



Inquiry into Tackling Climate Change in Victorian Communities

City of Melbourne submission

2 September 2019

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Executive summary

The City of Melbourne welcomes the Environment and Planning Committee's Inquiry into Tackling Climate Change in Victorian Communities.

On 16 July 2019 Council unanimously declared a Climate and Biodiversity Emergency. We recognise that urban, rural and regional communities will bear the brunt of climate change impacts due to increasingly severe heatwaves, bushfires, flooding and sea-level rise. Action is needed to address and prepare for the interdependencies of climate change impacts and the environmental, social and economic disruption that will result as businesses and markets respond to climate risk and stranded assets.

Climate change is already impacting our communities and the Intergovernmental Panel on Climate Change (IPCC) has reported to the world community that average global temperatures have already increased by 1°C (IPCC, 2018). Some of the most concerning impacts of climate change that need to be urgently addressed include:

- the health, resilience and social disruption of our communities
- economic impacts of disruption on households, businesses and public assets
- water and food supply, water catchments and coastlines
- energy, transport, and building infrastructure
- transition risks in the insurance, finance, primary production, energy, transport and property sectors
- impacts on urban forests, parks, gardens and biodiversity loss.

We urge the Victorian Government to increase its ambition to address the climate emergency in partnership with local governments and communities.

Greenhouse gas emissions from the municipality of Melbourne are among the highest per capita in the world due to our reliance on brown coal-fired energy supply and transport patterns. Greater Melbourne contributes nearly 60 per cent of Victoria's greenhouse gas emissions (13.39 tonnes CO₂ equivalent per person or 66.67 million tonnes CO₂ equivalent in total in 2017).

As custodians of the municipality of Melbourne, we are accelerating action to address climate change within our powers under the *Local Government Act 1989* by implementing comprehensive strategies to address climate change mitigation and adaptation risk.

On 4 December 2018 Council committed to the first Council Pledge under the *Climate Change Act 2017*. It describes the actions we can take to reduce emissions from energy supply, buildings, transport and waste in our municipality by 2025.

Local governments can be key partners in the just transition from fossil fuel powered cities to renewable and climate resilient communities, but we need supporting policy changes and action by the Victorian and Australian Governments.

Melbourne is known internationally for its liveability, sustainability and its food and fashion culture. We are also known for the highest per capita greenhouse gas emissions in the world due to our reliance on fossil fuel power stations and transport.

The health, liveability and prosperity of our municipality is dependent on the wellbeing and environmental sustainability of other municipalities. This is through the natural environment, rivers, food and transport systems we share and the supply of energy, materials and water to the city.

We recognise that responding to climate change means transitioning Victoria’s energy, food, fibre and water systems and reducing waste. We support a just transition for communities and industries in urban, rural and regional Victoria including active transition planning that is socially inclusive.

This submission responds to the terms of reference of your inquiry by describing:

- what the City of Melbourne is doing to tackle climate change
- how the Victorian Government can support urban, rural and regional communities to tackle climate change.

Summary of recommendations

The Victorian Government could support urban, rural and regional communities to tackle climate change in the following ways:

1. Demonstrate leadership on climate change

- Recommendation 1.1 Declare a Climate and Biodiversity Emergency.
- Recommendation 1.2 Set science-based emissions reduction targets for Victoria to achieve a 40–45 per cent reduction on 2005 emissions levels by 2025, and 65–75 per cent reduction on 2005 levels by 2030.
- Recommendation 1.3 Commit to sector pledges under the *Climate Change Act 2017* to accelerate emission reductions and the transition to 100 per cent renewable energy.

2. Support communities to prepare for the rapid transition away from coal, oil, gas and waste

- Recommendation 2.1 Support communities to prepare for the next closure of a coal-fired power station in the Latrobe Valley as early as 2023 with industry and place-based (urban and regional) transition plans.
- Recommendation 2.2 Support communities to prepare for the rapid transition from petrol and diesel vehicles by introducing a Victorian planning scheme amendment for electric vehicle-ready buildings.
- Recommendation 2.3 Extend train, tram and bus services and ensure they are powered by 100 per cent renewable energy.
- Recommendation 2.4 Ensure new buildings and urban renewal precincts are not locked into natural gas infrastructure and support communities to prepare for the transition away from natural gas.
- Recommendation 2.5 Introduce a state-wide Container Deposit Scheme and increase investment of landfill levy funds to support a resilient, local recycling sector.

3. Invest in climate resilience and adaptation to higher temperatures, sea-level rise, and flooding

- Recommendation 3.1 Ensure all new infrastructure and public housing is designed and built to minimise emissions and withstand climate change impacts, and existing infrastructure is retrofitted.
- Recommendation 3.2 Update the Victorian Planning System and building regulations to require developers to reduce emissions from buildings and address the physical impacts of climate change.
- Recommendation 3.3 Essential Services Commission to consider future climate change impacts when assessing business cases for water corporations.

- Recommendation 3.4 Provide up-to-date climate change data and information.
- Recommendation 3.5 Clarify insurance arrangements to support private sector adaptation and assist the insurance industry to develop appropriate products for the future.
- Recommendation 3.6 Address climate vulnerability among public housing tenants.
- Recommendation 3.7 Fund programs to foster community climate resilience programs that support vulnerable, low income members of the community.
- Recommendation 3.8 Drive implementation of the Living Melbourne: Our Metropolitan Urban Forest strategy and fund additional local government urban greening initiatives.

1. What the City of Melbourne is doing to tackle climate change

The City of Melbourne is tackling climate change by measuring, reporting and reducing greenhouse gas emissions from its operations and across the municipality and adapting to the physical impacts of climate change.

1.1 Climate change is a strategic risk

The City of Melbourne includes climate change as a strategic risk in our organisational risk register. Climate change risk includes physical, transition and legal risks.

We have identified risks associated with the physical impacts of climate change to the organisation's assets and the municipality. We are implementing actions to reduce these risks through the Climate Change Adaptation Strategy Refresh 2017. Climate change hazards can amplify existing risks through incremental changes in climate such as sea level rise, changing rainfall patterns, average temperature rise and associated changes to air pollution and vector-borne disease. Hazards also occur with the increased frequency and severity of climate-related events such as heatwaves, floods, and storms.

Consideration has also been given to interdependencies between major categories of climate change risk and the relationship between adaptation and mitigation goals. Examples include the impact of electricity blackouts on buildings and transport during heatwaves, and the impact of storms and floods on transport, housing, public buildings, businesses and events.

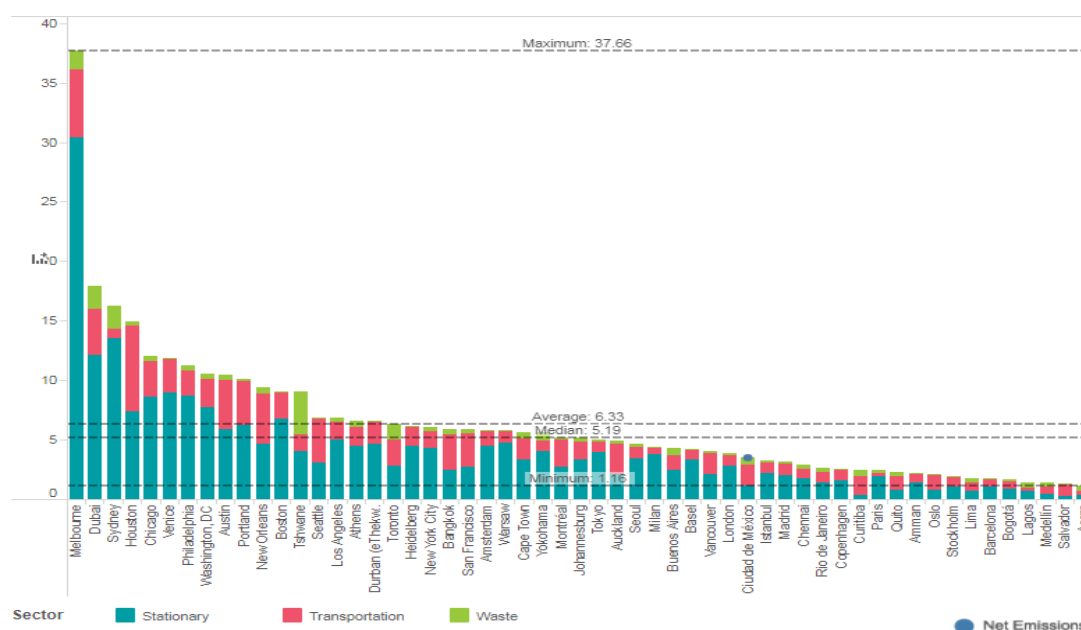
There can be synergies and trade-offs between climate change adaptation and mitigation goals. Our Climate Change Mitigation Strategy to 2050 describes some of the carbon transition risks associated with energy, buildings, transport and waste management. To help reduce the carbon transition risk we measure and publicly report annually on greenhouse gas emissions from our operations and the municipality. We have also committed to science-based emissions reduction targets and carbon neutral certification as described further below.

