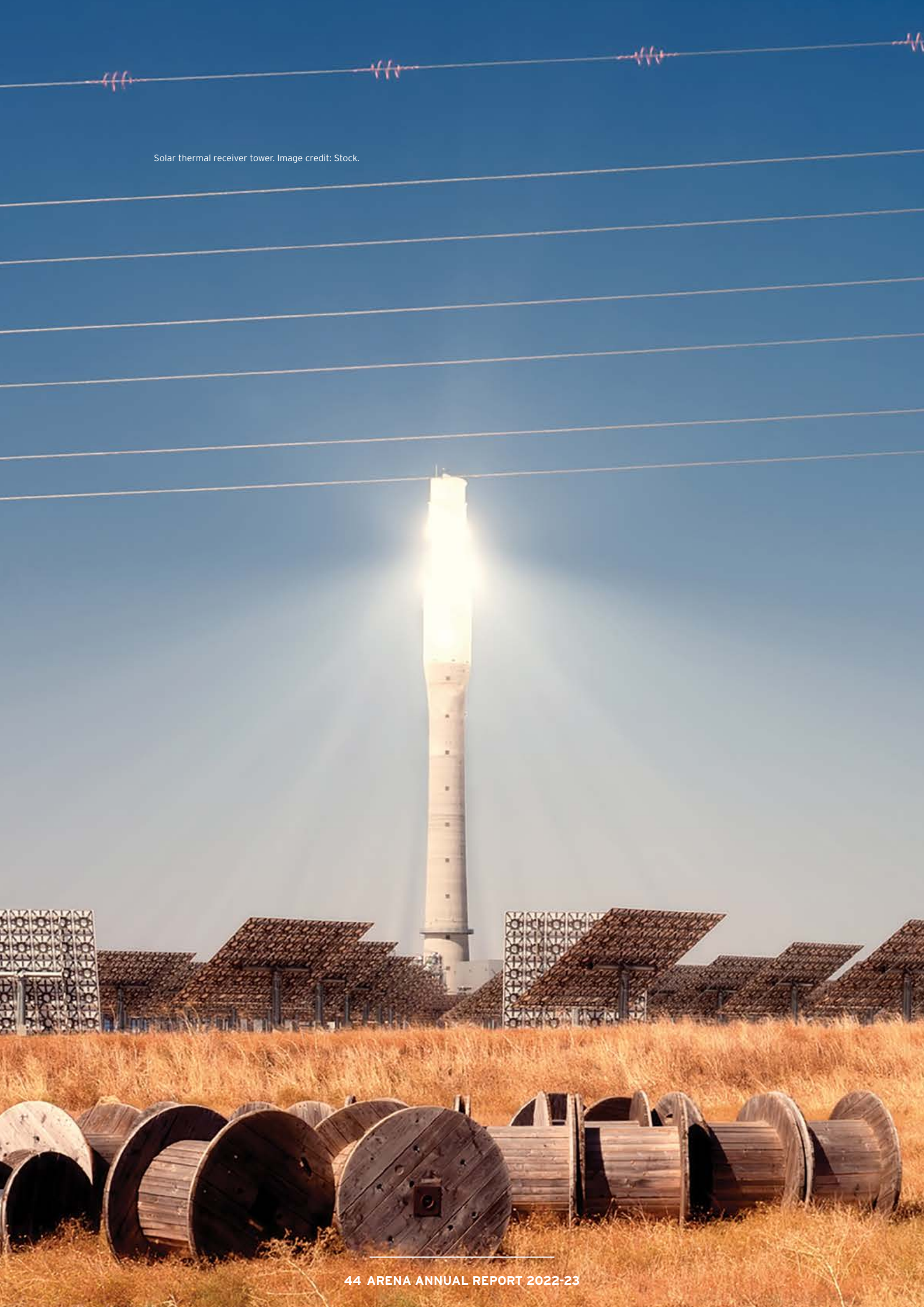
Cash and cash equivalents held at 30 June 2023 totalled $549.8 million. This cash is available to meet contracted commitments of $433.5 million and Board approved projects and funding rounds totalling $375.6 million, for which contracts have yet to be executed and which will be met from current and future funding.

ARENA invested $1 million into the Renewable Energy Venture Capital Fund during the financial year. On 30 June 2023, the investment recorded a fair value gain of $1.2 million, which is reported in the Other Comprehensive Income section of the financial statements. The carrying value of the investment at 30 June 2023 was $82.6 million.

TABLE 4: KEY FINANCIAL RESULTS

	2018-19 $M	2019-20 $M	2020-21 $M	2021-22 $M	2022-23 $M
Revenue from Government	174.0	231.4	227.5	422.0	312.6
Resources Received Free of Charge	5.5	4.9	4.9	5.1	5.9
Return of Grants	5.1	3.1	9.7	2.7	2.0
Interest and Other Income	1.6	1.6	1.0	1.6	16.5
Grant Expenses	**(138.7)**	**(193.3)**	**(164.5)**	**(100.2)**	**(187.0)**
Administration Expenses	(30.7)	(29.2)	(26.2)	(27.9)	(33.8)
Operating Surplus	**16.8**	**18.5**	**52.4**	**303.3**	**116.2**
Cash and Term Deposits	85.6	87.8	139.0	457.5	549.8
Investments	29.3	29.8	31.6	80.9	82.6
Total Equity	103.3	119.2	173.2	524.2	641.7

Chargefox EV ultra-rapid charging station. Image credit: Chargefox.



Solar thermal receiver tower. 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:

- delivering significant improvements in the competitiveness of renewable energy technologies
- increasing the supply of Australia's renewable energy
- helping to achieve Australia's greenhouse gas emissions reduction targets.

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 2022-23, those priorities were to:

- optimise the transition to renewable electricity by enabling ultra low-cost generation, improving the economics of energy storage, optimising large-scale integration and supporting flexible demand
- commercialise renewable hydrogen by supporting projects that enable a viable renewable hydrogen industry across the full value chain
- support the transition to low emissions metals by supporting projects that accelerate the adoption of low emissions technologies in the aluminium and steel value chains
- decarbonise land transport by accelerating the shift to zero-emissions vehicles and innovation in supporting infrastructure.

Targeted programs and Budget initiatives

ARENA is also provided with funding to support projects through targeted programs and Budget 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
- improve the economics of energy storage
- optimise the integration of large-scale renewable energy into the electricity system
- support flexible demand.

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.

Image credit: Stock.

CASE STUDY

R&D TO DRIVE DOWN THE COST OF SOLAR ELECTRICITY

PROJECT NAME
Cost-effective Si/Perovskite Tandem Modules on Passivating Contact Si Cells

LEAD ORGANISATION
Australian National University

ARENA FUNDING
$4.3 million

TOTAL PROJECT COST
$19.01 million

LOCATION
Australian Capital Territory

Australia has already made good progress in achieving the lower-cost renewable electricity generation that will allow us to further cut emissions from homes and businesses and through greater electrification of sectors such as transport, buildings and industry.

As a result, ARENA's focus has moved to achieving ultra low-cost solar, the key to producing low-cost green hydrogen, decarbonising heavy industries, and producing low emissions energy products.

Perovskite-based tandems are considered the most promising technology to increase the efficiency of commercial solar cells in a cost-effective way, and monolithic silicon-perovskite tandems have attracted significant attention by industry due to their relative ease of fabrication and high efficiency potential. The market share of Si-based tandems is predicted to increase significantly by 2030, thereby highlighting the importance of economically attractive tandem technologies entering the market early.

To help Australia unlock this opportunity, we committed $4.3 million in funding support to the Australian National University this year to further develop its monolithic silicon (Si)-perovskite tandem (SPT) to the point of commercial production, with significant anticipated production capacity by the end of the project.

This $19.01 million project aims to develop high-performing, industrially viable polysilicon sub-cells as well as efficient, scalable and stable perovskite sub-cells for SPTs, before testing them on Jinko Solar's pilot production line. It will create more than 11 jobs including chief investigators contributing to the project, newly recruited research staff, and related PhD students.

This project is funded under ARENA's Ultra Low-Cost Solar PV Research and Development Round, building on previous support for projects aligning with our Solar 30/30/30 target to improve module efficiency to 30 per cent and reduce total construction costs of utility scale solar farms to 30 cents per watt by 2030. Our funding is being made available to focus on commercialisation prospects, which will take place after an initial R&D phase, to assist getting the new technologies into the market.

Since 2012, ARENA through its R&D programs has committed $118.5 million in grant funding to 145 solar PV projects with 17 institutions. In addition to this, we are supporting the Australian Centre for Advanced Photovoltaics (ACAP) with $128.99 million in funding over 18 years up until 2030.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Australia's solar researchers have helped to make solar PV the cheapest form of energy in history, but to create a future in which Australian solar energy can supply the world with clean power, fuels and products, we need to be ambitious and drive the cost of solar even lower.

Ultra low-cost solar will be a key input for scaling up the production of low-cost renewable hydrogen and unlocking decarbonisation pathways for heavy industry including low emissions metals such as green steel and aluminium.

"We are grateful for ARENA's long-term support. Their understanding of the potential of our CSP technology is a testament to the Australian Government's ambition to deliver cost-competitive dispatchable renewable energy to help uphold emissions reduction goals while supporting local jobs and industry."

Craig Wood, CEO of Vast Solar

Vast Solar's CSP Pilot Plant in NSW. Image credit: Vast Solar.

CASE STUDY

ONE STEP CLOSER TO COMMERCIAL CONCENTRATED SOLAR THERMAL

PROJECT NAME
Vast Solar Port Augusta Concentrated Solar Thermal Power Project

LEAD ORGANISATION
Vast Solar

ARENA FUNDING
$65 million

TOTAL PROJECT COST
$203 million

LOCATION
South Australia

Our increasing need for dispatchable renewable generation and longer duration energy storage makes Concentrated Solar Power (CSP) a potential renewable energy technology to assist Australia's energy transition alongside other energy firming options such as pumped hydro and large-scale batteries.

CSP uses mirrors (or heliostats) to concentrate and capture heat from the sun in solar receivers, with high temperature heat transferred via sodium and stored in molten salt. The stored heat can then be used to heat water to create steam to power a turbine and produce electricity or used directly to decarbonise some industrial processes.

ARENA has supported the various stages of development in Vast Solar's CSP technology since 2012, including providing $9.9 million in funding towards the 1.1 MW CSP Pilot Plant in New South Wales. The CSP technology has potential applications for grid and off-grid dispatchable energy supply as well as industrial process heat.

This year we announced new funding to take the technology one step closer towards being Australia's first commercial-scale CSP plant. ARENA conditionally committed $65 million towards Vast Solar's VS1 project, a first-of-a-kind 30 MW / 288 MWh CSP plant in South Australia. The funding is conditional upon the project reaching financial close, followed by an estimated two-year construction period.

The $203 million project aims to demonstrate how CSP can provide a reliable and scalable dispatchable renewable energy solution in the Australian market. By demonstrating the technical and operational performance of CSP at a large scale, the project will also motivate investment in future projects and provide another pathway for Australian industry to decarbonise.

This project will create up to 450 jobs in the construction phase. Additionally, the South Australian CSP plant will enable the creation of up to 70 ongoing jobs in long-term manufacturing, plant operations and maintenance roles.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

A benefit of CSP is that the captured heat can be stored cost-effectively for long periods with little loss of energy. This means CSP can be used to generate electricity or provide heat on demand, including overnight. Globally, most CSP plants used for electricity production incorporate 3-15 hours of thermal energy storage.

Chemical batteries used to store electrical energy rely on in-demand or rare constituents such as lithium and cobalt. Components critical to CSP include sodium, which is the sixth most common element on Earth, with salts also relatively abundant.

Thermal blocks used to store renewable-generated heat. Image credit: MGA Thermal.

CASE STUDY

UNIQUE HOMEGROWN TECH TO UNLOCK MEDIUM DURATION ENERGY STORAGE

PROJECT NAME
MGA Thermal Energy Storage Project

LEAD ORGANISATION
MGA Thermal

ARENA FUNDING
$1.27 million

TOTAL PROJECT COST
$2.84 million

LOCATION
New South Wales

The electricity transition is going to require a variety of storage technologies that can discharge over a range of timeframes from hours to days. Medium duration energy storage, covering a timeframe of more than four hours up to a few weeks, will be essential to supplying power during the morning and evening peak-demand periods when solar production is at a minimum.

This year ARENA announced $1.27 million in funding for MGA Thermal to help demonstrate its innovative thermal energy storage technology.

The $2.84 million project will construct a pilot unit of MGA's Medium Duration Thermal Energy Storage (MDTES) technology to demonstrate the generation of steam from stored thermal energy.

Thermal energy storage uses plentiful renewable energy during the day to heat a large amount of material (in this case thermal blocks), releasing the energy when required as the block cools down. The technology is an Australian innovation success story, and with ARENA's support MGA Thermal is bringing a research breakthrough from the University of Newcastle closer to a commercially viable product.

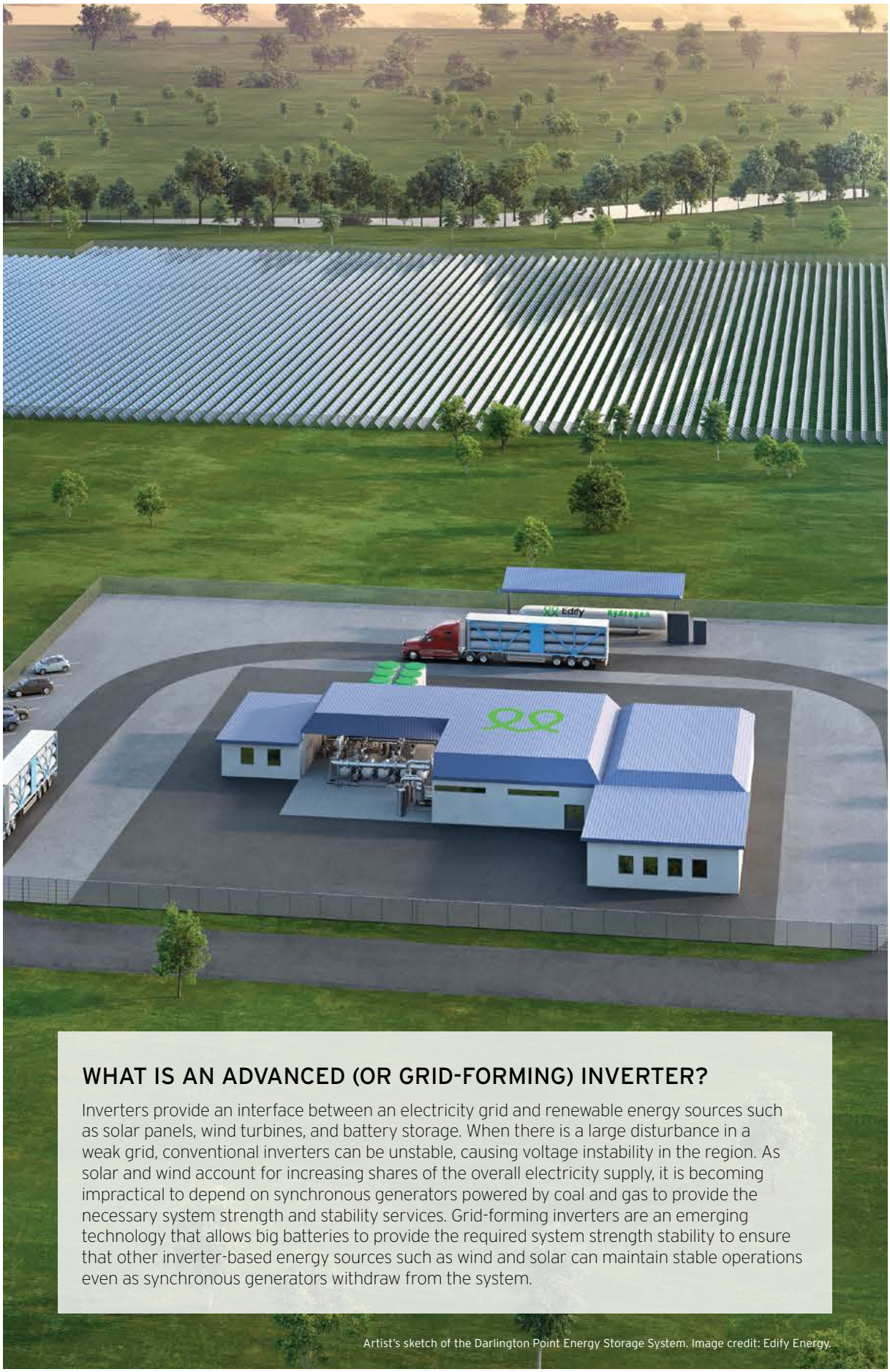
The pilot unit has a planned storage capacity of 5 MWh and will demonstrate charging and discharging of up to 500 kW. It will test the performance of MDTES under a variety of end-use simulations including the production of dispatchable power, process heat and green hydrogen.

The project will also deliver valuable performance data and provide a real-life demonstration of the technology for prospective customers. The data gathered will cover the technology's charging and discharging behaviour, fluid dynamics and temperature distributions, and validate the efficacy of mid-to-long term thermal storage in a practical system.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

MGA Thermal's unique technology has enormous potential to support the uptake of renewable energy.

With potential deployments for industrial heating end uses, the technology could play a valuable role in decarbonising both the electricity grid and heavy industry, which often requires high temperature heat and steam for manufacturing.



WHAT IS AN ADVANCED (OR GRID-FORMING) INVERTER?

Inverters provide an interface between an electricity grid and renewable energy sources such as solar panels, wind turbines, and battery storage. When there is a large disturbance in a weak grid, 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 powered by 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.

Artist's sketch of the Darlington Point Energy Storage System. Image credit: Edify Energy.

CASE STUDY

ADVANCED BATTERY TECH TO STRENGTHEN WEAK GRIDS

PROJECT NAME
Darlington Point Energy Storage System

LEAD ORGANISATION:
Edify Energy (operating as DPESS DevCo)

ARENA FUNDING
$6.6 million

TOTAL PROJECT COST
$32.34 million

LOCATION
New South Wales

Big batteries are now being seen as more than devices to store energy. When equipped with a technology known as advanced inverters, large-scale batteries may also be able to strengthen the grid, unlocking opportunities to support more renewable energy generation.

Advanced inverters make it possible for big batteries and grid-connected batteries to provide system stability services, which are traditionally provided by synchronous generation such as coal or gas. ARENA is supporting projects with advanced inverter technology to find new ways of providing stability to the electricity system, particularly as it begins to operate with higher shares of variable renewable energy.

This year we committed $6.6 million in funding to Edify Energy to build a 25 MW / 50 MWh battery with advanced inverters adjacent to the 275 MW Darlington Point Solar Farm in New South Wales. ARENA's funding enables Edify to expand the project to a total of 150 MW / 300 MWh.

The project will test the ability of large-scale battery storage with advanced inverters to provide a measurable improvement in system strength and aims to help future-proof the Darlington Point area as renewable energy generation continues to expand in the region.

The NSW Government will also provide $6.5 million in funding for the battery, as part of its $75 million Emerging Energy Program.

Once built, Edify's battery will be one of the most advanced battery systems in the Australian national electricity market and will further extend the capabilities of large-scale batteries equipped with advanced inverter technology by demonstrating they can substitute for more traditional forms of synchronous generation.

Since 2017, ARENA has supported eight large-scale batteries, including Edify's 25 MW Gannawarra battery. We have previously funded four other battery projects that aim to demonstrate advanced inverter functionality, including AGL's Broken Hill battery, Electranet's ESCRI battery, the Hornsdale Power Reserve expansion, and Transgrid's Wallgrove battery.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

Battery storage is an essential technology in the transition to renewable energy, allowing us to smooth out variable generation and store electricity for when it is needed.

These next generation grid-scale batteries will underpin this transition, with inverter technology that can maintain grid stability without the need for coal and gas generators.

One of the drones used by Infravision to install sensors on transmission lines. Image credit: Infravision.

CASE STUDY

DRONE-ENABLED MONITORING TO GET MORE OUT OF EXISTING TRANSMISSION LINES

PROJECT NAME
Infravision Next Generation Line Monitoring System Demonstration

LEAD ORGANISATION
Infravision

ARENA FUNDING
$732,000

TOTAL PROJECT COST
$1.78 million

LOCATION
New South Wales

Australia can go a long way towards meeting the challenge of cutting emissions by switching households and businesses to renewable electricity wherever possible. It has been forecast that this switch will require our network transmission lines to carry almost twice as much electricity as today. Transmission lines are the large overhead cables that carry electricity at high voltage across large distances.

The amount of electricity a transmission line can carry – its capacity – is partly dictated by the weather, namely wind and ambient heat. Additional heat caused by electricity flowing down the line can cause the cable to stretch and sag, sometimes close to vegetation and buildings.

To maintain safe operations, network utilities constantly monitor the condition of their transmission lines.

An Australian technology startup, Infravision, received a $732,000 funding commitment from ARENA this year to demonstrate how drones can help network utilities upgrade the monitoring on their transmission lines.

Infravision's project is testing its drone-enabled Next Generation Line Monitoring System, which aims to optimise grid performance by delivering faster, safer and more cost-efficient line enhancements to existing electrical infrastructure. The innovation comes as an added feature to its TX System, a live line aerial stringing system providing a modernised alternative to traditional methods.

The line monitoring technology uses sensors installed by drones on transmission lines to provide real time microclimatic data that can be used to obtain more accurate and responsive measurement of transmission capacity, allowing higher volumes of electricity to be safely dispatched when conditions are suitable.

The project is deploying, testing and enhancing a fleet of Next Generation sensors on the New South Wales transmission network to provide Transgrid with high fidelity data on selected lines.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

With the energy transition requiring new electricity generation and transmission on a massive scale, Infravision's technological solution can help Australia get the most out of existing transmission lines by improving grid management, keeping down costs for consumers and network operators, reducing the need for new transmission infrastructure and helping to accelerate the electricity transition.

Artist's sketch of the Western Downs Large Scale Battery. Image credit: Neoen.

LARGE SCALE BATTERY STORAGE ROUND

ARENA FUNDING

Up to $176 million

As increasing amounts of renewable energy enter our electricity grids, advanced technologies are required to keep the grids stable. One such technology is the advanced inverter, which has the potential to equip large-scale batteries to not only store energy but provide stability services that will support future grids operating with 100 per cent instantaneous renewable generation.

To drive the innovation needed to commercialise this technology in Australia, ARENA will provide $176 million in funding support to eight new 'grid-forming' battery projects selected through our Large Scale Battery Storage Funding Round.

