

NSW Climate Change Fund

Annual Report 2021-22



Acknowledgment of Country

The NSW Treasury acknowledges that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.



Artwork: 'Regeneration' by Josie Rose

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas, and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families, and communities, towards improved economic, social and cultural outcomes.

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Minister's foreword



The NSW Government is committed to taking decisive, responsible action on climate change and our record demonstrates our accelerated ambition. The NSW Climate Change Fund (CCF) is a critical part of achieving this goal.

The Hon. Matt Kean MP

Treasurer, and Minister for Energy

In 2021-22, NSW was once again faced with extreme weather events that devastated our communities. With numerous periods of high rainfall, including Australia's wettest November on record, catastrophic floods wreaked havoc across large areas of NSW. Unfortunately, this is the reality of climate change, and we need to take action not only to protect our planet but to safeguard our future and ensure the prosperity of the NSW people for generations to come.

Through CCF programs, communities, businesses, local councils and government agencies are supported to reduce emissions and become more resilient to the impacts of climate change. Its programs also support the protection of our vital landscapes including our beautiful coastline and our national parks.

In 2021-22 the CCF has continued to deliver real benefits to our people, the NSW economy, and our environment. CCF programs continue to help families, businesses and local councils seize sustainability opportunities, saving them energy and money.

We have invested more than \$166.3 million to help communities become more resilient to climate change, \$38.8 million to help households, businesses and communities benefit from clean energy, and \$40 million to support energy efficiency, providing energy bill relief for households and businesses across the state.

This year also saw the closing of the 2017-2022 funding round, with \$1.231 billion invested during the 5 year period.

We are speeding ahead with the transition to net zero emissions through our Renewable Energy Zones, solar photovoltaic and battery storage initiatives, and our transition to electric vehicles.

We are building the capacity our communities, businesses and people need to adapt to the impacts of climate, sharing stories, experiences, data, information and research through enhanced digital tools, information systems and capacity building programs.

We have also expanded our national parks system to 7.59 million hectares, or 9.48% of NSW. We are focussed on mitigating the increasing risks and regularity of bushfires, floods, drought and storm surges along our coastline through prevention and protection strategies, building the capacity and resilience of our communities to respond to extreme climate events.

Addressing the impacts of climate change will be challenging, but it is a challenge that NSW is ready to face. Through the CCF, we have shown that NSW has the capacity and the ambition to lead the way in combating climate change in a way that unlocks opportunity and prosperity for our state.



Executive summary

Our vision is to ensure the heart of our state, the people and communities of NSW and the natural environment, can continue to thrive through our decisive leadership on climate change. The NSW Climate Change Fund helps to realise this vision.

In 2021-22, the CCF has once again paved the way for a sustainable and resilient future for our state and our environment.

Over 5 years, we have faced many challenges. From drought, fire, floods and other extreme weather events to a global pandemic that has seen systemic shutdowns and major disruptions to global supply chains. We've also celebrated many successes, from delivering energy efficiency upgrades to increasing tree canopy on parks and streets, and developing collaborative relationships with international governments to achieve net zero emissions.

During this time, we have remained focussed on innovative delivery, working together and leading by example. Our programs have continued to help to make NSW communities more resilient to these challenges.

In 2022 and beyond, there is an opportunity to continue the legacy of our impact to date. We can move faster to a new low carbon future that supports clean, reliable and affordable energy, while protecting our environment, waterways, natural heritage and some of our most important biodiversity.

Working with households, businesses, and communities, we will ensure our approaches to achieving net zero by 2050 are in partnership with, and responsive to, the changing needs of the people, industry and the environment of NSW. Through the CCF, we will continue to lead the way nationally in supporting technologies and programs that will deliver a safer, cleaner and cheaper future for communities and businesses around the state.

NSW Climate Change Fund

2021-22 highlights



Here are some highlights achieved with support from the CCF

We've supported our environment and biodiversity by:



expanding NSW national parks system to 7.59 million hectares or 9.48% of NSW



working with local landholders and signing over 368 agreements with the Biodiversity Conservation Trust to protect more than 195,000 hectares of privately owned land to enhance and conserve biodiversity and protect our unique and diverse plants and animals



contributing to cultural burning research and setting the future direction of fire management by commissioning the innovative NSW Bushfire Risk Management Research Hub, winner of the prestigious 2021 Australian Museum Eureka prize for Applied Environmental Research



increasing tree canopy in our neighbourhoods and promoting healthier communities by planting and registering 922,814 trees across Greater Sydney, achieving over 90% of the Premier's Priority target of one million trees



investing in priority research relating to the impacts of climate change, natural disasters and extreme weather events on our koala population, addressing any gaps in knowledge and protecting koala habitat.

We've supported our community to:



save over \$24.1 million on annual energy bills and nearly 107,590 megawatt hours (MWh) in energy savings in 94,806 households across NSW through energy efficient upgrades and energy efficient appliances



plant over 60,000 trees on properties in Greater Sydney through the Free Tree Giveaway



install 1,380 solar systems in low-income households since 2019, saving on average \$600 per household per year



help identify more than 400 small NSW schools that could benefit from installing solar panels (photovoltaic) with potential savings of \$640,000 annually and a 15% reduction in energy consumption



build resilience to floods, with the Community Resilience Program 'Floods. What's your Plan?' campaign being awarded the national Emergency Media and Public Affairs award for Excellence in Readiness and Resilience.



We've supported businesses to:



save an average of \$1,534 through energy efficient lighting and appliance upgrades through the 3,195 projects delivered as part of the small business upgrades program



identify clean technology and innovation opportunities through 3 grant streams, representing \$162.5 million in potential investment



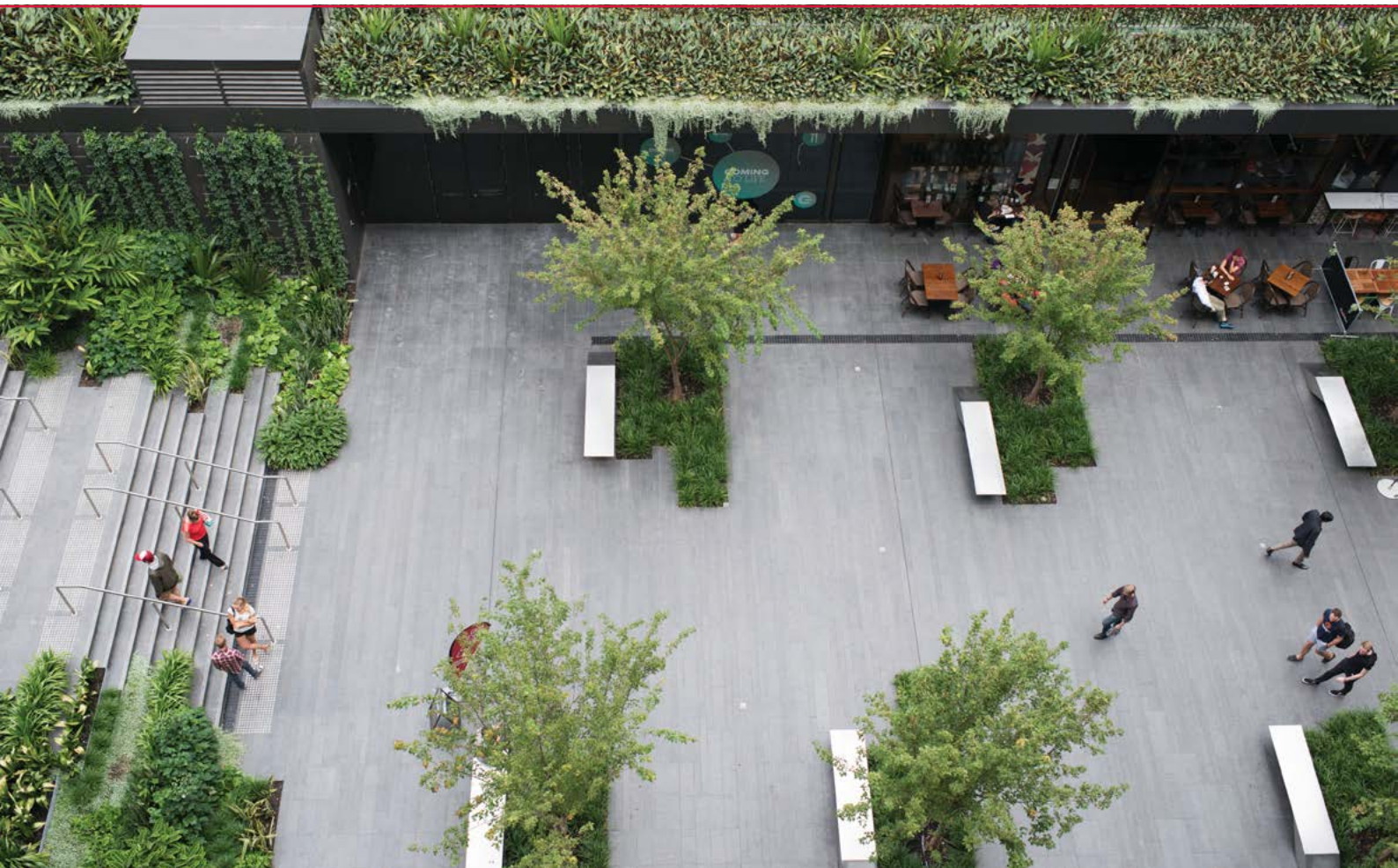
undertake metering and equipment upgrades in manufacturing facilities across NSW, saving 4,404 tonnes of (tCO₂e), equivalent to electricity use for 1,250 homes



transition their fleets to electric vehicles by providing funding support to car hire and fleet operators, reducing emissions and improving the affordability and availability of electric vehicles in NSW



understand climate mitigation options for cropping systems at 650 sites across regional NSW, to help farmers prepare for various climate change scenarios.



We've supported NSW local government and government agencies to:



deliver 1,255 efficiency projects across government agencies, saving an estimated \$115 million and 661 million kilowatt hours (kWh) in energy



analyse 165,000 government land assets for renewable energy opportunities using the Renewable Energy Infrastructure mapping portal to identify land assets for renewable energy opportunities including, wind, solar and pumped hydro



protect coastal and estuarine environments with \$47.88 million in local government funding



deliver the first large scale battery storage project at an Australian hospital with the battery manufactured right here in Australia.

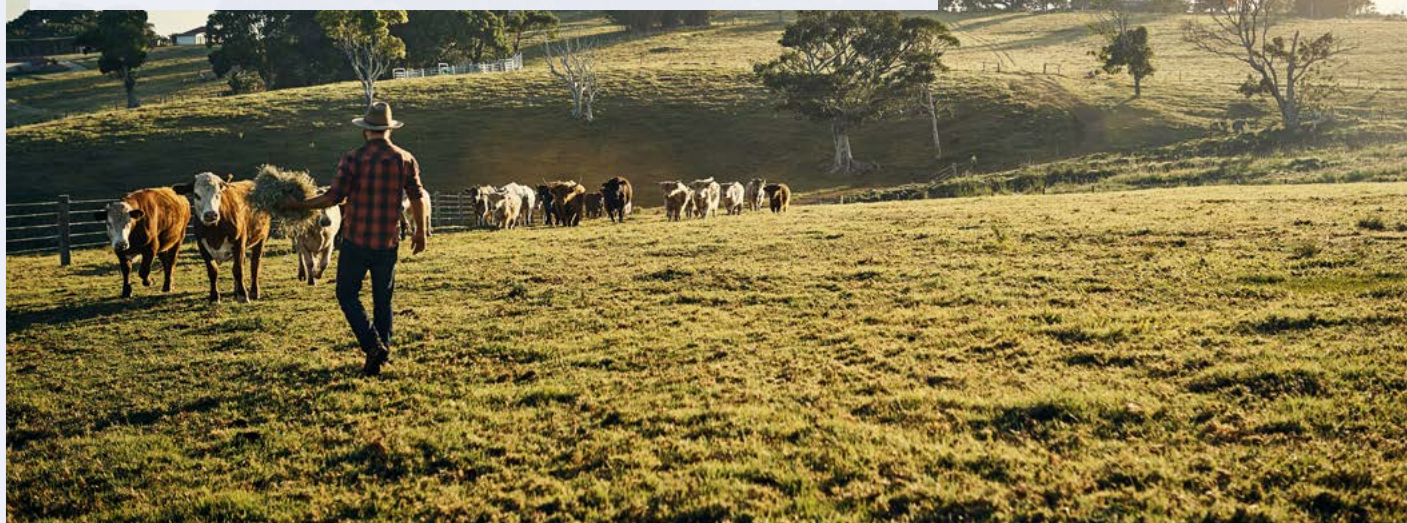
Did you know?

The NSW Government has launched the Climate and Energy Action website. The website provides easy-to-access information about sustainable choices for your household, businesses, or community.

[NSW Climate and Energy Action](#)

Financial support in a time of need

As cost-of-living rises, the CCF has supported households and local businesses to save on their energy and water bills.



The CCF provided much needed financial support to households and businesses to enable essential upgrades to improve comfort and reduce costs.

This included helping households to install solar panels and more energy efficient appliances; incentivising small businesses to upgrade to energy efficient lighting and appliances such as commercial fridges and air conditioning; and co-funding NSW manufacturing businesses to install metering and equipment.

The CCF has also promoted public knowledge, appreciation and understanding of the value of biodiversity conservation. We have supported farmers and landholders to enter agreements to conserve biodiversity, and improve carbon management to enhance productive landscapes.

We've also invested in the development of innovative large-scale electricity and storage projects, and we've worked closely with our regional communities to create community-led renewable energy projects. This investment has helped households, businesses and the community reduce their emissions and save on their energy and water use.

We've put a spotlight on some of the brightest examples of how the CCF has helped benefit households and communities across NSW this year. Our [Achievements](#) section provides further information on how the CCF has delivered financial support at a time of need. Read on to find out more.

Home Energy Action

The Home Energy Action (HEA) program is one of the most successful programs within the 2017-2022 funding round. It has delivered energy efficient appliances and energy efficient upgrades to eligible NSW households who are vulnerable to energy stress.

Through the Appliance Replacement Offer (ARO), Social Housing Upgrades (SHU) and Energy Hardship Assist streams, HEA has reduced bill stress and improved the affordability and liveability of social and low-income housing across the state.

