Victoria’s Climate Change Framework
Aboriginal acknowledgement

The Victorian Government proudly acknowledges Victoria’s Aboriginal community and their rich culture and pays respect to their Elders past and present. We acknowledge Aboriginal people as Australia’s first peoples and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

Consultation

Extensive consultation has underpinned development of Victoria’s Climate Change Framework. A broad range of organisations and individuals contributed their views and ideas including:

- 1,659 public submissions to the review of the Climate Change Act 2010
- more than 250 people who participated in nine community conversations on climate change
- more than 100 people who participated in a climate change leadership forum in Melbourne
- more than 300 people who attended and contributed to five climate change think tanks across regional Victoria
- more than 150 people who attended and contributed to 15 sector-specific round tables
- twenty-one individuals and organisations that provided input online.

We would like to acknowledge the contribution of members of Victoria’s Climate Change Advisory Panel who provided advice on Victoria’s climate change policy. The Panel comprised:

- Anna Skarbek, CEO, ClimateWorks Australia
- Colleen Gates, Councillor, Hobsons Bay Council
- Emma King, CEO, Victorian Council of Social Service
- Eugene Kayak, Deputy Chair and Victorian representative, Doctors for the Environment Australia
- Kane Thornton, CEO, Clean Energy Council
- Luke Hilakari, Secretary, Victorian Trades Hall Council
- Mark Wakeham, CEO, Environment Victoria
- Tim Piper, Victorian Director, Australian Industry Group
- Uncle Jim Berg, Council Member, Victorian Aboriginal Heritage Council
- Nellie Flagg, Council Member, Victorian Aboriginal Heritage Council
A positive, orderly and just transition for all Victorians

Climate change poses one of the biggest threats to our future. How we respond will determine the future wellbeing and prosperity of Victoria. We cannot wait for others to take action on climate change; the science is very clear that we must start to reduce our emissions and prepare for the future now. The Andrews Labor Government will deliver strong and lasting action on climate change for the Victorian community.

Victoria’s Climate Change Framework is our long-term plan to 2050. It makes the connections between climate change and the health of our economy and our communities. The new Climate Change Act is the cornerstone of our Framework, it will drive action across Victoria through to 2050.

The transition to a clean energy future is underway. Other countries are seizing the opportunities created by new technologies and changing consumer preferences, and preparing for the inevitable impacts of climate change.

We are legislating our emissions reduction target of net zero by 2050 and to begin, will reduce emissions to 15-20 per cent below 2005 levels by 2020. These targets will guide our decision-making to ensure our economy thrives as the global community also steps up climate action. A well-managed transition will grow our industries and support our communities while ensuring a secure, affordable and sustainable energy supply.

We are also implementing policies to get this transition underway. We have set renewable energy targets of 25 per cent by 2020 and 40 per cent by 2025 and strengthened the Victorian Energy Efficiency Target scheme. We released the first round of pledges under TAKE2 alongside this Framework. These documents set out the steps for our transition to clean energy and how the Government is ensuring energy security and affordability for all Victorians.

While reducing emissions will go some way to combatting climate change, we need to plan for the already unavoidable impacts of climate change. This Framework and Victoria’s Climate Change Adaptation Plan 2017-2020 will set us in the right direction to protect our communities and empower them to make informed decisions about their futures.

We are planning now to support substantial change through the transition in a way that is fair to industry and communities, minimises cost and risk, realises opportunities and shares costs equitably.

The opportunities are extensive. We’re seeing global shifts to new technology and industries. Community demands for clean energy and products are increasing. Victoria has significant resource endowments and industry capabilities, including education and professional services, which make us well placed for this transition.

The implementation a new Climate Change Act and the growth of the TAKE2 pledging program will help government and the broader Victorian community to increasingly consider climate change action, and to embed it in decision-making.

Working together, we can ensure Victoria is climate ready and prosperous.

The Hon. Daniel Andrews MP
Premier of Victoria

The Hon. Lily D’Ambrosio MP
Minister for Energy, Environment and Climate Change
Minister for Suburban Development
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In 2015 the international community committed to keep the rise in global temperatures to well below 2°C above preindustrial levels, and to work towards limiting the rise to 1.5°C. Global greenhouse gas emissions will need to reach net zero in the second half of the century to achieve this commitment.

Victorians want to play their part in global efforts to tackle climate change.

Decisive local and global climate change action will safeguard Victoria’s economic future and maintain our competitive edge. By taking action now we will join other world leaders that are successfully reducing their emissions while also driving economic growth. The transition will deliver jobs and investment in low emissions technologies, goods and services and safeguard our status as a liveable and prosperous place. We will ensure all Victorians benefit from the transition and that we have a secure, affordable and sustainable energy supply.

By sharing our experience and the technologies and services that we develop as Victoria transitions to a net zero emissions economy and society, we will support other countries around the world to reduce their emissions, and create new opportunities for economic and jobs growth.

If Victoria is to benefit from the global transition to a net zero emissions future, we need to invest and develop low emissions services, industries and technologies now. We cannot wait for the Australian Government to take strong action.

Climate change is already happening and we are all familiar with the impacts here in Victoria. Globally we have already locked in a level of climate change. We will collectively need to live with these unavoidable impacts. We know that any additional warming, even by half a degree, will adversely impact Victoria’s economy, environment, community health and cultural heritage.

By adapting to climate change we can minimise the risks and realise the economic benefits of being climate ready, including innovative new services and technologies. For more information on the impacts of climate change see the section in Part 3 on climate change in Victoria.
Purpose of Victoria’s Climate Change Framework

Climate change is one of the most critical issues facing Victoria. Our Government will maximise the opportunities while minimising the adverse impacts of climate change for our state.

We are taking action on climate change and demonstrating our leadership.

Victoria’s Climate Change Framework sets out:
- our vision for Victoria in 2050 and our approach to achieving it
- the steps the Government is taking in the period to 2020 to commence the transition (Part 1)
- how the proposed Climate Change Act will drive action to 2050 (Part 2)
- the transition required across the economy – and some of the challenges to be addressed – to 2050 (Part 3).