Each of the eight grid-scale lithium-ion batteries will be at least 200 MW / 400 MWh in size and equipped with advanced inverters. Once built, they will represent a tenfold increase in grid-forming battery storage capacity across the grid.

The developers and projects ARENA has selected for support are:

- AGL: new 250 MW / 500 MWh battery in Liddell NSW
- FRV: new 250 MW / 550 MWh battery in Gnarwarre VIC
- Neoen: retrofitting the 300 MW / 450 MWh Victorian Big Battery in Moorabool VIC to enable grid-forming capability
- Neoen: new 200 MW / 400 MWh battery in Hopeland QLD
- Neoen: new 200 MW / 400 MWh battery in Blyth SA
- Origin: new 300 MW / 900 MWh battery in Mortlake VIC
- Risen: new 200 MW / 400 MWh battery in Bungama SA
- TagEnergy: new 300 MW / 600 MWh battery in Mount Fox QLD

With projects stretching from Queensland's tropical north to the edge of the Southern Ocean in Victoria, the batteries will span the length of the mainland NEM – the main electricity grid that supplies most of Australia. At least one battery will be built in every mainland state connected to the NEM.

ARENA initially launched the round with a $100 million funding pool that was expanded to $176 million, partly funded by $60 million allocated by the Government in the October 2022 Budget.

The eight batteries were chosen from a shortlist of 12 projects, after ARENA received 54 expressions of interest for the competitive funding round.

ARENA has previously committed $81 million in funding for eight grid-scale batteries, including five with grid-forming capability at a smaller scale. The 150 MW / 194 MWh Hornsdale Power Reserve in South Australia, which received ARENA funding for its 2019 expansion, is currently the largest grid forming battery in Australia.

These previous projects highlighted the potential of grid-forming batteries and the need to support further projects at a larger scale to build experience with the technology, de-risk investment and drive further innovation from inverter manufacturers.

The funding round aims to do this as well as help to overcome current commercial and regulatory barriers to large-scale deployment.

PRIORITY 2

COMMERCIALISE RENEWABLE HYDROGEN

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

We particularly focused on:

- innovations that reduce the cost of hydrogen produced from renewable energy
- research and development to demonstrate technologies that address challenges along the rest of the hydrogen value chain
- projects that prove the technical feasibility and commercial viability of hydrogen use cases through innovations and activities that replace traditional fuels with hydrogen.

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 renewable 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

MASSIVE HYDROGEN ELECTROLYSER TO DECARBONISE AMMONIA PRODUCTION

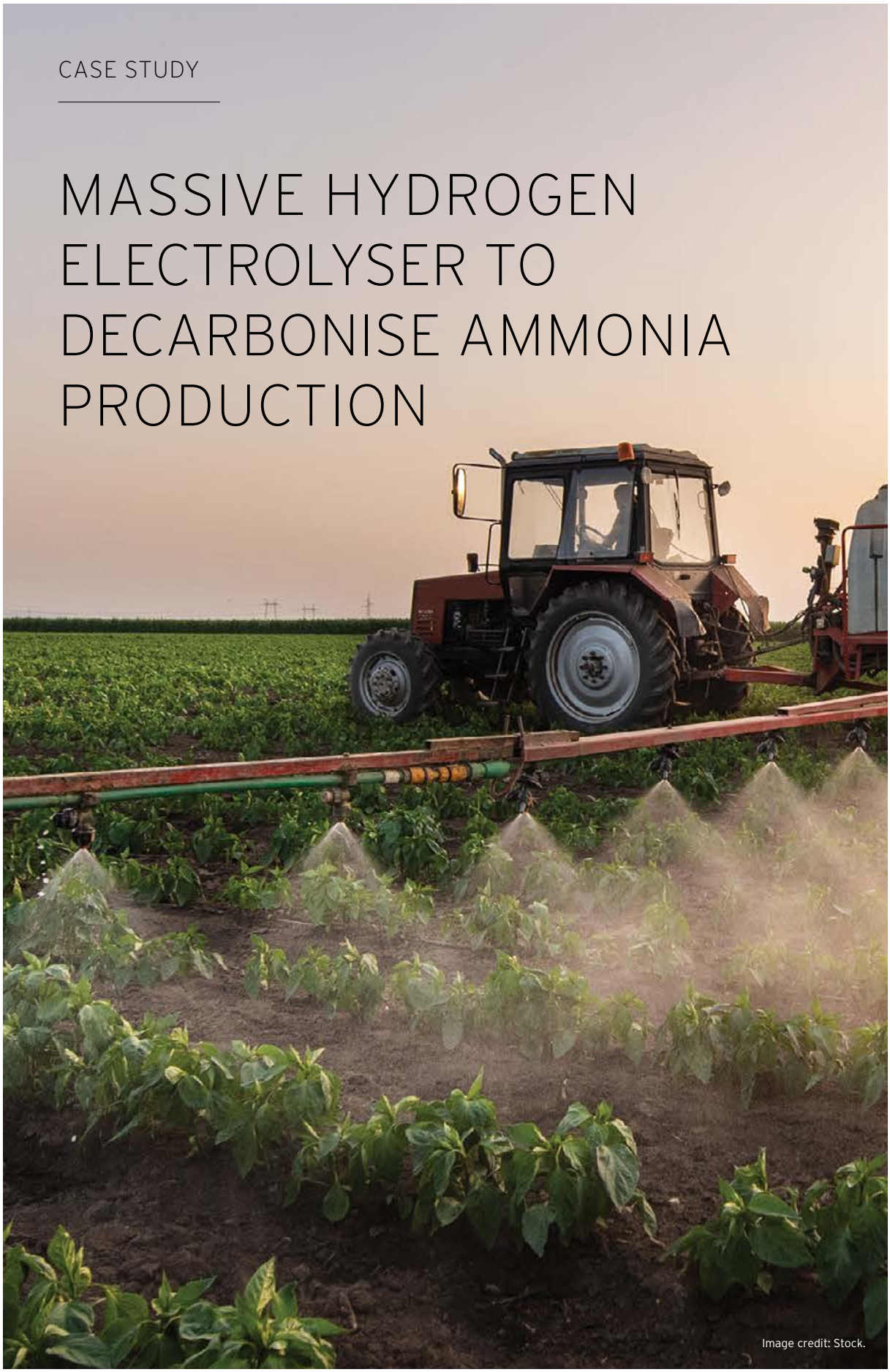


Image credit: Stock.

PROJECT NAME:

Gibson Island Renewable Ammonia Project FEED Study

LEAD ORGANISATION

Gibson Island H2 (Fortescue Future Industries Pty Ltd (FFI) as lead sponsor)

ARENA FUNDING

$13.7 million

TOTAL PROJECT COST

$38.6 million

LOCATION

Queensland

Australia's first large-scale project to decarbonise an existing ammonia plant using renewable hydrogen is set to get underway with ARENA supporting a front-end engineering and design (FEED) study.

ARENA announced $13.7 million in funding this year to Fortescue Future Industries in partnership with Incitec Pivot Limited (IPL) to support a FEED study for the development of a large-scale renewable hydrogen production facility and conversion of IPL's existing Gibson Island ammonia plant to use renewable hydrogen.

The Gibson Island Renewable Ammonia Project FEED Study aims to demonstrate a pathway to decarbonise ammonia production by converting existing ammonia facilities to use renewable hydrogen produced through the electrolysis of water.

The $38.6 million study will investigate the deployment of a 500 MW electrolyser, capable of producing up to 70,000 tonnes of renewable hydrogen per year. It will also consider the conversion requirements for IPL's existing ammonia plant to use the renewable hydrogen and offtake approximately 400,000 tonnes of renewable ammonia per year.

Global ammonia production is responsible for 500 million tonnes annually of carbon dioxide emissions, largely as a by-product of the chemical process. This is around 1.8 per cent of global carbon emissions and similar in scale to the aviation industry. Ammonia is used in agriculture and industry, with up to 80 per cent of ammonia used to make fertiliser and the rest used for industrial purposes such as manufacturing explosives and plastics.

The FEED study will generate important information for the industry, developing benchmarks for the economics of large-scale renewable hydrogen and ammonia production in Australia, and improving the understanding of the technical and commercial feasibility of large-scale electrolyser deployments.

The study will also provide insights into the feasibility of converting existing ammonia production facilities to use renewable hydrogen and help to further understand the market for renewable ammonia in Australia and internationally.

ARENA has been at the forefront of development of a homegrown hydrogen industry. Having supported development of Australia's earliest renewable hydrogen projects, we are now working with large industrial players who see the potential benefits of hydrogen and want to build even larger projects.

ARENA's goal is to reduce the cost of producing renewable hydrogen at scale so it can outcompete hydrogen made with fossil fuels.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

The FEED study represents the first step in establishing large-scale renewable hydrogen and ammonia production facilities in Australia, paving the way for future export opportunities.

If the study is successful and the project proceeds, it will create one of the largest electrolysers in the world, feeding renewable hydrogen into the first fully decarbonised renewable ammonia facility.

This would significantly accelerate the development of a renewable ammonia industry in Australia. Having the ability to continue using ageing assets and repurpose them to use renewable energy will not only help to keep costs down in the future, but also ensure skilled workers are retained as we continue our transition to net zero emissions.

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?

By directing funding to projects that best deliver on this priority, we are supporting Australian industry to find innovative and replicable technologies, processes and commercial models that have the potential to lower industry emissions.

ARENA project visit to BlueScope's Port Kembla Steelworks. Image credit: ARENA.

Image credit: Stock.

CASE STUDY

LOW EMISSIONS STEEL FROM NEW IRON REDUCTION TECHNOLOGY

PROJECT NAME
Calix Zero Emissions Steel Technology (ZESTY) pre-FEED / FEED Study

LEAD ORGANISATION
Calix

ARENA FUNDING
$947,000

TOTAL PROJECT COST
$1.96 million

LOCATION
Victoria

For Australia and the world to meet our net zero targets, we will need to develop new ways of making materials the world relies on. Steel is one of the most carbon intensive industries, accounting for more than seven per cent of global greenhouse emissions. As the world's largest producer of iron ore – the mineral used to make steel – Australia is uniquely positioned to reduce emissions from the steel production process, also known as the value chain.

To unlock this opportunity, ARENA announced $947,000 in funding this year to the Australian company Calix to evaluate the feasibility of a low emissions method for 'reducing' iron for steel production.

The $1.96 million pre-Front End Engineering and Design (FEED) and FEED study will scope the design for a proposed demonstration scale Hydrogen Direct Reduced Iron (HDRI) production plant using Calix's Zero Emissions Steel Technology (ZESTY).

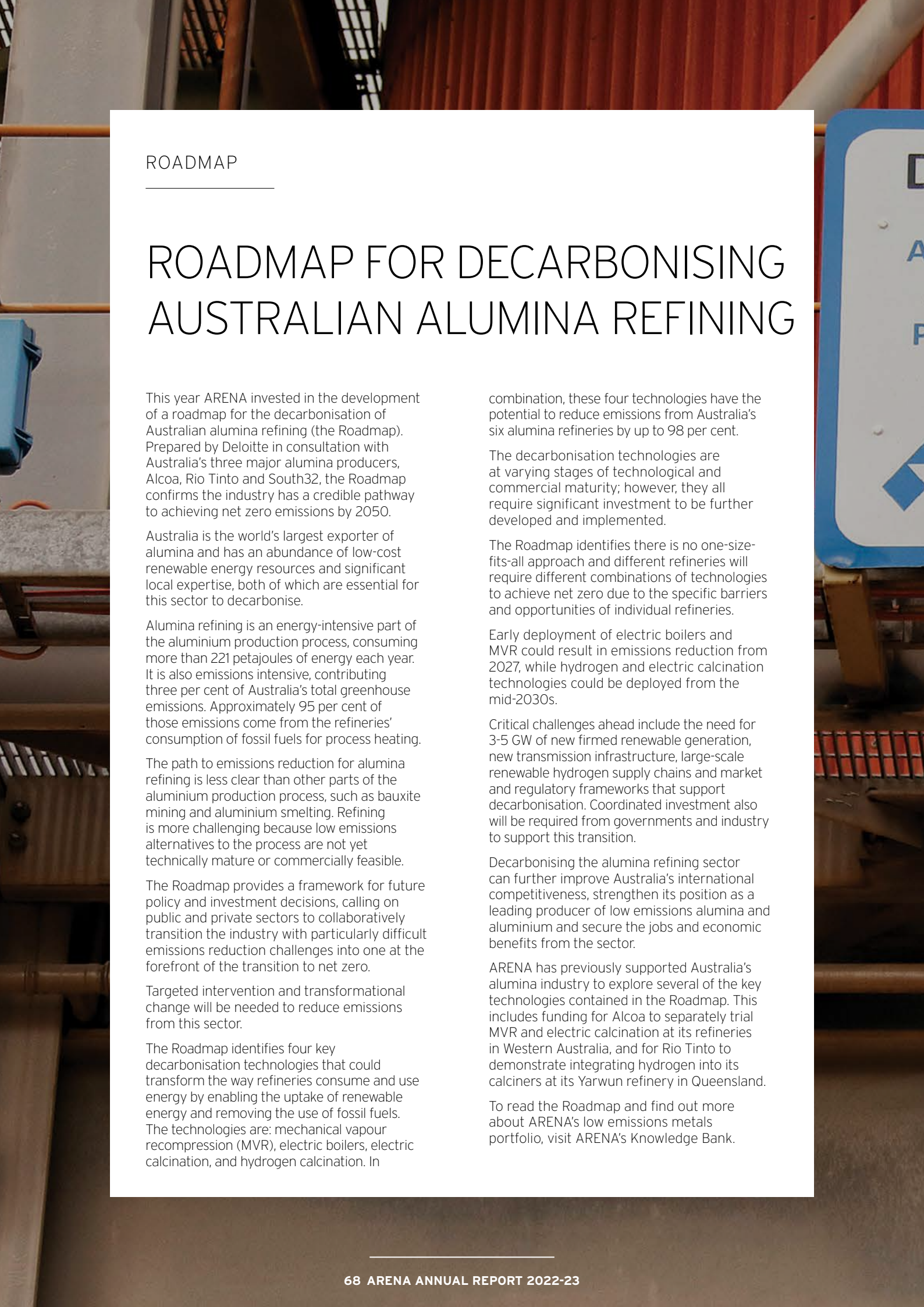
The study is due to be completed in late 2023 and will inform Calix's decision whether to proceed with a demonstration plant.

The proposed demonstration plant would be capable of producing 30,000 tonnes each year of HDRI to feed electric arc furnaces, which produce steel using only electricity. When powered by renewables, electric arc furnaces can reduce the emissions from this stage of the steel production process to virtually zero.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

ZESTY is a prime example of Australian innovation helping tackle global challenges.

This project aims to further develop a homegrown Australian technology that can help to make Australia a leading exporter of not just iron ore, but green iron and green steel.



ROADMAP FOR DECARBONISING AUSTRALIAN ALUMINA REFINING

This year ARENA invested in the development of a roadmap for the decarbonisation of Australian alumina refining (the Roadmap). Prepared by Deloitte in consultation with Australia's three major alumina producers, Alcoa, Rio Tinto and South32, the Roadmap confirms the industry has a credible pathway to achieving net zero emissions by 2050.

Australia is the world's largest exporter of alumina and has an abundance of low-cost renewable energy resources and significant local expertise, both of which are essential for this sector to decarbonise.

Alumina refining is an energy-intensive part of the aluminium production process, consuming more than 221 petajoules of energy each year. It is also emissions intensive, contributing three per cent of Australia's total greenhouse emissions. Approximately 95 per cent of those emissions come from the refineries' consumption of fossil fuels for process heating.

The path to emissions reduction for alumina refining is less clear than other parts of the aluminium production process, such as bauxite mining and aluminium smelting. Refining is more challenging because low emissions alternatives to the process are not yet technically mature or commercially feasible.

The Roadmap provides a framework for future policy and investment decisions, calling on public and private sectors to collaboratively transition the industry with particularly difficult emissions reduction challenges into one at the forefront of the transition to net zero.

Targeted intervention and transformational change will be needed to reduce emissions from this sector.

The Roadmap identifies four key decarbonisation technologies that could transform the way refineries consume and use energy by enabling the uptake of renewable energy and removing the use of fossil fuels. The technologies are: mechanical vapour recompression (MVR), electric boilers, electric calcination, and hydrogen calcination. In combination, these four technologies have the potential to reduce emissions from Australia's six alumina refineries by up to 98 per cent.

The decarbonisation technologies are at varying stages of technological and commercial maturity; however, they all require significant investment to be further developed and implemented.

The Roadmap identifies there is no one-size-fits-all approach and different refineries will require different combinations of technologies to achieve net zero due to the specific barriers and opportunities of individual refineries.

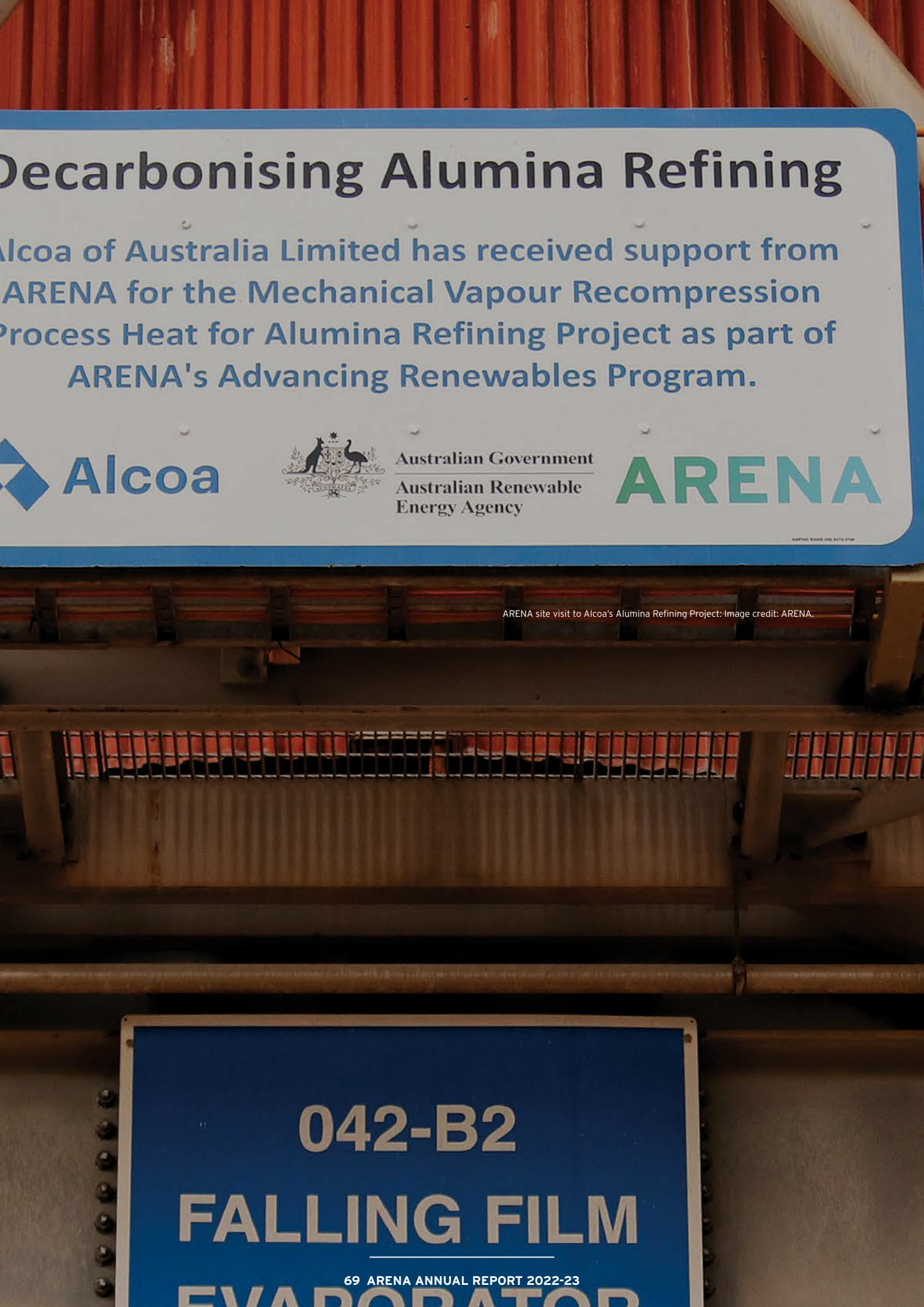
Early deployment of electric boilers and MVR could result in emissions reduction from 2027, while hydrogen and electric calcination technologies could be deployed from the mid-2030s.

Critical challenges ahead include the need for 3-5 GW of new firmed renewable generation, new transmission infrastructure, large-scale renewable hydrogen supply chains and market and regulatory frameworks that support decarbonisation. Coordinated investment also will be required from governments and industry to support this transition.

Decarbonising the alumina refining sector can further improve Australia's international competitiveness, strengthen its position as a leading producer of low emissions alumina and aluminium and secure the jobs and economic benefits from the sector.

ARENA has previously supported Australia's alumina industry to explore several of the key technologies contained in the Roadmap. This includes funding for Alcoa to separately trial MVR and electric calcination at its refineries in Western Australia, and for Rio Tinto to demonstrate integrating hydrogen into its calciners at its Yarwun refinery in Queensland.

To read the Roadmap and find out more about ARENA's low emissions metals portfolio, visit ARENA's Knowledge Bank.



ARENA site visit to Alcoa's Alumina Refining Project: Image credit: ARENA.

