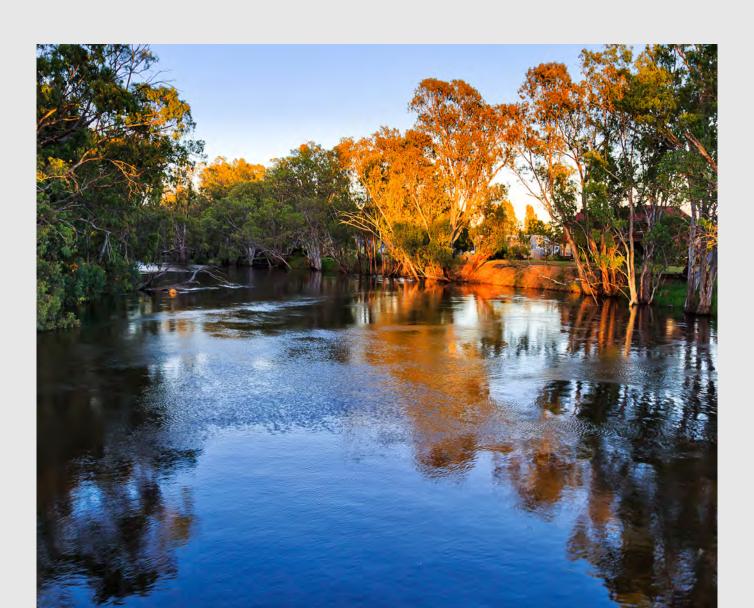


Environment Protection Authority

EPA Climate Change Policy

The NSW Environment Protection Authority's policy for addressing climate change and protecting the environment

DRAFT FOR CONSULTATION



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NSW Environment Protection Authority

6 Parramatta Square

10 Darcy Street, Parramatta NSW 2150 Locked Bag 5022, Parramatta NSW 2124

Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)

Fax: +61 2 9995 5999

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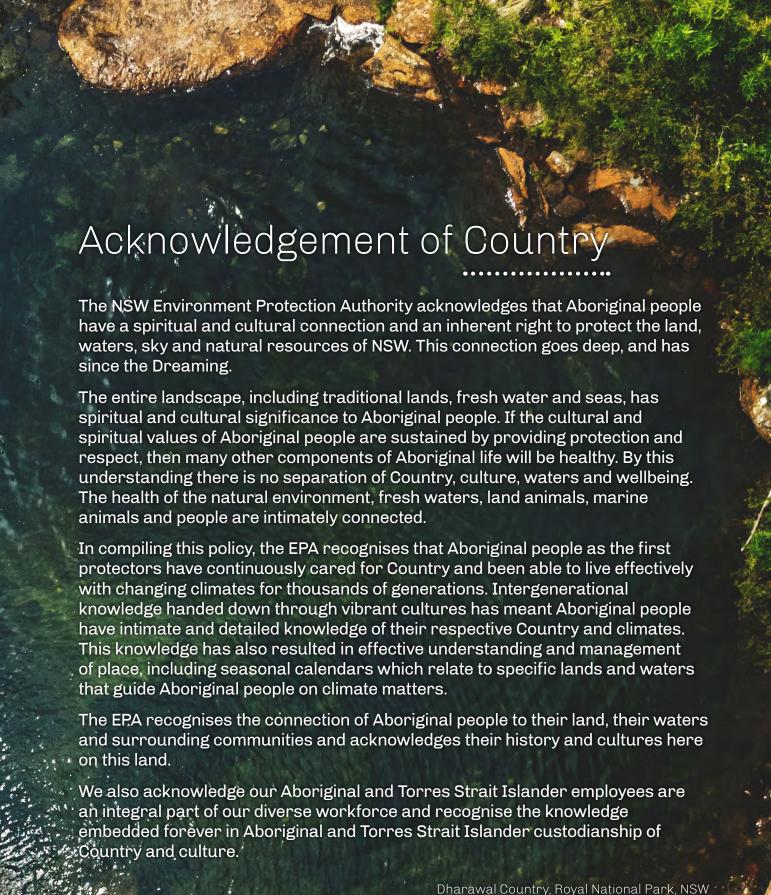
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The EPA's Statement of Commitment to Aboriginal People of NSW

We, the NSW Environment Protection Authority, acknowledge Aboriginal people as the enduring custodians of the land, sea, waters and sky of NSW.

We recognise the entire NSW landscape, including the lands, waters, plant and animal species and seas, has spiritual and cultural significance to all Aboriginal people of NSW. By this understanding there is no separation of nature, wellbeing and culture. The health of the natural environment, land animals, marine animals and the health of people and culture are intimately connected. In the spirit of reconciliation, the EPA is committed to:

- work in respectful partnership with Aboriginal people
- · actively learn from and listen to Aboriginal voices, culture and knowledge
- respect Aboriginal people's knowledge and science as an equal to western science
- weave Aboriginal knowledge and science with conventional science into the EPA's decision-making
- act boldly and bravely to play our part to mend and heal Country together
- ensure Aboriginal knowledge, science and Indigenous cultural and intellectual property is protected, and Aboriginal people have free, prior, informed consent
- address both the tangible and intangible cultural elements of environmental protection
- deliver on results that have direct benefits for Aboriginal communities
- · embed consistent, meaningful, and trustworthy engagement with Aboriginal communities
- develop Aboriginal cultural competency across the agency
- increase Aboriginal employment across the agency to exceed public sector Aboriginal employment targets and to identify specific occupational gaps
- monitor the impact of the commitment to Aboriginal people, Country, culture and spirit.

Foreword



The EPA has a legal duty to protect the community and environment from harm. including that caused by climate change. In this work the EPA is a crucial partner in supporting and building on the work of the NSW Government to address climate change for the people of NSW.

In 2021 the NSW EPA set climate change as a focus area within its Strategic Plan 2021-24. It has committed to taking action to reduce emissions, mitigate climate change impacts and build greater environmental and community resilience aligned with the principles of the NSW Government's Net Zero Plan. This Climate Change Policy and its companion Climate Change Action Plan 2022-25 set out a clear path for how the EPA will achieve that mission.

These two documents describe how the EPA will work with its stakeholders including its licensees, councils, experts, other government agencies and the community - to reduce greenhouse gas emissions and adjust to a changing climate. The EPA Board and I are pleased with the path the EPA has set and the way it is responding to its strategic plan commitment.

We are delighted to have a policy and action plan that adopt, support and build on the strong foundations that have been set by the NSW Government through the NSW Climate Change Policy Framework, Net Zero Plan and Climate Change Adaptation Strategy.

The policy and action plan ground the EPA's climate change work and enable it to continue to evolve its regulatory approaches to address the climate change challenges we all face now and will face into the future.

Carolyn Walsh

Acting Chair of the Board





Foreword



I am pleased to release this draft of the EPA's first dedicated Climate Change Policy and Climate Change Action Plan 2022-25 for consultation and feedback. The EPA is committed to taking action to protect the environment and community from the threat of climate change, and to working with industry, experts and the community as our regulatory response evolves.