Now

• +1°C warming above pre-industrial levels
• 119 Mt greenhouse gas emissions

Laying the foundations - Now to 2020

• Updating the Climate Change Act
• Set Victoria’s 2050 net zero emissions reduction target
• Set Victoria’s 2020 target of 15-20% below 2005 levels
• TAKE2 Victoria’s climate change pledge program
• Renewable Energy Roadmap including 25% renewable energy by 2020
• Energy Efficiency and Productivity Statement and strengthened VEET scheme
• New Energy Technologies Sector Strategy
• Victoria’s Climate Change Adaptation Plan 2017 – 2020
• Mainstreaming climate change into government policy

Increase energy efficiency and productivity
Move to a clean electricity supply including 40% renewable energy by 2025
Electrify our economy and switch to clean fuels
Reduce non-energy emissions and increase carbon storage
Build our resilience to climate change

2050

• Resilient to +1.5°C or more warming above pre-industrial levels
• Net zero greenhouse gas emissions

Accelerating the transition to a net zero emissions and climate-resilient Victoria

Implementing the proposed new Climate Change Act

Five-yearly:
- Interim Targets
- Pledges
- Climate Change Strategies
- Adaptation Action Plans

Embedding climate change (emissions reduction and adaptation) in government decision-making

Monitoring and reporting progress
Our Environment
We value our natural environment and the ecosystem services it provides. All our actions sustain and enhance our natural environment and ensure that our lands, waters and seas are resilient to climate change. Our cities and towns mimic natural catchments, with greener streets, vibrant and well-used open spaces. We have reduced fire risk through education, collaborative urban planning and strategic management of our natural places.

Our Economy
We have an advanced, innovative economy that captures the growth and job opportunities presented by climate change, technology and innovative industries. Renewable, clean energy powers Victoria, with resilient infrastructure and a built environment that supports zero carbon living for all Victorians.

Our Society
We are healthy, connected and resilient. Communities are prospering from the economic opportunities provided by the transition and contributing to Victoria’s net zero emissions status. Vulnerable Victorians are supported in adapting to the continuing changes in climate and extreme weather events.

Victoria in 2050 – Climate ready and prosperous
Our approach to climate change action

To achieve our vision for Victoria in 2050, we need to reduce our emissions and prepare for the impacts of climate change. The most effective way of doing this is to all work together, to share our knowledge and experience, and to form partnerships to drive further action.

Driving emissions reductions

There are many ways we can reduce emissions. In Victoria, four pillars underpin our transition to net zero emissions\(^1\) while maintaining economic prosperity:

- **Increase energy efficiency and productivity** across the economy, including in our homes, offices, industry and transport.
- **Move to a clean electricity supply** by increasing renewable energy generation.
- **Electrify our economy and switch to clean fuels** by increasing the use of electricity to power our homes, cars and public transport and using biofuels and gas in freight, air travel and industry.
- **Reduce non-energy emissions and increase carbon storage** through industrial processes improvements and improving carbon storage in trees, plants and soil.

The first three pillars focus on reducing our energy emissions, which account for over 80 per cent of Victoria’s emissions, while the fourth pillar is about reducing non-energy emissions from activities such as landfilling waste and fertiliser use. These four pillars will guide Victorian Government policies and programs, including our TAKE2 pledge program.

The pillars are interdependent – technologies and innovations within one will help to unlock emissions reduction actions in another. For example, significant emissions reductions will be achieved by clean electricity powering our cars, buses, and taxis. However, shifting to electric vehicles too quickly – before we have clean electricity – could increase emissions from fossil fuels. In addition, carbon capture and storage (CCS) technology could support emissions reduction action across multiple pillars including from industrial processes such as gas processing, refineries and chemical manufacturing.

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\(^1\) The four pillars were identified as part of the global deep decarbonisation pathways project led by the Institute for Sustainable Development and International Relations and the Sustainable Development Solutions Network.
The four pillars for emissions reduction

1. **Increase our energy efficiency and productivity**
   - Decrease the amount of energy required to run our homes and fuel our economy and produce more using less energy.

2. **Move to a clean electricity supply**
   - Increase electricity generation from zero emission sources and eliminate dependence on fossil fuels.

3. **Electrify our economy and switch to clean fuels**
   - Shift from fossil fuel energy for activities such as transport and heating to the use of electricity and switch from gas, petrol, diesel and other fossil fuels to clean energy.

4. **Reduce non-energy emissions and increase carbon storage**
   - Change industrial processes and increase carbon storage in our natural environment.
Preparing for continuing changes in climate

Reducing global greenhouse gas emissions is critical if the goals of the Paris Agreement are to be met. However, even if average global warming is kept to well below 2°C, significant impacts will still occur. Adaptation will be critical to achieving our 2050 vision, and includes the priorities below.

Increase our knowledge and understanding of climate change impacts

Understanding the potential impacts of climate change for Victoria based on different future scenarios is essential to making informed decisions. The Victorian Government plays an essential role in providing up-to-date and accessible climate change information and guidance to local government, business and the community.

Build our adaptive capacity and resilience to ongoing climate change

Victorians will need to be innovative and learn from others to build our capacity to adapt to continuing change. Using the data, information and guidance provided by government, individuals, businesses and communities are able to take responsibility for understanding and taking action to address climate change risks affecting them. The government can also provide extra support to help people adapt, especially for vulnerable communities.

Ensure that government decision-making accounts for climate change impacts and adaptation needs

The Victorian Government is responsible for managing climate change risks to its own assets, services and operations. The government will also need to embed climate change considerations into policy and regulation decisions concerning industry, community services and infrastructure.

Grow the connectivity between businesses, local government and community groups, so there is more collaboration for more effective adaptation responses

The Victorian Government can help by leading and coordinating sector-wide and state-wide action. We can help different people and organisations work together to understand and address challenges.
The Subnational Global Climate Leadership Memorandum of Understanding, the Under2 MOU, brings together states and regions willing to commit to reducing their greenhouse gas emissions. The MOU has been signed or endorsed by 165 jurisdictions from 33 countries.
Working together

Achieving the vision will require all Victorians – the State and local governments, business and the community – to work together. Addressing climate change requires top-down and bottom-up action, and the sharing of knowledge and solutions by everyone.

Climate Change... “It’s a collective endeavour, it’s collective accountability”

Christine Lagarde, Managing Director, IMF

Our Government is partnering with other governments, business and the community to share information and skills, leverage funding, and create economies of scale.

To realise the full potential of these partnerships, it is important that we engage with Victorians and build their capability to respond to climate change.

Victoria has joined the Under2 MOU.

Local Government

We will strengthen our partnership with local government to share knowledge and experience and ensure local government has the capacity to respond effectively to climate change.

Community

We will actively support locally-driven action, engage and empower communities through policies and programs so that well-informed decisions are made at the local level.

Business

We will work with industries and businesses to harness the opportunities the transition to low emissions technology, products and services presents for Victoria.

Federal Government

We will advocate for strong, durable action during the national review of climate change policy in 2017 and will work with the Commonwealth to establish robust and efficient policies in areas including energy, building performance and transport.

