

NSW Climate Change Fund

Annual Report 2023-24



Acknowledgement of Country



Department of Climate Change, Energy, the Environment and Water acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.

NSW Climate Change Fund

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The Climate Change Fund reinforces our commitment to addressing climate change and enhancing the well-being of every resident in NSW. In November 2023, we legislated that commitment through the *Climate Change (Net Zero Future) Act 2023*, writing our targets into law.



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The fund aligns with the Net Zero Plan and will help us reach our target of net zero emissions by 2050 while creating a cleaner, greener, more resilient NSW where sustainability benefits everyone.

Transitioning to a low-emissions economy is challenging, but the rewards are immense. Whether we live in the inner city, suburbs or regional areas, our move from fossil fuels to renewable energy ensures that everyone has access to affordable, clean and reliable energy now, and for generations to come.

Renewables (solar, wind and firming) have already replaced coal-fired power as the most affordable source of energy, and we're harnessing our natural advantages in NSW. This year, the Climate Change Fund invested \$36.1 million to ensure households, businesses and communities benefit from this clean energy and \$7.1 million to provide energy bill relief through energy efficiency programs.

We're investing in solar panel and battery installations for households, improving grid stability with smart battery systems in public buildings, and advancing community-led projects like NSW's first community solar garden. Together we're building an energy system to be proud of, that will keep the lights on and put downward pressure on energy bills for decades to come.

The fund also helps businesses and landowners reduce emissions and improve land management. It develops carbon management skills and provides incentives and energy efficiency support to lower operational costs, increase profitability and boost statewide competitiveness.

This year, the fund invested \$49.2 million to take action on climate change, driving towards our goal to reach net zero emissions. Over \$166.2 million has been spent to increase community resilience and safeguard our communities from the effects of climate change. Initiatives range from protecting national parks to improving how we manage floodplains, fire and coastal erosion. This includes funding hazard reduction and cultural burns with local First Nations groups, supporting local councils to plan and manage flood risks and funding infrastructure to protect our beaches from coastal erosion.

The Climate Change Fund continues to drive technological innovation and research, positioning NSW as a leader in clean energy and sustainability, advancing our climate goals and bringing economic benefits. By learning from global successes and incorporating international best practice, we're accelerating progress towards net zero and growing our economy.

We're dedicated to ensuring all our investments deliver real benefits to the people of NSW. Together, we're building a sustainable future that will enhance our quality of life, support our economy, and protect our environment.

Penny Sharpe
Minister for Climate Change
and Minister for Energy

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The Climate Change Fund was established in 2007 under Part 6A of the *Energy and Utilities Administration Act 1987* to address the impacts of climate change, encourage energy and water saving activities, and increase public awareness and acceptance of the importance of climate change.

The Minister for Climate Change and Energy has statutory responsibility for the fund. This responsibility includes approving payments to the fund, allocating funding to programs and reporting annually to parliament on the fund's performance.

From 1 July to 31 December 2023, the fund was in the Office of Energy and Climate Change in NSW Treasury. The Environment and Heritage Group in the NSW Department of Planning and Environment administered the fund for NSW Treasury under a service partnership agreement.

As a result of Machinery of Government changes, the NSW Department of Climate Change, Energy, the Environment and Water was formed on 1 January 2024 and the fund was moved to the new department.

The fund achieves its objectives through a range of programs delivered across government, primarily through the NSW Department of Climate Change, Energy, the Environment and Water.

The Climate Change Fund Administration Committee is an Advisory Committee established under Part 6A Division 5 of the Act. The Committee administers the fund on behalf of the Minister, with representatives from the NSW Department of Climate Change, Energy, the Environment and Water. The Committee meets monthly to monitor the fund and its programs.

The purposes of the fund as stated in section 34F of the Act are to provide funding:

- a. to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities
- b. to encourage water and energy savings and the recycling of water
- c. to reduce the demand for water and energy, including addressing peak demand for energy
- d. to stimulate investment in innovative water, and energy savings measures
- e. to increase public awareness and acceptance of the importance of climate change and water and energy savings measures
- f. for contributions made by the state for the purposes of national energy regulation.

The programs supported by the fund relate to one or more of these purposes and are included in this report.



Regenerating and restoring nature through environmental planting helps offset greenhouse gas emissions and reduce the impact of climate change

NSW Government ©Katherine Wilson

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Reduced emissions by

5,862 tonnes

through the Vehicle Emissions Offset Scheme



Conducted

3,000

electric vehicle test drives



Over 1,000

social houses provided with more than 1,500 total energy upgrades



Evaluated

1,015 private households and **87 social housing dwellings**

across **170 locations** in the NSW Residential Energy Performance Baseline to inform future residential energy targets



Another

56 buildings

committed to being NABERS certified



86,000 MWh

saved annually via school lighting upgrades



Generated

101,200 MWh

of annual solar power from NSW Government sites

3 MWh

of battery storage added to NSW public buildings



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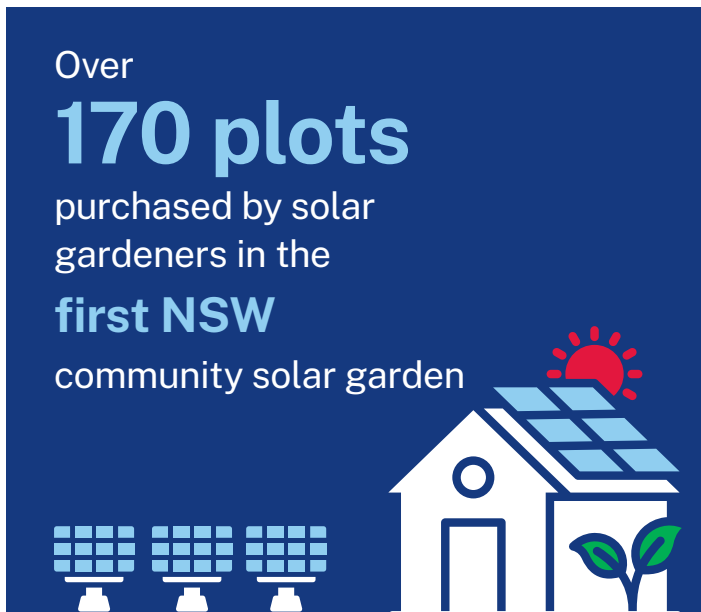
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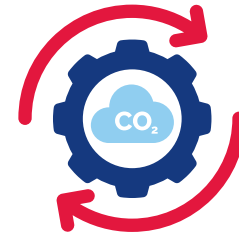
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Over **170 plots** purchased by solar gardeners in the **first NSW** community solar garden



88 On-Farm Carbon Advice events to over **4,200** farmers




16 farm carbon management plans, with participants reporting increased knowledge

Over 200 clean tech start-ups engaged for networking, business model mentoring, and insights on positioning for success



Completed 2 solar farm projects to power **2,300 homes** and reduce emissions by an estimated **10,500 t** annually for 30 years

\$12.5 million awarded to fund a 50 MW/ 2 hour New England Battery Energy system




155,711 trees planted in Greater Sydney to help keep suburbs cooler

4,441 students participated in tree planting, enhancing shade and green spaces while promoting urban greening



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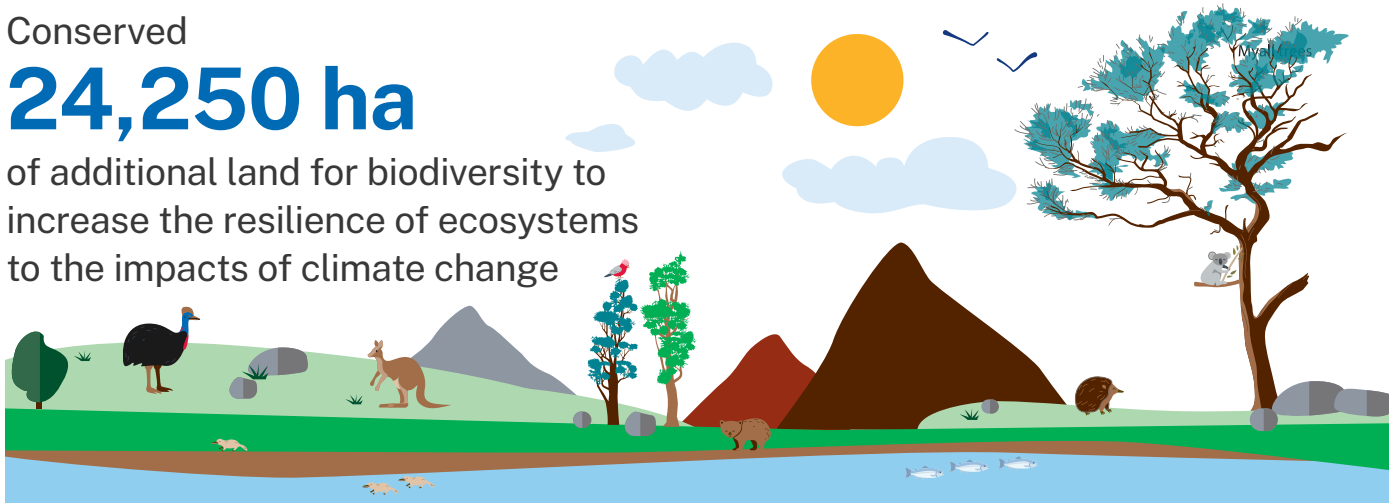
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Conserved

24,250 ha

of additional land for biodiversity to increase the resilience of ecosystems to the impacts of climate change



33,687 ha

of hazard reduction completed, reducing the impacts of more intense bushfires due to climate change



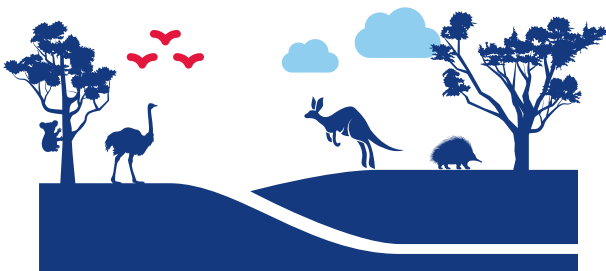
50,000

feral animals removed from national parks, building healthier, more resilience landscapes



40,000 ha

added to national parks, enhancing species migration under climate change and protecting diverse ecosystems across the state



7.86 ha

riverbank revegetated, enhancing riverbank protection, reducing flooding impacts downstream and providing habitat for native fauna



10

cultural burns conducted, reducing wildfire risk, restoring ecosystems, and strengthening cultural connections



60

regional councils undertook flood risk workshops to promote best practice and integrate flood risk management planning into council processes



458,219

visits to AdaptNSW website, providing access to information, advice and decision tools on the best way to adapt and prepare for climate change



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The NSW Government is advancing a low emissions future with significant investments in hydrogen, clean technology, and large-scale renewable electricity storage. The Climate Change Fund drives these initiatives, laying the groundwork for low-carbon solutions that improve our energy infrastructure.

The fund is working with industry and the community to accelerate our combined efforts towards achieving net zero. This includes promoting electric vehicles, building energy and water efficiency, and helping high-emitting industries reduce their carbon footprints.

Additionally, the fund is focused on building our understanding of the costs of climate change and creating favourable conditions to attract investment into NSW for the clean energy transition.

These efforts are creating a secure and reliable energy system, while making it easier for everyone in NSW to save on energy costs. They support innovation and engage the community, businesses and local governments, helping to ensure a widespread shift to a more sustainable future.

This section showcases the best examples of how the Climate Change Fund is making a tangible difference in creating a low emissions future.

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4.1 Hydrogen

The [NSW Hydrogen Strategy](#) sets the path and vision to establish a green hydrogen industry in NSW, enabling the decarbonisation of hard-to-abate sectors. The strategy provides incentives and grant funding to facilitate investment in emerging technology and establish local supply chains.

The Climate Change Fund's contribution to the Hydrogen program from 2022-23 to 2029-30 is \$98.1 million. Of this, the Hydrogen hubs program funding is up to 2027-28.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Hydrogen program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities. The Climate Change Fund provides funding for contributions made by the state for the purpose of national energy regulation.

Key achievements

The program achieves the purposes under the Act by providing production incentives, establishing green hydrogen hubs and supporting the development of a demonstration network of hydrogen refuelling stations and hydrogen-powered trucks.

In 2023-24, we:

- hosted the Asia-Pacific Hydrogen Summit in Sydney in October 2023. The summit showcased NSW hydrogen policies and projects, generating leads for follow-up investment and building networks for future international collaboration
- completed a range of studies so that government and industry can make informed decisions, including:
 - a state-wide infrastructure masterplan modelling assessment
 - a green ammonia market study
 - a supply chain mapping study to support the development of foundational supply chains for the hydrogen sector
- signed 4 Memorandums of Understanding to promote green hydrogen cooperation with the Flemish Government, Tokyo Metropolitan Government, Fukuoka Prefectural Government and JOGMEC (Japan Organization for Metals and Energy Security)
- consulted on and finalised the Renewable Fuel Scheme Rule outlining participation requirements for green hydrogen producers.



Hydrogen is a critical component to reach net zero and provides significant opportunities for economic growth, more jobs and investment

The Hunter Valley Hydrogen Hub on Kooragang Island, Newcastle received planning approval in May 2024 for a 50 megawatt electrolyser to produce green hydrogen.



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4.2 Electric Vehicles

The transport sector accounts for 20% of NSW's greenhouse gas emissions, nearly half of which come from passenger vehicles.

The NSW Government is promoting electric vehicle (EV) adoption to overcome obstacles to their widespread use. By increasing the number of EVs on NSW roads and powering them with renewable energy, the state aims to reduce transport sector emissions and advance towards achieving net zero emissions by 2050.

The Climate Change Fund's contribution to the Electric Vehicles program from 2022-23 to 2027-28 is \$63.1 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Climate Change Fund EV programs aim to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities. It also aims to increase public awareness and acceptance of the importance of climate change, and water and energy savings measures.

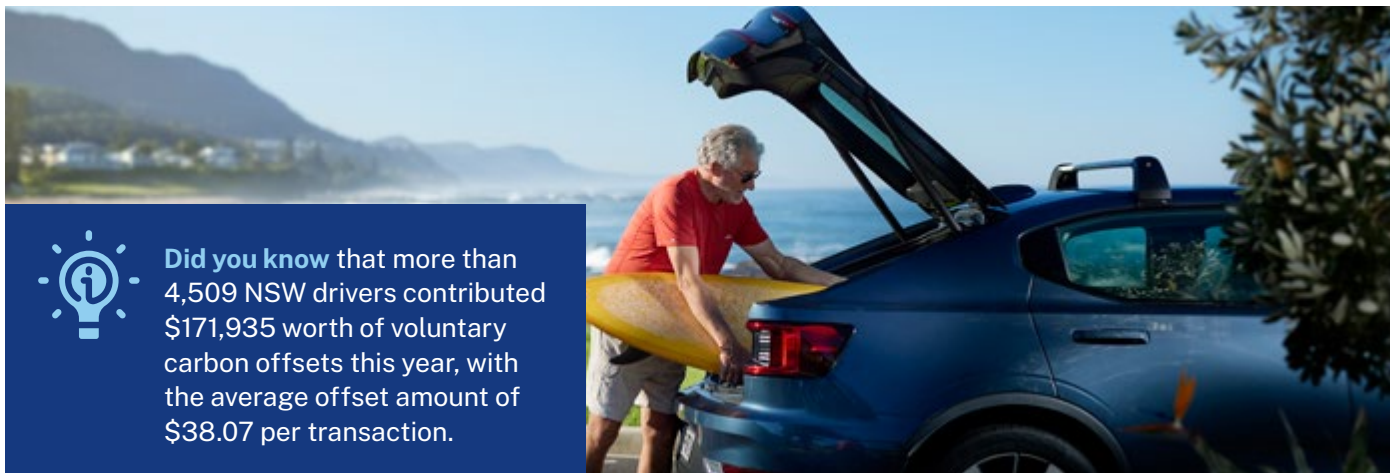
Key achievements

The program achieves the purposes under the Act through 2 separately funded streams. The Transport Consumer Information stream educates consumers on vehicle emissions, while the Drive Electric NSW - EV Fleet Incentives stream co-funds NSW fleets through a competitive bidding process to help them acquire battery electric vehicles and charging infrastructure.