The program finished on 30 June 2022 and all targets were met. The Energy Bill Buster program is currently being developed and will aim to support a similar cohort of customers.

Key achievements



Delivered 121,244 energy efficiency initiatives to 94,806 households across the life and the scope of the program. This has led to total bill savings of over \$24.13 million and energy savings of 107,588 MWh, which is equal to the total annual consumption of electricity by Sydney International Airport



ARO delivered 50% of replacements in regional NSW



70% of SHU activity was in regional NSW, often in areas most affected by extreme climates



SHU activity was undertaken in 23 Indigenous communities and included 636 homes in far west NSW. This \$7.4 million project was delivered in partnership with Murdi Paaki Regional Assembly



SHU supported 7 smaller social housing providers (Tier 2 and Tier 3) to deliver upgrades for their tenants, a cohort often lacking resources for energy efficiency upgrades.

Key data for 2021-22¹

- › Over 6,600 energy efficiency initiatives delivered to over 3,500 households
- › More than \$2.6 million in annual bill savings
- › 12,200 MWh in annual energy savings, which is equal to the annual energy required to run 30 high schools in NSW
- › 7,200 tCO₂e in total greenhouse gas (GHG) savings.



12,200 MWh

in annual energy savings,

which is equal to the annual energy required to run 30 high schools in NSW.

1. No data for 2021-22 as ARO finished in June 2021.

Spotlight on how solar photovoltaic (PV) is saving City West Housing tenants energy and money



The tenants of City West Housing were excited to hear that solar PV was being installed in their building. With the rising cost of energy, it was an opportunity for residents to lower their power bills, while also reducing the carbon footprint of their building.

City West Housing tenant, Alice was particularly keen, having spoken to City West Housing about the possibility of solar PV in her building in the past.

‘We live in such a sunny spot that I thought solar would be a really great opportunity for the residents to reduce their power bills’, says Alice. ‘I was a bit excited to open my new electricity bill just to see if there was savings. I’ve saved about 50% on my electricity bill so far,’ continues Alice.

Offering affordable homes to some 1,600 residents and their families on very low to moderate incomes, City West Housing Head of Assets, Ryan Rosenbaum says, ‘A secure, stable home is fundamental to people’s health and well-being, and we recognise the importance of energy efficiency in helping us achieve that.’

With funding from the Home Energy Action program, City West Housing installed 769 solar rooftop panels on 3 buildings, significantly reducing the energy costs and carbon footprint of 225 apartments.

For tenants like Howard, the rooftop solar couldn’t have come at a better time. Recently retired, Howard watches a lot of films and documentaries and is relieved that his electricity costs are not rising.

Household and Small Business Upgrades



The Household and Small Business Upgrades program (HASBUP) helped households and small businesses save energy and reduce their energy bills. The program supported positive change by providing incentives for upgrades to energy-efficient lighting and appliances such as commercial fridges and air conditioners.

Over 11,000 activities were completed under the program including upgrades to energy-efficient lighting and appliances such as commercial fridges and air conditioners. This has supported over 112 GWh of energy savings¹.

This 5 year program ended on 30 June 2022. Lighting, air conditioning, and refrigeration incentives are now available under the Energy Security Safeguard.

Key achievements

For the term of the program:



An estimated 41,062 tCO₂e reduction in emissions and \$15.1 million in energy bill savings



In total, 7,975 projects were delivered to households, with average savings of \$239 per household



In total, 3,195 projects were delivered to small businesses, with average savings² of \$1,534 per small business



Program evaluation found that service providers developed strong commercial relationships with local electricians in regions



Through consultation, under HASBUP, several broader improvements to the Energy Savings Scheme were identified and implemented.

Key data

In 2021-22:

- › 545 projects funded, approximately 95% were from regional NSW
- › \$242,016 invested in incentives
- › 502 MWh of energy savings per year
- › 297 tCO₂e reduction in emissions per year
- › \$139,507 in energy bill savings per year.

1. Energy savings figures have been discounted to account for changes in the lighting market

2. Figures are based on 2020 values

Spotlight on the power of investing in energy efficiency for small business



When Grant Michels opened Bottlekegcan with his brother Paul in southern Sydney, he wanted to ensure his business would be eco-friendly and energy efficient. That's why he jumped on the opportunity to purchase new energy-efficient commercial fridges with support from the Household and Small Business Upgrade program launched by the NSW Government.

Grant was able to access the commercial refrigerator rebate to purchase energy-efficient fridges for his business.

'It helped me narrow down my options to fridges included as part of the rebate but still matched the style and aesthetic I was looking for,' Grant said.

He used the rebate to purchase 5 new double glass-door display black fridges which are much more efficient than Grant's older fridge, helping to bring down the cost of his energy bills.

The new fridges control the temperature in a more eco-friendly way and are making a difference.

Manufacturing Efficiency Funding



The Manufacturing Efficiency Funding (MEF) program provided manufacturing businesses in NSW co-funding for metering and equipment upgrades, saving businesses both energy and money.

Following the program's closure on 31 October 2022, businesses can now apply for co-funding under the new \$12 million metering and monitoring package and seek further support to shift to net zero under the Business Decarbonisation program.

Key achievements



At the end of 2021-22, 197 manufacturing businesses have successfully completed their projects or had projects underway



Successfully completed 40 projects in 2021-22.

Key data

Projects completed in 2021-22 are estimated to annually save:

- › 3,899 MWh of electricity
- › 29,464 gigajoules (GJ) of gas
- › 4,404 tonnes of CO₂e (tCO₂e), equivalent to electricity use for 1,250 homes in NSW
- › \$1.1 million in energy bills.

Spotlight on how food manufacturers can reduce their energy consumption



One of the largest producers of bread and bakery products in Australia, Tip Top produces over 1 million loaves of bread daily and delivers to more than 18,000 locations nationally. Bread and bakery production is an energy intensive process, so when the opportunity came to participate in the High Energy User Coaching program, through the Energy Management System (EMS) program, Tip Top seized it.

‘The coaching program really helped us to identify the right EMS to implement at the site. It also provided extensive support to build the energy management capacity and capability of our team,’ says Daniel Barrett, Operational Excellence Systems Specialist at Tip Top.

As a result of the coaching support, the Tip Top manufacturing site at Chullora took advantage of the Manufacturing Efficiency Fund (MEF), which helps manufacturing businesses to save energy and reduce costs by providing co-funding for technology upgrades. As part of this program, Tip Top co-funded a sub-metering system for their Chullora bakery that would allow the collection of real-time data to better track the site’s energy use and inform decision-making.

Since installing the EMS sub-metering, Tip Top Chullora have identified several energy efficiency opportunities. These opportunities include identifying the differences in the energy performance of 2 identical breadlines as well as identifying compressed air inefficiencies.

‘What really surprised us most were the unexpected places that we found energy savings. The submetering and data gave us confidence that we were investing in projects that would deliver the savings we needed,’ shares Daniel. ‘So far we have measured a 6% decrease in annualised energy use.’

There has also been a shift in the business’s approach to managing the site, with energy management and data insights now being incorporated as part of business-as-usual.

‘This program has been invaluable to us. We have now adopted a broader energy management strategy and are hoping to roll out submetering systems for our 14 other manufacturing sites across Australia and New Zealand’ says Daniel.

Biodiversity Conservation Trust Private Land Conservation

The [Biodiversity Conservation Trust \(BCT\)](#) partners with landholders to enhance and conserve biodiversity. The aim of the program is to have vibrant private land conservation areas protecting our unique and diverse plants and animals.

The CCF helps to reduce the impacts of climate change to NSW by encouraging landholders to enter agreements to conserve biodiversity and support productive landscapes, support landholders to conserve biodiversity on their land and promote public knowledge, appreciation and understanding of the value of biodiversity conservation.

To date a total of 368 landholders have signed or are in the process of signing conservation agreements with the BCT covering more than 195,000 ha.

Key achievements



Invested \$1.5 million in grants to partnership conservation agreement holders across 64,000 ha of conservation areas



Completed 2 conservation tenders and 1 round of fixed price offer:

- the BCT will enter 9 conservation agreements in the NSW Riverina where over 18,900 ha of key Plains-wanderer grasslands habitat between Hay and Lockhart is located
- in the South Eastern Highlands, 6 landholders will protect 944 ha of critically endangered Snow Gum Woodlands and Grasslands
- fixed price offer 5 will see the BCT enter 7 permanent conservation agreements to protect over 37,000 ha



An additional 64 partnership conservation agreements or wildlife refuge agreements and 36 funded conservation agreements have been signed, protecting an additional 60,190 ha



Conducted 740 site visits with existing and potentially new clients. The BCT has recorded 3,714 interactions with landholders demonstrating continued interest in their programs.



Spotlight on protecting a huge swathe of NSW land in perpetuity



In early 2022, the Biodiversity Conservation Trust (BCT) reached an \$8.9 million deal with Bush Heritage Australia and South Endeavour Trust under the BCT fifth round of fixed price offers. The agreements are to protect a whopping 31,266 hectares of private land at Naree and Yantabulla Stations in north-west NSW. This forms one of the largest collective areas of private land protected under a BCT agreement to date.

‘This place in the Murray-Darling basin is extremely significant because it’s got all its original biodiversity,’ says UNSW Professor Richard Kingsford, a river ecologist and conservation biologist who has worked extensively across the wetlands and rivers of the Murray-Darling Basin. ‘When this place fills up there are thousands of birds breeding here. And this massive system connects with the free-flowing Paroo River system from Queensland. This area is amazing for its biodiversity.’

The land in these stations, which include nationally significant migratory bird breeding sites, will be protected forever. They will form one of the largest areas of private land protected under private land conservation agreements to date and will increase the area protected under the BCT’s funded agreements by 40%.

Budjiti Elder, Phil Eulo says ‘It’s hard to put into words what it means for me and my people to be looking after the country where my ancestors were, and it’s so great to be doing it alongside Bush Heritage.’

The Hon. James Griffin, NSW Minister for Environment and Heritage, was struck by the vastness of this land when he recently visited Naree station to meet with the landholders. ‘At least 60% of Australia’s land is privately owned or managed, and many important ecosystems are found on private land, which is why conservation agreements like these are so important,’ said Minister Griffin.

Ecologists like Professor Kingsford have recorded more than 187 water bird species in these wetlands, many of them threatened. At least 15 mammal species — including the vulnerable, striped-faced dunnart, sandy inland mouse, and little pied bat — and about 350 native plant species — pink cockatoos, budgies, emus, short-beaked echidnas, red kangaroos, and a variety of frogs and reptiles — have also been sighted in the area.

Annual payments will support ongoing conservation management to ensure the future of the unique biodiversity that call these stations home.

NSW Government is leading by example

NSW Government is accelerating the transition to net zero emissions by 2050, supporting its agencies to achieve a 50% reduction in emissions by 2030.



From developing the NSW [Electricity Infrastructure Roadmap](#), investing in clean technology, supporting the installation of rooftop solar photovoltaic and battery storage in schools, hospitals and other government buildings, the NSW Government is leading the way to a low carbon future.

Through the CCF, our government agencies are delivering projects that are having a big impact. We have partnered with researchers and the community, including local Indigenous communities, to build resilience and adapt to extreme weather events.

We've put a spotlight on some of the leading examples of how the CCF has enabled the NSW Government to lead by example on climate change. Our [Achievements](#) section provides further information. Read on to find out more.

Bushfire Risk Management Research Hub

The [Bushfire Risk Management Research Hub](#) was commissioned for 6 months to provide evidence for the causes and effects of the 2019-2020 Black Summer bushfires. Universities, government agencies and fire authorities worked together to deliver evidence-based research for bushfire management, allowing for the rapid translation of research findings into evidenced based recommendations.

This 5 year project ended on 30 June 2022 and is transitioning to the NSW Bushfire and Natural Hazards Research Centre. This is part of the government's announcement to increase investment in bushfire and natural hazard research and technology development, in response to the NSW Inquiry recommendations from the 2019-2020 Black Summer bushfires.

Key achievements



Awarded the 2021 Eureka Science Prize for Applied Environmental Research



Strengthened partnerships between fire researchers and fire management agencies to help in fire management planning



Delivered evidence of the NSW Bushfire Inquiry (19 reports)



Developed operational tools to assist providing core data to impact and influence burning strategies using applications like FireTools



Contributed to cultural burning research.

Key data

- › Invested \$16.69 million resulting in giving a \$3.34 return on investment for every dollar spent.



Spotlight on how a prize-winning research hub is driving innovation in bushfire risk management



FireTools is an innovative, cutting-edge predication tool that is used to plan prescribed burns that will enhance biodiversity. It is one of many products developed by the Eureka prize-winning [Bushfire Risk Management Research Hub](#) (the Hub).

The Hub brought together researchers, fire agencies, public land managers and Indigenous knowledge holders in a collaborative research effort to improve understanding in bushfire behaviour and risk. Translating research into innovative and transformative policies, tools and management practices, the Hub aims to solve long term complex problems as well as provide immediate tactical advice.

Lead Researcher for the Fire Tools platform, Dr Grant Williamson explains, 'Australian native plants often need fire to seed. Improving our knowledge on the specific plant responses to fire, we can better manage when to plan a prescribed burn, in certain locations, to enhance biodiversity in our national parks, whilst mitigating risks of unplanned bushfires.'

Taking the planned and unplanned fire history of an area, FireTool can predict areas of fire vulnerability as well as the positive and adverse impacts of a particular fire regime on biodiversity.

Working collaboratively with NSW National Parks to shape the science and develop the purpose-built tool has meant that protection of biodiversity, as well as life and property, is centred in the decision-making process of bushfire risk mitigation.

This is one of many examples of how the government can achieve positive and effective outcomes for bushfire risk management by delivering world-leading, cost-effective research that drives positive transformation in how bushfire is managed in Australia.

Enhanced Bushfire Management

The [Enhanced Bushfire Management program \(EBMP\)](#) focusses on mitigating the increasing risk of bushfire in NSW. The program increases National Parks and Wildlife Service's (NPWS) capacity for bushfire management by improving rapid bushfire response capability and implementing strategic hazard reduction to assist in protecting communities and assets.

NPWS consistently contributes at least 75% of all hazard reduction in NSW. NPWS also works with local Indigenous groups to facilitate cultural burns on NPWS managed land.

