LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ENVIRONMENT, CLIMATE CHANGE AND BIODIVERSITY
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Submission Cover Sheet

Inquiry into Climate Change and Greenhouse Gas Reduction (Natural Gas Transition) Amendment Bill 2022

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22/557

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Dear Dr ~~Paterson~~ Marisa

Thank you for the opportunity to respond to the Inquiry into the Climate Change and Greenhouse Gas Reduction (Natural Gas Transition) Amendment Bill 2022 (the Bill). I am providing this response on behalf of the ACT Government.

The *Climate Change and Greenhouse Gas Reduction Act 2010* sets a target for the ACT to reduce greenhouse gas emissions in the ACT to zero net emissions by 30 June 2045. The ACT Climate Change Strategy 2019-2025 (Climate Change Strategy) sets the initial pathway for the Territory to achieve this objective. The Climate Change Strategy (at Attachment 1) includes a goal of developing a plan to achieving zero emissions from gas use by 2045, which includes setting timelines with appropriate transition periods for phasing out new and existing gas connections.

In support of the Government's overarching climate change policy objectives, the Parliamentary and Governing Agreement of the 10th Legislative Assembly includes several projects in Appendix 1A1: Next steps on climate action, including:

(vii) Legislate to prevent new gas mains network connections to future stages of greenfield residential development in the ACT in 2021-22.

(viii) Commence a transition project, working with industry and other stakeholders, to advance all-electric infill developments, with a goal of no new gas mains network connections to future infill developments from 2023.

On 4 August 2022, the Government released the '*Powering Canberra: Our Pathway to Electrification. ACT Government Position Paper*'. This paper (at Attachment 2) outlines that the ACT's transition from fossil fuel gas will be led by electrification. The pathway was chosen after research and

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modelling demonstrated that this transition is already underway and that this pathway is the most cost effective and commercially viable option at this time. It was found that hydrogen and biogas must overcome significant supply and economic barriers to be commercially feasible in the Territory.

The introduction of the Bill is a foundational requirement to ensure that the Territory can meet its climate change objectives and commitments. The Bill has been drafted in a way to ensure that the regulation-making power is limited to 'natural gas' network connections and will ensure that it cannot be used to prevent retail customer account transfers, gas service upgrades or connections to 100 per cent renewable gas supply should it become available.

If enacted, the legislation will have no effect until such time as a regulation is in place. The Environment Planning and Sustainable Development Directorate is currently planning public and direct industry consultation on the potential scope of a future regulation, which is expected to commence before the end of this year. This consultation will include the consideration of the types of developments or areas where new fossil gas mains connections may be prohibited, appropriate transitional periods and exemption processes. The consultation will include the publication of a Regulatory Impact Statement and public submissions will be sought.

A future regulation that prevents fossil gas mains connections in prescribed circumstances does not prevent the Territory from considering green gas options as the market develops, but it does prevent the scale of the transition task from growing. This approach is supported by the Grattan Institute's 2020 '*Flame Out*' report which noted:

> *"…uncertainty is not an excuse for inaction. New houses in NSW, Queensland, SA, and the ACT are better off today using electricity for all their energy needs, and this choice will also reduce emissions. A moratorium on new gas connections in these places is a no-regrets option that saves money and emissions."*

This is an important Bill that will ensure that the Territory can meet its climate change commitments.

Yours sincerely

[redacted]

Shane Rattenbury MLA

23/8/22

Attachments:

1. The ACT Climate Change Strategy 2019-2025
2. Powering Canberra: Our Pathway to Electrification. ACT Government Position Paper


ACT
Government
ACT CLIMATE CHANGE STRATEGY 2019–25

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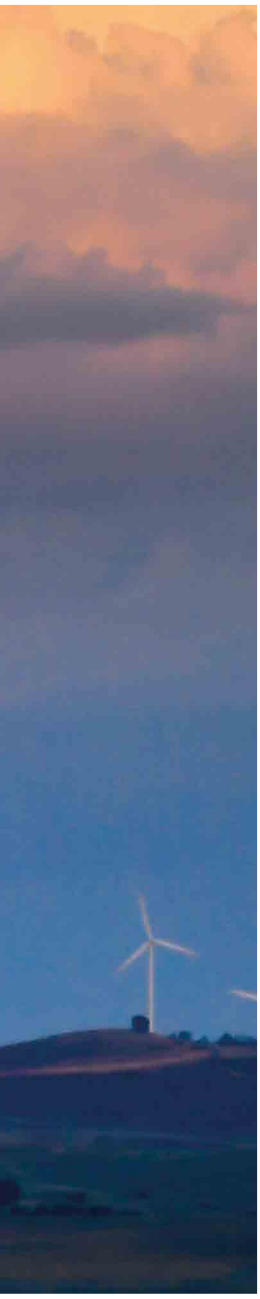
MINISTER'S MESSAGE



Climate change is one of the biggest challenges we face. Globally, if we continue to release greenhouse gases at current rates, our climate will reach a dangerous tipping point in coming decades, which will result in irreversible changes to the Earth's systems.

We have a chance to avoid this dangerous climate disruption, but we need to act now. By working together we can build a smarter, healthier, net zero emissions future. The ACT is a small jurisdiction but we are making a difference. We are a world-leading jurisdiction in addressing climate change in our own backyard, and participating in national and international forums dedicated to addressing climate change. We are internationally recognised for being on track to achieve 100% renewable electricity supply by 2020, our ambitious emissions reduction targets, our work to encourage the shift to zero emissions vehicles, and for our innovative projects to build a smarter and more reliable electricity network.

In May 2019, the ACT joined many other cities, states and territories around the world in declaring a state of climate emergency, acknowledging the need for urgent action across all levels of government. We are committed to doing everything we can to solve this global threat in the interests of securing a liveable and healthy future for our community, for all species and for future generations.

This strategy builds on achievements to date and identifies new measures to further reduce emissions and increase our resilience to unavoidable climate change impacts. It sets a path toward achieving our target of reducing emissions by 50–60% (from 1990 levels) by 2025 and outlines initial steps towards achieving our goal of net zero emissions by 2045. Our targets are ambitious. Achieving them will require continual learning and improvement as well as the active participation of the whole community. Government is committed to collaborating with the community and businesses to find new ways of working together to respond to climate change.

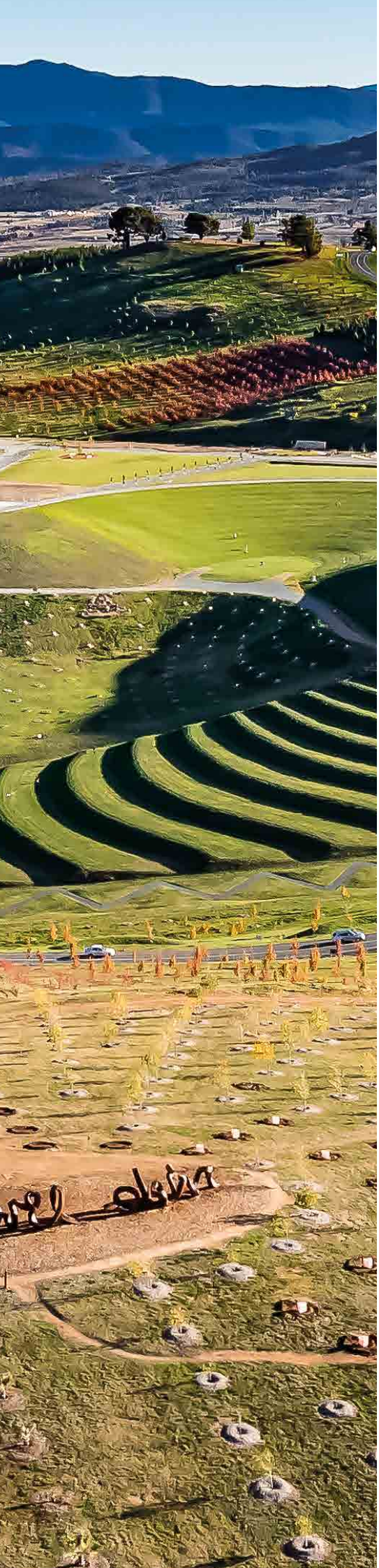
In addition to addressing climate change, many of the actions in this strategy will deliver other benefits for the community, such as cost savings, more comfortable homes and a cooler and more liveable city. Taking early action on climate change can bring economic benefits such as attracting zero emissions research, businesses and investment and job opportunities to Canberra.

I look forward to working with the community as we implement this strategy to achieve a sustainable, modern and climate-wise Territory.

Shane Rattenbury MLA, Minister for Climate Change and Sustainability.

ACKNOWLEDGEMENT OF COUNTRY

The ACT Government acknowledges the Australian Aboriginal and Torres Strait Islander peoples of this nation. We acknowledge and pay our respects to Elders, past, present and future of the Ngunnawal people as the Traditional Custodians of the lands on which we live and where we conduct our business. We recognise the significant contribution of the Ngunnawal people and neighbouring Nations—the Ngambri, Ngarigo, Wolgalu, Gundungurra, Yuin and Wiradjuri to the Canberra region. For thousands of years these Nations have maintained a tangible and intangible cultural, social, environmental, spiritual and economic connection to these lands and waters.



EXECUTIVE SUMMARY

Canberra in 2045 will be a smart, modern and highly liveable net zero emissions city which is leading by example to address the global challenge of climate change.

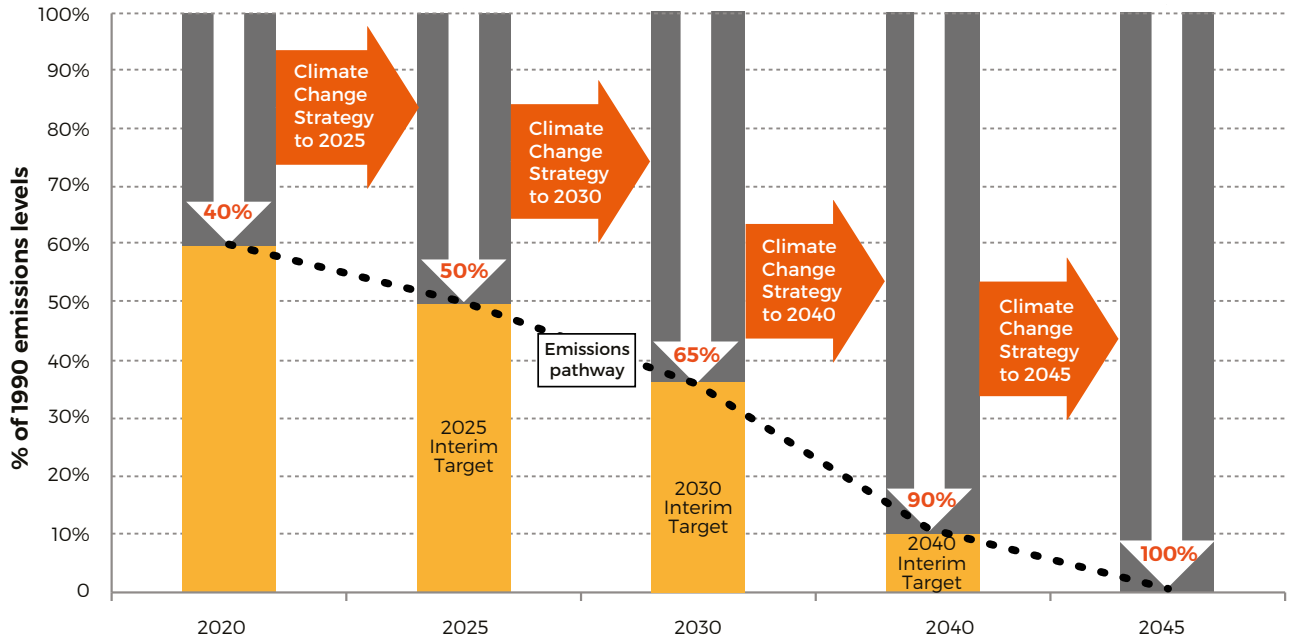
To build this future, immediate action is needed to further reduce greenhouse gas emissions and prepare for climate change. Our climate is already changing and the necessary adjustments to how we live, work and play will take time. As a prosperous, educated and progressive community, we are ideally placed to show the world how to meet this global challenge.

The Australian Capital Territory (ACT) has made good progress on climate change action in recent years. We are internationally recognised for being on track to achieve 100% renewable electricity by 2020, and for our world leading greenhouse gas emission reduction targets, including a 40% reduction in emissions by 2020. Achieving these targets is driving innovation in energy and transport industries, helping businesses and households save energy costs, improving government productivity and introducing new technologies and practices to the community.

The ACT has committed to reducing emissions (from 1990 levels) by:

- 40% by 2020
- 50–60% by 2025
- 65–75% by 2030
- 90–95% by 2040
- 100% (net zero emissions) by 2045.

Figure 1: ACT emission reduction targets to 2045 (shown at the lower level of ambition e.g. the 2025 target of 50-60% below 1990 levels is shown as 50%).



This strategy outlines the next stage of the ACT Government's climate change response and identifies actions to meet the above targets and prepare for climate change. The actions have been developed with the community and stakeholders and are focused on:

- meeting the 2025 target
- building resilience to climate change impacts
- ensuring we don't 'lock in' future emissions
- laying the foundations for achieving net zero emissions.

This strategy replaces the previous Climate Change Strategy and Action Plan 2 (2012) and the Climate Change Adaptation Strategy (2016) and is complemented by Canberra's Living Infrastructure Plan: Cooling the City, which sets the direction for maintaining and enhancing trees, soils and waterways to keep our city cool, healthy and liveable in a changing climate. It builds on successful initiatives including our transition to 100% renewable electricity, the Actsmart program and Energy Efficiency Improvement Scheme, the construction of our first light rail line, our growing cycle path network, and our improving knowledge of potential vulnerabilities to climate change impacts.

This strategy is aligned with the ACT Planning Strategy 2018, the ACT Housing Strategy (2018) and the draft Moving Canberra: Integrated Transport Strategy. It is also aligned with the goals of other related Government policies including in health, waste management and nature conservation. Together, these documents provide the framework for achieving a smart, sustainable and net zero emissions Territory by 2045.

The ACT's climate change response is urgent, ambitious, collaborative, equitable, innovative and integrated, and is informed by an understanding that the world is in a state of climate emergency. These principles informed the development of this strategy and will guide its implementation. Government is also committed to a just transition to net zero emissions that supports low income households and the most vulnerable in our community, and will work with industry to re-train affected workers and pursue opportunities for new, zero emissions industries.

This strategy places a strong focus on reducing emissions from transport and gas—the two largest sources of emissions from 2020 once emissions from electricity are zero. Unlike electricity, emission reductions in these sectors are less influenced by Government and will require active participation of the whole community.

Government will endeavour to provide the services, incentives and regulatory framework to support change and will continue to work closely with the community and businesses to find new ways to reduce emissions. The actions that Government will undertake are listed in the following table of actions to 2025. Further information about these actions is included in the 'Actions to 2025' section of this strategy.

The ambitious scale and rate of change required to meet our targets is unprecedented and necessitates an innovative approach. As we will be breaking new ground in working to reduce emissions so rapidly and extensively, we don't yet have all the answers. A successful transition to net zero emissions will require constant learning, collaboration and a dynamic approach to finding solutions to new challenges. Many of the actions rely on active community participation in making different choices, which is difficult to predict. While the transition to net zero emissions is a major challenge, this shift is possible with the participation of the whole community and through consistent effort and a clear vision. Government will take an adaptive and innovative approach to implementing the strategy, trialling and evaluating new approaches and responding to feedback. We will continue to learn, collaborate with the ACT community and adjust our approach.

KEY PRIORITIES

The key priorities of this strategy are summarised below and the full list of actions is included in the following section.

Community leadership and just transition

- Support community-driven solutions to climate change including through grants and trialling new models for collaboration.
- Encourage preparedness and adaptation action by households and businesses.
- Provide tailored programs and support for low income households and vulnerable sectors of the community.
- Review progress annually and work with experts, stakeholders and the community to identify innovative new ideas for implementation.