International

We will collaborate with other sub-national jurisdictions to enhance our capacity to respond to climate change and to promote our knowledge and expertise internationally. We will remain an active member of the Climate Group and the Under2 MOU.
Our Government is taking strong action on climate change. We are putting in place a world-leading Climate Change Act to ensure our economy, environment and way of living is resilient and prosperous in the face of climate change. However, we are not waiting for the legislation to take action. We are starting the transition to a net zero emissions and climate-resilient Victoria now. The following diagram provides an overview of the actions we have already taken and the steps we will take between now and 2020.
Joined the Under2 MOU

Set Victoria’s 2020 target of 15-20% below 2005 levels

Seek independent advice on Victoria’s 2021-25 and 2026-30 interim targets

$20 million New Energy Jobs Fund (Round 2)

Climate Change Framework to 2050

Victoria’s Climate Change Adaptation Plan 2017-2020

State-wide vulnerability assessment

Mainstreaming climate change into government legislation, policy and programs

Review of Schedule 1 of the Climate Change Act

Announce Victoria’s 2021-25 and 2026-30 interim targets

Annual greenhouse gas reporting commences

1st Government pledges made under the proposed new Climate Change Act

1st Climate Change Strategy followed by Adaptation Action Plans in 2021

Climate Science Report – update on current climate change science and implications for Victoria
Key steps to 2020

**2050 net zero emissions target**

In June 2016, we set Victoria’s 2050 target of net zero emissions. This target puts us amongst the world’s leading jurisdictions and demonstrates that we are serious about playing our part in keeping warming below 2°C.

**2020 emissions reduction target**

To ensure that strong action on climate change starts now, the Government has set a 2020 emissions reduction target of 15-20 per cent below 2005 levels. TAKE2 pledges outline how we are reducing Victoria’s emissions to achieve this target. This target applies to all emissions in Victoria – across all sectors of the economy.

2020 target = 15% - 20% below 2005 levels

Reduce greenhouse gas emissions and increase carbon sequestration in Victoria as far as possible

Any remaining emissions will be offset from outside Victoria

= Net Zero Emissions by 2050
TAKE2 – Climate Change Pledges 2016

In June 2016 we launched TAKE2 – Victoria’s Climate Change Pledge program.

TAKE2 is the first state government-led climate change pledging program in Australia, and one of the most comprehensive climate change pledging programs in the world. Actions pledged through TAKE2 will contribute to achieving our 2020 target, and continue to reduce emissions beyond 2020.

Our Government has pledged to reduce our reported emissions from government operations by 30 per cent below 2015 levels by 2020. Learn more about our emissions reduction actions in TAKE2 – Acting now on Climate Change.

Through TAKE2 we are building awareness and momentum on climate change action across Victoria in line with the four pillars for achieving net zero emissions. You can take action by making your TAKE2 pledge – www.take2.vic.gov.au

Case Study: The City of Melbourne

The City of Melbourne has developed an ambitious plan to achieve net zero emissions by 2020 with the goal of becoming one of the world’s most sustainable cities.

In addition to the overall target, the City has established specific emissions reduction targets for businesses, government and services:

- Council operations and leadership: reduce greenhouse gas emissions by 10 per cent by 2018 (baseline year 2010-11).
- Commercial buildings and industry: increase the average NABERS3, or equivalent, rating of commercial buildings to four by 2018.
- Stationary energy supply: ensure 25 per cent of electricity from renewable sources by 2018.
- Transport and freight: increase the percentage of all trips using low emissions transport from 51 per cent in 2009 to 60 per cent in 2018.
- Waste management: decrease waste to landfill per resident by 5 per cent by 2018.

3 NABERS is a national rating system that measures the energy efficiency, water usage, waste management and indoor environment quality of a building or tenancy and its impact on the environment.
Victoria’s energy policy

An energy market transformation is underway. New energy technologies, distributed generation and renewable energy are changing the way we produce and consume energy. The Andrews Labor Government wants to position Victoria to take advantage of these opportunities.

In 2015, we strengthened the Victorian Energy Efficiency Target (VEET) scheme, released a Renewable Energy Roadmap and an Energy Efficiency and Productivity Statement. In 2016 we took significant steps by setting renewable energy targets of 25 per cent by 2020 and 40 per cent by 2025; released a New Energy Technologies Sector Strategy; and established the $20 million New Energy Jobs Fund. We also integrated responsibility for climate change and energy policy under a single Ministerial portfolio.

The actions we are taking will drive investment and jobs in Victoria. The VEET scheme supports more than 2,000 jobs across the state, and has helped thousands of businesses and households to reduce their energy bills.

Victoria has set ambitious but achievable renewable energy targets that will deliver up to 5,400MW of renewable energy projects. This would create $9 billion in new capital expenditure, contribute $2.5 billion in direct economic activity, and an additional 11,000 Victorian jobs.

The New Energy Technologies Sector Strategy is driving technology development in Victoria, including renewable energy, innovations that make the state’s energy system more efficient and the development of products and services that give consumers greater control over how they satisfy their energy needs.

The Victorian Government recognises our role to provide effective leadership, facilitate collaboration, and deliver considered plans and actions to transition our State to a modern energy future. The Victorian Government will release energy policies that include a comprehensive set of renewable energy, energy efficiency and productivity, reliability and security of supply, and demand side management actions designed to stimulate the sector and drive the transformation. This is necessary to support long term growth, reduce emissions, create jobs and capabilities and complement Victorian energy affordability, stability and security of supply.

Victoria’s Climate Change Adaptation Plan 2017-2020

Victoria’s Climate Change Adaptation Plan 2017-2020 outlines the Government’s strategic priorities, measures and responses for adaptation in Victoria, as required by the current Climate Change Act 2010. It recognises and builds on adaptation action already underway, and lays the groundwork for a new approach to adaptation under the proposed new Climate Change Act.

The Adaptation Plan has been developed in close consultation with the community, and will drive collaboration locally and regionally and across sectors of the economy over the life of the Plan.

Mainstreaming climate change into Government policies and programs

The Government has already begun integrating climate change into policies and programs. This includes:

• Plan Melbourne – the need to better integrate climate change into land use planning was one of the key drivers for reviewing and updating the Plan. The refreshed Plan will describe how Melbourne can become more sustainable as the city grows.

• Regional and Metropolitan partnerships – provide a platform for regions to identify priorities for their communities, to work together to understand how climate change impacts or affects those priorities, and to collectively solve the problems and capture the opportunities.

• Water for Victoria – integrates climate change into planning for Victoria’s water resources for the decades to come.

• Victorian public health and wellbeing plan 2015-2019 – identifies the need for improved understanding and preparedness for the effects of climate change.

• The Victorian Government Value Creation and Capture Framework – will provide best practice guidance for departments and agencies to enhance value creation through capital infrastructure projects, development of public land and precinct projects, and to consider value capture as a project funding source. It will require projects to set objectives and identify opportunities for optimising the economic, social and environmental benefits (including those related to climate change) delivered by Government investments.
A new Climate Change Act - the cornerstone for action to 2050

The proposed Act, replacing the Climate Change Act 2010, will create a strong and robust framework to help us achieve our 2050 vision. It will be the strongest state-based climate legislation in Australia.