Key achievements

- › Exceeded target for hazard reduction in Asset Protection Zones (APZs) by 43%
- › Completed 2,237 hazard reduction activities including 100 hazard reduction burns and 2,137 mechanical activities
- › Conducted 30,983 ha of hazard reduction activity on national park-managed land
- › 98% of all bushfires started on-park were contained to less than 10 ha in size
- › 100% of bushfires that started on-park were contained to NPWS managed land.



Completed

2,237 hazard reduction activities

including 100 hazard reduction burns and 2,137 mechanical activities.



Spotlight on healing country through cultural burning

Recognising the importance of working with Aboriginal communities, National Parks and Wildlife Service (NPWS) have been partnering with Aboriginal people to undertake low risk, culturally informed burning on national parks and reserves.

‘Cultural burning is about creating a healthy country which provides healthy people. It’s more than the burns themselves, rather it’s about encouraging new growth, bringing community together to practice culture and teaching our children’ says Liz Dargin, Senior Project Officer Cultural Fire Management at NPWS.

In July 2021, Aboriginal Fire Practitioners and NPWS participated in a cultural burn at Diamond Flat, New England National Park. Located in the Northern Tablelands of NSW, New England National Park is a place of spectacular beauty and pristine wilderness. It has been home to the Thunguti People for thousands of years. Working with mob from the Local Aboriginal Land Councils, the burn has become an important event on the cultural calendar.

Over 2 days, cultural fire was used to restore the natural grasslands, improve habitat diversity, and protect the surrounding cool temperate rainforest including the Antarctic beech, an important remnant of our Gondwana rainforests. It also helped control blackberry and other introduced grass species as part of an integrated pest management program.

Mob participating in the cultural burn, alongside local NPWS staff, spent a day learning and sharing practices.

‘It’s this sharing of knowledge and practice, to be able to express and maintain culture, kinship and identity and to enhance and protect natural and cultural values. It’s much more than the burn itself,’ continues Ms Dargin.

Through the Enhanced Bushfire Management program, NPWS and the NSW Government will continue to work with Aboriginal communities across NSW to undertake this important cultural practice.



Building better together

The CCF has partnered with community and industry to build a low carbon future.



Through the CCF, we are working with community and industry to deliver a better future for NSW.

We have been developing and collaborating on new energy efficiency standards for appliances, buildings and infrastructure, making it easier for residents living in apartments to install solar photovoltaics and purchase better energy performing appliances. We have also worked with the community to deliver cooler urban environments with close to one million trees planted.

We are building community resilience through the sharing of information, research and data, particularly with flood-prone communities. We have worked with industry and regional communities to identify opportunities to develop renewable energy zones and hydrogen hubs to enhance energy reliability into the future.

We've highlighted some of the brightest examples of how the CCF has partnered with communities and industries to build better together. Our [Achievements](#) section provides further information. Read on to find out more.

Coastal and Estuary Management

Increasing impacts of climate change pose a significant threat to the wellbeing of coastal communities, assets, infrastructure and ecosystems.

Through the Coastal and Estuary Management program, the NSW Government works in partnership with local councils providing technical guidance, and support to ensure our communities are resilient to these threats.

Key achievements

- › Released the [Future Directions Statement](#), detailing the government's priorities to work with local councils, First Nations peoples and communities to manage the coast. Of the 54 actions to be delivered by 2025, 35% are completed or ongoing actions, 30% in progress and 22% to commence in later years
- › Progressed longer-term actions to resolve coastal hazard risks at 2 of the state's most vulnerable open coast margins in Collaroy, Narrabeen and Wamberal
- › Collaborated with the Deputy Premier's Taskforce, City of Newcastle and their community to investigate opportunities to restore Stockton Beach and investigate long-term sand nourishment sources.

Key data

- › 95% of the 56 coastal councils are preparing and implementing coastal management programs (CMPs) that define the NSW coasts' long-term management
- › 47 CMPs are in the planning stage and 4 are being implemented.

Did you know?

You can check out over 6,500 km² of NSW's coastal bathymetry and real-time wave data and forecasts with our new digital [Seabed NSW 3D map viewer](#) and a [NSW Nearshore Wave Forecast](#) tool.

Our map viewer and wave forecasting tool provides high resolution detailed digital maps and nearshore wave forecasts across the entire NSW coastline, covering 6,800 square kilometres of the coast and seafloor for depths of out to 35 metres.



Spotlight on how working with community delivers function and beauty



In recent times, the iconic beach at South West Rocks has faced several big wave and erosion events which impacted the foreshore area in front of the Surf Life Saving Club. Storms have resulted in waves running up into the base of the Surf Club building and there was significant erosion along the northern bank of Saltwater Creek.

Kempsey Council's Natural Resources Officer, Ron Kemsley, said 'previous efforts to abate coastal erosion on the site had been unsuccessful, resulting in continual erosion problems, safety risks and access issues for Surf Club members and the general public.'

Providing technical guidance and funding support, the NSW Department of Planning and Environment's (DPE) Coastal and Estuary Management Program, worked with Council who engaged UNSW Water Research Laboratory to develop detailed concept designs for a seawall, and undertake coastal process investigations.

'The success of projects like the South West Rocks seawall is due to the collaborative working relationship that we have with councils and the community.

Our role is to support coastal councils, particularly smaller and resource-constrained councils, with technical expertise and guidance,' says John Schmidt, Senior Coast and Estuary Officer, DPE.

As coastal hazard risks intensify with climate change, the technical advice provided moves with the shifting situation, meaning councils have access to up-to-date resources without having to bring the expertise inhouse.

Following detailed concept designs, coastal process investigations and extensive community consultation, the rock armouring was replaced with a 45-metre-long stepped sandstone block retaining wall, concrete step access and a new ramp for greater access for Surf Club members and their vehicles.

'We're really pleased with the new seawall. Our members appreciate the easier access to the beach and the community are enjoying the new foreshore amenity. We also know that the new seawall will help protect the sand dunes from erosion which will in turn protect the Surf Club. It's been a great win all round,' says South West Rocks Surf Club president, Rod McDonagh.

Greening our City

[Greening our City](#) aims to shade and cool urban areas and reduce the impacts of climate change. It is on track to deliver the [Greening our City Premiers Priority](#) to plant 1 million trees by 2022. This is part of the broader Greater Sydney Commission goal to increase tree canopy within Greater Sydney to 40% by 2036.

Increasing the tree canopy in our properties, parks, streets and neighbourhoods will improve resilience to climate change. Tree canopy provides shade and shelter from heat, improves air and water quality and improves the health and wellbeing of our citizens.

Key achievements

- › 922,814 trees planted and registered across Greater Sydney – that's over 90% of the Premiers Priority of 1 million trees with remainder on contract for planting by the end of 2022
- › Over 70% of registered plantings are in Western Sydney, where temperatures from urban heat island effect can be up to 10 degrees hotter than Eastern Sydney
- › Have ensured the planning and economic valuation systems consider trees and green cover in future land-use decisions
- › Working with NSW Treasury to develop framework that will determine the value of green infrastructure and public spaces. The framework will include economic evaluations that will demonstrate the financial importance of having green and open spaces in our communities
- › Awarded over \$27 million for Greater Sydney Councils to undertake tree planting, pilot projects, and active transport and strategic planning
- › Free Tree Giveaway has seen over 60,000 trees provided to Greater Sydney residents for planting on private properties. The program is in partnership with Bunnings and IndigiGrow, an Aboriginal-owned and run nursery
- › Provided new data to support policy development. Data included information on canopy cover, tree height, vegetation health and land surface temperatures
- › Managed \$37.5 million budget over the first 4 years of program, securing a further \$60 million for the remainder of the program 2022-2030.



Spotlight on cooling Chameleon Reserve



Penrith City Council was one of 20 councils successful in securing a share of \$5.3 million from the CCF to plant more trees across Greater Sydney. The Council decided to use the funding to cool Chameleon Reserve, which thermal imaging had identified as one of the hottest locations in the suburb. By increasing canopy coverage and creating a cooler reserve, Penrith City Council can provide an appealing open space, connecting the community to nature and promoting outdoor recreation.

Penrith City Council knows how important it is to provide cool spaces for their residents to be active and healthy. Stage 1 of the planting at Chameleon Reserve will see more canopy provided in the reserve to enable and encourage immediate use of the park for passive recreation in advance of future upgrades.

The tree planting will also provide cooling to the adjacent residential areas.

Around 340 new trees from a diverse selection were planted to support local biodiversity and provide long-term canopy coverage and shade. Council is also required to water and maintain the trees to ensure successful tree establishment. The planting program has resulted in a 98% tree survival rate and as trees mature further, both the community and wildlife will enjoy the cooling effects of the canopy.

Floodplain Management Program

The [Floodplain Management Program](#) provides technical support, guidance and financial assistance to councils to enable them to understand and manage flood risk to their communities more effectively through the development and implementation of flood risk management plans.

Key achievements

- › 12 additional Floodplain Risk Management Plans adopted by local councils, with a total of 220 adopted plans to-date
- › A total of 770 local council projects have been supported since 2013, helping to manage flood risk in their communities
- › Facilitating flood behaviour assessments in the worst affected areas on the far north coast
- › Worked with NSW State Emergency Service on the NSW Flood Data Portal. The portal holds over 2,500 data sets on 1,400 flood projects and is used by 166 member organisations
- › Provided flood advice to Housing Recovery Taskforce, and to major projects including the Hawkesbury Nepean Valley Flood Risk Management Strategy, Narrabri Special Activation Precinct, the South Creek Sector Review and the Aerotropolis Precinct for Sydney's new airport.



Spotlight on building resilience in flood-prone communities



Flooding in NSW costs our economy more than \$200 million each year, and the human impact is even greater. Working collaboratively with local councils to build a community's resilience to floods through prevention and preparedness is an important role for the Department of Planning and Environment (DPE).

Communities need to be prepared for flooding, understand how to respond to flood threats and be able to recover from the impacts of floods when they occur.

DPE works with local councils to enable them to better understand and manage the risks of flooding, and to consider flooding in their decision making. This includes supporting the NSW State Emergency Service (SES) to fulfill its role as the state's flood combat agency.

The updated Flood Risk Management Manual being developed by DPE is one of the tools DPE is using to support councils to better understand and manage flood risks to their communities. It considers lessons learnt from floods and relevant national and international frameworks, strategies and best practice guidance.

Councils value the advice and guidance DPE gives them to manage flood risks. It is important that councils have access to the latest information, research and best practice flood risk management advice so that they can make informed and strategic decisions.

When councils have access to best practice guidance, they can develop and implement management plans that reduce flood risk to the community and to existing and future development and reduce losses through a range of property, flood and response modification measures. This saves property assets but more importantly lives.

Innovative delivery

The CCF has enabled out-of-box thinking, delivering innovative and award-winning programs to protect our environment and address the impacts of climate change.

Collaborating with industry, across government agencies and the community, the CCF has initiated innovative programs that have been delivering real and sustainable impact.

This year, the Minister-led Net Zero Futures Policy Forum was established, which will see NSW at the forefront of climate policy and innovation.

The work of the CCF is helping businesses and councils to develop their capacity to deliver on their net zero commitments, working closely with high-emitting and hard-to-abate sectors and investing in the technology needed to deliver these commitments.

We've highlighted some of the leading examples of how the CCF has enabled innovative delivery. Our [Achievements](#) section provides further information. Read on to find out more.

Electric Vehicle Fleets Incentives

The [Electric Vehicle Fleets Incentive program](#) helps ensure that by 2035 the majority of new car sales are electric vehicles (EVs).

This is a key objective within the NSW Government's Electric Vehicle Strategy, the most comprehensive EV strategy in Australia. The program also aims to reduce vehicle emissions, improve the affordability and availability of EVs and help create EV business models.

Key achievements

- › Funding deeds worth \$3.8 million have been agreed following round 1 of the EV fleets incentive
- › Funding will support the purchase of over 730 EVs and over 700 smart chargers.

Key data

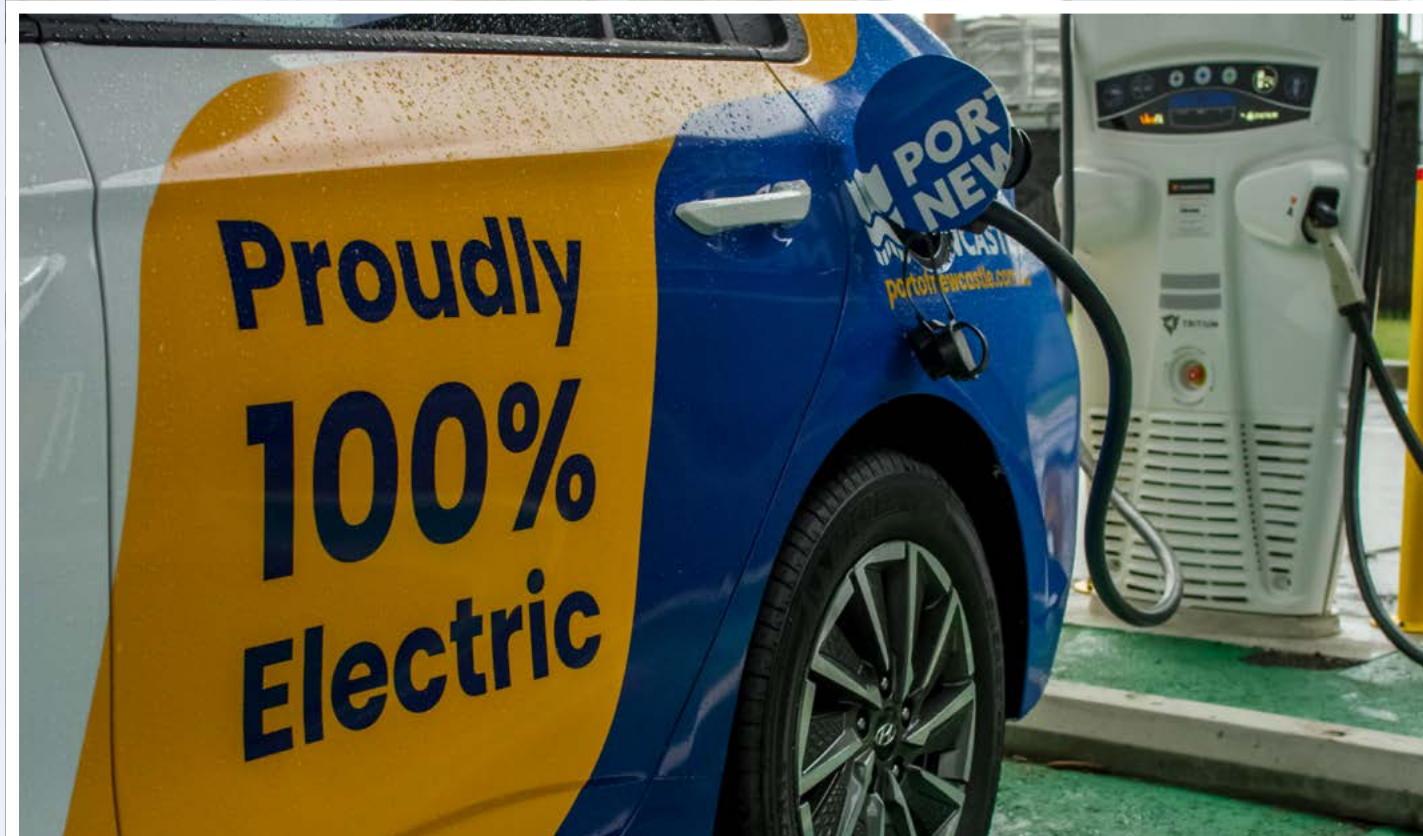
- › Funding to be distributed among 16 organisations.