We are undertaking further analysis of climate change risks as part of the continual improvement of the organisation's risk management framework.

1.2 Public disclosure of greenhouse gas emissions

Greenhouse gas emissions from the municipality of Melbourne are the highest per capita in the world due to our reliance on brown coal-fired energy supply and transport patterns (Figure 1 below). In 2018 the greenhouse emissions from Council operations were 35,914 tonnes CO₂ equivalent (tCO₂-e) and from the municipality they were 5,046,231 tCO₂-e.

Figure 1. International comparison of cities per capita greenhouse gas emissions



Source: <http://www.c40.org/other/gpc-dashboard> * 2014-15 figures

Greater Melbourne contributes nearly 60 per cent of Victoria’s greenhouse gas emissions (13.39 tCO₂-e per person, 66.67 million tonnes CO₂-e in total in 2017) and our municipality contributes a large proportion of these emissions despite a small proportion of residential population.

The City of Melbourne reports greenhouse gas emissions from its operations and the municipality annually under the following reporting frameworks and standards:

- National Carbon Offset Standard and Carbon Neutral Program Guidelines
- National Greenhouse and Energy Reporting System (NGERS)
- Global Protocol for Community Scale Greenhouse Emissions
- Carbon Disclosure Project.

Reporting the municipality’s emissions and the actions we take to reduce emissions and address climate change impacts is part of the Carbon Disclosure Project and a requirement of the Global Covenant of Mayors for Climate and Energy.

This follows international best practice standards for emissions reporting and disclosure.

1.3 Climate Change Mitigation Strategy to 2050: Melbourne Together for 1.5°C

Our Climate Change Mitigation Strategy: Melbourne Together for 1.5°C is part of our contribution to the local and international movement of cities stepping up to address climate change. The strategy aligns to the Paris Climate Agreement and the international effort to stay below a 1.5°C rise in global average temperatures. It describes the actions we can take together to address the greenhouse gas emissions that cause climate change under four strategic priorities:

1. 100 per cent renewable energy
2. zero emissions buildings and precincts
3. zero emissions transport
4. reducing the impact of waste.

The strategy was endorsed in December 2018 and delivered as part of a C40 pilot program of eight world leading cities to align climate action plans to the Paris Climate Agreement.

It includes the first formal Council Pledge to reduce emissions made under the *Climate Change Act 2017* for the period 1 January 2021 to 31 December 2025, with a two-year preliminary period from 1 January 2019 to 31 December 2020. A comprehensive technical and economic analysis was conducted to identify the best opportunities to reduce emissions from the major sources of emissions generated in the municipality. Interim targets were calculated for 2025 and 2030.

The City of Melbourne is committed to social inclusion in the approach that we take to implementing the Council Pledge and to delivering environmental, social and economic benefits to the community.

1.4 Emission Reduction Plan for Council Operations 2016-2021

Our operations have been certified Carbon Neutral every year since 2012 and we were one of the first organisations internationally, to introduce 1.5°C science-based targets for our operations. We are achieving these targets by improving the energy efficiency of our buildings and vehicles, reducing emissions through our supply chain and purchasing 100 per cent renewable energy.

The City of Melbourne has cut emissions by 31 per cent (16,145 tCO₂-e) between our baseline year of 2011–12 and 2017–18. This is a direct result of projects implemented as part of our Emissions Reduction Plan.

Emissions reduction projects implemented include building energy efficiency improvements, street light upgrades, and solar installations on Council-owned buildings and community facilities.

We have also reduced emissions from our events and procurement and in so doing we are helping to drive market transformation in the city's supply chain and engage the community in Council's vision for a zero emissions city.

We are exceeding our 4.5 per cent per annum science-based emission reduction target. This trend is set to accelerate now that Council is purchasing 100 per cent renewable energy via the Melbourne Renewable Energy Project (MREP).

1.5 Melbourne Renewable Energy Project

The Melbourne Renewable Energy Project (MREP) is the first time in Australia that a group of local governments, cultural institutions, universities and corporations collectively purchased renewable energy from a newly built facility.

The MREP project has enabled the construction of a new 39-turbine 80 MW capacity wind farm outside the municipality, to supply 88 GWh of renewable energy to 14 organisations in the city through a power purchase agreement. The annual amount of renewable electricity generated through MREP is equivalent to two percent of the municipality's electricity demand.

Since the MREP tender was announced, many other large users across the country have started contracting directly with renewable energy projects as a way of managing risk, reducing costs and driving down carbon emissions.

The Melbourne Renewable Energy Project won the Premier's Sustainability Award last year and has been recognised internationally for its innovation by the Carbon Neutral Cities Alliance.

1.6 Climate Change Adaptation Strategy Refresh 2017

In 2017 we completed a refresh of our Climate Change Adaptation Strategy. The updated strategy details how Melbourne will work towards the vision of a city that is adapting well to climate change and in particular address the need to create stronger partnerships with others and empower the

community to act. The refreshed strategy was guided both by our understanding of climate risks and strategic priorities identified by the community. Climate change risks from insufficient water supply, floods, heatwaves and storms remain a priority.

The strategy outlines how the city will deliver, partner and advocate for effective adaptation through five strategic adaptation goals:

1. enhance the natural environment and green spaces of our municipality
2. shape our built form and urban renewal areas to withstand future climate change impacts
3. strengthen the resilience of our inclusive, family friendly and culturally diverse community
4. protect and enhance our diverse economy
5. continue to build City of Melbourne's adaptation capabilities and expertise.

Climate change considerations have been integrated into our Asset Management Strategy 2015–2025, recognising the vulnerability of Melbourne's infrastructure, particularly in relation to drainage and irrigation.

We are already improving our built environment through the way that we create and manage our assets and implement strategies such as Total Watermark: City as a Catchment. We have set strong targets on stormwater capture and reuse and we are improving our drainage system to respond to 1 in 20 year rainfall events.

1.7 Total Watermark Strategy and Integrated Water Management Plan

The City of Melbourne practices integrated water management, defined as the coordinated management of all components of the water cycle including water consumption, rainwater, stormwater, wastewater and groundwater, to secure a range of benefits for the wider catchment. Our Municipal Integrated Water Management Plan 2017 sets the strategic direction on water management across the municipality, using a place-based and catchment approach and will guide our effort, thinking and investment to 2021. The Plan addresses key challenges including reducing the municipality's flood risk; ensuring our major waterways are clean and healthy, and planning water supply infrastructure for current and future water demand. Actions to address these challenges include to:

- undertake flood and sea level rise modelling
- partner with Melbourne Water to update the Land Subject to Inundation Overlay to best current knowledge
- implement a 10-year stormwater harvesting plan (2014–2024)
- implement streetscape Water Sensitive Urban Design intervention in collaboration with the Urban Forest Precinct Plans
- advocate for connection to third pipe network for urban renewal projects
- seek to increase permeability in public and private realm.