Key components of our proposed Act

Legislating our targets – net zero emissions by 2050 and five-yearly interim targets

We will legislate our target of net zero emissions by 2050. This target, coupled with five-yearly interim emissions reduction targets, will set the direction for a just, affordable and staged transition to a net zero emissions Victoria.

The five-yearly interim targets will ensure we stay on track to the 2050 target. The Victorian Government will seek independent advice on each interim target and the potential cost-effective opportunities for achieving it. The advice will consider:

- how we are tracking towards the 2050 target
- climate science
- technology relevant to climate change
- economic, social and environmental circumstances
- existing national and global action on climate change

All interim targets will be reductions compared with 2005. This provides a consistent base year to measure our progress against.

Creating effective, flexible and long-lasting legislation


On 22 November 2016, the Government introduced a Bill into Parliament to establish a new Climate Change Act. For the Climate Change Bill 2016 to become law, it must pass both Houses of Parliament and receive royal assent.

“The proposed changes to the Act provide a comprehensive framework in line with Victoria’s objective to be a leader in climate change action”

-Independent Review of the Climate Change Act 2010
Climate Change Strategies

The five-yearly Strategies will provide a state-wide picture of the actions the Victorian Government will take on climate change, and how we are progressing towards the long-term vision. They will outline the Victorian Government's emissions reduction, adaptation and transition priorities.

As well as incorporating the Government's pledges, they will include medium to long-term adaptation objectives and adaptation actions the Victorian Government will take to prepare its own operations and activities for climate change.

Mandating Government pledges

Victoria's climate change pledge program is modelled on the pledge and review process underpinning the Paris Agreement. The proposed new Act will require the Victorian Government to make emissions reduction pledges every five years.

Building on the 2016-2020 TAKE2 pledging process, Government pledges will identify what actions are needed to achieve interim targets and keep Victoria on track towards the 2050 target. The Victorian Government will make two types of pledges: to reduce emissions from its own operations and to reduce emissions from sectors across the economy, such as energy and transport.

When making sector pledges, the Government will pursue the most efficient and effective measures for driving emissions reductions. All potential policy instruments will be considered, including information and education, economic incentives, economic instruments and regulation. This includes the role of the Environment Protection Authority in regulating greenhouse gas emissions.

Adaptation Action Plans

Adaptation Action Plans (AAPs) will be developed for key systems such as health and human services, and the water cycle. The Victorian Government will work with local government, Registered Aboriginal Parties and other Traditional Owners groups, industry and the community to develop AAPs, ensuring that place-based, local knowledge is integrated into state-wide adaptation planning.

AAPs will build on existing Government policies that deliver on the adaptation priorities identified in the Climate Change Strategies. AAPs will be updated every five years following the release of each Climate Change Strategy. Adaptation actions will continue to evolve as climate change impacts and solutions change, and will draw on the most up-to-date information and tools available.
A new Climate Change Act for Victoria

- Policy objectives and guiding principles must be considered across government
- Specific decisions under Acts listed in Schedule 1 must have regard to climate change impacts and greenhouse gas emissions
- Victorian Government operational pledge, Victorian Government sector pledges, Council pledges
- Health and human services, Transport, Natural environment, Water, Built environment, Primary production, Education and training
- Long-term emissions reduction target
- Interim emissions reduction targets
- Objectives and principles
- Decision-making framework
- Climate Change Strategy
- Pledges
- Adaptation Action Plans
- Reporting requirements
- Carbon sequestration
- Soil and forest carbon sequestration on public and private land
- End of interim target period report
- Annual GHG emissions reporting
- Reducing emissions
- Preparing for climate change
- Transition priorities
- Net Zero Emissions
- 2020 2025 2030 2035 2040 2045 2050
- 2020
- End of interim target period report
- Annual GHG emissions reporting
- Soil and forest carbon sequestration on public and private land
- Specific decisions under Acts listed in Schedule 1 must have regard to climate change impacts and greenhouse gas emissions
- Victorian Government operational pledge, Victorian Government sector pledges, Council pledges
- Health and human services, Transport, Natural environment, Water, Built environment, Primary production, Education and training
- Five yearly climate science updates
Embedding climate change into Government decision-making

The transition to a net zero emissions and climate-resilient Victoria will require mainstreaming of climate change considerations across Government and society. The proposed new Act will require all Government policies and programs to consider climate change policy objectives and guiding principles in making our decisions. Guidance on how the objectives and principles should be applied to Government decision-making and investments will be developed.

**Guiding principles**

**Integrated decision-making**

Decisions should:
- integrate environmental, economic, health and social considerations in the short, medium and long-term
- be cost effective and proportionate to the problem

**Informed decision-making**

Decisions should be informed by:
- assessment of climate risks
- contribution to Victoria’s emissions

**Community engagement**

- Community involvement in decisions that may affect them or future generations
- Vulnerable and marginalised community voices need to be heard

**Risk Management**

- Understanding and assessing the risks of decisions in the context of climate change impacts

**Equity**

- Consideration of the short, medium and long-term consequences of decisions
- Capacity for present and future generations to adapt to climate change, especially the most vulnerable

**Compatibility**

- Climate change action needs to be taken by all levels of government and by the private sector and community
- We need to work together to ensure outcomes are aligned

**Policy Objectives**

- **Reduce greenhouse gas emissions** consistent with interim targets and the long-term emissions reduction target
- **Promote and support Victoria’s regions, industries and communities** to adjust to the changes involved in the transition to a net zero emissions economy, including capturing new opportunities and addressing any impacts arising from the need to reduce emissions across the economy
- **Support vulnerable communities**, and promote intergenerational equity and social justice
- **Manage Victoria’s natural resources, ecosystems and biodiversity to promote resilience**
- **Build the resilience of Victoria’s infrastructure, built environment and communities through effective adaptation and disaster preparedness action**
Transitioning key sectors of our economy

Our transition to a net zero emissions and climate-resilient economy will require progressive change. Long-term planning will ensure that the transition is positive, orderly and just.

A well-planned transition will deliver economic, social and health benefits to all Victorians. And strategic action now will stimulate job creation and reduce cost-of-living pressures. The Victorian Government will also support communities through the transition, especially the most vulnerable.

Our state is laying the foundations for the transition. We have a skilled workforce and we are well placed to capitalise on our natural advantages, including some of the best renewable energy resources in the world. Victoria already leads in innovation, research, science and services.

Victoria has successfully transitioned to challenges, economic shifts and technology changes in the past. We can learn from past experiences to ensure the transition to a net zero emissions and climate-resilient economy delivers benefits for all Victorians.