ACT Government leadership

- Transition to a zero emissions Government passenger vehicle fleet and a zero emissions bus fleet (where fit for purpose).
- Reduce emissions from Government operations by more than 33% by 2025 (from 2020 levels) without the use of offsets.
- Shift to high efficiency, all-electric and climate-wise Government buildings and facilities.
- Consider the 'social cost of carbon' and climate change adaptation outcomes in all policies, budget decisions, and procurement and capital works decisions.
- Invest the social cost of emissions from Government operations from 2020 onwards in measures to further reduce emissions rather than purchasing carbon offsets.
- Monitor climate change projections and ensure infrastructure and services are resilient to climate change impacts.

Transport

- Support higher uptake of public transport by continuing to improve services to meet community travel needs.
- Trial new ways of using roads that most efficiently move people and goods and better support sustainable transport modes.
- Encourage active travel by continuing to improve cycle paths and walkability.
- Continue to encourage the uptake of zero emissions vehicles and explore the need for further incentives.
- Plan for a compact and efficient city to improve access to public transport and active travel options, reduce travel distances and reliance on private car use.

Waste avoidance and management

- Divert organic waste from landfill by continuing to roll out garden waste collection to all suburbs and expanding to include household food waste.
- Investigate options to divert additional organic waste from landfill by requiring key sectors to have a separate organic waste collection.
- Identify opportunities to reduce emissions from organic waste treatment including wastewater and consider sites for organic waste processing.

Energy, buildings and urban development

- Encourage a shift from gas to electricity by removing the mandated requirement for gas connection in new suburbs, supporting gas to electric appliance upgrades and transitioning to all-electric new builds.
- Maintain 100% renewable electricity through efficiency and additional procurement of renewable electricity if required.
- Improve energy performance and climate change resilience requirements for new buildings and introduce minimum energy performance requirements for rental dwellings.
- Improve liveability and adapt to the impacts of climate change by implementing Canberra's Living Infrastructure Plan to ensure adequate and appropriate mature tree cover, account for the value of living infrastructure and assess local needs for managing heat.
- Plan for efficient and sustainable urban land use to reduce emissions and maintain and enhance living infrastructure and biodiversity.

Land use and biodiversity

- Identify and enable opportunities for carbon sequestration in trees and soils and for adaptation innovation.
- Encourage sustainable farming practices which are fit for the current and future climate.
- Continue to identify the risks from climate change to species, ecological communities and ecosystems and take action to improve resilience and adaptation.

ACTIONS TO 2025

	GOAL		ACTION	DIRECTORATE TIMEFRAME
1. COMMUNITY LEADERSHIP				
1A	Encourage community-driven solutions to climate change	1.1	Expand the scope of the Community Zero Emissions Grants to support community projects that reduce emissions and/or increase resilience to climate change and prioritise projects that offer replicable solutions.	EPSDD From 2019
		1.2	Support and enable community action on climate change by providing tools and resources and recruiting a dedicated climate change community liaison in the Environment, Planning and Sustainable Development Directorate.	EPSDD From 2020
		1.3	Deliver the Actsmart programs to encourage and support community efforts to reduce emissions and improve sustainability outcomes.	EPSDD Ongoing
		1.4	Enable community members to share ideas for ongoing improvements to the strategy via Government digital platforms.	EPSDD Ongoing
		1.5	Work with the ACT Climate Change Council to encourage community participation in climate change initiatives.	EPSDD Ongoing
1B	Collaborate for resilient communities	1.6	Work with the local Traditional Custodians and the Aboriginal and Torres Strait Islander community to integrate traditional knowledge into landscape management.	EPSDD Ongoing
2. JUST TRANSITION				
2A	Support low income residents	2.1	Partner with community service organisations to identify vulnerable and disengaged sectors of the community and implement measures to support their participation in shifting to net zero emissions.	EPSDD/CSD By 2021
2B	A just transition for workers	2.2	Engage with industry and workers to identify sectors likely to be affected by the transition to a net zero emissions economy and support re-training of workers where needed.	EPSDD/ CMTEDD By 2021

	GOAL		ACTION	DIRECTORATE TIMEFRAME
3. TRANSPORT				
3A	Support sustainable travel choices	3.1	Expand the Actsmart Home, School and Business programs to include travel choices and integrate with the work of the Active Travel Office.	EPSDD/TCCS By 2020
		3.2	Explore options for implementing a reward scheme for community members who increase their use of public transport and/or active travel.	EPSDD/TCCS By 2020
3B	Plan for a compact and efficient city	3.3	Plan for a compact and efficient city with improved access to sustainable transport options by delivering up to 70% of new housing within our existing town and group centres and along key transit corridors.	EPSDD Ongoing
3C	Increase use of public transport	3.4	Prioritise improving public transport services and supporting infrastructure, including buses, light rail stage two and connecting services.	TCCS Ongoing
		3.5	Maximise accessibility to the rapid bus and light rail networks through feeder services and expanding the Park and Ride network.	TCCS By 2024
3D	Encourage active travel	3.6	Expand and promote the Active Travel Office and schools-based active travel initiatives.	TCCS/ED/HD Ongoing
		3.7	Finalise an active travel strategic plan and update the Active Travel Framework to provide coordinated active travel networks across the Territory.	TCCS By 2020
		3.8	Implement the Municipal Infrastructure Standards for Active Travel and develop best practice guidance for industry and stakeholders to inform better design outcomes for active travel infrastructure.	TCCS By 2020
		3.9	Prioritise walking and cycling and enhance active travel infrastructure to improve safety and connectivity of the active travel network.	TCCS Ongoing
		3.10	Support bike share schemes and other measures to improve the effectiveness and accessibility of cycling as a 'last kilometre' solution.	TCCS Ongoing
		3.11	Finalise and implement the End-of-Trip Facilities General Code to encourage improved bicycle parking and end-of-trip facilities in commercial developments.	TCCS/EPSDD By 2021
3E	Reduce car use	3.12	Trial and evaluate innovative approaches to planning and development that prioritise active travel and public transport.	EPSDD By 2024
		3.13	Implement car free days and consider car free areas, shared zones and traffic calmed streets.	EPSDD/ TCCS/CRA By 2021
		3.14	Support car share schemes and transport-on-demand solutions across the ACT region.	TCCS Ongoing
		3.15	Investigate and implement options for encouraging a shift to public transport and active travel through planning and a smarter approach to parking.	CMTEDD/ EPSDD/TCCS By 2022

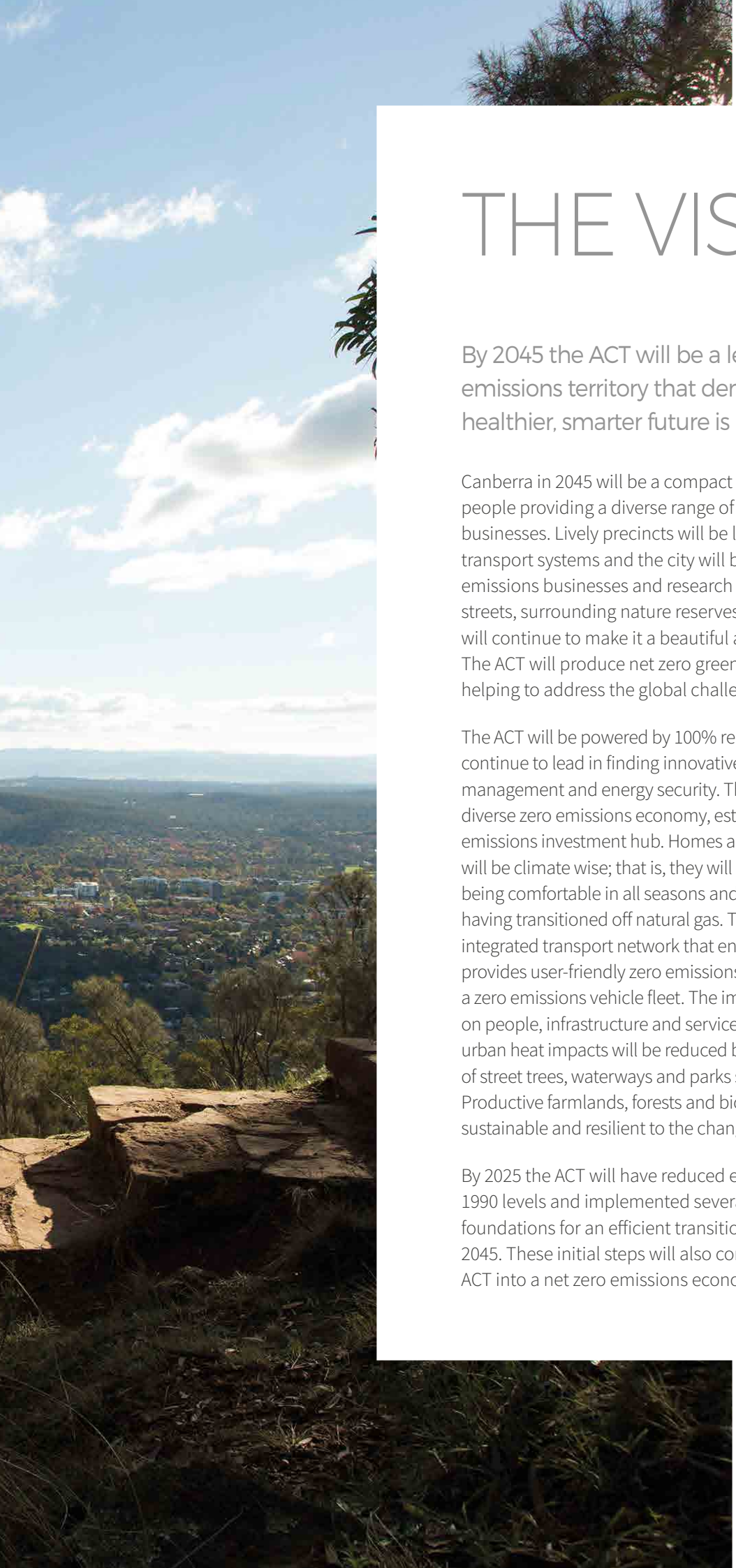
	GOAL		ACTION	DIRECTORATE TIMEFRAME
3F	Smarter use of roads	3.16	Explore and implement new approaches to improving the productivity of key transport corridors through prioritisation of public transport and/or active travel.	TCCS By 2024
		3.17	Improve efficiency and usability of public transport through the adoption of emerging smart cities technologies such as smart street lights, congestion monitoring, real time data and optimisation of timetables to reduce journey times.	TCCS By 2023
		3.18	Investigate options for dedicating a greater proportion of road space and public realm space to sustainable transport modes.	TCCS By 2023
		3.19	Consider options for reforming car registration fees to incentivise efficient road use.	CMTEDD/ TCCS/EPSDD By 2022
3G	Encourage zero emissions vehicles	3.20	Explore and trial financial incentives such as increased registration discounts, rebates and low interest loans to encourage the uptake of zero emissions vehicles and electric bikes.	EPSDD By 2020
		3.21	Implement the Zero Emissions Vehicles Action Plan 2018–21, explore opportunities to promote investment in public charging infrastructure, and identify new actions to support the uptake of zero emissions vehicles from 2021 onwards.	EPSDD By 2021
		3.22	Amend road rules to facilitate the safe use of new sustainable personal mobility options, such as electric scooters.	JACS/TCCS Ongoing
		3.23	Investigate regulatory options to drive the transition to zero emissions commercial vehicle fleets.	JACS / CMTEDD By 2023

	GOAL		ACTION	DIRECTORATE TIMEFRAME
4 ENERGY, BUILDINGS AND URBAN DEVELOPMENT				
4A	Maintain 100% renewable electricity supply	4.1	Legislate a 100% renewable electricity target to continue from 2020.	EPSDD By 2019
		4.2	Develop and implement a Sustainable Energy Policy 2020–25 that sets out actions to deliver sustainable, affordable and reliable energy to the Territory and drives the continued development of the renewable energy industry in the ACT.	EPSDD By 2020
4B	Reduce emissions from gas	4.3	Amend planning regulations to remove the mandating of reticulated gas in new suburbs.	EPSDD By 2020
		4.4	Conduct a campaign to support the transition from gas by highlighting electric options and savings opportunities to the ACT community.	EPSDD From 2020
		4.5	Develop a plan for achieving zero emissions from gas use by 2045, including setting timelines with appropriate transition periods for phasing out new and existing gas connections.	EPSDD By 2024
4C	Climate-wise, zero emissions rental homes	4.6	Introduce mandatory disclosure of energy performance for all rental properties.	EPSDD By 2022
		4.7	By 2021 introduce legislation for staged minimum energy performance requirements for rental properties to come into force in 2022–23.	EPSDD By 2021
		4.8	Expand the Actsmart Home Energy Program to provide free, tailored in-home energy assessments for renters.	EPSDD From 2021

	GOAL		ACTION	DIRECTORATE TIMEFRAME
4D	Climate-wise, zero emissions public housing	4.9	Continue to upgrade to efficient electric appliances in existing public housing properties where technically feasible and assess the costs and benefits of shifting to all-electric public housing.	CSD From 2019
		4.10	Ensure all newly constructed public housing properties are all-electric (fitted with efficient electric appliances) from 2019.	CSD From 2019
4E	Climate-wise, zero emissions low income homes	4.11	Continue to deliver the solar for low income program and investigate options for providing solar to public housing.	EPSDD Ongoing
		4.12	Trial facilitating access to interest free loans or other innovative finance for gas to electric upgrades and deep retrofits of low income homes.	EPSDD By 2022
4F	Climate-wise, zero emissions homes	4.13	Provide information and training tailored to first home buyers, home owners and owner-builders to support higher awareness of zero emissions, climate-wise homes.	EPSDD Ongoing
		4.14	Facilitate demonstration projects showcasing zero (or negative) emissions climate-wise homes.	EPSDD By 2024
4G	Climate-wise, zero emissions buildings	4.15	Design, and commit to a timeframe for implementing, higher minimum energy performance and climate resilience standards for new buildings that will deliver efficient, zero emissions buildings.	EPSDD By 2022
		4.16	Provide information and facilitate education and training of developers and design and construction practitioners in zero emissions technologies and systems and climate-wise design.	EPSDD Ongoing
		4.17	Develop a new residential energy assessment tool that adequately assesses the year-round thermal performance of buildings in the Canberra climate.	EPSDD By 2022
		4.18	Trial incentives and other measures to encourage all-electric, high efficiency apartment and commercial buildings.	EPSDD By 2024
		4.19	Expand the Energy Efficiency Improvement Scheme to increase support for low income priority households and further encourage a shift from gas to high efficiency electric appliances.	EPSDD From 2020
		4.20	Encourage the use of smart financing by medium and large businesses and organisations to support energy efficiency improvements, space heating upgrades and zero emissions vehicle fleets.	EPSDD By 2023
4H	Climate-wise built environment	4.21	Review planning regulations and identify opportunities to require sustainable, climate-wise built environment including through developing a Climate-wise Code.	EPSDD By 2021
4I	Reduce urban heat and improve liveability	4.22	Implement Canberra's Living Infrastructure Plan to work towards 30% urban canopy cover and 30% surface permeability, account for the value of living infrastructure and assess local needs for managing heat.	EPSDD Ongoing