PRIORITY 4

DECARBONISE LAND TRANSPORT

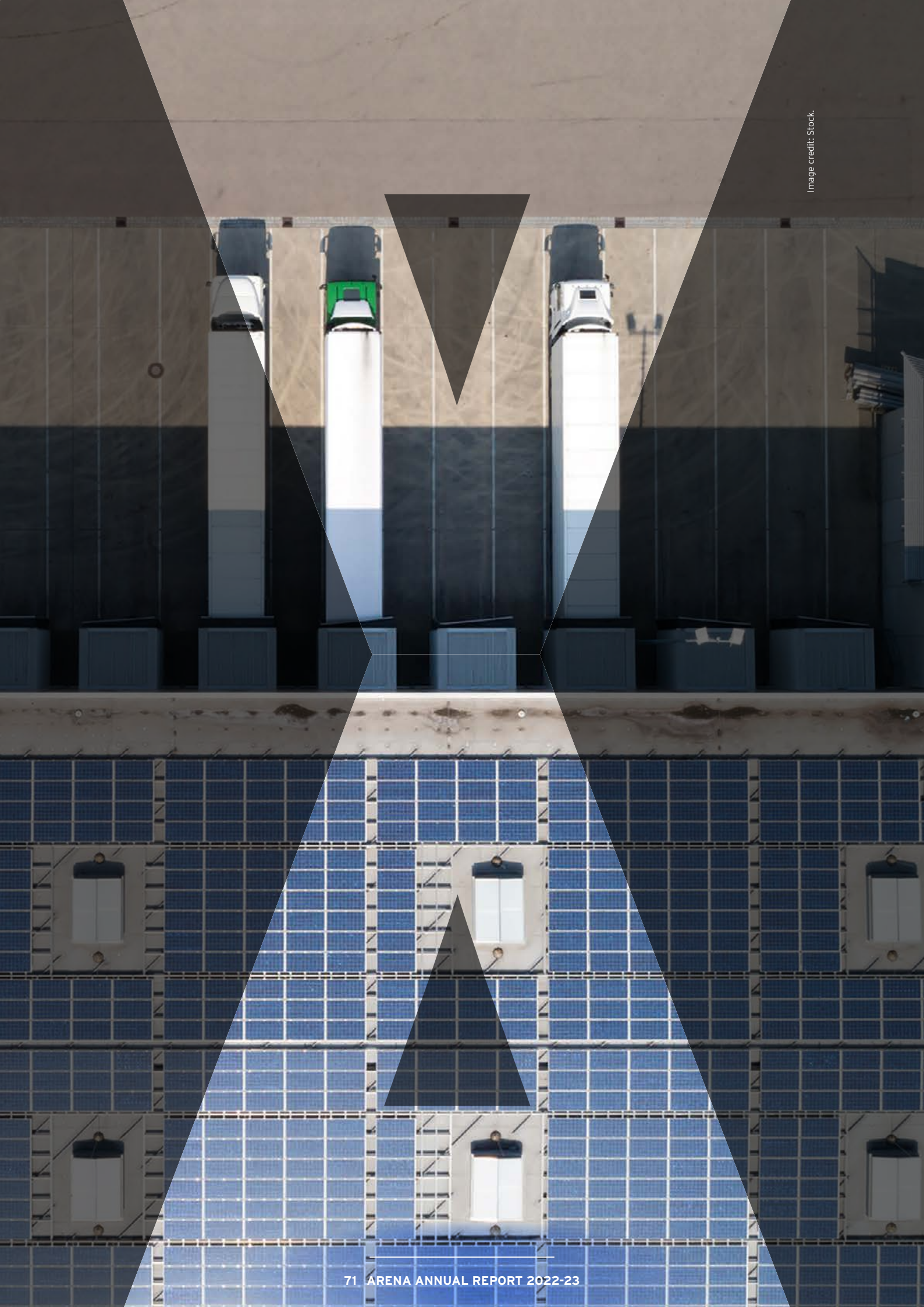
This year ARENA committed funding support to projects designed to accelerate the decarbonisation of land transport.

We particularly focused on projects that will help to:

- drive the use of zero-emissions vehicles in commercial fleets

WHY IS THIS A PRIORITY FOR ARENA?

By directing funding to projects that best deliver on this priority, ARENA is supporting Australian industry to identify and implement practical decarbonisation pathways for land transport, enabling significant emissions reduction.



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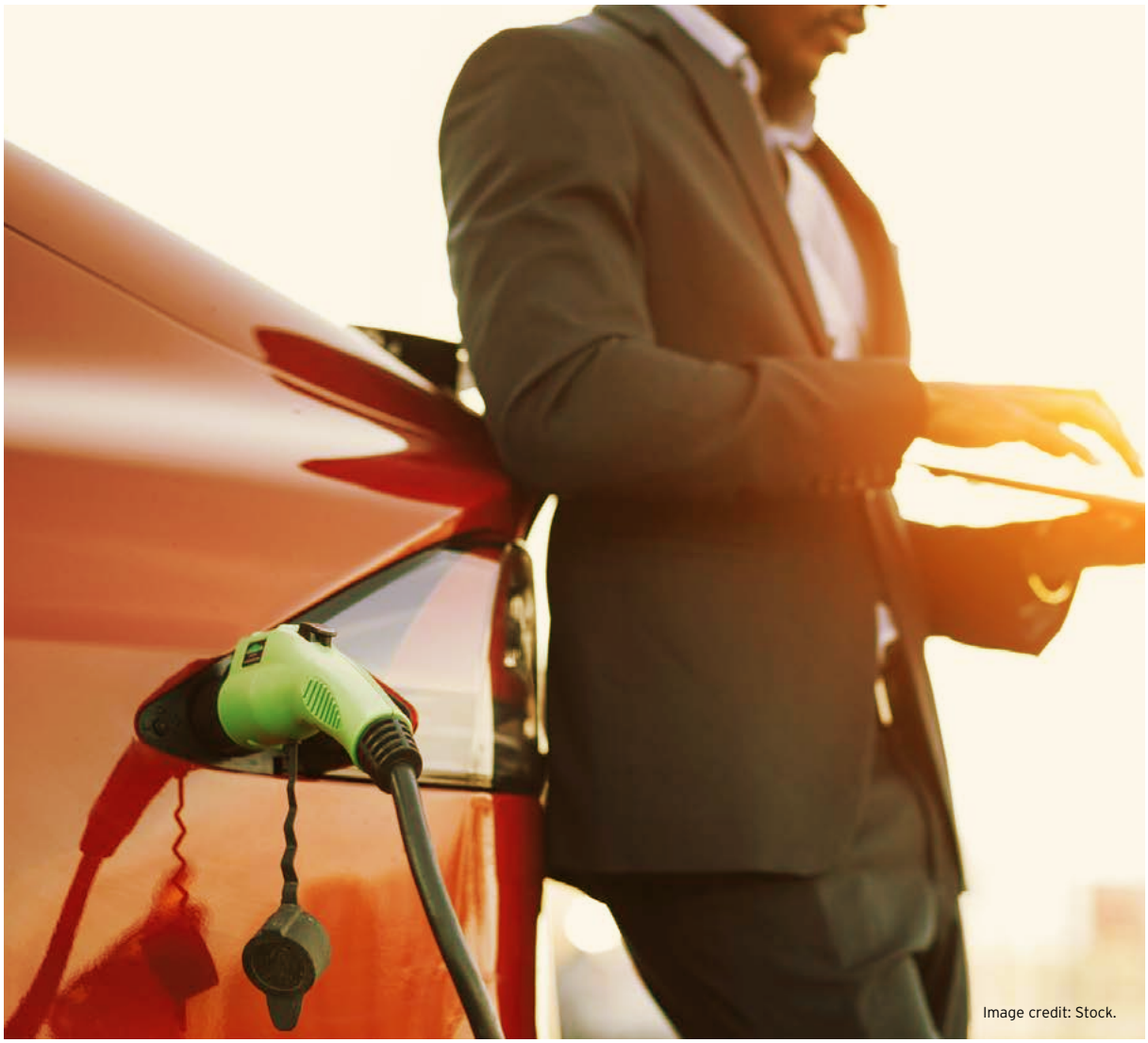


Image credit: Stock.

"This funding from ARENA will allow us to support more business customers with their transition to EVs, helping them to reduce their carbon footprint and operating costs."

Chau Le, Origin General Manager E-Mobility

CASE STUDY

SUPERCHARGE THE UPTAKE OF EVS BY BUSINESS

PROJECT NAME
Origin Accelerate EV Fleet Program

LEAD ORGANISATION
Origin Energy

ARENA FUNDING
$6.2 million

TOTAL PROJECT COST
$12.8 million

LOCATION
Australian Capital Territory and New South Wales

Decarbonisation of land transport is a key priority for ARENA. Through the Government's Driving the Nation Program we are helping industry and consumers take the steps necessary to see Australia's transport emissions reduce in line with international commitments.

With light vehicles accounting for around 11 per cent of Australia's total emissions and fleet users accounting for nearly half of all passenger vehicles sold in Australia, decarbonising business fleets is an opportunity to efficiently switch large numbers of vehicles to low emissions alternatives.

To help boost this transition, ARENA announced almost $6.2 million in funding to Origin Energy this year for its Accelerate EV Fleet Program.

The $12.8 million program will see Origin deliver 1000 electric vehicles (EVs) and charging infrastructure to business customers nationally. Origin's program aims to help establish supply chains and business ecosystems that can be scaled up as the capital cost of EVs falls and more businesses look to transition their fleets.

On top of higher upfront vehicle costs, charging infrastructure presents an additional financial barrier to car owners wishing to switch to an EV. ARENA's funding for this project is also supporting the installation of smart chargers, helping to reduce a significant component of the additional costs of running an EV fleet.

Origin's program is ARENA's largest to date targeting light vehicle fleets. Not only will it put 1000 new EVs on the road, it will also create a blueprint for how EV fleet leasing models can operate. The 1000 fleet vehicles will also feed the second-hand market for EVs in the years ahead.

Since 2015, ARENA has announced more than $146 million in funding to projects that decarbonise the transport sector, including fast charging stations, hydrogen refuelling and household smart charging. We have also supported heavy vehicle fleet operators including Team Global Express' Depot of the Future project, Australia's largest order of electric trucks to date. In April ARENA announced a $70 million Driving the Nation funding pool aimed at stimulating innovation around public charging.

Origin is partnering with fleet management organisation, Custom Fleet, to deliver the Accelerate EV Fleet Program, which will run until 2025.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

As EVs become more affordable, more and more businesses will be looking to electrify their fleets. The EV Accelerate Program aims to demonstrate the business case and identify the lessons that will allow that transition to gather pace.

One of the battery electric delivery vehicles being used in the Depot of the Future project. Image credit: ARENA.

CASE STUDY

DEPOT OF THE FUTURE DELIVERS AUSTRALIA'S LARGEST EV LOGISTICS FLEET

PROJECT NAME
Depot of the Future Vehicle Electrification Project

LEAD ORGANISATION
IPEC (trading as Team Global Express)

ARENA FUNDING
$20.1 million

TOTAL PROJECT COST
$44.3 million

LOCATION
New South Wales

With ARENA's support, one of Australia's largest logistics providers is embarking on Australia's largest vehicle electrification project at its western Sydney depot.

We announced $20.1 million in funding this year to Team Global Express for its Depot of the Future project to integrate battery electric vehicles (BEVs) within its transport and logistics operations.

The company's operations span Australia and New Zealand, with more than 13,000 delivery vehicles in their fleet. The $44.3 million Depot of the Future project includes the purchase and operation of 24 Daimler Fuso eCanters (Light Rigid Vehicles), 36 Volvo eFLs (Medium Rigid Vehicles) and associated charging and site infrastructure.

The project is playing a critical role in the company's decarbonisation strategy, transitioning one-third of its western Sydney fleet to BEVs and operating under a back-to-base model with the trucks travelling from distribution centres to customers in urban areas, then returning to the depot for charging.

Insights expected to be generated by the project creating Australia's largest logistics EV fleet include the impact on fleet management, delivery routing and infrastructure requirements when a large fleet electrifies a material proportion of its operations.

ARENA has committed more than $100 million to projects involving the transport sector since 2016, including fast charging networks, home smart charging trials and hydrogen refuelling infrastructure. The projects are progressively building an understanding of key issues and helping to address key barriers.

ARENA will continue to support further development in zero emissions vehicles and technologies, including further investment in charging stations across the country, as well as EV charging at home and applications for hydrogen fuel cell vehicles, heavy fleets and vehicles used in mining.

HOW DOES ARENA MAKE A DIFFERENCE BY SUPPORTING THIS PROJECT?

The project is an important next step to reduce emissions from heavy vehicles. It will provide valuable insights into the costs and operational aspects of transitioning a fleet to zero emissions vehicles, which will be shared with the rest of the heavy vehicle industry as other consider their transition pathway.

Operating a fleet of battery electric vehicles will help to address some of the key barriers to adoption, including overcoming the higher upfront purchase price, and uncertainty of integrating electric vehicles into existing operations at scale.

Understanding these barriers will help to build market confidence around EV technology and show that the transition to heavy electric vehicles is possible.

04

GOVERNANCE

This section explains ARENA's governance arrangements.

Image credit: Stock.

KEY GOVERNANCE EVENTS IN 2022-23

In July 2022, the Australian Renewable Energy Agency Regulation 2016 was amended to expand our mandate, allowing ARENA to support energy efficiency and electrification technologies that can reduce emissions.

This amendment occurred through the Australian Renewable Energy Agency Amendment (Powering Australia) Regulations 2022.

The object of the ARENA Act was expanded in September 2022 by the *Climate Change (Consequential Amendments) Act 2022* to include 'facilitate the achievement of Australia's greenhouse gas emissions reduction targets'.

RISK OVERSIGHT AND MANAGEMENT

We have embedded risk management into our culture to support well-informed investment 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.

We embrace innovation through new solutions and ideas that will transform Australia's energy markets. We acknowledge that some of the projects we fund may not fully achieve their original objectives, which is one reason why knowledge sharing is an important part of ARENA's activities. Technology and commercialisation failures will occur, and we accept this as a risk. With robust project management processes and due diligence conducted on every project, we mitigate the project risks to ARENA.

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 risk management 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 Purpose. 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.

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 system 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: Stock.

ARENA site visit to Alcoa's Alumina Refining Project: Image credit: ARENA.

CONFLICT OF INTEREST

CONFLICT OF INTEREST POLICY

In 2022-23, the Board continued to manage conflicts in accordance with ARENA's 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)
- how individuals are to discharge their duties under the Policy, how conflict of interest declarations are made and how material conflicts are to be managed.

DECLARATION OF CONFLICT OF INTEREST

In accordance with the requirements of ARENA's Conflict of Interest Policy, all Board and Board 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 with members 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. For Board meetings, at least two days prior to the meeting, 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 outside of a meeting 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 disclosed during a meeting are dealt with by the Board members (who are not conflicted).

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.

If a conflict arises during the meeting, the matter will be referred to the other members of the ARENA Board present at the meeting, also not conflicted, to manage in accordance with Conflict of Interest Policy. Where assessed by the relevant delegate as appropriate, probity advice is procured as part of managing material conflicts of interest.

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 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 2022-23, 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 $243,699 (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 17-19 of Appendix 3.

Image credit: Stock.

05

LEGISLATIVE, GOVERNMENT AND OTHER INFORMATION

This section contains additional information that ARENA is required to report.

ENABLING LEGISLATION

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

The main object of the ARENA Act is to improve the competitiveness of renewable energy technologies, increase the supply of renewable energy in Australia and facilitate the achievement of Australia's greenhouse gas emissions reduction targets.

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.

Under the Australian Renewable Energy Agency Amendment (Powering Australia) Regulations 2022, ARENA's mandate was expanded to allow us to support energy efficiency and electrification technologies that can reduce emissions.

PORTFOLIO MINISTER ENGAGEMENT

ARENA's Portfolio Minister for the reporting period was the Hon Chris Bowen MP, Minister for Climate Change and Energy.

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 if, under the program, the total of all grants for a particular project could exceed $15 million. The Minister must approve grants of more than $50 million to individual projects.

During the reporting period, the Portfolio Minister approved the ARENA General Funding Strategy 2022-23 to 2024-25.

MINISTERIAL REQUESTS AND DIRECTIONS

In 2022-23 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 2022-23.

STATEMENT OF EXPECTATIONS

In September 2022, the Minister provided ARENA with a Statement of Expectations outlining the key role ARENA is playing, through our strategic priorities, in supporting the achievement of Australia's emissions reductions targets.

ARENA responded to the Minister in November 2022 with a Statement of Intent, which emphasised the strong alignment between the Government's ambitions and ARENA's mission. Both documents are available on the ARENA website.

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 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.

The Hon Chris Bowen MP, Minister for Climate Change and Energy releasing the Australian Industry ETI Pathways to Industrial Carbonisation Phase 3 Report. Image credit: Cassandra Hannagan.

ENGAGEMENT WITH OUR STAKEHOLDERS

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.

Three requests for information related to ARENA under the FOI Act were received in 2022-23.

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

https://www.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 2022–23.

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 the 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 https://modernslaveryregister.gov.au/statements/11819/).

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. In addition, the Board has approved the Modern Slavery Policy which sets out our approach to managing risk of modern slavery in our operations.

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 5 provides this information.

TABLE 5: 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	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. ARENA's policies, plans and programs all accord with and contribute to the ESD principles by: › 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	ARENA provides financial assistance to the research, development, demonstration and deployment of renewable energy technologies, electrification technologies and energy efficiency technologies. Some of the projects funded by ARENA, particularly those relating to demonstration and deployment, may have impacts on the natural environment. ARENA takes a risk-based approach to identifying and managing potential environmental impacts from the projects that it funds. As part of its funding arrangements, ARENA requires projects to undertake risk management plans so that funding recipients can demonstrate how they will manage any risks arising from their projects, including environmental impacts. ARENA elects to use green electricity options to power its three offices in Sydney, Canberra and Melbourne. All office have end of trip facilities and are located near public transport services that provide low emissions options for workers' daily commute. ARENA participates in the Government Energy Action response protocol, minimising power usage throughout the three offices.

AUSTRALIAN PUBLIC SERVICE NET ZERO 2030

APS Net Zero 2030 is the Government's policy for the Australian Public Service (APS) to reduce its greenhouse gas emissions to net zero by 2030, and transparently report on its emissions. As part of this, non-corporate and corporate Commonwealth entities are required to report on their operational greenhouse has emissions.

The Greenhouse Gas Inventory presents greenhouse gas emissions over the 2022-23 financial year. Results are presented on the basis of Carbon Dioxide Equivalent (CO2-e) emissions. Greenhouse gas emissions reporting has been developed with a methodology that is consistent with the Whole-of-Australian Government approach as part of the APS Net Zero 2030 policy.

The three categories of emission source activities are as follows:

- Scope 1 is direct emissions from entity facilities and company owned and/or operated vehicles
- Scope 2 is indirect emissions from purchased electricity, steam, heating and cooling for own use, and
- Scope 3 is all other indirect emissions, including from leased assets up and down stream.

TABLE 6: ARENA GREENHOUSE GAS EMISSIONS INVENTORY

EMISSION SOURCE	SCOPE 1 KG $CO_{2\text{-}e}$	SCOPE 2 KG $CO_{2\text{-}e}$	SCOPE 3 KG $CO_{2\text{-}e}$	TOTAL KG $CO_{2\text{-}e}$
Electricity	N/A	-	-	-
Natural Gas	-	N/A	-	-
Fleet vehicles	-	N/A	-	-
Domestic flights	N/A	N/A	86,685	86,685
Other energy	-	N/A	-	-
TOTAL KG $CO_{2\text{-}e}$	-	-	86,685	86,685

$CO_{2\text{-}e}$ = Carbon Dioxide Equivalent

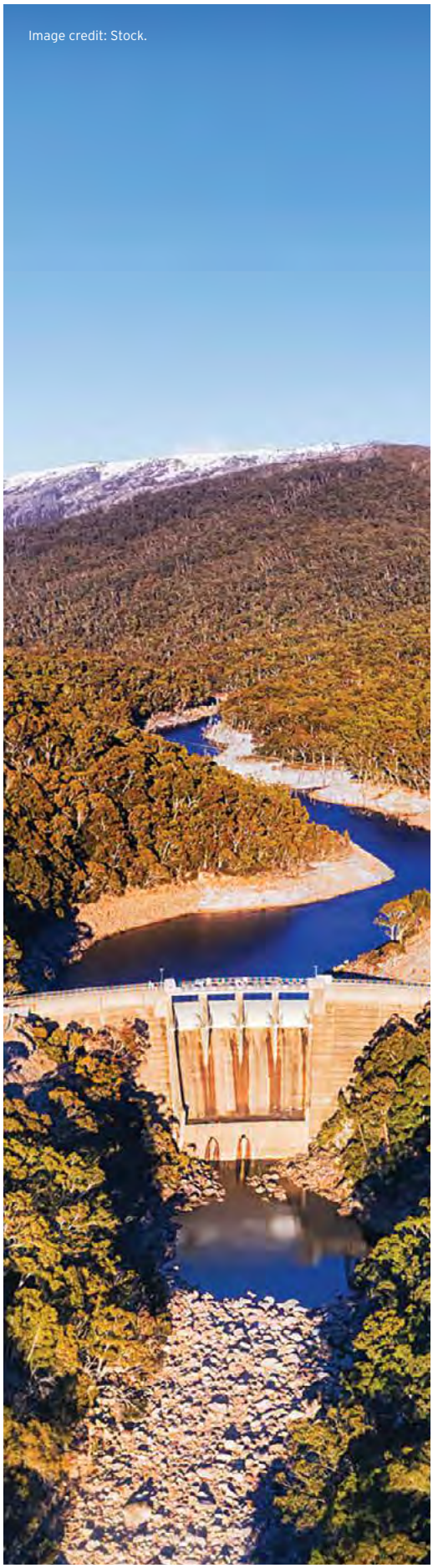


Image credit: Stock.

JUDICIAL DECISIONS AND REVIEWS BY OUTSIDE BODIES

During 2022–23 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 (7 and 28 September 2022) and the General Funding Strategy (28 September and 26 October 2022).

FINANCIAL AUDIT

ARENA received an unqualified audit report on its financial statements for 2022–23. 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 engaged by 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 2022–23 ARENA incurred $1,885,504 (excluding GST) in external legal services expenditure. ARENA will report 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. The agreement is currently under review.

SUBSIDIARIES

ARENA did not have any subsidiaries during 2022- 23.

OUR WORKFORCE

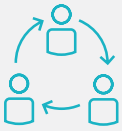
ARENA is a dynamic, adaptable and outcomes-oriented agency, with a highly qualified and experienced workforce. Our aim is to be agile, with the ability to respond quickly to any changes in our operating environment.

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 workshops on workplace respect.

FIGURE 5: ARENA VALUES

1. 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.



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

3. STAKEHOLDER-FOCUSED
We deliver excellent service. Our approach is marked by responsiveness, clarity and flexibility.

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. 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.

EMPLOYEES AND OTHER STAFF

ARENA has two employees, as stipulated by the ARENA Act. These are the Chief Executive Officer (CEO) and the 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 2023, ARENA had two employees (CEO and CFO) and 35 departmental staff (34.1 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 six Board members (not including the Secretary of the Portfolio Department), three were female
- of the seven members of the Senior Leadership Team, three were female
- of the sixteen personnel in ARENA's Executive Management Team, there was an even split of females and males.

ENGAGEMENT

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

The 2022 People Survey demonstrated that worker engagement is positive, especially regarding workplace flexibility, work-life balance and commitment to delivering on agency priorities.

PLANNING

ARENA's workforce planning is focussed on our current and near-term workforce and the capabilities required to deliver ARENA's key outcomes within our allocated budget.