In 2023-24, we:

- launched the Vehicle Emissions Star Rating (VESR) website, helping consumers easily explore and compare the vehicle emissions of their next new or used vehicle purchase. Over 15,500 people have visited the site, with 79,529 total unique page views
- reduced emissions by 5,862 tonnes of CO₂ through the Vehicle Emissions Offset Scheme (VEOS) with NSW driver contributions of \$274,985
- held 5 multi-day NRMA EV test drive events across regional and metropolitan NSW. Over 1,000 drivers took more than 3,000 test drives across 9 event days
- awarded funding for over 3,400 electric fleet vehicles and 900 chargers since inception in 2021-22
- developed and delivered capacity-building initiatives to support fleet operators in preparing vehicle transition plans and charging infrastructure strategies.

To complete these actions, the program successfully navigated complex interactions to align with a diverse group of partners. These included the Commonwealth Green Vehicle Guide team, state and territory representatives, and various external and intra-departmental stakeholders.



Did you know that more than 4,509 NSW drivers contributed \$171,935 worth of voluntary carbon offsets this year, with the average offset amount of \$38.07 per transaction.

NSW Government © Jeremy Park

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4.3 Clean Technology Innovation

The [Clean Technology Innovation](#) program supports the research, development, ecosystem and commercialisation of emerging clean technology solutions, especially in industries where they do not exist.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$94.9 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Clean Technology Innovation program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities. It also aims to stimulate investment in energy savings measures.

Key achievements

The program achieves the purposes under the Act by investing in the next wave of NSW-led innovative clean technology solutions, reducing barriers and increasing the likelihood of breakthroughs and success for clean technology solutions.

In 2023-24, we:

- launched the [Net Zero Manufacturing Initiative](#) with the Minister for Climate Change and Minister for Energy. The initiative includes up to \$25 million for Clean Technology Innovation Round 2, providing funding to support 2 streams: Project Development Stream and Commercial Readiness Stream. The team is currently awarding the grant and is expected to administer grants under both streams by early 2025
- supported researchers, innovators and startups in their ongoing development and advancement of clean technologies. Significant progress has been made across 12 Clean Technology Innovation Round 1 projects who received a total of \$6,812,265 in grant funding. The establishment of the Clean Energy Living Lab at the University of Wollongong and a program to commercialise research-based projects in clean agriculture and food technologies are just some examples
- engaged more than 200 start-ups through the support of the 5 Clean Technology Innovation Round 1 Ecosystem stream grantees. This provided opportunities for the start-ups to connect with other start-ups, receive mentoring on their business model and gain insights on how to best position their start-ups for success.

The program team provided dedicated support to grantees, effectively collaborated to resolve any roadblocks and ensure successful project outcomes. By adjusting Round 1 project milestones and funding timelines, they were able to accommodate variations in scope.



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Did you know that almost half the clean technologies required for the world to achieve net zero emissions will come from solutions that are still in prototype or demonstration phase (predominantly in university and science laboratories).¹

¹ Net Zero by 2050 A Roadmap for the Global Energy Sector, International Energy Agency, 2021

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Case study

Advancing hydrogen storage technology

Rux Energy is revolutionising hydrogen storage with support from the NSW Government's Clean Technology Innovation grants.

The NSW Government is working with industry to develop a thriving green hydrogen industry in NSW and has provided funding to help Rux Energy develop a new method to store hydrogen by utilising metal-organic frameworks.

The goal is to improve dispatchable hydrogen (H₂) storage for heavy mobility and refuelling. This will enhance the adaptability of hydrogen in the manufacturing and heavy vehicle industries, potentially leading to a solution for decarbonisation.

Hydrogen is a critical fuel source for NSW to reach net zero by 2050 for industries that can't easily be electrified. It also provides significant opportunities for economic growth, more jobs and investment.

Due to hydrogen's small molecular size and high energy capacity (hydrogen has 3 times the energy content of petroleum), storing and transporting hydrogen in a safe and stable way is one of the biggest barriers to widespread use as an energy source. Conventional hydrogen storage requires extreme-pressurisation or exceedingly low temperatures (-253°C).

Rux's solution involves filling composite tanks with a highly porous nanomaterial that acts like a sponge. It absorbs hydrogen without any chemical changes to the hydrogen molecule itself, at much lower pressures and more moderate temperatures.

This storage is crucial for reducing emissions from hard-to-decarbonise sectors like steel manufacturing, heavy freight, maritime and rail. These sectors are vital for the NSW economy but are finding it difficult to move away from fossil fuels because they rely on combustion. By focusing on local production units, Rux Energy lowers the carbon footprint of these sectors and supports NSW's emissions reduction goals.

Rux Founder and CEO Dr. Jehan Kanga believes that by engaging upfront with these sectors, Rux has shown them that decarbonisation can be profitable.

"We want to be remembered as one of the few companies in the world really focussed on the hardest of the hard-to-abate sectors – the stuff no one wants to do, but which are the heaviest carbon emitters. We're working toward decarbonising tugboats, big locomotives, and the largest trucks on Earth. We just need to listen to them and get the tech right for them."

Looking ahead to 2025, Rux Energy plans to scale up tenfold. The company is preparing for significant advancements, including international collaborations and a strong commitment to global carbon emission reductions. They have a stretch target to help abate up to 10 million tonnes of carbon a year globally by 2030.

NSW is becoming a hub for clean technology innovation, supported by projects like Rux Energy. By focusing on local manufacturing, they're strengthening NSW's energy security and supporting a low-carbon future.



Minister Penny Sharpe launched the Net Zero Manufacturing Initiative at Rux Energy's Redfern laboratories

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4.4 Accelerating Net Zero Buildings

The [Accelerating Net Zero Buildings](#) program helps non-residential buildings transition to net zero emissions by improving building performance and by lowering the embodied carbon in buildings. Embodied emissions are the greenhouse gas emissions associated with the physical parts of a building during its lifetime.

The Climate Change Fund's contribution to this program from 2022-23 to 2024-25 is \$3.4 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Accelerating Net Zero Buildings program aims to reduce the demand for water and energy, including addressing peak demand for energy.

Key achievements

The program achieves the purpose under the Act by providing incentives, tools and support to drive large-scale energy efficiency and emission reductions in the built environment. A key initiative is the [National Australian Built Environment Rating System \(NABERS\)](#), which is now a leading global system used to rate the environmental performance of buildings.

In 2023-24, we:

- engaged over 400 building and construction professionals from more than 150 organisations to increase awareness of how and why embodied carbon should be measured in buildings
- achieved 80% growth in the hotel sector's uptake of NABERS which means that 88 hotels are now rating with NABERS. This is a result of strong outreach activities and the net zero in government operations strategy which encourages Australian Government travellers to choose more sustainable hotels
- committed 56 additional buildings to achieve a NABERS rating. This ensures that each building measures and manages its energy performance and implements an action plan for improvement. This will drive existing buildings towards higher energy performance by improving efficiency and reducing emissions
- commenced developing an Embodied Carbon Rating tool that will enable the industry to measure and compare embodied carbon in buildings, encouraging the use of lower embodied carbon materials and designs.

As new sectors are engaged, valuable insights have emerged including data privacy concerns in industrial facilities and rating responsibility issues between building owners and tenants. The program team is addressing these areas through continued engagement and targeted education.



56 additional buildings received a NABERS rating in 2023-24

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4.5 Emerging Energy

The [Emerging Energy program](#) provides grants to help develop and commercialise large-scale, dispatchable electricity storage projects in NSW. ‘Dispatchable electricity’ is power that can be turned on or off as needed.

The program supports projects at different stages of development. It aims to reduce investment barriers for emerging technologies and promote affordable, reliable and clean energy across NSW.

The Climate Change Fund’s contribution to this program from 2022-23 to 2026-27 is \$46.3 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Emerging Energy program aims to reduce the demand for energy, including addressing peak demand for energy and to stimulate investment in energy savings measures.

Key achievements

The program achieves the purposes under the Act by reducing investment barriers to innovative clean energy technologies and enabling the development of necessary energy storage infrastructure to meet the NSW Government’s net zero and clean energy goals.

In 2023-24, we:

- awarded \$1.875 million to support ACEN Australia’s New England Battery Energy Storage System (NE BESS) project. In total, the project was awarded \$12.5 million by the NSW Government to partially fund a 50 MW/2 hour battery system that will store and dispatch energy from the grid. It will improve system reliability, reduce the risk of outages and help integrate more renewable energy generators into the grid. A key milestone was the signing of the Engineering, Procurement and Construction contracts by ACEN Australia and its NE BESS principal contractor, Energy Vault, to start construction
- provided \$1.31 million in grant funding to the SolarHub Virtual Power Plant project, resulting in 1.47 MW of installed battery capacity. A Virtual Power Plant is a network of small-scale solar and battery systems, connected via smart technology. Using this technology allows the 273 new households and small businesses in southern NSW to share excess or unused energy with other connected users, and support grid resiliency. Grid resilience is the ability to withstand and quickly recover from disruptive grid events.

Many projects have faced delays and budget overruns due to supply chain challenges. These include increased global demand for equipment and skilled personnel, higher procurement costs and complex grid connection processes. In response, the Emerging Energy team have approved reasonable requests for time extensions to help grant recipients to navigate these industry-wide issues and keep projects on track.



Emerging energy promotes affordable, reliable clean energy across NSW

NSW Government ©Neil Feneilton

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Pioneering energy storage innovation at the New England Solar project

The New England Solar project, in the NSW New England region, will power about 300,000 average Australian homes each year. ACEN Australia is building the project in stages across 2,000 ha near Uralla.

The project plays a key role in the transition to a low-carbon energy system. It improves system reliability, reduces the risk of outages and helps integrate more renewable energy generators into the grid.

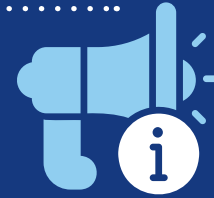
The focus is now on Stage 2 and a 200 MW/2-hour battery energy storage system that will store and dispatch energy to the grid.

The system will store excess solar power generated during peak sunlight hours, charging when there is available energy and discharging during periods of high demand. This will help moderate peaks in electricity prices.

One of the standout features of this project is the integration of advanced grid-forming inverters. These inverters are among the first of their kind to be used in the National Electricity Market. They provide critical benefits, such as system strength, stability, and network security.

The inverters are so advanced, they required new regulatory frameworks, as the existing rules were not set up for their capabilities.

.....
 The **National Electricity Market** is a wholesale market through which generators and retailers trade electricity in Australia.



Additionally, the project boosts the local economy by creating jobs and supporting regional growth during both construction and operation.

“ACEN Australia’s New England battery energy storage system represents a major leap forward in energy storage technology,” said Dave Pollington, ACEN Australia’s Managing Director.

“The integration of advanced grid-forming inverters enhances the reliability and stability of the electricity grid. By leading the adoption of this cutting-edge technology, ACEN Australia is setting a precedent for future renewable energy projects in Australia.”

This new battery energy storage system will underscore ACEN Australia and the NSW Government’s commitment to advancing renewable energy technology to build a low-emissions future.



Solar batteries help moderate peaks in demand and pricing by storing energy produced during peak sunlight hours

NSW Government ©Matt Beaver

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4.6 Sustainable Councils

The Sustainable Councils program partners with metropolitan, regional and groups of NSW local councils to accelerate their transition to net zero. They build capacity, provide technical resources and offer expert advice to help NSW councils reduce their carbon emissions.

The Climate Change Fund's contribution to the Sustainability programs from 2022-23 to 2029-30 is \$38.5 million, which covers Sustainable Councils, Sustainable Homes, Sustainable Government, and Sustainability Advantage.

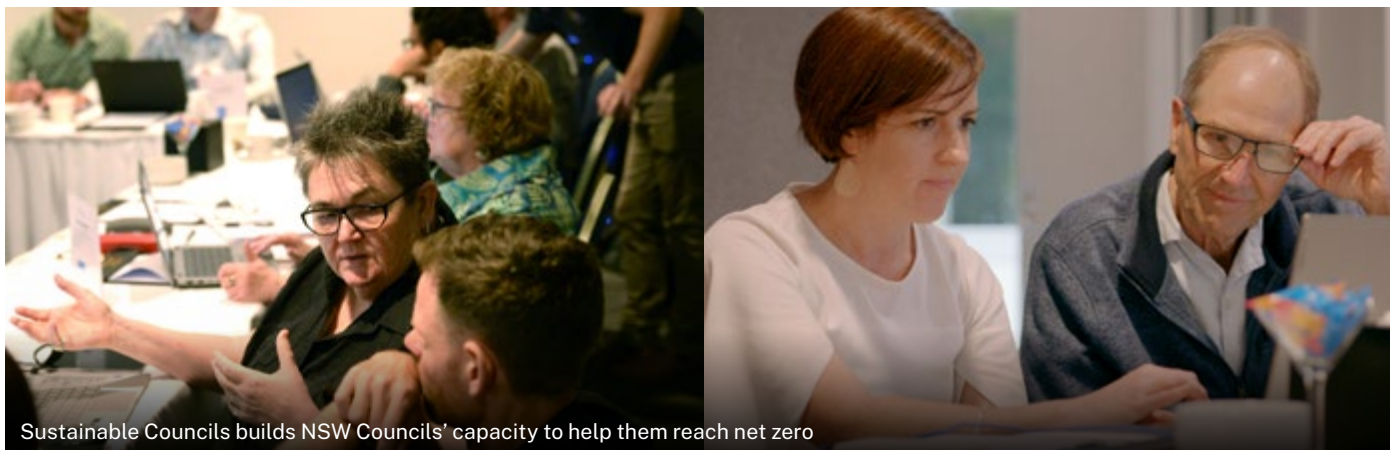
In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Sustainable Councils program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities. It also aims to encourage water and energy savings and the recycling of water, and to reduce the demand for water and energy including addressing peak demand for energy.

Key achievements

The program achieves the purposes under the Act by catalysing and accelerating the net zero transition in the local government sector in line with state commitments to reach net zero emissions by 2050.

In 2023-24, we:

- launched a second round of the Joint Organisation Net Zero Acceleration (JONZA) grant, awarding grants to 9 regional Joint Organisations, covering 70 councils across regional NSW. The JONZA grant appoints a Net Zero Manager within each Joint Organisation to drive council-related net zero activities in the region and act as a point of contact for other NSW climate change programs
- supported a regional Power Purchase Agreement (PPA) Buyers group, enabling significant savings for councils to procure renewable energy and ensure price certainty. The agreement includes 13 regional councils across NSW with most participating councils seeking 100% renewable energy for the long-term contract. This will supply over 390 GWh of electricity to more than 160 large council sites and streetlights, and is estimated to reduce emissions by more than 185,000 tCO₂e which is equivalent to the annual electricity emissions of over 53,000 homes. The Power Purchase Agreement forecast is over \$5.2 million in financial savings for the group of councils over the 6-year term of the contract
- delivered webinars on a range of net zero-related topics for councils including Lighting Specifications, Net Zero Pools, Council EV Fleet Transitions, Destination Charging, Understanding and Tracking Emissions, and Sewage and Water Treatment Plants. The webinars attracted over 800 attendees and supported the release of EV Fleet Transition Tools and the *Net Zero Community Emissions Guide*



Sustainable Councils builds NSW Councils' capacity to help them reach net zero

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At Lane Cove, we use the app to influence the decisions makers to gain their support in investing in sustainability projects. The app assists our team in building a business case that clearly demonstrates a pathway to emissions reductions.