1.8 Nature in the City Strategy

Melbourne's green network both provides and depends upon many ecosystem assets and services. The resilience and enhancement of our ecosystems is dependent on timely and considered action to address a range of complex issues. Challenges such as rapid population growth, increasing density of buildings and infrastructure, land-use legacies, invasive species, and climate change, continue to test our ability to adapt.

Melbourne is a surprisingly biodiverse municipality with at least 239 species of birds, 12 species of reptiles, 18 species of mammals, seven species of frogs, at least 1500 species of insects, and 31 species of fish recorded in the last 20 years in the municipality.

Unfortunately, many of these species are threatened and how the municipality responds to these challenges will fundamentally affect which species live and thrive in the city, the services that ecosystems can provide, and subsequently the liveability of the city for people.

Our vision is for the municipality of Melbourne to support diverse, resilient, and healthy ecosystems that improve the environment and wellbeing of our community, providing the foundation for a liveable city. Our Nature in the City Strategy has three goals and six priorities that guide planning, development, and management of the city's biodiversity and ecosystems. It also details a set of actions and targets to evaluate the success of implementation.

The goals and priorities to achieve this vision are:

Goal 1: Create a more diverse, connected, and resilient natural environment

- 1: Improve ecosystem health and biodiversity.
- 2: Develop a more ecologically-connected urban landscape.
- 3: Increase the contribution of the private realm in supporting biodiversity conservation and ecosystem health within the municipality.

Goal 2: Connect people to nature

- 4: Connect more people to nature to improve social resilience, health, and wellbeing.
- 5: Explore opportunities to use cultural and practical 'Caring for Country' principles to integrate people with nature.

Goal 3: Demonstrate leadership in urban ecology and conservation of biodiversity

- 6: Demonstrate local and global leadership in conserving biodiversity and creating and sustaining healthy urban ecosystems.

1.9 Urban Forest Strategy

The municipality is currently facing three significant challenges: climate change, population growth and urban heating. These will place significant pressure on the built fabric, services and people of the city. A healthy urban forest will play a critical role in maintaining the health and liveability of Melbourne.

The addition of trees and other vegetation to the built environment provides the greatest benefit in mitigating the urban heat island effect. Through the process of transpiration and the provision of shade, trees help reduce day and night-time temperatures, especially during summer. They shade streets and footpaths, and their leaves reflect more sunlight and absorb less heat than built materials, reducing the heat absorbed by the built environment. During transpiration, plants draw water from the soil and release moisture through their leaves into the air.

Our vision, as set out in the Urban Forest Strategy (2012) is for a healthy, resilient and diverse urban forest that contributes to the health and wellbeing of our communities, and to a liveable city.

The strategies identified to achieve this vision are:

- 1: Increase canopy cover
 - Increase public realm canopy cover from 22 per cent at present to 40 per cent by 2040. To achieve this target we are planting at least 3000 trees per year.

2: Increase urban forest diversity

- The urban forest will be composed of no more than 5 per cent of any tree species, no more than 10 per cent of any genus and no more than 20 per cent of any one family. To achieve this target we are actively growing, testing and planting new native and exotic species, with a particular focus on those suited to Melbourne's future climate.

3: Improve vegetation health

- That 90 per cent of the municipality's tree population will be healthy by 2040. To achieve this we are working to minimise the impacts of pests, diseases and drought, and working closely with the nursery industry to ensure high quality stock.

4: Improve soil moisture and water quality

- Soil moisture levels will be maintained at levels to provide healthy growth of vegetation. To achieve this we have an active program to incorporate passive irrigation and stormwater harvesting wherever possible.

5: Improve urban ecology

- Protect and enhance a level of biodiversity that contributes to a healthy ecosystem. To achieve this we have developed and implemented the Nature in the City Strategy.

6: Inform and consult the community

- The community will have a broader understanding of the importance of our urban forest, increase their connection to it and engage with its process of evolution. To achieve this we have created the Citizen Forester Program, where more than 300 community members volunteer to assist with urban forest and ecology projects in the city.

1.10 Green Our City Action Plan

The Green Our City Strategic Action Plan was endorsed in 2017. The four-year plan aims to improve the quality and quantity of green roofs and vertical greening in the municipality to support amenity, liveability and adapt to climate change.

By working to promote green roofs and vertical greening, City of Melbourne recognises providing new green and open space in the central city is increasingly difficult, and to meet the future green space targets for a growing population, a novel approach is required.

The size of the challenges faced by Melbourne demand a greater degree of green infrastructure than the city can deliver on its own.

Actions focus on:

- leading by example
- expanding urban greening in public areas
- making relevant information and data available to the public
- introducing changes to the planning scheme to deliver sustainable design and green infrastructure on private developments.

1.11 Transport Strategy

The City of Melbourne has published a new draft Transport Strategy and the strategy is due to be finalised in late 2019. It has been developed alongside the Climate Change Mitigation Strategy to 2050.

The draft strategy establishes a vision for transport in Melbourne to 2030. It sets policies and actions to create a safe and liveable city, foster an efficient and productive city and encourage a dynamic and adaptive city. Substantial investment in walking, cycling and public transport, and better use of existing infrastructure, is needed to reduce transport emissions and meet Melbourne's growth.

The draft strategy shows the way people travel in Melbourne has changed. In 2001, most people travelled to the city for work by car. Since then, the share of trips to work by private car has declined by 25 per cent and use of public transport continues to increase. Within the central city, walking is the dominant mode with 89 per cent of all trips within the Hoddle Grid made on foot.

As the population grows, the pressure on the city's transport network to move people efficiently, comfortably and safely becomes increasingly challenging. Promoting sustainable transport modes – walking, cycling and public transport – over private vehicle trips is key to addressing this challenge.

The Transport Strategy commits to zero emissions transport in the municipality by 2050. This will be achieved by:

- supporting electric vehicles powered by renewable energy
- prioritising lower emissions for commercial vehicles and freight
- supporting stronger vehicle emissions standards
- supporting electric car charging in buildings and minimising on-street charging.

1.12 Waste and Resource Recovery Strategy 2030

More than 800,000 tonnes of waste (including garbage and recycling) is estimated to be generated in the municipality each year. Waste in landfill generates a highly potent greenhouse gas (methane) and contributed six per cent of the greenhouse gas emissions in our municipality in 2015. Reducing greenhouse gas emissions from waste is consistent with the waste hierarchy.

In July 2019, the City of Melbourne adopted an ambitious strategy that will guide the way the city collects and processes waste, while encouraging a decrease in waste production. The overall goal of the strategy is for a cost-effective and environmentally responsive waste and resource recovery system. The strategy is based on the principles of the circular economy and waste hierarchy. The City of Melbourne has three clear roles in this strategy: deliver, govern, and influence others.

The City of Melbourne will deliver:

- options to separate organic waste
- a new resource recovery hub network for businesses
- a new expert advisory service to support an improved waste system
- a waste minimisation and innovation fund
- electronic waste (e-waste) recycling options for residents.

The City of Melbourne will improve governance by:

- strengthening Waste Management Plan guidelines for new developments
- reviewing regulations and permits for waste operators and bins in the public realm
- ensuring that critical waste infrastructure is protected and enhanced.

The City of Melbourne will influence others and advocate for:

- investment in new resource recovery infrastructure
- an incentive program to improve collection systems
- best practice sustainable procurement policies and processes
- extended producer responsibility and a container deposit scheme in Victoria.

The City of Melbourne will fast-track the delivery of parts of its Waste and Resource Recovery Strategy and bring forward investment in infrastructure and new technology to deal with the state's recycling crisis and minimise waste.

Ultimately we need to work towards the model used by many European countries where recycling streams are collected and processed separately. This is not a process that can be tackled by individual municipalities so we will be working with other councils, the Victorian Government and the community to achieve long-term change.

We will also look at increasing the amount of recycled content that we use in our infrastructure projects. For example, instead of having our glass bottles and plastic thrown into landfill, they could be used to help build new roads, footpaths, bikeways and playground equipment.