The People and Culture team has been working on our longer-term workforce planning capability and supporting critical role retention in ARENA with the implementation of ARENA's Capability Framework, building a more mature approach to recruitment by partnering with managers to identify workforce needs, developing a remuneration philosophy and maturing our remuneration strategy.

ARENA Senior Leadership Team. From left: Stephanie Purcell, Ian Kay, Anna Whitelaw (to July 2023), Chris Faris, Darren Miller, Rachele Williams (to June 2023), Dhruv Vishrani. Not present: Alicia Barnes (from June 2023).

WORK HEALTH AND SAFETY

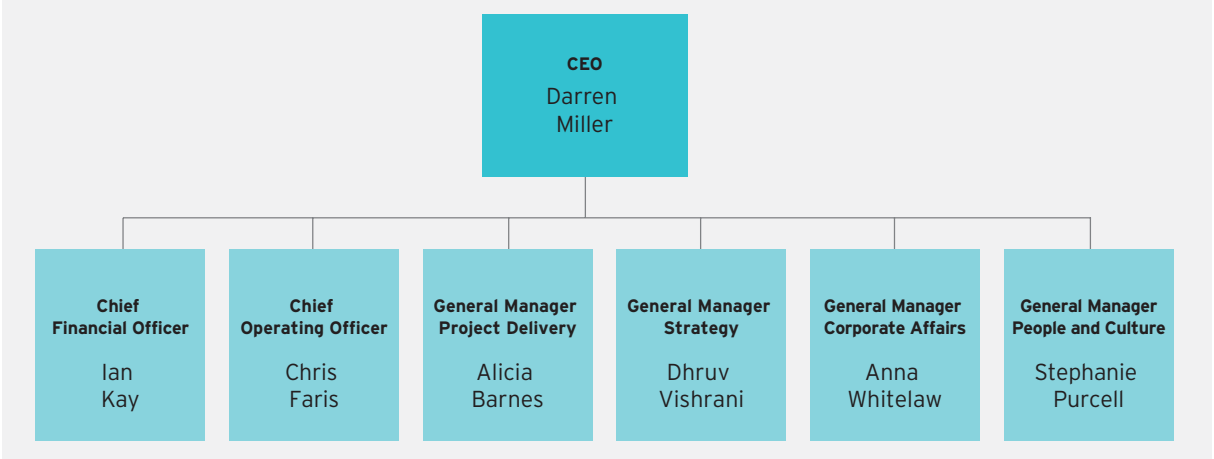
In accordance with the *Work Health and Safety Act 2011* (WHS Act), ARENA aims to ensure - so far as reasonably practicable - the health and safety of the workforce (who are engaged by us or whose work is influenced or directed by us).

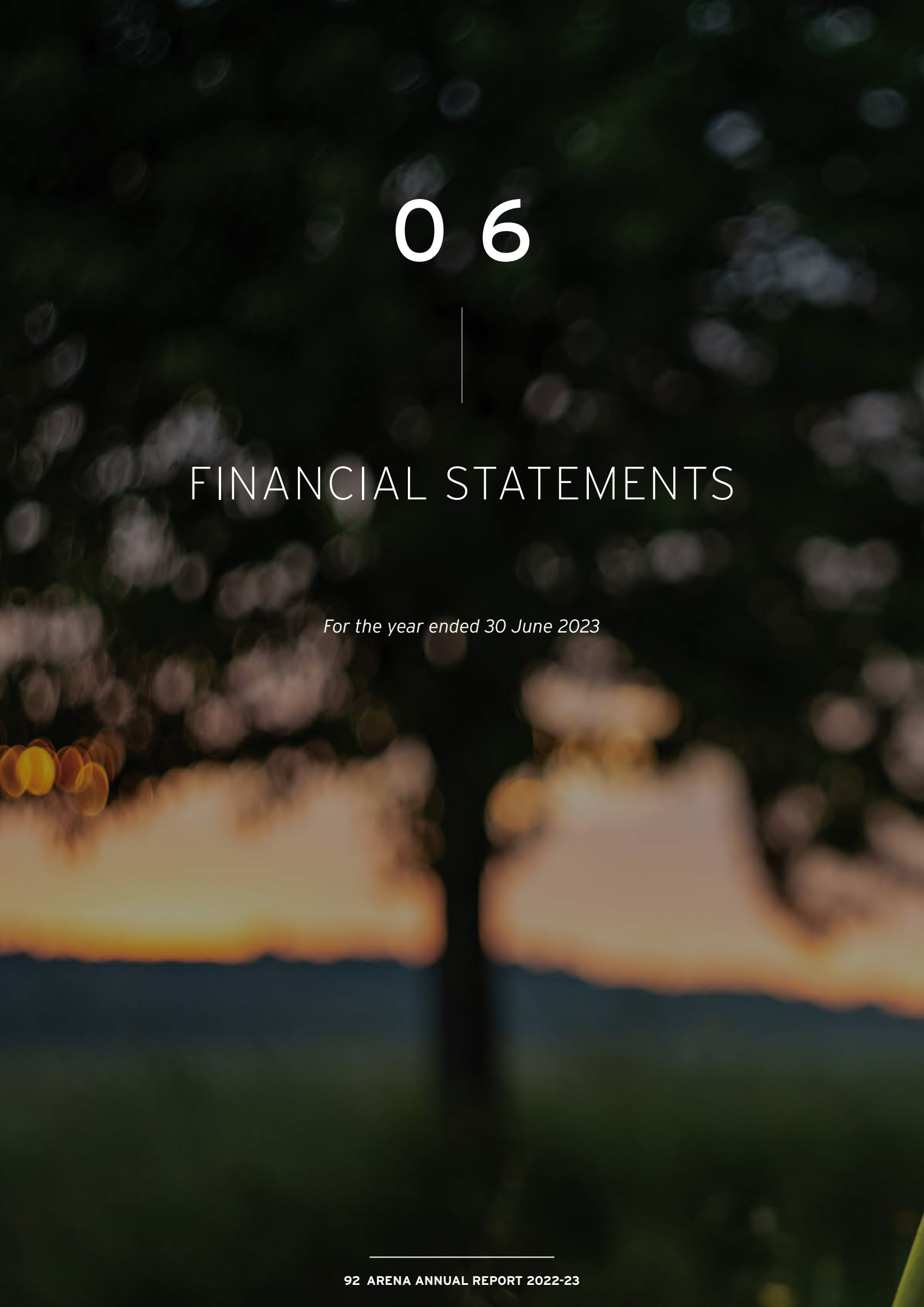
The Board monitors health and safety in ARENA workplaces. ARENA considers health and safety throughout the lifecycle of the funding process and our officials promote a positive safety culture at ARENA.

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.

In respect of ARENA workers, no WHS investigations were conducted and no notifiable WHS incidents were reported during 2022–23. Reporting in respect of Departmental staff made available to ARENA is covered in the Portfolio Department's annual reports for 2022–23.

FIGURE 6: ARENA ORGANISATIONAL STRUCTURE AT 1 JULY 2023





06

FINANCIAL STATEMENTS

For the year ended 30 June 2023

Image credit: Stock.

Australian National Audit Office

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 2023:

(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 2023 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 2023 and for the year then ended:

- Statement by the Board, Chief Executive Officer 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

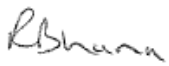
My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that 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



Rita Bhana

Audit Principal

Delegate of the Auditor-General

Canberra

26 September 2023

CONTENTS

CERTIFICATION

Australian Government
Australian Renewable Energy Agency

ARENA

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

In our opinion, the attached financial statements for the year ended 30 June 2023 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 amounts fall due.

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

JUSTIN PUNCH
CHAIR OF THE BOARD

26 September 2023

DARREN MILLER
CHIEF EXECUTIVE OFFICER

26 SEPTEMBER 2023

IAN KAY
CHIEF FINANCIAL OFFICER

26 SEPTEMBER 2023

FINANCIAL STATEMENTS

STATEMENT OF COMPREHENSIVE INCOME

FOR THE PERIOD ENDED 30 JUNE 2023

	NOTES	**2023 $'000**	2022 $'000	ORIGINAL[1] BUDGET $'000
NET COST OF SERVICES				
Expenses				
Employee benefits	1.1A	**1,333**	1,301	1,343
Suppliers	1.1B	**30,555**	24,937	29,845
Grants	1.1C	**186,978**	100,170	285,633
Depreciation and amortisation	2.2	**1,475**	1,658	1,167
Finance Costs		**522**	-	12
Total expenses		**220,863**	128,066	318,000
Own-source revenue				
Interest	1.2A	**16,517**	1,617	900
Other revenue	1.2B	**7,973**	7,777	6,060
Total own-source revenue		**24,490**	9,394	6,960
Net cost of services		**(196,373)**	(118,672)	(311,040)
Revenue from Government	1.2C	**312,630**	422,009	312,630
Surplus on continuing operations		**116,257**	303,337	1,590
OTHER COMPREHENSIVE INCOME				
Items not subject to subsequent reclassification to net cost of services				
(Increase) / decrease in asset revaluation reserve	2.2	**-**	(1,926)	-
Items subject to subsequent reclassification to net cost of services				
Increase in unwinding of make-good	2.4	**-**	(343)	-
(Increase) / decrease in the value of investment	2.1C	**(1,220)**	(45,427)	500
Total other comprehensive income		**(1,220)**	(47,696)	500
Total comprehensive income		**117,477**	351,033	2,090

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 original budget as published in the 2022-23 Portfolio Budget Statements, October 2022.

STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2023

	NOTES	**2023 $'000**	2022 $'000	ORIGINAL[1] BUDGET $'000
ASSETS				
Financial assets				
Cash and cash equivalents	2.1A	**549,819**	457,452	463,216
Trade and other receivables	2.1B	**13,207**	2,133	133
Investments	2.1C	**82,646**	80,939	81,439
Total financial assets		**645,672**	540,524	544,788
Non-financial assets				
Buildings - right of use assets	2.2	**4,633**	-	4,528
Leasehold improvements	2.2	**1,716**	2,066	1,900
Plant and equipment	2.2	**414**	156	655
Prepayments		**493**	608	508
Total non-financial assets		**7,256**	2,830	7,591
Total assets		**652,928**	543,354	552,379
LIABILITIES				
Payables				
Suppliers - trade creditors and accruals	2.3A	**1,145**	1,930	1,904
Grants	2.3B	**4,792**	16,826	19,284
Other payables	2.3C	**30**	20	22
Total payables		**5,967**	18,776	21,210
Interest-bearing liabilities				
Leases	2.4	**4,900**	-	4,478
Total interest-bearing liabilities		**4,900**	-	4,478
Provisions				
Employee provisions	3.1	**376**	370	392
Total provisions		**376**	370	392
Total liabilities		**11,243**	19,146	26,080
Net assets		**641,685**	524,208	526,299
EQUITY				
Asset revaluation reserve		**2,173**	**2,173**	2,173
Retained earnings		**639,512**	**522,035**	524,126
Total equity		**641,685**	**524,208**	526,299

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 original budget as published in the 2022-23 Portfolio Budget Statements, October 2022.

STATEMENT OF CHANGES IN EQUITY
FOR THE PERIOD ENDED 30 JUNE 2023

	RETAINED EARNINGS			ASSET REVALUATION SURPLUS			TOTAL EQUITY		
	2023 $'000	2022 $'000	ORIGINAL BUDGET[1] $'000	**2023 $'000**	2022 $'000	ORIGINAL BUDGET[1] $'000	**2023 $'000**	2022 $'000	ORIGINAL BUDGET[1] $'000
OPENING BALANCE									
Balance carried forward from previous period	**522,035**	172,928	522,036	**2,173**	247	2,173	**524,208**	173,175	524,209
COMPREHENSIVE INCOME									
Surplus for the period	**116,257**	303,337	1,590	**-**	-	-	**116,257**	303,337	1,590
Other comprehensive income & revaluation	**1,220**	45,770	500	**-**	1,926	-	**1,220**	47,696	500
Total comprehensive income	**117,477**	349,107	2,090	**-**	1,926	-	**117,477**	351,033	2,090
Closing balance as at 30 June	**639,512**	522,035	524,126	**2,173**	2,173	2,173	**641,685**	524,208	526,299

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 original budget as published in the 2022-23 Portfolio Budget Statements, October 2022.

CASH FLOW STATEMENT
FOR THE PERIOD ENDED 30 JUNE 2023

	NOTES	**2023 $'000**	2022 $'000	ORIGINAL BUDGET[1] $'000
OPERATING ACTIVITIES				
Cash received				
Receipts from Government		**312,630**	422,009	312,630
Interest		**10,451**	747	925
Net GST received		**18,340**	14,667	27,496
Return of grant funds from prior years		**1,011**	2,765	-
Other		**235**	188	500
Total cash received		**342,667**	440,376	341,551
Cash used				
Employees		**(1,317)**	(1,277)	(1,325)
Suppliers		**(27,853)**	(22,100)	(26,761)
Grants		**(218,934)**	(93,034)	(311,666)
Interest paid		**(574)**	-	(12)
Total cash used		**(248,678)**	(116,411)	(339,764)
Net cash from operating activities		**93,989**	323,965	1,787
INVESTING ACTIVITIES				
Cash received				
Proceeds from sales of investments	2.1C	**545**	942	-
Total cash received		**545**	942	-
Cash used				
Purchase of property, plant and equipment		**(554)**	(549)	(500)
Investments	2.1C	**(1,032)**	(4,843)	(500)
Total cash used		**(1,586)**	(5,392)	(1,000)
Net cash used by investing activities		**(1,041)**	(4,450)	(1,000)
FINANCING ACTIVITIES				
Cash used				
Principal payments of lease liabilities		**(581)**	(1,096)	(1,050)
Total cash used		**(581)**	(1,096)	(1,050)
Net cash used by financing activities		**(581)**	(1,096)	(1,050)
Net increase in cash held		**92,367**	318,419	(263)
Cash and cash equivalents at the beginning of the reporting period		**457,452**	139,033	463,479
Cash and cash equivalents at the end of the reporting period	2.1A	**549,819**	457,452	463,216

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 original budget as published in the 2022-23 Portfolio Budget Statements, October 2022.

NOTES TO THE FINANCIAL 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. ARENA's purpose is to support improvements in the competitiveness of renewable energy and enabling technologies, increase the supply of renewable energy in Australia, and to facilitate the achievement of Australia's greenhouse gas emissions targets by providing financial assistance and sharing knowledge to accelerate innovation that benefits all Australians.

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

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 2013.

The financial statements have been prepared in accordance with:

1. *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015* (FRR), and
2. Australian Accounting Standards and Interpretations - including simplified disclosures for Tier 2 Entities under AASB 1060 issued by the Australian Accounting Standards 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.

CASH BALANCE

Cash and cash equivalents held at 30 June 2023 totalled $549.8 million. This cash is available to meet contracted commitments of $433.5 million and Board approved projects and funding rounds totalling $375.6 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 financial statements 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 2021-2 Amendments to Australian Accounting Standards – Disclosure of Accounting Policies and Definition of Accounting Estimates AASB 2021-6 Amendments to Australian Accounting Standards – Disclosure of Accounting Policies: Tier 2 and other Australian Accounting Standards	AASB 2021-2 amends AASB 7, AASB 101, AASB 108, AASB 134 and AASB Practice Statement 2. The amending standard requires the disclosure of material, rather than significant accounting policies, and clarifies what is considered a change in accounting policy compared to a change in accounting estimate. AASB 2021-6 amends the Tier 2 reporting requirements set out in AASB 1049, AASB 1054 and AASB 1060 to reflect the changes made by AASB 2021-2. The details of the changes in accounting policies and adjustments are disclosed below and in the relevant notes to the financial statements. This amending standard is not expected to have a material impact on the entity's financial statements for the current reporting period or future reporting periods.

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 ARENA's ongoing structure or financial activities.

FINANCIAL PERFORMANCE

This section analyses the financial performance of ARENA for the period ended 30 June 2023.

1.1 EXPENSES

	2023 $'000	2022 $'000
1.1A Employee Benefits		
Board remuneration fees	**349**	310
Salaries and wages	**886**	848
Superannuation - defined contribution plans	**92**	83
Leave and other entitlements	**6**	60
Total employee benefits	**1,333**	1,301

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	**96**	89
Consultants	**19,110**	15,811
Department support costs (resources received free of charge)[1]	**5,918**	5,123
IT services	**1,842**	1,445
Legal fees	**1,601**	1,144
Travel	**505**	139
Other	**1,460**	1,183
Total goods and services supplied or rendered	**30,532**	24,934
Other suppliers		
Workers' compensation expenses	**23**	3
Total other suppliers	**23**	3
Total suppliers	**30,555**	24,937

[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).

1.1C: Grants		
Public sector		
Australian Government entities	**3,750**	7,610
Private sector		
Australian companies	**153,441**	82,211
Australian not-for-profit entities	**496**	310
Other entities[2]	**29,291**	10,039
Total grants	**186,978**	100,170

[2] Grants to other entities includes grants to Australian universities.

Accounting policy

Grant expenses are recognised to the extent that services required to be performed by the grantee have been performed or the grant eligibility criteria have 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 calculations 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 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 terms of 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 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

	2023 $'000	2022 $'000
Own-Source Revenue		
1.2A: Interest		
Interest on bank deposits	**16,517**	1,617
Total interest	**16,517**	1,617

Accounting policy

Interest revenue is recognised using the effective interest method.

1.2B: Other Revenue		
Resources received free of charge - Department of Climate Change, Energy and the Environment and Water	**5,527**	-
Resources received free of charge - Department of Industry, Science, Energy and Resources	**391**	5,123
Return of grant funding and project recoupments	**1,856**	2,468
Other	**199**	186
Total other revenue	**7,973**	7,777

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 not 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: Revenue from Government		
Payments from Portfolio Department - Department of Climate Change, Energy, the Environment and Water	**312,630**	-
Payments from Portfolio Department - Department of Industry, Science, Energy and Resources	**-**	422,009
Total revenue from Government	**312,630**	422,009

Accounting policy

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

FINANCIAL POSITION

This section analyses 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

	2023 $'000	2022 $'000
2.1A: Cash and Cash Equivalents		
Cash at bank	**42,733**	2,329
Cash on deposit	**507,086**	455,123
Total cash and cash equivalents	**549,819**	457,452

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	**5,029**	958
Interest receivable	**7,148**	1,082
Other	**1,030**	93
Total other receivables	**13,207**	2,133
Total trade and other receivables	**13,207**	2,133

There is no impairment allowance for receivables as at 30 June 2023 (2022: nil).

2.1C: Investments		
Opening balance	**80,939**	31,611
Investment distributions	**(545)**	(942)
Investments calls and management fees	**1,032**	4,843
Increase in value of investment at 30 June	**1,220**	45,427
Total investments - REVC Fund Commonwealth Participation Trust	**82,646**	80,939

Accounting policy

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

At 30 June 2023 ARENA held 52,127,205 (2022: 51,639,253) 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 2023 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 2022				
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 1 July 2022	-	2,066	156	2,222
Additions:				
Right of use assets	5,528	-	-	5,528
Purchases	-	-	504	504
Disposals:				
Write back of asset on disposal	(3,098)	-	(218)	(3,316)
Write back accumulated depreciation on disposal	3,098	-	202	3,300
Depreciation and amortisation	(895)	(350)	(230)	(1,475)
Total as at 30 June 2023	4,633	1,716	414	6,763
Total as at 30 June 2023 represented by				
Gross book value	5,528	3,500	771	9,799
Accumulated depreciation, amortisation and impairment	(895)	(1,784)	(357)	(3,036)
Total as at 30 June 2023	4,633	1,716	414	6,763

At 30 June 2023 ARENA conducted an impairment assessment of assets. No indicators of impairment were found for property, plant and equipment.

On 1 July 2022, ARENA entered into contracts for new office accommodation in Canberra, Sydney and Melbourne. ARENA has applied AASB 16 Leases, to obtain the right-of-use (ROU) value. Further information on the lease obligations is detailed in Note 2.4.

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 these items were owned. On initial adoption of AASB 16 in 2019-20, 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, General Government Sector (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 Financial Reporting Rule (FRR).
Impairment	All assets are assessed for impairment at the end of each reporting period by officers of the agency or independent valuers. 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 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 these amounts 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. The last independent valuation of assets was conducted by Jones Lang LaSalle in June 2022. The valuation was undertaken using a cost approach.
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: Leasehold improvements - 2023: Lease term, 2022: Lease term Plant and equipment - 2023: 3 years, 2022: 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

	2023 $'000	2022 $'000
2.3A: Suppliers		
Trade creditors and accrued expenses	**1,145**	1,930
	1,145	1,930

Settlement of supplier invoices is made within 21 days, consistent with the supplier terms of trade.

2.3B: Grants		
Private sector		
Australian companies	**4,792**	**15,900**
Other entities	**-**	**926**
Total grants	**4,792**	**16,826**

2.3C: Other payables		
Accrued salaries including Pay As You Go tax withheld	**30**	20
Total other payables	**30**	20

2.4 INTEREST BEARING LIABILITIES

	2023 $'000	2022 $'000
2.4 Leases		
Lease liabilities	**4,900**	-
Total leases	**4,900**	-
Maturity analysis - contractual undiscounted cash flows		
Within 1 year	**1,112**	1,054
Between 1 to 5 years	**4,531**	4,814
More than 5 years	**873**	1,701
Total leases	**6,516**	7,569

Total cash outflow for leases for the year ended 30 June 2023 was $1,051,371 (2022: $1,095,956)

ARENA has entered into three new leases for office accommodation in Canberra, Sydney and Melbourne. These leases were effective from 1 July 2022. ARENA has recognised 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, which 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 agency's incremental borrowing rate.

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.

3.1 EMPLOYEE PROVISIONS

	2023 $'000	2022 $'000
Employee provisions		
Leave and other entitlements	**376**	370
Total employee provisions	**376**	370

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 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 leave 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 using the 'shorthand method' referenced in subsection 24(1)(b) of the FRR, which is applicable for Commonwealth entities with 1,000 or less employees. The estimate of the present value of the liability takes into account employee 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 Board Members, the Chief Executive Officer, Chief Financial Officer, Chief Operating Officer and General Manager Project Delivery. The Chief Operating Officer and General Manager Project Delivery made available from the Portfolio Department.

	2023 $	2022 $
Short-term employee benefits	**1,208,945**	1,194,292
Post-employment benefits	**91,654**	83,464
Other long-term employee benefits	**32,183**	23,273
Total KMP remuneration expenses, paid by ARENA, as per Note 1.1	**1,332,782**	1,301,029
Add KMP provided by the Department, resources received free of charge	**587,569**	498,855
Total KMP remuneration expenses as per Executive Remuneration Disclosure table	**1,920,351**	1,799,884

The total number of KMP that are included in the above table are 11 individuals (2022: 11) and includes seven ARENA Board Members (2022: seven). In July 2022 there was a change in the Board membership, with one member departing and one new member appointed.