The Intergovernmental Panel on Climate Change, in its 2022 assessment, confirmed that while the impact of climate change cannot be eliminated, near-term actions are critical to limit global warming to 1.5°C and substantially reduce projected losses and damages in human systems and ecosystems. To achieve this outcome, global emissions need to halve by 2030, a target adopted by the NSW Government.

Our draft policy and plan are how we propose to build on the strong foundations set by the NSW Government. The EPA knows the role it must play to support the ambition of a 50% reduction in emissions by 2030 (compared to 2005 levels) and net zero emissions by 2050. Equally, driving reductions will not be possible without providing NSW industry and communities the pathway to be more resilient to our changing climate.

Clear expectations have been set for our regulated industries and we will be working with them to support further cost-effective decarbonisation, implement best practice. build resilience to climate change risks, and support NSW in its transition to a low-carbon economy. Our staged approach also ensures that the actions we take are deliberate and well informed, and complement government and industry actions on climate change.

Acting on climate change also presents an immense opportunity to secure future sources of prosperity for our society and economy. As we consider the appropriate policy and regulatory pathways, we are mindful of the

opportunities offered by new industries including hydrogen, green steel and metals, green ammonia, clean energy, natural capital and regenerative agriculture.

We know through our lived experience how important it is to continue the work we do to help industry and the people of NSW prepare for, respond to, and recover from the devastating impacts of the unprecedented droughts, fires and floods of recent years. As these threats escalate, the EPA is already responding to increasing climate-change-induced severe weather events that significantly impact our environment and communities.

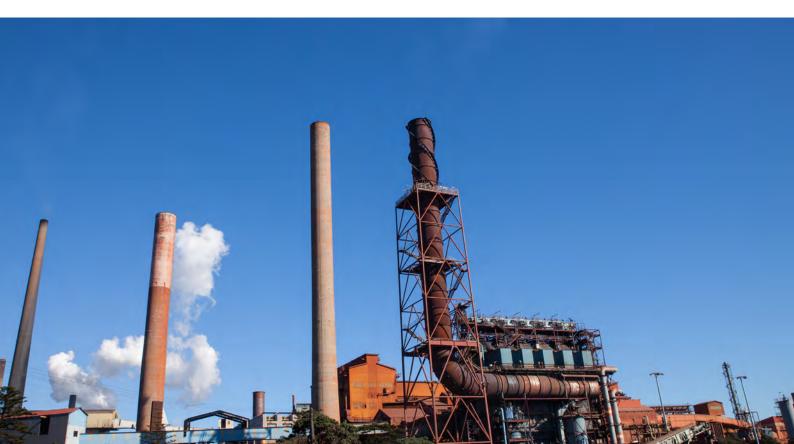
We know we cannot take these steps alone. We will continue to work with other agencies, other jurisdictions (including the Commonwealth and local government), subject-matter experts, scientists, industry, young people, Aboriginal people and communities across NSW as we collaborate to meet these challenges. I welcome your feedback to these draft proposals and invite you to work with us to tackle these challenging issues.

Tony Chappel Chief Executive Officer



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1. Introduction

The EPA is committed to strengthening its regulatory response to climate change.

Without substantial action, climate change poses a major threat to humanity and most living systems on Earth. We can already see its effects, and they are predicted to worsen over time.

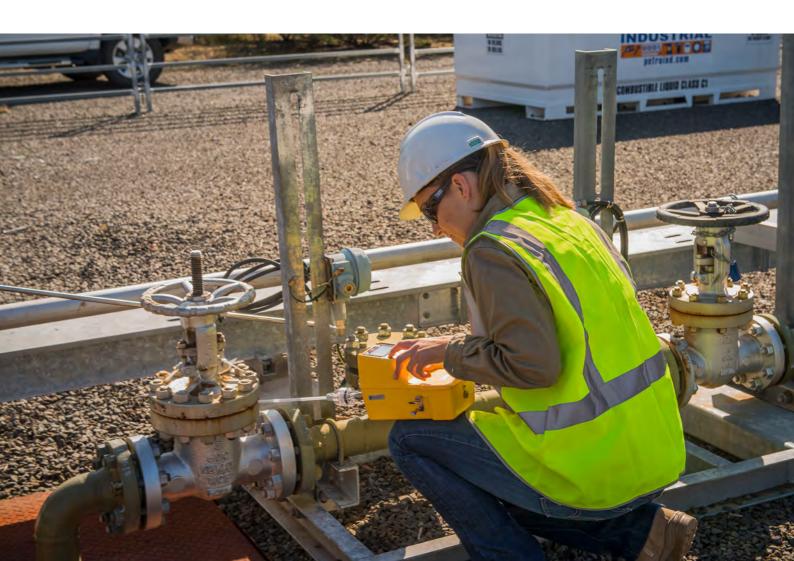
Increasingly, communities across Australia and the globe are demanding that governments take effective and meaningful climate change action. Our NSW community expects us, as the State's primary environmental regulator, to strengthen our climate change approach.

We are increasingly being called on to respond to the acute and chronic impacts of climate change, including more frequent, widespread and devastating severe weather events. More than ever before we are coordinating major clean-up and recovery programs to help significantly affected communities get back on their feet and deal with the impacts of these concurrent, compounding and consecutive disasters and significant pollution incidents.

We are shifting our focus into helping government, our regulated community (especially our licensees) and the community more broadly to minimise and manage the impacts of climate change (including exposure to climate risks) and be better prepared for the next series of climate-induced events and incidents.

In doing so, we call on businesses and communities across NSW to work with us as we strengthen our climate change approaches. How impacted the people of NSW are by the effects of climate change depends on how quickly emissions can be reduced and by how much, and how prepared the State is for the predicted climate changes.

We recognise the role we have to play in this whole-of-State effort. This policy document outlines our role in environmental regulation more broadly and how we are expanding our focus to more explicitly regulate the causes and consequences of climate change, within our regulatory remit.



2. Policy context

The causes and consequences of climate change in NSW

The build-up of greenhouse gases in the atmosphere since the beginning of the industrial age is causing our climate to change, with potentially serious consequences. These changes are now being acutely felt. Our NSW State of the Environment 2021 report (SoE 2021) describes the effects of greenhouse gas emissions on our climate, as well as how climate change already affects, or will affect, all aspects of our environment.

Key findings in our SoE 2021 report include:

- NSW greenhouse gas emissions in 2018–19 were 136.6 million tonnes (Mt) of carbon dioxide equivalent (CO₂-e), which is 17% lower than in 2005.
- Fuel production and combustion in NSW accounted for almost 80% of NSW emissions in 2018-19.
- The effects of climate change, especially increases in temperature, are already being felt and will become more intense in the future.
- In NSW, the mean temperature is about 1.4°C higher than in 1910, with 2018 and 2019 being the warmest years on record. Other observed changes include increased seasonal variability in rainfall and increases in some extreme weather events such as heatwaves
- The changes to climate are expected to become more severe over time. They include more extreme weather events, increasing coastal erosion and inundation, and greater impacts on infrastructure, human health and wellbeing.