Alicia Lloyd, Sustainability Coordinator Community Programs

- supported developing and delivering the first-ever net zero training course specifically designed for council staff. Topics covered during the course included carbon accounting, setting net zero targets, identifying, prioritising, and implementing emissions reduction opportunities, modelling net zero pathways, and developing net zero strategies. Over 75 employees from 43 councils and 9 Joint Organisations across NSW participated in the Council Net Zero Accelerator initiative. This resulted in over a third of councils in NSW receiving net zero training during the course's pilot round
- published the *Net Zero Community Emissions Guide* and the *Net Zero Community Emissions Strategy Template*, empowering councils to plan and lead their communities to a net zero future
- supplied technical assessments and support for councils to develop net zero funding applications. This includes supporting 20 regional councils to identify heat pump, solar and battery upgrades with projected savings of over \$3.4 million and over 10,000 t of emissions a year
- enabled 33 Sydney councils to have access to a Net Zero App to inform and prioritise council investment in evidence-based net zero strategies, action plans and investment priorities that deliver to State and local net zero ambitions. The Net Zero App has been used to create net zero pathways and plans for key metropolitan councils, including City of Ryde, Blacktown City Council, City of Parramatta and Blue Mountains City Council in 2023-24.



The Joint Organisations Net Zero Acceleration officers help local councils collaborate to address their local emissions

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4.7 Business Decarbonisation

The [Business Decarbonisation program](#) helps businesses plan for net zero, make low-cost improvements and take practical steps to shift towards net zero emissions.

The Climate Change Fund's contribution to this program from 2022-23 to 2026-27 is \$20.4 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Business Decarbonisation program aims to reduce greenhouse gas emissions and the impacts of climate change associated with energy activities. It also aims to stimulate investment in energy savings measures, and reduce the demand for energy, including addressing peak demand for energy.

Key achievements

The program achieves the purposes under the Act by helping businesses identify energy-saving opportunities and providing long-term net zero planning support.

In 2023-24, we:

- launched metering plan implementation grants as part of a \$12 million metering package. This initiative helps medium and large energy-using businesses install metering and monitoring systems to enhance energy performance and reduce emissions
- continued delivering heat pump pilots to evaluate the benefits of replacing gas-fired heating with heat pumps. The pre-screening stage included 19 organisations, with 5 advancing to detailed technical feasibility studies.
- began developing the Net Zero Business Guide, which will provide practical advice for businesses transitioning to net zero. The guide will be based on lessons from the net zero pathways pilots, extensive literature review and stakeholder consultation



Tip Top Bakeries measured a 6% decrease in annual energy use through our Metering and Monitoring program

NSW Government © James Wood

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4.8 Emissions Intensity Reduction

The Emissions Intensity Reduction program supports hard-to-abate industries in NSW to accelerate their transition to net zero emissions, without compromising their contribution to the NSW economy and workforce.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$404.8 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Emissions Intensity Reduction program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities. It also aims to increase public awareness and acceptance of the importance of climate change and energy savings measures.

Key achievements

The program achieves the purposes under the Act by supporting hard-to-abate mining and manufacturing industries to decarbonise their plant, equipment, facilities and processes. It also fosters low-emissions industrial supply chains and infrastructure, while helping Hunter and Illawarra industries plan for decarbonisation.

In 2023-24, we:

- supported the development of decarbonisation scoping studies to identify pathways to achieve net zero for 3 of the state's highest emitting manufacturers: Orica, Tomago Aluminium and Manildra Group. The Transformative Industry Project Scoping Studies outlined opportunities for accelerated and deep decarbonisation
- engaged 3,500 individuals across over 450 stakeholder groups to develop Industrial Decarbonisation Plans for the Hunter and Illawarra in close consultation with regional industry stakeholders. This work will support NSW Government decisions around investment, technologies and shared infrastructure, and other market, policy and regulatory initiatives required to decarbonise manufacturing and mining in these regions.

Industry engagement has indicated that achieving net zero by 2050 can be achieved for the industrial sector. However, achieving this goal will depend on significant public and private investment in infrastructure and projects, and it will also rely upon the future availability of affordable, firmed renewable fuels and technologies. Recognising critical challenges ahead, the program is proactively adjusting its design and guidelines to continue to address evolving market needs and support effective decarbonisation.

The Orica Tertiary Abatement Project has cut

689,000 tonnes

of CO₂e to date, which is the same amount as running 315,000 cars for a year or the electricity use of over 200,000 homes in NSW.



NSW Government ©Jaime Plaza Van Roon

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4.9 Sustainable Finance



Sustainable Finance identifies ways to quantify the financials of climate change for NSW budget planning

Launched in February 2024, the Sustainable Finance program is a collaboration between the NSW Department of Climate Change, Energy, the Environment and Water, and NSW Treasury.

The program identifies and develops products and provides advice to drive Treasury's contribution to achieving the State's climate change strategic priorities, in Treasury's capacity as the State's principal fiscal and economic adviser.

The Climate Change Fund's contribution to this program from 2022-23 to 2025-26 is \$4.2 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Sustainable Finance program aims to reduce greenhouse gas emissions and the impacts of climate change associated with energy activities.

Key achievements

The program achieves the purpose under the Act by developing tools and capabilities to assess the cost of climate change for fiscal and policy decisions, and supporting other agencies to create suitable market conditions for net zero.

In 2023-24, we

- launched the [Sustainable Finance website](#), which provides the latest sustainable finance information and data to government agencies, investors, credit rating agencies and other industry stakeholders. The website has 1,600 active users and a 40% engagement rate
- coordinated and analysed Treasury's Climate Change Network stocktake to inform future climate change related priority work areas
- identified methods for NSW Treasury to quantify the financial cost of climate change for the budget, planning years and forward estimates
- developed tools and guidance to support net zero program design and improve market conditions for investment in the net zero transition.

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The NSW Government is committed to making clean energy more affordable and reliable for the people of NSW. Across NSW, our electricity systems are getting an upgrade.

Renewables (solar, wind and firming) have already replaced coal-fired power as the most affordable source of energy, and we're harnessing our natural advantages in NSW.

The NSW Government is leading the way and setting the benchmark for others to follow as we upgrade our electricity network to deliver even more clean, affordable and reliable energy for everyone in NSW.

With the backing of the Climate Change Fund, a mix of renewable technologies will power our state. Solar and wind farms, along with large-scale energy storage like pumped hydro and big batteries are supported by rooftop solar and household batteries. With 1 in 3 households already generating power with rooftop solar, renewable energy is already making a difference in our everyday lives.

The Climate Change Fund has helped households install solar panels and batteries, which lower energy bills and encourage clean energy use. Additionally, smart battery systems in key government buildings have improved energy storage and management, contributing to a more stable grid and lower costs, ultimately reducing energy bills for taxpayers.

Upgrades to social housing have made homes more energy-efficient, extending clean energy benefits to those who need them most. Community-led renewable energy projects, including NSW's first community solar garden, have empowered households without access to rooftop solar to participate in the renewable energy transition.

These investments are making clean energy more affordable and reliable, creating tangible benefits for the people of NSW, from reduced energy bills and enhanced grid stability to increased access to renewable energy solutions.

This section highlights how these efforts are improving clean energy affordability and reliability in NSW. Together we're building an energy system to be proud of, that will keep the lights on and put downward pressure on energy bills for decades to come.

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5.1 NSW Electricity Infrastructure Roadmap

NSW is leading a once-in-a-generation upgrade of the electricity network, building the infrastructure we need to keep the lights on.

The Electricity Infrastructure Roadmap (Roadmap) outlines how NSW will transition the electricity network to ensure affordable, clean and reliable energy for everyone.

Our coal-fired power stations, which have been a reliable source of power for many generations, are ageing and scheduled to close. They're expensive to operate and maintain, increasing the price we pay for electricity. As we move away from coal-fired power, a mix of renewable technologies will power our state and new transmission lines will deliver the power where it's needed.

Renewables have replaced coal-fired power as the most affordable source of new build energy. That is why we are harnessing our state's abundant solar and wind resources to deliver a network built on a mix of renewable technologies, including solar and wind, large-scale energy storage, like pumped hydro and big batteries, and new transmission infrastructure.

The Roadmap focuses on integrating a range of renewable technologies, including solar and wind farms, large-scale energy storage solutions like pumped hydro and big batteries, and new network infrastructure. This comprehensive approach is expected to contribute 53% of the emissions reductions needed to meet the legislated 2030 net zero target.

The Roadmap is expected to support more than \$32 billion of private sector investment into the NSW economy by 2030.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$119.4 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Roadmap aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities.

Key achievements

The Climate Change Fund has contributed critical funding to deliver the Roadmap, with a particular emphasis on each Renewable Energy Zone (REZ) being delivered by the Energy Corporation of NSW (EnergyCo).

In 2023-24, Climate Change Fund expenses have helped deliver the Roadmap by supporting:

- critical milestones for the Central-West Orana REZ – NSW's most advanced REZ – including network planning approval, Network Operator authorisation and adequate funding and land access. This project will enable the connection of new solar, wind and energy storage projects to the electricity grid. It is expected to drive up to \$20 billion in private investment and create around 5,000 jobs during peak construction
- delivery milestones for projects connected to the Hunter-Central Coast REZ. EnergyCo published a scoping report for the Hunter Transmission Project (HTP) in May 2024, an additional community consultation step beyond regulatory requirements. Both the Hunter-Central Coast REZ transmission project and HTP commenced procuring a network operator.

Additionally, EnergyCo secured Critical State Significant Infrastructure status for the New England REZ, with the project releasing a revised study corridor after feedback from landowners, community and stakeholders.



Did you know one of the world's largest battery energy storage systems is being developed on the site of a former coal-fired power station in Munmorah, NSW. The Waratah Super Battery is set to bring significant investment and create new jobs for the local community.

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5.2 Sustainable Homes

The Sustainable Homes program aims to enhance energy efficiency in NSW households and boost demand for sustainable homes.

The Climate Change Fund's contribution to the Sustainability programs from 2022-23 to 2029-30 is \$38.5 million, which covers Sustainable Councils, Sustainable Homes, Sustainable Government, and Sustainability Advantage.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Sustainable Homes program aims to encourage energy savings. It also aims to reduce the demand for energy, including addressing peak demand for energy, and increase public awareness and acceptance of the importance of climate change and energy savings measures.

Key achievements

The program achieves the purposes under the Act by helping NSW households identify and install cost-effective energy upgrades that lower energy bills, increase home value and promote environmental benefits. It also prepares the market for policy and market shifts, facilitating the transition to sustainable homes in NSW.

In 2023-24, we:

- collaborated with the Commonwealth and other jurisdictions to deliver important residential initiatives: expanding the Nationwide House Energy Rating Scheme (NatHERS) to existing homes (set to launch in mid-2025), trialling the *National Home Energy Ratings Disclosure Framework* (expected in 2024-25) and the *National Framework for Minimum Energy Efficiency Rental Standards*
- participated in the NSW Behavioural Insights Unit's Behaviour Smart Bootcamp which focused on using behavioural insights to address challenges in implementing residential disclosure for energy performance. These 'disclosures' would make energy 'star ratings' for homes available when a property is advertised for sale or lease.

The bootcamp ran from February to November 2024, with a pilot of the intervention planned for 2025. Insights from this pilot will help shape the approach for implementing residential disclosure in NSW

- evaluated 1,015 Class 1 private households and 87 social housing dwellings across 5 climate zones, and over 170 locations as part of the NSW Residential Energy Performance Baseline project. The project assessed the average energy performance of privately-owned, rented and social housing. Reports from this research are expected by late 2024 and will be vital for setting future residential energy targets and policies.

The NSW Residential Energy Performance Baseline project encountered challenges in recruiting households due to the requirement for a statistically robust and randomly selected sample. Initial difficulties included low interest from door-to-door outreach and public concerns about the study's legitimacy. The project changed its approach to recruitment and was able to successfully engage over 1,000 participants.

The NSW Residential Energy Performance Baseline project is Australia's first study to deliver a statistically representative sample of the housing stock on such a large scale.



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5.3 Safeguard Acceleration

The Safeguard Acceleration program supports the expansion of the [Energy Security Safeguard \(Safeguard\)](#).

The program assists the growth of the Safeguard by stimulating new and underserved activities in the market. This initiative will accelerate the industry to take up new opportunities under the Peak Demand Reduction Scheme and the Energy Savings Scheme.

The Climate Change Fund's contribution to this program from 2022-23 to 2026-27 is \$22.8 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Safeguard Acceleration program aims to encourage energy savings and reduce the demand for energy including addressing peak demand for energy.

Key achievements

The program achieves the purposes under the Act by supporting energy and peak demand savings upgrades in underserved areas. It offers Accredited Certificate Providers (ACPs) a fixed price for Energy Savings Certificates (ESCs) for upgrades delivered through Certificate Supply Contracts. This price certainty underwrites risk and fosters business model development. The program also builds relationships to connect the supply chain with the Safeguard, addressing barriers and raising awareness about accessing the schemes.

In 2023-24, we:

- completed the submetering grants round with 49 projects finalised, providing \$700,000 in funding to businesses for the installation of submeters. Businesses also invested \$1.2 million towards their installations. Submeters helped these businesses implement efficiency measures, access Safeguard incentives and expand metering capacity. Of these projects, 41% were outside metropolitan Sydney
- awarded 9 Certificate Supply Contracts worth \$2.7 million to drive the installation of air conditioning and heat pump hot water upgrades in NSW
- delivered 971 air conditioning implementations through Certificate Supply Contracts worth over \$1.6 million, and saving an estimated 15,416 MWh of electricity. Of these upgrades, 97% occurred outside metropolitan Sydney
- identified key rule changes to unlock the inactive pool pump and commercial air conditioning markets under the Safeguard. Together with the Safeguard Implementation team, we developed and implemented rule changes for pool pumps, with changes for commercial air conditioning expected next year.

The program has successfully launched contracts for hot water systems and is now actively working on new contracts for other technologies.



In 2023-24, a whopping

82%

of the program funding for Certificate Supply Contracts has been dedicated to boosting energy and peak demand savings in regional areas across NSW that often get overlooked.

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5.4 Liddell Response



Tallawarra B will play a vital role in providing reliable power to NSW customers

©Energy Australia

The Liddell Response program helps secure the NSW energy system by part-funding the development of a gas-fired open cycle power station at Tallawarra.

The power station will have a capacity of about 320 MW. Tallawarra B is a fast start gas-fired power station in Yallah and will be Australia's first peaking power station to be powered by a blend of gas and green hydrogen with direct emissions offset. The new power plant will play a vital role in maintaining system security, complementing renewables coming into the system and providing reliable power to NSW customers.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$29.3 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Liddell Response program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities. It also aims to reduce the demand for energy, including addressing peak demand for energy.

Key achievements

The program achieves the purposes under the Act by setting new benchmarks for gas generators by using green hydrogen, offsetting emissions and ensuring grid security. It complements renewable energy sources with reliable, fast-start gas-fired power generation for NSW customers.

In 2023-24, we:

- achieved Temporary Commercial Date of Operation. The 320 MW fast-start gas plant is operational and supplying power to the grid during peak demand
- generated 320 MW of power within 30 minutes of starting up, enough to supply 180,000 homes in NSW
- ensured the safety of planes flying nearby through a \$13 million purpose-built plume dispersion device.

The Department of Climate Change, Energy, the Environment and Water is working with Energy Australia to address delays in commissioning Tallawarra B which was affected by the main engineering, procurement and construction contractor entering administration. The plant is now expected to be commissioned by the end of 2024.

The department is also considering Energy Australia's request to extend the green hydrogen co-firing milestone date from July 2025 to July 2030. An internal working group will make recommendations and progress the request to the Minister for a decision.