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:

1. Key Management Personnel (See Note 3.2 KMP)
2. Portfolio and Cabinet Ministers
3. Close family members of the persons identified in (1) and (2) above, and
4. 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 during the reporting period, it has been determined that ARENA entered into two (2022: 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 is the CEO of Horizon Power. During the reporting period ARENA conducted the following business:

- In 2022-23 grants payments of $1,698,226 (2021-22: nil) 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 ARENA funding for this project of $2,830,378. At 30 June 2023 the remaining balance available for the project is $1,132,152 (2021-22: $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 2022-23 grants payments of $330,692 (2021-22: nil) 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 2023 the remaining balance available for the project is $686,570 (2021-22: $1,017,262).

All amounts reported above in Note 3.3 are GST inclusive.

MANAGING UNCERTAINTIES

4.1 CONTINGENT ASSETS AND LIABILITIES

	GRANT RECOUPMENT $'000	TOTAL $'000
Contingent assets		
Balance as at 30 June 2022	-	-
New contingent assets recognised	6,000	6,000
Total contingent assets as at 30 June 2023	**6,000**	**6,000**

ARENA did not have any contingent liabilities at 30 June 2023 (2022: 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 formulae agreed as part of the terms and conditions of the funding agreement. ARENA is expecting one project to meet the recoupment conditions in 2023-24 (2022-23: 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. These amounts 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 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

	2023 $'000	2022 $'000
4.2A Financial Assets		
Financial assets at amortised cost		
Cash and cash equivalents	**549,819**	457,452
Trade and other receivables	**8,178**	1,175
Total financial assets at amortised cost	**557,997**	458,627
Financial assets at fair value through other comprehensive income		
Investments	**82,646**	80,939
Total available-for-sale financial assets	**82,646**	80,939
Total financial assets	**640,643**	539,566
Financial liabilities		
Suppliers and other payables	**1,175**	1,950
Grant payables	**4,792**	16,826
Total financial liabilities measured at amortised cost	**5,967**	18,776
Total financial liabilities	**5,967**	18,776

Accounting policy	
Financial assets	ARENA classifies its financial assets in the following categories: a. financial assets at fair value through other comprehensive income; and b. 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: 1. the financial asset is held in order to collect the contractual cash flows, and 2. the cash flows are solely payments of principal and interest 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 sole payment of principal and interest 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 receipt of supplier invoice).

	2023 $'000	2022 $'000
4.2B Net Gains or Losses on Financial Assets		
Financial assets at amortised cost		
Interest revenue	**16,517**	1,617
Net gains on financial assets at amortised cost	**16,517**	1,617
Financial assets at fair value through other comprehensive income		
Fair value changes to investments	**1,220**	45,427
Net gains on available-for-sale financial assets	**1,220**	45,427
Net gains/(losses) on financial assets	**17,737**	47,044

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 last independent valuation was completed in 2021-22.

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 have 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 transfers out of fair value hierarchy levels as at the end of the reporting period. There has been no transfer during the 2023 year (2022: nil).

OTHER INFORMATION

5.1 CURRENT / NON-CURRENT DISTINCTION FOR ASSETS AND LIABILITIES

	2023 $'000	2022 $'000
Assets expected to be recovered in:		
No more than 12 months		
Cash and cash equivalents	**549,819**	457,452
Trade and other receivables	**13,207**	2,133
Prepayments	**493**	608
No more than 12 months	**563,519**	460,193
More than 12 months		
Investments	**82,646**	80,939
Buildings - right of use assets	**4,633**	-
Leasehold improvements	**1,716**	2,066
Plant and equipment	**414**	156
More than 12 months	**89,409**	83,161
Total assets	**652,928**	543,354
Liabilities expected to be settled in:		
No more than 12 months		
Suppliers	**(1,145)**	(1,930)
Grants	**(4,792)**	(16,826)
Other payables	**(30)**	(20)
Employee provisions	**(225)**	(251)
Leases	**(649)**	-
No more than 12 months	**(6,841)**	(19,027)
More than 12 months		
Leases	**(4,251)**	-
Employee provisions	**(151)**	(119)
More than 12 months	**(4,402)**	(119)
Total liabilities	**(11,243)**	(19,146)

5.2 ASSETS HELD IN TRUST

	2023 $'000	2022 $'000
Cash held in Locked Boxes		
Balance as at 1 July	**15,300**	29,493
Receipts[1]	**126,042**	47
Payments[2]	**(32,110)**	(14,240)
Balance as at 30 June	**109,232**	15,300
Total monetary assets held in trust	**109,232**	15,300

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 for ensuring that the funds are only released when conditions specified in the grant funding agreement have been met.

During 2022-23 ARENA paid $124.3 million to four new Locked Box projects and earned interest of $1.742 million. Withdrawals against projects which commenced in 2022-23 amounted to $24.3 million, with the remaining payments of $7.810 million relating to Locked Boxes in existence at the start of the year. At the beginning of the year, there were six active Locked Box projects, three projects were completed during the year, four new projects commenced, with seven projects active at 30 June 2023 (2022:six).

[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 agreed milestones.

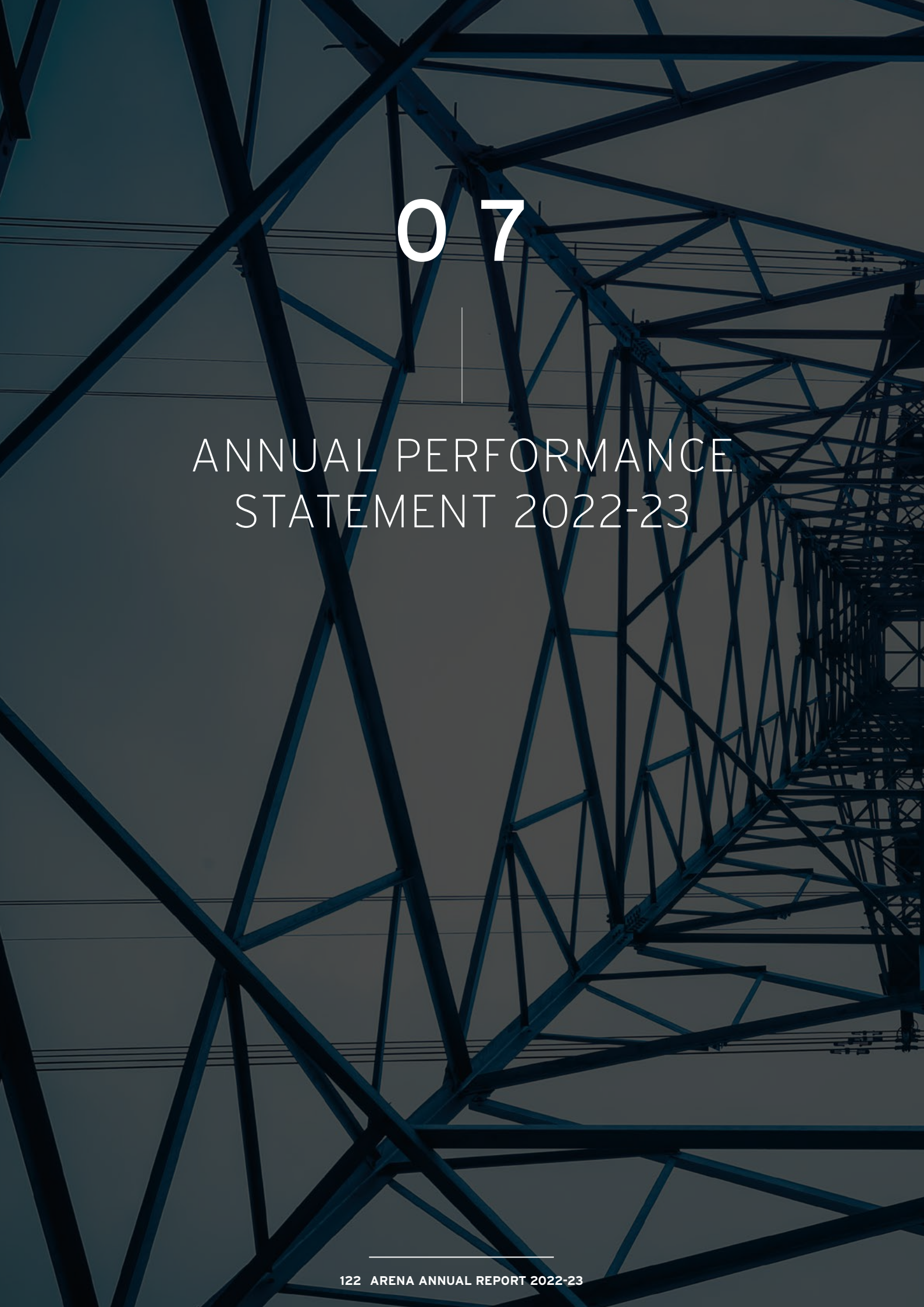
5.3 BUDGET VARIANCE COMMENTARY

ARENA's financial performance is measured against its original budget as published in the 2022-23 Portfolio Budget Statements, October 2022. Budget Statements and the 2023 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 ARENA's performance.

Budget Variance Explanations and Commentary	Affected financial statements and line items
The variance is due to the complex nature of ARENA's projects which deal with emerging and developing technologies and the approval of new projects has taken longer than originally forecast. Milestone deliverables on contracted projects have encountered delays as a result of supply chain issues and personnel disruptions. These circumstances have caused the need to vary contracts and extend the delivery date on due milestones. The number of variations progressed was beyond that forecast in the Budget. Finance costs relate to the new lease contracts for office accommodation, which became effective from 1 July 2022. The application of AASB - Leases requires the application of an incremental borrowing rate to determine the finance cost. Due to interest rate increases the IBR was higher than used at the time the budget was developed. The lower than anticipated grant expenses have resulted in a higher than expected holding of cash and cash equivalents. The $549.8 million held in cash and cash equivalents will be used to meet the milestone deliverables as these amounts fall due. The higher than expected holding of cash and cash equivalents, together with the increase in interest rates, has resulted in higher than anticipated interest received. Trade and other receivables exceed Budget due to higher than expected accrued interest and a higher than anticipated GST receivable at balance date due to timing of grants expenditure in June 2023.	**Statement of Comprehensive Income:** › Grants › Finance costs › Interest **Statement of Financial Position:** › Cash and cash equivalents › Trade and other receivables › Grants payable **Cash Flow Statement:** › Interest received › Grants cash used › Interest paid
During the financial year, ARENA invested $1.032 million into the Renewable Energy Venture Capital Fund. The principal activity of the Fund is to invest in early-stage renewable energy technology companies. Movement in the fair value of the investment is driven by the market. A gain of $1.2 million in the fair value of the investment was recorded at 30 June 2023, which was higher than the budget which assumed a growth of $0.5 million. All investment decisions are made by the Fund Manager within an agreed timeframe ending in December 2024.	**Statement of Comprehensive Income:** › Increase in the value of investment **Statement of Financial Position:** › Other investments **Cash Flow Statement:** › Proceeds from the sale of investments › Investments
Net GST received was lower than expected due to lower grants expenditure.	**Cash Flow Statement:** › Net GST received



07

ANNUAL PERFORMANCE STATEMENT 2022-23

Image credit: Stock.

INTRODUCTION

STATEMENT OF PREPARATION

The Board, as the accountable authority of the Australian Renewable Energy Agency (ARENA), presents the Annual Performance Statement of the Agency covering the 2022-23 financial year as required under section 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 section 39(2) of the PGPA Act.

ARENA PURPOSE

ARENA was established by the *Australian Renewable Energy Agency Act 2011* (ARENA Act).

Our Purpose is to support improvements in the competitiveness and supply of renewable energy and other low emissions technologies by providing financial assistance and sharing knowledge to accelerate innovation that benefits all Australians.

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 2022-23 to 2025-26 Corporate Plan.

The second section presents the findings of an Impact Assessment Project. The project is a collaborative initiative of ARENA's Strategy and Data and Performance teams with the objective of improving the ways ARENA measures impact as an organisation.

The second section also includes a summary of an evaluation conducted in July 2023 on large-scale battery storage (LSBS). The results of this evaluation are based on a subset of projects completed under the Advancing Renewables Program administered by ARENA. The purpose of the evaluation is to assess the impact of these projects and provide insight to support the current program sized at $176 million, supporting eight batteries with advanced inverter capability (e.g. grid-forming inverters).

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

Figure 7 shows how the results presented in this Annual Performance Statement enable a clear read between the ARENA Act, 2022-23 Portfolio Budget Statements and 2022-23 to 2025-26 Corporate Plan.

The results presented below use baselines to demonstrate trends over time. Reporting performance using technology and commercial readiness indicators aims to enable a clear view across entities that contribute to renewable energy technology development.

FIGURE 7: HOW PERFORMANCE INFORMATION FITS TOGETHER ACROSS ARENA'S CORPORATE PLAN, PORTFOLIO BUDGET STATEMENTS, AND THE ANNAL PERFORMANCE STATEMENT

RESULTS ACHIEVED

This section presents ARENA's performance against the measures set out in the 2022-23 to 2025-26 Corporate Plan.

Image credit: Stock.

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 commits and approves funding that supports renewable energy technologies.

$m ARENA funds approved[2]	$m ARENA funds committed[3]
TARGET: $326 million in 2022-23	TARGET: $364.9 million in 2022-23

SOURCE

ARENA Corporate Plan 2022-23 to 2025-26 p13.

RATIONALE FOR MEASURE

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

RESULT

FUNDS APPROVED

ACHIEVED: In 2022-23 ARENA approved a total of $544.1 million.

FUNDS COMMITTED

NOT ACHIEVED: In 2022-23 ARENA committed a total of $358.0 million.

During the year, ARENA completed the project assessment and approval process for its Large Scale Battery Storage (LSBS), Ultra Low-Cost Solar Research & Development (ULCS) and HyGATE funding rounds.

[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.

Funds approved under the LSBS funding round exceeded ARENA's initial allocation, reflecting an additional $60 million funding provided by Government to support the funding round.

ARENA has also seen a general increase in the scale of projects and the corresponding funding requirements. This has contributed to the outperformance of $218.1 million relative to the 2022-23 Funds Approved target.

ARENA slightly underperformed with respect to its 2022-23 Funds Committed target, by $6.9 million. Relative to funds committed in 2021-22 of $107.2 million, 2022-23 commitments of $358.0 million nonetheless represents an elevated rate of activity.

The strong 2022-23 approvals performance will also support an increased conversion to executed funding agreements and commitments in 2023-24.

ARENA has been chosen as the delivery agency for several new funding initiatives and anticipates launching multiple new funding programs in 2023-24. Combined with an existing strong project pipeline, ARENA expects to maintain this elevated rate of approvals and commitments in 2023-24.

1.2 PERFORMANCE MEASURE

ARENA funding increases private sector and other third-party investment in renewable energy technologies.

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

SOURCE

ARENA Corporate Plan 2022-23 to 2025-26 p13.

Leverage provides the $ invested for every $1 of ARENA funds invested.

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 across newly active projects in the year.

RESULT

ACHIEVED: In 2022-23 ARENA's overall investment leverage was 3.44. That is, for every dollar of ARENA funding provided to new projects, third parties contributed $3.44.

The overall investment leverage of $3.44 of third-party funds for every dollar of ARENA funds achieved in 2022-23 was higher than achieved in 2021-22 ($2.06).

Table 7 shows investment leverage in 2022-23 by innovation stage.

TABLE 7: INVESTMENT LEVERAGE BY INNOVATION STAGE

INNOVATION STAGE	INVESTMENT LEVERAGE
R&D projects	2.73
Demonstration projects	2.04
Deployment projects	3.85
Studies	3.60
All projects	3.44

Image credit: Stock.

1.3 PERFORMANCE MEASURE

ARENA-funded projects increase the supply of renewable energy in Australia.

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.

SOURCE

ARENA Corporate Plan 2022-23 to 2025-26 p13.

2022-23 Portfolio Budget Statements p124.

RATIONALE FOR MEASURE

ARENA-funded demonstration and deployment projects build renewable energy capacity to support industry learning in emerging technology areas. The primary objective of demonstration and deployment-stage projects is to build industry experience, leading to increases of supply through follow-on projects.

RESULT

ACHIEVED: ARENA contractually committed to 14 Demonstration and Deployment Projects in 2022-23.

Projects included Yuri Operation's Renewable Hydrogen to Ammonia Project, Shell Energy Hub's Smart Energy Hubs Deployment Project, Rio Tinto Aluminium and Summit Hydrogen Gladstone's Yarwun Hydrogen Calcination Pilot Demonstration Project, Hysata's High-Efficiency 'Capillary-fed' Electrolyser Pilot Project and Viva Energy's New Energies Service Station Geelong Demonstration Project.

Other projects that joined the ARENA portfolio in 2022-23 include AGIG's Hydrogen Park Murray Valley Project. The Project involves the development of a 10 MW electrolyser to produce renewable hydrogen for initial use of gas-blending into the Albury-Wodonga Gas Network with the electrolyser ideally located for other end uses as the hydrogen market matures.

Vast Solar's Port Augusta Concentrated Solar Power Project involves the development, construction and operation of a 30 MW / 288 MWh Concentrated Solar Thermal Power (CSP) plant at Port Augusta, South Australia.

Australian startup SunDrive's low-cost, high-efficiency solar cell manufacturing facility. Image credit: ARENA.

1.4 PERFORMANCE MEASURE

ARENA-funded projects advance the technological and commercial readiness of renewable energy technologies.

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 2022-23 to 2025-26 p13.

2022-23 Portfolio Budget Statements p125.

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 technological 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 in relation to eight indicators.

RESULT

ACHIEVED: In 2022-23, 87 per cent of the 15 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 seven percentage points.

- 60 per cent of projects that set out to improve technological readiness succeeded in improving TRL by one or more levels
- 27 per cent of projects improved TRL by two or more levels
- all but four of the projects advanced the CRI summary status level. Five projects advanced the CRI summary status by two levels.

UNDERSTANDING TECHNOLOGY/COMMERCIAL READINESS LEVELS

TECHNOLOGY READINESS LEVELS

1. Transition from scientific research to applied research
2. Applied research
3. Proof of concept validation
4. Standalone prototyping implementation and test
5. Thorough testing of prototyping in representative environment
6. Prototyping implementations on full-scale realistic problems
7. System prototyping demonstration in operational environment
8. End of system development
9. Actual system has been thoroughly demonstrated and tested in its operational environment

LEVELS OF THE COMMERCIAL READINESS INDEX

1. Hypothetical commercial proposition
2. Commercial trial
3. Commercial scale up
4. Multiple commercial applications
5. Market competition driving widespread deployment
6. (Most mature) Bankable asset class

The commercial readiness index is a composite of eight indicators, which are:

- Regulatory environment
- Stakeholder acceptance
- Technical performance
- Financial performance (costs)
- Financial performance (revenue)
- Industry supply chain and skills
- Market opportunities
- Company maturity

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.

WHO BENEFITS

Industry, energy market bodies, policy makers, consumers and businesses benefit through a faster, smoother and less-expensive energy transition.

2.1 PERFORMANCE MEASURE

ARENA produces and shares knowledge.

TARGET: Significant project outcomes and lessons learned disseminated.

- ARENA delivers at least four knowledge sharing events
- ARENA publishes at least eight Insights newsletters
- 4 per cent increase in visitor traffic (unique page views) to ARENA website
- At least 50 per cent of survey responses note that knowledge shared by ARENA has informed part of their decision-making processes

SOURCE

ARENA Corporate Plan 2022-23 to 2025-26 p13.

2022-23 Portfolio Budget Statements p125.

RATIONALE FOR MEASURE

The dissemination of significant project outcomes and lessons learned is an indicator of success of ARENA's contract management process and capabilities. It shows that projects have been managed so that they can succeed, generate and share knowledge.

RESULT

ARENA delivers at least four knowledge sharing events

ACHIEVED: In the past year, ARENA delivered six knowledge sharing events (forums, webinars, roundables and workshops).

RESULT

ARENA publishes at least eight Insights newsletters

NOT ACHIEVED: Seven Insights Newsletters were produced this financial year. Interest and readership of the newsletter markedly increased by 30 per cent, with the current number of subscribers at 3611.

RESULT

Four per cent increase in visitor traffic (unique page views) to ARENA website

ACHIEVED: Unique views to the ARENA website increased by 5.8 per cent. Downloads from the Knowledge Bank increased by 17.5 per cent.

RESULT

At least 50 per cent of survey responses note that knowledge shared by ARENA has informed part of their decision-making processes

ACHIEVED: 68 per cent of survey responses noted that ARENA resources and information were used to support decision-making within their organisation.

METHODOLOGY

ARENA engaged independent researchers, EY Sweeney to conduct a stakeholder survey and provide aggregate data to ARENA. Data collection was conducted via a quantitative survey during the period of June and July 2023. 280 stakeholders completed the survey. 243 stakeholder provided responses to the question "To what extent has ARENA's resources and information assisted with decision making processes?"


Image credit: Stock.

2.2 PERFORMANCE MEASURE

ARENA performs its functions to a high standard, as judged by its stakeholders.

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

SOURCE

ARENA Corporate Plan 2022-23 to 2025-26 p13.

RATIONALE FOR MEASURE

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

RESULT

NOT ACHIEVED: This financial year, 75 per cent of respondents to ARENA's external stakeholder survey rated ARENA's performance as 'good' or better. This was below the target of 85 per cent.

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. A broader range of these stakeholders were invited to participate for the first time in 2022-23, including unsuccessful funding recipients. Overall, there was a 141 per cent increase in sample invite size compared to 2021-22.

The stakeholder survey rating of 75 per cent in 2022-23 was lower than achieved in 2021-22 (87 per cent). In both years, self-reported 'successful' funding recipients were found to be more likely to give positive responses. There was a 22 per cent decrease in this cohort in the 2022-23 responses, which may have contributed to a lower overall rating.

ARENA is looking at the insights driven from the survey for future business improvements and stakeholder management principles.

METHODOLOGY

ARENA engaged independent researchers, EY Sweeney to conduct a quantitative stakeholder survey and provide aggregate data to ARENA. Data gathering was completed during June and July 2023. The total survey sample size was 280 with 272 responses analysed in determining the 75 per cent result. Eight 'don't know' responses were excluded from analysis.