Appendix A provides a summary of the causes and consequences of climate change in NSW, as described in our SoE 2021 report under the Climate and Air theme.

NSW Government responses to climate change

Combatting climate change requires a coordinated, multi-level government and agency response. The primary architecture governing this effort internationally is the **United Nations** Framework Convention on Climate Change and the **Paris Agreement**. Australia is a party to both initiatives.

The NSW Government has endorsed the Paris Agreement and is taking decisive and responsible action to reduce greenhouse gas emissions and secure the State's long-term economic prosperity and prepare NSW to manage the impacts of a changing climate.

Key documents - NSW framework and plan

The NSW Climate Change Policy Framework (OEH 2016) sets out the NSW Government's long-term goal to achieve net zero emissions by 2050 and to make NSW more resilient and adapted to a changing climate.

The Net Zero Plan Stage1: 2020–2030 (DPIE 2020) is the foundation for NSW's action on climate change. It outlines the NSW Government's plan to grow the economy, create jobs and reduce emissions over the next decade.

The Net Zero Plan Stage 1: 2020–2030 Implementation Update (DPIE 2021a) provides an update on the key achievements of the NSW Government under the Net Zero Plan and commits NSW to reducing emissions by 50% below 2005 levels by 2030.

The NSW Climate Change Adaptation Strategy (NSW Government 2022) sets out the NSW Government's strategic approach for managing the impacts of climate change on the State.

The NSW Waste and Sustainable Materials Strategy 2041 (DPIE 2021c) sets out how NSW will transition to a circular economy over the next 20 years, including key reforms for reducing greenhouse gas emissions from materials (embedded carbon) and the waste sector.

Further detail about the various NSW Government responses to climate change can be found in our SoE 2021 report, under the Climate and Air theme.

Key documents - EPA

We adopt and support the delivery of the NSW Government's Climate Change Policy Framework, including the:

- Net Zero Plan Stage 1: 2020–2030
- Net Zero Plan Stage 1: 2020–2030 Implementation Update
- Climate Change Adaptation Strategy
- Waste and Sustainable Materials Strategy.

Our climate change policy and the associated action plan (Climate Change Action Plan 2022-25) complement, support and build on the foundations set in those documents.

Our Strategic Plan 2021–24 identifies climate change and ecologically sustainable development as two of our key focus areas. We are committed to:

- taking action to reduce greenhouse gas emissions, mitigate climate change impacts and build greater environmental and community resilience aligned with the principles in the NSW Net Zero Plan
- championing sustainable approaches to mitigate the cumulative impacts of industry on local communities and environments.

Our climate change policy and the associated action plan help us deliver on these strategic commitments.

Our Regulatory Strategy 2021-24 outlines our purpose, guiding principles and approach to improving outcomes for the environment and human health. The strategy identifies climate change as one of our key regulatory challenges.

Our Regulatory Policy explains how we make decisions and identify appropriate action to respond to environmental or human health issues. Our climate change policy and the associated action plan are consistent with our Regulatory Policy. Appendix B outlines how we have considered our decision-making principles and relevant decision factors in developing our regulatory response to climate change.

Our Waste Delivery Plan outlines the actions we'll take to reduce the harmful impact of waste and drive behaviours that create a circular economy. including actions to deliver on the NSW Waste and Sustainable Materials Strategy 2041 (DPIE 2021c). Our Waste Delivery Plan includes actions to reduce carbon emissions and building waste sector resilience to climate change.

We prepare the NSW State of the Environment (SoE) report (EPA 2021d) every three years, to provide a snapshot in time of the status of the main environmental issues facing NSW. Our SoE 2021 report describes the causes and consequences of climate change in NSW and provides information about the NSW Government's response. (Appendix A of this policy document gives a summary of the causes and consequences of climate change).

The EPA's role

The EPA is the primary environmental regulator for NSW. As such, we are an active government partner on climate change policy, regulation and innovation.

We've always regulated some of the causes and consequences of climate change. For example, we regulate certain air emissions (e.g. methane, black carbon) that contribute to climate change, although we have focused mainly on how those emissions affect the environment and human health at a local and regional level. Under the State's emergency management arrangements we also play an important role in responding to the environmental impacts of climate-induced incidents, emergencies and disasters, taking part in response and recovery activities.

We're now expanding our focus, to more explicitly regulate the causes and consequences of climate change in NSW, within our regulatory remit. Our regulatory response to climate change is aligned with our broader approach to regulation (see **Box 1** and **Figure 1** below).

We regulate activities that release greenhouse gas emissions and are exposed to climaterelated risks. Figure 2 below provides an overview of the main sources of greenhouse gas emissions in NSW and a description of the relative amount covered by our regulatory remit. There are considerable opportunities to improve environmental and human health outcomes as we work with our regulated community to manage the causes and consequences of climate change. Our existing environmental legislation

and environment protection licences provide a robust framework through which we can support our regulated community to reduce greenhouse gas emissions and build greater resilience to the consequences of climate change.





Box 1: What is 'regulation' and how does the EPA regulate?

Our environment protection legislation establishes a strong basis for environmental regulation that is outcomes-focused, proactive and contains appropriate compliance mechanisms. We also address challenging issues with innovative and effective tools that combine enforcement and education, business and community partnerships, and economic mechanisms.

We're responsible for regulating a broad range of activities and the environmental or human health risks associated with (for instance):

- air emissions
- noise
- waste
- water discharges
- native forestry
- contaminated land
- dangerous goods
- hazardous materials
- chemicals
- radiation
- pesticides
- · coal seam gas.

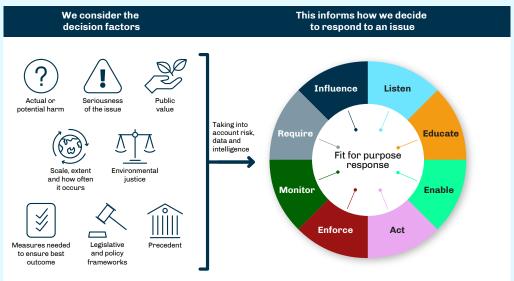
These responsibilities extend to regulating the causes and consequences of climate change, within our regulatory remit.

Many (but not all) of the activities we regulate have the potential to significantly impact the environment and so require an environment protection licence from the EPA to operate. Most of our licensees are environment protection licensees but we also issue other types of licences for occupations or activities as required by the legislation. In this policy document (and in our action plan), when we say 'licence', we mean 'environment protection licence' unless we say otherwise.

Regulation refers to the functions we perform to protect, enhance and restore the environment, reduce the risks to human health and prevent degradation of the environment. We have a balanced regulatory approach with eight elements: influence, listen, educate, enable, act, enforce, monitor, require (see Figure 1 below).