	GOAL		ACTION	DIRECTORATE TIMEFRAME
5. ACT GOVERNMENT LEADERSHIP				
5A	Reducing risk in a changing climate	5.1	Reflect climate change projections and risk vulnerabilities in disaster and emergency prevention, preparedness, response and recovery, particularly for extreme heat, bushfire and flash flooding.	ESA/EPSDD Ongoing
		5.2	Encourage community preparedness for climate risks through targeted Emergency Services Agency outreach and the Actsmart sustainability programs.	ESA/EPSDD Ongoing
5B	Leading by example	5.3	Reduce staff travel needs by co-locating staff in centralised offices, providing facilities for teleconferencing, exploring co-working hubs and supporting flexible work arrangements and explore incentives to support staff use of public transport and active travel.	EPSDD/ CMTEDD Ongoing
		5.4	Implement a user-friendly sustainable procurement approach for goods and services and capital works that ensures greenhouse gas and adaptation outcomes are considered in all procurement decisions.	CMTEDD By 2021
		5.5	Ensure the social cost of carbon and climate change adaptation outcomes are considered in all ACT Government policies, budget decisions, capital works projects and procurements.	CMTEDD/ EPSDD By 2021
		5.6	Ensure all new Government capital works with a budget of more than $10 million either seek or are consistent with an independent sustainability rating such as an Infrastructure Sustainability rating from the Infrastructure Sustainability Council of Australia (ISCA), or a Greenstar rating from the Green Building Council of Australia or equivalent, and review ratings at least every five years.	CMTEDD/ EPSDD From 2020
5C	Collaborating for increased ambition	5.7	Foster partnerships with sub-national governments and non-government organisations locally, nationally and internationally to promote climate action and increased ambition.	EPSDD/ CMTEDD Ongoing
		5.8	Join the Global Green and Healthy Hospitals network to improve sustainability performance and reduce emissions from ACT Health facilities.	HD By 2020
5D	Zero emissions Government	5.9	Develop and implement a roadmap for transitioning Transport Canberra buses to zero emissions by 2040 at the latest while continuing to improve service levels, and review progress every five years.	TCCS/EPSDD From 2022
		5.10	Establish and implement a pathway to a zero emissions ACT Government health sector by 2040 informed by an assessment of all current and planned public health facilities.	HD/EPSDD From 2020
		5.11	Invest an interim price of $20 per tonne of emissions from government operations into measures to meet the Zero Emissions Government target from 2020–21, and arrange for an independent body to develop a social cost of carbon for application from 2025.	All From 2020
		5.12	Establish a pathway to zero emissions ACT Government schools supported by an interim emissions reduction plan to 2025.	ED/EPSDD From 2020
		5.13	Ensure all newly built or newly leased Government buildings and facilities are all-electric and climate-wise (where fit for purpose).	CMTEDD/ EPSDD From 2020
		5.14	Replace all space and water heating systems in Government facilities with electric systems at the end of their economic lives (where fit for purpose).	CMTEDD/ EPSDD From 2020
		5.15	Ensure all newly leased ACT Government passenger fleet vehicles will be zero emissions vehicles from 2020–21 (where fit for purpose)	CMTEDD/ EPSDD From 2021
		5.16	Investigate the use of innovative finance options such as Energy Performance Contracting as a method of reducing costs and emissions in Government assets.	EPSDD By 2020

	GOAL		ACTION	DIRECTORATE TIMEFRAME
6. WASTE AVOIDANCE AND MANAGEMENT				
6A	Reduce waste generation	6.1	Support food rescue organisations to avoid food waste.	EPSDD Ongoing
		6.2	Implement the Actsmart programs and household waste education programs to reduce waste generation and increase recycling.	EPSDD/TCCS Ongoing
6B	Reduce emissions from waste treatment	6.3	Introduce a food and garden waste collection for all households (including multi-unit dwellings) from 2023, and support with an education program from 2020.	TCCS From 2020 From 2023
		6.4	Develop and consult on a scheme for requiring large organic waste producers such as hospitality and food retail businesses to have a separate organic waste collection.	TCCS By 2023
		6.5	Identify opportunities to reduce emissions from organic waste treatment including sewage such as through the use of anaerobic digestion and composting, and investigate potential sites for organic waste processing.	TCCS/EPSDD Ongoing
7. LAND USE AND BIODIVERSITY				
7A	Protect local species and habitats	7.1	Identify opportunities to increase resilience of terrestrial and aquatic habitats at risk from climate change and implement land management changes and relevant on-ground works with delivery partners.	EPSDD Ongoing
		7.2	Ensure action plans for threatened species and communities consider the impact of climate change.	EPSDD Ongoing
7B	Sequester carbon in the landscape	7.3	Identify suitable sites in the ACT for 'carbon sinks' and develop a plan for planting trees or using soil carbon in these areas to sequester carbon with consideration of biodiversity outcomes and competing land uses.	EPSDD By 2022
7C	Encourage sustainable and resilient farming	7.4	Encourage sustainable farming practices which are fit for the current and future climate and enhance soil and water quality, and work with farmers to identify opportunities for net zero emissions farming and innovation to increase resilience.	EPSDD Ongoing
8. INDUSTRY DEVELOPMENT AND INNOVATION				
8A	Promote a zero emissions economy	8.1	Work with industry to support innovation, research and partnerships that will enable and accelerate the transition to a net zero emissions economy.	EPSDD/ CMTEDD Ongoing
9. MONITORING, EVALUATION, REPORTING AND IMPROVEMENT				
9A	Evaluate and improve	9.1	Improve data capture, integration and sharing across Government to enable accurate tracking and reporting of progress.	CMTEDD Ongoing
9B	Measure and report progress	9.2	Collect and report ACT travel data at least every two years on a range of journey types.	TCCS/EPSDD Ongoing
9C	Measure and report resilience	9.3	Collect and report data to monitor progress against resilience indicators, including continuation of the longitudinal survey and climate-related health impacts and costs.	EPSDD/HD Ongoing
10. INCREASING AMBITION				
10A	Explore negative emissions technologies	10.1	Investigate opportunities for implementation of negative emissions technologies in, or supported by, the ACT.	EPSDD By 2024



THE VISION

By 2045 the ACT will be a leading net zero emissions territory that demonstrates that a healthier, smarter future is possible.

Canberra in 2045 will be a compact and efficient city of 600,000 people providing a diverse range of housing choices and businesses. Lively precincts will be linked by flexible and efficient transport systems and the city will be home to leading low emissions businesses and research hubs. The city's tree-lined streets, surrounding nature reserves and healthy landscapes will continue to make it a beautiful and enjoyable place to live. The ACT will produce net zero greenhouse gas emissions, helping to address the global challenge of climate change.

The ACT will be powered by 100% renewable electricity and will continue to lead in finding innovative solutions for energy demand management and energy security. This will support a strong and diverse zero emissions economy, establishing the ACT as a zero emissions investment hub. Homes and commercial buildings will be climate wise; that is, they will be efficient and capable of being comfortable in all seasons and will generate zero emissions having transitioned off natural gas. The city will be serviced by an integrated transport network that encourages cycling and walking, provides user-friendly zero emissions public transport and supports a zero emissions vehicle fleet. The impacts of a changing climate on people, infrastructure and services will be well-managed and urban heat impacts will be reduced by an established network of street trees, waterways and parks supported by healthy soils. Productive farmlands, forests and biodiverse nature reserves will be sustainable and resilient to the changing climate.

By 2025 the ACT will have reduced emissions by 50–60% from 1990 levels and implemented several measures that lay the foundations for an efficient transition to net zero emissions by 2045. These initial steps will also contribute to transforming the ACT into a net zero emissions economy.

ABOUT THIS STRATEGY

This strategy presents Government's climate change response to 2025. It outlines the actions Government will take to meet its legislated emission reduction target of 50–60% (below 1990 levels) by 2025 and establish a pathway for achieving net zero emissions by 2045. The strategy will be in place until 2025, when a new strategy will be developed to guide the ACT to meeting its 2030 target, taking account of community feedback, technology and scientific advice. Achieving our targets will require a dynamic and collaborative approach focused on continual learning and responding to emerging information and technologies throughout implementation.

The strategy has been informed by consultation with the community, local businesses and subject matter experts. During consultation from December 2017 to April 2018 the community submitted more than 2000 suggestions. These suggestions, along with consultation with key stakeholders throughout 2017 and 2018, helped shape the direction of this strategy.

Our community understands the need for urgent, practical and meaningful action to address climate change and has shown strong support for the ACT to continue being a leader in responding to climate change.[1] Sporadic action or deliberate inaction by the Australian Government in recent years has led to states, territories and particularly cities taking the lead on climate action. This trend is seen in Australia and internationally.

The ACT is recognised nationally and internationally for our successful transition to 100% renewable electricity and our world-leading emission reduction targets. The Government will build on these achievements and continue to take the lead in rapidly and efficiently reducing emissions and preparing for climate change impacts. The Government will continue to collaborate with the community and businesses to find innovative solutions for a better future.

The ACT is well placed to lead as we have a strong economy and resources to play this role. We will also support the most vulnerable in our community as we make this transition. Responding to climate change is a major challenge that will require continuous learning and innovation to ensure we meet our objectives in the most effective way.

PRINCIPLES TO GUIDE THE ACT'S CLIMATE CHANGE RESPONSE

Ambitious

Aim for beyond best practice in line with latest scientific advice.

Collaborative

Cultivate community and business ownership and participation in climate action.

Efficient

Use resources wisely for the best outcomes.

Equitable

Promote a just transition to net zero emissions that supports the most vulnerable in our community.

Innovative

Adopt an innovative and flexible approach that captures opportunities and learns from outcomes.

Integrated

Embed climate change mitigation and adaptation into operations and decisions and align with related policies.

Urgent

Recognise that we are in a state of climate emergency and urgent action is required across all levels of government.

This strategy has been developed in coordination with the ACT Planning Strategy 2018, the ACT Housing Strategy and the draft Moving Canberra: Integrated Transport Strategy. It is also aligned with the goals of related Government policies including in health, waste management and nature conservation. Together, these strategies provide a comprehensive approach to building a smart, healthy, net zero emissions city.

Canberra's Living Infrastructure Plan, provides additional detail on the actions Government will take to increase living infrastructure (such as plants, soils and water) to maintain liveability and enhance our city in a changing climate.

There is a strong link to the strategic policy directions of the ACT Planning Strategy, such as the importance of strategic land use planning policies to support reduced transport emissions through planning for a compact and efficient city. It also links to the role of sustainable urban land use in reducing emissions and contributing to maintenance and enhancement of living infrastructure and biodiversity. The strategy also complements the Moving Canberra: Integrated Transport Strategy and provides a detailed pathway to reducing transport emissions. A goal of the ACT Housing Strategy is to provide an equitable, diverse and sustainable supply of housing for the community. Sustainable housing will support residents to live comfortably in a changing climate while also reducing emissions.

The actions in this strategy aim to reduce emissions as well as prepare for the unavoidable impacts of climate change. The strategy sets out the steps needed to continue the transition to a more climate resilient Territory by increasing the resilience of buildings, infrastructure, people and nature to climate change impacts and extreme events. The strategy aims to embed the consideration of climate change in Government and community decision making.

Government is aiming for a just transition to net zero emissions that supports the most vulnerable in our community. The strategy considers factors such as reducing energy costs, managing impacts on workers and businesses and providing tailored information and support for low income households. The intent is to share the benefits of actions, such as improved parks and open spaces and access to public transport, equitably across sectors and geographic communities in the ACT. Considerations for a just transition are embedded throughout the actions. Specific actions are included in the 'just transition' section.

THE NEED FOR ACTION

Climate change is a complex global challenge that requires an immediate and strategic response. Increased levels of greenhouses gases in the atmosphere as a result of human activities are causing changes in the global climate. These changes include increased average land and ocean temperatures, changes in rainfall patterns, increased severity of extreme weather events, acidification of oceans and unprecedented melting of glaciers and polar ice caps, which is driving rising sea levels. Advice from the international scientific community is that if we are to avoid the most catastrophic effects of climate change, the increase in average global temperature must not exceed 2°C above pre-industrial levels. Global efforts through the United Nations Framework Convention on Climate Change (UNFCCC), including the Paris Agreement, aim to keep global average temperature increase to well below 2°C and to pursue efforts to keep warming to below 1.5°C. A 2018 report by the Intergovernmental Panel on Climate Change (IPCC) found that keeping warming to under 2°C would require immediate and large-scale transformative action.

If global warming is not kept below 2°C there is a substantial risk that the climate system will pass an irreversible tipping point, beyond which the task of stabilising global warming at anywhere near the Paris targets becomes impossible. This would mean an increasingly extreme and unpredictable climate.

The ACT response to climate change is informed by the best available information and a thorough understanding of the urgent changes required if we are to avoid dangerous levels of climate disruption.

In May 2019, the ACT declared a climate emergency in recognition of this need for urgent action.

Taking early action to reduce emissions and prepare for climate change is more cost effective than delaying action. Leading change can also bring opportunities such as establishing the ACT as a zero carbon research and investment hub, driving technological innovation and improved efficiencies and encouraging business leadership. While the ACT is a small jurisdiction, we are well placed to lead and, through our leadership, we can help to drive greater emission reduction efforts in other cities around the world. The ACT's efforts to reduce emissions also contribute to meeting our national emission reduction targets.

An effective response to climate change delivers a range of other benefits for the community. More active travel and reducing the urban heat island effect will reduce health costs and impacts. Promoting new and innovative technologies will deliver growth in the Territory's knowledge-based industries, increasing jobs. A healthy environment will support increased tourism and enhance the value of living in our community. Helping vulnerable households share in the clean energy revolution will help to create a fair and equitable society. Government leadership to make facilities more efficient will make our schools, hospitals and other services more comfortable and effective. And building more climate-ready buildings and infrastructure will help protect us against future environmental threats.

900 people voted

What the community has told us

Community engagement and input played an important role in developing the Strategy. The engagement process presented information and sought input from ACT residents, business and other stakeholders, and was a source of ideas and suggestions.

The engagement process was extensive. More than 65,000 people were reached by social media and engagement events. There were almost 60 individual engagement events, 1100 face-to-face conversations with individuals and 100 emailed submissions. On the YourSay website, there were 3000 visits, 900 people voted in quick polls and 116 people submitted written contributions.

116 written contributions on YOURSAY

3000 YourSay WEBSITE VISITS

There is broad community support for the ACT showing leadership on climate change through ambitious targets and actions. No responses opposed transitioning to net zero emissions by 2045, and only two comments opposed the overarching proposal to tackle climate change through strong and strategic commitment to net zero emissions.

Energy and buildings, transport and living infrastructure accounted for the majority of responses. There was strong support for promoting the uptake of electric vehicles and support for improving public transport. There was strong support for improving energy efficiency standards and building codes.

100 emailed SUBMISSIONS

For more information about the community engagement, see the ACT's Climate Strategy Community Engagement Report at www.act.gov.au/climatechangestrategyreport.

EMISSION REDUCTION TARGETS

The ACT has set world-leading emission reduction targets that are legislated under the Climate Change and Greenhouse Gas Reduction Act 2010. These targets were first introduced in October 2010 and were revised in 2016 to increase ambition and again in 2018.
The most recent increase in ambition was informed by advice from the ACT Climate Change Council.[2]
The Council noted the importance of setting mid-term greenhouse gas emission reduction targets for the Territory and recommended that Government set interim targets for 2025, 2030 and 2040 and achieve carbon neutrality for the ACT by 2045 or earlier.
The advice was based on scientific evidence that more severe impacts could occur at lower increases in global mean temperature levels than previously predicted.
The advice was also based on the global carbon budget, which is the maximum amount of carbon we can emit to keep warming below the internationally agreed 2°C limit. The ACT's share is around 8 million tonnes of carbon (equivalent to 28 Mt of CO_2) and would be spent before 2030 at the current rate of emissions. The Government adopted the Council's proposed interim targets and 2045 net zero emissions target as the ACT's legislated emission reduction targets.

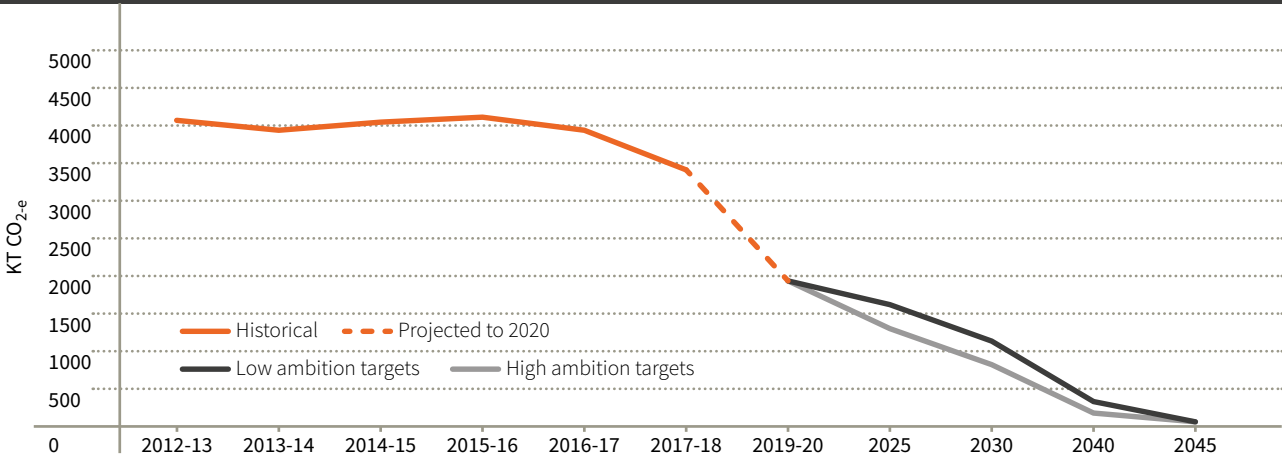
40% emissions REDUCTION ON 1990 LEVELS BY 2020

The current targets are to reduce emissions (from 1990 levels) by:

- 40% by 2020
- 50–60% by 2025
- 65–75% by 2030
- 90–95% by 2040
- 100% (net zero emissions) by 2045.