New disruptive technologies and business models, such as the shift to the online and sharing economy, will continue to change the way most industries do business. Like past innovations that have unlocked new investment and jobs, these new social and economic changes present opportunities for Victoria.

All sectors of the economy will have to respond to climate change. This will present different opportunities and challenges for sectors depending on when and how they need to respond. Energy, infrastructure, transport, health and wellbeing, the natural environment, water and agriculture are key areas that will be affected by the transition. This section provides a high-level overview of the issues to be addressed and how the Government is commencing the transition in each of these areas.

Regions like Geelong are already experiencing an economic transition as a result of domestic and international pressures. Geelong Region Alliance (G21) is a formal alliance between government, business and community organisations that is working to improve the lives of people within the region. By working together, the Alliance has supported the Geelong community during the transition.

Victoria has established Liveability Victoria International to promote and support the export of Victorian services and expertise in liveability, particularly to growing economies in Asia. Melbourne is consistently rated as one of the world’s most liveable cities, and Victorian expertise is being sought to inform development of liveable cities internationally.

Liveability Victoria International will focus on our strengths in water resource management; environment protection and clean-tech; and planning and urban design. It will bring government, industry and universities together to establish effective relationships in key international markets, which are becoming increasingly important with climate change pressures.
Transforming the way we generate, distribute and use energy in Victoria

What will our energy system look like in 2050?
By 2050, we will have a resilient energy system based on decentralised and well integrated energy resources. Large and small scale renewable generation, energy storage and flexible demand will be coordinated through a smart and dynamic network and supported by new ways of offering innovative energy services. Our energy network will be resilient to climate change, ensuring Victorians have secure and reliable access to affordable energy.

The transition is already happening.
We are positioning Victoria to take advantage of this with a range of initiatives

- **Increasing energy efficiency and productivity:**
  - Strengthening the Victorian Energy Efficiency Target (VEET) scheme to increase the uptake of energy efficient products and services by households and businesses.
  - Working proactively with other jurisdictions to implement the National Energy Productivity Plan with an aim to improve Australia’s energy productivity by 40 per cent by 2030. This includes improving the efficiency and quality of our buildings, removing market barriers to new technologies and services, empowering energy consumers and supporting innovation and competition in energy markets.
  - In 2017, the Victorian Government will announce further actions to drive improvements in energy efficiency and productivity in Victoria.

- **Sustainable energy market:**
  - Setting renewable energy targets of 25 per cent by 2020 and 40 per cent by 2025.
  - The Government is using its purchasing power to build renewable energy in regional Victoria – this will attract around $200 million investment in two new wind farms.
  - In 2017, the Victorian Government will announce further actions to drive the development of renewable energy in Victoria, while ensuring we maintain security and reliability of supply.

- **Investing in clean energy projects in Victoria, including energy storage, anaerobic digestion and wind and solar power.**

- **Preparing our energy network for climate change:**
  - Enhancing the energy network’s resilience to extreme climate events through the powerline bushfire safety program.
  - Replacing powerlines in high bushfire risk areas.
  - Developing a diverse and distributed energy system that provides Victorians with energy security in the face of extreme weather events.

- **Growing the new energy technologies sector:**
  - Implementing the New Energy Technologies Sector Strategy to create and sustain jobs in manufacturing and service industries and strengthen skills, collaboration and innovation.
  - Encouraging the development of new consumer driven markets.
  - Funding new energy technologies through the $20 million New Energy Jobs Fund.

By 2050, we will have a resilient energy system based on decentralised and well integrated energy resources. Large and small scale renewable generation, energy storage and flexible demand will be coordinated through a smart and dynamic network and supported by new ways of offering innovative energy services. Our energy network will be resilient to climate change, ensuring Victorians have secure and reliable access to affordable energy.
Challenges for the transition

The transition to net zero emissions presents many opportunities and challenges for how we generate, supply and use energy.

Policy and programs will need to consider:

- technical changes to shift from a one directional flow of energy to a more diverse and dispersed structure that includes more households and businesses generating electricity.
- changes in energy supply will need to be managed to ensure energy security, affordability and stability of supply.
- a massive increase in the scale and pace of investment required for energy network infrastructure.
- the interconnected nature of the National Electricity Market and the role that energy policy from other states plays a part in shaping Victoria’s emissions from electricity generation, and our security of energy supply.
- high levels of investment for the research and development of low emissions technologies.
- changes in consumer preferences and demand.
- barriers to new consumer markets for innovative products and services.
- the management of climate change impacts on assets to ensure a safe and reliable service.

What are others doing?

Newstead is seeking to become Victoria’s first town to run on 100 per cent renewable energy with the help of a $200,000 Government grant. Renewable Newstead, a community group in central Victoria, is developing a master plan to guide the transition to renewable energy and storage. The model will incorporate community ownership and balance commercial viability with social equity through low prices and price protections for vulnerable Newstead residents. Newstead will provide us all with lessons that we can replicate across Victoria.
Working together to support the Latrobe Valley community to transition

The coal-fired electricity sector has played an important role in creating the vibrant and prosperous Victoria we know today; the Latrobe Valley has been a big part of that. However, achieving our net zero emissions target by 2050 requires a transition from brown coal-fired electricity to clean energy sources.

In the 1990s, the privatisation of the coal-fired electricity plants led to significant changes in the Latrobe Valley. We learnt from what happened then and will ensure that the transition to clean energy is planned and orderly, and creates a sustainable future for Latrobe Valley communities.

This transition started on 3 November 2016 when the owners of the Hazelwood power station, Engie and Mitsui, announced that the Hazelwood power station will close by 31 March 2017. These companies made this commercial decision as part of Engie’s global move to divest from coal-fired power generation.

The Victorian Government has committed a package of $266 million to the Latrobe Valley to create local jobs, grow local businesses and build a stronger and brighter future for the Latrobe Valley. This package includes a $50 million Economic Growth Zone to support new and expanding businesses, and $174 million to establish the Community Infrastructure and Investment Fund which has so far provided:

- $17 million for the Gippsland Hi-Tech Precinct, an Australian first that will provide jobs and foster cooperation between education and industry;
- $20 million for the Community Facility Fund, supporting community projects that make the Latrobe Valley more liveable and an attractive place to visit, live and work; and
- $5 million to upgrade classrooms and school facilities.

Over the next four years the $266 million package also provides:

- $22 million for worker and business transition support; and
- $20 million for the Latrobe Valley Authority to work in partnership with the community and coordinate all government action in the Valley.

This is in addition to the $40 million already provided for economic revitalisation in the Valley in the 2016/17 Budget.