Our regulatory responses to environmental and human health issues are informed, fit for purpose and may result in more than one tool being used or action being taken. When choosing an appropriate regulatory response, we are guided by our decision-making principles. We also consider the relevant decision factors and take into account risk, data and intelligence (see Figure 1 below). By focusing on the greatest risks to human health and the environment, we apply a risk-based approach to regulation.

Figure 1. The EPA's regulatory response to environmental or human health issues



We work with our regulatory partners in complementary ways as co-regulators. These are other State and local government regulators including the Department of Planning and Environment, NSW Health, SafeWork NSW, Transport for NSW, the Department of Regional NSW and local councils.

Our regulated community is the people, businesses and industries we regulate under our environment protection legislation.

Source: EPA Regulatory Strategy (EPA 2021b) and EPA Regulatory Policy (EPA 2021a).

Figure 2. NSW greenhouse gas emissions (2018–19) and description of coverage by the EPA's regulatory remit

Sector *		Description	Total NSW emissions (% of total NSW emissions)**	Activities in this sector that are covered by the EPA's regulatory remit
55	Stationary energy (electricity generation)	Emissions from the combustion of fossil fuels for electricity generation	52 Mt (38%)	The EPA is responsible for regulating larger electricity generation activities that generate almost all of these emissions (e.g. coal-fired power stations). Local councils are generally responsible for regulating smaller activities, which typically have much lower emissions.
	Stationary energy (excluding electricity generation)	Emissions from on-site fossil fuel combustion (e.g. to run boilers and furnaces) used in manufacturing and other activities	15 Mt (11%)	The EPA is responsible for regulating larger industrial activities that generate most of these emissions (e.g. metallurgy). Local councils generally regulate smaller premises that use on-site stationary energy (e.g. some commercial, residential and smaller industrial premises).
	Transport	Includes fossil fuel combustion emissions for use in transport activities (e.g. on-road vehicles, rail, domestic aviation and domestic shipping)	28 Mt (20%)	While some operators that the EPA regulates use on-road vehicles or rail rolling stock, emissions from these account for a very small proportion of total transport sector emissions.
	Agriculture	Includes emissions of methane and nitrous oxide from livestock, crops, and agricultural and forest soils	16 Mt	Most agricultural emissions are methane emissions from ruminant animals (mainly cattle and sheep). These animals are predominantly kept on grazing land, which is not within the EPA's remit. Some of these emissions are from livestock-intensive activities (e.g. feedlots), which the EPA does regulate.
.>,>,>	Fugitive emissions	Emissions from the extraction and distribution of coal and natural gas	13 Mt	In NSW fugitive emissions are mainly from coal and gas extraction activities, which are almost all regulated by the EPA (e.g. coal mines).
	Industrial processes and product use	Emissions from chemical and/or physical transformation of materials, and consumption of synthetic greenhouse gases	13 Mt (9%)	The EPA is responsible for regulating larger industrial premises that generate most of these emissions (e.g. chemical production). Local councils are generally responsible for regulating smaller activities; however, these typically have much lower emissions.
	Waste	Emissions due to waste disposal, treatment and processing, including domestic and industrial wastewater	5 Mt (4%)	Almost all waste activities are regulated by the EPA (e.g. landfills, sewage treatment plants).
4	Land use, land-use change and forestry	Emissions due to land use, land-use change and forestry can either be an emission source (positive emissions) or sink (negative emissions)	-5 Mt (-3%)	EPA has a role in regulating some forestry activities (e.g. native forestry).

^{*}Sectors are based on the UNFCCC (United Nations Framework Convention on Climate Change) classification system.

^{**} Total greenhouse gas emissions in NSW (2018–19). Data from SoE 2021 (EPA 2021d), Spotlight figure 5, which uses data from (DISER 2021).

Our statutory objectives and duty and how they relate to climate change

Statutory objectives

Section 6 of the Protection of the Environment Administration Act 1991 (POEA Act) outlines the EPA's **statutory objectives** to protect the environment and human health. The key elements are:

- to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development (see Glossary)
- to reduce the risks to human health and prevent the degradation of the environment.

These objectives extend to protecting the environment and human health from climate change.

Statutory duty

Section 9 of the POEA Act imposes a statutory duty on the EPA to develop environmental quality objectives, guidelines and policies to ensure environment protection. This includes protection of the environment from climate change. This policy addresses our duty under section 9 of the POEA Act.

Purpose of this policy

The main purpose of this policy is to address both:

- our statutory objectives to protect, restore and enhance the quality of the environment in NSW, and to reduce the risks to human health and prevent the degradation of the environment, under section 6(1) of the POEA Act
- our statutory duty to develop environmental quality objectives, guidelines and policies to ensure environment protection from climate change, under section 9(1)(a) of the POEA Act.

Our climate change action plan

This policy will be delivered through an accompanying action plan (Climate Change Action Plan 2022–25). The plan sets out:

- the specific actions we'll take over the next three years
- the stronger regulatory action we'll consider over the medium to longer term, where an increased regulatory response may be required to support the NSW Government's climate change commitments and policies, including achieving net zero emissions in NSW by 2050.

This policy should be read in conjunction with the action plan.

Our objectives

Through this policy and our action plan, the EPA adopts, supports and seeks to complement the NSW Government's overarching climate change objectives. Those objectives are:

- to maximise the economic, social and environmental wellbeing of NSW in the context of a changing climate and current and emerging international and national policy settings and actions to address climate change
- to reduce greenhouse gas emissions in line with the NSW Government's net zero targets, which are
 - a 50% reduction in emissions by 2030, compared to 2005 levels
 - net zero emissions by 2050
- to make NSW more resilient and adapted to a changing climate.

Reporting and review

We'll report on our progress towards achieving the climate change outcomes we've set out in our Strategic Plan (EPA 2021c); for example, by reporting our progress against our climate change action plan in our EPA Annual Report.

We'll review our climate change policy and action plan in 2025, in line with the reporting cycles for our strategic planning and NSW State of the Environment report (EPA 2021d). However, we may adjust the action plan and policy earlier, if required.

3. Our policy: Strengthening our climate change response

Our general policies

- We adopt and support the delivery of the NSW Government's Climate Change Policy Framework (OEH 2016), including the:
 - Net Zero Plan Stage 1: 2020-2030 (DPIE 2020)
 - Net Zero Plan Stage 1: 2020–2030 Implementation Update (DPIE 2021a)
 - Climate Change Adaption Strategy (NSW Government 2022)
 - Waste and Sustainable Materials Strategy (DPIE 2021c).
- We complement the action our government partners are taking to address climate change, so that together we can achieve the best possible outcomes for the environment and human health.
- We identify how actions to address climate change can achieve broad benefits for the environment, human health and Aboriginal cultural values.
- We listen to our regulated community (including our environment protection licensees) and regulatory partners so that we understand the nature of the climate change actions they are already taking.
- Where support is needed, we work with our regulated community and regulatory partners to build their own understanding of climate change mitigation and adaptation, and their capacity to respond.
- We ensure our policies, actions and approaches are well-informed, fit for purpose, fair, transparent, and consistent with environmental justice principles.