The ACT also set a target to peak emissions per person by 2013. This was achieved in 2012–13 at 10.53 tonnes of carbon dioxide equivalent (t CO_2-e) per person and has remained below this level ever since. In 2017–18 emissions were 8.09 t CO_2-e per person.

Figure 2: ACT historical and projected emissions to meet legislated emission reduction targets (high and low)



Carbon Budgets

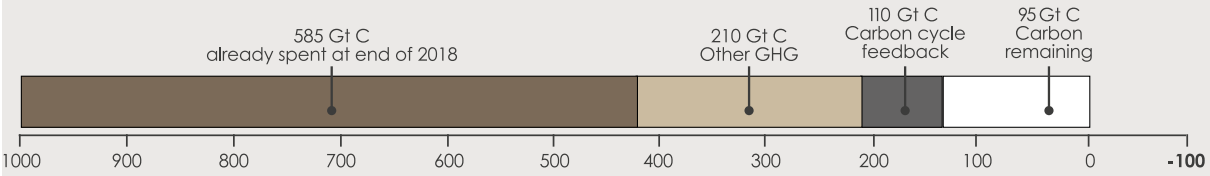
In order to understand the impact of different levels of greenhouse gas emissions, scientists developed the 'carbon budget'. A carbon budget is the amount of cumulative human emissions of carbon dioxide that will cause a given level of warming. If we want to limit warming to 2°C or 1.5°C, there is a certain quantity of total greenhouse gas emissions that cannot be exceeded. The carbon budget for limiting warming to 1.5°C is smaller than the carbon budget for limiting warming to 2°C.

The budget is cumulative for all time—past, present and future. Once the carbon budget has been 'spent', then emissions must be held to net zero from that point onward in order to avoid exceeding the temperature target.

A large amount of the carbon budget has already been spent. This highlights the importance of urgent action. Also, because of the cumulative nature of the carbon budget, the sooner we make reductions, the less dramatic those reductions need to be.

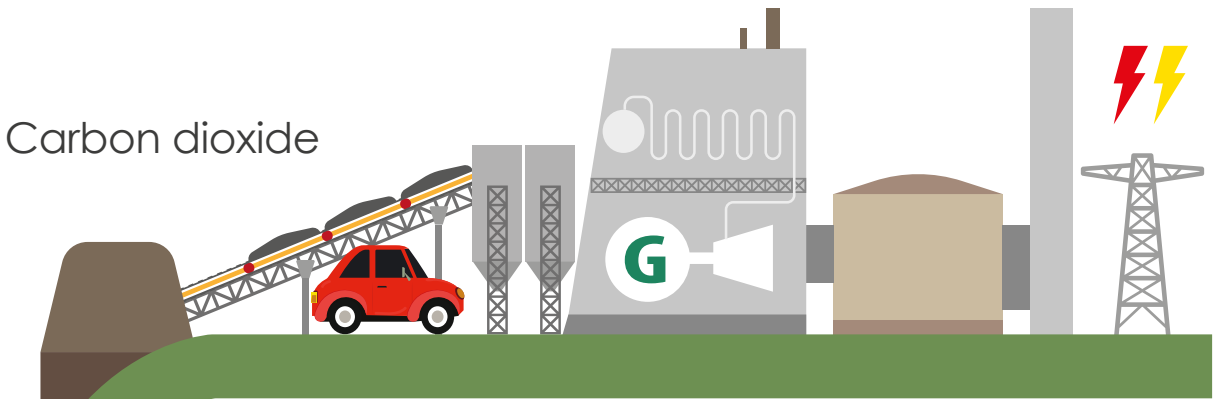
Figure 3 illustrates the size of the global carbon budget. The total carbon budget has been calculated to be 1000 billion tonnes of carbon (also referred to as gigatonnes, or Gt). We have already spent about 585 billion tonnes. The budget needs to be reduced by a further 210 billion tonnes to account for the effects of other greenhouse gases, like methane and nitrous oxide, that also cause warming. In addition it is reduced by 110 billion tonnes due to gases that will be released from the environment as a result of carbon cycle feedbacks. This leaves only about 95 billion tonnes that can be emitted if we are to prevent warming of 2°C.

Figure 3: Carbon budget to stay below the Paris 2°C Target



The ACT's emission reduction targets have been informed by considering the ACT's share of the global carbon budget.

For more information about carbon budgets, see the ACT Climate Change Council's factsheet at http://www.act.gov.au/carbonbudget.



PARTNERING WITH BUSINESSES AND THE COMMUNITY

Addressing climate change requires ongoing collaboration and participation between Government, the community and business.

Together, important steps are already being taken. The community and businesses are achieving sustainability outcomes through choices that reduce emissions, such as how to travel and how to dispose of waste. Existing Government programs such as the Energy Efficiency Improvement Scheme and Actsmart programs are supporting these sustainability outcomes.

Businesses in the ACT Renewables Innovation Hub are developing new low carbon solutions that will help the ACT transition towards a zero carbon economy. Community and business have also contributed to the ACT's climate change policy direction by participating in consultation, guiding the development of this Strategy.

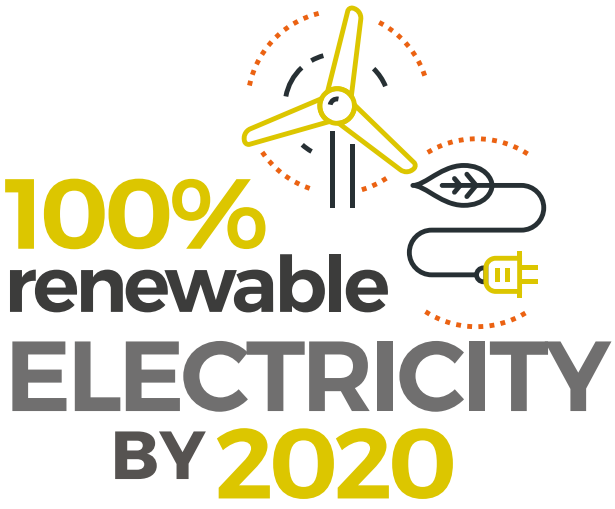
Continuing success will require ongoing collaboration and participation. Businesses, individuals and community groups can make a difference by making choices that are better for the climate and by choosing to lead initiatives or projects that encourage others to act. Government can develop robust policy that enables these decisions to be made, while providing ongoing support.

This strategy contains a range of actions that will promote ongoing collaboration and participation between Government, community and businesses. Actions that Government will take to work with the community and key community organisations are discussed under 'Community leadership'. Actions that promote ongoing collaboration and participation by business are included throughout the Strategy, including under 'Industry development and innovation'.

WHAT WE HAVE ACHIEVED SO FAR

The ACT is recognised as a leader, nationally and internationally, for our work on climate change. Our emission reduction targets, 100% renewable electricity target and work to encourage the transition to zero emissions vehicles are recognised as global excellence in climate change action.

The ACT's Climate Change Strategy and Action Plan 2 (AP2), released in 2012 started the journey towards a renewable electricity supply and a net zero emissions territory. AP2 committed to achieving 90% renewable electricity by 2020 and net zero emissions by 2060. Ambition has since increased, partly due to the achievements to date but also to reflect scientific advice that a more rapid shift is required and to reflect changes in the electricity market that make achieving 100% renewable electricity more affordable. In 2016 the ACT Government brought forward the net zero emissions target date to '2050 at the latest', and in 2018 brought the date forward to 2045. AP2's progress is summarised in the AP2 Implementation Status Report released by the Commissioner for Sustainability and the Environment in 2017.[3] Key achievements are listed in the following section.



Achieving 100% renewable electricity

The ACT is on track to be powered by 100% renewable electricity by 2020. This has been achieved through an innovative reverse auction process that has resulted in approximately $2 billion of investment in 640 megawatts of wind and solar projects both in the ACT and across Australia and has attracted $500 million in low carbon investment to the ACT. This reverse auction model has since been adopted by the Victorian Government.

Encouraging the uptake of zero emissions vehicles

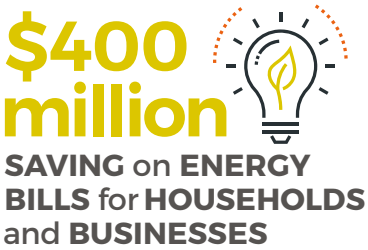
In April 2018 Government released the Zero Emissions Vehicles Action Plan 2018–21 to accelerate the transition to battery electric and fuel cell vehicles, including shifting to a zero emissions Government passenger vehicle fleet from 2020.

A hydrogen pilot project is expected to commence in late 2019, comprising an initial ACT Government fleet of 20 Hyundai fuel cell electric vehicles as well as a 60 kilowatt hydrogen electrolyser facility, refuelling infrastructure, and technical support and research. The pilot is one of the first of its kind in Australia.

Improved energy efficiency and sustainability outcomes for households, businesses and schools

Energy Efficiency Improvement Scheme

Government runs a number of effective programs to raise awareness of climate change, improve energy efficiency, reduce water use and encourage reuse and recycling. The Energy Efficiency Improvement Scheme (EEIS) is a key mechanism for delivering on the ACT's emission reduction targets by helping households and businesses reduce emissions and energy costs. From scheme commencement in 2013 until mid-2019, the scheme had fulfilled its objectives with a benefit to cost ratio of 4:1, achieving lifetime emission reductions of 500,000 t CO_2–e and helping more than 74,000 households and businesses save approximately $400 million over the lifetime of the energy saving items installed. The EEIS also provided targeted assistance to more than 19,000 low income priority households, which are expected to save around $70 million on their energy bills over the lifetime of the products.

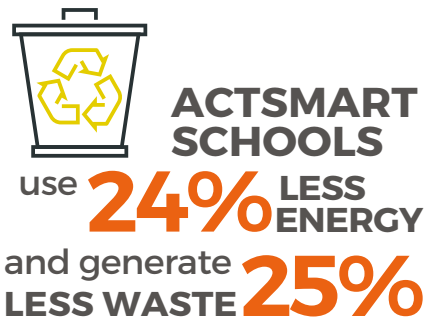


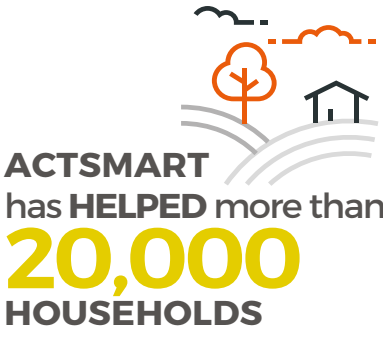
Actsmart programs

Government's Actsmart programs provide tailored information and support for households, small businesses, schools and community groups. These programs have successfully reduced energy consumption, waste and water use and raised awareness of climate change and sustainability issues.

All ACT schools participate in the Actsmart Schools Program, which supports schools to improve sustainability outcomes and include sustainability education in the curriculum. On average, an Actsmart accredited school uses 24% less energy and generates 25% less waste than schools without accreditation.

The Actsmart Home Energy Efficiency and Sustainable Home Advice Programs have helped more than 20,000 households make their home and garden more sustainable by better managing their energy, water and waste.





More than 10,000 of Canberra's most vulnerable households have reduced their energy and water use through the support of the Actsmart Low Income and solar programs.

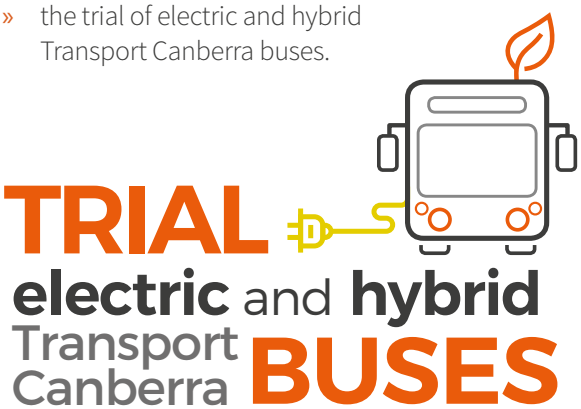
More than 1800 businesses have participated in Actsmart Business programs to reduce their energy and water use and waste to landfill. On average, a small business participating in the program saves $2,500 annually on their electricity bills. More than 50,000 staff have access to comprehensive recycling through their workplace.

The EEIS and Actsmart programs are an important element of Government's climate change response and will continue to be delivered throughout implementation of this strategy. The actions in this strategy are additional to these existing programs.

Reduced emissions from Government operations

Government has achieved significant emissions reductions in its own operations since the release of the Carbon Neutral Government Framework in 2014. By 2020, Government expects to have achieved a 60% reduction in emissions compared to 2012–13 levels. This reduction has occurred in the context of a growing Canberra population and an increase in demand for Government services such as education, health and transport. At the end of 2018, the Government had achieved:

- utility bill savings of approximately $2 million per annum
- solar PV arrays on all Government schools
- demonstration of large-scale electric heating systems in the ACT
- establishment of a Government zero emissions vehicle fleet
- the trial of electric and hybrid Transport Canberra buses.



Increased resilience to climate change

The ACT Climate Change Adaptation Strategy (2016) was developed to support our community, our city and the natural environment to reduce vulnerability and become more resilient to the impacts of climate change. The Adaptation Strategy included actions to prepare for unavoidable climate change impacts such as longer, hotter heatwaves, increased bushfire risk, changing rainfall patterns and increased intensity of storms and rainfall events and to monitor resilience over time. At the end of 2018, the majority of actions had been completed, while some had resulted in additional or ongoing activities beyond the scope of the original action.

Implementing the Adaptation Strategy has improved climate change risk identification and management in Government operations, helping to make our infrastructure and services more resilient in a changing climate. This includes considering future climate projections in planning to reduce risks such as bushfires. Another key focus of the Adaptation Strategy is to work with the community to increase understanding of climate change risks and impacts and encourage preparedness.

To better understand and monitor community resilience, a 2018 community survey on climate change resilience surveyed 2600 people over 18 years old in the ACT, Queanbeyan and Googong to assess resilience to climate change impacts.[4] Key findings of the survey:

- Although resilience was moderate to high for most people in the ACT region, resilience was low for one in three people.
- Many dwellings do not protect residents well from heatwaves, and many households have low preparedness for extreme weather events.
- Over 80% of respondents had high awareness and willingness to act on climate change, however this is not currently translating into high preparedness for the effects of climate change.

The survey will be repeated every five years, with the 2018 results becoming a baseline of community resilience to measure progress over time. This will enable Government to better respond to the needs of the community as we face the challenges of climate change.

ADAPTING TO CLIMATE CHANGE

Despite efforts to reduce emissions, the ACT community will experience an increasingly extreme and unpredictable climate. The level and severity of climate change in coming years will be determined by the cumulative amount of greenhouse gases emitted.

Building on the achievements to date, this strategy brings together emission reduction, resilience and adaptation measures as part of a holistic response to climate change. Together with Canberra's Living Infrastructure Plan, this strategy replaces the Climate Change Adaptation Strategy. Previous Adaptation Strategy actions that have not been completed and those that require ongoing effort are included in this strategy, along with new adaptation actions. Adaptation measures are included in relevant sectors and in the ACT Government leadership section where they are cross-sectoral.

THE FUTURE ACT CLIMATE

Across the ACT, maximum, minimum and average temperatures are already increasing and are projected to continue to rise.