IMPACT ASSESSMENT REVIEW

CONDUCTED BY ERNST & YOUNG

ABOUT THE PROGRAM

ARENA's Vision is a prosperous Australia that is a renewable energy superpower in a net zero world. To achieve this long-term impact, the Agency undertakes activities such as grant funding and knowledge sharing, which lead to outcomes including the advancement of technology and commercial readiness for the projects we support, a reduction in technology costs, and the unlocking of further private sector investment.

There are several complexities involved in measuring ARENA's long-term impact, for example the time lag for the technologies that ARENA funds to reach scale, and the roles that a range of stakeholders play in testing and scaling these technologies alongside ARENA. A robust impact assessment methodology is critical to demonstrating value-for-money to ARENA's key stakeholders, including the Board, Risk and Audit Committee, Australian National Audit Office, Parliament, the Portfolio Minister, the Portfolio Department and the public. It is also an important tool for enabling continuous improvement as an Agency.

ARENA currently undertakes regular, comprehensive evaluations. Examples include our recent Large Scale Battery Round (*see findings on the following page*), Hydrogen R&D Round, and an ARENA-wide review conducted in 2019. The Agency also reports on its overall performance annually through its Performance Measures and Targets.

To ensure our approach to impact assessment remains fit-for-purpose, in 2022-23 ARENA completed a review of the overarching approach and supporting tools/processes used to assess our impact as an agency. The impact assessment review, and associated ongoing work, will help ARENA better understand and articulate the impact of the crucial role the Agency plays in accelerating innovation and supporting industry decision-making through each of our Strategic Priorities.

The scope of this review included:

- understanding impact assessment approaches used by similar organisations in Australia and globally
- comparing ARENA's current impact assessment methodology to good practice from other organisations, compliance requirements, and expectations from key external stakeholders
- developing an improved methodology for ARENA's future impact assessment including an updated agency-level program logic, refinements to the scope and frequency of evaluations and other assessments, and a prioritised list of measures of success
- developing supporting tools and templates to be used in ongoing impact assessment.

Upgrades to ARENA's impact assessment methodology are currently underway, with the implementation of relevant improvements planned for 2023-24.

Wallgrove Battery. Image credit: TransGrid.

EVALUATION OF ARENA'S LARGE SCALE BATTERY STORAGE

CONDUCTED BY ERNST & YOUNG

ABOUT THE PROGRAM

Large-scale battery storage (LSBS) is an emerging industry in Australia with a range of important challenges and opportunities to understand, explore and resolve. While the LSBS industry is in its early stages in Australia, the batteries developed to date represent a variety of technical and commercial opportunities. The key revenue streams are related to wholesale energy market participation, regulation frequency control ancillary services (FCAS) and contingency FCAS.

In June 2022 ARENA made an Updated Funding Announcement to notify potential recipients of ARENA's intention to seek to fund a minimum of three large-scale battery storage projects with advanced inverter capability (e.g. grid-forming inverters) under the Advancing Renewables Program (ARP). ARENA allocated $100 million.

The objectives of this funding round were to accelerate demonstration of advanced inverter capabilities on LSBS projects at scale, overcome barriers that prevent LSBS projects form incorporating advanced inverter capabilities, improve industry understanding of the potential role of advanced inverters to address system stability, demonstrate capability of advanced inverters (at scale) in multiple stages and across inverter types, and inform the market regulatory bodies to facilitate the efficient delivery of services from grid-forming batteries.

Prior to this funding round, under ARP, several projects were funded by ARENA relating to the area of LSBS. The purpose of this evaluation is to understand the impact of these eight LSBS projects and inform future, potential funding rounds.

ARP objectives:

- reduction in the cost of renewable energy
- increase in the value delivered by renewable energy
- improvement in technology readiness and commercial readiness of renewable energy technologies
- reduction in or removal of barriers to renewable energy uptake, and
- increased skills, capacity and knowledge relevant to renewable energy technologies.

To inform this evaluation, information was gathered from a combination of sources including desktop research, quantitative analysis, and feedback from internal and external stakeholders (via interviews and surveys). The approach relies on a combination of qualitative and quantitative research methods to answer key evaluation questions.

At the time of this review, ARENA was revising its impact assessment methodology. This evaluation was conducted using the evaluation approach in place at the time but sought to test some of the emerging priorities from the new methodology, particularly with respect to emissions reduction and additionality considerations.

PROGRAM LOGIC

Program logic describes the stepping stones between an activity and a desired change. The program logic shown in Figure 8 outlines the specific inputs, activities, output, outcomes and impacts that ARENA seeks to deliver with this evaluation.

Hornsdale Power Reserve. Image credit: Neoen.

FIGURE 8: PROGRAM LOGIC: LARGE-SCALE BATTERY STORAGE

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACTS
Resources invested to deliver activities	Actions performed, where inputs are used to achieve outputs	The results that are produced from the completion of activities	The intended or desired medium-term effects/change	Desired long-term end goals that correspond to ARENA purpose
› ARP grant funding › ARENA's internal spend on delivering the ARP	› Facilitating ARP to generate interest in projects that meet the program's objectives › Producing publicly available KS reports › Convening a private stakeholder reference group with TNSPs and AEMO for knowledge sharing on specialised technical matters › Convening public webinars to share project-specific knowledge	› Delivering a portfolio of large scale batteries that reach completion and achieve the objectives of ARP › Knowledge sharing reports issued by Proponents for each project + developed by ARENA for Proponents	› Improvement in the positioning of the technology on the TRL and CRI scale (project increasing by at least 1 on both scales) › Change in knowledge levels due to knowledge sharing reports (informed by stakeholder surveys) › Improving industry awareness of how large scale batteries can be used and what services can be provided	› 100% instantaneous renewables to support Australia's net zero emissions targets, enabled by greater uptake of batteries with grid forming technology

Image credit: Infigen Energy.

FINDINGS

This evaluation assisted in providing verification that ARENA is focusing its resources on selecting quality projects that will support the global transition to net zero emissions by accelerating the pace of pre-commercial innovation to the benefit of Australia.

While it is difficult to quantitatively measure the extent to which ARENA's activities will drive wider market impacts, based on this set of eight projects, the pipeline of large-scale batteries in the market has grown since these projects were concluded. This pipeline of projects is proceeding without funding from ARENA; however, some have secured minor funding from State Governments.

This indicates a maturing industry as a greater number of large-scale batteries are progressing with lower levels of government support. Validation of ARENA's project selection ensures that, where market signals are sent to industry about the type of technologies to invest in, those technologies have the potential to support the achievement of emissions reduction targets set for 2030 and 2050 – both directly (through ARENA-funded projects) and indirectly (through wider market impacts that emerge as a result of ARENA's activities).

The ARP objectives were met by this group of eight projects in the following ways.

REDUCTION IN THE COST OF RENEWABLE ENERGY

This group of projects delivers up to c. 379.5 MWh of discharge capacity, which provides the potential to lower energy prices for consumers, due to there being greater price competition in the NEM, primarily from renewables (indirectly via storage) with open-cycle gas turbines (OCGT) during high price periods. In addition, they have also demonstrated the potential to drive cost reductions in frequency control ancillary services (FCAS). FCAS is an essential service for the grid – maintaining frequency by injecting or absorbing power.

INCREASE IN THE VALUE DELIVERED BY RENEWABLE ENERGY

In addition to providing firming capacity, all eight selected projects provide a range of other market services. The assets also provide inertia and system strength, to the extent they are equipped with advanced inverter technology. This highlights the potential for the batteries to ensure system security currently provided by fossil-fuel powered synchronous generators as they are replaced by intermittent renewable energy sources.

REDUCTION IN OR REMOVAL OF BARRIERS TO RENEWABLE ENERGY UPTAKE

According to funding recipients the process helped to remove barriers to the uptake of large-scale batteries. Specifically, the potential to retrofit large-scale solar farms (with an existing grid connection) with a battery, without the need for regulatory approvals. Additionally, the potential for grid-forming inverter technology to be used in the grid for the provision of market services and system strength. This would increase the level of comfort for the Australian Energy Market Operator (AEMO), Transmission Network Service Providers (TNSPs) and regulators, thereby reducing barriers for the approval and connection of large-scale batteries.

DISCLOSURE

Any conflicts of interest that arose and were deemed material were managed in accordance with ARENA's Conflict of Interest Policy. EY has previously conducted reports, evaluations and other work for ARENA.

ANALYSIS

KEY DEVELOPMENTS AFFECTING PROGRAM IMPLEMENTATION AND PROJECT DELIVERY

2022-23 was a record year for ARENA, in which we approved $544.1 million in project funding for 60 projects and committed $358 million to 35 projects. Factors that contributed to an increase in projects include growing confidence that renewable energy can reduce the use of fossil fuels and do so in a cost-effective way. This positive momentum, together with a significant funding commitment by the Australian Government, resulted in more projects being delivered compared with 2021-22. Additionally, these projects have grown in both scale and complexity.

Throughout 2022-23 the implementation of new programs and ARENA's portfolio of active projects continued to be impacted by COVID-19, although to a lesser degree than in 2021-22. The ongoing effects of COVID-19 on ARENA's portfolio of projects is seen in scheduling delays and supply chains.

Additionally, increased demand for renewables in the global market, and other supply pressures, have also affected ARENA projects. The major causes of supply chain issues reported from our projects were international shipping delays, staff shortages, and difficulty accessing critical products such as batteries.

ARENA continues to support its portfolio of projects in line with its policies and the terms of its grant funding agreements. ARENA works with its grant recipients to achieve relevant project outcomes and support ARENA's objectives.

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*, ARENA has implemented the following three recommendations that relate to its Performance Framework:

1. That the Australian Renewable Energy Agency improves the reliability and completeness of its performance measurement and reporting framework.
2. 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.
3. 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 that led to the recommendations contained in the Auditor General's Report. ARENA is working diligently to implement the recommendation relating to the integration of ARENA's assessment and grant management processes with its information systems to strengthen its assurance over its grants management activities. The implementation of this recommendation will further increase the level of assurances over performance data and information and will lead to greater efficiencies in business processes.

Image credit: Stock.

Led by Solar Analytics, this multifocal study reflected Australia's growing concern with maximising the value of Distributed Energy Resources (DER) by exploring ways in which rooftop solar can be monitored and managed to provide benefits for consumers and the broader grid.

Image credit: Stock.

CASE STUDY 1
ACCELERATING THE GROWTH AND DEVELOPMENT OF ENERGY MONITORING

INSIGHT 1: DATA VISIBILITY IS ESSENTIAL BUT INHIBITED

A key facet of the project was the provision of historical and real-time electricity data to network operators, regulators, academic institutions and market participants to help address the critical lack of DER visibility. While the study identified the value of data visibility for supporting efficient response mechanisms in the instance of network events, simulating solar generation in microgrids, and forecasting and modelling rooftop solar production, data visibility is inhibited by existing security and access requirements. The sharing of live data with network operators encounters several problems relating to consistency in terms of time zones, communications faults and shading impacts on solar generation. Moreover, while network operators are keenly interested in data, they are constricted by regulations and budget, and it is challenging to secure funding to explore new data use cases.

INSIGHT 2: ACTIVE SOLAR MONITORING PROVIDES SIGNIFICANT LONG-TERM SAVINGS

Another facet of the study involved the implementation of active monitoring devices in households, paid for by the solar PV owner, which facilitated early identification of system issues and provided an overview of total energy usage. This increased visibility enabled customers to take fast action on any system defects, select optimal retail energy plans and shift energy loads of major load appliances, producing significant long-term savings and increasing overall solar production.

INSIGHT 3: THE INNOVATIVE INTEGRATED PRODUCT SOLUTION REVOLUTIONISING REMOTE CONTROL

As DER penetration increases, it is necessary to remotely control DER to ensure resources respond appropriately to wider network requirements. Thus, another focus of the study was the launch of an integrated product solution that provided an intelligent remote control of DER through connection to the solar inverter at a lower cost than traditional hardware enabled monitoring solutions. When compared with traditional options, this solution reduced cost, by approximately 50%. The savings, adaptability and scalability of this solution has already gained commercial attention, and it has been launched in the market with global inverter partners Sungrow and Fronius, with agreements also on the way with GoodWe and GroWatt.

INSIGHT 4: SHARED SOLAR REMAINS A SOCIAL CHALLENGE

Solar Analytics also sought to explore how 'Shared Solar' could maximise the number of consumers who could benefit from the uptake of rooftop solar. Shared solar enabled PV owners to select from a range of options for how they sell their surplus solar, and non-solar households to purchase this lower cost solar electricity, creating a shared energy trading platform. Despite its theoretical potential, the trial was unsuccessful for three significant reasons.

First, consumers lacked technical understanding of peer-to-peer trading, and when the reality of the model departed from their expectations of their solar being connected directly to their trading partners, they became more confused and less engaged, such that the technical difficulties of conveying the value proposition and effort of participating in the trial exceeded the perceived benefits. Second, the savings from sharing electricity locally were negligible when considered in conjunction with network tariffs and costs associated with providing different service options. And finally, while rooftop solar owners would be excited to give the excess to a neighbour or other community member, they dislike the idea of energy companies obtaining profit from their energy, and therefore dislike the idea of giving energy back to the grid.

CASE STUDY 2
THE INNOVATION HUB FOR AFFORDABLE HEATING AND COOLING

The i-Hub project was a collaboration between academia, government and industry to demonstrate how renewable energy technology could be optimally integrated with heating ventilation, air conditioning and refrigeration (HVAC&R) equipment to facilitate the industry transition to a low emissions future. The project was premised off a vision of highly efficient buildings cooled and heated by efficient systems that are powered by carbon free energy sources and was delivered through three innovative and multidisciplinary platforms.

The first platform involved a data clearing house, or digital 'data institute' for buildings that empowered building owners to understand and use their buildings to optimise their energy assets by increasing the value of open data platforms. The primary aim of the data clearing platforms was to provide a rapidly growing innovation ecosystem to support improved energy management and developer decision making capabilities. It did so through the connection of smart buildings under one open platform, the provision of digital software solutions for managing peak demand, and the exploration of novel opportunities for buildings to participate in flexible demand markets.

The second platform involved 14 Integrated Design Studios (IDS) that sought to combine responsible energy design with decarbonisation technologies and real-world building blueprints to produce energy and grid demand reduction and manage peak demand. The IDSs generated design ideas for clients that were able to move towards net zero that in many cases had proven problematic beforehand. For instance, the Ambulance Victoria Studio enabled the client to amend internal policies around the design of facilities by improving understanding of what was possible in net zero design for their building typology.

The third platform established five Living Laboratories where industry and property owners could test innovative measurement and verification systems within buildings to observe and evaluate the technologies in a fully instrumented occupied building. The laboratories were established in healthcare and education buildings due to their intensive energy profiles and tendency to form large portfolios and reflected the potential widespread application of technologies assessed. To date, the Living Laboratories have tested and evaluated 11 new decarbonisation technologies and services and published several sector-specific roadmaps outlining the potential for increased value of renewable energy and reduction in energy demand.

The culmination of these innovation platforms has been successful in providing publicly available background materials supporting integrated design to raise awareness of the benefits of integrated design and provide a forum in which interested industry players can discuss and develop the co-design of high-performance buildings. Significantly, it is hoped that the materials and relationships borne from the project will carry integrated design further in industry through ongoing symposiums, industry engagement sessions, education, and the formation of integrated design peak bodies.

The Data Clearing House digital platform has continued to grow and develop under CSIRO stewardship, while HVAC and energy management technologies continue to be evaluated in the education and healthcare Living Laboratories.

Image credit: Stock.

Image credit: Stock.

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APPENDICES

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, 215 active projects were managed by ARENA. Of those projects, 44 were completed in 2022-23 and 7 were terminated during the course of the year.

ARENA contractually committed funds to 35 new projects in 2022-23 (Table 8). As with previous years, some of the projects contractually committed during 2022-23 were approved by the Board in the previous financial year, while other projects approved by the Board during 2022-23 will be contractually committed in 2023-24. This is reflective of ARENA's approval processes.

Details of all active projects (including new commitments) during 2022-23 are provided in Table 9.

ARENA invested funds in 12 organisations under the Renewable Energy Venture Capital Fund Program in 2022-23. Details of those investments are provided in Table 10.

TABLE 8: ARENA FUNDS CONTRACTUALLY COMMITTED TO NEW PROJECTS IN 2022-23

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
A-CAES NSW Pty Ltd	Active	Hydrostor Broken Hill Advanced Compressed Air Energy Storage Demonstration	$45,000,000	NSW	Optimising the transition to renewable electricity	Battery storage	Deployment
AGI Renewables Pty Ltd	Active	Hydrogen Park Murray Valley Project	$36,105,000	VIC	Previous initiatives	Hydrogen	Deployment
AGL Energy Limited	Active	AGL Thermal Storage at Torrens Island Power Station B Feasibility Study (Project Calor)	$422,582	VIC	Optimising the transition to renewable electricity	Geothermal	Study
Australian National University	Active	Next generation silicon solar cells >26% efficiency in mass production	$2,702,721	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Cost-effective Si/perovskite tandem modules on passivating contact Si cells	$4,308,107	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Low-cost integration of on-site PV for large-scale industrial heat supply	$2,350,604	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian PV Institute Limited	Active	APVI Silicon to Solar Study	$541,640	NSW	Optimising the transition to renewable electricity	Solar PV	Study
Calix Ltd	Active	Calix Zero Emissions Steel Technology (ZESTY) pre-FEED / FEED Study	$947,035	NSW	Supporting the transition to low emissions metals	Hydrogen	Study
ENEL X Australia Pty Ltd	Active	Commercial Refrigeration Flexible Demand Project	$3,675,361	VIC	Optimising the transition to renewable electricity	Enabling	Demonstration
Fortescue Future Industries Pty Ltd	Active	Gibson Island Green Ammonia Study	$13,662,272	QLD	Optimising the transition to renewable electricity	Hydrogen	Study
HYSATA Pty Lrd	Active	High-Efficiency 'Capillary-fed' Electrolyser Pilot Project	$8,980,000	NSW	Commercialising clean hydrogen	Hydrogen	Demonstration
Infravision Pty Ltd	Active	Next Generation Line Monitoring System Demonstration Project	$732,492	NSW	Optimising the transition to renewable electricity	Enabling	Demonstration

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
IPEC Pty Ltd	Active	Depot of the Future Vehicle Electrification Project	$20,062,127	NSW	Budget Measures	Electric vehicles	Deployment
Logan City Council	Active	FOGO Feasibility Study	$291,785	QLD	Budget Measures	Enabling	Study
Monash University	Active	Management of Oscillations in Australia's National Grid	$499,744	VIC	Optimising the transition to renewable electricity	Solar PV	Study
Origin Energy Limited	Active	Accelerate EV Fleet Program	$6,171,855	NSW	Optimising the transition to renewable electricity	Electric vehicles	Deployment
Rio Tinto Aluminium Limited	Active	Yarwun Hydrogen Calcination Pilot Demonstration Program	$32,108,283	QLD	Previous initiatives	Hydrogen	Demonstration
SA Power Networks	Active	Market-Active Solar trial	$1,016,063	SA	Optimising the transition to renewable electricity	Enabling	Demonstration
Shell Energy Retail Pty Ltd	Active	Smart Energy Hubs Deployment Project	$9,100,000	QLD	Optimising the transition to renewable electricity	Enabling	Deployment
Solar Analytics	Active	Smart CER Consumer Uptake Tool Project	$927,890	NSW	Optimising the transition to renewable electricity	Enabling	Deployment
Stanwell Corporation Limited	Active	Central Queensland Hydrogen (CQ-H2) Project FEED study	$20,000,000	QLD	Commercialising clean hydrogen	Hydrogen	Study
Trustee for ERIC Alpha AUP Trust 1 & Others	Active	South Australia Demand Flexibility trial	$2,717,136	SA	Optimising the transition to renewable electricity	Enabling	Demonstration
University of New South Wales	Active	Industrial high-throughput inspection methods for high-efficiency multijunction solar cells	$2,727,949	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Machine learning applications for utility-scale PV	$2,587,980	NSW	Optimising the transition to renewable electricity	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
University of New South Wales	Active	Silver-lean screen printing for sustainable low-cost industrial PV manufacturing at the terawatt scale Project	$3,364,455	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Efficient and Stable Chalcogenide-Si tandem cells: integrating commercialised PV technologies	$3,082,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Low-cost >30% Efficient Silicon Photovoltaic Solar Cells Achieved through Singlet Fission	$4,836,546	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Rear-Junction p-type PERC/ TOPCon Hybrid Solar Cells (RJ-PERP)	$3,740,423	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Low-cost and Sustainable PV Systems for the Terawatt Scale Project	$2,426,656	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Optimal O&M-strategy and LCOE-modelling for ground-mounted PV	$3,746,878	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Daytime Inspection Solutions for Advanced Operation and Maintenance of Solar Farms	$2,853,813	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of Sydney	Active	Commercialising Si perovskite tandem in Australia	$2,783,525	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of Wollongong	Active	Robust Methods for Harmonics Compliance Study	$1,040,000	NSW	Optimising the transition to renewable electricity	Enabling	Study

TABLE 9: ALL ACTIVE PROJECTS MANAGED BY ARENA IN 2022-23 (INCLUDING NEW PROJECTS LISTED IN TABLE 8)

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (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	$3,500,000	NSW	Previous initiatives	Solar PV	Demonstration
A-CAES NSW Pty Ltd	Active	Hydrostor Broken Hill Advanced Compressed Air Energy Storage Demonstration	$45,000,000		NSW	Optimising the transition to renewable electricity	Battery storage	Deployment
Advanced Energy Resources on behalf of PGWF Pty Ltd atf PGWF Unit Trust	Closed	Fringe of Grid Battery Microgrid for Port Gregory (WA) Wind & Solar Farm	$2,932,828	$32,828	WA	Supporting the transition to low emissions metals	Battery storage	Demonstration
Aeolius Wind Systems Pty Ltd	Active	Wind Forecasting Demonstration Project	$1,899,000		VIC	Optimising the transition to renewable electricity	Market data and information	Demonstration
AGI Renewables Pty Ltd	Active	Hydrogen Park Murray Valley Project	$36,105,000	$36,100,000	VIC	Previous initiatives	Hydrogen	Deployment
AGL Energy Limited	Active	Broken Hill Grid-Forming Battery	$14,839,000	$6,000,000	NSW	Previous initiatives	Enabling	Demonstration
AGL Energy Limited	Active	Thermal Storage at Torrens Island Power Station B Feasibility Study (Project Calor)	$422,582		VIC	Optimising the transition to renewable electricity	Geothermal	Study
AGL Energy Services Pty Limited	Active	Electric Vehicle Orchestration Trial	$2,336,638	$403,432	VIC	Optimising the transition to renewable electricity	Enabling	Deployment
AGL Energy Services Pty Limited	Closed	5MW Virtual Power Plant in South Australia (VPP-SA) Project	$5,300,000		SA	Optimising the transition to renewable electricity	Enabling	Deployment
Alcoa of Australia Limited	Active	Renewable Powered Electric Calcination Pilot	$8,621,168		WA	Previous initiatives	Enabling	Demonstration
Alcoa of Australia Limited	Active	Mechanical Vapour Recompression for Low Carbon Alumina Refining Project	$11,285,293		WA	Supporting the transition to low emissions metals	Enabling	Demonstration
Alinta Energy Pilbara Finance Pty Ltd	Active	Solar Gas Hybrid Project	$24,200,000		WA	Supporting the transition to low emissions metals	Solar PV	Deployment