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5.5 Regional Community Energy Fund



The [Regional Energy Community Fund program](#) has been designed to increase renewable energy generation, improve energy reliability and help communities save money on electricity bills.

Launched in 2019, the fund initially approved the awarding of \$15.4 million for 7 renewable community energy projects in regional NSW, to deliver secure renewable energy and greater energy resilience. Of those, 5 projects continue to be funded.

The Climate Change Fund's contribution to this program from 2022-23 to 2024-25 is \$10.5 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Regional Community Energy Fund aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities.

Key achievements

The program achieves the purpose under the Act by funding community energy projects that create innovative, dispatchable renewable energy, while providing government oversight and support. It ensures community buy-in by requiring groups to invest at least 50% of the project cost.

In 2023-24, we:

- awarded \$1.76 million of funding to 4 community renewable energy and storage projects
- launched the Haystacks Solar Garden, the first community solar garden in NSW. More than 170 plots have been purchased by 'solar gardeners', on the privately-owned 1 MWh solar farm in Grong Grong. Total funding of \$1.97 million was awarded over the project life from 2019-2024
- launched the Byron Bay Solar Farm and Battery Storage Facility. The 4.99 MWh solar farm and 10 MWh community battery will power 2,300 homes with renewable energy for 30 years and reduce greenhouse gas emissions by an estimated 10,500 t per year over 30 years. Total funding of \$3.5 million was awarded over the project life from 2019-2024
- continued to support 2 projects scheduled for mid-2025:
 - Orange Community Renewable Energy Park, a community-owned facility that will have about 5 MWh of solar and 5 MWh of battery energy storage
 - Goulburn Community Dispatchable Solar Farm, that will have 1.8 MWh of community-owned solar.

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Haystacks Solar Garden – A groundbreaking leap for renters and solar energy

The Haystacks Solar Garden is changing the game for solar energy in Australia, as the country's first large-scale solar garden designed specifically for renters and those who cannot install solar on their own rooftops. It makes solar power accessible and offers a new way for people to engage with clean energy.

The garden is located on Farmer, Gemma Purcell's land, and is part of the Grong Grong Solar Farm. The Grong Grong Solar Farm generates 1.5 MW, which is enough electricity to power around 700 homes, slashing NSW's carbon dioxide emissions by about 2,700 tonnes a year.

Kim Mallee, Program Director for the Community Power Agency, highlights the project's revolutionary approach.

"Haystacks Solar Garden is like a community garden for solar energy. It's designed for those without suitable rooftops—renters, people with shady or heritage-listed roofs. If you want solar power but lack the space, you simply buy a plot and benefit from the energy produced."

This inclusive model opens the door to clean energy for many who were previously excluded. Over 170 participants—primarily city dwellers—have purchased a plot for \$4,200, providing about 3 kilowatts of solar panels. In return, they enjoy substantial savings: at least \$455 off their power bills every year for a decade, with guaranteed returns of \$505 annually for the first 5 years. This model not only reduces electricity costs but also integrates participants into a thriving solar community.

Jean Hay, one of the garden's participants, captures its significance: "We're making history here with Haystacks Solar Garden. I'm a renter, I live in a unit, and my partner and I are both in our 80s! We care deeply about equity in the shift to clean energy, and this is a way of making the benefits of renewables accessible to all."

The solar garden goes beyond just saving money and being inclusive. Participants gain a deeper understanding of solar energy, connect with fellow solar enthusiasts and help reduce reliance on fossil fuels. The garden, which is around the size of a Bunnings store, connects efficiently to existing power lines, avoiding costly infrastructure. It also minimises agricultural land impact and creates local jobs.

For Farmer, Gemma Purcell, the garden is more than just a green initiative—it's a vital income stream that provides financial stability during challenging times. "It's a steady income that helps buffer against difficult periods," Purcell explains. Her efforts in securing approvals and contracts set a precedent for future community energy projects. "Farmers are generally supportive of renewable energy. We've tackled many of the challenges that future solar gardens will face, and we're ready to share our experiences," she adds.

Supported by the NSW Government's Regional Community Energy program, Haystacks Solar Garden is redefining clean energy accessibility. Kim Mallee sums up its impact: "Haystacks Solar Garden proves that solar power can be accessible to everyone—regardless of where you live. It demonstrates that community-driven clean energy solutions can make the transition to renewables both faster and fairer."



Haystacks Solar Garden provides access to solar for community members who don't have room for their own solar panels

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5.6 Smart Batteries for Key Government Buildings

The [Smart Batteries for Key Government Buildings program](#) funds battery storage projects for NSW government buildings.

The Climate Change Fund's contribution to this program from 2022-23 to 2023-24 is \$1.2 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Smart Batteries for Key Government Buildings program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with energy activities.

Key achievements

The program achieves the purpose under the Act by enhancing energy resilience and efficiency in public buildings by funding battery storage systems that work with existing solar panels. This improves the use of existing solar panels and reduces the need for electricity network upgrades.

In 2023-24, we:

- added more than 3 MWh of battery storage capacity at schools, hospitals and other government buildings with rooftop solar systems
- created a data dashboard to provide ongoing insights into the performance and cost savings resulting from the battery installations.

The program has now closed and the final batteries have been installed.



The Smart Batteries program provided 3 MWh of storage capacity for hospitals, schools and other government buildings with rooftop solar systems

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5.7 Social Housing Energy Performance Initiative



We're helping social housing stay cooler in summer and warmer in winter

NSW Government ©Katherine Griffiths

The Social Housing Energy Performance Initiative program aims to boost the energy efficiency of social housing properties in NSW. The initiative helps lower tenants' energy bills and ensures their homes stay cooler in summer and warmer in winter.

The NSW Government is contributing \$87.5 million, matched by an equal amount from the Commonwealth, for energy efficiency upgrades. These upgrades will benefit about 24,000 social housing properties across the state. Some of this funding comes from the Clean Energy Finance Corporation.

The Climate Change Fund's contribution to this program from 2022-23 to 2026-27 is \$29 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Social Housing Energy Performance Initiative aims to encourage energy savings. It also aims to increase public awareness and acceptance of the importance of climate change and energy savings measures.

Key achievements

The program achieves the purposes under the Act by installing energy-efficient equipment and supporting home improvements in social housing to enhance energy savings and comfort. It also boosts public awareness of energy-saving measures across about 24,000 properties statewide.

In 2023-24, we:

- executed a Federation Funding Agreement Schedule in May 2024 with the NSW Minister for Energy, and the Commonwealth Assistant Minister for Climate Change and Energy signing
- finalised 2 Memoranda of Understanding for inclusion with the Land and Housing Corporation and the Aboriginal Housing Office for program delivery
- upgraded about 1,000 social housing properties with more than 1,500 energy upgrades.

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The Climate Change Fund works with businesses, landowners, and NSW government agencies to facilitate the transition to cleaner practices and reduced emissions. By removing barriers and incentivising action, the fund supports these groups through skills development, improved carbon management, and the adoption of clean technologies.

For businesses, this support translates to lower operational costs and enhanced competitiveness as they adopt more efficient and sustainable practices. Landowners benefit from improved land management techniques that enhance productivity while reducing environmental impacts. Government agencies can better manage public resources and infrastructure, leading to a cleaner environment and improved public services.

The Climate Change Fund also engages with governments worldwide to exchange ideas and learn from global successes. This international cooperation allows NSW to incorporate best practice and innovation into its climate projects, accelerating progress towards net zero.

This section highlights how working together, both locally and globally, strengthens NSW's progress towards a sustainable and low-emissions future.

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6.1 Primary Industries Productivity and Abatement

The [Primary Industries Productivity and Abatement program \(PIPAP\)](#) supports farmers and land managers to reduce emissions, improve carbon management and enhance biodiversity while maintaining production.

Additionally, the program aims to scale up and sustain this activity over the long term by facilitating access to environmental markets and accelerating finance for natural capital and low-carbon farming.

The Climate Change Fund supports 2 sub-programs within PIPAP: On-Ground Implementation and Market Development (formerly Net Zero Nature Markets).

The Climate Change Fund's contribution to the PIPAP program from 2022-23 to 2029-30 is \$93.2 million.

6.1.1 PIPAP On-Ground Implementation

The PIPAP On-Ground Implementation program builds critical mass and capacity for carbon projects in the land sector.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the PIPAP On-Ground Implementation program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities. It also aims to increase public awareness and acceptance of the importance of climate change and water and energy savings measures.

Key achievements

The program achieves the purposes under the Act by building capacity for carbon projects in the land sector, providing incentives for land managers to reduce agricultural emissions and enhance sequestration in soils, vegetation and blue carbon, and developing land managers' skills and capabilities.

In 2023-24, we:

- funded 6 projects worth \$6.8 million under the High Impact Partnerships grants. These grants are aimed at planting trees, improving soil and blue carbon, and restoring 24,800 ha of land. These initiatives are expected to cut 1.83 million tonnes of CO₂e, which is the same as the emissions used to produce almost 150 million kg of beef (not including processing). They will generate a corresponding number of Australian Carbon Credit Units, and enhance biodiversity, farm productivity, and landscape health
- launched the Living Carbon grants in 2 NSW regions to support landholders joining the Australian Carbon Credit Units scheme, creating up to 200 ha for environmental planting projects and boosting biodiversity. Landholders will generate carbon credits, track biodiversity benefits and share their experiences to inspire others
- worked with various NSW Government agencies to help land managers reduce emissions, capture carbon and provide additional co-benefits. These agencies included the NSW Department of Climate Change, Energy, the Environment and Water; Local Land Services; the Biodiversity Conservation Trust; the Department of Primary Industries and Regional Development; and the Environment Protection Authority
- supported delivery of 88 On-Farm Carbon Advice events to over 4,200 farmers this year and 16 farm carbon management plans, with participants reporting increased knowledge.



Did you know that the combined area of High Impact Partnership projects reducing carbon will be 253.97 km². This is almost the same size as Newcastle (which is 261.8 km²).

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Case study

High impact partnership grants boosts grazing innovations in NSW

Wilmot Cattle Company, in the NSW Northern Tablelands, is transforming agriculture with funding and support from a high impact partnership grant from the NSW Government.

The grant enables Wilmot to support soil carbon sequestration practices across 12 farms, covering 20,700 hectares and aiming to sequester over 750,000 tonnes of CO₂ over the 25-year period of the project. This is the same amount of carbon emitted from producing over 60 million kilograms of beef before processing. The project highlights how collaborative grazing management can improve environmental sustainability and farm profitability.

Carbon sequestration involves capturing and storing CO₂ from the atmosphere, which Wilmot achieves through enhanced pasture, grazing and soil management. By diversifying pasture species and managing grazing, Wilmot has significantly boosted its soil carbon levels resulting in healthier soils and more resilient pastures. During the 2019–20 bushfire season, the farm's high soil carbon content enabled swift recovery, producing 6 months of feed from just 6 weeks of rain, showcasing enhanced resilience and financial benefits.

When Alasdair MacLeod took over Wilmot in 2008, he introduced grazing management technology. Partnering with Atlas Carbon, they introduced the Maia Grazing Tool that tracks livestock, grazing locations and rainfall in real time. This technology has allowed Wilmot to enhance grazing strategies, raising soil carbon levels from 2.3% in 2011 to 5.2% in 2021.

Raising soil carbon levels not only reduces the concentration of CO₂ in the atmosphere, it helps soil retain water and improves its structure, fertility and productivity. This results in healthier, more abundant pasture at a lower cost due to reduced soil inputs and pasture improvement.

Wilmot's team are not only leading by example but setting the stage for broader agricultural innovation. They'll mentor the 11 other landowners, fostering collaboration and knowledge sharing to boost productivity and profitability.

Increasing pasture diversity and maintaining ground cover through grazing management, helps enhance soil biological activity, soil health and carbon retention. This will help farmers throughout NSW diversify their income and increase profitability.

The high impact partnership grant is central to expanding these practices. The grant will be used to engage Atlas Carbon to guide farmers in using the Maia Grazing Tool. This will help optimise grazing density and duration to maximise pasture utilisation and soil carbon storage.

According to Atlas Carbon's Carbon Services Director, Sean Hoobin, "We focus on implementing grazing practices to improve pasture growth and store more carbon in the soil. Farmers can then sell carbon credits generated or count them against emissions produced."

This partnership demonstrates how improving grazing practices can drive both environmental and economic progress and pave the way for a more sustainable and profitable agricultural future.



Wilmot Cattle are helping 11 other farmers to diversify their income and increase profitability

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Raising soil carbon levels helps soil retain water and improves its structure, fertility and productivity

NSW Government ©Katherine Wilson

6.1.2 PIPAP Market Development

The PIPAP Market Development program (formerly Net Zero Nature Markets), is working to ensure that effective market mechanisms are in place to incentivise high quality carbon abatement and make it a commercially viable investment which can be delivered using private finance. This will enable carbon outcomes and other benefits to be achieved at scale and sustained beyond the period of direct government funding.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the PIPAP Market Development program aims to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities.

Key achievements

The program achieves the purpose under the Act by targeting greenhouse gas emissions reductions and increased carbon sequestration in the agriculture and land use sectors, through market mechanisms and access to finance.

In 2023-24, we:

- refined the approach to market development, addressing changes in the market, funding and policy context. Pending approval, the program will advance to delivery in the next financial year
- established relationships with stakeholders, securing strong support for the new program design from internal and external parties. This endorsement confirms the design's suitability for achieving program objectives and ensures efficient and effective delivery
- facilitated knowledge sharing by sponsoring the Carbon Market Institute's 2023 Emissions Reduction Summit and organising a panel on nature-related financial disclosures at the 2023 Adapt NSW Forum.

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6.2 Sustainable Government

The Sustainable Government program focuses on projects that impact at scale to deliver resource efficiency, net zero emission pathways and renewable energy generation on government-owned assets.

The program includes the separately funded Renewable Energy Infrastructure Investment program which facilitates the development of renewable energy infrastructure on government land assets.

The Climate Change Fund's contribution to the Sustainability programs from 2022-23 to 2029-30 is \$38.5 million, which covers Sustainable Councils, Sustainable Homes, Sustainable Government, and Sustainability Advantage. An additional \$1.4 million has been allocated to the Renewable Energy Infrastructure Investment program from 2022-23 to 2024-25.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Sustainable Government program aims to reduce greenhouse gas emissions and the impacts of climate change associated with energy activities. It also aims to encourage energy savings and reduce the demand for energy, including addressing peak demand for energy.

Key achievements

The program achieves the purposes under the Act by helping NSW Government agencies meet targets under the Government Resource Efficiency Policy. The program helps agencies reduce their costs and environmental impacts by improving resource efficiency and fostering additional renewable energy development in NSW. The program embodies the NSW Net Zero Plan priority 4 for government to lead by example.

In 2023-24, we:

- achieved 91 GWh in energy savings, marking the program's largest annual energy saving since inception. This brings total annual savings to 209 GWh and represents 9.96% of total energy compared to the 2012-13 baseline
- generated 101.2 GWh of annual solar power from systems installed on NSW Government sites. This surpasses the original solar target of 55 GWh a year by 2024 and aligns with the revised target of 126 GWh by 2030 under the NSW Net Zero Plan Stage 1
- ran technical assessments and feasibility studies at 19 crown land sites managed by local councils and 5 Department of Primary Industries research facilities. These identified 831 kW of solar potential and 976 kW of battery storage for councils, as well as 3.265 MW of solar potential and 8.1 MW of battery storage for the Department of Primary Industries
- trialled the Carbon Zero Accelerator with user groups from selected local and state government departments. Developed over the past 3 years, this unique tool will help the entire state advance its net zero goals. It will monitor greenhouse gas emissions and recommend preferred scenarios for greenhouse gas reduction. This will fast-track developing net zero strategies for local and state government
- enabled the procurement of a 14 MW battery storage facility at the former Belrose municipal waste landfill site, managed by the State's Waste and Asset Management Corporation
- resolved issues with incorrect waste data reporting by collaborating with the Procurement NSW 9698 waste contract team to improve data accuracy for both teams
- funded 1,413 NSW schools to complete a lighting upgrade, saving 86 GWh a year. This is the largest energy savings contribution across the program.