Key pillars of our policy

- 1. Inform and plan: continually improving as we listen, provide support and report
- 2. Mitigate: reducing greenhouse gas emissions
- 3. Adapt: adapting and building resilience to a changing climate



Inform and plan: continually improving as we listen, provide support and report

Reliable, high-quality information and planning are critical for an effective climate change response. 'Information and planning' includes determining baselines, assessing risks, promoting good practices, measuring success, reporting in a transparent way. and improving in response to new evidence, technologies, government policies and stakeholder feedback.

- We identify emerging issues, trends, risks and opportunities related to climate change.
- We monitor and report on the state of the NSW environment (including the climate) and on the effectiveness of the NSW Government's climate change response, in our NSW State of the Environment reports.
- We consider climate change when we make our regulatory decisions, using the best available evidence and knowledge.
- We focus our regulatory effort by listening to our stakeholders, considering current NSW Government policies and strategies, analysing the best available data, and considering current and best practice.
- We consult, collaborate and partner with other NSW Government agencies and with other Australian jurisdictions on regulatory responses to climate change, to share knowledge and align approaches where appropriate.
- We listen to Aboriginal people, young people, scientists, our regulated community, businesses, local communities and other key stakeholders as we implement, review and update our climate change response.





Mitigate: reducing greenhouse gas emissions

Climate change mitigation is about taking action to reduce the rate of climate change. It includes actions that limit or prevent greenhouse gas emissions and activities that remove these gases from the atmosphere.

- We'll develop feasible, evidence-based greenhouse gas emission reduction targets for key industry sectors we license (or parts of those sectors), including appropriate pathways. These targets will help guide the EPA's regulatory efforts and contribute to the broader NSW net zero targets.
- We'll progressively place feasible, evidencebased greenhouse gas emission limits and other requirements on licences for key licensed industry sectors, once we have set appropriate targets and identified or developed guidance to support these requirements being set consistently.
- We support our regulatory partners to understand and consider greenhouse gas emissions and climate change mitigation as they make land-use planning decisions.
- We expect and support our regulated community, especially our licensees, to understand their greenhouse gas emissions and make fair and reasonable emission reductions to help NSW meet its net zero targets.
- We encourage and support the broader community and businesses in general to minimise greenhouse gas emissions and increase carbon sinks in NSW, by using education, behavioural change programs and other innovative approaches.
- We encourage and support our regulated community to engage with innovation programs and initiatives, including those of the NSW Government, to reduce emissions and transition to a decarbonised economy, identifying barriers to innovation.

We lead by example and are committed to becoming a carbon-neutral organisation by 2030.



Adapt: adapting and building resilience to a changing climate

Climate change adaptation is about adjusting to the actual or expected effects of climate change. Adaptation plays a key role in reducing exposure and vulnerability to climate change. Adaptation enables communities, business and the economy to plan for, and recover more quickly and easily from, the acute and chronic impacts of climate change.

- We support our regulatory partners to understand and consider climate change risks and adaptation as they make land-use planning decisions.
- We expect and support our regulated community to understand the impacts of climate change on their activities and to reduce their exposure to climate risks in a way that contributes to the State's goal of making NSW more resilient and adapted to a changing climate.
- We encourage and support the broader community and businesses in general to adapt and build resilience to the acute and chronic impacts of climate change in NSW, through education, behavioural change programs and other, innovative approaches.
- We assist NSW communities, in partnership with other agencies, to be more prepared for climate-change-related incidents, emergencies and disasters such as bushfires and floods, and help communities recover from these events when they occur.
- We assess and effectively manage the risk of climate change on our own operations.

4. We're committed to engaging with our stakeholders

The EPA is committed to listening to the people of NSW. Our stakeholders are expressing significant concern about climate change. We're committed to effective engagement as we implement and improve our climate change response.

Our regulated community, including our licensees

We're committed to working with our regulated community, especially our environment protection licensees ('licensees'), to help ensure they are actively contributing to the State's netzero targets and the goal of making NSW more resilient and adapted to a changing climate.

We recognise that many of our licensees are already forging ahead of mandated requirements, in response to expectations from shareholders, financial institutions, customers and the broader community. Equally, we acknowledge that many of our licensees are already disclosing and addressing their exposure to climate-related risks and investing resources to reduce greenhouse gas emissions, as this makes good business sense.

We'll listen to our licensees to understand their climate approaches, and provide support to enable change where this is needed.

The business case for action on climate change is compelling

Deloitte CxO Sustainability Report – Australia (2022)

In this report Deloitte found that '[m]ost executives believe the world is at a tipping point for responding to climate change' and '[t]he business case for change is compelling and broadly accepted – Australia stands to lose \$3.4 trillion by 2070 if we don't act fast, but could gain \$680 billion with rapid, focused action' (Deloitte 2022).

CDP report: Are companies ready for climate change? (2019)

In 2018, the Carbon Disclosure Project (CDP) analysed 500 of the world's biggest companies by market capitalisation (G500). The CDP found that 215 of these companies reported facing a collective \$970 billion in risks related to climate change, and that over half of these risks were likely to materialise in the next five years. Two hundred and twenty-five of these companies also reported climate-related opportunities representing potential financial impacts totalling over US\$2.1 trillion dollars (CDP 2019).

1. The CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.

Young people

We're committed to the principles of environmental justice and intergenerational equity in our climate change response. Young people (and generations to come) will be affected more by climate change than older Australians alive today. Young people also tend to report higher levels of concern and anxiety over climate change (Wu et al. 2020). We must give them opportunities to influence our actions on climate change.

Aboriginal people

Aboriginal people have been able to live effectively with changing climates over tens of thousands of years. Knowledge handed down from generation to generation has given Aboriginal people across Australia an intimate and detailed knowledge of their respective Country and its climate. This knowledge has also resulted in effective understanding and management of place (EPA 2021d).

Indigenous people across the globe are particularly vulnerable to climate change and disproportionately affected by it.

For Aboriginal people in NSW, the impacts of climate change are compounded by disconnection from Country and cultures; the loss of access to, and damage to, land, water, food, natural resources and culturally significant places; and socio-cultural challenges including poverty, land dispossession and housing.

We recognise that connection to Country is integral to Aboriginal people's wellbeing and cultural practices. As we build our climate change response, we're also building our capacity to engage with Aboriginal people and communities on this important issue, so that we can support Aboriginal perspectives about caring for Country in sustainable and culturally appropriate ways.

We aim to ensure Aboriginal knowledge and perspectives are taken and incorporated within our work and in important environmental issues, by building relationships with communities and working to maintain these relationships for the long term (EPA 2021c).