NSW Government expects more than 700 new EVs to come into service in local councils and other private fleets in 2022-23.

This is part of a \$105 million plan to encourage car hire and fleet operators to buy EVs over conventional engines. Hertz and Splend are among the successful applicants. Hertz is one of the largest car rental companies in Australia and Splend leases vehicles to Uber drivers.



Spotlight on how the Port of Newcastle is making the transition to electric vehicles



By electrifying its fleet, the Port of Newcastle could have a powerful impact on the overall market, both spurring demand for and increasing supply of electric vehicles.

The port will save \$20,000 in fuel costs and 48 tonnes of CO₂e annually once the fleet is fully electric.

Taking its first step to transition to a fully electric fleet in May 2020, the Port of Newcastle is well along the way to its target of 100% electrification by 2023, with battery electric vehicles (BEVs) comprising 9 of its 13-strong fleet.

The BEVs, mostly Hyundai's Ioniq and Kona models, perform a variety of functions at the port. Two are pool cars for general transport, while the others are used by wharf officers, the survey team and executives overseeing field operations.

Staff from the Port of Newcastle welcome the fleet conversion. They reported that the Konas are quiet, accelerate instantly and, with a typical 450-kilometre range, refuelling needs are similar to conventional cars.

The port has installed 2 50-kilowatt DC fast chargers dockside and 6 22-kilowatt dual-port AC chargers at head office. They are also encouraging BEV uptake locally, working in a partnership with the City of Newcastle and providing 2 public charging stations on the city's busy foreshore.

Net Zero Emissions Policy (International Collaboration program)



The NSW Government's international climate change work is about going further, faster and together to achieve net zero emissions.

Net Zero Emissions Policy supports the government to develop collaborative relationships with international governments based on knowledge exchange, practical collaboration and a mutual desire to realise the economic benefits of the global transition to net zero emissions.

Since 2021 the [Net Zero Futures Policy Forum](#), a new international collaboration of state, regional and devolved governments committed to reducing their emissions in line with the Paris Agreement, has been established. NSW has also signed a Memorandum of Understanding with Denmark on net zero emissions. Officials from the NSW and Danish governments are now planning to collaborate through workshops on topics like sourcing renewable energy and building renewable energy infrastructure.

Key achievements

- › Supported a small NSW delegation to attend COP26 in Glasgow, Scotland, to build our connections with other subnational jurisdictions globally and give NSW policymakers lasting access to world-leading policy ideas that could be adopted in NSW
- › Launched the Net Zero Futures Policy Forum by the NSW Treasurer and Minister for Energy in Glasgow, Scotland, as part of the Under2 Coalition General Assembly at COP26
- › All Australian states and territories have since joined the Forum, which also includes Scotland as its co-chair and first member from outside Australia.

Key data

- › Grew the Forum's membership to 9 governments.

Spotlight on how NSW is championing collaborative efforts to drive the national and international policy agenda



NSW Government is playing a leading role in driving inter-government collaboration to solve the hardest policy challenges that would enable governments around the world to decarbonise their economies faster.

In July 2021, the NSW Government became a founding member and co-chair of the international Net Zero Futures Policy Forum. As a Minister-led initiative, the Forum recognises that state, regional and devolved governments are aiming to get to the same end goal - net zero emissions. The potential to get further and faster in this area is to collaborate, to learn from and to develop best practice decarbonisation policies.

The Hon. Matt Kean MP, NSW Treasurer and Minister for Energy says, 'Governments have different areas of policy expertise. We want to bring them together to share technologies and ideas to reduce emissions, create jobs and build the net zero emissions economies of the future.'

The Forum aims to draw on the best international expertise and connect officials from across a range of policy areas, with a focus on the first 3 priority areas including carbon sequestration, transport emissions and green hydrogen.

As the Forum's other founding co-chair, Scotland's Cabinet Secretary for Net Zero, Energy and Transport Michael Matheson MSP says, 'Global challenges such as climate change require a global response. The Net Zero Futures Policy Forum will support governments to work together to address the practical challenges of achieving net zero emissions in a just and fair way.'

The Forum will be supported with a policy library that will provide deep analysis of the issues faced, challenges overcome and the outcomes of various policy options. This is to enable decision-makers to put in place the best option for their jurisdictions.

The Forum is a voluntary international collaboration open to state, regional and other interested governments at the forefront of global decarbonisation efforts with Scotland and the 8 Australian states and territories its founding members.

Sustainability Advantage

Sustainability Advantage (SA) supports and encourages medium and large organisations to achieve better business success by adopting sustainable practices and goals. Impact at scale is achieved by supporting good practice, catalysing collaborations and building sustainability leadership.

It works with a network of 800 program partners, consisting of businesses, not-for-profits and government agencies, to boost commitment to net zero emissions, circular economy, the restoration of nature, and the UN Sustainable Development Goals.

Some of SA's leadership projects include the projects listed below.

- › Sustainability Advantage Net Zero Emissions Leadership Accelerator is a 6-month capacity building program created to provide sustainability champions with skills and capacity to drive net zero emission ambitions throughout their organisations
- › Executive Director Sustainability Forum provides access for NSW Government executives to leading practitioners and thought leaders to inspire ambition and share how they can contribute to NSW's sustainable development and support the government's priorities around net zero emissions.

Key achievements

- › Delivered more than 150 tailored projects with program partners, resulting in an estimated \$87 million cost savings for program partners
- › 20 new program partners joined the program demonstrating their commitment to supporting the low carbon and circular economy
- › 26 high emitting organisations participated in the Net Zero Emissions Leadership Accelerator. Following the Accelerator, 93% of participants were likely to implement a net zero related project. This is an increase from 63% prior to attending the accelerator
- › 36 large organisations completed the Net Zero Emissions Pathway Pilot which provided cost effective net zero emissions strategies for organisations involved in the pilot.

Key data

- › 93% of program participants expected to implement net zero related projects, up from 63% pre-program.



Delivered more than
150 tailored projects

with program partners, resulting in an estimated \$87 million cost savings for program partners.

Spotlight on creating a marketplace for second-hand and decommissioned solar panels



In a first of its kind, NSW Office of Energy and Climate Change's Sustainability Advantage, Dubbo Regional Council (DRC), Commonwealth Scientific and Industrial Research Organisation (CSIRO), NSW Environment Protection Authority (EPA), The Blue Tribe Company and Solar Professionals have collaborated to trial a 'whole of supply' chain approach to managing decommissioned solar panels in NSW.

Solar panels are an increasingly popular way to save energy and promote better outcomes environmentally. However, it has been estimated that 1 million tonnes of solar panel waste will be accumulated by 2047. This is equivalent to the weight of 19 Sydney Harbour Bridges¹.

James McGregor from Blue Tribe says, 'Around the country we are installing record amounts of rooftop solar systems but at the same time we are also throwing away fully functioning older solar modules into landfill.'

'This pilot is about giving these panels a second life by diverting them from landfill and utilising them to continue to generate clean energy to help us get to NSW's net zero targets sooner,' continues James.

The project was first initiated by Sustainability Advantage and was designed to address the retesting of decommissioned panels. The project team worked with the CSIRO and the EPA to ensure that second hand solar PV panels could be tested and reused. This pilot demonstrates how to reduce technical and commercial risks and it showcases the cost benefit of second life solar.

Offering the pilot site, DRC has installed an 8kW solar system made up of second hand (serviceable) solar panels on the Small Vehicle Receival Centre at Council's Whylandra Waste and Recycling Centre in Dubbo.

'By participating in this trial, we are boosting the service life of solar panels, and increasing the uptake of renewable energy,' says DRC's Manager Resource Recovery & Efficiency, John Wisniewski.

NSW Office of Energy and Climate Change's Sustainability Advantage Manager, Celia Tesoriero says, 'If we are to accelerate the transition needed to address the climate crisis, we need to collaborate across government, industry and research to find innovative solutions. This project exemplifies what can be achieved when we do just that.'

1. D Mathur, I Muhammad, ['Stop removing your solar panels early, please. It's creating a huge waste problem for Australia'](#), The Conversation, 24 May 2021

Sustainable Councils

The Sustainable Councils program helps local governments in regional NSW save energy and money, reduce emissions, and set a path to net zero.

The program was designed to address a key barrier in regional councils - chronic resource and staff constraints around energy and emissions management.

Key achievements



Expanded the program to engage 43 regional councils and 3 Joint Organisations (JOs) - the program was originally designed to work with up to 18 regional councils



Delivered 14 Council Energy Savings Action Plans and 1 JOs Regional Energy Plan taking the total to 30. Energy strategies guide the actions of councils towards net zero



20 councils have implemented energy saving and renewable energy upgrades



Developed a Revolving Energy Fund Guide and Toolkit to assist councils in managing funds for energy savings activities, whereby savings from sustainability projects are tracked and used to replenish the fund for the next round of investments



Developed toolkits for councils to reduce energy consumption at swimming pools, water treatment plants and sewage treatment plants. These sites are significant energy consuming assets and common across most council areas



In partnership with the Australian Photovoltaic Institute, implemented the SunSPOT tool across regional councils. SunSPOT is a tool designed to help building managers understand the benefits and costs of installing solar panels.

Key data

- › \$2.7 million invested in energy efficiency and renewable energy by councils, generating \$800,000 in energy bill savings.



Spotlight on solar in regional NSW



The uptake of solar in the Mid North Coast of NSW has been significant. Kempsey Shire Council has recently installed a 99 kW solar photovoltaic system as part of their long-term Renewable Energy and Water Strategy.

As part of that strategy, council identified the Kempsey Civic Centre as a perfect site for solar due to the building's high level of daytime energy use from staff. Installed in November 2021, the solar system generates 144 MWh of energy per annum, saving 117 tCO₂e in carbon emissions each year. This represents a 40% reduction in the council's annual carbon footprint.

It is also estimated to save \$26,000 per annum in energy savings, freeing up more of the council's budget to spend on other sustainability initiatives.

Kempsey Shire Council is also becoming a leader in the sustainability space, working to encourage more solar projects like this, both within council and in the local community.

Primary Industries Climate Change Research Strategy

The Primary Industries Climate Change Research Strategy (PICCRS) invests in research that could support the primary industries sector to mitigate and adapt to climate change. The PICCRS is looking to identify, through research and innovation, energy supply and demand solutions, carbon markets and emissions reduction opportunities as well as climate resilience building programs.

The PICCRS has received a 12 month extension due to delays as a result of external factors including drought, bushfires, floods and COVID-19. This extension will allow the 7 research projects to complete their milestone activities and publish results. All are on schedule to be completed in June 2023.

Key achievements

- › Refined cropping management recommendations for industry and policy makers through biophysical modelling of carbon mitigation options of key cropping areas across NSW, modelling 2 climate scenarios
- › Commenced climate adaptation field pilots and projects covering issues such as drought, landscape rehydration, regenerative agriculture and precision agriculture
- › Identified significant opportunities for biomass to play an important role in the decarbonisation of the grid, using hybrid biomass and solar thermal systems in grid generation and industrial applications
- › Delivered a 3 day Carbon Forum including soil carbon field day, conference highlighting soil and farm carbon opportunities and markets and masterclass for farmers considering on-farm carbon projects
- › Undertook a series of technical and economic feasibility studies into the use of biomass as a grid firming technology to support a move to a renewable electricity grid. The project has commenced harvesting of the 12 trials to test the feasibility of growing tree biomass crops on farm.

Key data

- › Climate impact assessment models and maps for 29 commodities and 14 biosecurity risks confirmed. These models will improve understanding of the vulnerability of these commodities and biosecurity risks to climate change
- › \$2.65 million has been invested in 7 farm energy pilots in across a range of energy intensive industries, with site monitoring for carbon and energy savings underway
- › Biophysical modelling of a range of climate mitigation options for cropping systems at 650 sites across the key cropping regions of NSW, for 2 climate change scenarios
- › H2Cuts van delivered 560 haircuts and used 3-5 kilograms of hydrogen at 8 events this year.

Spotlight on farm digital technology that is increasing climate resilience of the horticultural sector



The hot, catastrophic summer of 2019-20 followed an extended dry period for much of NSW.

For the state's horticultural growers, this resulted in reduced water storage across many orchards. For Ian Pearce, who grows apples and cherries near Orange, it meant making tough decisions on which blocks to focus efforts, and which to sacrifice and leave unwatered.

However, in the space of just a year, the way these types of difficult decisions are made is being turned around through the adoption of on-farm digital technology.

Ian has partnered with NSW Department of Primary Industries (DPI) in its Climate-smart Horticulture Pilot which aims to increase resilience to climate change by improving the understanding and use of digital agriculture technologies.

Technologies include soil moisture monitors to provide essential information for good irrigation management; automatic onsite weather stations to provide greater relevance compared with regional weather sites and photosynthetically active radiation (PAR) sensors to estimate the amount of light intercepted by the canopy.

At Ian's farm, soil moisture sensors revealed that drip irrigation provided improved water efficiency compared to traditional surface sprayers.