Regional climate modelling has identified the four most significant impacts on the ACT:

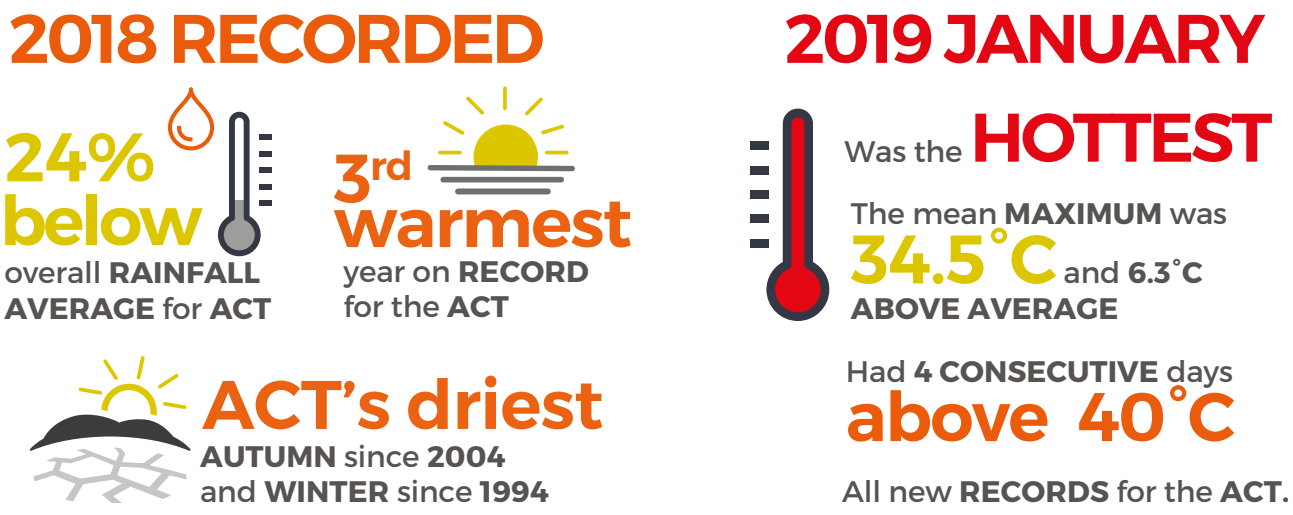
- Bushfires will become more frequent and severe as rainfall is reduced and temperatures increase.
- Heatwaves will become hotter (day and night), longer and more frequent.
- Drought will become more frequent and prolonged as rainfall is seasonally more variable.
- Storms will become more frequent and severe over a longer summer season, with flash flooding and violent winds.

We have already seen more hot days (above 35°C) and fewer cold nights in the ACT region. Projections are for up to an additional five hot days per year in the near future (2030). The number of hot days could increase to 20 more per year by 2070, depending on the level of greenhouse gas emissions in future.[5] These increases will mainly be in spring and summer, though the number of hot days will also extend into autumn. Hot days and heatwaves will be exacerbated in some parts of the city by the urban heat island effect.

The ACT region already experiences considerable rainfall variability. Projections show that future spring and winter rainfall will likely decrease. Droughts are expected to occur more often, along with weather conducive to the formation of thunderstorms, which frequently start summer season bushfires.

As the climate changes, bushfire risk is increasing. The bushfire season is sometimes starting earlier than normal. Increased temperatures, particularly in autumn, are impacting on planned hazard reduction burning. The number of severe fire weather days in the ACT is projected to increase, particularly in summer and spring. As the ACT Strategic Bushfire Management Plan 2014–19 is renewed, risks from climate change will be incorporated and future climate projections will be taken into account.

More days of extreme heat, and increased severity of storms and bushfires, will increase the risks to the health and wellbeing of the community, our environment and the city's built assets and infrastructure. In Australia, more people die during heatwaves than from all other natural disasters combined.[6] However, storm damage from high winds, inundation and flash flooding adversely affects more people more often, and is the most concerning impact for the property insurance industry. Preparing for and responding to these events comes at a cost in terms of providing increased health and emergency services. The ACT Emergency Services Agency will continue to consider climate risks in mitigating and preparing for emergency situations (see the ACT Government leadership section for further detail).



INTEGRATING MITIGATION AND ADAPTATION

This strategy takes an integrated approach to climate change, which means considering both mitigation and adaptation outcomes of decisions and policy measures. In taking this approach, Government will thoroughly consider synergies and trade-offs in responding to climate change, helping to avoid unintended negative outcomes.

Examples of synergies:

- Efficient climate-wise buildings help insulate against heat stress (adaptation) and provide improved thermal comfort while also allowing people to use less gas for heating and cooling, reducing emissions (mitigation).
- Cycling or walking instead of driving reduces emissions (mitigation) and can also result in improved health and reduced strain on the health care system (adaptation).
- Planting large shade trees cools the city, helping to protect people from heat stress and creating a more liveable urban environment (adaptation) while also sequestering carbon and potentially reducing summer air-conditioning cooling requirements in buildings (mitigation). It can also result in avoided costs to medical services and add value to the tourism sector.
- Increased vegetation cover (trees, shrubs, grass and pasture) increases carbon sequestration (mitigation) while improving soil productivity and ecosystem resilience and reducing excessive heat (adaptation).

Canberra's climate is already changing, and in future the ACT can expect more EXTREME WEATHER EVENTS.

Heatwaves will become hotter, more frequent and last longer.

Droughts will increase in severity and frequency.

Storms will become more intense, causing flash flooding.

Bushfire weather will become more dangerous.

A certain amount of warming is already locked in. The ACT Government is committed to ensuring Canberra adapts to the changing climate, so that it can remain a vibrant, resilient and liveable city.

GETTING TO NET ZERO EMISSIONS

THE CHALLENGE

ACT emissions are projected to be around 1920 kilotonnes (kt) CO_2-e in 2020. To achieve the lower ambition target of reducing emissions by 50% from 1990 levels, ACT emissions will need to be around 1600kt CO_2-e in 2025. This means a further reduction of at least 320kt CO_2-e will be required from 2020–25, and up to 640 kt CO_2-e to meet the 60% reduction target. This represents a 17–33% reduction from projected 2020 emissions.

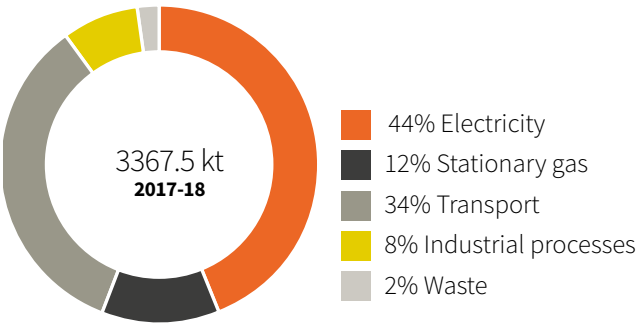
Figure 4 shows ACT emissions by sector in 2017–18, and those projected for 2019–20.[7] Once emissions from electricity are zero, transport will account for around 62% and gas around 22%.

To better understand the challenge ahead, we can compare the estimated emissions under a business as usual scenario (no further Government intervention) to emission levels required to meet our targets. The business as usual scenario factors in likely efficiency improvements and changes in technologies as well as continuation of existing Government policies and programs such as 100% renewable electricity supply and ongoing programs to support energy efficiency improvements.

The business as usual scenario estimates that ACT emissions will be around 1925 kt CO_2-e in 2025. This means that a reduction of around 330 kt CO_2-e will be required from 2020 in order to meet the 2025 target. Table 1 and Figure 5 show the emission reduction targets, estimated business as usual emissions, and the remaining emission reductions required to meet the targets.

There is a high level of uncertainty in emission forecasts due to the many factors that influence future emissions such as availability of new technologies, the rate of population growth, and community and industry responses to incentives. Government will continue to measure and report ACT emissions annually to track progress towards the target and will adjust emission reduction measures as needed.

Figure 4: ACT greenhouse gas emissions in 2017–18 and the projected emissions for 2019–20 by sector



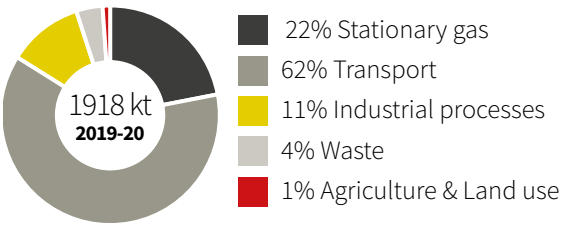
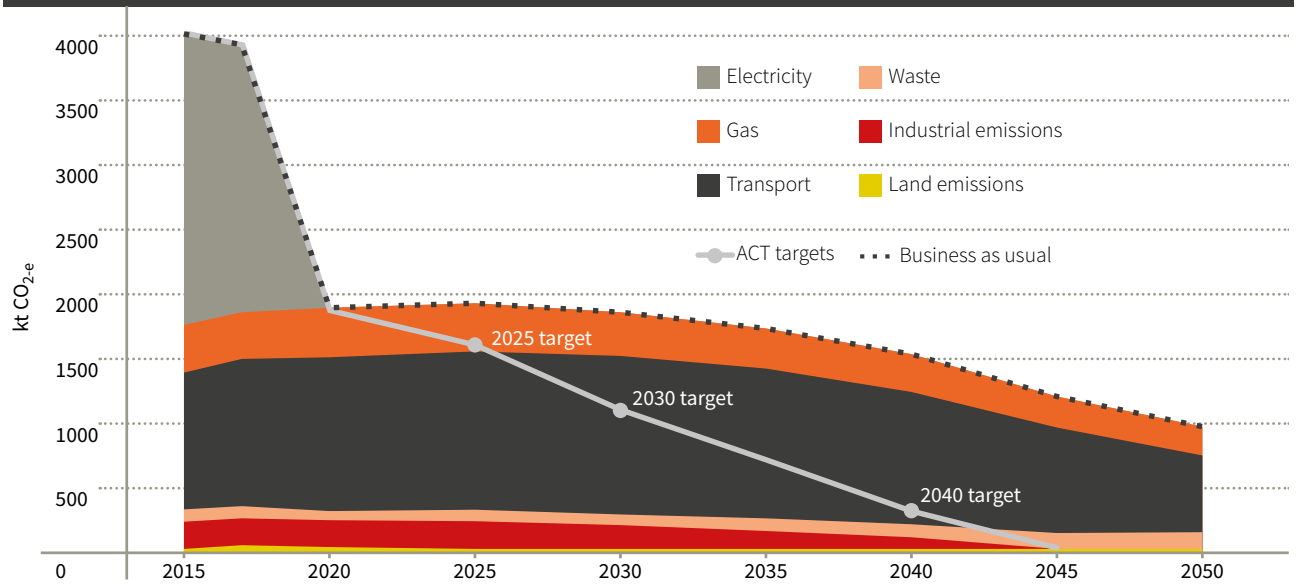
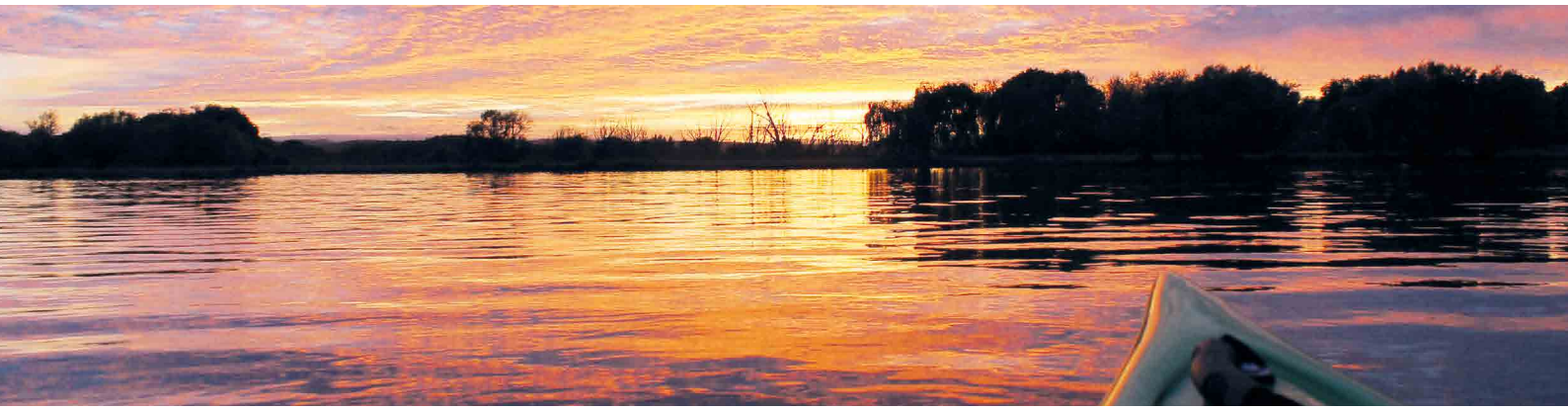


Table 1: Emission reduction targets and abatement task (all emissions values are in kt CO_2-e)

	AMBITION	2020	2025	2030	2040	2045
Legislated targets (% reduction from 1990 levels)	Low	-40%	-50%	-65%	-90%	-100%
	High	-40%	-60%	-75%	-95%	-100%
Maximum allowable emissions in target year to meet target	Low	1918	1598	1119	320	0
	High	1918	1279	799	160	0
Reduction from previous target—equivalent level of ambition	Low	-	320	479	799	320
	High	-	639	480	639	160
Business as usual emission projections (without further Government intervention)		1918	1925	1862	1517	1284
Reduction required factoring in business as usual decrease in emissions—low ambition	Low	-	327	743	1197	1284
Reduction required factoring in business as usual decrease in emissions—high ambition	High	-	646	1063	1357	1284

Figure 5: Business as usual ACT greenhouse gas emissions to 2050 with no further Government intervention.
The legislated emission reduction targets are shown at their lowest level of ambition (i.e. for the 50–60% interim reduction target in 2025, the white dot represents a 50% reduction from 1990 levels). Source: ACT greenhouse gas emissions modelling 2018





MAPPING A PATHWAY TO 2025 AND NET ZERO EMISSIONS BY 2045

The ACT is aiming to rapidly reduce emissions and, in particular, to reduce emissions from transport and gas. Achieving such a rapid reduction in our emissions will require substantial changes in the way we plan and build our city, how we travel, the appliances and products we choose and many other elements of our day to day lives. Unlike the transition to renewable electricity, reducing emissions from transport and gas will rely on a range of factors rather than direct Government control. These factors include consumer choices, individual practices and availability of new technologies. Success will require active participation of everyone in our community, an ongoing collaboration between Government, individuals, businesses, institutions and community organisations.

The magnitude of the task is large, equating to a 17–33% reduction in emissions from 2020–25, and is among the most ambitious emission reduction pathways in the world. But the science shows the need for such rapid action to avoid potential climate catastrophes, and the ACT remains well placed to demonstrate global leadership.

The targets have been informed by the latest climate science and consideration of market trends and emerging technologies. Over the next 30 years there are likely to be major changes in technologies and the products and services available to support and enable the shift to a net zero emissions community. While this change is already occurring, the majority of the transformation is still some years off. This means that to achieve our 2025 target while technologies are maturing and the market is beginning to respond to the challenge, we will need to place a stronger emphasis on changing our choices. For example, the availability of zero emissions vehicles—both passenger and freight—is projected to increase sharply in coming years, particularly post-2025.[8]

This 'lag' in vehicle availability means there will need to be a greater emphasis on increasing active travel (for example, walking and cycling) and public transport use to reduce transport emissions to 2025.

This strategy places a strong focus on reducing emissions from transport and gas as these are the sectors where the greatest reductions are needed. This strategy also includes measures to reduce emissions in other sectors and adapt to climate change impacts as doing so will be important in the longer term. While this strategy focuses on actions to meet the 2025 target, it also includes longer term actions that establish the foundations for achieving net zero emissions by 2045. Avoiding investment in infrastructure that will 'lock in' emissions in future years is critical for meeting our targets in later years.