Consistent with the principles of environmental justice, we're committed to including Aboriginal people socially, culturally and economically in our climate change response, such as by incorporating Aboriginal ecological and climate knowledge. This will ensure benefits are shared and that cultural practices can continue.

Our key partner agencies on climate change

We'll continue to work closely with our regulatory partners (see **Glossary**) and NSW Government agencies more broadly on regulatory responses to climate change, including as we implement and improve our regulatory response and determine if stronger regulatory action is needed. This includes engaging with agencies with climate change expertise and those that conduct related research and support the businesses we regulate.

Our key partner agencies on climate change include the Office of Energy and Climate Change (NSW Treasury), the Department of Planning and Environment, Resilience NSW, the Department of Regional NSW, Transport for NSW and Investment NSW.

Other jurisdictions

In developing our climate change policy and action plan, we've considered the climate change approaches of other countries and other Australian jurisdictions. We've collaborated and will continue to collaborate with other jurisdictions as our approach evolves.



Glossary

Term	Definition
Acute climate change impacts or events	Acute climate change impacts are event-driven: they include increased severity of extreme weather events such as heatwaves, floods or storms. These impacts are also sometimes called acute events, hazards or shocks (DPIE 2021b; NSW Government 2022).
	See also: chronic climate change impacts.
Carbon sink or greenhouse gas sink	Carbon (or greenhouse gas) sink means a reservoir (natural or human, in soil, ocean, and plants) where a greenhouse gas, an aerosol or a precursor of a greenhouse gas is stored (IPCC 2018).
Chronic climate change impacts or stressors	Chronic climate change impacts result from longer-term and cumulative changes in weather patterns and climate-related trends. Chronic impacts are sometimes called stressors or slow-onset events. Examples include, sustained high temperatures, sustained low or high rainfall and sea level rise. Chronic impacts can lead to and amplify acute impacts (event-based) (DPIE 2021b; NSW Government 2022).
	See also: acute impacts of climate change.
Climate	Climate means the average weather that a location experiences over many years, even thousands of years. Key variables include temperature, rainfall and wind (CSIRO 2018).
Climate change	Climate change means changes in the climate (the average weather) that persist for an extended period of time, typically decades or longer. Climate change therefore occurs in addition to or on top of variability from year to year (CSIRO 2018).
Climate change adaptation	Climate change adaptation means adjustment to the actual or expected effects of climate change. Adaptation plays a key role in reducing exposure and vulnerability to climate change, and can be proactive, reactive, incremental or transformational (IPCC 2022a).
Climate change mitigation	Climate change mitigation means actions that reduce the rate of climate change. This includes actions that limit or prevent greenhouse gas emissions and activities that remove these gases from the atmosphere (IPCC 2022b).
Climate resilience	Climate resilience means the capacity of systems (including social, economic, engineered, natural and ecosystems) to cope with a hazardous event, trend or disturbance. Coping means responding in ways that maintain the essential function, identity and structure of a system (as well as biodiversity in the case of ecosystems) (IPCC 2022a).
Climate risk or climate change risk or climate- related risks	Climate risk is when a hazard creates the potential for negative consequences due to the exposure and vulnerability of human or ecological systems. These consequences can include impacts on lives, livelihoods, health and wellbeing, economic, sociocultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species (IPCC 2021c).

Term	Definition
Environment protection licence ('licence') and environment protection licensee ('licensee')	Environment protection licences ('licences') are a central means to control the localised, cumulative and acute impacts of pollution in NSW. The <i>Protection of the Environment Operations Act 1997</i> (POEO Act) contains a list of activities that require a licence (in Schedule 1 of the POEO Act). Broadly, they are activities with potentially significant environmental impacts. An activity listed in Schedule 1 is referred to as a 'scheduled activity'. The EPA issues these licences and is the appropriate regulatory authority (ARA) for all scheduled activities in NSW.
Innovation	Innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (COAG 2017).
Natural resources	Natural resources are the naturally occurring assets that provide use benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use. They are subdivided into four categories: mineral and energy resources, soil resources, water resources and biological resources (UN 1997).
Net zero emissions	Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period (IPCC 2018).
Net zero targets (NSW Government)	The NSW Government's net zero targets are: • a 50% reduction in greenhouse gas emissions by 2030, compared to 2005 levels and • net zero greenhouse gas emissions by 2050. (DPIE 2021a)
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act is the key piece of environment protection legislation administered by the EPA. The object of the Act is to achieve the protection, restoration and enhancement of the quality of the NSW environment. The activities listed in Schedule 1 of the Act (broadly, activities with potentially significant environmental impacts) require an environment protection licence from the EPA. We're also responsible for a range of other NSW environment protection legislation.
Regulation	Regulation means the functions performed by the EPA to protect, enhance and restore the environment, reduce the risks to human health and prevent degradation of the environment. Regulation includes all the elements of the EPA's regulatory approach (see below) (EPA 2021a).

including the Department of Planning and the Environment, NSW Health, SafeWork NSW, Transport for NSW, Department of Regional NSW and local councils. We work with our regulatory partners in complementary ways as co-regulators. We also influence their activities under environment protection legislation so they are informed by EPA expertise (EPA 2021b).



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Summary of the causes and consequences Appendix A: of climate change in NSW, from the EPA's NSW State of the Environment 2021

The EPA's NSW State of the Environment 2021 (SoE 2021) describes the causes and consequences of climate change in NSW. The Climate and Air theme describes the effects of greenhouse gas emissions on our climate, as well as how climate change already affects, or will affect, all aspects of our environment. This Appendix provides a summary of the key information contained in the Climate and Air theme of the 2021 report.

About the SoF

NSW State of the Environment 2021 (SoE 2021), provides a snapshot in time of the status of the main environmental issues facing NSW. The SoE report is published every three years and brings together information and data from across all NSW Government agencies with responsibility for managing the State's environmental assets.

The EPA is responsible for preparing SoE reports under section 10 of the Protection of the Environment Administration Act 1991. The 2021 report was completed in December 2021 and has been tabled in Parliament. The next SoE report will be compiled in 2024.

The EPA prepares SoE reports every three vears. The 2021 report has been prepared as an interactive, online resource as well as a downloadable PDF. This means that elements of the SoE can be updated as new information becomes available. For the most up-to-date information, please refer to the EPA's SoE webpage.

Greenhouse gas emissions

The levels and trends in greenhouse gas emissions in NSW are described in the Greenhouse Gas Emissions topic of our 2021 SoE report. In addition, the Net Zero Plan Stage 1: 2020–2030 topic provides an update on the status of the various initiatives under the NSW Government's Net Zero Plan and outlines how key sectors are being transformed and tracks their performance across the plan's priority areas. The following text is a brief summary of these topics.

Burning and extracting fossil fuels and certain chemical processes release greenhouse gases which build up in the atmosphere, causing extra heat to be trapped by the atmosphere and resulting in global warming. Human activities are estimated to account for global warming of between 0.8°C and 1.3°C above pre-industrial levels. Unless deep reductions in greenhouse gas emissions occur, global warming will exceed 1.5-2°C during the 21st century (IPCC 2021a).