Following SKM being declared insolvent in August 2019, the City of Melbourne has been forced to send 45 tonnes of recycling to landfill each day. Annually, more than 51,000 tonnes of waste including recycling is collected from municipal household and public street litter bins. As part of its response, the City of Melbourne and our waste collection business subsidiary, Citywide, will work with independent experts and undertake a feasibility study into establishing a new large-scale recycling centre.

The study will consider the potential size and location for a new facility, known as a Material Recovery Facility in Greater Melbourne, as well as the number of municipalities it could service. It would also consider the level of recycled material required for it to be viable, and potential markets for recycled materials.

Rather than sending our recycling overseas, the study will examine the feasibility and cost of preparing materials for manufacturing use here in Victoria.

1.13 Environmentally Sustainable Design Policy

The City of Melbourne currently references Environmentally Sustainable Design and green infrastructure objectives within the Municipal Strategic Statement, local policy and some overlays. The City of Melbourne's Energy, Water and Waste Efficiency Policy (22.19) ensures that any new development and significant refurbishments meet the objectives of the energy, water and resource efficiency strategies. There is opportunity to update and broaden this policy to refer to contemporary best practice, rather than particular assessment tools and to incorporate green infrastructure provisions including green roofs and vertical greening. These updates would align with recent policies from the Council Alliance for a Sustainable Built Environment (CASBE).

1.14 Future directions

We recognise there is still a lot more to do to address climate change risk within our powers and functions under the *Local Government Act 1989* and the *Climate Change Act 2017*.

The City of Melbourne is developing a City Vision which will form the basis of the Municipal Planning Strategy, within the Melbourne Planning Scheme. A changing climate presents significant challenges for our municipality and will shape the decisions we make in planning the future of our city. The City Vision identifies city-wide objectives and place visions to ensure we maintain our liveability in the face

of global and local change. Objectives to reduce greenhouse gas emissions and adapt to the impacts of climate change are critical to achieving our vision.

Infrastructure will play an increasingly important role in responding to climate change by helping to reduce carbon emissions and responding to extreme weather events. Decisions about infrastructure will directly impact our ability to reduce emissions and adapt to climate change in future decades. Planning for climate risk will contribute to the future liveability of the municipality and this underpins long term social, environmental and economic benefits.

We are committed to working collaboratively with the Victorian Government on strategic and statutory planning for buildings, precincts and infrastructure to ensure planning decisions are consistent with the policy objectives, guiding principles and decision-making principles described in Section 20 of the *Climate Change Act 2017*.

We note that the *Local Government Act 1989* has been included in schedule 1 of the *Climate Change Act 2017*, while the *Planning and Environment Act 1989* has not been included, to date.

We urge the Victorian Government to update the Victorian Planning System to align with Section 20 of the *Climate Change Act 2017* and to reflect the urgency with which the physical, transition and legal risks of climate change need to be addressed. The policy changes needed are described in more detail in the next section.

2. How the Victorian Government can support urban, rural and regional communities to tackle climate change

The City of Melbourne makes the following recommendations to the Planning and Environment Committee:

2.1. Demonstrate leadership on climate change

Recommendation 1.1 Declare a Climate and Biodiversity Emergency

On 16 July 2019 Council declared a Climate and Biodiversity Emergency. In making this decision, Council recognised the serious risks to the people of Melbourne and Australia from climate change as well as the City of Melbourne's long standing record of reducing emissions, restoring and conserving biodiversity, and preparing our community for the impacts of climate change. Solutions such as the Melbourne Renewable Energy Project are demonstrating the action we need to accelerate to mitigate the severity of climate change.

In declaring a climate emergency the City of Melbourne has joined a growing number of cities, states and national governments in Australia and around the world. The Municipality Association of Victoria and the Australian Local Government Association have also declared a climate emergency and called on other levels of government to act.

The climate emergency declaration acknowledges more needs to be done by all levels of government to accelerate climate action. The Victorian Government has committed to reducing greenhouse gas emissions consistent with the Paris Climate Agreement goal of "limiting global warming to less than 2 degrees above pre-industrial levels and taking efforts to limit warming to 1.5 degrees above preindustrial levels."

If implemented, the policy objectives, guiding principles and decision-making principles described in Section 20 of the *Climate Change Act 2017* provide an effective framework for addressing the climate emergency by accelerating emission reductions and preparing Victorian communities for the impacts of climate change.

The Australian Labor Party's 2018 National Platform recognised that "the recent IPCC report indicates that we are experiencing a climate emergency, and as a result, meaningful action on climate change is urgent, at home and internationally" (ALP, 2018).

Victorian communities need the Victorian Government to continue to demonstrate leadership on climate change by advocating for national climate change and energy policies consistent with the Paris Climate Agreement and collaborating with other state governments to address the climate emergency through forums such as the Council of Australian Governments and Ministerial Council on Energy.

Recommendation 1.2 Set science-based emissions reduction targets for Victoria to achieve a 40–45 per cent reduction on 2005 emissions levels by 2025, and 65–75 per cent reduction on 2005 levels by 2030.

Cities around the world are committed to 1.5°C science-based targets. If global average temperatures were to increase to 2°C rather than remaining below 1.5°C, there will be higher "climate-related risks to health, livelihoods, food security, water supply, human security and economic growth" (IPCC 2018).

The difference between 1.5°C and 2°C of global warming means a far higher likelihood that the irreversible tipping point of the global climate emergency will be reached. For example, the irreversible decline of agricultural production due to more severe heat waves, bushfires, drought and flooding resulting in human fatalities and food shortages; the irreversible loss of biodiversity and

marine and coastal ecosystems including coral reefs; and multi-metre sea-level rise in the long term due to the melting of the Greenland ice sheet (IPCC 2018).

For this reason, cities are advocating for 1.5°C targets to be implemented. All 96 global cities in the C40 Climate Leadership Group are committed to developing a climate action plan by 2020 aligned to the 1.5°C target. The City of Melbourne was one of the first to deliver on this commitment with the Climate Mitigation Strategy to 2050: Melbourne Together for 1.5°C endorsed by Council on 4 December 2018.

The Victorian Government recently conducted consultation and is currently considering Interim Emissions Reduction Targets for Victoria for 2025 and 2030 with final targets to be published by March 2020.

The City of Melbourne does not support the targets and trajectories as proposed by the Independent Expert Panel because according to their own research they set a pathway that relies too heavily on future emissions reduction post 2030 rather than accelerating emission reduction in line with 1.5°C science-based targets prior to 2030. This will increase the burden on future generations, rural and regional communities and reliance on as-yet unproven technologies.

Carbon budget for 1.5°C versus 2°C

There is a significant difference in the carbon budgets for 1.5°C and 2°C of global warming. The carbon budget for 1.5°C is 1250 million tonnes (Mt) CO₂-e, which is 33 per cent lower than that for 2°C (1851 Mt CO₂-e). This is a substantial difference in the level of ambition that needs to be reflected in Victoria's targets to align with the Paris Climate Agreement.

We urge the Victorian Government to set the following targets:

- 40–45 per cent below 2005 emissions levels in 2025 and
- 65–75 per cent below 2005 emissions levels in 2030

The City of Melbourne has analysed a range of scenarios and targets put forward in the Independent Panel's report (Table 1 below). Scenario one of a 75 per cent reduction by 2030 is the only scenario not relying on as yet undeveloped technology to drawdown emissions below zero post-2050. The IPCC suggest a target of 67 per cent below 2005 levels by 2030 for only a 50 per cent chance of avoiding global warming of 1.5°C (scenario two).

The targets currently proposed: 45–60 per cent below 2005 levels by 2030 (scenario four) are lower than the 65 per cent reduction recommended in 2014 put forward by the Climate Change Authority to avoid 2°C of global warming (scenario 3). The targets as proposed will also require sequestration of greenhouse gas emissions post 2050 to achieve 1.5°C. That technology does not yet exist.

Given the severity of the irreversible consequences of global warming in excess of 1.5°C, it would be in line with the precautionary principle to set targets toward the higher end of the range recommended by the Climate Change Authority and the IPCC.