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Ampol Australia Petroleum Pty Ltd	Active	Addressing Blackspots Fast Charging Project	$800,000		WA	Budget Measures	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Addressing Blackspots Fast Charging Project	$1,500,000		QLD	Budget Measures	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Addressing Blackspots Fast Charging Project	$2,250,000		VIC	Budget Measures	Electric vehicles	Deployment
Ampol Australia Petroleum Pty Ltd	Active	Addressing Blackspots Fast Charging Project	$2,500,000		NSW	Budget Measures	Electric vehicles	Deployment
APT Facility Management Pty Limited	Active	Renewable Methane Demonstration Project	$1,100,000		QLD	Commercialising renewable hydrogen	Hydrogen	Demonstration
Ark Energy H2 Pty Ltd	Active	SunHQ Phase 1: Renewable Hydrogen Demonstration for Heavy Transport	$3,023,797		QLD	Previous initiatives	Hydrogen	Deployment
Australand Residential Edmondson Park Pty Limited	Active	Net Zero Energy Homes	$708,910		NSW	Previous initiatives	Solar PV	Deployment
Australian Association for Hydrogen Energy	Active	IEA Hydrogen Technology Collaboration Program, Promoting hydrogen implementation and utilization in Australia through International collaboration	$494,000	$88,800	WA	Commercialising renewable hydrogen	Hydrogen	Study
Australian Energy Market Operator	Active	Project EDGE (Energy Demand & Generation Exchange)	$12,927,065		VIC	Optimising the transition to renewable electricity	Enabling	Demonstration
Australian Energy Market Operator	Active	Connections Tool Project	$2,227,273	$1,690,385	NSW	Optimising the transition to renewable electricity	Enabling	Deployment
Australian Gas Networks Limited	Active	Blending Hydrogen into Victorian and South Australian Gas Infrastructure - Feasibility studies	$1,280,000		SA	Commercialising renewable hydrogen	Hydrogen	Study

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Australian Institute of Refrigeration Airconditioning and Heating	Closed	Affordable Heating and Cooling Innovation Hub (i-Hub)	$6,480,870		VIC	Optimising the transition to renewable electricity	Enabling	Deployment
Australian National University	Active	DEIP Interoperability Steering Committee Resourcing Project	$439,452	$219,726	ACT	Previous initiatives	Enabling	Study
Australian National University	Active	Direct Water Electrolysis R&D Project	$1,310,407		ACT	Commercialising renewable hydrogen	Hydrogen	R&D
Australian National University	Active	Perovskite modules that are stable under real-world conditions	$735,288		ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Heterocontact-Polysilicon Hybrid IBC Solar Cells	$507,819		ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Monolithic Si/perovskite tandem solar cell: advanced designs towards high-efficiency at low-cost	$1,130,542		ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Next generation silicon solar cells >26% efficiency in mass production	$2,702,721	$1,186,049	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Cost-effective Si/perovskite tandem modules on passivating contact Si cells	$4,308,107	$1,867,521	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Active	Low-cost integration of on-site PV for large-scale industrial heat supply	$2,350,604	$893,604	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Closed	Hydrogen Generation by Electro-Catalytic Systems R&D Project	$614,776		ACT	Commercialising renewable hydrogen	Hydrogen	R&D
Australian National University	Closed	Solar Hydrogen Generation R&D Project	$1,712,303	$402,460	ACT	Commercialising renewable hydrogen	Hydrogen	R&D
Australian National University	Closed	Short Term Off-River Energy Storage Stage 2 (STORES 2) Study	$308,736	$195,736	ACT	Optimising the transition to renewable electricity	Pumped hydro energy storage	Study

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Australian National University	Closed	Driving Increased Efficiency and Reliability in Silicon Photovoltaics - from ingots to modules	$2,399,392	$239,940	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Closed	Physical vapour deposited passivating contacts for high efficiency silicon solar cells	$404,177	$80,835	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian National University	Closed	Advanced multifunctional dielectric layers enabling simplified production of high-efficiency silicon solar cells	$455,322	$91,064	ACT	Optimising the transition to renewable electricity	Solar PV	R&D
Australian PV Institute Limited	Active	International Energy Agency Technology Collaboration Programme - PV Power Systems	$668,000		NSW	Optimising the transition to renewable electricity	Solar PV	Study
Australian PV Institute Limited	Active	Silicon to Solar Study	$541,640	$189,390	NSW	Optimising the transition to renewable electricity	Solar PV	Study
Australian PV Institute Limited	Active	IEA Technology Collaboration Programme (TCP) - Solar Heating and Cooling	$383,500		NSW	Previous initiatives	Solar thermal	Study
Bioenergy Australia	Closed	Bioenergy Australia participation in the International Energy Agency (IEA) Technology Collaboration Programme (TCP) on Bioenergy	$885,733		ACT	Previous initiatives	Bioenergy	Study
BlueScope Steel (AIS) Pty Ltd	Active	Port Kembla Steelworks Renewables/ Emissions Reduction Study	$924,784	$300,629	NSW	Previous initiatives	Hydrogen	Study
BOC Ltd	Active	Renewable Hydrogen Production and Refuelling Project	$1,137,000		QLD	Commercialising clean hydrogen	Hydrogen	Demonstration

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Brimbank City Council	Active	St Albans Leisure Centre Replacement - Carbon Neutral Deployment Project	$1,530,000		VIC	Optimising the transition to renewable electricity	Enabling	Deployment
BT Imaging Pty Ltd	Terminated	LIS-M1 Solar Module Inspection System Project	$70,000		NSW	Previous initiatives	Solar PV	Deployment
Calix Ltd	Active	Zero Emissions Steel Technology (ZESTY) pre-FEED / FEED Study	$947,035		NSW	Supporting the transition to low emissions metals	Hydrogen	Study
Canadian Solar (Australia) Pty Limited	Terminated	Canadian Solar connection studies at Carwarp Solar Farm	$70,000		QLD	Optimising the transition to renewable electricity	Battery storage	Demonstration
Centennial Newstan Pty Limited	Terminated	Pumped Hydro Energy Storage Project	$364,212	$364,212	NSW	Optimising the transition to renewable electricity	Pumped hydro energy storage	Study
Chargefox Pty Ltd	Active	Electric Vehicle Charging Network Project	$6,000,000		VIC	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Chargefox Pty Ltd	Active	Future Fuels Public Fast Charging Adelaide Project	$600,000		SA	Budget Measures	Electric vehicles	Deployment
Chargefox Pty Ltd	Active	Future Fuels Public Fast Charging Perth Project	$800,000		WA	Budget Measures	Electric vehicles	Deployment
Climate-KIC Australia Ltd	Closed	Residential heat pump study	$500,000		NSW	Previous initiatives	Geothermal	Study
CSIRO	Active	Solar Thermochemical Hydrogen R&D Project	$2,207,676		NSW	Commercialising renewable hydrogen	Hydrogen	R&D
CSIRO	Active	IEA SolarPACES (Solar Power and Chemical Energy Systems) Technology Collaboration Program (TCP)	$364,000		NSW	Previous initiatives	Solar thermal	Study
CSIRO	Active	IEA Ocean Energy Systems -Technology Collaboration Program (TCP)	$231,599		TAS	Previous initiatives	Marine	Study
CSIRO	Active	Australian Solar Thermal Research Institute (ASTRI)	$49,958,747	$3,750,000	NSW	Previous initiatives	Solar thermal	R&D

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CSIRO	Closed	Missions Innovation Challenge - Smart Grids	$113,750	$11,375	NSW	Previous initiatives	Enabling	Study
CSIRO	Closed	Hydrogen to Ammonia R&D Project	$1,175,000		VIC	Commercialising renewable hydrogen	Hydrogen	R&D
Desert Knowledge Research Institute Ltd	Active	Alice Springs Future Grid Project	$2,171,916	$817,498	NT	Previous initiatives	Enabling	Deployment
Diffuse Energy Pty Ltd	Active	Diffuse Energy Resilient Wind Energy for Telecommunications Sites	$341,990	$42,463	NSW	Optimising the transition to renewable electricity	Wind	Demonstration
East Rockingham Rrf Project Co Pty Ltd	Active	East Rockingham Waste to Energy Project	$18,000,000		WA	Previous initiatives	Bioenergy	Deployment
Edify Energy Pty Ltd	Active	Darlington Point Energy Storage System	$6,600,000		NSW	Optimising the transition to renewable electricity	Battery storage	Deployment
EDL Group Operations Pty Ltd	Active	Coober Pedy Renewable Diesel Hybrid	$18,410,879		SA	Previous initiatives	Hybrid	Demonstration
Electric Highway Tasmania Proprietary Limited	Active	Hobart EHT Fast Charger Network Project	$400,000	$160,000	TAS	Budget Measures	Electric vehicles	Deployment
Elexsys Energy Pty Ltd	Active	DER Hosting Capacity Demonstration Project	$451,167	$100,000	QLD	Previous initiatives	Enabling	Demonstration
ENEL X Australia Pty Ltd	Active	Commercial Refrigeration Flexible Demand Project	$3,675,361		VIC	Optimising the transition to renewable electricity	Enabling	Demonstration
ERM Power Retail Pty Ltd	Closed	ERM Power advancing renewables in the manufacturing sector project	$250,000		QLD	Optimising the transition to renewable electricity	Enabling	Study
Ethanol Technologies Pty Limited	Active	Cellulosic Ethanol Pilot Plant	$11,960,000		NSW	Previous initiatives	Bioenergy	Demonstration
Evie Networks	Active	Future Fuels Public Fast Charging Darwin	$300,000	$30,000	NT	Budget Measures	Electric vehicles	Deployment

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Evie Networks	Active	Future Fuels Public Fast Charging Hobart	$400,000	$40,000	TAS	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Canberra	$500,000		ACT	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Adelaide	$600,000		SA	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Perth	$800,000		WA	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Brisbane	$1,500,000	$150,000	QLD	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Melbourne	$2,250,000		VIC	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Future Fuels Public Fast Charging Sydney	$2,500,000	$250,000	NSW	Budget Measures	Electric vehicles	Deployment
Evie Networks	Active	Fast Cities - Creating a National Ultrafast EV Charging Infrastructure Network	$15,000,000	$4,000,000	QLD	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Evoenergy	Active	ACT Distributed Energy Resources Demonstration Pilot (Project Converge)	$2,852,118	$588,299	ACT	Previous initiatives	Enabling	Demonstration
Fortescue Future Industries Pty Ltd	Active	Gibson Island Green Ammonia Study	$13,662,272		QLD	Optimising the transition to renewable electricity	Hydrogen	Study
Genex Power Limited	Active	Kidston Pumped Hydro Energy Storage Project	$47,000,000		QLD	Optimising the transition to renewable electricity	Pumped hydro energy storage	Deployment
Gess Devco Pty Ltd	Closed	Gannawarra Energy Storage System (GESS)	$22,735,000		VIC	Optimising the transition to renewable electricity	Battery storage	Demonstration
Glaciem Cooling Technologies Pty Ltd	Active	Advancing Renewables with PCM Thermal Energy Storage Project	$1,962,037		SA	Optimising the transition to renewable electricity	Enabling	Demonstration

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Goldwind Australia Pty Ltd	Closed	Gold Fields Demonstration of a high penetration renewable microgrid on an operating mine in WA	$13,500,000		WA	Supporting the transition to low emissions metals	Off grid	Deployment
Ground Source Systems Pty Ltd	Active	Yanderra Shallow Geothermal-Solar Systems Demonstration	$318,556	$168,722	NSW	Previous initiatives	Geothermal	Demonstration
Hardwick Processors Proprietary Limited	Active	Installation of Heat Pump and Power Upgrade Demonstration	$838,000	$728,000	VIC	Previous initiatives	Enabling	Demonstration
Hazer Group Limited	Active	Hazer Process Demonstration Plant	$9,410,000		WA	Commercialising renewable hydrogen	Hydrogen	Demonstration
HYSATA Pty Ltd	Active	High-Efficiency 'Capillary-fed' Electrolyser Pilot Project	$8,980,000		NSW	Commercialising renewable hydrogen	Hydrogen	Demonstration
Icon Retail Investments Limited and AGL Act Retail Investments Pty Ltd	Active	Realising Electric Vehicle-to-grid Services Project	$2,738,648	$1,282,995	ACT	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Indigenous Essential Services Pty Ltd	Active	Northern Territory Solar Energy Transformation Program (SETuP)	$35,000,000		NT	Previous initiatives	Hybrid	Demonstration
Indra Australia Pty Ltd	Closed	Monash Smart Microgrid Project	$2,974,162		VIC	Optimising the transition to renewable electricity	DER integration	Demonstration
Infravision Pty Ltd	Active	Next Generation Line Monitoring System Demonstration Project	$732,492	$348,553	NSW	Optimising the transition to renewable electricity	Enabling	Demonstration
Intellihub Australia Pty Ltd	Active	Street Light Pole EV Charger with Grid Integration Project	$871,000	$436,950	NSW	Previous initiatives	Enabling	Demonstration
IPAH Client Solutions Australia Pty Ltd	Active	Future Fuels Public Fast Charging Adelaide	$600,000		SA	Budget Measures	Electric vehicles	Deployment
IPAH Client Solutions Australia Pty Ltd	Active	Future Fuels Public Fast Charging Melbourne	$2,250,000		VIC	Budget Measures	Electric vehicles	Deployment
IPAH Client Solutions Australia Pty Ltd	Active	Future Fuels Public Fast Charging Brisbane	$1,500,000		QLD	Budget Measures	Electric vehicles	Deployment

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IPAH Client Solutions Australia Pty Ltd	Active	Future Fuels Public Fast Charging Sydney	$2,500,000		NSW	Budget Measures	Electric vehicles	Deployment
IPEC Pty Ltd	Active	Depot of the Future Vehicle Electrification Project	$20,062,127		NSW	Budget Measures	Electric vehicles	Deployment
IT Power (Australia) Pty Limited	Closed	Testing the performance of lithium-ion batteries	$1,290,000		ACT	Previous initiatives	Battery storage	R&D
IT Power (Australia) Pty Limited	Closed	Open Source Grid Integration Model for the National Electricity Market	$624,940		ACT	Previous initiatives	Enabling	Study
Jemalong JSS Project No 1 Pty Limited	Active	30MW Concentrating Solar Thermal power plant with thermal energy storage	$39,500,000		NSW	Optimising the transition to renewable electricity	Solar thermal	Demonstration
Jemena	Active	Power to Gas Demonstration	$7,500,000		NSW	Commercialising renewable hydrogen	Hydrogen	Demonstration
Jemena Electricity Networks (VIC) Ltd	Active	Dynamic Electric Vehicle Charging Trial Project	$1,558,590	$975,110	VIC	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Jemena Gas Networks (NSW) Ltd	Active	Biomethane Injection Demonstration	$5,900,000	$1,572,420	NSW	Previous initiatives	Bioenergy	Demonstration
Jolt Charge Pty Ltd	Active	Metro Advertising Revenue Funded Electric Vehicle Charging Trial Project	$983,776		NSW	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Kennedy Energy Park	Active	Kennedy Energy Park (KEP)	$18,000,000		QLD	Optimising the transition to renewable electricity	Hybrid	Demonstration
Lake Bonney BESS Pty Ltd	Closed	Lake Bonney BESS	$5,000,000	$100,000	SA	Optimising the transition to renewable electricity	Battery storage	Demonstration
Lakeland Solar & Storage Pty Limited	Terminated	Lakeland Solar & Storage Project	$17,419,000		QLD	Previous initiatives	Large-scale solar	Demonstration
Logan City Council	Active	Loganholme Wastewater Treatment Plant Gasification Facility Demonstration Project	$6,220,898	$1,824,109	QLD	Previous initiatives	Bioenergy	Demonstration

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Logan City Council	Active	FOGO Feasibility Study	$291,785		QLD	Budget Measures	Enabling	Study
Lord Howe Island Board	Active	Lord Howe Island Hybrid Renewable Project	$4,500,000		NSW	Previous initiatives	Hybrid	Demonstration
Macquarie Capital (Australia) Limited	Active	Kwinana Waste to Energy	$23,000,000		WA	Previous initiatives	Bioenergy	Deployment
Macquarie Corporate Holdings Pty Limited	Active	H2 Newcastle Hydrogen Hub at the Port of Newcastle Feasibility Study	$1,500,000	$870,666	NSW	Previous initiatives	Hydrogen	Study
Macquarie University	Active	Substitution of niche-market PV production tools with cost-effective consumer-electronics technology	$420,000	$160,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
Macquarie University	Closed	Biological Hydrogen Production R&D Project	$1,148,455	$229,691	NSW	Commercialising renewable hydrogen	Hydrogen	R&D
Meridian Energy Australia	Active	Wind Forecasting Demonstration Project	$2,180,155	$80,155	VIC	Optimising the transition to renewable electricity	Market data and information	Demonstration
MGA Thermal Pty Ltd	Active	Thermal Energy Storage Project	$1,267,500	$700,000	NSW	Optimising the transition to renewable electricity	Enabling	Demonstration
Mirvac	Active	Net Zero Energy Homes	$784,000	$534,000	VIC	Previous initiatives	Hybrid	Deployment
Monash University	Active	Stability-Enhancing Measures for Weak Grids Study	$559,376	$191,776	VIC	Optimising the transition to renewable electricity	Enabling	Study
Monash University	Active	Integrating Energy Storage into the NEM Study	$495,000		VIC	Previous initiatives	Enabling	Study
Monash University	Active	Management of Oscillations in Australia's National Grid	$499,744		VIC	Optimising the transition to renewable electricity	Solar PV	Study
Monash University	Closed	Australian Industry ETI Delivery Stage Project	$2,000,000	$1,108,780	VIC	Supporting the transition to low emissions metals	Enabling	Study

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Monash University	Closed	Water splitting electrodes R&D Project	$1,054,209	$210,842	VIC	Commercialising renewable hydrogen	Hydrogen	R&D
Monash University	Closed	Ammonia production from renewables R&D Project	$915,848	$183,170	VIC	Commercialising renewable hydrogen	Hydrogen	R&D
Musselroe Wind Farm Pty Ltd	Closed	Musselroe Wind Farm FCAS Trial	$448,811		TAS	Optimising the transition to renewable electricity	Wind	Study
Neoen Australia Pty Ltd	Active	Hornsdale Power Reserve Upgrade Project	$8,000,000		SA	Optimising the transition to renewable electricity	Battery storage	Deployment
NEV Power Pty Ltd	Active	Narara Ecovillage smart grid	$1,388,660	$318,069	NSW	Previous initiatives	Hybrid	Deployment
OMPS Pty Ltd	Active	New England PHES Benefits Study	$666,303	$107,303	NSW	Optimising the transition to renewable electricity	Pumped hydro energy storage	Study
Origin Energy Limited	Active	Electric Vehicle Smart Charging Trial	$838,400		NSW	Optimising the transition to renewable electricity	Electric vehicles	Demonstration
Origin Energy Limited	Active	Accelerate EV Fleet Program	$6,171,855		NSW	Optimising the transition to renewable electricity	Electric vehicles	Deployment
Pooled Energy	Terminated	Demand Management and Modulation	$2,100,000		NSW	Previous initiatives	Enabling	Demonstration
Queensland University of Technology	Active	Hydrogen process R&D Project	$3,650,000		QLD	Commercialising renewable hydrogen	Hydrogen	R&D
RayGen Resources Pty Ltd	Active	Solar Power Plant Demonstration Project	$15,000,000	$3,900,000	VIC	Optimising the transition to renewable electricity	Solar thermal	Deployment
Re.Group Pty Ltd	Closed	Mt Piper Energy Recovery Project, Financial Investment Decision Study	$892,724		NSW	Previous initiatives	Bioenergy	Study
Reactive Technologies Pty Ltd	Active	System Inertia Measurement Demonstration	$1,430,000	$300,000	VIC	Optimising the transition to renewable electricity	Enabling	Demonstration

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Redback Operations Pty Ltd	Active	SHIELD - Synchronising Heterogeneous Information (to) Evaluate Limits (for) DNSPs Project	$2,629,500		QLD	Optimising the transition to renewable electricity	Enabling	Demonstration
Regional Power Corporation	Active	Denham Hydrogen Demonstration	$2,573,071	$1,543,842	WA	Commercialising renewable hydrogen	Hydrogen	Demonstration
Relectrify Holdings Pty Ltd	Active	Second-Life Battery Trial	$1,488,560		VIC	Previous initiatives	Battery storage	Demonstration
Renergi Pty Ltd	Active	Waste to Energy through Pyrolysis	$4,300,000	$784,874	WA	Previous initiatives	Bioenergy	Demonstration
Rheem Australia	Active	Bringing South Australia"s Hot Water Load Under Active Control	$1,981,000		SA	Optimising the transition to renewable electricity	Enabling	Demonstration
Rio Tinto Aluminium Limited	Active	Yarwun Hydrogen Calcination Pilot Demonstration Program	$32,108,283		QLD	Previous initiatives	Hydrogen	Demonstration
Rio Tinto Aluminium Limited	Closed	Rio Tinto Pacific Operations Hydrogen Program	$563,498	$563,498	QLD	Supporting the transition to low emissions metals	Hydrogen	Study
RMIT University	Closed	Building Integrated Photovoltaics (BIPV) Enabler	$100,614	$50,307	VIC	Optimising the transition to renewable electricity	Enabling	R&D
SA Power Networks	Active	Market-Active Solar trial	$1,016,063	$58,203	SA	Optimising the transition to renewable electricity	Enabling	Demonstration
SA Power Networks	Active	Flexible exports for solar PV trial	$2,085,337		SA	Optimising the transition to renewable electricity	Solar PV	Demonstration
Shell Energy Retail Pty Ltd	Active	Smart Energy Hubs Deployment Project	$9,100,000	$2,972,500	QLD	Optimising the transition to renewable electricity	Enabling	Deployment
Simply Energy Solutions Pty Ltd	Active	Virtual Power Plant (VPPX) Project	$7,700,000	$25,000	SA	Optimising the transition to renewable electricity	Solar PV	Deployment
Solar Analytics	Active	Smart CER Consumer Uptake Tool Project	$927,890	$300,000	NSW	Optimising the transition to renewable electricity	Enabling	Deployment