Studies suggest that the shade from solar panels at the Broken Hill Solar Farm might improve the quality of wool for sheep grazing nearby. The farm is located on Crown land that was previously a grazing lease.



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Case study

NSW transforms a closed landfill site into a renewable energy asset

The NSW Government is embarking on a groundbreaking project to repurpose the old Belrose landfill site into a state-of-the-art Battery Energy Storage System with a capacity of up to 14.2 MW. Given the average NSW home uses about 6.5 to 7 MWh annually, this capacity could theoretically power about 17,800 to 19,200 homes for a year, if it were all used to power homes.

This new facility will help keep the electricity grid stable and support the grid during peak demand. It will also improve local power quality by enabling the supply of renewable energy when fossil fuel sources would normally dominate the grid supply.

For residents across NSW, this means more reliable electricity and potentially lower energy costs.

Once landfill sites are closed, they have very few uses. They are capped and need regular maintenance, emitting methane gas as organic waste decomposes, and providing little economic or practical value. The Belrose site was used to generate electricity from this methane gas until 2022. Today, the remnant methane is still captured, but flared into the atmosphere.

NSW Waste Asset Management Corporation is leasing the Belrose site to a private developer through a competitive tender process. The developer has now been selected and will be awarded the contract in

2024-25, to oversee the construction, operation and maintenance of the Battery Energy Storage System. Revenue from this lease will cover methane flaring costs and fund the rehabilitation of other closed landfills across NSW. This will be a significant step toward a cleaner and more affordable energy future for NSW.

The Belrose project sets an example for these future projects aiming to reuse government land for renewable energy. It shows how the NSW Government, NSW Waste Asset Management Corporation, technical experts, and private developers are working together to make the most of unused crown land.

This approach addresses environmental concerns while creating local job opportunities and stimulating local economic growth by developing new skills in the renewable energy sector. It also shows how unused, unproductive government land can be turned into valuable community resources while advancing our net zero goals.

The initiative is part of the Renewable Energy Infrastructure Investment program within the Sustainable Government team. The program aims to convert about 190,000 ha of unused government land into renewable energy projects that will help support a cleaner economy.



Revenue from the new Battery Energy Storage system will cover methane flaring costs and help fund the rehabilitation of other closed landfill sites

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6.3 Net Zero Emissions and Clean Economy Board

The [Net Zero Emissions and Clean Economy Board](#) advised the NSW Government on how to implement its Net Zero Plan, which aims to cut emissions by 70% by 2035 and reach net zero by 2050. The Board guided the design of net zero programs, exploring low emissions opportunities and supporting industries to decarbonise.

The Board was abolished in May 2024 due to the imminent establishment of the Net Zero Commission under the [Climate Change \(Net Zero Future\) Act 2023](#). The Net Zero Commission was established in July 2024, and its functions are to monitor, review, report on and advise the State's progress towards the emission reduction targets and adaptation objective.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$1.7 million.

In line with section 34F of the [Energy and Utilities Administration Act 1987](#), the Net Zero Emissions and Clean Economy Board aimed to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities.

Key achievements

The program achieved the purpose under the Act by advising on key net zero programs to reduce greenhouse gas emissions and the impacts of climate change associated with water and energy activities.

Between July 2023 and May 2024, the Net Zero Emissions and Clean Economy Board met 8 times. The Board focussed on providing advice on the NSW Government's key net zero funded programs:

- Net Zero Industry and Innovation
- Hydrogen
- NSW Net Zero Primary Industries Productivity and Abatement
- NSW Safeguard Acceleration
- NSW Business Decarbonisation
- Electric Vehicle programs.

Meeting agendas included items on emerging and thematic issues to facilitate discussion about opportunities for emissions reduction in NSW. The minutes from each meeting are available on the Board's [webpage](#).



Electric vehicles programs are some of the key NSW Government net zero programs covered by the Board

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6.4 Sustainability Advantage

The [Sustainability Advantage program](#) partners with government, business and industry to embed sustainable goals and practices in diverse organisations. It does this by building capability to drive ambitious and tangible actions that build resilience and allow companies to remain competitive.

Impact at scale is achieved by supporting good practice, catalysing collaborations, growing capability and strengthening leadership. Sustainability Advantage works with a network of over 900 partners to boost commitment and action to achieve and exceed net zero emissions targets, a circular economy and the positive restoration of nature. This is all underpinned by the United Nations Sustainable Development Goals.

The Climate Change Fund's contribution to the Sustainability programs from 2022-23 to 2029-30 is \$38.5 million, which covers Sustainable Councils, Sustainable Homes, Sustainable Government, and Sustainability Advantage.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Sustainability Advantage program aims to stimulate investment in innovative water and energy savings measures. It also aims to increase public awareness and acceptance of the importance of climate change and water and energy savings measures.

Key achievements

The program achieves the purposes under the Act by raising awareness of the NSW Government's net zero commitments and supporting the development and scaling of market-based net zero and circular economy solutions. It also fosters collaborations to address sustainability challenges and provides actionable steps and insights for organisations to manage their environmental impact.

In 2023-24, we:

- trained 28 participants from 16 organisations to develop net zero pathways and projects through the 2023 Net Zero Emissions Leadership Accelerator. Since 2021, 82 participants from 70 organisations have completed this program, with 93% now capable of implementing net zero commitments and 56% investing over \$1 million each
- launched the inaugural Circular Economy Leadership Accelerator in Western Sydney, enhancing capabilities for 21 diverse organisations to manage resources sustainably. Participants reported improved skills and knowledge, with 95% observing accelerated action within their organisations
- established the Hunter Net Zero Champion Network, consisting of 24 individuals across 18 organisations committed to collaborating on net zero initiatives. Initiatives included creating the Net Zero Hunter roadmap, supporting high-quality employment and initiating a significant Hunter Power Purchase Agreement
- brought together 40 senior executives from NSW Government through the 2023 Net Zero Emissions Leadership Accelerator, enhancing their skills in tackling global sustainability challenges and boosting their ability to drive significant change
- developed the Sustainable Valuable Chain Engagement framework, a simple 4 stage process to enable organisations to engage their value chain to reduce scope 3 emissions. 7 organisations and 20 suppliers tested the framework, improving their ability to address scope 3 emissions. Participants gained a better understanding of scope 3, enhanced their stakeholder engagement and received resources for measuring and acting on emissions.



Case study

Blackmores takes bold steps toward net zero and nature restoration

Blackmores, a trailblazer in health and wellness, is setting a high standard with its ambitious goal to achieve net zero emissions by 2030 and develop a Nature Positive strategy. To deliver these, the company has created a practical roadmap and gained essential implementation skills, supported by the NSW Government's Energy Markets and Sustainability Advantage teams.

By zeroing in on impactful, feasible projects, Blackmores has achieved a 40% reduction in emissions from its 2020 baseline year. This has been achieved by introducing new technologies, streamlining processes and adopting renewable energy sources. Projects included upgrading energy metering and monitoring in its manufacturing facilities with support from the NSW Government.

The company continues to evolve its strategic plan and explore innovative ways to decarbonise its electricity purchases and enhance its carbon management systems. Sustainability Advantage has supplied crucial expertise to help the company evaluate its current investments and spotlight future projects.

Sally Townsend, Blackmores' Head of Sustainability, shares the transformative impact of this journey: "These efforts are not just about meeting targets, they're about fostering a culture of continuous improvement and driving the company towards its 2030 net zero goal. The support from the NSW Government has deepened our team's understanding of net zero and bolstered our capacity to identify and implement emissions reduction initiatives".

One of Blackmores' significant hurdles is tackling indirect emissions from its supply chain. Townsend emphasises that Sustainability Advantage has been invaluable in helping achieve the industry-wide collaboration necessary for them to set and achieve meaningful reduction targets.

In 2023, Blackmores joined with McPhersons to support an innovative partnership with Complementary Medicines Australia to pilot a sector-specific Sustainability Advantage Net Zero Emissions Leadership Accelerator. Complementary Medicines Australia is the peak industry body for the complementary medicines supply chain in Australia, including manufacturers, raw material suppliers, researchers and retailers.

By partnering with suppliers and encouraging others in their sector to embark on their journey to decarbonise and reduce impact, these leading organisations aim to enhance supply chain resilience and cut emissions as a sector.

Beyond reducing emissions, Blackmores is also dedicated to improving its environmental impact on nature. As Townsend explains, "Just as we've recognised areas where innovative solutions are crucial, we also recognise that we can't get to net zero without embracing nature-based solutions."

The company was among the first to trial Science-Based Targets for Nature, underscoring its commitment to comprehensive environmental stewardship. The trial confirmed the need to start local when collecting data in a complex global supply chain and helped identify next steps to address data gaps in Blackmores' nature-related supply chain risks. Blackmores is committed to integrating nature-based solutions into their business strategies.

Blackmores is setting a new benchmark in the industry through their ongoing partnership with the NSW Government. Their commitment to leadership, ambitious goals, and effective implementation not only results in operational efficiencies but also drives positive change.

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6.5 Net Zero Futures Policy Forum (International Collaboration)

The [Net Zero Futures Policy Forum](#) supports the NSW Government to learn, collaborate and connect with other governments, both domestically and internationally, to accelerate our transition to net zero emissions.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$4.7 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Net Zero Futures Policy Forum aims to reduce greenhouse gas emissions, and the impacts of climate change associated with water and energy activities.

Key achievements

The program achieves the purpose under the Act by connecting NSW policymakers with their peers, ensuring NSW policies reflect international experience and incorporating global best practice into policy.

In 2023-24, we:

- sent 4 NSW Government staff to attend the COP28 climate change conference in Dubai, where they launched a case study compendium from Net Zero Futures Policy Forum members, engaged with other governments, and hosted 3 events. This international experience has enhanced the NSW Government's policy capabilities and is shaping its greenhouse gas emissions-reduction policies
- delivered a workshop on nature-based solutions at the Impact X Summit in Sydney, featuring speakers from Australian and international governments and organisations. This workshop highlighted innovative approaches and strategies adopted by subnational governments to support net zero and nature-positive outcomes.
- piloted 4 international knowledge-sharing webinars for government policymakers. The sessions were well-attended and NSW participants gained valuable insights from global perspectives on net zero emissions policy issues

The team worked closely with their UK-based delivery partner, the Climate Group, to co-design the Net Zero Futures Policy Forum's work program. This involved investing significant time to understand their operations and establish a positive and productive working relationship.



NSW is **one of 188 subnational governments** with a net zero emissions target, according to the Net Zero Tracker. The Net Zero Tracker is the only independent tool that provides a comprehensive view of net zero across all nations and the world's largest regions, cities, and companies. It is managed through an international collaboration of research agencies.

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Through the Climate Change Fund, collaboration with local governments, communities and NSW Government agencies has strengthened resilience and managed risks to vital infrastructure affected by climate change. The fund uses data and science to address key climate risks such as flooding, extreme heat, and coastal erosion.

The fund focuses on increasing awareness and building skills to handle these risks effectively. Investments include floodplain management to prevent and mitigate flooding, coastal and estuary management to protect against erosion and habitat loss, and urban cooling projects to reduce heat in cities and improve comfort during hot weather. These initiatives directly benefit the people of NSW by mitigating the impacts of climate-related risks, enhancing community safety, and improving overall quality of life.

This section highlights the best examples of how the Climate Change Fund is helping NSW communities adapt to climate change, building a more resilient and sustainable future.

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7.1 Greening our City

The [Greening our City program](#) addresses urban heat in Greater Sydney by funding projects that increase green spaces and plant more trees.

By targeting suburbs with fewer trees and higher temperatures, the program improves canopy cover, reduces the heat-island effect and lowers urban temperatures. Increased green space creates more pleasant and attractive places to live, work, and socialise.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$60 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Greening our City program aims to increase public awareness and acceptance of the importance of climate change and energy savings measures.

Key achievements

The program achieves the purpose under the Act by supporting local councils to strategically plant and manage urban trees, providing grants for urban tree planting, partnering on public and private land projects, and community-driven planting initiatives.

In 2023-24, we:

- provided \$3.5 million in grant funding to Greater Sydney Councils for tree planting in public spaces and strategic urban canopy planning support
- acquired and released a comprehensive tree canopy dataset for the Greater Sydney Region which enables strategic and targeted tree planting
- planted 155,711 trees including 80,440 with Landcare NSW and 75,271 trees with Greening Australia, through the Cooling our Schools and Rewilding Sydney programs
- published the *Valuing Green Infrastructure and Public Spaces Framework* which provides a

standardised, robust and comprehensive way to identify and quantify costs and benefits associated with green infrastructure and public spaces. This document is a companion to the NSW Government's *Guide to Cost Benefit Analysis*

- supported 4,441 students to participate in a hands-on tree planting program through our Cooling the Schools partnership with Greening Australia. This initiative teaches students the importance of urban greening while enhancing the school's shade and green spaces.

Weather conditions, plant stock availability and bushfire risk posed ongoing challenges for delivery partners who managed these issues with resilience and adaptability.



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Case study

Celebrating Indigenous culture and ecological education along the Great West Walk

The Bush Food Trail (Trail) invites the community to actively engage with nature and immerse themselves in First Nations culture. Created in partnership with local First Nations organisations, including Muru-Mittigar and Nepean Community and Neighbourhood Services, the Trail integrates environmental sustainability with First Nations cultural awareness.

Stretching across lands traditionally owned by the Dharug Language Group, the Trail is part of the Great West Walk – a 140 km walking route stretching from Parramatta to the Blue Mountains. It was funded by the NSW Government and Penrith City Council through the Greening the Great West Walk program.

Visitors to the Trail can explore how native plants were used by First Nations peoples. For instance, the Bunya Pine played a role in ceremonial gatherings, while Kangaroo Grass was ground into a nutritious flour. Spiny-head Mat-rush was crafted into various items like baskets and mats, and Sandpaper Fig was used as natural sandpaper for smoothing tools. Educational signage along the Trail provides rich insights into these traditional uses, connecting visitors with the region’s cultural and ecological heritage.

Penrith Mayor Todd Carney emphasised its importance, noting, “We wanted the bush food trail to provide insight into the knowledge of First Nations peoples – specifically the Dharug Language Group – and how they’ve thrived in Cranebrook for over 50,000 years.”

“The signage provides information about the plants and their significance and use to Aboriginal communities in our region.”

The project also includes 2 rest areas that support workshops, educational activities and community gatherings to enrich the cultural and educational experience of visitors.

Tree and understorey planting along the trail are also instrumental in cooling the urban environment, offering shade and supporting local biodiversity. By mitigating temperature increases in urban areas, the Bush Food Trail contributes to local climate resilience, showcasing how urban greening can be a tool for adapting to climate impacts while celebrating cultural heritage.

Community feedback highlights the trail’s success, with locals praising its low-impact design and its dual benefits for education and the environment. The enthusiasm for this project underscores a broader interest in creating more spaces that celebrate cultural heritage and promote ecological stewardship.

The Bush Food Trail connects visitors with the region’s natural history and First Nations heritage while actively contributing to climate adaptation strategies. It stands as a model of how urban greening initiatives can celebrate and preserve our natural environment and cultural heritage, setting a precedent for future urban and environmental planning efforts.



The Bush Food trail invites the community to immerse themselves in First Nations culture

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7.2 Coastal and Estuary, and Floodplain

The Coastal and Estuary, and Floodplain programs focus on enhancing the resilience of coastal, estuarine and flood prone areas across NSW.