Managing the amount of greenhouse gas emissions released and sequestered will be vital to the ongoing health of our State's ecosystems and viability of key economic sectors.

Although generating and using energy from nonrenewable sources in NSW continues to produce greenhouse gas emissions, their levels are decreasing. With current policies implemented, emissions by 2030 are projected to be 47-52% lower than 2005 levels.

In 2018–19, NSW recorded net greenhouse gas emissions of 136.6 Mt of CO₂-e. Emissions peaked in 2007 and were 17% lower in 2019 than in 2005. Emissions have declined across most economic sectors, with the exception of transport, which has undergone almost uninterrupted growth in emissions.

In financial year 2018-19, NSW net greenhouse gas emissions were 136.6 Mt CO₂-e, which was 17.2% lower than 2005 levels. Using the estimation and reporting rules of the IPCC and the UNFCCC, the State's emissions predominantly arise from the energy sector, which incorporates stationary energy and transport emissions, followed by agriculture, industrial processes and waste (see Figure A1 below).

4.8 Mt CO 2-e 12.8 Mt CO 2-e 12.7 Mt CO 2-e 51.9 Mt CO 2-e 16.3 Mt CO 2-e 27.6 Mt CO 2-e 15.2 Mt CO 2-e Stationary energy (electricity generation): 38% Fugitive emissions: 9% Stationary energy (excluding electricity): 11% Industrial processes and product use: 9% Transport: 20% Waste: 4% Land-use, land use change and forestry: -3% Agriculture: 12%

Figure A1. NSW greenhouse gas emissions by UNFCCC key categories 2018–19

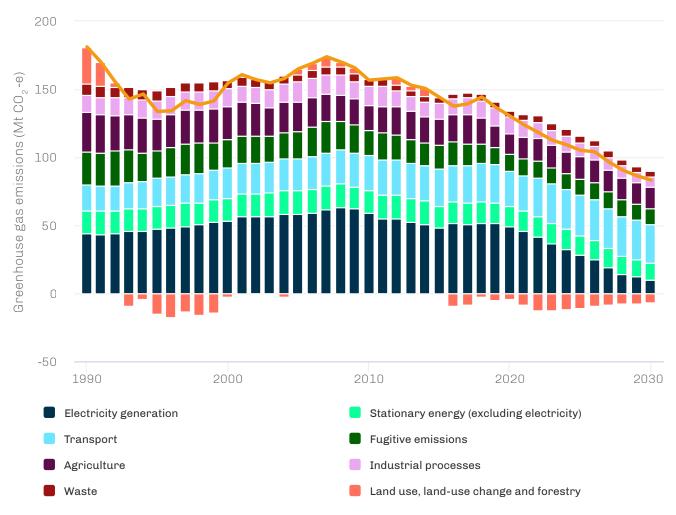
Source figure: SoE 2021, Spotlight figure 5, which uses data from (DISER 2021)

Fuel production and combustion in NSW accounted for almost 80% of NSW emissions in 2018–19. Of this, coal production and domestic coal combustion is the largest contributor to NSW emissions by fuel type (see Figure 5.4 in SoE 2021).

Emissions in NSW peaked in 2006-07 and have since fallen mainly due to reductions in emissions from stationary energy (mostly electricity) and the land sector (see Figure A2 below).

The NSW Government has an objective to achieve a 50% reduction in emissions on 2005 levels by 2030 and to reach net zero emissions by 2050. The Net Zero Plan Stage 1: 2020–2030 is the foundation for NSW action on climate change. Under current policy settings, NSW emissions in 2030 are projected to fall to 78.9-87.6 million tonnes CO_o-e, a 47-52% reduction from 2005 levels. This will put NSW on the path to achieving net zero emissions with further action and investment in decarbonisation initiatives needed to reach net zero emissions by 2050.

Figure A2. Net NSW greenhouse gas emissions as inventoried (2005–19) and projected (2020–30) by **UNFCCC** key categories



Source: Figure 5.2, SoE 2021

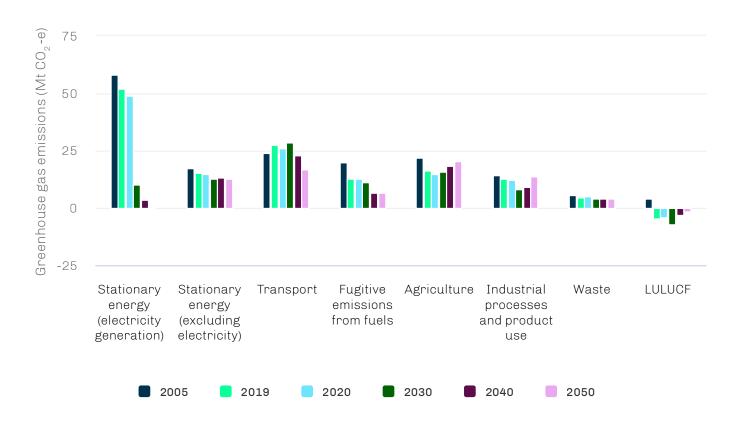
Notes

1. LULUCF = Land use, land-use change and forestry

2. Emissions to 2019 are from (DISER 2021). Emission projections for 2020-30 are based on NSW Department of Planning, Industry and Environment modelling and analysis.

Electricity generation emissions are forecast to reduce significantly as a result of an increased share of renewable energy as the State's coal-fired power stations are retired. Projections indicate that action beyond current policies will be needed to address emissions from most sectors, including heavy-duty vehicles, agriculture, stationary energy, industry, mining, aviation and land clearing (see Figure A3 below).

Figure A3. Inventoried and projected NSW emissions by sector with current Net Zero Plan Stage 1 policies implemented, 2005-50 (based on UNFCCC key categories)



Source: Figure 23.6, 2021 SoE report

Note: LULUCF = Land use, land-use change and forestry

Climate change impacts

The Climate Change topic of our 2021 SoE report describes the changes in current temperature and weather patterns in NSW, the future projections of change, and the impacts of these changes on the environment more generally. The following text is a brief summary of this topic.

The climate of NSW is changing due to global warming. The effects of climate change on the people and environment of NSW are expected to become more pronounced as the climate continues to change over this century.

Emissions of CO₂ and other greenhouse gases from human activity accumulate in the atmosphere, trapping heat and leading to global warming. Without substantial, concerted action, climate change poses a major threat to humanity and most living systems on Earth. While impacts are being observed now, they will become more pronounced over time. Extreme events such as extreme heat, dangerous fire weather and heatwaves are projected to increase in duration, magnitude and frequency with impacts on communities and infrastructure.