Table 1. Comparison of proposed emission reduction targets for Victoria

| Scenario | Year | 2005 | 2016 | Carbon budget 2017-2050 | 2005-2016 | 2020 | 2005-2025 | 2005-2030 | Independent Panel report reference |
|----------|--|-------|-------|-------------------------|---------------|----------------|-----------|-----------|------------------------------------|
| | Victoria's current emissions trajectory | 128Mt | 114Mt | | 11% reduction | 18% below 2005 | | | |
| 1 | 75% option | | | | | | | 75% | p. 43 |
| 2 | 1.5°C IPCC (2018, 50% chance) | | | 1250 Mt | | | 43% | 67% | p.12, 53, 131 |
| 3 | CCA "well below 2°C" (2014,67–90% chance, 45–65% target for Australia) | | | 1851 Mt | | | | 65% | p. 40, 131 |
| 4 | Proposed "well below 2°C" (60% by 2030) | | | 1851 Mt | | | 39% | 60% | p.7 |
| 5 | Climate Change Authority 2°C 2014 | | | 1851 Mt | | | 33% | 47–48.8% | p.53, 131 |
| 6 | Proposed 2°C (45% by 2030) | | | | | | 32% | 45% | p.7 |
| 7 | Australian National Determined Contribution (26–28% by 2030) | | | | | | | 26–28% | |

Inequality between urban, rural and regional communities

Inadequate targets for 2025 and 2030 means locking in higher carbon emissions from the energy, transport and building sectors between now and 2050. This will transfer the higher cost of emission reduction post-2030 onto agricultural production, forestry, land use and land use change, which will be slower and more difficult to transition to lower emissions.

The need for further emissions reduction post-2030 will then occur at the same time as the severity of climate impacts such as drought and flooding will be more severely impacting agricultural production and rural and regional communities.

This will exacerbate the inequality between urban communities with access to the growing finance, services and knowledge economy of Melbourne, and regional and rural Victorian communities impacted by a decline in agricultural production and higher risk of stranded assets.

Rounding down of science-based targets and carbon lock-in through policy settings

The emissions reduction target set by Victoria will cascade down into policy settings for all Victorian regions, sectors of the economy, infrastructure, and all community segments.

There has been consistent “rounding down” of ambition from the science-based targets calculated at each stage of decision-making and this will mean the starting point for policy settings for the transition

of energy, buildings, transport and so on will not deliver sufficient emission reductions to avoid irreversible consequences of climate change.

The higher cumulative emissions (area under the curve) to 2030 will lock in higher emissions for the period 2020–2050 that cannot physically be reduced below zero for the period 2050–2100. Rather than placing this burden on future generations it would be fairer to reduce emissions more rapidly prior to 2030.

International and subnational commitments to 1.5°C targets of Paris Climate Agreement

The Victorian Government's Independent Panel Report on Interim Emission Reduction Targets suggests international consensus has not yet crystallised around the 1.5°C target however the Paris Climate Agreement clearly states a commitment to “pursue best efforts to limit warming at 1.5°C”. “Pursuing best efforts” should mean setting targets and implementing policy measure to try to achieve adequate emission reductions to avoid global average warming of 1.5°C.

In 2018 the IPCC revised figures to recommend that governments accelerate emission reductions and set more ambitious targets. They also provided a strong case in favour of limiting global warming to 1.5°C rather than 2°C. It will take time for the implications of this latest science to be analysed for the purpose of policy making. However the evidence is clear that action needs to be accelerated to avoid 1.5°C global warming and targets need to be higher than previously anticipated.

Along with other sub-national actors, as a minimum the Victorian Government should set a target aligned to the 50 per cent chance of avoiding 1.5°C using the carbon budget of 1250 Mt CO₂e and allowing for increased ambition for higher confidence when this is calculated (67–90 per cent likelihood).

Recommendation 1.3 Commit to sector pledges under the *Climate Change Act 2017* to accelerate emission reductions and the transition to 100 per cent renewable energy

The Victorian Government has committed to preparing sector pledges by 2020 for the major sources of greenhouse emissions in Victoria. Under the *Climate Change Act 2017* sector pledges need to be prepared for:

- energy, including stationary energy, transport and fugitive emissions
- industrial processes and product use
- agriculture
- waste and
- land use, land use change and forestry.

These sectors cover the industries and activities that generate the largest sources of greenhouse gas emissions in Victoria. Each sector has specific challenges and opportunities and it is in the interest of residents, businesses and visitors to Melbourne that emissions are reduced rapidly through these sector pledges.

To accelerate a smooth transition in the renewable energy sector and support urban, rural and regional communities the Victorian Government needs to:

- Develop sector pledges to achieve emissions reductions consistent with 1.5°C science based targets (65–75 per cent below 2005 levels in 2030).
- Publish a program of works that will deliver the government's commitment to 40 per cent renewable energy by 2025.
- Raise the renewable energy target for 2030 in line with science-based targets.

Role of local government

Local governments can play an important role in implementing emissions reductions through strategic and statutory land use planning for buildings, transport and industries as well as for energy, water and waste infrastructure. Local governments can also support sector pledges to reduce emissions by facilitating innovation and through advocating for policy change.

Sustainability Victoria's Take 2 Pledge Program provides a platform for local communities, local governments and businesses to share solutions to reduce greenhouse gas emissions. For local governments this program has the potential to support and build capacity for formal Council Pledges under the *Climate Change Act 2017*.

As part of our Council Pledge 2021–2025 and our Climate Change Mitigation Strategy to 2050 the City of Melbourne has identified actions we can take to reduce emissions from these sectors. Our strategic priorities include:

1. 100 per cent renewable energy
2. zero emissions buildings and precincts
3. zero emissions transport
4. reducing the impact of waste

We are committed to working with the Victorian Government and key industry sectors to achieve these priorities by contributing to the development and implementation of the sector pledges.

The Melbourne Renewable Energy Project (MREP) involved local councils and some of Melbourne's best known cultural institutions, universities and corporations purchasing electricity from a new windfarm constructed at Crowlands in regional Victoria. The corporate power purchase model is now being replicated by the City of Melbourne as well as other local governments and businesses in Victoria and other states.

These kinds of innovative projects recognise the purchasing power of energy consumers and businesses in urban areas, and their desire for affordable, secure and renewable energy supply. These demand-driven projects are contributing to the energy market transition and the Victorian Government's renewable energy target.

Victorian Renewable Energy Target

Residents and businesses in Melbourne have an interest in a smooth and cost effective transition of energy supply from fossil fuels to 100 per cent renewable energy. As the energy market transforms, we anticipate aging coal-fired power stations will become increasingly less reliable and close with as little as three to five years notice.

We support the integration of renewable energy requirements into building standards and regulations. However overshadowing of buildings in the central business district of Melbourne will also limit the scale of opportunity for rooftop renewable energy.

Through legislation the Victorian Government has committed to 40 per cent renewable energy by 2025 and 50 per cent renewable energy by 2030. The Victorian Renewable Energy Target has been successful in providing certainty to investors in the renewable energy sector in Victoria in the absence of adequate national policy settings. However, the Victorian Renewable Energy Target for 2030 represents an increase in renewable energy of only 2 per cent per year from 2025 to 2030.

Given the scale of the opportunity to plan the transition of the energy sector when the market is rapidly shifting investment away from fossil fuels a higher renewable energy target for 2030 is needed to accelerate a smooth transition in the energy sector. This is because of the time needed for the

industry to construct and deliver adequate new generation to fill the gap when the next coal-fired power station closes – with as little as 3–5 years notice.

An increased Victorian Renewable Energy Target, along with supporting transmission network upgrades should be pursued as it is likely to be a least regrets strategy in the event that a major thermal generator exits the market early. The risk of high prices and lack of reserve is real and present for Victorians if Yallourn Power Station exits or has major reliability issues earlier than 2032. A higher renewable energy target and accelerated transmission upgrades would help mitigate these risks, whilst also delivering emissions reduction benefits.