In 2015 the Victorian Government re-opened the Hazelwood Mine Fire Inquiry. The Government has committed over $80 million to deliver the Hazelwood Mine Fire Inquiry: Victorian Government Implementation Plan, which outlines the 246 action items that will be undertaken by Government to implement all recommendations and affirmations of the Inquiry Reports.
Transforming the way we travel

What will our transport system look like in 2050?

Victoria will have an effective, integrated and climate change-resilient transport system that provides a wide range of travel choices for all Victorians, including electric and autonomous vehicles.

We are laying the foundations for transition with a range of initiatives

• Investing in and enhancing our public transport:
  – supporting the Melbourne Metro Rail, High Capacity Metro Trains and Regional Network Development Plan, and
  – purchasing renewable energy to power our trams.

• Developing an effective and integrated transport system:
  – establishing Transport for Victoria, updating Plan Melbourne (2016), improving precinct planning and removing 50 railway level crossings, and
  – seeking independent advice from Infrastructure Victoria.

• Supporting walking and cycling:

• Supporting innovation in new technology:
  – funding to support a commercial electric vehicle manufacturing facility and development of Australia’s first self-driving vehicle.

Challenges for the transition

• Large-scale infrastructure investment will be needed as many of the actions to reduce greenhouse gas emissions require clean energy sources.

• Technology is changing rapidly and we will need to continue to invest in research and pilots to ensure that the technology and infrastructure is available when the transport transition accelerates.

• Regulatory frameworks will need to adapt to these new technologies.

• Population growth, especially in our large cities, will continue to increase demands on the transport system.

• Climate change poses a risk to the transport system due to sea level rise and extreme weather events becoming more frequent, including buckling train lines as a result of extreme heat.

• Compromised transport access can lead to social isolation, loss of employment and disconnection from services. Resilience and accessibility is needed to ensure Victorians stay connected.

What are others doing?

• California has committed to cutting petroleum use in half by 2030 by investing in public transport and increasing vehicle efficiency.

• London has a target to increase cycling to 1.5 million cycle journeys per day through new cycling infrastructure and training.
Creating a low emission climate-resilient built environment

What will Victoria’s built environment look like in 2050?

Our cities, towns and regions will be climate-resilient and achieve net zero emissions, and will provide all Victorians with a liveable, healthy and prosperous place to live. Disadvantaged groups will be helped to adapt to climate change impacts.

We are laying the foundations for transition with a range of initiatives

• Developing and implementing long-term plans:
  – integrating climate change into land-use, transport and infrastructure planning in Plan Melbourne and Regional Growth Plans.
  – mapping and minimising harm to significant Aboriginal cultural heritage sites located along the coast.
• Reviewing and setting building standards to increase energy efficiency:
  – developing better apartment design standards and contributing to a national review of the energy efficiency provisions of the National Construction Code.
• Creating incentives for innovation:
  – providing financial support for energy efficiency and resilience retrofitting.
  – establishing the Plumbing Industry Climate Action Centre in Geelong to deliver the next generation of sustainable and water efficient buildings.
• Providing information and creating behaviour change:
  – developing the residential efficiency scorecard.
  – utilising climate science and vulnerability information.
• Increasing resource recovery across Victoria:
The World Green Building Council has set long-term targets for all new buildings and major renovations to be net zero emissions by 2030. Beyond 2030, no buildings will be built below net zero standards, and 100 per cent of buildings will be net zero by 2050.

The Melbourne Urban Forest Strategy extends and links existing urban greening, reforestation and nature initiatives across Melbourne to improve wellbeing and reduce our exposure to hazards such as heatwaves and flooding.

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Challenges for the transition

- Population growth is creating pressure for further urban sprawl.
- Retrofitting to improve the efficiency and resilience of existing urban development and infrastructure can be difficult and expensive.
- The costs of managing infrastructure and associated services are increasing, in part due to extreme weather events disrupting services.
- The uncertainty around future local climate change impacts makes it challenging to plan and design robust infrastructure.
- Maintaining and protecting critical infrastructure will become more complex and challenging with climate change.
- Sea level rise will impact on communities and infrastructure along our coastline and may result in the relocation of homes, offices and community services.
The Rural City of Wangaratta is improving community resilience to climate change through the City’s innovative ‘Rent Savers’ and ‘Cooking Circles’ programs. The two projects support vulnerable members of the community to understand climate change impacts and identify unique ways to improve their resilience.

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Victorians’ health and wellbeing in 2050

A healthy and sustainable environment maintains clean air, water and soils for all. Victorians will be actively protecting themselves, their families and communities from climate change-related health risks. Vulnerable and disadvantaged groups will be helped to adapt to climate change impacts.

We are laying the foundations for transition with a range of initiatives

- Supporting communities to adapt to climate change:
  - implementing the Heat Health Plan for Victoria to protect Victorians from extreme heat.
  - developing an Adaptation Action Plan for the health and human services sector to reduce population vulnerability to climate change health risks.
- Building our knowledge of climate change risks:
  - undertaking an assessment of the climate change health risks to Victorians and the health and human services sector
  - continuing sector-wide resilience planning for the health and human services sector.
- Government leading by example:
  - reducing the carbon intensity of service delivery, and understanding the carbon liability of the health and human services sector.

Challenges for the transition

- More frequent and intense extreme weather will likely have adverse downstream effects upon the determinants of health and wellbeing such as housing, urban liveability, food security and employment.
- Disadvantaged and vulnerable communities and people are at greater risk from climate change. The economic consequences of climate change could cause more disadvantage, affecting population health and wellbeing.
- Degradation of the natural environment will occur at an unprecedented rate, which will likely compromise air quality, water supplies and soil health.
- Climate change is increasing the incidence and duration of drought, which can affect regional and rural economies, affect community cohesion, and increase the incidence of mental health problems.

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Growing Victoria’s agriculture sector and regional communities

What will our agriculture sector look like in 2050?

Victoria’s agriculture sector will be constantly adapting to climate change. The design of farm systems will feature both carbon sequestration and emission reduction approaches, supporting strong participation in markets. Victoria will have resilient regional communities, viable farming enterprises and growing international markets. Regionally relevant world-class research and development will underpin adaptation and emissions reduction.

Challenges for the transition

- The increasingly variable climate will make investment in agriculture and farm decision-making more challenging.
- Longer and more frequent droughts, more intense rain and wind events, shorter growing seasons, and changes in pests and weeds will require the development of new farming systems.
- Climate change impacts may have negative flow-ons for local communities and services.
- Adoption of cost-effective strategies for reducing emissions while maintaining productivity.
- Changes in temperature will alter crop planting, flowering and harvesting times.