These programs aim to address the impacts of coastal hazards, flooding and sea level rise through comprehensive management strategies, innovative solutions and community engagement. By integrating scientific research, policy development and practical management strategies, the programs seek to protect vulnerable communities, safeguard infrastructure and environmental conservation in high-risk areas.

The Climate Change Fund supports 4 of the Coastal and Estuary, and Floodplain program streams: Coastal and Estuary grants, Floodplain Management, Coastal and Estuary Management, and NSW Coastal and Flood Data Network.

7.2.1 Coastal and Estuary grants

The Coastal and Estuary grants program supports local governments to manage coastal areas. This includes reducing the risk of coastal hazards, restoring and maintaining coastal habitats, improving the health of estuaries, wetlands and coastal rainforests and promoting sustainable management of the coastal environment.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$88.8 million.

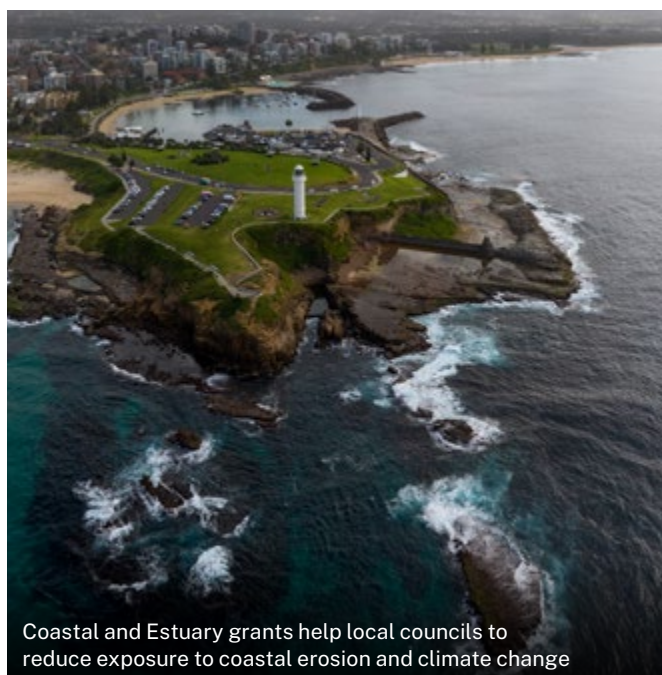
In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Coastal and Estuary grants program aims to reduce the impacts of climate change, and increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purposes under the Act by supporting local councils and communities to reduce exposure to coastal erosion and climate change.

In 2023-24, we:

- certified 11 Coastal Management Programs, which councils are now implementing
- provided financial and technical support to help councils prepare 50 additional Coastal Management Programs
- awarded 16 new planning grants (totalling \$2,061,936) and 35 new implementation grants (totalling \$11,368,708)
- enhanced local government resilience to coastal erosion and inundation while conserving biodiversity through planting and managing dunes and riparian vegetation.



Coastal and Estuary grants help local councils to reduce exposure to coastal erosion and climate change

NSW Government @Leo-Pol Letronnier

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7.2.2 Floodplain Management

The Floodplain Management program stream provides grants administration and flooding supplementary technical advice.

7.2.2.1 Floodplain Management grants

The Floodplain Management grants program provides financial support to local councils to help them manage flood risk in their communities. It aims to reduce the frequency of household exposure to flood damage, as well as household disruption and associated trauma from flood events. The program supports the implementation of the NSW Government's Flood Prone Land Policy.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$90.7 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Floodplain Management grants program aims to reduce the impacts of climate change, and increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purposes under the Act by funding local councils to understand and mitigate flooding hazards, and increase community resilience to flooding.

In 2023-24, we:

- increased community resilience to flooding by enhancing understanding of local flood risks and delivering a range of mitigation solutions to reduce flood impacts, including new infrastructure, warning systems, emergency response plans and other processes
- awarded \$6,818,477 to 35 new projects which focus on managing flood risk
- provided over \$9.2 million through existing grants to local councils to study and mitigate flood risks.



NSW Government ©Melanie Garrick

The program has supported **763 projects** worth over **\$158.59 million** to help local councils manage and mitigate flood risks since 2012. This has enabled councils to reduce the impacts and severity of floods on their local communities through levee construction, improved planning controls for flood prone land development, property protection works, detailed flood studies and community education.



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7.2.2.2 Floodplain Management (technical advice)

The Floodplain Management (technical advice) program provides technical support and guidance to government agencies and NSW local councils to enable them to understand and manage flood risk to their communities more effectively.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$9 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Floodplain Management program aims to increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purpose under the Act by supporting local councils to develop and implement flood risk management plans, improving the understanding of climate change impacts on flood behaviour, increasing public awareness of climate change, and offering grants and specialist advice for flood risk management.

In 2023-24, we:

- delivered workshops to around 60 councils in regional centres, supporting the rollout of the updated *Flood risk management manual* and toolkit. These resources and workshops are designed to promote best practice and integrate flood risk management planning into council processes
- added 128 new projects to the NSW Flood Data Portal, bringing the total to around 2,100 projects. This increased public and government access to flood information to help inform decision-making about flood risks
- commissioned technical investigations to update Floodplain Management Program guidance, taking into account new industry guidance on climate change impacts on flood producing rainfall events
- released 4 reports on the 2022 north coast flood event, detailing flood behaviour and lessons learned. These studies provide valuable information for council flood risk managers and will help councils with their future flood risk management activities
- improved the flood levee guidance and conducted a number of levee audits with councils to assess levee conditions and build council staff capability to manage and maintain these vital community assets.



The NSW Department of Climate Change, Energy, the Environment and Water **sponsored the Floodplain Management Australia Conference** held in May 2024 in Brisbane. The conference brought together experts to discuss understanding and managing flood risk, including the challenges posed by adapting to the impacts of climate change on flood behaviour.

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7.2.3 Coastal and Estuary Management

The Coastal and Estuary Management program supports the implementation of state responsibilities under the *Coastal Management Act (2016)*. These include state-wide science, the NSW Coastal Council, the review of planning proposals, technical advice to government agencies and supporting local councils preparing and implementing coastal management programs.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$21.5 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Coastal and Estuary Management program aims to reduce the impacts of climate change, and increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purposes under the Act by providing technical advice and financial support to local councils and public land managers responsible for managing the NSW coastal zone, addressing current and future coastal management challenges and opportunities, managing climate change risks and restoring coastal habitats and estuary environments across NSW.

In 2023-24, we:

- engaged with over 95% of the 56 coastal councils to develop and implement coastal management programs that set long-term strategies for managing the coast and adapting to climate change
- reviewed and updated the *Resilience and Hazards State Environment Planning Policy* to better define the mapping of the NSW coastal zone
- released the *NSW Nearshore Wave Tool* that provides past, present and future wave conditions along the coastline to support the development of coastal hazards assessments
- collected 2,044 combined days of nearshore wave data and provided 344 km² of offshore seabed data to the national *AusSeabed data portal*, including over 90 km² of previous unmapped areas
- published key guidance materials, including the *Coastal Management: Engaging with First Nations people*, which provides an overview of the considerations for engaging Aboriginal communities, knowledge holders and Aboriginal-led organisations when preparing coastal management programs
- appointed 3 new members to the NSW Coastal Council, which advises the Minister on coastal management matters under the *Coastal Management Act (2016)*.



Did you know there are 892 beaches in NSW! There are 757 open coast beaches, 120 bay beaches, and 15 beaches on Lord Howe Island.



The Coastal and Estuary Management program helps address current and future coastal management challenges

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Case study

New seawall fortifies the historic North Wollongong Surf Club from coastal erosion

The historic North Wollongong Surf Club has been revitalised and protected against coastal erosion with the completion of a new seawall. Finished just in time for the summer season, this crucial upgrade not only secures the 85-year-old surf club but breathes new life into the cherished, heritage-listed foreshore area.

The new seawall stands out with its tiered precast concrete seating and rock mattress, which replaces an outdated crib lock wall. It brings a fresh look with enhanced amenities including modern seating, improved fencing, elegant landscaping and upgraded lighting.

This upgrade fortifies the surf club and transforms the beach experience, making it more enjoyable for visitors.

Former Wollongong Lord Mayor Councillor Gordon Bradbery AM praised the design, highlighting, “The large, sand-coloured steps have been designed to improve accessibility to this popular beach and protect the North Wollongong Surf Club building and foreshore area from storm events and coastal wave damage.”

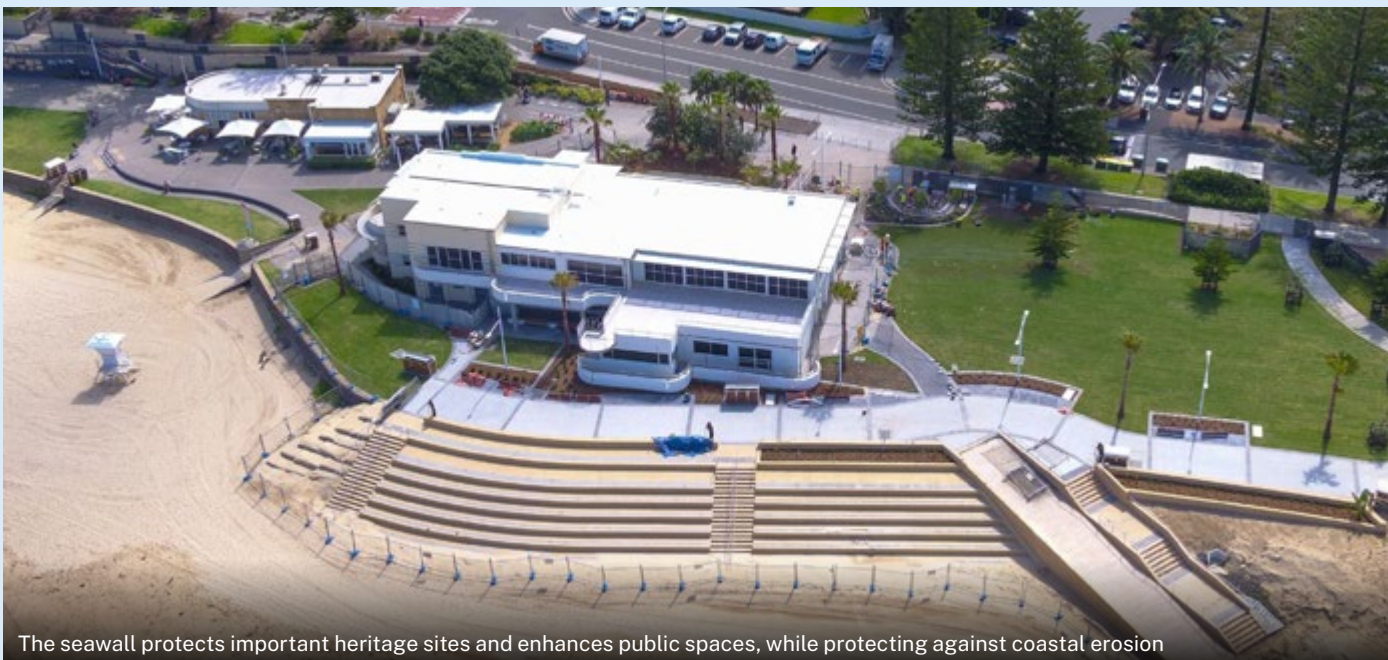
The community’s response has been overwhelmingly positive. Locals have eagerly embraced the newly improved space, finding greater recreational

opportunities and easier access. The surf club now enjoys direct beach access, and the foreshore has become a vibrant spot for both locals and tourists.

Despite facing hurdles such as severe weather, heavy rains and supply chain issues, the project was a success thanks to strong collaboration between Wollongong City Council and the NSW Government. The seawall was implemented in 2 carefully planned phases to minimise disruptions. Stage 1, from late 2020 to 2023, involved detailed planning and extensive community consultation, effectively balancing project goals with minimal impact on residents.

Looking ahead, Stage 2 is set to commence and be completed by 2026. This will extend the seawall’s protection further along the coast including replacing the aging seawall at the southern end and enhancing protection for the North Beach Bathers Pavilion.

Overall, this seawall project is a compelling example of how effective planning and collaboration can adapt infrastructure to meet future climate challenges. By incorporating climate-resilient features, the seawall protects important heritage sites and enhances public spaces. It prepares the community to tackle the impacts of climate change, ensuring lasting safety and resilience.



The seawall protects important heritage sites and enhances public spaces, while protecting against coastal erosion

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7.2.4 NSW Coastal and Flood Data Network

The NSW Coastal and Flood Data Network program provides near real-time data on flood and estuary water levels, rainfall, tides and waves. It serves governments, emergency services, the Bureau of Meteorology, researchers and the community. This data supports warnings for extreme weather events, emergency response planning, long-term disaster and climate change modelling, land use planning, and coastal and flood risk management planning. It is also essential in designing critical infrastructure.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$32.8 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the NSW Coastal and Flood Data Network aims to increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purpose under the Act by collecting physical environmental data on climate change risks, including data on coastal and flood hazards and sea level rise. This data informs infrastructure design to ensure resilience to flooding and helps govern emergency response during flood and coastal storm events that are increasing in intensity and frequency.

In 2023-24, we:

- worked with the NSW Reconstruction Authority, NSW Department of Climate Change, Energy, the Environment and Water, and the Australian Government to reinstate and install new monitoring stations in Northern NSW, implementing recommendations from the 2022 NSW Flood Inquiry
- provided data to state and federal government agencies, local government, universities, consultants, community groups and individuals
- collected and provided consistent and continuous data in near real-time, achieving data capture rates of:
 - 99% for flood and estuary water levels and rainfall stations (above target of 95%)
 - 99% for ocean tide levels (above target of 95%)
 - 87% for offshore wave climate data (above target of 85%)
 - 923,000 web page visits.

The network is operated and maintained by Manly Hydraulics Laboratory. It facilitates the proactive mitigation and management of coastal hazards and flood risks by capturing data from:

- 225 flood and estuary water level recording stations
- 75 rainfall monitoring stations
- 20 ocean tide monitoring stations
- 7 offshore waverider buoys.

Challenges from flood impacts on monitoring stations have been addressed by rebuilding and renewing damaged infrastructure, including response to riverbank erosion and collapses. Upgrades to aging equipment have been carried out, including the successful replacement of Waverider buoys at Byron Bay, Crowdy Head, Batemans Bay, and Eden, despite the complications of poor sea conditions and damage to buoys caused by vessel collisions.



The Coastal and Flood Data Network collects data on climate change risks including data on coastal and flood hazards and sea water rise

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7.3 Hunter Valley Flood Mitigation Scheme



The scheme helps address the increased frequency and intensity of storm and flood events in the Hunter River system caused by climate change

NSW Government ©Leo-Pol Letronnier

The [Hunter Valley Flood Mitigation Scheme](#) is an integrated system designed to mitigate flooding within the Hunter Valley. The scheme delivers social, economic and environmental outcomes, improving the community's resilience to the impacts of flooding.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$39.3 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Hunter Valley Flood Mitigation Scheme aims to increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purpose under the Act by managing increasing flood risks in the Hunter Valley. This includes addressing climate change driven sea level rise and the increased frequency and intensity of storm and flood events in the Hunter River system. It also enhances the resilience of Hunter Valley communities to climate impacts, in alignment with the NSW Climate Change Policy Framework.

In 2023-24, we:

- delivered a full maintenance program, ensuring the flood mitigation schemes in the Hunter Valley operated as designed
- implemented improvements to the Hunter Valley Flood Mitigation Scheme Flood Intelligence tool including live soil moisture and traffic condition feeds, and incorporating new LiDAR (Light Detection and Ranging) information. This has enhanced flood response for the NSW State Emergency Service (SES), local councils and the community
- revegetated 7.86 ha of riverbank with 4,394 native plants, enhancing riverbank protection, reducing flooding impacts downstream and providing habitat for native fauna
- presented on the flood response initiative at the annual Floodplain Management Australia National Conference held in May 2024 in Brisbane, leading to a new collaboration with Singapore's Flood Mitigation team.