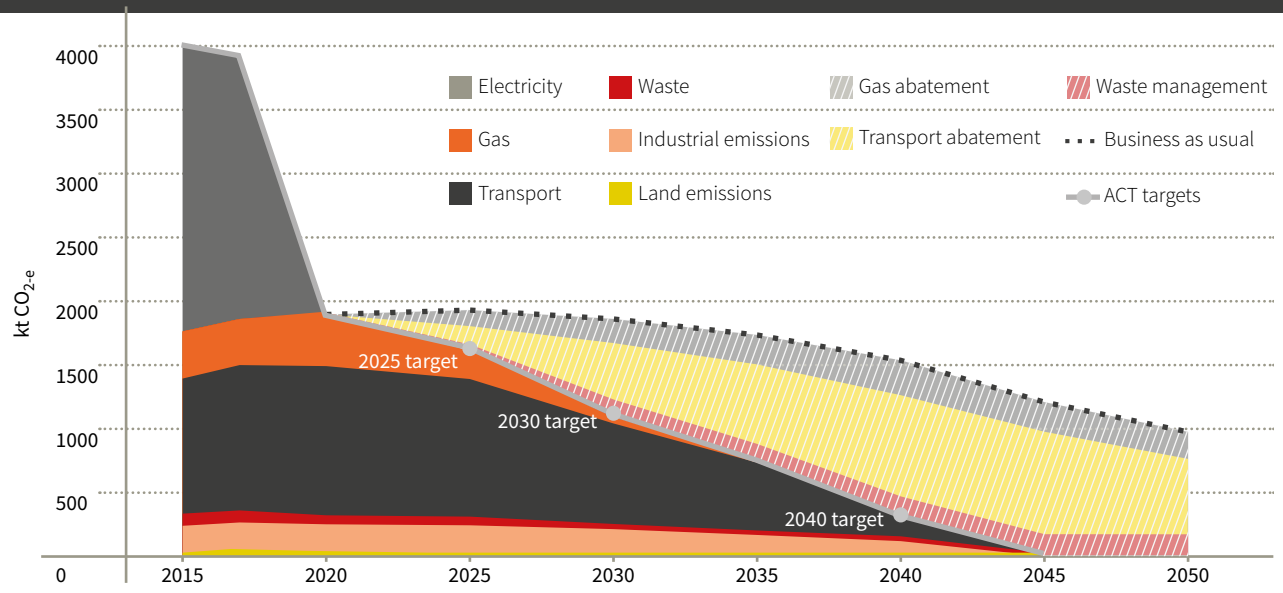
Table 2 shows priority actions by 2025 to reduce emissions, build resilience to climate change, promote a just transition and lead by example.

Table 2: Key priorities to 2025 and priorities post 2025

PRIORITIES	TO 2025 – KEY PRIORITIES	FROM 2025 – FUTURE PRIORITIES
Community leadership	Support community-driven solutions to climate change including through grants and trialling new models for collaboration.	Continue to encourage community and business leadership and action.
	Encourage preparedness and adaptation action by households and businesses.	
	Review progress annually and work with experts, stakeholders and the community to identify innovative ideas for implementation.	
Just transition	Provide support for low income households and vulnerable sectors of the community to enable participation in responding to climate change.	Continue tailored programs and support for renters and low income households to reduce emissions and adapt to climate change. Continue to work with industry to pursue opportunities for training, economic diversification and attracting low carbon investment and jobs.
	Identify affected sectors and support re-training of workers where needed.	
Transport	Support higher uptake of public transport by continuing to improve services to meet community travel needs.	Continue to electrify public and private transport and support active travel.
	Trial new ways of using roads that most efficiently move people and goods and better support sustainable transport modes.	
	Encourage active travel by continuing to improve cycle paths and walkability.	
	Encourage the uptake of zero emissions vehicles and explore the need for further incentives.	
	Plan for a compact and efficient city to improve access to public transport and active travel options, reduce travel distances and reliance on private car use.	
Energy, buildings and urban development	Implement Canberra's Living Infrastructure Plan to reduce urban heat and improve liveability.	Continue to improve building standards to deliver efficient new buildings that are designed for the current and future climate. Continue to increase tree canopy cover and maintain a healthy urban forest.
	Encourage a shift from gas to electricity by removing the mandated requirement for gas connection in new suburbs, supporting gas to electric appliance upgrades and encouraging new-builds to be all-electric.	
	Maintain 100% renewable electricity through efficiency and additional procurement of renewable electricity if required.	
	Improve energy performance and climate change resilience requirements for new buildings and introduce minimum energy performance requirements for rental dwellings.	
	Improve liveability and adapt to the impacts of climate change by implementing Canberra's Living Infrastructure Plan and continuing to explore approaches to reducing urban heat.	
	Plan for efficient and sustainable urban land use to reduce emissions and maintain and enhance living infrastructure and biodiversity.	

PRIORITIES	TO 2025 – KEY PRIORITIES	FROM 2025 – FUTURE PRIORITIES
ACT Government leadership	Transition to a zero emissions Government passenger vehicle fleet and a zero emissions bus fleet where fit for purpose.	Continue to collaborate and find new and innovative solutions.
	Reduce emissions from Government operations by over 33% by 2025 (from 2020 levels).	
	Shift to high efficiency, all-electric and climate-wise Government buildings and facilities.	
	Investigate applying a social cost of carbon and climate change adaptation considerations in procurement and capital works decisions.	
	Invest the social cost of emissions from Government operations from 2020 onwards in measures to further reduce emissions rather than purchasing carbon offsets.	
	Monitor climate change projections and ensure infrastructure and services are resilient to climate change impacts.	
Waste avoidance and management	Divert organic waste from landfill by continuing to roll out garden waste collection to all suburbs and expanding to include household food waste.	Continue to encourage reduced waste generation, divert organic waste from landfill and reduce emissions from waste treatment.
	Investigate options to divert additional organic waste from landfill by requiring key sectors to have a separate organic waste collection.	
	Identify opportunities to reduce emissions from organic waste treatment and potential sites for processing.	
Land use and biodiversity	Identify and enable opportunities for carbon sequestration in trees and soils and for adaptation innovation.	Continue to increase tree canopy cover and maintain a healthy urban forest. Foster resilient agricultural and plantation forestry industries.
	Encourage sustainable farming practices which are fit for the current and future climate.	
	Identify the risks from climate change to species, ecological communities and ecosystems and take action to improve resilience and adaptation.	

Figure 6: A potential pathway to achieving interim targets and net zero emissions by 2045.
Source: ACT greenhouse gas emissions modelling 2018.



ONE SCENARIO FOR ACHIEVING NET ZERO EMISSIONS

Achieving net zero emissions by 2045 will require changes across all sectors of the economy over coming decades. Figure 6 shows one example of a potential emission reduction pathway to 2045. This scenario includes new measures in addition to the actions in this strategy, as further action and significant new investment will be needed. This potential pathway is an indication only, to demonstrate the magnitude of the challenge we face.

The scenario, informed by emissions modelling, includes measures to reduce emissions in each sector, building on the initial focus on transport and gas. There is a high level of uncertainty in emissions forecasts due to the range of factors involved, but these projections still offer valuable insight into possible future scenarios. The actual approach taken to meeting our targets will be regularly updated based on best available information and evaluation of implementation success. Regular monitoring through the annual ACT Greenhouse Gas Inventory will enable Government to reassess priority actions necessary to stay on track to meet our targets.

This pathway is based on the following possible approaches in each key sector. In order to achieve net zero emissions by 2045, substantial progress will need to be made by 2025 to ensure we meet the 2030 and 2045 targets.

Gas

Significant reductions in gas use in the residential sector to 2030, and reduction in commercial gas use in later years towards 2045.

- Around 60,000 existing households not connected to gas by 2025, increasing to around 90,000 in 2030 and all houses by 2045.
- A decline in new houses connecting to gas, with no houses connected to gas by 2045.

Transport

Some emission reductions in early years through a shift to public transport and active travel, then further reductions from 2025 due to greater uptake of zero emissions vehicles, phase out of diesel buses, additional mode shift and a gradual reduction in freight emissions.

- An additional 10–15% of car journeys shifting to public or active travel by 2025, with an additional 10% mode shift of these car journeys by 2030, and a further 20% mode shift by 2045.
- Around 2% of private cars being zero emissions vehicles in 2025, increasing to 25% in 2030 and 100% in 2045.
- Accelerated adoption of zero emissions buses and zero emissions freight from 2025.

Waste

Fewer emissions from waste through steps such as waste avoidance, source separation of organic waste from households and businesses and landfill bans on unsorted general waste, timber and unsorted construction and demolition waste. Future measures will need to be developed that take advantage of new technologies, national policies and research findings.

Land Use

Increasing local carbon storage through planting forest on around 5700 hectares. This approach would need to consider availability of suitable land and competing land uses.


Photo by: Tom Dears

ACTIONS TO 2025

COMMUNITY LEADERSHIP

More than 80% of ACT residents want the Government to take a strong leadership role on climate change and more than 80% believe that actions by householders can help make a difference in responding to climate change.[9] Individuals, community organisations and businesses continue to play an important role in helping to meet our targets by taking action to reduce emissions, improve efficiency and promote solutions to climate change. Support and leadership from across the community will become even more important as we move into the next stage of reducing emissions and maintaining 100% renewable electricity.

Achieving our targets will require a dynamic and collaborative approach focused on continual learning and community participation. Throughout implementation, community members will be invited to provide ideas to further work towards our targets via a dedicated online platform. The Minister will meet regularly with the ACT Climate Change Council and other stakeholders to review progress and identify new opportunities for action based on emerging information, evaluation of measures and community suggestions.

GOALS AND ACTIONS

GOAL 1A
Encourage community-driven solutions to climate change

1.1 Expand the scope of the Community Zero Emissions Grants to support community projects that reduce emissions and/or increase resilience to climate change and prioritise projects that offer replicable solutions.

1.2 Support and enable community action on climate change by providing tools and resources and recruiting a dedicated climate change community liaison officer in the Environment, Planning and Sustainable Development Directorate.

1.3 Deliver the Actsmart programs to encourage and support community efforts to reduce emissions and improve sustainability outcomes.

1.4 Enable community members to share ideas for ongoing improvements to the strategy via Government digital platforms.

1.5 Work with the ACT Climate Change Council to encourage community participation in climate change initiatives.

GOAL 1B
Collaborate for resilient communities

1.6 Work with the local Traditional Custodians and the Aboriginal and Torres Strait Islander community to integrate traditional knowledge into landscape management.

Working together

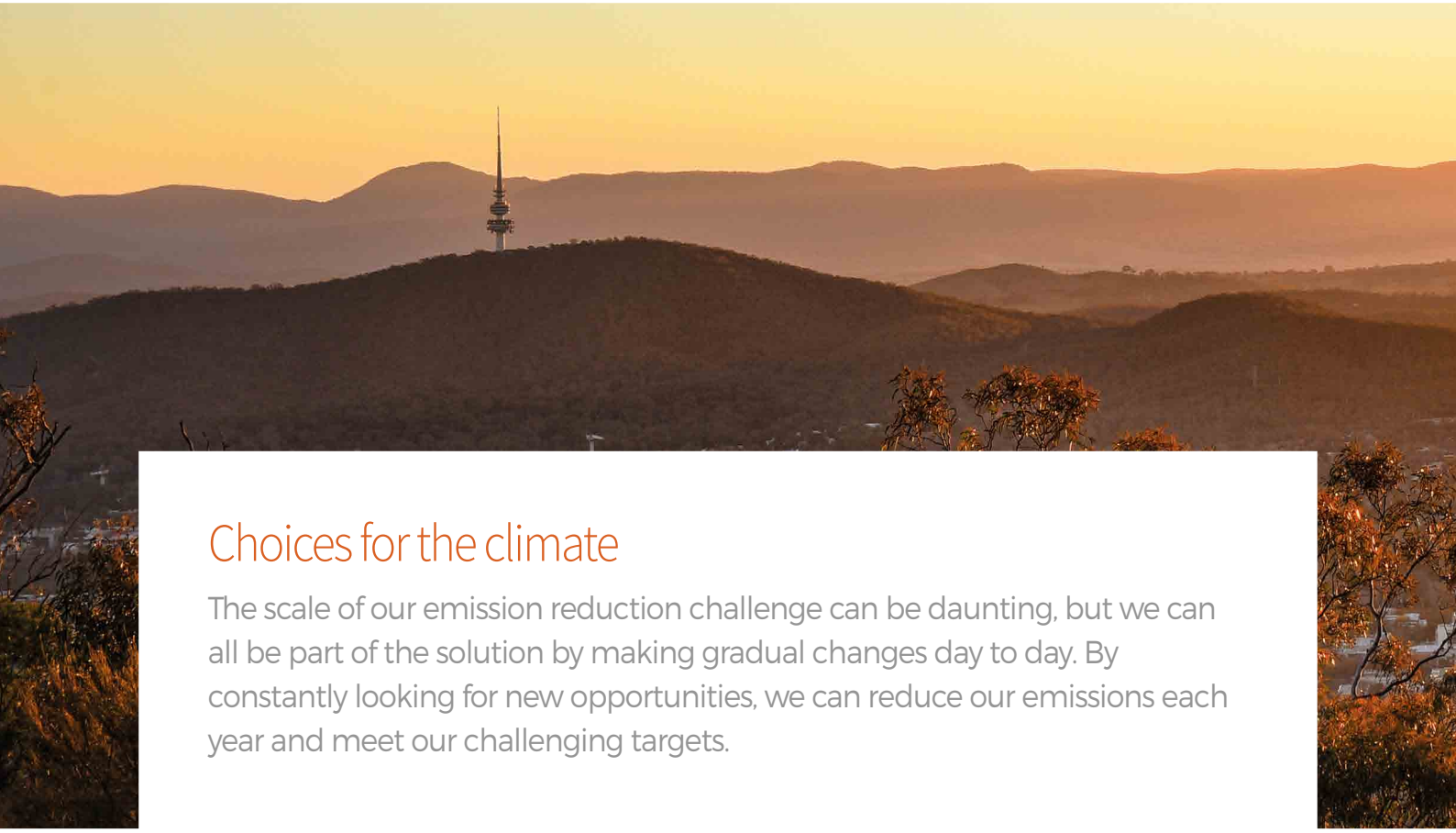
It is not possible for Government to achieve the ACT's emission reduction targets alone. Success will require collaboration with and participation of the whole community, particularly as we focus on reducing transport emissions and switching from gas to electricity. Individual choices about how to travel, which household appliance to choose and what type of car to purchase have major implications for emissions. Businesses, individuals and community groups can make a difference by choosing practices and products that are good for the climate and by choosing to lead initiatives or projects that encourage others to act.

Government acknowledges the important climate change work that individuals, organisations and businesses are already doing and will continue to support this work. Given community organisations and industry groups are well placed to lead within their networks as trusted members of their communities, Government will seek to partner with them to support their ongoing leadership.

Existing programs, such as the Actsmart programs and the EEIS will continue to play an important role in supporting change. Government will expand the Community Zero Emissions Grants program to provide additional support for community climate change initiatives, and will establish a dedicated stream focused on supporting community projects that aim to encourage actions and choices that reduce emissions or build resilience to climate change.

Government will also promote community leadership on climate change by providing tools and resources and recruiting a dedicated community liaison officer in the Environment, Planning and Sustainable Development Directorate. Community members will also be able to share ideas on addressing climate change via Government digital platforms.

Many volunteers across the ACT help to manage our natural areas. Government will explore opportunities for supporting ongoing volunteering and encouraging greater community involvement in caring for the natural environment. It will also support greater sharing of traditional knowledge.



Choices for the climate

The scale of our emission reduction challenge can be daunting, but we can all be part of the solution by making gradual changes day to day. By constantly looking for new opportunities, we can reduce our emissions each year and meet our challenging targets.

Here are some tips for reducing emissions.
The Actsmart website at www.actsmart.act.gov.au offers further suggestions.

1. Reduce your car use

You could start by car-pooling, or going 'car free' one day per week by catching the bus or light rail, cycling or walking. We understand this will work better for some people than others depending on where you live and your travel needs. If you live too far from your destination for cycling you could consider buying an electric bike, which offers a great solution for longer commutes and for people who prefer gentle exercise. If catching public transport from your home isn't convenient, try leaving your car or bike at one of the Park and Ride stations and catching the bus from there. You can also take your bike on most buses and on the light rail.

Did you know?

» Each day you choose to leave your car at home and walk or cycle instead, you save around 8 kg of greenhouse gas emissions. If you do this once per week you will reduce emissions by around 400 kg each year.

2. Consider a zero emissions vehicle

If you're thinking about getting a new car in the next couple of years, now is the time to think about going zero emissions. New and more affordable zero emissions vehicle models will be increasingly available offering benefits including reduced running and maintenance costs, a 20% registration discount, stamp duty exemption for new vehicles, smooth, quiet driving and cleaner air. So before you buy your next car, find out about zero emissions options. Electric motor bikes offer a quiet and pollution-free travel option for longer commutes, are cheap to run and are also eligible for a 20% registration discount.

Did you know?

» Switching to a zero emissions vehicle could reduce your greenhouse gas emissions by around 3 tonnes per year.