We are laying the foundations for transition with a range of initiatives

- Investing in research and development:
  - understanding the impacts of hotter, drier temperatures on grains, pastures and animals, breeding new varieties and building capacity to manage the risks.
- Improving farm and regional infrastructure:
  - using the $200 million Agriculture Infrastructure and Jobs Fund to improve supply chain efficiency and build resilience.
- Supporting capacity building and adaptation planning:
  - helping farm businesses to plan for climate change adaptation and developing new flexible farming systems and value chains for dairy, livestock and grain enterprises.
- Partnering with industry to progress emissions reduction and offset opportunities:
  - reducing emissions from livestock by developing novel feeding strategies and maintaining soil carbon stores for enhanced productivity.

What are others doing?

- Dairy Australia has developed a Dairy Climate Toolkit that provides information and guidance on how dairy farmers can reduce their emissions and adapt to climate change. As the opportunities for action can vary in different climates, the toolkit includes practical recommendations for eight different regions in Australia, three of which are in Victoria.
- France is increasing resilience to climate change by plant breeding for heat and drought tolerance, using remote sensing and drought monitoring to deliver real time advice to farmers, conservation agriculture, and diversification at farm scale.
Ensuring Victoria’s water future

What will our water sector look like in 2050?

Water is fundamental to our communities. We will manage water to support a healthy environment, a prosperous economy and thriving communities.

We are laying the foundations for transition with a range of initiatives

- Integrating climate change into our water resource management:
  - using our new Water for Victoria plan to outline how we are preparing for climate change through adaptation and emissions reduction.
- Starting on the pathway to achieving net zero emissions in the water sector:
  - developing principles to guide mitigation pathway planning and committing to agreed emissions reduction targets for water authorities.
  - assessing and implementing opportunities for carbon offsets.
- Creating effective partnerships and undertaking research:
  - building our understanding of how climate change will affect water resources by investing $1.6 million in 2016-17 and identifying future research needs.
  - understanding water use efficiency, recycling and water distribution for agriculture and industry.
- Reviewing and updating legislation:
  - refreshing the State Environment Protection Policy (Waters of Victoria) that sets long-term water quality standards.
- Establishing ongoing monitoring, reporting and evaluation
  - five-yearly reviews of sustainable water strategies.

Challenges for the transition

- Increased frequency and severity of heatwaves and bushfires, and reductions in rainfall will result in less water being available for use and decreased waterway health.
- The water sector will need to reduce emissions associated with its wastewater treatment and energy use.
- A growing population and increasing urban development will change Victoria’s water demand.
- Sea level rise and increases in storm surges will affect our coastal and water infrastructure.
- The development of our climate change knowledge will require continued investment in research and identification of future research needs.

What are others doing?

- Victoria’s world-class Schools Water Efficiency Program uses data loggers to monitor water use in schools and to identify any leaks or problems. The program has already saved more than 2.1 billion litres of water.
- In South Australia a floating solar plant has been installed to power a wastewater treatment plant, with a co-benefit of reducing evaporation by up to 90 per cent.
Building the resilience of our natural environment

What will our natural environment look like in 2050?

Our natural environment will be healthy, valued, actively cared for and recognised as fundamental to our economy and liveability. Native plants and trees will be providing carbon storage, biodiversity and broader catchment benefits while also helping protect us from the impacts of climate change.

Aboriginal Victorians have a deep understanding of our environment and landscape, and as such are very aware of changes occurring on their land as a result of climate change. Registered Aboriginal Parties and other Traditional Owners groups play an important role in working with government and communities to safeguard and pass on knowledge of the Victorian landscapes and cultural heritage and to help non-indigenous Victorians understand the cultural and spiritual significance of Victoria’s land and water.

We are laying the foundations for transition with a range of initiatives

- Improving our knowledge of values, threats and effective action:
  - developing comprehensive biodiversity information and ensuring access to support government and community decision-making.
  - adopting the UN System of Environmental-Economic Accounts to guide government decision-making and reporting.
  - understanding the health of our bays through improved reporting and better information.
- Modernising policy and legislation to guide long-term action:
  - implementing a new biodiversity strategy and a plan for integrated catchment management that consider climate change.
- Maximising results from investment in our environment:
  - working across government to leverage positive environmental outcomes from all potential investment sources.
  - publishing a biodiversity investment prospectus that identifies cost-effective actions to achieve state-wide biodiversity targets.
- Improving land management to achieve holistic and lasting environmental outcomes:
  - increasing the area of well-managed habitat on private land through complementary use of regulatory, voluntary and market tools
  - ensuring the conservation reserve system provides suitable and resilient species habitat in the face of climate change.
- Increasing opportunities for carbon storage:
  - investigating the potential for carbon markets and offset funds to deliver increased carbon storage and biodiversity co-benefits from land use change.
  - piloting a carbon project for the private management of tree planting on public land.
Challenges for the transition

- Climate change science cannot fully predict how species or ecosystems will respond to climate change impacts, so building the resilience of the natural environment is a complex task. Decisions have to be made in the face of uncertainty.
- Climate change will compound existing challenges facing catchment management, including changes to waterways and wetlands, water flows, fire regimes and pests and diseases.
- Climate change will exacerbate other pressures such as land degradation, habitat loss and the impacts of a growing population.
- Environmental management is required across tenures and there is often a lack of incentives to drive protection on private land.
- There are many competing priorities that will need to be considered including agriculture, biodiversity and carbon sequestration.
- We need to better understand our options for carbon sequestration on both private and public land, as well as for blue carbon.

What are others doing?

- Catchment Management Authorities (CMAs) have undertaken regional climate change adaptation planning across Victoria. The Plans and Strategies will help inform investment into NRM in the Regions and support the Government’s policy and planning. In developing the plans the CMAs:
  - developed spatial tools to assess climate change vulnerability across the state.
  - pioneered adaptation pathways planning in the state.
  - undertook extensive engagement with the community and key stakeholders on climate change adaptation.
  - produced the most comprehensive NRM climate change adaptation planning to date in Victoria.
- The Victorian Government has established a pilot carbon project with Greenfleet. The project will demonstrate how private companies can plant native trees and other plants on public land to generate carbon credits. The pilot project will guide the future rollout of such projects on public land.
Climate change in Victoria

Victoria’s greenhouse gas emissions

Energy emissions by end use

Most of Victoria’s energy supply comes from fossil fuels. By looking at where energy is being used across the economy, we can prioritise our emissions reduction activities.