Higher ambition for the renewable energy target is also needed to ensure urban communities are resilient in terms of security and affordability of energy supply. The Victorian Government needs to ensure the transition of the electricity and gas sector will deliver a secure renewable energy supply at the lowest overall cost. While market driven approaches, such as corporate power purchase agreements (PPAs) are playing a role in the transition, private sector PPAs alone without Victorian Government support may not be the lowest cost approach for all Victorian consumers.

The Victorian Government may also consider its role in ensuring corporate PPAs are accessible to a wider range of large energy users through aggregation initiatives such as the Melbourne Renewable Energy Project. At present, there is latent demand for renewable energy PPAs not being well serviced due to lack of aggregation and facilitation services.

2.2 Support communities to prepare for the rapid transition away from coal, oil, gas and waste

The Australian Government's recent response to the Senate Economics Reference Committee Inquiry into Carbon Risk supported recommendations that the Australian Securities and Investment Commission (ASIC), and Australian Stock Exchange (ASX) provide guidance to company directors and listed companies on disclosure of carbon risk, which includes exposure to fossil fuels. These recommendations are also reflected in advice about climate risk exposure to company directors from the Australian Institute of Company Directors (AICD).

This is part of a global corporate governance and investment trend following the Financial Stability Board's Taskforce on Climate Related Financial Disclosure guidelines to stock exchanges, corporate regulators, financial institutions and global corporations in response to the Paris Climate Agreement.

Major investors and corporations are pursuing efforts to reduce emissions consistent with the IPCC 1.5°C target and to reduce their exposure to investment in coal, oil and gas. A growing number of Australian financial institutions and major insurers are divesting from thermal coal power stations and coal mining and this trend is expected to continue through the integration of carbon risk into credit risk analysis.

The trend toward carbon risk analysis will impact businesses operating in the municipality of Melbourne and other local governments because credit risk analysis influences the cost of finance and insurance. The municipality is therefore exposed to carbon transition risk because the city is highly reliant on coal, oil and gas for its energy demand.

It is in the community's interests for the Victorian Government to support a rapid transition to renewable energy prior to investor-driven closure of coal-fired power stations. Otherwise, the social and economic cost of climate impacts will be exacerbated by disruption to energy supply, transport, households and businesses and increasingly high costs of energy.

In addition to carbon transition risk is the cost of physical risks associated with climate change impacts. Residents, businesses and public assets across the municipality will experience increasingly severe physical risks and disruption due to heat waves, flooding and sea-level rise. The cost of climate change impacts to our municipality is already increasing and they are projected to increase by

\$12.6 billion from 2020 to 2050. The economic benefits are estimated to be \$5 billion over the same period if we transition to net zero emissions for our municipality.

Recommendation 2.1 Support communities to prepare for the next closure of a coal-fired power station in the Latrobe Valley as early as 2023 with industry and place-based (urban and regional) transition plans

To support urban, rural and regional communities, the Victorian Government needs to develop industry and place-based (urban and regional) transition plans to accelerate emission reductions. It also needs to support communities to adjust and industries to diversify away from fossil fuels.

The City of Melbourne is willing to work with the Victorian Government and other local governments toward a just transition for Victorian communities and industries.

Electricity Transmission and Distribution Infrastructure

For urban areas, decarbonising energy supply, buildings and transport means electrification powered by 100 per cent renewable energy. This requires a transition of new and existing suburbs away from coal-fired power electricity and gas to achieve net zero emissions by 2050. Barriers to the uptake of renewable energy include building and planning regulations, and electricity and gas distribution infrastructure.

Market transition is already underway, towards large-scale renewable energy, and new business models for distributed, digitised, and demand responsive energy technology in urban areas.

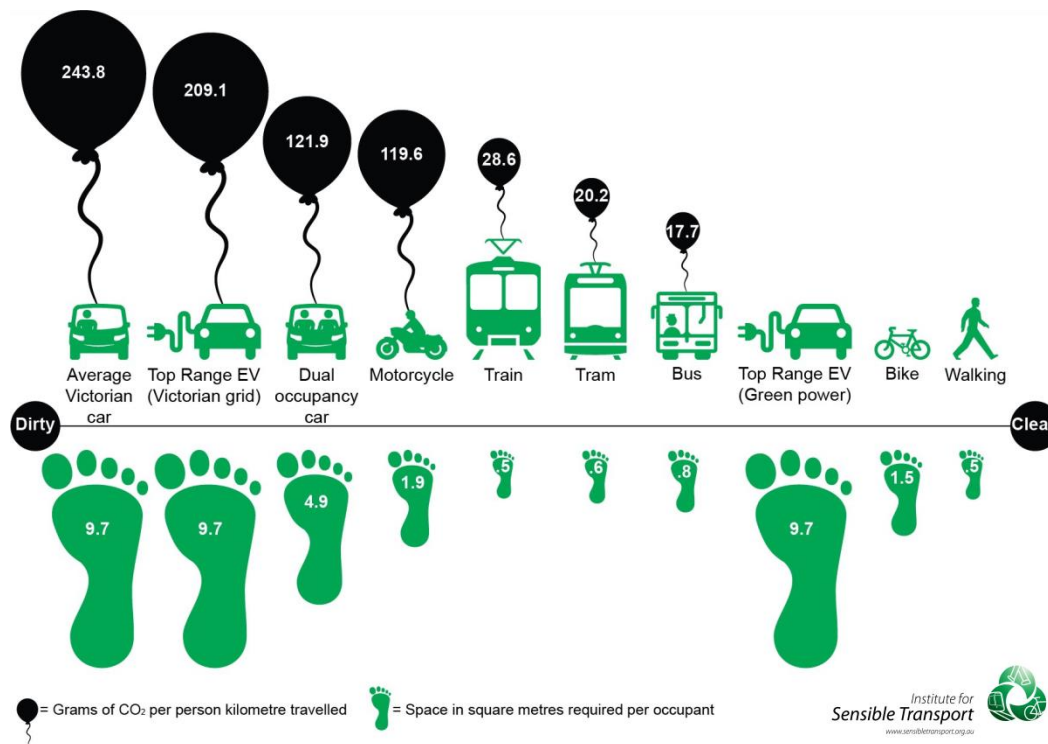
To accelerate a smooth transition in the renewable energy sector and support urban, rural and regional communities the Victorian Government needs to:

- Develop industry and place-based (urban and regional) transition plans.
- Work with the Australian Energy Market Operator (AEMO) and Transmission Network Service Providers to prioritise and accelerate investment in transmission network upgrades identified in AEMO's Integrated System Plan.
- Introduce building and plumbing regulations and changes to the Victorian Planning Provisions to transition urban renewal precincts and new homes away from coal-fired power and gas, including gas-boosted solar hot water.

Recommendation 2.2 Support communities to prepare for the rapid transition away from petrol and diesel vehicles by introducing a Victorian planning scheme amendment for electric vehicle-ready buildings

In the short term, the electrification of vehicles will increase emissions until there is adequate supply of renewable energy in the electricity grid. Figure 2 (below) shows the relative contribution to greenhouse gas emissions of different modes of transport and the physical space taken up by those forms of transport. Walking, cycling and public transport produce lower greenhouse gas emissions and take up less public space. In the long term, cars, buses and commercial vehicles will need to be powered by 100 per cent renewable energy to reduce emissions in line with the Paris Climate Agreement. This will also improve air quality.

Figure 2. Greenhouse gas emissions generated by different transport modes in Greater Melbourne



The City of Melbourne Draft Transport Strategy 2030 notes that as the uptake of battery electric vehicles (EVs) accelerates, market demand for charging facilities will grow. However competition for public space from different transport modes is a significant consideration in urban planning. Currently, at the street level, more public space is allocated to driving and parking cars than walking and cycling, even though the number of people walking and cycling is far greater, and greenhouse gas emissions far lower.

The City of Melbourne encourages charging facilities which are compatible with a wide variety of vehicles and available to as many drivers as possible to encourage a faster uptake of electric vehicles. However, just as the City of Melbourne does not allocate public space for the refuelling of petrol and diesel fuelled vehicles, we do not plan to allocate public space for the charging of electric vehicles. Instead, our preference is for the recharging vehicles off-street. Charging off-street means street space can deliver benefits to more people as public space, green space, wider footpaths, bicycle lanes or other uses. There is currently an excess of private off-street parking in the municipality.