The program handled wet weather challenges by bringing extra help to complete fieldwork during dry periods. They also shifted to projects unaffected by the weather, like improving spatial and flood intelligence software.

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7.4 Community Resilience to Climate Change

The Community Resilience to Climate Change program aims to enhance the ability of NSW communities to withstand and adapt to climate impacts over the long-term.

By focusing on building resilient infrastructure, promoting sustainable practices and strengthening community networks, the program ensures that communities can effectively address climate-related challenges.

The Climate Change Fund supports 2 of the Community Resilience to Climate Change program streams: the Climate Science and Information program, and the Climate Change Adaptation in Action program.

7.4.1 Climate Science and Information

The Climate Science and Information program provides detailed regional climate projections to help plan for climate change in NSW. It supports government and industry with up-to-date, high-resolution climate change projections. By managing the NSW and Australian Regional Climate Modelling (NARClIM) project, the program creates advanced climate projections for NSW and southeast Australia at 4 km resolution, and much of Australasia at 20 km resolution, continuously improving the accuracy of these models using the latest science.

The Climate Change Fund's contribution to this program from 2022-23 to 2027-28 is \$14.7 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Climate Science and Information program aims to increase public awareness and acceptance of the importance of climate change and water and energy savings measures.



Our detailed climate projections help government and industry plan for climate change

NSW Government ©Katherine Wilson

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Easy to use applications help people to prepare and adapt to climate change

©NSW Government

Key achievements

The program achieves the purpose under the Act by providing communities, government and industry with up-to-date climate projection data, tools and resources. It also offers easy-to-use applications to help people prepare for and adapt to climate change.

In 2023-24, we completed and released NARcliM2.0 climate projections for a historical period (1950-2014) and 2 future greenhouse gas emissions scenarios. The climate projections were simulated on the National Computational Infrastructure. These new products enhance awareness of and access to climate projections data access and support high-impact research on climate change effects.

Additionally:

- NARcliM2.0 uses 5 of the latest global climate models from the Coupled Model Intercomparison Project (CMIP6), which were selected by a rigorous, peer reviewed study published in the journal *Earth's Future*² (Di Virgilio et al. 2022). Each of these 5 global climate models are inputs to 2 newly designed regional climate models which produce the high resolution, regional scale climate projections over NSW, southeast Australia and Australasia.
- NARcliM2.0 projections are now quality-assured for 2 greenhouse gas emissions scenarios (under low and high emissions assumptions) and around 150 climate

indices over 150 years. NARcliM2.0 projections under a third 'middle of the road' greenhouse gas emissions scenario will be released in 2025.

- NARcliM2.0 now offers data at a 4 square km resolution for southeastern Australia. This is the finest resolution data currently available nationally, simulating continuously to 2100. NARcliM2.0 data are also available at 20 square km covering a large area of Australasia
- NARcliM2.0 was publicly released in August 2024.

Developing climate projections is complex and requires rigorous quality checks. NARcliM2.0 represents a significant advancement over its predecessors, demanding significantly more data storage being 15 times larger in data volume.

To manage and complete the project in 2023-24, a team of experts in climate science and modelling was further built, along with software tools to generate the climate projections. Expert program management practices were employed to manage both technical issues and communications.



Did you know it has taken 235 million computer processing hours to process NARcliM2.0 data. That means that on a standard laptop it would take 5,000 years to complete NARcliM2.0.

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² Selecting CMIP6 GCMs for CORDEX Dynamical Downscaling: Model Performance, Independence, and Climate Change Signals

Case study

Future-proofing NSW with a new generation of climate modelling

We need trusted data and tools to understand and plan for the likely impacts of climate change. The NSW and Australian Regional Climate Modelling (NARClIM) project supports government, business and communities to mitigate and adapt to climate change.

The latest update, NARClIM2.0, provides the most advanced and detailed climate model data NSW has ever produced. It generates around 15 times the volume of data of NARClIM1.5.

NARClIM2.0 data underwent almost 3 years of processing on one of the Southern Hemisphere's most powerful supercomputers, thanks to a collaborative partnership with National Computational Infrastructure.

According to Matthew Riley, Director of Climate and Atmospheric Science, "Most climate change impacts will be felt locally and regionally, and NARClIM provides the level of information we need to prepare for and adapt to climate change."

"NARClIM2.0 data can better inform decision-making and planning at local and regional planning levels, such as climate risk assessments for individual suburbs or planning zones."

NARClIM2.0 brings together globally recognised science and multidisciplinary expertise to deliver high-quality climate change projections. It's the result of 5 years' work by the Climate Research team from design to delivery.

To make NARClIM2.0 possible, the team re-engineered production workflows and tools. This involved extensive quality control and assurance, both manual and automated, to remotely monitor simulation progress.

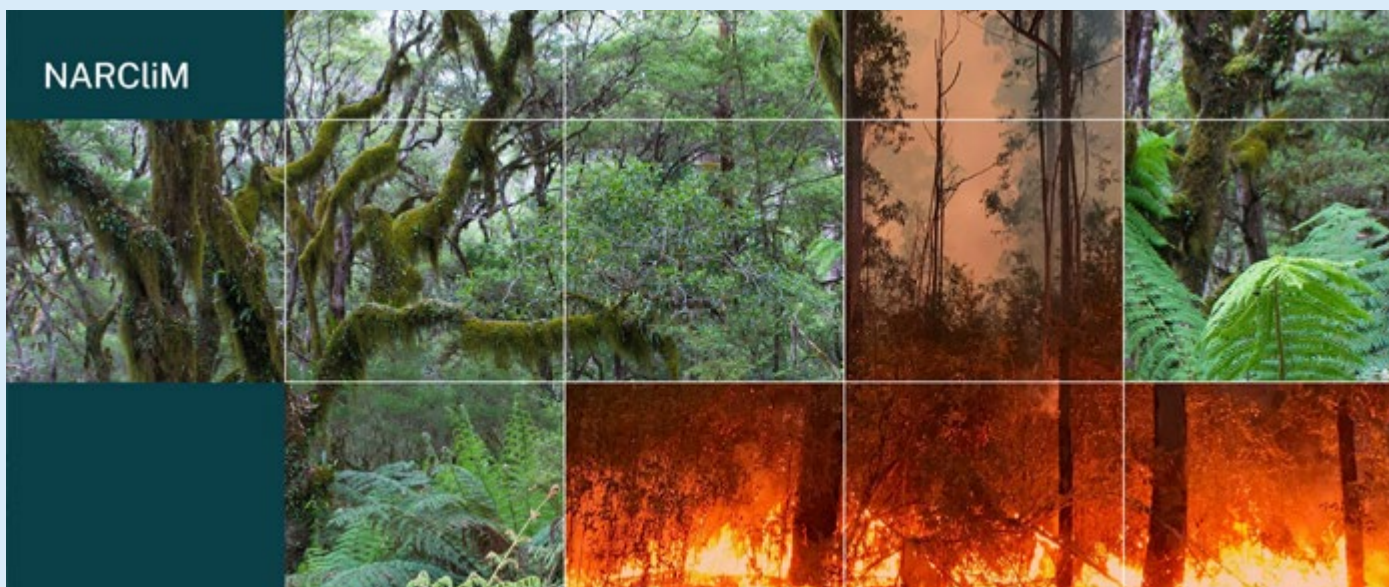
To ensure NARClIM2.0 would meet stakeholder needs, the team:

- modelled 3 global greenhouse gas emissions scenarios
- increased the resolution of downscaled data from 10 km to 4 km over south-east Australia
- redesigned the regional climate models used.

With these advancements, NARClIM2.0 is fit-for-purpose across the NSW Government and an essential tool for practitioners working in climate change adaptation.

NARClIM2.0 projections are now available for 2 scenarios, and the third is soon to follow. The focus now is on integrating the data into planning and research across the NSW Government. Early users are already exploring applications for modelling soil erosion, flood risk, and species distribution.

NARClIM is led by the NSW Government with support from the Australian Capital Territory, South Australian, Victorian, and Western Australian governments, as well as National Computational Infrastructure Australia, the University of New South Wales and Murdoch University.



NSW Government ©Marc Anderson

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Threatened species were propagated and planned for planting in the Gondwana Rainforests.

7.4.2 Climate Change Adaptation in Action

The Climate Change Adaptation in Action program helps the NSW Government, local government and communities adapt to climate change, safeguarding the prosperity and competitiveness of NSW. It focuses on managing critical infrastructure risks, protecting World Heritage assets, embedding First Nations knowledge and promoting climate education and engagement. Additionally, it prepares the NSW Government for climate risks through Climate Risk Ready NSW.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$11.7 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Climate Change Adaptation in Action program aims to increase public awareness and acceptance of the importance of climate change and water and energy savings measures.

Key achievements

The program achieves the purpose under the Act by enhancing climate change adaptation in line with the NSW Adaptation Strategy, supporting strategic and infrastructure planning, and sharing knowledge with state and local governments. The program also maintains the XDI NSW platform which enables decision-makers by producing quantified information about risks and costs to support adaptation decision-making. The program delivers adaptation plans for World Heritage sites and incorporates First Nations knowledge to protect Country and culture.

In 2023-24, we:

- through the XDI tool, supported up to 500 users across NSW Government agencies and councils with climate risk insights to improve asset resilience
- increased the user base by 50% by targeting and training whole-of-government champions
- successfully propagated threatened species and planned for planting in climate refuge sites within the Gondwana Rainforests of Australia World Heritage Area.

Additionally:

- AdaptNSW website pageviews jumped from 383,901 in 2022 to 458,219 in 2023, and the newsletter subscriber list grew from 866 to 1,000. Updates included regular news, case studies, and resources.

- A 3-day cultural immersion for 30 staff enhanced cultural awareness and adaptation planning for First Nations communities. Support included sand dune adaptation on Worimi conservation lands and drafting the Climate Change Adaptation Planning workbook, leading to additional funding for cultural adaptation planning.
- The Climate Risk Ready program trained 62 NSW Government staff, from 10 entities this year. This is the only consistent, integrated climate risk management guidance across the government sector.

The Adapt NSW Climate Education and Engagement Program is addressing the evolving needs and interactions of its users by evaluating the effectiveness of its website structure and communications. The team is embarking on a human-centred design project to ensure that information delivery channels continue to meet the audience's needs effectively.

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Through the Climate Change Fund, the NSW Government is working to reduce the impact of climate change, stabilise ecosystems and protect biodiversity across the state. The fund has improved the management of our national parks and increased public awareness about the importance of addressing climate change and conserving biodiversity.

The Climate Change Fund has also helped farmers and landholders adopt practices that conserve biodiversity and improve carbon management, making landscapes more sustainable and productive. To address the increasing risk of bushfires as a result of climate change, the fund supports fire management programs, including hazard reduction activities, and works with local Indigenous groups to conduct cultural burns. These measures help manage landscapes, reduce bushfire risks, and preserve traditional practices.

Additionally, the fund has increased public awareness and acceptance of climate change through advanced air quality monitoring and forecasting, which helps safeguard communities from the effects of poor air quality events such as bushfires and promotes better public health.

This section highlights how the Climate Change Fund is protecting the environment, increasing public awareness of climate change and contributing to a more resilient future for NSW.

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8.1 Private Land Conservation – Biodiversity Conservation Trust



The Murray River Woodlands conservation tender helps landlords protect remnant woodlands as part of a carbon project

NSW Government ©Peter Robey

The [Biodiversity Conservation Trust](#) partners with landholders to enhance and conserve biodiversity on private land, aiming to create vibrant private land conservation areas that protect unique plants and animals.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$437.4 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Private Land Conservation program aims to increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purpose under the Act by increasing private land conservation in areas of strategic biodiversity value, supporting landholders in conserving biodiversity and promoting public knowledge and appreciation of the importance of conservation.

In 2023-24, we:

- conserved 24,250 ha of additional land for biodiversity, by securing 69 new conservation agreements and wildlife refuge agreements. This protects an additional 6 unique NSW landscapes not well-represented in public or private protected areas
- exceeded 2 out of 3 business plan targets a year early. We did this by protecting 53 unrepresented or inadequately protected NSW landscapes and securing an additional 200,400 ha through private land conservation agreements since July 2021.

Since August 2017, the Biodiversity Conservation Trust has entered into conservation agreements with 489 landholders, covering 250,400 ha and awarded \$9.17 million in grants to 444 landholders with partner conservation agreements.

We've helped **2 landholders register their first carbon projects** under the Clean Energy Regulator's Emissions Reduction Fund through the Restoring Murray Woodlands conservation tender. This tender allows landholders to protect remnant woodlands while participating in a pilot carbon project for environmental plantings. More carbon projects will be registered over the next 12 months.



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Case study

Conservation agreements secure future for endangered snow gum

The NSW Biodiversity Conservation Trust has delivered a landmark conservation effort to protect 4,200 hectares of snow gum woodlands and native grasslands in the Snowy Monaro region. Once common, these ecosystems are now mostly confined to private properties and are not well represented in the region's National Parks.

This initiative highlights the vital role of private landholders and honours the cultural significance of the land to the Ngarigo people. Integrating First Nations perspectives, it supports ecological preservation while respecting traditional custodianship.

Barbara and Thomas Evison, owners of the Beauderen property near Moonbah, were one of 8 successful bidders in the Trust's Snow Gum Woodlands and Grasslands conservation tender.

Their agreement has protected nearly 66 hectares of crucial habitat for endangered species, such as the vulnerable austral toadflax, koalas, glossy black cockatoos, hooded robins and speckled warblers. The agreement also ensures the preservation of trees that provide essential nesting hollows for wildlife.

The Evisons' property was chosen due to its high potential for biodiversity conservation, reflecting the Trust's focus on private lands where these critical habitats are predominantly found. Under

the agreement, the Evisons will manage their conservation site with guidance from Trust ecologists, which may include managing pests and weeds, fencing protected habitat, restoring and monitoring the conservation sites.

Barbara Evison shared, "We wanted to make sure there's always funding available for managing the land, no matter who owns it in the future. We wanted to make sure conservation efforts can continue uninterrupted." This commitment to long-term stewardship underscores the importance of securing ongoing support for conservation efforts.

Thomas Evison added: "There's a lot more snow gums now. Many are germinating and growing along the drainage lines. The whole health of the property has improved dramatically." His observations highlight the positive impacts of their conservation practices, demonstrating how effective management can significantly enhance ecological health.

Through their successful conservation agreement, the Evisons are protecting key habitats and advancing biodiversity goals. Their dedication serves as a powerful example of how private landholders can drive meaningful conservation outcomes, ensuring the preservation of Australia's natural landscapes for future generations.



Barbara and Thomas Evison work with the Biodiversity Conservation Trust to protect 66 ha of crucial habitat in the Snow Gum Woodlands

NSW Government © Colin Elphick

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8.2 Fire Management

The [National Parks and Wildlife Service \(NPWS\) Fire Management program](#) is an adaptive management initiative. It mitigates the increasing risk of bushfires on communities, assets and the environment resulting from the impacts of climate change.

As one of 4 firefighting authorities in NSW and the primary manager of conservation land, NPWS works with the NSW Rural Fire Service, Fire and Rescue NSW, and Forestry Corporation of NSW to manage and suppress bushfire on and off the park.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$260.6 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the NPWS Fire Management program aims to reduce the impacts of climate change.

Key achievements

The program achieves the purpose under the Act by helping to manage and reduce the growing risk of bushfires caused by climate change, protecting communities, assets and the environment.