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Solar and Storage Modelling Pty Ltd	Closed	Gridded Renewables Nowcasting Demonstration over South Australia	$994,685	$100,000	NSW	Previous initiatives	Enabling	Demonstration
Southern Cross REVC Trusco	Active	Southern Cross Renewable Energy Fund	$60,000,000		NSW	Previous initiatives	Enabling	Demonstration
Spinifex Offshore Wind Farm Pty Ltd	Active	Offshore Wind Farm Phase 1 Development Activities	$1,500,000	$1,100,000	VIC	Supporting the transition to low emissions metals	Wind	Study
Spotless Sustainability Services	Closed	Ballarat Terminal Station Battery Energy Storage System (BESS)	$2,265,000		VIC	Optimising the transition to renewable electricity	Battery storage	Demonstration
Stanwell Corporation Limited	Active	Central Queensland Hydrogen (CQ-H2) Project FEED study	$20,000,000		QLD	Commercialising renewable hydrogen	Hydrogen	Study
Stanwell Corporation Limited	Closed	Central Queensland Hydrogen Project Feasibility Study	$2,168,229	$2,168,229	QLD	Commercialising renewable hydrogen	Hydrogen	Study
Sundrive Solar Pty Ltd	Active	Copper Metallisation Demonstration Project	$3,000,000	$1,000,000	NSW	Previous initiatives	Solar PV	Demonstration
Swinburne University of Technology	Active	Electrically-Enhanced Recycling Process for EoL Si PV-Cells	$454,000		VIC	Optimising the transition to renewable electricity	Solar PV	R&D
Toyota Motor Corporation Australia Ltd	Active	Toyota Ecopark Hydrogen Demonstration	$3,283,173	$362,944	VIC	Commercialising renewable hydrogen	Hydrogen	Demonstration
TransGrid	Active	Wallgrove Battery	$10,147,919		NSW	Optimising the transition to renewable electricity	Battery storage	Deployment
TransGrid	Active	Central West NSW Energy Zone Detailed Scoping Study	$5,000,000	$50,000	NSW	Optimising the transition to renewable electricity	Enabling	Study
Trustee for ERIC Alpha AUP Trust 1 & Others	Active	South Australia Demand Flexibility trial	$2,717,136	$428,125	SA	Optimising the transition to renewable electricity	Enabling	Demonstration
Trustee for Penrith Smart Battery Project Trust	Terminated	Western Sydney Smart Battery Project	$0		NSW	Previous initiatives	Enabling	Deployment

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Trustee for Sustainable Melbourne Fund	Active	Scaling up Environmental Upgrade Agreements (EUAs) across Australia	$725,000	$100,000	NSW	Previous initiatives	Enabling	Deployment
Trustee for Transgrid Services Trust	Active	Pilot for commercial development of transmission structure	$995,000		NSW	Optimising the transition to renewable electricity	Enabling	Demonstration
Trustee for Yadlamalka Land Trust	Active	Co-located Vanadium Flow Battery Storage and Solar Project	$5,695,000		SA	Optimising the transition to renewable electricity	Battery storage	Demonstration
United Energy Distribution Pty Limited	Active	LV Battery Trial	$4,000,000		VIC	Previous initiatives	Battery storage	Demonstration
University of Adelaide	Active	Integrating Concentrating Solar Thermal Energy into the Bayer Alumina Process	$4,490,752		SA	Supporting the transition to low emissions metals	Solar thermal	R&D
University of Melbourne	Active	Hydrogen Fuelled Reciprocating Engines R&D Project	$2,594,747		VIC	Commercialising renewable hydrogen	Hydrogen	R&D
University of Melbourne	Active	New Materials-Singlet Fission enhanced silicon solar cells.	$1,290,333	$387,100	VIC	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Project MATCH - Distributed energy resources (DER)	$981,241	$350,000	NSW	Previous initiatives	Enabling	Study
University of New South Wales	Active	Australia-US Institute for Advanced Photovoltaics (AUSIAPV)	$128,974,090	$6,407,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Development of Beyond 20% Efficiency Kesterite (CZTSSe) Solar Cells	$1,331,098	$133,110	NSW	Optimising the transition to renewable electricity	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		NSW	Optimising the transition to renewable electricity	Solar PV	R&D

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University of New South Wales	Active	Efficient Adamantine Thin-Film on Silicon Tandem Cells: The Next Step in Commercial Cell Evolution	$3,184,166	$318,417	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Next-generation selective-emitters for commercial PERC and TOPCon solar panels	$1,232,429	$246,486	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Reduced Solar Module Temperature R&D project	$1,767,730		NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	RoHS-compliant antimony chalcogenide: top cell alternative for silicon tandem cells	$693,388		NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Highly efficient, low-cost and eco-friendly recycling technology for silicon photovoltaic panels	$1,360,000	$408,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Lower PV cost by a combination of luminescence images and machine-learning	$694,224	$138,845	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Industrial high-throughput inspection methods for high-efficiency multijunction solar cells	$2,727,949	$1,160,759	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Machine learning applications for utility-scale PV	$2,587,980	$1,053,734	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Silver-lean screen printing for sustainable low-cost industrial PV manufacturing at the terawatt scale Project	$3,364,455	$1,035,578	NSW	Optimising the transition to renewable electricity	Solar PV	R&D

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University of New South Wales	Active	Efficient and Stable Chalcogenide-Si tandem cells: integrating commercialised PV technologies	$3,082,000	$1,414,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Low-cost >30% Efficient Silicon Photovoltaic Solar Cells Achieved through Singlet Fission	$4,836,546	$1,526,377	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Rear-Junction p-type PERC/ TOPCon Hybrid Solar Cells (RJ-PERP)	$3,740,423	$1,199,232	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Low-cost and Sustainable PV Systems for the Terawatt Scale Project	$2,426,656	$557,612	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Optimal O&M-strategy and LCOE-modelling for ground-mounted PV	$3,746,878	$1,294,982	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Daytime Inspection Solutions for Advanced Operation and Maintenance of Solar Farms	$2,853,813	$956,963	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Active	Development and Commercialisation of High Efficiency Silicon Solar Cell Technology	$5,791,980		NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Launch of a photothermal absorption spectrometer for cost reduction in PV materials	$100,000	$50,000	NSW	Optimising the transition to renewable electricity	Enabling	R&D
University of New South Wales	Closed	Mission Innovation Challenge - Off-Grid Access to Electricity	$195,933		NSW	Previous initiatives	Enabling	Study
University of New South Wales	Closed	Photovoltaic Electrolysis to Generate Hydrogen R&D Project	$1,319,105	$263,821	NSW	Commercialising renewable hydrogen	Hydrogen	R&D

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University of New South Wales	Closed	Waste Biomass to Renewable Hydrogen R&D Project	$1,041,620	$205,004	NSW	Commercialising renewable hydrogen	Hydrogen	R&D
University of New South Wales	Closed	Accelerating industrial solar cells efficiency by development of plasma-enhanced chemical vapour deposition (PECVD) - based metal oxides	$503,389	$103,389	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Metallised Encapsulant for Silicon PV Modules: A Path to Reduced LCOE for PV	$1,120,790	$10,790	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Improving World-Record Commercial High-Efficiency n-type Solar Cells through Recombination Analysis and Innovative Passivation	$1,785,000	$178,500	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Hydrogenated bifacial PERL Silicon PV Cells with laser doping and plated contacts R&D Project	$1,100,000	$110,000	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Advanced high-efficiency silicon solar cells employing innovative atomic scale engineered surface and contact passivation layers	$2,019,456		NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of New South Wales	Closed	Development of novel hydrogen trapping techniques for breakthrough Si casting and wafering technologies	$1,968,000		NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of Queensland	Active	Platform for Solar Farm Pre-commissioning	$498,000	$338,640	QLD	Previous initiatives	Solar PV	Study
University of Sydney	Active	Durable Silicon Perovskite Tandem Photovoltaics	$987,285	$197,456	NSW	Optimising the transition to renewable electricity	Solar PV	R&D

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
University of Sydney	Active	Commercialising Si perovskite tandem in Australia	$2,783,525	$1,260,273	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of Sydney	Closed	Triple Junction Silicon-Perovskite-Perovskite Tandem Photovoltaics	$1,494,340	$747,170	NSW	Optimising the transition to renewable electricity	Solar PV	R&D
University of Western Australia	Closed	Methanol from Syngas R&D Project	$1,032,765	$168,865	WA	Commercialising renewable hydrogen	Hydrogen	R&D
University of Wollongong	Active	Robust Methods for Harmonics Compliance Study	$1,040,000		NSW	Optimising the transition to renewable electricity	Enabling	Study
University of Wollongong	Closed	Investigation of the Impact and Management of Harmonic Distortion for Large Renewable Generators	$146,400	$10,000	NSW	Optimising the transition to renewable electricity	Enabling	Study
Upowr Pty Ltd	Terminated	Customer focused design for DER participation	$191,300		VIC	Optimising the transition to renewable electricity	Battery storage	Demonstration
Viva Energy Australia Pty Ltd	Active	New Energies Service Station Geelong Demonstration Project	$22,800,000	$22,800,000	VIC	Previous initiatives	Hydrogen	Demonstration
VPP Project 1 (SA) Pty Ltd	Active	South Australia's Virtual Power Plant - Phase 3A, Tesla Motors Australia	$8,200,000		SA	Optimising the transition to renewable electricity	Battery storage	Deployment
Wattwatchers	Active	My Energy Marketplace Deployment Project	$2,703,134	$179,392	NSW	Optimising the transition to renewable electricity	Enabling	Demonstration
Wave Swell Energy Limited	Active	UniWave200 King Island Project	$4,035,628		TAS	Previous initiatives	Marine	Demonstration
Western Power	Active	Distributed Energy Resources Orchestration Pilot (Project Symphony)	$8,557,027	$4,322,413	WA	Previous initiatives	Enabling	Demonstration
Yuri Operations Pty Ltd	Active	Yuri Renewable Hydrogen to Ammonia Project	$47,500,000	$47,500,000	WA	Previous initiatives	Hydrogen	Deployment
Zenobe Australia Pty Ltd	Closed	Next generation electric bus depot	$5,000,000	$1,579,041	NSW	Previous initiatives	Battery storage	Demonstration

PROPONENT NAME	PROJECT STATUS	PROJECT NAME	FINANCIAL ASSISTANCE COMMITTED (EX GST)	FINANCIAL ASSISTANCE PAID 2022-23 (EX GST)	PRIMARY LOCATION	STRATEGIC PRIORITY	PRIMARY TECHNOLOGY	INNOVATION STAGE
Zeppelin Bend Pty Ltd	Closed	Publishing operating envelopes to the node to support the integration, orchestration and coordination of high-penetration DER in electricity distribution networks	$4,292,632		ACT	Optimising the transition to renewable electricity	DER integration	Demonstration

TABLE 10: TOTAL RECV INVESTMENT IN PROJECTS 2022-23

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	Wound-up
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

*ARENA's share of these investments is 50 per cent.

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	REQUIREMENT
Australian Renewable Energy Agency Act 2011 (ARENA Act) (section 70)	147 122	**Funding provided under ARENA Act** Provide particulars of each person to whom financial assistance was provided or committed during the year: › 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)	84	**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)	84	**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)	147	**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: › 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: › 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 Acts Interpretation Act 1901
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
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

LEGISLATION	ANNUAL REPORT	REQUIREMENT
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)	84	**Contents of annual report** Details of the legislation that established ARENA
	84	Summary of ARENA's objects and functions as set out in the legislation
	22, 78, 102, 124-125, 138, 140	ARENA's Purpose as set out in the Corporate Plan for the reporting period
	84	Name and title of the responsible Minister(s) during the reporting period
	84	Directions given to ARENA by the Minister under an Act or instrument during the reporting period
	84	Any government policy order that applied to ARENA during the reporting period under section 22 of the Act
	84	Particulars of any non-compliance with ministerial directions or government policy orders
	122	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
	84	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
	28	Information on each member of the ARENA Board during the reporting period
	91	Outline of ARENA's organisational structure
	173	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
	76	Main corporate governance practices used by ARENA during the reporting period
	88 + 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): › 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
	78	Any significant activities and changes that affected ARENA's operations or structure during the reporting period This may include: › significant events, such as forming or participating in the formation of a company, significant partnership or trust › operational and financial results of the entity › key changes to the entity's state of affairs or principal activities › amendments to the entity's enabling legislation and to any other legislation directly relevant to its operation.
	88	Particulars of judicial decisions or decisions of administrative tribunals that may have a significant effect on the operations of ARENA

LEGISLATION	ANNUAL REPORT	REQUIREMENT
	88	Particulars of any reports on ARENA given by: › the Auditor-General › a Parliamentary Committee › the Commonwealth Ombudsman › the Office of the Australian Information Commissioner › any capability reviews of the entity that were released during the period.
	89	Explanation of information not obtained from an ARENA subsidiary and the effect of not having the information in the annual report
	81	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)
	34-36, 78, 81, 134, 174-175	Information about the ARENA audit committee: › 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
	173 + Note 3.2 of Financials	Information about executive remuneration
PGPA Act (section 39), PGPA Rule (section 16F)	122	**Annual performance statement** Statement of preparation Results achieved Analysis of performance
PGPA Act (section 42), PGPA Rule 2015	92	**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
Environment Protection and Biodiversity Conservation Act 1999 (Section 516a)	86	**Environmental performance** Annual reports must: › report how the agency's activities have accorded with the principles of ESD › identify how the agency's outcomes contributed to ESD › report on the agency's impact on the environment › identify any measures taken to minimise the impact › identify the review mechanisms used for reviewing and increasing the effectiveness of those measures **Australian Public Service Net Zero 2030** Report on the emissions from ARENA's operations using the tools and guidance provided by the APS Net Zero Unit in the Department of Finance.
Freedom of Information Act 1982 (Part II)	86	**Information Publication Scheme** Actions taken to comply

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 (2022-23)

	MALE			FEMALE			INDETERMINATE			TOTAL
	Fulltime	Part time	*Total male*	Fulltime	Part time	*Total female*	Fulltime	Part time	*Total indeter-minate*	
NSW	2	-	2	-	-	-	-	-	-	2
Total	2	-	2	-	-	-	-	-	-	2

TABLE 13: ALL NON-ONGOING EMPLOYEES CURRENT REPORTING PERIOD (2022-23)

	MALE			FEMALE			INDETERMINATE			TOTAL
	Fulltime	Part time	*Total male*	Fulltime	Part time	*Total female*	Fulltime	Part time	*Total indeter-minate*	
Total	-	-	-	-	-	-	-	-	-	-

TABLE 14: ALL ONGOING EMPLOYEES PREVIOUS REPORTING PERIOD (2021-22)

	MALE			FEMALE			INDETERMINATE			TOTAL
	Fulltime	Part time	*Total male*	Fulltime	Part time	*Total female*	Fulltime	Part time	*Total indeter-minate*	
NSW	2	-	2	-	-	-	-	-	-	2
Total	2	-	2	-	-	-	-	-	-	2

TABLE 15: ALL NON-ONGOING EMPLOYEES PREVIOUS REPORTING PERIOD (2021-22)

	MALE			FEMALE			INDETERMINATE			TOTAL
	Fulltime	Part time	*Total male*	Fulltime	Part time	*Total female*	Fulltime	Part time	*Total indeter-minate*	
Total	-	-	-	-	-	-	-	-	-	-

TABLE 16: SIGNIFICANT NON-COMPLIANCE WITH FINANCE LAW

DESCRIPTION OF NON-COMPLIANCE	REMEDIAL ACTION
N/A	N/A

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 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 the 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 17 and 18 below.

TABLE 17: EXECUTIVE REMUNERATION DISCLOSURES 2022-23

		SHORT-TERM BENEFITS			POST-EMPLOYMENT BENEFITS	OTHER LONG-TERM BENEFITS		TERMINATION BENEFITS	TOTAL REMUNERATION
NAME	POSITION	BASE SALARY	BONUSES	OTHER BENEFITS AND ALLOWANCES	SUPERANNUATION CONTRIBUTIONS	LONG SERVICE LEAVE	OTHER LONG-TERM BENEFITS	TERMINATION BENEFITS	TOTAL REMUNERATION
KEY MANAGEMENT PERSONNEL		**$**	**$**	**$**	**$**	**$**	**$**	**$**	**$**
Mr Justin Punch	Board member Chair	96,840	-	-	10,168	-	-	-	107,008
Mr Justin Butcher	Board member (to 17 July 2022)	2,919			306				3,225
Mr John Hirjee	Board member Risk and Audit Committee member	53,504	-	-	5,613	-	-	-	59,117
Ms Anna Matysek	Board member	48,420	-	-	5,084	-	-	-	53,504
Mr Stephen McIntosh	Board member Risk and Audit Committee member	53,504			5,613				59,117
Ms Elizabeth O'Leary	Board member (from 18 July 2022)	45,579	-	-	4,786	-	-	-	50,365
Ms Stephanie Unwin	Board member	48,420	-	-	5,084	-	-	-	53,504
Mr Darren Miller	Chief Executive Officer	447,971	-	-	27,500	14,865	-	-	490,336
Mr Ian Kay	Chief Financial Officer	411,788	-	-	27,500	17,318	-	-	456,606
Mr Chris Faris	Chief Operating Officer	262,672	-	-	37,571	8,418	-	-	308,661
Ms Rachele Williams	General Manager Project Delivery	237,352	-	-	33,949	7,607	-	-	278,908
TOTAL		**1,708,969**	**-**	**-**	**163,174**	**48,208**	**-**	**-**	**1,920,351**

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 other benefits or allowances (such as motor vehicle benefits, housing and health benefits and the associated fringe benefits tax).
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 Table 18: Remuneration of ARENA Risk and Audit Committee Members.
Note 5: The CEO salary and the Board fees are determined by the Remuneration Tribunal.
Note 6: The Chief Operating Officer and the General Manager Project Delivery are employees of the Portfolio Department, on secondment to ARENA. Salary for these secondments is provided in the resources free of charge to ARENA. Salary information is provided by the Portfolio Department.
Note 7: ARENA was subject to a Machinery of Government (MoG) change on 01 July 2022, moving to a new Portfolio Department. Entitlements for the Chief Operating Officer and the General Manager Project Delivery transferred with salary rates of the new Portfolio Department effective from 1 July 2022. Salary and entitlements for Board members, the Chief Executive Officer and the Chief Financial Officer were not impacted by the MoG.

TABLE 18: REMUNERATION OF ARENA RISK AND AUDIT COMMITTEE MEMBERS (RAC) 2022-23

		SHORT-TERM BENEFITS			POST-EMPLOYMENT BENEFITS	OTHER LONG-TERM BENEFITS		TERMINATION BENEFITS	TOTAL REMUNERATION
NAME	POSITION	BASE SALARY	BONUSES	OTHER BENEFITS AND ALLOWANCES	SUPERANNUATION CONTRIBUTIONS	LONG SERVICE LEAVE	OTHER LONG-TERM BENEFITS	TERMINATION BENEFITS	TOTAL REMUNERATION
Ms Karen Hogan	Risk and Audit Committee Chair	-	-	21,000	-	-	-	-	21,000
Mr Stephen Sheehan	Risk and Audit Committee member	-	-	11,850	-	-	-	-	11,850
Mr John Hirjee	Board member Risk and Audit Committee member	5,080	-	-	533	-	-	-	5,613
Mr Stephen McIntosh	Board member Risk and Audit Committee member	5,080	-	-	533	-	-	-	5,613
TOTAL		**10,160**	**-**	**32,850**	**1,066**	**-**	**-**	**-**	**44,076**

Note 1: Independent RAC members are engaged on fee for service basis; amounts reported are GST exclusive.

SENIOR EXECUTIVE REMUNERATION DISCLOSURES 2022-23

ARENA does not have any senior executives other than those already included within the KMP disclosures in Table 17.

OTHER HIGHLY PAID STAFF REMUNERATION DISCLOSURES 2022-23

For the reporting period 2020-21, the threshold for other highly paid staff was $240,000.

TABLE 19: OTHER HIGHLY PAID STAFF REMUNERATION DISCLOSURES 2022-23

		AVERAGE SHORT-TERM BENEFITS			AVERAGE POST-EMPLOYMENT BENEFITS	AVERAGE OTHER LONG-TERM BENEFITS		AVERAGE TERMINATION BENEFITS	AVERAGE TOTAL REMUNERATION
TOTAL REMUNERATION BAND	NUMBER OF OTHER HIGHLY PAID STAFF	AVERAGE BASE SALARY	AVERAGE BONUSES	AVERAGE OTHER BENEFITS AND ALLOWANCES	AVERAGE SUPERANNUATION CONTRIBUTIONS	AVERAGE LONG SERVICE LEAVE	AVERAGE OTHER LONG-TERM BENEFITS		
$0-$275,000	1	232,699	-	-	33,840	7,457	-	-	273,996

Note 1: Figures in the table are reported on an accrual basis. Base salary includes movements in annual leave liabilities.
Note 2: The table reports the average remuneration for Other Highly Paid Staff employed during the reporting period.
Note 3: The Other Highly Paid Staff member was seconded from the Portfolio Department to ARENA free of charge. Salary information is provided by the Portfolio Department.

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.

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, Australian Public Service
ARENA	Australian Renewable Energy Agency
ARENA Act	*Australian Renewable Energy Agency Act 2011*
ASI	Australian Solar Institute
CEFC	Clean Energy Finance Corporation
commercialise	
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	*Environment Protection and Biodiversity Conservation Act 1999*
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.
FOI Act	*Freedom of Information Act 1982*
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
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 third party funds to ARENA funds.
IP	Investment Plan
KS	Knowledge Sharing
knowledge sharing	Information shared by ARENA or funding recipients to impart knowledge and lessons learned.
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.
NEM	National Electricity Market
off grid	Not connected to the electricity grid, such as in remote areas.
PGPA Act	*Public Governance, Performance and Accountability Act 2013*
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 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 power system to continue operating even in the event of the unexpected disruption
Strategic priority	An area that ARENA wishes to focus its funding and activities on. Strategic priorities are described in ARENA's Investment Plan and help guide funding assessments.
TNSP	Transmission network service providers
value chain	The full lifecycle of a product including design and development, material sourcing, production, consumption and disposal / recycling.
variable (energy, generation)	Types of energy generation with output that varies based on the weather.
WHS	Work health and safety
WHS Act	*Work Health and Safety Act 2011*

PUBLICATION DETAILS

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