If Ian had access to the information, it would have motivated him to make the change earlier, and perhaps it would have saved some of the areas sacrificed.

Horticulture is a high value, high input industry. Jessica Fearnley, Temperate Fruits and Horticulture development officer explains that digital technology can monitor, predict and automate some decisions, reducing input and labour costs leading to economic and environmental sustainability improvements.

All the data produced by the technologies are easily accessed through DPI's FarmDecisionTECH website.

Dr Allen Benter, who leads DPI's Climate Smart Pilots project, says the aim is to improve the horticultural industry's knowledge of this technology and associated decision-making tools.

'By making sure the data gathered and used at our Stoneleigh pilot is available to all, we can show others in the industry how the technologies and tools tested there can be used to make better, more informed decisions elsewhere and ensure the industry is in the best place to adapt to a changing climate.'

Field days, both on-farm and virtually, have been held over the course of the 4 year pilot to share and maximise the impact of this innovative delivery.



Achievements

Financial support in a time of need



Solar for Low Income Households

The [Solar for Low Income Households](#) (SLIH) offer helps households reduce their electricity bills by installing a free 3 kW solar system if the household agrees not to receive the Low-Income Household Rebate for 10 years.

The offer has delivered significant savings to rebate recipients while allowing NSW residents, who may not otherwise participate, to transition to renewable energy.

The offer is an innovative application of government funds helping to put downward pressure on the state's budget for energy rebates into the future.

The SLIH is being expanded across the state as part of the recently announced \$128 million Energy Bill Buster program, which will help up to 30,000 NSW households to cut their energy bills.

Key achievements

- › Incorporated as part of the Service NSW Savings Finder, making it easier for households to find relevant savings and reduce their cost of living
- › Expanded the offer to include an additional 12 Greater Sydney local government areas
- › A total of 1,380 solar systems have been installed from the start of the program in 2019 to 30 June 2022. 494 solar systems were installed in 2021-22.

Key data

- › \$600 average savings per household per year. This is double the amount residents would have received from the Low-Income Household Rebate.

Coastal and Estuary Grants

The state's long-term vision for the coast is to manage the use and development of the coastal environment in an ecologically sustainable way, for the social, cultural and economic well-being of the people of NSW.

The Coastal and Estuary Grants program provides funding to local government to achieve this.

Recent weather events are having significant impacts on the coast. The Coastal and Estuary Grants program underpins the implementation of the coastal management framework and supports local councils and communities to achieve the state's long-term vision.

The program directly funds local government to plan and implement actions to protect the coastal and estuarine environment.

Key achievements

- › 34 projects were awarded \$4.1 million (implementation stream) and 18 projects totalling nearly \$2 million (planning stream) were awarded in 2021-22.

Key data

- › Since 2016, 254 new grants totalling \$47.88 million have been awarded to local government under the Coastal and Estuary Grants program
- › 115 grants totalling around \$11.83 million awarded under the planning stream
- › 139 grants totalling around \$36.05 million awarded under the implementation stream.



Emerging Energy

The \$75 million NSW Emerging Energy program provides grant funding to assist with the development of innovative, large-scale electricity and storage projects in NSW.

By reducing barriers to investing in emerging technologies, the Emerging Energy program supports affordable, reliable and clean energy across the state.

Key achievements

- › Completed construction of the 50 MW Wallgrove battery by grant recipient, Lumea
- › Installed batteries at 246 households, delivering 1.2 MW of the 6 MW Virtual Power Plant (VPP) project by grant recipient, SolarHub.

Did you know?

The Wallgrove battery is the first grid-scale battery in NSW that will pilot the use of synthetic inertia as a network service. This network service helps to stabilise the grid and will become increasingly integral to enable the increase in renewable generation to safely connect to the grid.



Regional Community Energy Fund

The [Regional Community Energy Fund](#) (RCEF) provides grants to community energy projects that create innovative and/or dispatchable renewable energy and benefit the local community.

The RCEF has been designed to increase renewable energy generation, improve energy reliability and help communities save money on electricity bills.

Projects being funded by RCEF require the community group to invest at least 50% of the project cost. The capital raise has been hugely successful at demonstrating how government and community can work together, with regional community groups keen to be involved in the transition to renewable energy. Government involvement is key to ensuring that appropriate oversight can be provided to community-led projects.

Key achievements

- › 7 projects awarded grants totalling \$15.4 million
- › These 7 projects will unlock nearly 17.2 MW in electricity generation and up to 17.9 MW (39.3 MWh) of energy storage and leverage around \$36 million in private investment
- › Construction has commenced on the Latitude Solar Farm in Boggabilla, using innovative new low-cost solar technology.

Key data

- › The Latitude Solar Farm will be a 4.99 MW solar photovoltaic and 4.99 MW (10 MWh) lithium-ion battery storage system.

Did you know?

Supported by the RCEF, the community-led Latitude Solar Farm in Boggabilla will provide 13,500 MWh per year of clean, renewable energy, or enough electricity to power over 2,300 homes.



Building Consumer Information

The Building Consumer Information (BCI) program was a 2 year program designed to build awareness of the [National Australian Built Environment Rating System](#) (NABERS) to drive large-scale uptake of NABERS across the commercial building sector over the next 10 years.

BCI ended on 30 June 2022. NABERS will work with the Safeguard Acceleration program and Business Decarbonisation program to identify opportunities to support Commercial Buildings in their journey to net zero. The Accelerating Net Zero Buildings program is also supporting new customers with their first-ever energy rating and developing an Embodied Emissions Framework.

Key achievements

- › Published the [NABERS Sustainable Finance Criteria](#), creating consistent guidelines to support green finance products for the Australian commercial building sector
- › Updated [NABERS Baseline Method](#) Accreditations with Independent Pricing and Regulatory Tribunal (IPART), streamlining the Energy Savings Certificate (ESC) creation process for NABERS Accredited Certificate Providers (ACPs)
- › Launched the NABERS Energy Savings Certificate estimator helping customers and ACPs understand how many ESCs could be generated with an improved NABERS rating
- › Launched a range of online training to increase knowledge within the sector including:
 - free [Carbon Neutral](#) online training module to help customers learn about how Carbon Neutral Certification works. The course has received a 93% customer satisfaction rating
 - NABERS Sustainable Finance online training module to support customers understand how to use our Criteria
 - Green Bonds standard for public hospitals based on NABERS ratings approved by Climate Bonds Initiative.

Did you know?

In September 2021, the Commonwealth Bank of Australia (CBA) launched a [Property Sustainability Upgrade loan](#). This product offered customers a zero fee, zero margin loan increase of up to 20% if they conducted property upgrades that improved their NABERS rating, equivalent to a minimum 30% reduction in emissions.

Coming as a direct result of NABERS engagement and support, this is one example of how the Building Consumer Information program is working with the market to incentivise energy efficiency.



Primary Industries Productivity and Abatement

Officially launched in March 2022, this program demonstrates the government's commitment to supporting NSW farmers and land managers to reduce their emissions, improve carbon management and enhance biodiversity on their land alongside production. It will also support the sector to access revenue from environmental markets and demonstrate environmental performance.

Early in its lifecycle, [the program's](#) key focus is on building data, metrics and market enablers to grow the carbon market in NSW.

The program will also support farmers and land managers to build knowledge and skills around carbon management and markets, providing funding to implement abatement projects and partnering with industry to drive change across the land sector.



Achievements

NSW Government is leading by example



NSW Electricity Infrastructure Roadmap

The [NSW Electricity Infrastructure Roadmap](#) (the Roadmap) is the NSW Government's plan to transform our electricity sector to be cheaper, cleaner and more reliable. It will directly support the development of new electricity infrastructure in NSW.

The Roadmap will unlock up to \$32 billion in private investment in regional energy infrastructure to 2030, including in strategically planned and coordinated Renewable Energy Zones (REZs).

Key achievements

- › Appointed the NSW Electricity Infrastructure Jobs Advocate to advise the Minister for Energy on strategies and incentives that encourage workforce development, employment, education and training in the energy sector. Focus is on the Hunter, Central Coast, Illawarra, Far West, South West, New England and Central West regions of NSW
- › Developed [First Nations Guidelines](#) to ensure that the economic benefits of the energy transition under the Roadmap are shared with local Aboriginal businesses and communities into the future
- › Published the first [Energy Security Target Monitor Report](#), showing the amount of reliable electricity needed in NSW during maximum consumer demand (For example, summer heatwave).

Sustainable Net Zero Government

The Sustainable Net Zero Government program supports government agencies to build a sustainable net zero future by improving resource efficiency, developing net zero emission pathways and generating renewable energy on government-owned assets. We focus our resources on projects that impact at scale.

Key achievements

- › 10 additional net-zero pathways prepared, with 30 NSW Government agencies now having completed plans to transition operations to net zero emissions
- › Identified viable rooftop solar photovoltaic opportunities at 412 small schools for 2.9 MW capacity, reducing energy consumption by 15% and saving \$640,000 each year
- › Delivered 252 solar feasibility site assessments across 7 agencies, identifying 133 viable opportunities for 8.1 MW of rooftop PV, saving 10,500 MWh and \$1,600,000 each year
- › Successfully piloted Shell's energy management service under the whole-of-government electricity contract, identifying energy savings for emissions reductions of 7,000 tonnes and cost savings of \$1.2 million each year for 7 large agencies.

Key data

- › 1,255 efficiency projects leading to cumulative savings estimated at \$115 million cost efficiencies and 661 million kWh consumption efficiencies. This equates to the yearly consumption of 120,000 NSW homes [Assuming 5629 kWh/year, Australian Energy Regulator, 2020]
- › Reduced carbon emissions by around 53,000 tonnes, which is equal to electricity use to run 15,400 homes annually.

Did you know?

Six complex and hard-to-abate organisations, including Transport for NSW and Hunter New England Local Health District, have identified 7.5 GWh of energy savings and opportunities to reduce carbon emissions by 5,000 tonnes and save \$2.2 million each year.



Renewable Energy Infrastructure Investment

Renewable Energy Infrastructure Investment (REII) program aims to maximise the economic value of existing land through renewable energy infrastructure.

The \$3.4 million REII program enables investors, businesses, and communities to develop renewable energy infrastructure on government-owned land. This land consists of areas which government agencies have identified as surplus to their needs or land with potential to provide additional economic, social or environmental benefits through development.

Key achievements

- › Developed the bespoke Renewable Energy Infrastructure GIS portal used to analyse 165,000 government land assets for renewable energy opportunities including wind, solar and pumped hydro
- › Engaged with government agencies to further investigate identified renewable energy opportunities through a detailed assessment of technical and planning constraints.



Making communities more resilient to climate change – projections, hazards and risks to critical infrastructure

The program works to enhance state-wide regional climate projections through the [NSW and Australian Regional Climate Modelling \(NARClIM\) project](#).

The program develops comprehensive and detailed climate data under different greenhouse gas emissions scenarios. It maps and reports natural hazards under climate change, enabling robust climate impact assessment and risk mitigation helping to reduce damage to assets, infrastructure, and services.

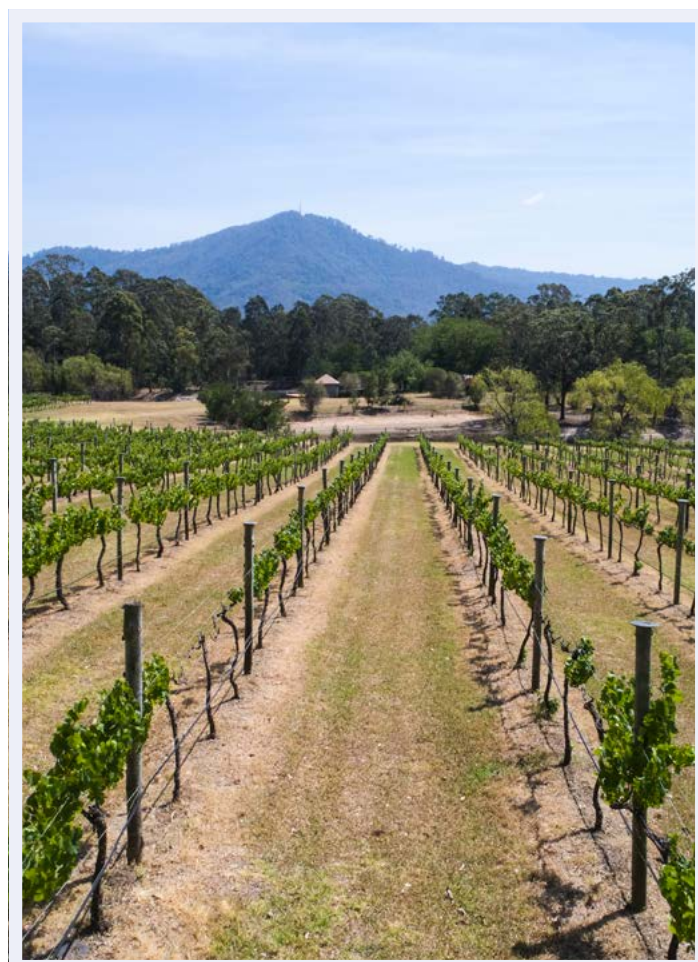
It also provides ongoing engagement and collaboration with stakeholders and partners to ensure climate projections and natural hazards data and information are co-designed to meet end user needs.

Key achievements

- › Completed the scientific design for NARClIM2.0, the latest generation of NARClIM regional climate projections and published research evaluating next generation CMIP6 Global Climate Models so that NARClIM2.0 climate projections are state of the art, robust and high quality
- › NARClIM2.0 climate projections currently simulating on National Computing Infrastructure with a target completion of 2023. NARClIM2.0 evaluation simulations already completed
- › Published research evaluating the performance of NARClIM1.5, which will assist end users to understand its fitness for their application
- › Entered partnerships for the National Partnership for Climate Projections and National Environmental Science Program Phase 2 (NESP2) Climate Systems Hub
- › Entered new partnership with the Western Australian Government, who will join the NARClIM project and a Memorandum of Understanding with Murdoch University
- › Contributed subject matter expertise toward the development of content for the new look AdaptNSW website launched early 2022.

Key data

- › Climate extremes and natural hazards indices data for fire weather, drought, heatwaves, extreme rainfall, modelled for period 1950-2100 for NARClIM1.0 and NARClIM1.5 (in review)
- › NARClIM2.0 data currently in production, targeting release in 2023.