Photo by Anouk Schumann-Morin

3. Think about switching off gas

Switching to an all-electric household can save you money on connection fees and reduce your emissions. Our electricity supply will be 100% renewable from 2020, which means electric appliances will be zero emissions. If you're replacing an appliance such as a stove or a heating system, find out about all-electric options. Some great products include induction cooktops, reverse cycle heating and cooling and heat pump hot water systems. Rebates are available to help you upgrade inefficient appliances and switch to electric.

Did you know?

- Switching to an all-electric household can reduce your greenhouse gas emissions by around 2 tonnes per year.
- Upgrading your gas heating system to an efficient reverse cycle air conditioning system can reduce your emissions by around 14 tonnes over the system's useful life while saving about $500 per year on heating bills.
- Upgrading your gas hot water system to an electric heat pump can help you reduce your emissions by around 10 tonnes over the heat pump's useful life while saving about $150 per year.
- Installing ceiling insulation can help you reduce your emissions by around 23 tonnes over the insulation's useful life.

4. Get involved in a community organisation

Local community projects can make a big difference. If you have the time, think about getting involved in a community organisation or project near you that encourages climate action, cares for trees and parks, encourages energy efficiency, local food production or reuse and recycling.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A JUST TRANSITION

The ACT is a prosperous and progressive society that has welcomed the chance to demonstrate leadership on climate change and that cares for vulnerable members of our community. The Government is committed to working in partnership with the community to develop policies and implement programs to support low income households and vulnerable sectors transition to zero emissions in a way that maximises their access to low emission, reliable and affordable services.

A just transition for workers

The transition to net zero emissions will require changes in how we deliver services and products. Government is committed to making this a just transition that secures the livelihoods of workers and their communities. Government will work with workers, unions, employers, institutions and organisations to ensure our pathway to decarbonisation is equitable and supports our community.

Support for vulnerable households

Low income households spend a relatively high proportion of their income on energy and feel energy price rises the most, but often cannot afford to purchase more efficient appliances, upgrade their cars and homes or use active and public transport.

Government will seek to partner with vulnerable households and community service providers to ensure low income households can participate in the shift to net zero emissions and are not disproportionately affected by new measures. A coordinated mix of concessions, rebates, loans, education, dispute resolution and consumer advocacy programs will be required. These will be designed to address the barriers faced by groups such as low income households, renters, those in public housing, elderly people, people with disabilities and illness, sole parents, people in energy poverty or who are working but on low incomes and not eligible for current concessions. Many of the people in these groups are also more vulnerable to illness, which can be compounded by the health effects of climate extremes. Tailored support and programs can therefore also help to improve health outcomes for these community members.

GOAL 2A
Support low income residents

2.1
Partner with community service organisations to identify vulnerable and disengaged sectors of the community and implement measures to support their participation in shifting to net zero emissions.

GOAL 2B
A just transition for workers

2.2
Engage with industry and workers to identify sectors likely to be affected by the transition to a net zero emissions economy and support re-training of workers where needed.

TRANSPORT

Re-thinking transport

Transport is expected to account for more than 60% of emissions from 2020 (see Figure 4). Reducing emissions from transport is therefore a high priority and presents one of the biggest challenges in meeting our 2025 target and achieving net zero emissions in the longer term. Responding to this challenge will require fundamental changes in how we plan and deliver transport networks and how we choose to travel.

The actions included in this section complement the Moving Canberra: Integrated Transport Strategy and form a part of the action plan for implementing that strategy. They also complement the ACT Planning Strategy 2018, which supports a compact and efficient city through sustainable urban growth and supports high levels of active travel and public transport accessibility.

Key elements of Government's response to this challenge are outlined below.

- Improve public transport to provide an extensive, user-friendly light rail and bus network that is well integrated with active travel options and supported by an expanded network of Park and Ride facilities.
- Plan for a compact and efficient city to improve access to public transport and active travel options and to reduce travel distances and reliance on private car use.
- Make the best use of roads, with a greater focus on moving people and goods.
- Support active travel, including the use of electric bikes, by improving the quality and safety of cycling and walking infrastructure.
- Encourage zero emissions vehicles by providing incentives, facilitating installation of charging infrastructure, running commercial and freight vehicle trials and working toward a zero emissions Government passenger vehicle and bus fleet.

The scale and nature of this challenge requires the participation of the whole community. In particular, there will need to be an increased uptake of active travel such as cycling and walking, and increased use of public transport. Whether or not we meet our targets will depend on the choices we all make about how to travel as well as on the availability of new technologies such as zero emissions vehicles. Government will play its part in supporting and encouraging individual choices and technologies that reduce transport emissions, but will also seek the participation of the community in rising to this challenge. Government will actively work with the community to investigate how we can best support the transition to a low carbon transport system while meeting the mobility needs of the community, mindful that some members of our community have a necessarily greater reliance on car-based transport. A Parking Strategy will be developed to ensure a smarter approach to parking that reduces congestion and meets the mobility needs of the community.

GOALS AND ACTIONS

GOAL 3A
Support sustainable travel choices

3.1 Expand the Actsmart Home, School and Business programs to include travel choices and integrate with the work of the Active Travel Office.

3.2 Explore options for implementing a reward scheme for community members who increase their use of public transport and/or active travel.

GOAL 3B
Plan for a compact and efficient city

3.3 Plan for a compact and efficient city with improved access to sustainable transport options by delivering up to 70% of new housing within our existing town and group centres and along key transit corridors.

GOAL 3C
Increase use of public transport

3.4 Prioritise improving public transport services and supporting infrastructure, including buses, light rail stage two and connecting services.

3.5 Maximise accessibility to the rapid bus and light rail networks through feeder services and expanding the Park and Ride network.

GOAL 3D
Encourage active travel

3.6 Expand and promote the Active Travel Office and schools-based active travel initiatives.

3.7 Finalise an active travel strategic plan and update the Active Travel Framework to provide coordinated active travel networks across the Territory.

3.8 Implement the Municipal Infrastructure Standards for Active Travel and develop best practice guidance for industry and stakeholders to inform better design outcomes for active travel infrastructure.

3.9 Prioritise walking and cycling and enhance active travel infrastructure to improve safety and connectivity of the active travel network.

3.10 Support bike share schemes and other measures to improve the effectiveness and accessibility of cycling as a 'last kilometre' solution.

3.11 Finalise and implement the End-of-Trip Facilities General Code to encourage improved bicycle parking and end-of-trip facilities in commercial developments.

GOAL 3E
Reduce car use

3.12 Trial and evaluate innovative approaches to planning and development that prioritise active travel and public transport.

3.13 Implement car free days and consider car free areas, shared zones and traffic calmed streets.

3.14 Support car share schemes and transport-on-demand solutions across the ACT region.

3.15 Investigate and implement options for encouraging a shift to public transport and active travel through planning and a smarter approach to parking.

GOAL 3F
Smarter use of roads

3.16 Explore and implement new approaches to improving the productivity of key transport corridors through prioritisation of public transport and/or active travel.

3.17 Improve efficiency and usability of public transport through the adoption of emerging smart cities technologies such as smart street lights, congestion monitoring, real time data and optimisation of timetables to reduce journey times.

3.18 Investigate options for dedicating a greater proportion of road space and public realm space to sustainable transport modes..

3.19 Consider options for reforming car registration fees to incentivise efficient road use.

GOAL 3G
Encourage zero emissions vehicles

3.20 Explore and trial financial incentives such as increased registration discounts, rebates and low interest loans to encourage the uptake of zero emissions vehicles and electric bikes.

3.21 Implement the Zero Emissions Vehicles Action Plan 2018–21, explore investment in appropriate public charging infrastructure, and identify new actions to support the uptake of zero emissions vehicles from 2021 onwards.

3.22 Amend road rules to facilitate the safe use of new sustainable personal mobility options, such as electric scooters.

3.23 Investigate regulatory options to drive the transition to zero emissions commercial vehicle fleets.

Improving public transport

Work is underway to improve public transport services to provide a user-friendly, efficient and zero emissions network. This will be critical for supporting increased use of public transport across our city.
The ACT Government is working towards a zero emissions bus fleet by 2040 at the latest as outlined in the 'ACT Government leadership' section.

Government recognises the importance of changing peoples' modes of travel in achieving its transport policy and climate change objectives. Attempts to encourage a shift from cars to less emissions-intensive modes have so far not yielded significant improvements. For example, the share of people cycling to work increased from 2.5% in 2006 to 2.6% in 2016 (see Table 3).

Improving public transport and accessibility through feeder services (including expanding the Park and Ride network) is a key measure for achieving mode shift , as is continuing to improve active travel infrastructure.

Providing similar end-to-end journey times to private car use has also been shown to improve the attractiveness of public transport.

ACT Government transport planning will need to encourage sustainable transport modes as represented in the transport hierarchy.

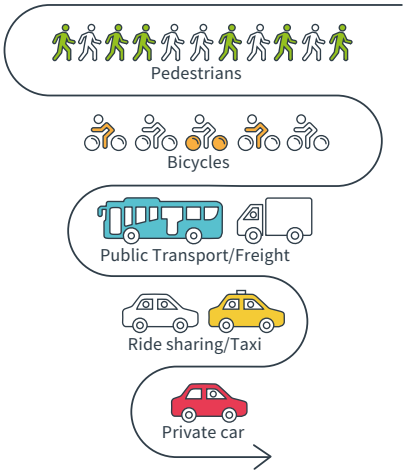


Table 3: Percentage mode share for journey to work in the ACT in 2006, 2011 and 2016 (remaining mode share is by car)

MODE	2006[1]	2011[2]	2016[3]
Public transport	5%	7.8%	8.0%
Cycling	2.5%	2.8%	2.6%
Walking	7.9%	4.9%	4.5%
Total	**15.4%**	**15.5%**	**15.0%**

1. ABS Census 2006 2. ABS Census 2011 3. ABS Census 2016

Government is currently assessing how information from emerging technologies such as smart street lights and congestion monitoring, coupled with real-time-information on transport options, can provide a superior transport experience to private car travel.

The introduction of light rail in April 2019 as part of an integrated public transport network resulted in more people using public transport in Canberra. The number of journeys made using Transport Canberra services over the first two months of the new network was 10% higher than the number of journeys made over the same period in 2018. In June 2019, there were more than 80,000 light rail boardings per week and almost 15,000 each weekday.

Note: A boarding is recorded when a person gets on a bus or light rail vehicle. A journey is the whole trip a person is taking, which may include more than one boarding. For example catching a bus to Gungahlin Place, then catching light rail to the city is two boardings but one journey.

September 25, 2016: Car Free Day in Paris

Planning for a compact and efficient city

The ACT Planning Strategy 2018 seeks to deliver up to 70% of new housing as infill development close to centres and public transport corridors providing better sustainable transport options. In implementing the Planning Strategy, the Government will consider revisions to the Territory Plan and other planning frameworks to meet our planning objectives and move to a zero-emissions transport sector.

As well as planning for a more compact and efficient city that provides more sustainable transport options to reduce the need for private car travel, Government will explore innovative approaches to promoting active travel and public transport use. These include parking offsets where developers can pay a fee toward sustainable transport instead of building parking spaces, maximum parking requirements for new developments, and ensuring the Estate Development Code gives priority to active travel and public transport where possible.

Supporting sustainable travel choices

Government is committed to supporting the community and promoting more sustainable transport choices. To assist the community, Government will expand the Actsmart Home, School and Business programs to include travel choices and integrate this with the work of the Active Travel Office. It will also explore implementing a reward scheme for community members who increase their use of public transport or active travel.

Smarter use of roads

In order to meet our ambitious targets Government will need to invest in making our transport system more efficient. This means changing how we value our transport infrastructure, moving from the concept of roads being built to facilitate private transport to one where roads are used to most efficiently move people, goods and services in ways consistent with our climate change goals and a modern, efficient, low congestion city. This means making better use of the available road space and infrastructure and making choices about our priorities when allocating this space. This will enable the community to develop a more liveable city, which can support a greater variety of transport options including for those vulnerable households for which traditional car-based options are resulting in greater stress on household budgets.

Car free days offer an opportunity for Canberrans to experience a different way of using roads. Around 20% of our urban area is taken up by roads and adjacent footpaths and paved areas. Having a day to use this road space for walking and cycling, supported by public transport, gives a sense of the kind of city that emerges when cars are de-prioritised. These days also give people a safe and fun opportunity to try out different transport options.

Car free days have been implemented in hundreds of cities around the world. Paris makes its central areas car-free on the first Sunday of every month. Government will work toward holding car-free days at least once per year. These could be held to coincide with on-street activities such as markets and festivals.

Government will also investigate setting a target for a percentage of roads to be dedicated to sustainable modes of transport.

Supporting active travel

Active travel, such as cycling and walking, offers a zero emissions transport option with health and wellbeing benefits. It allows people to incorporate physical exercise into their daily routine while helping to reduce traffic congestion and air pollution. Canberra is well suited to active travel, being relatively flat in many areas of the city and with an average trip distance of around eight kilometres. This makes active travel a viable option for many residents, particularly when combined with public transport for longer trips.
A 2017 survey found that around 4.5% of people in the ACT walk to work and around 2.5% cycle to work.

Government will continue to implement the Active Travel Strategy to encourage more people to choose active travel. This will include improving infrastructure such as on- and off-road cycle paths, footpaths, drinking fountains and bicycle parking to provide a safer and more effective active travel network.
In addition, Government will implement measures to encourage the uptake of electric bikes, which offer a solution for longer trips and make cycling more accessible to a wider section of the community.

Increasing shade cover for active travel routes will help to encourage use of active travel and offer protection to users of the cycle and pedestrian network during hot weather. Increasing tree canopy cover is a major goal of Canberra's Living Infrastructure Plan.

Many cities around the world have had success in encouraging their citizens to walk or cycle.
For example, Copenhagen has achieved 41% cycling mode share for trips to work and education through heavy investment in appropriate cycling routes and other programs.[10] Leipzig has also achieved its goal of 20% of trips by bike by 2020 ahead of schedule by implementing a range of measures (e.g. more cycle paths and pedestrian areas).[11] Auckland has also achieved strong growth in cycling and walking mode share, including through the development of new cycleways.[12] Government will continue to learn from international examples such as these, whilst acknowledging that there is no 'one size fits all' approach to encouraging active travel.

Transition to zero emissions vehicles

With the ACT's electricity supply being 100% renewable from 2020, vehicles powered by electricity will have zero emissions in their operation. Electrifying cars, motorbikes, buses and trucks therefore presents an opportunity to begin the shift to zero emissions transport. The ACT's Transition to Zero Emissions Vehicles Action Plan 2018–21 outlines Government's actions to encourage the rapid uptake of zero emissions vehicles including electric cars, motorbikes and bicycles. The range of models of electric vehicles is expanding and costs are forecast to continue to decline.

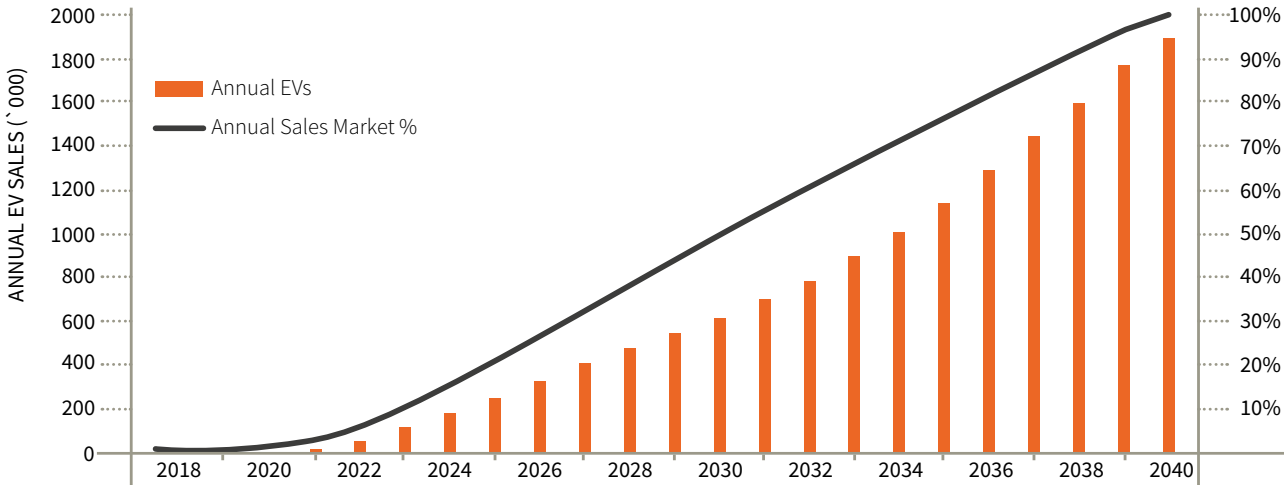
With a moderate level of government support nationally, electric vehicles sales in Australia are expected to reach around one million per year by 2034 and account for 100% of new vehicles sales by 2040 as shown in Figure 7. As a result, the total number of electric vehicles on the road is forecast to reach over 3 million by 2030 and over 13 million, around 50% of all vehicles on the road, by 2040.[13]

To encourage this shift, Government will explore financial incentives to encourage the uptake of zero emissions vehicles, and will continue to improve facilities and infrastructure for electric bikes.