RESIDENTIAL
Powering our homes, eg. heating, cooking, air conditioning, lighting, appliances

COMMERCIAL
Energy use in our public and private office buildings, shops and cinemas, education and public health (e.g. heating, refrigeration, elevators and other appliances and electronics)

INDUSTRY
Energy use by Victorian industries including refineries, manufacturing, mining, and wood and paper products

TRANSPORT
Powering our transport system, including energy consumed by our cars, trains, trams and buses

Victoria is responsible for around a quarter of Australia’s total net emissions, and is the third-highest emitting state following New South Wales and Queensland.iii

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Energy emissions by end use are based on estimates of the use of different energy sources by the different sectors multiplied by the emission factor for that energy type. This method results in total emissions of 120.8 Mt CO₂e, this is 1.8 Mt CO₂e more than the National Greenhouse Gas Inventory estimate for 2014 of 119 Mt CO₂e (a 1.5 per cent difference).
Victoria’s emissions profile helps us to understand both the challenge ahead and the opportunities to drive innovation and action to reduce emissions. Our per capita emissions are amongst the highest in the world. In 2014, they were 20.2 tonnes – this is equivalent to every Victorian driving from Melbourne to Sydney 100 times a year.\textsuperscript{i, x}

Most of Victoria’s energy supply comes from fossil fuels. By looking at where energy is being used across the economy, we can prioritise our emissions reduction activities. Non-energy emissions account for all greenhouse gas emissions that are not as a result of combustion of fuels for energy.

Total Emissions
\[= 119 \text{ Mt CO}_2\text{e}\]

Non-Energy Emissions
- Asterisks indicate sectors with significant reductions or contributions to energy efficiency. 

**AGRICULTURE & FORESTRY**
- Energy used in our farming and forestry including heating greenhouses, irrigation systems and sheds.

**POWER**
- Energy used in generating power for distribution across Victoria, including transmission and distribution losses.

**INDUSTRY**

**AGRICULTURE**
- Manufacturing processes that generate or leak greenhouse gas emissions.
- Direct emissions from farming include methane from livestock and nitrous oxide from fertilisers.

**FORESTRY**
- Active management of forests & vegetation for carbon storage.

**WASTE**
- Emissions from waste management, including landfills.

- Emphasizes data points for different sectors.
Climate change impacts in Victoria

Victorians are already feeling the impacts of climate change. Records for average monthly temperatures are continually being broken, and the frequency and length of heatwaves are increasing. Our fire season is starting earlier and lasting longer.

In 2015, the global average surface temperature was approximately 1°C above preindustrial levels. All signs indicate that this increase will continue. Urgent and decisive global action to reduce emissions is needed if the increase in global average temperature is to be held to 1.5°C. Even if this is achieved, there will be climate change impacts for years to come. We need to prepare for these unavoidable impacts and the risk that more severe warming will occur.

Current policy commitments by the international community are inadequate to keep global warming below 2°C. Without further global action, it is predicted that global warming could reach 1.5°C as early as 2024 and 2°C in 2036.

The differences between warming of 1.5°C and 2°C are significant. Changes over 2°C would increase some risks that would eventually become unmanageable. Figure 1 illustrates the global consequences of different levels of global warming.
Unique and threatened systems, including ecosystems and cultures, are at risk from climate change. The risks to these systems increase with additional warming.

Extreme weather events
Extreme weather events, such as heat waves, storms and coastal flooding are already occurring as a result of climate change. Risks associated with some types of extreme events (e.g. extreme heat) increase further at higher temperatures.

Distribution of impacts
Impacts are unevenly distributed and are generally greater for disadvantaged people and communities.

Global aggregate impacts
The impacts of additional global warming between 1–2°C are moderate when aggregated globally. This includes impacts to biodiversity and the overall global economy. Aggregate damage accelerates with increasing temperature.

Large-scale singular events
Large-scale singular climate change-related events are increasing with warming, some physical systems or ecosystems are at risk of abrupt and irreversible changes, for example large and irreversible sea level rise from ice sheet loss.

Figure 1 - A global perspective on climate-related risks.
The scale of the impacts on Victoria will depend on how high and how quickly global temperatures increase, but there are a number of likely impacts.xi

### Agriculture
- Impacts on primary production throughout the value chain, including access to local, national and global markets
- Decreased water security for farmers as drought becomes more common
- Altered crop planting, flowering and harvesting times due to changes in temperature
- Farm businesses affected by more frequent extreme events, including flooding and fires
  - Smoke taint caused by the 2009 bushfire season was estimated to cost the winegrape industry in excess of $100 million.

### Environment
- Hotter temperatures and reduced rainfall alter or destroy habitat for plants and animals
- Existing challenges facing catchment management are compounded, including changes to waterways and wetlands, water flows and pests and diseases
- Species’ viability threatened by more frequent extreme events, such as bushfire
- Major bushfires have resulted in widespread death of alpine ash trees and the seed-crop that would enable the species to regenerate.

### Tourism
- Reduced access to popular tourist sites due to more frequent extreme weather events
  - Access to the Great Ocean Road was restricted in 2016 due to fires in summer and landslides following heavy rain in spring.
- Alpine tourism affected by shorter snow seasons and reduced snow cover and ultimately by 2050 there will be little or no snow cover across Victoria if the increase in global temperature exceeds 2.9°C.
**Infrastructure**

- Critical lifelines and essential services, like energy, water, transport and communications, increasingly exposed to extreme weather
- Long, hot, dry spells lead to weakened road surfaces, including rutting and cracking
- Sea level rise in coastal communities affecting infrastructure, and resulting in higher insurance premiums and, in some cases, relocation
  - Sea level rise of 11 metres would impact between 31,000 and 48,000 residential buildings, 3,500 kilometres of Victoria’s roads, up to 125 kilometres of railways and up to 2,000 commercial buildings in Victoria.

**Community and health**

- Our natural and cultural heritage affected by extreme weather events and sea level rise, including significant areas of coastal indigenous heritage that would be at risk with 1 metre of sea level rise
- Impacts on community services, for example, restructured use of green space and access to local shops and services
- Increased and repeated exposure to climate extremes, including floods, fire and drought, directly and indirectly affect health and wellbeing, including mental health
- Increases in vector borne diseases
  - Dengue fever is already moving further south in Australia.

**Emergency Management**

- More complex emergency response situations as a result of increases in the frequency, intensity and severity of extreme weather events
- Response to emergency events will become increasingly more complex, especially for community preparedness and emergency responders
- Overlapping fire seasons in the northern and southern hemispheres increases the cost of bushfire response as equipment and emergency management staff may not be able to be shared.
This is just the beginning

Victoria’s Climate Change Framework is just the start. We must all take responsibility for reducing emissions and building resilience.

Achieving significant reductions in greenhouse gas emissions requires strong action at the national level. In the absence of such action, the heavy lifting on emissions reduction will continue to fall upon the states and territories. A positive outcome from the Federal Government’s review of its climate change policy in 2017 is, therefore, critical. Victoria is advocating strongly for this outcome.

The Victorian Government will continue to build strong and effective relationships that support Victorians to act on climate change and ensure that Victoria remains a prosperous place to live. The Government will focus on implementing the Framework, the proposed new Climate Change Act, the Adaptation Plan and the Government’s TAKE2 Pledges.
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