The Victorian Government could support the transition from petrol and diesel vehicles through requiring electric vehicle-ready buildings in the planning scheme. New development should be required to incorporate electricity supply infrastructure, space, and metering arrangements to ensure private off-street car parking is 'EV ready', to enable the efficient installation of EV charging infrastructure in the future.

A study conducted by the City of Vancouver suggests that retrofitting EV parking bays post-construction is up to ten times more expensive than designing them in at construction stage. Given the costs associated with upgrading electrical transformers and substations, the electrical load for a proportion of EVs should also be factored into at design stage.

Recommendation 2.3 Extend train, tram and bus services and ensure they are powered by 100 per cent renewable energy

The Victorian Government has invested in major new rail infrastructure for Melbourne, yet rapid population growth means the Melbourne Metro project will only keep up with demand for train travel. Train, tram and bus services need to be extended so that Melburnians and Victorians chose to commute by public transport instead of travelling by car. This increased public transport capacity should begin with building Melbourne Metro 2 and expansion of tram and bus services to urban renewal areas such as Fishermans Bend and Arden.

The Victorian Government recently delivered solar energy to power Melbourne's tram network. Trains are still powered by coal-fired power and need to transition to 100 per cent renewable energy in the future.

As climate change becomes more severe, Melbourne needs to prepare for the impact of increased temperatures, flood and drought on people walking, cycling and using public transport. The Victorian Government needs to consider the interaction between the electrification of vehicles, decarbonisation of the electricity grid, energy storage infrastructure and the physical risks of climate change. Electricity blackouts during heat waves already disrupt public transport services during summer. There is an opportunity for effective infrastructure planning of electric vehicle charging and energy storage technology to contribute to the stability of the electricity grid, particularly in new urban renewal precincts.

Recommendation 2.3 Ensure new buildings and urban renewal precincts are not locked into natural gas infrastructure and support communities to prepare for the transition away from natural gas

Forward planning for renewable energy in cities needs to include the transition away from gas infrastructure for new buildings and urban renewal areas. To enable residential and commercial buildings to be fit for purpose in a zero carbon future, planning, building and plumbing regulations need to reduce reliance on fossil fuels. Assets reliant on natural gas for space and water heating and cooking may experience steeply declining value as renewable electricity displaces gas as the most cost effective and zero emissions energy source.

Melbourne is one of the fastest growing municipalities in Australia and this requires large-scale urban renewal across many precincts. Installing renewable-ready electricity grid infrastructure in the urban renewal phase is far cheaper than retrofitting infrastructure including gas networks in existing suburbs. It makes sense to avoid installing new natural gas distribution in major urban renewal precincts and to ensure new electricity infrastructure will be renewable-ready. Fishermans Bend and the Arden Urban Renewal precinct offer major opportunities to demonstrate this approach.

Since the Victorian Government introduced requirements for energy efficient hot water for new homes in 2006, natural gas prices have increased significantly due to export demand. The installation of natural gas in buildings is locking in higher energy costs and higher cumulative carbon emissions as it is no longer considered a sustainable transition fuel. In the same way as investors, insurers and financial analysts are factoring in the credit risk for coal and oil, they are also factoring in the higher credit risk of gas. As one of the most carbon-intensive cities in the world, Melbourne's future liveability as a place to live and do business is best served by transitioning away from fossil fuels.

Recommendation 2.4 Introduce a state-wide Container Deposit Scheme and increase investment from landfill levy funds to support a resilient, local recycling sector

The City of Melbourne has joined other Victorian Councils such as the Cities of Frankston, Darebin and Port Phillip and the Municipal Association of Victoria in calling for the Victorian Government to introduce a state-wide Container Deposit Scheme.

A Container Deposit Scheme would help reduce plastic and glass being sent to landfill by rewarding individuals and community groups for recycling. It's time to provide an incentive for people who collect bottles and cans and give back to the community.

Victoria and Tasmania are the only Australian states yet to commit to a scheme. South Australia's scheme was introduced in 1977 and they currently offer a 10 cent deposit and refund on beverage containers. Introducing a similar scheme in Victoria would help reduce litter while providing a commodity that could be used by our local industry. The scheme could include manually operated or automated 'reverse vending machines' that would give credit for each item deposited.

Along with reducing litter, the scheme would ensure the beverage supplier industry takes greater responsibility for packaging. The scheme also produces streams of containers with low contamination rates, allowing the containers to be recycled more easily than co-mingled recycling streams that require post-collection sorting and have higher rates of contamination.

Following SKM's insolvency, the City of Melbourne has been forced to send 45 tonnes of recycling to landfill each day. SKM sorts 50 per cent of Victoria's kerbside recycling – close to 300,000 tonnes a year.

More than \$500 million is available in the Victorian Government's Sustainability Fund, with the City of Melbourne contributing \$11 million over the past five years. This must be invested to increase capacity and resilience of the local recycling sector. We need the Victorian Government to invest in new technologies to transform our waste and resource recovery sector and transition to a circular economy. We also need all levels of government setting procurement targets for recycled content to build Australia's domestic recycling industry, like the steel industry.

2.3 Invest in climate resilience and adaptation to higher temperatures, sea-level rise, and flooding

The Victorian planning system and building regulations need to ensure that urban development is energy efficient and addresses the impacts of climate change on Victorian communities. The thermal performance of buildings during heatwaves and the impacts of the Urban Heat Island effect can be addressed through the planning system and building regulations.

Through the *Climate Change Act 2017* the Victorian Government has committed to developing Adaptation Action Plans every five years commencing in 2021 for the following systems:

- built environment
- education and training
- health and human services
- natural environment
- primary production
- transport
- the water cycle.

We urge the Victorian Government to partner with local governments and urban, rural and regional communities in the development of these Adaptation Action Plans. The following recommendations need to be delivered as part of the preparation of these first plans by 2021.

Recommendation 3.1 Ensure all new and existing infrastructure including public housing is designed and built to respond to, and mitigate, climate change

Infrastructure networks – including transport, energy, waste and water service sectors with critical interdependencies – are at risk of failure from external shocks or stresses including climate change impacts. We need to understand the extent of interdependencies and climate-related risks faced by infrastructure systems so that adaptation solutions can be developed. The Senate Economics Reference Committee Inquiry should consider these interdependencies.

Climate change impacts our transport infrastructure in a number of ways. Trams are reliant on electricity supply and cannot operate if tracks are flooded more than 10 cm and therefore disrupts commuters getting to and from work. Train lines buckle in the heat and during recent heatwaves commuters have been unable to get home.

The Victorian Government needs to ensure that transport agencies complete necessary risk assessments on the impact of climate change on transport infrastructure and put measures and design standards in place to reduce risks. Emergency management needs to be included in risk planning.

Addressing the risk and impact of climate change is crucial in the planning, design and construction of new infrastructure and the maintenance and renewal of existing infrastructure. All levels of government, agencies and private developers have a role to play in ensuring our infrastructure responds to the changing climate. This will avoid costly retrofits in the future.

City of Melbourne is completing vulnerability assessments of all council buildings, including our libraries, maternal child health services and childcare centres. This will identify actions to improve building performance in extreme weather and incorporate thermal comfort, drainage and water storage considerations into building retrofits. A similar process should be done for Victorian Government infrastructure including public housing. New buildings need to be designed to high standards, with reference to best practice examples such as PassivHaus and 6 star Green Star, to improve thermal comfort, passive design and shade.

Recommendation 3.2 Update the Victorian Planning System and building regulations to require developers to reduce emissions from buildings and address the physical impacts of climate change

The building regulations and planning scheme need to be updated to ensure that private developers are required to reduce building emissions and prepare for the impacts of climate change.

The City of Melbourne is investigating options to ensure local planning controls are renewable-ready and climate resilient for the wider municipality. All local governments will require similar provisions, so implementation could be made significantly easier by the introduction of state planning policy, alongside changes to the National Construction Code. Government leadership is needed to drive the transition of our buildings to be climate-ready into the future.