Net Zero Emissions and Clean Economy Board

The [Net Zero Emissions and Clean Economy Board](#) advises the NSW Government on the implementation of the state's Net Zero Plan.

The Net Zero Plan Stage 1: 2020-2030 will deliver a 50% emissions reduction by 2030 and net zero emissions by 2050. The Board's membership includes industry experts who bring experience from across the private, public, and not-for-profit sectors.

The Board was established in December 2021 and have held monthly meetings since February 2022.



Clean Technology Innovation

Clean Technology Innovation (CTI) is 1 of the 3 focus areas within the [Net Zero Industry and Innovation](#) program.

Through this work, we support the development and continued innovation of emerging clean technologies, with priority areas guided by the NSW Office of the Chief Scientist and Engineer's (OCSE) [decarbonisation innovation study](#). Investing in the next wave of innovative and low-emissions technologies will help industry overcome technical and commercial barriers, build capacity and position NSW as a leading investment destination.

Priority areas include, but aren't limited to electrification and energy systems, sustainable land and primary industries and environmentally sustainable power fuels including hydrogen.

Key achievements

- › 99 Expressions of Interest (EOIs) received across 3 grant streams, representing \$162.5 million in potential investment
- › Research, development and commercialisation infrastructure grants (RDCI) received 21 EOIs, \$31.5 million funding requested, \$41.5 million potential co-contribution with 7 projects invited to full application
- › Ecosystem grants received 21 EOIs, \$10 million funding requested, \$28.5 million potential co-contribution with 8 projects invited to full application
- › Commercialisation grants received 57 EOIs, \$17 million funding requested, \$34 million potential co-contribution with 10 projects invited to submit a full application.



Low Emissions Building Materials – Voluntary target for green building materials

The [Low Emissions Building Materials \(LEBM\) program](#) aims to stimulate the modification, uptake and implementation of voluntary specifications and standards for low embedded carbon emissions building and infrastructure materials.

This is achieved through initiatives that drive awareness, influence and encourage those in the sector, including designers and materials specifiers, construction firms, developers and asset owners, to select LEBMs. By driving market demand for these materials, it is hoped that the market puts a premium value on these materials.

LEBM finished in June 2022 as it achieved its objectives between 2020-22. The key elements of the LEBM program are now incorporated in the new Low Emissions Specifications Program funded by the NSW Environmental Trust.

Key achievements

- › Partnered with Infrastructure Sustainability Council Australia (ISCA) to develop digital specifications for a Material Calculator to improve access to data across and improve LEBM uptake
- › Led a review of international policies aimed at reducing embodied carbon in the built environment, identifying similar local initiatives
- › Consulted with NSW Infrastructure and the Construction Leadership group to establish a working group to develop specifications of LEBM for use in government procurement
- › Developed a baseline for LEBMs to establish the trajectory for the annual carbon in the NSW buildings and infrastructure construction sectors embodied in 3 high-emissions building materials: concrete, steel and aluminium
- › Materials and Embodied Carbon Leaders Alliance (MECLA) event attended by 101 government representatives and CEOs from over a dozen MECLA Founding Member organisations to discuss further commitments to net zero carbon and LEBMs.



Smart Batteries for Key Government Buildings

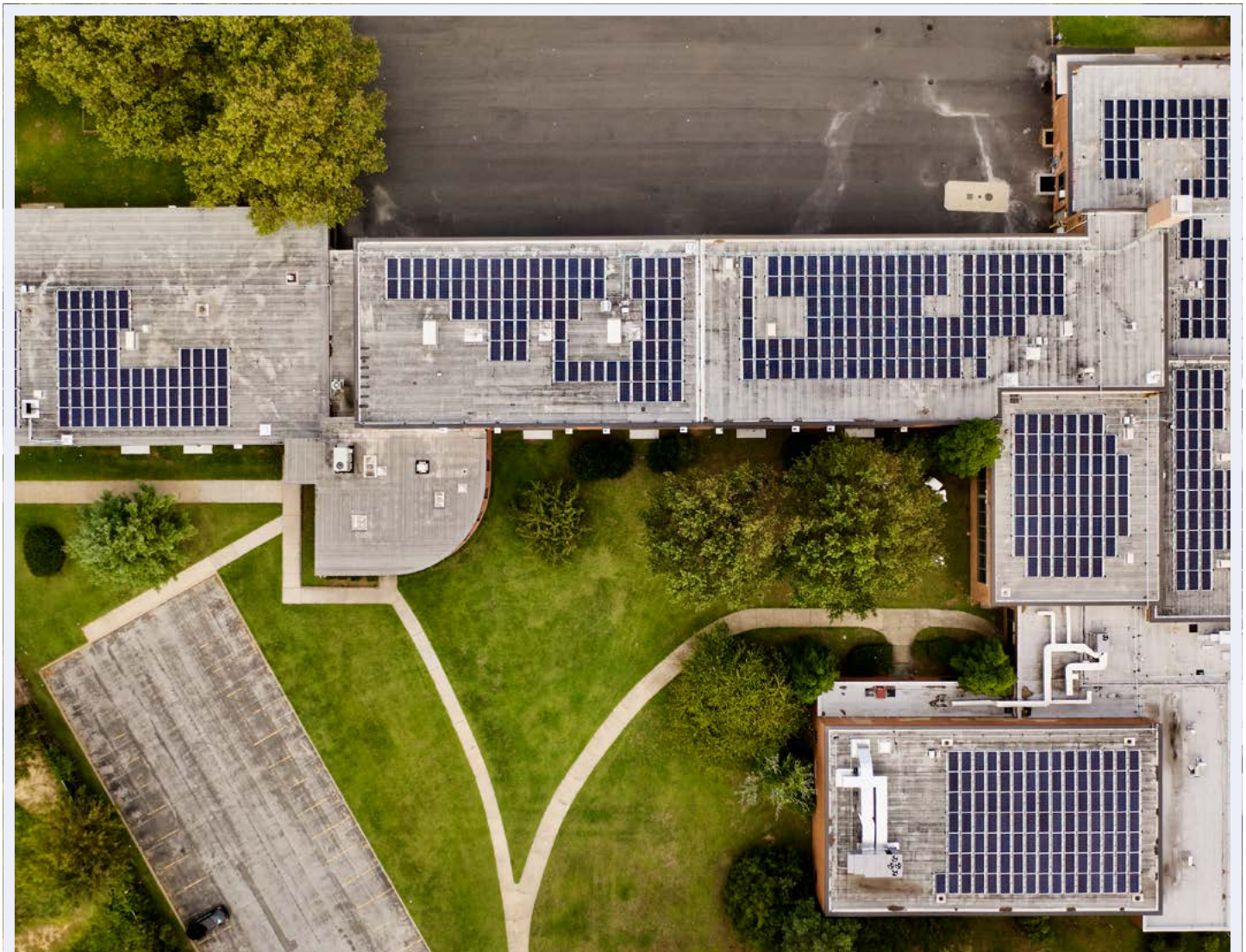
The Smart Batteries for Key Government Buildings program provides funding to support the installation of battery storage in schools, hospitals and other government buildings with rooftop solar systems.

Key achievements

- › Installed batteries at 7 schools resulting in the Department of Education expanding the program and installing solar/batteries at 24 schools with another 60 in planning
- › First large-scale battery storage project delivered at an Australian hospital through program grant funding. The battery was manufactured in Australia.

Key data

- › In 2021-22, installed 2,555 kWh of storage.





Hawkesbury-Nepean Flood Risk Management Strategy

The [Hawkesbury-Nepean Valley Flood Risk Management Strategy's](#) key objective is to reduce the flood risk to life, property and communities in the valley. It is a comprehensive long-term plan for government agencies, local councils, businesses and the community.

Funding for this program through the CCF ended in April 2022. The work of the strategy continues as part of the government's long term strategic plan to respond to the ongoing flood risks in the Hawkesbury-Nepean. These ongoing functions are now funded through recurrent appropriations from the NSW Consolidated Fund.

Key achievements

- › Initiated the 2022 Hawkesbury-Nepean River Flood Study which builds on earlier work and includes a 2-dimensional model with higher resolution. The study includes data from the March 2021 and 2022 flood events. It will be placed on public exhibition in the first quarter of 2023
- › Under the monitoring, evaluation, reporting and improvement (MERI) framework, delivered a comprehensive evaluation and associated report of the March 2021 Hawkesbury-Nepean Valley flood event - the largest flood experienced in the valley since 1990
- › Delivered the Flood Warnings research project in partnership with the Bureau of Meteorology and NSW State Emergency Services. The project investigated how people receive and respond to emergency flood warnings.

Did you know?

Under the Community Resilience Program, ['Floods. What's your plan?'](#) campaign was awarded the national Emergency Media and Public Affairs award for Excellence in Readiness and Resilience.

Achievements

Building better together



NSW Hydrogen Strategy

The \$3 billion [NSW Hydrogen Strategy](#) aims to support the commercialisation of the green hydrogen industry in NSW and transform the state into a renewable energy superpower.

Development of the green hydrogen industry will be a critical component to NSW's industrial transformation and prepare our economy for a low carbon future. Commercialising hydrogen supply chains across different sectors will require industry and government to innovate in partnerships and program delivery.

In 2022-23 it will:

- › progress hydrogen infrastructure masterplan
- › award up to \$150 million of grant funding for hydrogen hubs
- › award up to \$20 million of grant funding in partnership with the Victorian Government for the Hume Hydrogen Highway
- › finalise key regulations and rules for up to \$3 billion of incentives for green hydrogen production, including the Renewable Fuel Scheme, Australia's first market-based scheme to incentivise renewable gas, and network charge and scheme exemptions
- › deliver ammonia market study in partnership with industry
- › progress port infrastructure assessments and planning studies.

Did you know?

NSW Hydrogen Strategy is set to attract more than \$80 billion of investment, drive deep decarbonisation and help NSW establish itself as an energy and economic superpower.

Renewable Energy Zones

[Renewable Energy Zones](#) (REZs) will play a vital role in delivering affordable energy generation to help replace the state's existing power stations as they close over the coming decades.

The Energy Corporation of NSW (EnergyCo) is working with communities, investors and industry to coordinate investment in renewable energy generation, transmission and storage in REZs for the long-term benefit of energy consumers.

REZs will be delivered in the Central-West Orana, New England, South West, Hunter Central Coast and Illawarra regions. The Central-West Orana REZ was the first REZ to be formally declared in Australia on 5 November 2021, with the New England REZ following on 17 December 2021.

Key achievements

- › Received 49 Registrations of Interest in the South West REZ, totalling 34 GW of potential new renewable energy generation and storage projects
- › Received almost 40 GW of potential renewable energy and storage projects in the Hunter Central Coast REZ, representing more than \$100 billion in potential investment
- › Published a Central-West Orana REZ Project Overview. This identifies a revised study corridor that avoids significant areas of high-quality agricultural land and enables opportunities to deliver greater capacity to meet future energy needs
- › Commenced procurement for developers and sites to host the 700 MW Waratah Super Battery, the largest standby battery in the Southern Hemisphere. This is in response to the potential early closure of the Eraring power station in 2025.



Climate Information and Knowledge Delivery

Climate Information and Knowledge Delivery provides information, tools and resources to help government, businesses and communities build resilience and adapt to the effects of climate change. It provides funding and support for community groups, through Increasing Resilience to Climate Change (IRCC) grants.

The program delivered resources and information through the [AdaptNSW](#) website as well as enabling community groups to build their resilience, despite floods and the COVID pandemic effecting community grant delivery and project completion. Communities have adjusted the scope of projects to deal with these additional challenges, delivering great project outcomes.

Key achievements

- › Redeveloped the [AdaptNSW](#) website to enable better sharing of climate change information
- › Developed [41 written and 18 video case studies](#), showcasing the community impact and change resulting from the Increasing Resilience to Climate Change (IRCC) grants.

Did you know?

The AdaptNSW website has information and resources you need to prepare and adapt to climate change impacts. Why not check it out and see how you and your community can best prepare. Visit [AdaptNSW](#)



Hunter Valley Flood Mitigation Scheme

The [Hunter Valley Flood Mitigation Scheme](#) (the Scheme) manages flood risk to the communities of the Hunter Valley, including reducing the impacts of climate change now and into the future. The Scheme maintains flood mitigation infrastructure in a flood ready state and operates it during times of flood.

The ongoing maintenance of the Scheme has been disrupted by 4 floods in the past 15 months. COVID-19 pandemic restrictions have disrupted the program's supply chains and its ability to undertake planned works. Despite these challenges, the Scheme delivered \$9.5 million worth of flood mitigation works during the year.

Post flood damage assessments were completed for the March 2021, November 2021 and March 2022 floods, with the July 2022 damage assessment in progress. Recovery works have commenced with critical repairs being completed.