In 2023-24, we:

- delivered 2,365 ha of hazard reduction works in Asset Protection Zones, exceeding the annual target by 31%
- delivered 33,687 ha in Strategic Fire Advantage Zones, reducing the risk to properties and assets in high risk areas for the NSW community
- supported First Nations communities to deliver 10 cultural burns on NPWS managed land, exceeding the annual target by 25%
- contained 188 (88%) of bushfires that started on NPWS managed land within the park boundary and kept 155 (73%) to less than 10 ha in size. In total, there were 297 bushfires that impacted national park with 213 of these starting on NPWS managed land
- placed Rapid Aerial Response Teams (a helicopter and firefighting crew) in strategic areas based on forecast fire weather danger on 5 occasions. However, the teams did not need to respond
- managed 95% of NPWS reserves (within 9 months of gazettal) under an approved Reserve Fire Management Strategy. All other reserves are currently finalising their plans.

Although the extended La Niña event presented challenges with weather and fuel conditions, NPWS took a proactive approach by planning and securing approval for more than 141,000 ha of hazard reduction.

This effort not only provided flexibility in delivering burning activities, but also exceeded the overall annual hazard reduction planning target by 5%.



National Parks and Wildlife Service contained 88% of bushfires within park boundaries in 2023-24

NSW Government ©John Spencer

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Case study

AI is supporting hazard reduction burns to protect koala habitats

NSW National Parks and Wildlife Service is testing artificial intelligence (AI) in their fire management practices, addressing a critical issue identified in the NSW Koala Strategy.

Bushfires pose a major threat to koalas and without action, the species could face extinction by 2050.

Hazard reduction burns are controlled fires used to lower the risk of larger bushfires by reducing fuel such as dry vegetation.

AI allows National Parks to assess the fire severity potential during hazard reduction burns. This enhances the risk management and control efforts to safeguard koalas, their habitats, and nearby communities.

In Autumn 2024, National Parks applied AI in the Southern Highlands, which is home to over 3,000 koalas, combining AI predictions with field data including the locations of koala feed trees and habitats. This initiative supported decision-making on ignition methods and burn patterns to specifically lower fire intensity and protect crucial koala habitats.

The 'Random Forest Model' was also used to inform on-the-ground decision-making, improving coordination among firefighters and emergency services. This model is a machine learning algorithm that was trained to evaluate data to predict fire severity. Data sets include topography, satellite imagery, vegetation fuel types, aridity, weather forecasts from the Bureau of Meteorology and others.

According to Erik Sumarkho, a project officer with National Parks, "AI has the potential to support our approach to hazard reduction burns in sensitive ecosystems. It will give us the tools to predict, plan, and communicate the risks facing arboreal mammals, as well as other environmental, cultural and property assets, with accuracy."

Erik highlights how AI can quickly distil complex data to accurately forecast fire severity, including how far up into the canopy a fire might reach.

Extreme fires can consume the upper canopy where koalas live and feed, so predicting fire severity allows NSW National Parks and Wildlife Service to



Artificial Intelligence helped map koala feed trees to lower fire intensity and protect crucial koala habitats

NSW Government @Jaime Plaza

implement risk controls and mitigation strategies to protect these crucial habitats.

"The model might, for example, forecast that a particular area will experience high fire severity, prompting firefighters to remove excessive fuel loads before the burn begins," says Erik.

Beyond protecting koalas, AI-driven fire management could benefit the wider community. By reducing the frequency and intensity of bushfires, these strategies lower risks to homes, businesses and infrastructure, enhancing public safety and community resilience.

The National Parks and Wildlife Service's integration of AI represents an innovative approach to fire management, aiming to protect koalas and ensure community safety and resilience. It offers a more reliable way to manage fire risks, helping to preserve koala habitats and secure their survival for the future.

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8.3 Air Quality Monitoring and Forecasting

The Air Quality Monitoring and Forecasting program provides state-wide air quality monitoring and forecasting, informing the public about air quality issues from various sources and supporting agencies with data for risk assessment and clean air initiatives.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$22.3 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Air Quality Monitoring and Forecasting program aims to increase public awareness and acceptance of the importance of climate change.

Key achievements

The program achieves the purpose under the Act by enhancing NSW's resilience to climate change through tracking air quality across NSW with a network of stations, providing hourly updates and daily forecasts. It sends alerts about poor air quality, helping people reduce exposure and health risks.

In 2023-24, we:

- established a new air quality forecasting model and updated the smoke modelling module to improve air pollution predictions for events like hazard reduction burning and bushfires. This tool helps agencies to proactively manage air quality and respond better to unavoidable poor air quality incidents
- added greenhouse gas (GHG) monitoring capability at sites in Sydney (Lidcombe) and Newcastle (Stockton) to assist with tracking GHG emissions and verifying GHG inventory estimates. GHG monitoring includes nitrous oxide (N₂O), methane (CH₄), carbon dioxide (CO₂), ammonia (NH₃) and water vapor
- set up emergency air quality monitors on request. These monitors provide near real-time data and information to the community, enabling people to make informed decisions to protect their health and well-being.



The program provides hourly updates, daily forecasts and alerts about air quality across NSW



Did you know you can find out about air quality in your area? The Department of Climate Change, Energy, the Environment and Water operates 95 permanent air quality monitoring stations across NSW, the largest network in Australia. Some of these stations have been in place for at least 70 years. Visit [Air quality in my area](#) to locate your nearest station.

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8.4 Protected Area Management



The program helped control weeds in over 70,000 ha of National Park

NSW Government ©John Spencer

The National Parks and Wildlife Service (NPWS) Protected Area Management program helps fund park management and expansion activities that enhance the protection of ecosystems and biodiversity. The program also aims to improve or stabilise the condition and ecological integrity of these areas.

The Climate Change Fund's contribution to this program from 2022-23 to 2029-30 is \$273.6 million.

In line with section 34F of the *Energy and Utilities Administration Act 1987*, the Protected Area Management program aims to reduce the impacts of climate change associated with water and energy activities. It also aims to encourage water and energy savings and the recycling of water.

Key achievements

The program achieves the purposes under the Act by supporting NPWS to acquire and manage land to strengthen the NSW reserve system. This helps address key threats and impacts to park values and operational assets, and renews and replaces assets after climate change-related damage so that they are more energy and water-efficient.

In 2023-24, we:

- contributed to 10 ongoing NPWS programs, including Park Acquisition and Establishment, Feral Animal Control and Weed Control
- assisted in acquiring over 40,000 ha of land for the national parks system. Land acquisition increases the ecosystems and species represented in NSW national parks, helping to protect biodiversity
- supported the removal of over 50,000 feral animals and over 70,000 ha of weed control. This helps to improve or stabilise trends in the condition and resilience of ecosystems and biodiversity.

External issues, such as floods and resource shortages, posed challenges this year and funds were allocated between the 10 ongoing programs as needed.

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Section 34H(4) of the *Energy and Utilities Administration Act 1987* requires the Minister to report on the effectiveness of completed Climate Change Fund programs. The Climate Change Fund Monitoring, Evaluation, Reporting and Improvement Framework provides guidance on the fund's focus outcomes and related measurement and reporting approaches. It is aligned with the NSW Government Program Evaluation Guidelines and best practice for evaluation management.

To date, 38 outcome evaluations have been completed focusing on programs from the 2017-22 funding cycle. These evaluations have provided key evidence to support program management and decision-making under the current funding cycle. Further details on each program evaluation can be found at [Climate Change Fund Evaluation of Programs | NSW Climate and Energy Action](#).

Table 1: Key findings and recommendations from evaluations completed in 2023-24

Evaluation report	Key findings	Key recommendations
Smart batteries for key government buildings end-of-pilot evaluation	<ul style="list-style-type: none"> Promising early indicators that the program contributed to energy network cost savings by installing batteries in network-constrained sites and thus avoided network capacity expansion costs. Although connection of batteries to a Virtual Power Plan was descoped, the program has had a positive contribution to Virtual Power Plans as all participating agencies are now independently pursuing this next step to generate additional revenue streams. Positive impacts on smart battery and Virtual Power Plan supply chains, including developing supplier capacity and prompting market changes such as new product development. The program has also made it easier for government sites to access Virtual Power Plans, has increased interest in battery technology and other secondary benefits. 	<ul style="list-style-type: none"> Co-design of key program considerations with participating agencies may help to build flexibility, adaptability to participant needs and avoid any unintended barriers. Prioritise rigorous and consistent data collection. Build structured knowledge sharing and dissemination into the program design to improve rollout and greater long-term benefits. Stage implementation in phases to avoid the same challenges being repeated across multiple sites. Structure procurement processes to ensure they give appropriate weight to technical capability in complex projects. Build buy-in at all levels of participating agencies to ensure smoother rollouts. Provide funding for ongoing maintenance and operation to maximise benefits and improve data visibility. Explore new funding mechanisms to improve revenue streams and maximise public benefit beyond the site level benefits, e.g. reduced energy prices from avoided network infrastructure upgrades.

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Table 1: Key findings and recommendations from evaluations completed in 2023-24

Evaluation report	Key findings	Key recommendations
Making communities more resilient to climate change program outcome evaluation	<ul style="list-style-type: none"> The program established central foundations for climate risk management and contributed to building knowledge and capacity on climate risk, including in decision-making. Lack of a coordinated, strategic approach limited the scale and potential sustainability of achievements. Need to integrate end user needs in the design of the information and tools to ensure intended outcomes are achieved. Use of grants was somewhat effective in addressing resource barriers. 	<ul style="list-style-type: none"> Ensure strategic whole of program governance and coordination is facilitating collaboration across projects and departments for greater impact. Establish robust project and program-level monitoring, evaluation, reporting and improvement. Deliver targeted communications and engagement activities to extend the reach and influence of the AdaptNSW website and forums. Expand training and capability building initiatives to engage target end-users with different levels of skill and climate risk management maturity. Seek opportunities to further leverage the Enabling Regional Adaptation reports to identify priorities for climate risk adaptation within target NSW regions. Deliver strategic funding programs for climate risk adaptation across NSW, focussing on lower-capability councils and communities.
Primary Industries Climate Change Research Strategy end-of-program evaluation	<ul style="list-style-type: none"> The strategy contributed to strategic outcomes by proactively developing solutions and responding to opportunities for primary industries in a changing climate. Adaptive management was effectively applied in response to external challenges including natural disasters and the COVID-19 pandemic. Organisational systems, processes, and shared services presented barriers to efficient delivery. Formal and informal learning processes were employed throughout delivery to the benefit of the strategy. 	<ul style="list-style-type: none"> Continue efforts to address the organisational systems and processes that impede efficient project management. Prioritise large portfolios of work that bring critical mass and expertise, reduce fragmentation and more clearly establish the value proposition. Maintain and evolve a high-level governance group to support collaboration and good governance in relation to climate change, adaptation and mitigation. Place greater emphasis on resource planning including properly costing all facets of project management and governance. Continue efforts to share the knowledge and insights generated by the strategy.

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Table 1: Key findings and recommendations from evaluations completed in 2023-24

Evaluation report	Key findings	Key recommendations
Sustainability Advantage Program Evaluation 2017-22	<ul style="list-style-type: none"> • The program is effective and appropriate to support its members to deliver resource efficiencies, achieve cost savings and better manage current and emerging sustainability challenges. • The program influences ‘systems-level’ change through the delivery of outcomes at 4 levels. <ul style="list-style-type: none"> – Working with individual organisations to transform operations and drive positive change. – Working pre-competitively through industry collaboration projects to transform whole-of-sector practices. – Facilitating ‘place-based’ initiatives in regional areas to create local solutions and benefits. – Working with multi-sectoral stakeholder partners to create and transform markets for new products and services. 	<ul style="list-style-type: none"> • Integrate pilot projects into core service offerings where they have demonstrated their value and effectiveness. • Develop and implement a structured and consistent approach to monitoring and tracking member projects and activities to help showcase program effectiveness and inform evidence-based decision making. • Explore and modify models of stakeholder engagement to further enhance the scale and impact of the program by focusing on strategic collaborations. • Continue to adapt the program to address emerging sustainability issues to ensure its ongoing relevance and long-term success.

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In 2023-24, the Climate Change Fund 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 2023-24

The total revenue for the Climate Change Fund in the 2023-24 financial year was \$307.2 million.

Source	Amount (\$)
Ausgrid	136,668,164
Endeavour Energy	93,626,764
Essential Energy	59,853,812
Interest	16,906,254
Miscellaneous Revenue and Return of Grant	193,961
Total	307,248,956

Expenditure 2023-24

In 2023-24, the Climate Change Fund's total expenditure was \$276.8 million.

The difference between revenue and expenditure is a result of different program implementation schedules in the 2023-24 financial year.

Net Zero programs	Actuals (\$M)	Theme
Clean Technology Innovation	6.8	Building a low emissions future
Electric Vehicles	2.0	Building a low emissions future
Utilising NSW Government Assets for Renewable Energy Infrastructure Investment	0.3	Working together for NSW
Primary Industries Productivity and Abatement Program	10.5	Working together for NSW
Emissions Intensity Reduction	12.7	Building a low emissions future
Hydrogen	4.0	Building a low emissions future
Renewable Fuel Scheme	1.8	Building a low emissions future
Business Decarbonisation	1.8	Building a low emissions future
Safeguard Acceleration	1.7	Making clean energy more affordable and reliable
Accelerating Net Zero Buildings	1.2	Building a low emissions future
Net Zero Emissions and Clean Economy Board	0.7	Working together for NSW
Net Zero Futures Policy Forum (International Collaboration)	0.4	Working together for NSW
Strategic Portfolio Functions	5.3	Governance and program administration
Subtotal	49.2	
Electricity Roadmap	Actuals (\$M)	Theme
Electricity Infrastructure Roadmap Implementation	24.6	Making clean energy more affordable and reliable
Subtotal	24.6	

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Clean Energy programs	Actuals (\$M)	Theme
Empowering Homes	0.3	Making clean energy more affordable and reliable
Regional Community Energy	2.2	Making clean energy more affordable and reliable
Smart Batteries for Key Government Buildings	0.2	Making clean energy more affordable and reliable
Emerging Energy	3.3	Building a low emissions future
Reliable Affordable Clean Energy (RACE) for 2030	0.3	Other
Social Housing Energy Performance Initiative	1.0	Making clean energy more affordable and reliable
Subtotal	7.3	
Energy efficiency and sustainability programs	Actuals (\$M)	Theme
Sustainable Government	1.5	Working together for NSW
Sustainable Homes	1.9	Making clean energy more affordable and reliable
Sustainability Advantage	1.4	Working together for NSW
Sustainable Councils	1.4	Building a low emissions future
Sustainable Finance	0.8	Building a low emissions future
Subtotal	7.1	
Resilience and adaptation programs	Actuals (\$M)	Theme
Climate Science and Information	1.9	Adapting to climate change
Climate Change Adaptation in Action	0.9	Adapting to climate change
Greening our City	7.5	Adapting to climate change
Private Land Conservation – Biodiversity Conservation Trust	51.3	Protecting the environment
Protected Area Management	34.0	Protecting the environment
Hunter Valley Flood Mitigation Scheme	4.8	Adapting to climate change
Air Quality Monitoring and Forecasting	3.1	Protecting the environment
Fire Management	33.4	Protecting the environment
Coastal and Estuary Grants	11.1	Adapting to climate change
Floodplain Management Grants	9.9	Adapting to climate change
Coastal and Estuary Management	3.0	Adapting to climate change
NSW Coast and Flood Data Network	4.1	Adapting to climate change
Floodplain Management	1.3	Adapting to climate change
Subtotal	166.2	
NSW's energy regulation responsibilities	Actuals (\$M)	Theme
Australian Energy Market Commission	12.6	Other
Commonwealth Energy Efficiency Working Group	0.7	Other
Subtotal	13.4	
Governance and program administration	Actuals (\$M)	Theme
Climate Change Fund Portfolio Management Office	2.5	Governance and program administration
Program Support Services	2.4	Governance and program administration
Subtotal	4.9	
Other	Actuals (\$M)	Theme
Liddell Response	4.2	Making clean energy more affordable and reliable
Subtotal	4.2	
Grand total	276.8	

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