Heat

There is a current disconnect between science, heat projections and building performance requirements. University of Melbourne's Heat Box study shows there is a significant risk of creating apartments which exacerbate heat stress. The study shows that if there is a heatwave in Melbourne and the power goes out, most apartment buildings will have indoor temperatures exceeding international health standards.

Planning and building reform needs to include standards that ensure buildings are designed so that they can efficiently withstand all climate hazards. An update of the Code needs to include standards for new buildings as well as a plan to retrofit existing buildings.

Flooding

With population expected to nearly double in the next 20 years, we will continue to expand into high rise buildings in low-lying renewal areas that are at risk of flooding and storm surges, such as Fishermans Bend, Southbank and Arden Macaulay.

As climate change impacts intensify, approaches to water management and flooding need to be embedded in the design and planning of new development and urban renewal areas. In some flood prone areas water authorities require building floor levels to be raised to address flooding risk, which can result in a disconnection with the public realm. Policies that require building floor levels to be raised should be included in the planning provisions to avoid poor urban design outcomes.

Recommendation 3.3 Require the Essential Services Commission to consider future climate change impacts when assessing water corporation business cases

Population growth and decreasing annual average rainfall are placing higher demands on our water supply. Drinking water demand is projected to outgrow supply and finding more alternative water sources will be part of meeting this demand.

For water corporations the business case for third pipe recycled water may not always stack up from a traditional cost benefit analysis. A sensitivity analysis of different sources under various climate scenarios must be considered as part of business cases e.g. stormwater or recycled water scheme will continue to deliver a fit-for-purpose supply in drought conditions.

The Essential Services Commission (ESC) currently conducts price reviews for water corporations, including assessing proposed operating and capital expenditure, and capital investments. The ESC needs to accept business cases that go beyond the cost comparison to potable water to ensure future water supply demands are met.

Recommendation 3.4 Provide up-to-date climate change data and information

Good climate change adaptation planning requires up-to-date data and research to inform decision making. Data is critical to local governments' asset management planning to ensure we are managing our infrastructure to cope with the future impacts of climate change. The City of Melbourne encourages the Victorian Government to continue to fund the research on the impacts of climate change by research bodies such as the Victorian Centre for Climate Change Adaptation Research, National Climate Change Adaptation Research Facility and the CSIRO, as well as into effective mitigation solutions.

Recommendation 3.5 Clarify insurance arrangements to support private sector adaptation and assist the insurance industry to develop appropriate products for the future

Insurance companies are already reluctant to insure properties for storm surge and sea level rise. City of Melbourne is working with the Victorian Government Department of Environment, Land, Water and Planning and the Resilient Melbourne Office to work with the insurance industry to increase knowledge and awareness on managing risk.

The Victorian Climate Change Adaptation Plan 2017–2020 recognises that the Victorian Government can help by using planning policy to manage land-use risks, and by working with insurance companies to ensure insurance premiums accurately reflect climate change risks.

Risk reduction through the implementation of Australian, Victorian and local government policy and increasing community awareness will help reduce costly impacts of extreme climate events.

Recommendation 3.6 Address climate vulnerability among public housing tenants

Even relatively recently constructed apartment buildings rely on artificial air conditioning in heat wave conditions, which comes at a cost to residents and has associated impacts on greenhouse gas

emissions and peak demand. During the heatwave preceding Black Saturday in 2009, 374 people died due to heat-related illness. This was more than double the number of deaths caused by the fires.

This inquiry should consider the impact of climate change on social housing, rooming houses, rental properties and strata properties. Research by the University of Melbourne has shown that current standards are inadequate to protect residents against heat stress.

Recommendation 3.7 Fund programs to foster community climate resilience programs to support vulnerable, low income members of the community.

The need for adaptation action is particularly pressing for vulnerable people within the community, including those experiencing homelessness, the elderly, young children, international students, people with disabilities and low-income households.

Maintaining an inclusive, culturally diverse community that provides for people of all ages will require strengthening and enabling community resilience to climate impacts. There is significant socio-economic disadvantage in our municipality, with approximately 18.7 per cent of residents living below the poverty line, and over 1200 people experiencing homelessness. These groups are more vulnerable to climate change impacts. Working with those who are likely to be disproportionately impacted by climate change is essential to maintain and improve social cohesion. As a major provider of community services, governments also need to plan for potential demand growth due to climate change impacts.

The creative industries also have a part to play in enabling community resilience to climate change. Art installations and music events, which teach people about climate change impacts, can be very powerful and engaging. Refuge at Arts House is a five-year interdisciplinary project exploring the role of art and culture in preparing communities for climate related impacts. It brings together people who might not normally collaborate in a crisis, including local residents, artists, scientists, Elders and experts from the world of emergency services. Refuge promotes new ways to ground equity, access, dignity and hope in our response to catastrophe through a creative approach.

Recommendation 3.8 Drive implementation of the Living Melbourne: Our Metropolitan Urban Forest strategy and fund additional local government urban greening initiatives.

The Living Melbourne strategy was developed by Resilient Melbourne in partnership with the Nature Conservancy. It provides a cohesive plan for the urban forest across metropolitan Melbourne. With support from 32 councils, this strategy has the potential to ensure excellent greening outcomes for millions of Melburnians but without leadership and funding at the Victorian Government level there is a risk it may not achieve its full potential.

3. Conclusion

There is strong support from residents and businesses for the Victorian Government to set ambitious emissions reduction targets and prepare the state for climate change impacts.

We urge the Victorian Government to declare a Climate and Biodiversity Emergency and collaborate with local governments to address climate change in urban, rural and regional communities. Local governments can be key partners in accelerating the just transition from fossil fuels to renewable and climate resilient communities.

Victorian Government policy settings are critical to delivery of City of Melbourne's emissions reduction targets. We cannot achieve the level of emissions reductions needed without supporting action by the Victorian Government to set 1.5°C science-based emission reduction targets.

Victorian Government policy changes are needed to transition away from fossil fuels towards 100 per cent renewable energy, zero emissions buildings, precincts and transport and to reduce the impact of waste.

Increasingly severe and frequent heatwaves, storms and floods will continue to disrupt communities and businesses and impact public health, buildings and infrastructure. Changes to the Victorian Planning System are urgently needed to reduce emissions and to prepare Victorian communities for the impacts of climate change.

We welcome the opportunity to respond to this Inquiry and we urge the Planning and Environment Committee to consider our recommendations and make bold recommendations to accelerate the Victorian Government's response to the climate emergency.

Appendix I Key Council Strategies and Plans

- Climate Change Mitigation Strategy to 2050: Melbourne Together for 1.5°C:
<https://www.melbourne.vic.gov.au/sitecollectiondocuments/climate-change-mitigation-strategy-2050.pdf>
- Emission Reduction Plan for Council Operations 2016–2021:
<https://www.melbourne.vic.gov.au/SiteCollectionDocuments/emissions-reduction-plan.pdf>
- Climate Change Adaptation Strategy Refresh 2017:
<https://www.melbourne.vic.gov.au/sitecollectiondocuments/climate-change-adaptation-strategy-refresh-2017.pdf>
- Nature in the City Strategy: Thriving Biodiversity and Healthy Ecosystems:
<https://www.melbourne.vic.gov.au/SiteCollectionDocuments/nature-in-the-city-strategy.pdf>
- Green Our City Strategic Action Plan 2017–2021:
<https://www.melbourne.vic.gov.au/sitecollectiondocuments/green-our-city-action-plan-2018.pdf>
- Waste and Resource Recovery Strategy 2030:
<https://www.melbourne.vic.gov.au/SiteCollectionDocuments/waste-resource-recovery-strategy.pdf>
- Draft Transport Strategy 2030:
<https://participate.melbourne.vic.gov.au/transportstrategy/draft-strategy-overview>
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- Intergovernmental Panel on Climate Change (IPCC) (2018). *Special Report into Global Warming of 1.5°C*
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- Planning and Environment Act 1987*
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