Key achievements

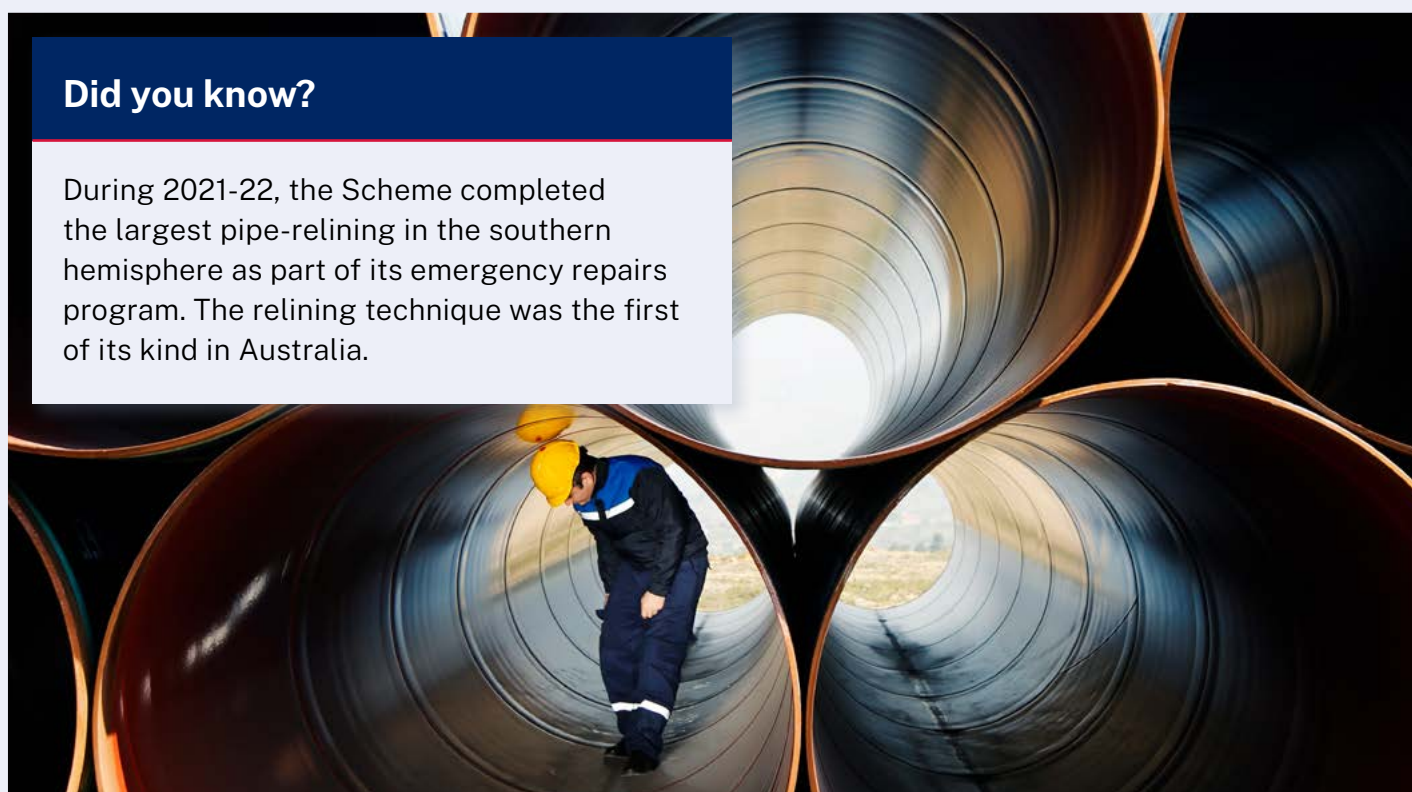
- › Provided flood protection to Singleton, Maitland, Lorn and Raymond Terrace during floods in November - December 2021, March 2022 and July 2022
- › Developed a flood intelligence system to inform our flood emergency response and assist emergency response services during flooding in the Hunter.

Key data

- › Scheme value - \$790 million (2022)
- › Flood mitigation infrastructure comprising levees, spillways, drains, floodgates, flood pipes and bank protection works
- › Predominantly on private land with 750 individual landholders
- › Provides a level of flood risk management to over 250,000 people in the Hunter Valley region.

Did you know?

During 2021-22, the Scheme completed the largest pipe-relining in the southern hemisphere as part of its emergency repairs program. The relining technique was the first of its kind in Australia.



Liddell Response

The Liddell Response program was initiated following the announcement of the closure of the Liddell power plant.

Through this program, the NSW Government is working to secure energy system reliability in NSW. The program includes part-funding the development by Energy Australia of a gas-fired open cycle power station at Tallawarra. The power station will have a capacity of at least 300 MW.

There is also the opportunity to reduce emissions from electricity generation through the development of capability for co-firing the plant with green hydrogen. The new power plant will help ensure NSW energy consumers have continued access to affordable and reliable power when the Liddell Power Station closes in 2023.

Key achievements

- › Achieved completion of the stack footings for the turbine, generator and exhaust stacks ready for placements of the turbine and the generators
- › Completed pouring of the concrete for the gas turbine foundation
- › Successfully delivered the gas turbine onsite
- › Project remains on track for completion by end of 2023.

Key data

- › Construction of the Tallawarra B gas plant will create 250 jobs. When operational, it will deliver reliable power to an additional 150,000 NSW homes during peak periods, delivering a \$300 million boost to the economy
- › In May 2021, the Minister for Energy announced that \$83 million had been allocated to support the delivery of the Tallawarra B gas plant project (\$78 million from NSW Government, \$5 million from the Commonwealth Government).





Koala Research Plan

The [Koala Research Plan](#) identifies knowledge gaps relating to koalas including the impacts of climate change, natural hazards and extreme weather events. This program's Plan funds priority research to address these knowledge gaps.

5 of the 10 research projects funded have been completed. Project variations have been granted to 5 projects primarily due to impacts of the COVID-19 pandemic. These projects are on track to deliver in line with the program's approved variations.

Key achievements

- › Developed Draft Best Practice Guidelines for Koala Translocation, providing guidance for the establishment of insurance populations in response to climate change impacts
- › Completed a report on maximising outcomes for koalas on private land which assessed livelihood, economic and social factors associated with the adoption of conservation covenants on private land in NSW
- › Completed a study into how adoption of conservation covenants may be affected by future climate change and extreme weather events
- › Investigated spatial genetic structure of extant populations of koalas in NSW. The findings identified a number of populations more vulnerable to key threatening processes including climate change.

New energy efficiency standards for buildings and infrastructure

To help meet the state's emissions targets, it is important to make it easier for apartment residents to install sustainable technology including solar, batteries and electric vehicle charging stations.

This program examines the role of standards and investigates other ways of enhancing energy efficiency in existing commercial buildings, residential buildings and existing apartment buildings.

It also ensures NSW continues its contributions to the National Energy Productivity Plan and the Nationwide House Energy Rating Scheme.

Key achievements

- › Contributed to the development of the Strata Schemes Management Amendment (Sustainability Infrastructure) Act 2021 and the government's Sustainability Infrastructure Review. The aim is to make it easier for people living in residential apartments to install solar photovoltaic (PV) panels, batteries and electric vehicle (EV) charging stations
- › Developed the Energy and Climate Change Action Plan for Sustainability Infrastructure in Existing Apartments with recommended actions to improve the energy efficiency of NSW's existing apartment buildings, including common areas and shared services
- › Supported the implementation of several energy efficient building measures under the National Energy Productivity Plan including:
 - a home energy-rating scheme for existing homes due to be released in mid-2023
 - a national disclosure framework for home energy ratings to support customers' choice at the point of sale and lease with a draft released in February 2022. The final framework is expected to be delivered mid-2023
 - a national framework for minimum energy efficiency standards for rental homes
 - a regulatory impact assessment for mandating and disclosing energy efficiency reporting, using NABERS, for apartment buildings' shared services.

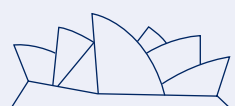


New Energy Efficiency Standards for Appliances

The New Energy Efficiency Standards for Appliances program led, collaborated on, or contributed to investigation into the development of new minimum energy performance standards and energy rating labelling on behalf of the Trans-Tasman interjurisdictional [Equipment Energy Efficiency \(E3\) Program](#).

Key achievements

- › Undertook analysis for Consultation Regulation Impact Statements and provided estimates for potential savings if minimum energy performance standards and energy rating labelling are introduced. For example:
 - NSW households would collectively save more than 430,000 MWh in energy, over \$100 million in bill savings and over 77,000 tCO₂e per year (equal to electricity use for more than 22,000 homes in NSW) if performance standards were introduced for domestic cooking appliances, including ovens, stove tops and exhaust hoods by 2024–25
 - NSW businesses would collectively save more than 24,000 MWh in energy, over \$3.7 million in bill savings and over 4,800 tCO₂e per year if commercial ice maker performance standards were introduced by 2023–24
 - NSW businesses would collectively save more than 480,000 MWh in energy (equal to powering the Sydney Opera House for 30 years), over \$56 million in bill savings and over 100,000 tCO₂e per year if performance standards were introduced for commercial catering equipment, including commercial dishwashers, commercial ovens, deep fryers and hot food holding cabinets, by 2024–25.



480,000 MWh in energy savings

is equivalent to powering the
Sydney Opera House for 30 years.



NSW Coastal and Flood Data Network

The [NSW Coastal and Flood Data Network](#) provides essential near real time flood and estuary water levels, rainfall, tide and wave data to government, emergency services, Bureau of Meteorology, research and community.

It informs extreme weather event warnings and emergency response planning, long term disaster and climate change modelling, land use planning and critical infrastructure design.

Key achievements

- › Proactively mitigated and managed coastal hazards and flooding risks
- › Data network maintained by Manly Hydraulics Laboratory includes the following:
 - 225 flood and estuary water level recorders
 - 75 rainfall monitoring stations
 - 20 ocean tide sites
 - 7 offshore waverider buoys.

Key data

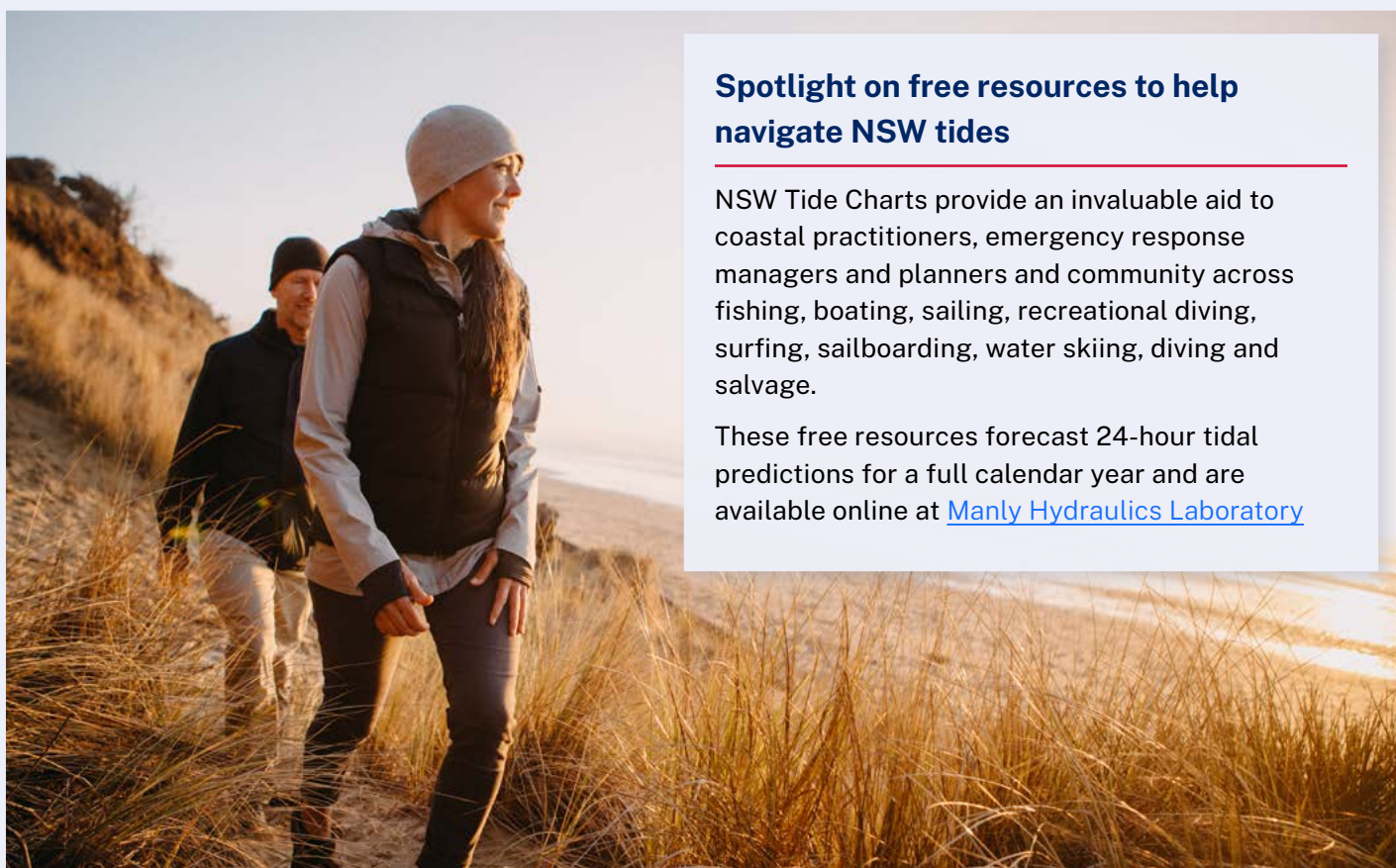
Consistent and continuous data available in near real time and published for free. This includes:

- › Floodplain and estuary water levels and ocean tides data 99%
- › Wave climate data 90%
- › Flood level recorders 93%
- › In 2021-22, 224,931 people accessed over a million data sets from the [Manly Hydraulics Laboratory](#) to inform decision-making.

Spotlight on free resources to help navigate NSW tides

NSW Tide Charts provide an invaluable aid to coastal practitioners, emergency response managers and planners and community across fishing, boating, sailing, recreational diving, surfing, sailboarding, water skiing, diving and salvage.

These free resources forecast 24-hour tidal predictions for a full calendar year and are available online at [Manly Hydraulics Laboratory](#)



Achievements

Innovative Delivery



Emissions Intensity Reduction

The Emissions Intensity Reduction (EIR) supports hard-to-abate industrial sectors to deliver significant emissions abatement projects from now until 2030. It also aims to foster the development and growth of a low-emissions industrial sector, supply chain and infrastructure in NSW.

The EIR is part of the Net Zero Industry and Innovation program, a cornerstone of the Net Zero Plan to accelerate [decarbonisation](#) by 2030 and beyond. EIR is working closely with the [biggest manufacturing and mining emitters](#) in NSW to build a more sustainable low carbon future for NSW.

Key achievements

- › Signed first capital co-funded project at the Orica Kooragang Island facility. The project will result in 567,000 tCO₂e annual emissions reduction from mid-2023
- › Undertook the NSW Regional Scoping Study to understand the potential for industry transitions to net zero emissions in the Hunter and Illawarra regions. The study has provided insights that are helping to develop roadmaps for regional Clean Manufacturing Precincts
- › Received 4 applications to study significant decarbonisation opportunities from 4 of the highest scope 1 emitting manufacturers in NSW
- › Working with Commonwealth agencies on a co-investment partnership framework to help increase the pool of co-funding available to our program participants. The framework is expected to be finalised early 2023.

Emissions Reduction in national parks

The Emissions Reduction program ran from 2017 to 2022. Its objectives were to:

- › trial public sector involvement in the carbon market
- › identify efficient and effective business models to access future carbon incentives
- › rehabilitate degraded habitat
- › increase carbon sequestration and cycling carbon funds into further rehabilitation in national parks.