Globally, warming has increased by approximately 1.1°C since industrialisation (1850–1900). Based on current trajectories, global temperature will likely increase by approximately 1.5°C by around 2030. Exceeding this target will result in more serious and

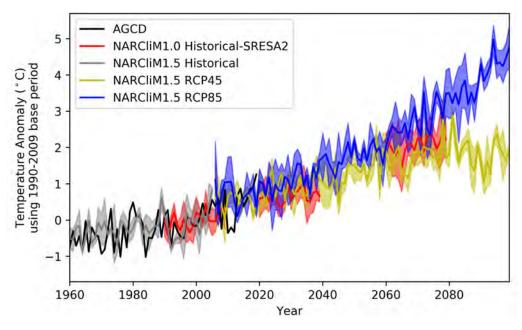
frequent heat extremes and bushfires, and fewer cold extremes.

In NSW the mean temperature is about 1.4°C higher than in 1910, with 2018 and 2019 being the warmest years on record. Mean temperatures during 2020 in NSW were generally above average, with the exception of the State's south west. Black Summer fires peaked in December 2019-January 2020, causing widespread destruction and prolonged poor air quality in Sydney and Canberra.

Other observed changes include increased seasonal variability in rainfall and increases in some extreme weather events such as heatwaves.

The changes to climate are expected to become more severe over time. Regional climate projections over NSW suggest that by 2070 mean temperature will have risen by a further 2.1°C relative to a 1990–2009 baseline period, with much larger increases in extreme temperatures (see Figure A4 below).

Figure A4. Observed and projected changes in annual mean temperatures for NSW and the ACT



Source: Spotlight figure 21, SoE 2021

Since the late 20th century, sea surface temperatures (SST) in the western Tasman Sea have increased by 0.2–0.5°C per decade. For the Sydney area, SST have increased by 0.2°C per decade since 1945.

The rate of sea level rise has nearly doubled. From an average rate of 1.7 mm per year during most of the 20th century, sea levels at the Port Kembla Baseline Sea Level Monitoring Station now indicate an average 3.4 mm increase per year since 1991. Globally, sea levels are expected to rise by a half to one metre [above the reference point of the year 2000] by the end of the 21st century.

The future effects of climate change will be extensive, including more extreme weather events, increasing coastal erosion and inundation and greater impacts on infrastructure, human health and wellbeing. The survival of many species and ecosystems, water availability, and the productivity of some agricultural systems will be affected.

Effective action to counteract the effects of climate change depends on concerted action globally. The extent of climate change impacts will be determined by mitigation and adaptation actions and the time taken to reduce greenhouse gas emissions.



Appendix B:

Principles and factors guiding our response to climate change

Table B1. The EPA's decision-making principles and how they are guiding our regulatory response to climate change

Principle	Our regulatory response to climate change
Responsive	We'll respond to the threat of climate change, to prevent and reduce harm to the environment and human health. We'll implement our climate change response in a practical, timely and efficient manner. We'll respond quickly to new information.
Prevention- focused	We'll use a mix of regulatory tools as part of our climate change response and play our part to help prevent climate change and to reduce exposure to the risks and impacts associated with a changing climate.
Effective	We'll apply the right tool at the right time and take appropriate action to address climate change, in a way that complements the NSW Climate Change Policy Framework. We'll follow through on our commitments and make adjustment where needed.
Targeted	We'll focus our climate change response where we can achieve the best environmental and human health outcomes.
Informed and evidence-based	We'll use an evidence-based approach to developing our climate change response, informed by sound science, EPA priorities, an assessment of risk, data, intelligence and insights, Aboriginal knowledge, behavioural insights, and information received from the community, interest groups, industry and other regulators.
Firm but fair	We'll consider the attitude and behaviour of our regulated community, including voluntary measures already taken to mitigate and adapt to climate change. We'll balance environmental, social and economic considerations and will not impose unreasonable costs on business. We'll implement new requirements in a predictable, and where necessary, an appropriately staged way, so our regulated community has time to adjust.
Consistent and coherent	We'll apply our climate change response to our regulated community in a consistent and coherent manner. We'll consider individual circumstances, where appropriate.
Transparent	We'll provide clear information about our climate change response to our regulated community and the broader community and provide access to information about environmental performance.
Ethical and accountable	We'll act in accordance with the EPA Code of Ethics and Conduct, the decision-making principles and decision factors in our EPA Regulatory Policy, and other relevant policies and guidance. We'll review this policy and take responsibility for our actions. We'll measure and report on the performance of our climate change response.
Collaborative	We'll ensure our climate change response complements other initiatives that are part of the NSW Climate Change Policy Framework. We'll partner with Aboriginal people, young people and stakeholders including our regulated community, our regulatory partners, local communities and others to enhance mutual understanding and deliver the best environmental and human health outcomes.

Note: The EPA's decision-making principles are outlined in the EPA Regulatory Policy (EPA 2021a).

Factor	Our regulatory response to climate change
Actual or potential harm to the environment or human health Seriousness of the environmental or human health issue	We've considered the actual and potential impacts of climate change on human health and the environment of NSW, and the seriousness of the issue. We recognise that without substantial, concerted action, climate change poses a major threat to humanity and most living systems on Earth. While impacts are being observed now, they will become more pronounced over time. Extreme events such as extreme heat, dangerous fire weather and heatwaves are projected to increase in duration, magnitude and frequency with impacts on communities and infrastructure (EPA 2021d).
Scale and extent of the environmental or human health issue and how often it occurs	We've considered the widespread, persistent, worsening and cumulative impact of climate change on the environment and communities of NSW.
Measures needed to ensure best outcome	We've considered the measures to bring about the best environmental and human health outcomes, recognising that combatting climate change needs a coordinated, multi-government response. Our regulatory response complements, supports and builds on international, national and NSW climate change responses. It will also evolve, and we will actively look to improve and mature it over time.
Public value	 We're committed to delivering public value and acting in the public interest. We've considered public interest and well-being to ensure we deliver outcomes that are of value to the people of NSW. Our regulatory response to climate change will: reduce harm to the environment and human health respond to community expectations recognise connection to place and Country – land, waters and culture – of Aboriginal people seek to minimise the impact of our actions on the community (e.g. minimising disruption to – or cost of – essential services such as power supply or sewage services).
Legislative and policy frameworks	We've considered our statutory objectives and duty to protect the environment and human health from climate change. We've considered our role to complement, support and build on the foundations set in the NSW Climate Change Policy Framework, Net Zero Plan Stage 1, Net Zero Implementation Update and Climate Change Adaptation Strategy.
Precedent	We've considered the climate change responses of environmental regulators in other countries and other Australian jurisdictions. We've ensured we have aligned our responses, where appropriate. We'll continue to collaborate with other regulators as our approach evolves.
Environmental justice Note: The EPA's decision to	We've considered environmental justice principles, including the impact of climate change on disadvantaged and vulnerable communities and people (now and into the future). We'll ensure our climate actions are fair and, where appropriate, allow for meaningful involvement, regardless of age, ethnic background, socio-economic background and status, and seek to achieve intergenerational equity. factors are outlined in the <i>EPA Regulatory Policy</i> (EPA 2021a).