Funding of the program ended on 30 June 2022. NPWS is currently working with the public lands and Primary Industry Productivity Abatement programs to meet the government's net zero commitments.

Key achievements

- › Progress was made on infill planting sites impacted by fire, flood and frost events at pilot tree planting sites
- › A comprehensive review of contract inclusions, site selection, plant establishment techniques, contract management arrangements and the integration of business and biodiversity objectives was undertaken and recommendations prepared
- › Successfully registered 3 projects in the Emissions Reduction Fund, despite impacts resulting from drought, floods, bushfires and COVID-19
- › Sought and received approval from NSW Cabinet to trial public sector involvement in the carbon market
- › Undertook effective rehabilitation of some or parts of the 18 sites under the pilot project
- › 13 sites were assessed to determine plant survival success over the 980 ha of plantings.



Accelerating Net Zero Buildings

[Accelerating Net Zero Buildings](#) provides incentives to improve performance of built environment, working collaboratively with industry to work out how we create a market to drive down embodied emissions of buildings. Embodied emissions are the greenhouse gas emissions associated with the physical parts of a building during its lifetime.

Embodied emissions are becoming increasingly important. They currently represent 16% of emissions from buildings and construction globally. This will increase to 85% by 2050 as buildings become more efficient as the energy grid decarbonises through increased renewables.¹

The program has 2 goals:

- › increasing participation in National Australian Built Environment Rating System (NABERS) by 50% by 2030, making NSW a world leader in sustainable and efficient buildings
- › developing a national embodied emissions framework to grow the influence of the built environment to decarbonise the economy.

Key achievements

- › Launched Energy Starters which helps owners of existing buildings in the early stages of their energy efficiency and sustainability journey. There were 44 Energy Starters applications approved
- › Launched New Builds Offer which incentivises the uptake of NABERS Commitment Agreements. Buildings applying for this offer will achieve an additional 25% reduction in emissions once they are in operation
- › Worked in partnership with the Department of Planning and Environment to increase the uptake of NABERS Water ratings as part of the offer. This offer continues until June 2024
- › Undertook market feasibility as part of the NABERS Embodied Emissions Initiative to determine market desire for a NABERS embodied emissions tool. There was strong desire for the tool which would help accelerate the reduction in embodied emissions in the built environment.

Did you know?

Without decisive action, the emissions from building materials are expected to grow to up to 85% of all emissions in the building sector over the next 3 decades. Accelerating Net Zero is creating a world-leading standard to change this, helping NSW buildings measure, compare and reduce these emissions.



1. Green Building Council Australia, [Embodied Carbon & Embodied Energy in Australia's Buildings](#), 20 August 2021

Energy Demand Response

The Energy Demand Response program was a new way to address supply shortages in the electricity system. Demand response is an effective source of reserve capacity for maintaining reliability of the electricity grid.

This program improved its commercial and technological readiness in NSW. Innovative market models and equipment control technologies were used and developed in this program.

Completed in 2022, the Energy Demand Response program successfully delivered more than the targeted total demand response capacity for the summers of 2017-18 to 2020-21.

Future support for Energy Demand Response has been integrated in new initiatives including the Peak Demand Reduction Scheme and the Wholesale Demand Response Market.

Key achievements

- › Delivered 77 MW of capacity in year 1 (28% above target)
- › Delivered 93 MW of capacity in year 2 (20% above contracted capacity)
- › Helped market participants develop new demand response retail offers for consumers
- › Achieved participation from all electricity customer segments - residential, small and large business.



Sustainable Homes

The Sustainable Homes initiative works collaboratively with industry and other government agencies to increase the demand and supply of sustainable homes. Sustainable Homes are more energy efficient, more comfortable, cheaper to operate and more resilient to climate and extreme weather.

The Sustainable Homes team has used several design principles to inform the approach to projects and policy. Through the recent evaluation, it was demonstrated that the team has been able to work on demand, supply and policy levers to support the market transition for homes.

Key achievements

- › Project '[Renovate or Rebuild](#)' aired on Channel Nine Life in October 2021 reaching over 3.2 million people across Australia. Survey results indicated those who reported watching the show were significantly more likely to consider having a home energy star rating above the minimum standards for Australia as a 'must have' feature
- › In collaboration with the commonwealth, states and territories, Sustainable Homes investigated the inclusion of a simplified assessment option in the Draft National Framework for Disclosure of Residential Energy Efficiency Information. This involved engagement with 160 stakeholders from key user groups
- › Designed a major project to measure the energy performance of NSW's existing housing stock (pre-BASIX). Data derived from energy assessments performed in sample residential properties throughout NSW will provide fundamental evidence to build the case for change and inform fit-for-purpose residential strategies and policies.



Protected Area Management

The Protected Area Management program aims to manage and expand the NSW national parks system to maximise protection of ecosystems and biodiversity.

The program improves or stabilises the trend in condition and ecological integrity of ecosystems and biodiversity. Its objectives are to avoid and minimise climate change impacts to ecosystems and biodiversity as well as manage or reduce risk to public and private infrastructure, assets and property from climate change risks.

The program ended on 30 June 2022. Ongoing park management activities will be funded through an extension of the program into Protected Area Management 2022-30, which commenced 1 July 2022.

Key achievements

- › Contributed to expanding the NSW national parks system to 7.59 million hectares (ha) or 9.48% of NSW
- › Contributed to adding 31,000 ha to the national parks system with the creation of Gardens of Stone State Conservation Area and expansion of Gardens of Stone National Park and Wollemi National Park
- › Lessons have been learned to improve the effectiveness and efficiency of control methods for pests, like foxes, from monitoring of the largest-ever vertebrate pest control campaign by NSW National Parks and Wildlife Service (NPWS) after the 2019-2020 bushfires.

Did you know?

The Gardens of Stone State Conservation Area and Gardens of Stone National Park protects habitat for more than 80 threatened plant and animal species, as well as ancient rock pagodas, slot canyons, and Aboriginal cultural sites.



Empowering Homes

The Empowering Homes pilot offered no-interest loans to people with a household income of up to \$180,000 per year to purchase a home battery or solar and battery system.

The pilot operated in 24 Local Government Areas (LGAs) to test its effectiveness and design.

A recent evaluation found there has been a significant shift in the market since the offer was launched. In particular, the evaluation showed that a government-backed no-interest loan is no longer needed. This is because the private sector has started to offer these products without the need for additional taxpayer support. The pilot closed at end of July 2022.

Key achievements



Facilitated installation of 256 systems by providing interest-free loans



New solar capacity is 1,472 kW and new battery installed capacity is 2,755 kWh.



Systems included 193 solar and battery systems and 72 battery-only systems



Safeguard Administration

The CCF helps the [Independent Pricing and Regulatory Tribunal](#) (IPART) to regulate and administer the Peak Demand Reduction Scheme (PDRS) and the expanded Energy Savings Scheme (ESS).

From January 2024, IPART will also regulate and administer the Renewable Fuel Scheme (RFS). It supports IPART in preparing stakeholders to transition to new schemes and activities under the Energy Security Safeguard (the Safeguard).

Key achievements

- › Developed the legislative framework to introduce the RFS, the PDRS activity rule and the PDRS compliance rule
- › Produced supporting materials to administer the ESS and PDRS
- › Streamlined the processes to support the delivery of ESS and PDRS
- › Engaged with stakeholders to inform upcoming changes
- › Produced tools and provided stakeholder training in preparation for upcoming changes in the schemes
- › Supported IPART to introduce its new online registry for the ESS and PDRS.



Air quality monitoring and forecasting

The [air quality monitoring and forecasting program](#) delivers air quality data, information and monitoring support for a variety of stakeholders, as part of the government's action on air pollution.

The program aims to improve average air quality results across NSW supporting public health and continued growth and prosperity. Its monitoring network collects data on air quality and meteorological measurements, air alert and forecast information, air pollution emissions estimates, population exposure and provides air quality reports.

Over the past 4 years the program has:

- › established air quality monitoring in Sydney, Parramatta and Penrith
- › enhanced the NSW rural air quality monitoring network
- › established a baseline air quality monitoring station in rural NSW
- › enhanced the government's air quality website and data delivery
- › provided state-wide air quality forecasting and alerts.

Key achievements

- › Finalised Stage 2 of the Sydney Air Quality Study and helped to evaluate the impact of air emissions from anthropogenic sectors on human health
- › Vendor selected for new air quality data acquisition, management and reporting system. Implementation has now commenced
- › 2 emergency incident responses undertaken in Kurri Kurri and Bowral
- › New state-of-the-art chemical transport model for air quality forecasting is currently being implemented
- › Partnered with Asthma Australia on an Air Smart communications pilot app.

Did you know?

The NSW Government is developing a dedicated air quality website. It will present air quality data and information that is fit-for-purpose, easy-to-understand and works well on desktop and mobile devices.



Administration, evaluation and budget

Administration

The CCF is established under Part 6A of the Energy and Utilities Administration Act 1987. The Minister for Energy has statutory responsibility for the fund.

The Office of Energy and Climate Change in NSW Treasury manages the CCF and provides strategic oversight of programs. The CCF Administration Committee meets regularly to monitor the fund and its programs.



Evaluation

Section 34H(4) of the Act requires the Minister to report on the effectiveness of completed CCF programs. To meet program evaluation requirements, the Department of Planning and Environment (DPE) has updated the CCF Evaluation Framework to ensure all programs are evaluated rigorously and consistently and thematic evaluations assess performance and outcomes from a whole-of-fund perspective.

To date, 14 end of cycle evaluations have been completed and 26 have been planned over the next 2 financial years in line with approved program completion timelines. Many of the evaluations have noted the ongoing challenges posed by the COVID-19 pandemic and have provided critical learnings for informing future program design for the 2022-2030 funding cycle.

The More Efficient Street Lighting program evaluation confirmed the program's positive impact on energy use, bill savings and greenhouse gas emissions with recommendations accepted to strengthen program monitoring and evaluation.

A strategic review of the Green Globes program recommended its closure and relaunch into a new format.

An evaluation of the Energy Management Services and Training program found some improvements in the understanding of energy use and energy management skills among training and coaching participants, with recommendations to better demonstrate future benefits and enhance program integration.

The evaluation for the Manufacturing Energy Efficiency program, also known as Manufacturing Efficiency Funding, showed the manufacturing sector had achieved some energy savings with several recommendations accepted to better demonstrate future additionality.

The NSW Bushfire Risk Management Research Hub evaluation found the Hub was instrumental in facilitating research, collaboration and coordination amongst partners with several constructive recommendations to improve knowledge translation for end users.

The Enhanced Bushfire Management program evaluation found improved planning, resourcing, preparation and implementation of hazard reduction activities has occurred because of this program. A key recommendation has been accepted around the move toward risk-based targets for future bushfire management outcomes.

An evaluation of the Hunter Valley Flood Mitigation Scheme found the program to have reduced risks to infrastructure, property and lives to a high degree with a key recommendation for the Scheme to pivot from asset management towards a more holistic approach to flood mitigation focusing on community resilience and the restoration of local wetlands.

The Air Quality Monitoring program evaluation found the department's actions had contributed toward improvements to the NSW air quality monitoring network and the science underpinning air quality monitoring and forecasting with recommendations to further improve program planning and communications.

Finally, the evaluation of Sydney Water's WaterFix Residential program found the CCF to be a critical enabler for program expansion with recommendations focusing on maintaining and improving quality over time.

Budget

In 2021-22, the CCF was resourced by contributions from electricity distributors. Electricity distributors are requested to recover no more than 25% of costs from household customers, with the remainder to come from commercial, business and industrial customers.

Revenue 2021-22

The total revenue for CCF in the 2021-22 financial year was **\$276.9 million**.

Source	Amount (\$)
Ausgrid	133,552,793
Endeavour Energy	86,613,114
Essential Energy	56,001,839
Interest	580,566
Miscellaneous Revenue and Return of Grant	175,016
Total	276,923,327



Expenditure 2021-22

In 2021-22, the CCF's total expenditure was **\$268.3 million**.

The difference between revenue and expenditure is a result of different program implementation schedules in the 2021-22 financial year.

Program	ACTUALS (\$M)
Energy efficiency programs	
Home Energy Action	6.7
Household and Small Business Upgrades	1.7
More efficient homes for low income tenants	0.9
Manufacturing Efficiency Funding	1.5
More efficient street lighting	0.2
New Energy Efficiency Standards For Appliances, Buildings And Infrastructure	1.4
Net Zero Programs	27.5
Subtotal	40.0

Program	ACTUALS (\$M)
Delivering reliable, clean and affordable energy	
Empowering Homes	1.1
Smart Batteries for Key Government Buildings	2.4
Emerging Energy	0.3
Regional Community Energy	6.0
Solar for Low Income Households	0.6
Reliable Affordable Clean Energy (RACE)	0.2
Electricity Strategy and Energy Infrastructure Roadmap, including Renewable Energy Zones	10.1
Tallawara B grant	18.0
Subtotal	38.8

Expenditure 2021-22 (continued)

Program	ACTUALS (\$M)
NSW's energy regulation responsibilities	
National energy regulation contribution	12.6
Subtotal	12.6
Program	ACTUALS (\$M)
Increasing resilience to a changing climate	
Tree planting projects to reduce carbon emissions	0.2
Greening Our City	14.1
Biodiversity Conservation Trust Private Land Conservation	51.3
Enhanced Bushfire Management & Research Hub	12.5
Bushfire Management	9.2
Hawkesbury-Nepean Flood Risk Management Strategy	0.7
Helping communities become more resilient to climate change	5.7
Primary Industries Climate Change Research Strategy	6.2
Koala Strategy - Koala Research Plan	0.5
Hunter Valley Flood Mitigation	5.1
Air Quality Monitoring and Forecasting	3.6
Coastal, Estuary and Floodplain Management	16.9
NSW Coastal and Flood Data Network	4.1
Sustainability Programs	3.4
Protected Area Management	32.9
Subtotal	166.3
Program	ACTUALS (\$M)
Other	
CCF Administration	2.2
Program support services and short-term priorities	8.4
Subtotal	10.6
Grand Total	268.3

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Website: www.energy.nsw.gov.au

Report pollution and environmental incidents Environment

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