Government will also review and amend road rules to support the safe use of electric scooters and other zero emissions personal mobility options and identify opportunities to integrate with public transport services to provide effective solutions for travellers.

Zero emissions freight vehicles are a less mature industry, but an important next step in reducing transport emissions. To foster new approaches and emerging technologies, Government will partner with industry to trial zero emissions freight options. This will involve evaluation of the practicalities, economics and level of support required to accelerate the uptake of zero emissions freight in the ACT region.

Figure 7: Projected annual electric vehicle (EV) sales in Australia.
Source: Australian Electric Vehicle Market Study, Prepared by ENERGEIA for the Australian Renewable Energy Agency and the Clean Energy Finance Corporation, May 2018



Future possibilities for transport

Over coming years there are likely to be major advancements in transport technologies that will transform the way we travel and could help to further reduce emissions. Government is currently exploring options for bringing these new approaches and technologies to the ACT as outlined in the Moving Canberra: Integrated Transport Strategy and is committed to transitioning to a zero emissions bus fleet as outlined in the 'Government leadership' section.

Incentivising reductions in road network use

Car registration fees are levied as fixed charges only. This structure provides no incentive for individuals to reduce private vehicle travel, leading to unnecessary congestion and greater emissions. Reforming the structure of car registration to be related to the level of driving could provide an incentive to reduce car use, which would be consistent with a low carbon future. As part of a national body of work by jurisdictions, the ACT Government will explore options for reforms in this area, which will include consideration of benefits for the community, continuing uptake of electric vehicles, improving fairness across all road users, and social equity.

Forms of road network cost measuring have been implemented in many cities, including London and Singapore, and found to reduce congestion and total kilometres travelled. A recent trial in Melbourne also found that varying network pricing by time of day was most effective at reducing driving at congested times.

Mobility as a service

Mobility as a Service (MaaS) describes a shift away from personally-owned transportation and towards mobility solutions that are consumed as a service, where members of the public buy and navigate access to a service that enables use of many modes of transport including public transport, car share, taxis, rideshare, bikes and others. The first commercial application of MaaS, the 'Whim' App, was launched in Helsinki, Finland, in 2016. The company behind the Whim App is planning to launch the App in several cities throughout Asia and the United States.

Government is committed to supporting car share schemes and transport on demand services across the ACT region and supporting a transition to zero emissions rideshare and carshare vehicles.

Autonomous vehicles

Autonomous, or self-driving, vehicles are emerging technologies that have the potential to significantly change how we use vehicles. Autonomous electric vehicles that are part of the share economy (not privately owned) have the potential to reduce private car use and improve the efficiency of how we move around the city. Such a transition could see reduced private car ownership as people instead use shared autonomous vehicles to meet their transport needs. It could offer benefits such as reduced costs to households, increased safety and improved access to mobility for children, elderly people, disabled and low income households. Government will undertake further on-road trials of autonomous vehicles, including testing of an autonomous bus as part of the public transport network.

ENERGY, BUILDINGS AND URBAN DEVELOPMENT

Our built environment plays a major role in determining how we use energy and move around the city as well as how liveable our city is in a changing climate. The energy performance of our buildings, and the type of energy they use, will affect the comfort of occupants and our ability to reduce emissions over coming decades. The way in which we plan new suburbs, develop the city centre and town centres, and design new infrastructure will also have long-term implications for sustainable transport choices and achieving a net zero emissions city that is resilient to climate change impacts. Government will work towards a compact, liveable and sustainable built environment that supports achievement of our net zero emissions goal. This work is closely aligned with the ACT Planning Strategy.

GOALS AND ACTIONS

GOAL 4A
Maintain 100% renewable electricity supply

4.1 Legislate a 100% renewable electricity target to continue from 2020.

4.2 Develop and implement a Sustainable Energy Policy 2020–25 that sets out actions to deliver sustainable, affordable and reliable energy to the Territory and drives the continued development of the renewable energy industry in the ACT.

GOAL 4B
Reduce emissions from gas

4.3 Amend planning regulations to remove the mandating of reticulated gas in new suburbs.

4.4 Conduct a campaign to support the transition from gas by highlighting electric options and savings opportunities to the ACT community.

4.5 Develop a plan for achieving zero emissions from gas use by 2045, including setting timelines with appropriate transition periods for phasing out new and existing gas connections.

GOAL 4C
Climate-wise, zero emissions rental homes

4.6 Introduce mandatory disclosure of energy performance for all rental properties.

4.7 By 2021 introduce legislation for staged minimum energy performance requirements for rental properties to come into force in 2022–23.

4.8 Expand the Actsmart Home Energy Program to provide free, tailored in-home energy assessments for renters.

GOAL 4D
Climate-wise, zero emissions public housing

4.9 Continue to upgrade to efficient electric appliances in existing public housing properties where technically feasible and assess the costs and benefits of shifting to all-electric public housing.

4.10 Ensure all newly constructed public housing properties are all-electric (fitted with efficient electric appliances) from 2019.

GOAL 4E
Climate-wise, zero emissions low income homes

4.11 Continue to deliver the solar for low income program and investigate options for providing solar to public housing.

4.12 Trial facilitating access to interest free loans or other innovative finance for gas to electric upgrades and deep retrofits of low income homes.

GOAL 4F
Climate-wise, zero emissions homes

4.13 Provide information and training tailored to first home buyers, home owners and owner-builders to support higher awareness of zero emissions, climate-wise homes.

4.14 Facilitate demonstration projects showcasing zero (or negative) emissions climate-wise homes.

GOAL 4G
Climate-wise, zero emissions buildings

4.15 Design, and commit to a timeframe for implementing, higher minimum energy performance and climate resilience standards for new buildings that will deliver efficient, zero emissions buildings.

4.16 Provide information and facilitate education and training of developers and design and construction practitioners in zero emissions technologies and systems and climate-wise design.

4.17 Develop a new residential energy assessment tool that adequately assesses the year-round thermal performance of buildings in the Canberra climate.

4.18 Trial incentives and other measures to encourage all-electric, high efficiency apartment and commercial buildings.

4.19 Expand the Energy Efficiency Improvement Scheme to increase support for low income priority households and further encourage a shift from gas to high efficiency electric appliances.

4.20 Encourage the use of smart financing by medium and large businesses and organisations to support energy efficiency improvements, space heating upgrades and zero emissions vehicle fleets.

GOAL 4H
Climate-wise built environment

4.21 Review planning regulations and identify opportunities to require a sustainable, climate-wise built environment including through developing a Climate-wise Code.

GOAL 4I
Reduce urban heat and improve liveability

4.22 Implement Canberra's Living Infrastructure Plan to work towards 30% urban canopy cover and 30% surface permeability, account for the value of living infrastructure and assess local needs for managing heat.

Maintaining 100% renewable electricity

The ACT's renewable electricity target will be met through a combination of large-scale solar and wind projects in the ACT, New South Wales, Victoria and South Australia as well as local rooftop solar and GreenPower purchases (individuals and businesses choosing to purchase renewable electricity through their energy provider) and renewable generation through the national Large-scale Renewable Energy Target. The ACT is committed to maintaining 100% renewable supply into the future, and will legislate a 100% renewable electricity target to continue from 2020.

Reducing electricity demand through improving efficiency, adopting smart demand management solutions and investing in onsite renewable energy generation will also be important for cost effectively maintaining 100% renewable electricity. By managing demand we can avoid, or postpone, the need to invest in more large-scale renewable electricity projects. This will be particularly important as electricity demand increases as a result of electrification of transport and buildings.

Government will develop the Sustainable Energy Policy 2020–25 to map a pathway to efficiently maintaining a 100% renewable electricity supply.

As the climate changes, it is likely that summer air-conditioning usage will rise in the ACT—and nationally—due to higher average summer temperatures and more extreme heatwaves, resulting in higher peak electricity demand. The transition to zero emissions vehicles and the shift from gas to electricity in buildings will increase electricity demand. The use of smart technologies, such as vehicle to grid capabilities, where electric car batteries can be used to support the grid at times of peak demand, could help to mitigate peaks and associated impacts on electricity grid infrastructure. The Government is taking an integrated approach to reducing peak electricity demand to adapt to climate change, including the following approaches.

- Work through the COAG Energy Council for a coordinated national approach to managing electricity demand during heat wave events.
- Improve energy efficiency in homes, small businesses and schools through the EEIS, Actsmart and implementation of the COAG Energy Council's National Energy Productivity Plan.
- Incentivise uptake of battery storage for homes and small businesses through the Next Generation Battery Storage program. This program includes the first city-wide trial of a virtual power plant to reduce peak electricity grid demand.
- Invite community participation to reduce demand through the summer energy saving campaign.
- Support advocacy to ensure the needs of the community, especially the vulnerable, are heard and understood.

Sustainable Energy Policy 2020–25

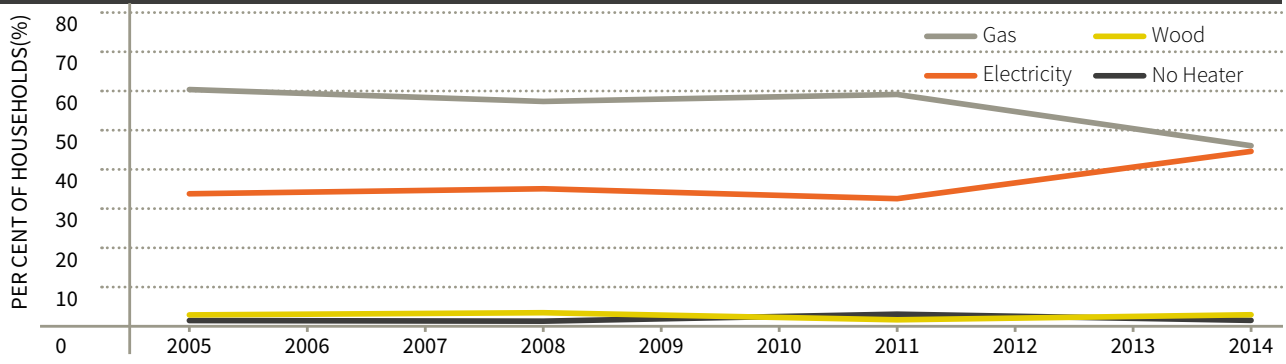
The ACT Sustainable Energy Policy 2020–25 is expected for release in 2020, and will build on the work of the ACT Sustainable Energy Policy 2011–20.

The success of the ACT's renewable energy projects, including the transition to 100% renewable electricity by 2020 and the Next Generation Battery Storage Program for improved energy storage and smart demand management, has positioned us as a national and international leader in climate and energy policy.

The new policy will outline how the ACT will continue to deliver a 100% renewable electricity supply and continue to lead and innovate for a net zero emissions future. The policy will consider issues such as:

- how we can most efficiently maintain a 100% renewable electricity supply from 2020, both through continual improvements in energy efficiency and any future reverse auctions needed
- the potential role of hydrogen in meeting our future stationary energy and transport needs
- the impacts for electricity demand and grid infrastructure of electrifying transport and shifting from gas to electricity in buildings, and opportunities for grid integration and smart demand management
- new opportunities to maintain the ACT's national and international leadership position in a changing energy industry environment.

Figure 8: ACT household winter heating energy consumption patterns – 2005–14
Source: Energy Gas Trends, 2018 report Commonwealth Department of Energy



Reducing emissions from gas

Reducing emissions from gas is a crucial part of achieving net zero emissions by 2045. As an energy source, natural gas is relatively emissions intensive and cannot easily be replaced with a zero emissions alternative. Hydrogen could be injected into the gas network, but current evidence suggests some new infrastructure would be required and existing appliances may need to be replaced or modified if hydrogen is more than 10–15% of the gas mix. Biogas, gas from fermentation of organic material, could be useful at the small scale, but is not seen as a viable replacement for natural gas at this stage due to uncertainty around availability of a sufficient quantity of suitable material from which to generate the gas and the likely high cost. Electrification is a proven technology for most energy services currently delivered by gas, but increased electricity demand presents its own challenges. Government will explore alternatives to natural gas and decide the most efficient way forward. Avoiding investment in infrastructure and appliances that will lock in emissions from natural gas will be critical for meeting long-term targets.

Figure 8 shows that the percentage of households using gas for space heating fell from 60% in 2011 to 45% in 2014. Overall, annual consumption of gas per household fell by 22% from 2010 to 2017.[14] These trends need to continue. Replacing gas household appliances with electric alternatives is a relatively simple solution as electric cooktops and efficient heat pump heating and hot water systems can easily, and affordably, replace gas appliances.

Government will amend regulations to remove the requirement for new suburbs to be connected to gas. This will give developers the freedom to build all-electric suburbs if they choose, allowing new zero emissions suburbs. All-electric new homes could reduce annual energy bills for residents by up to $450 per year, and up to $1600 per year if combined with installation of solar panels.

For commercial buildings, electrification of heating, ventilation and cooling (HVAC) systems is a viable option for most business sectors. All-electric and hybrid electric HVAC systems can help to reduce operating costs and have been demonstrated to work effectively. An example of this is the all-electric HVAC upgrade at the Government's North Building in Civic, home of the Canberra Museum and Gallery. Funded by the Carbon Neutral Government Loan Fund, this system replaced a gas heating system and has reduced emissions by 263 tonnes per year and energy costs by more than $120,000 per year. In addition, the move to air-cooled rather than water-cooled chillers provides maintenance savings and negates the need for cooling tower maintenance and water treatment, registration and ongoing risk assessment costs.

Government will work with energy retailers to support consumers wishing to switch from gas to electric appliances, and will develop tailored programs to support the transition away from natural gas for residential and commercial buildings. Further work will be undertaken to better understand commercial gas use and identify suitable substitutions for uses other than heating buildings. This work will inform the development of a plan to achieve zero emissions from gas by 2045.

> " All electric buildings are currently more cost effective than installing gas connections in new buildings. This is because electric heating and hot water technology is becoming increasingly efficient, so electric appliances have lower running costs than their gas-powered counterparts. An all-electric approach would also reduce the cost of building homes in new suburbs, as it avoids the need for costly new gas infrastructure to be built."[15]

Climate-wise buildings

The buildings we build now will last for many decades and need to be fit for the future climate and compatible with our net zero emissions goal. It is estimated that more than half the buildings expected to be standing in 2050 will be built after 2019. The requirements we set now can therefore have a major impact on the resilience of our building stock in 2045. A climate-wise building is designed so it can provide a reasonable level of comfort in all seasons, minimising the use of artificial heating and cooling, particularly through passive solar design including good orientation, appropriate use of thermal mass, natural ventilation and summer shading. It will also be resilient to climate-related risks the building may face including bushfires, particularly in locations close to nature reserves, severe storms and local flooding
(in flood-prone areas). The efficiency of a building is also determined by how its occupants choose to use it. Heating and cooling buildings uses a lot of energy. We can reduce our impacts, and save money, by learning to live comfortably while using less air-conditioning and heating.

Residential areas adjacent to Canberra's nature reserves, waterway corridors and rural lands have many benefits, but also face risks from extreme events such as bushfires and flooding. Managing these risks requires changes to the way we plan and build new homes and surrounding landscapes. It also requires ongoing work to ensure community members, and particularly those living in high risk areas, are aware of the issues, are supported to make changes at their property to reduce risk and are aware of what to do in the case of an emergency. Risks to these 'urban edges' are considered as part of the ACT Strategic Bushfire Management Plan 2014–19 and ACT flood risk mapping. Government is working to reduce risks in strategic locations through on-ground works, planning and community engagement to increase resilience of households.

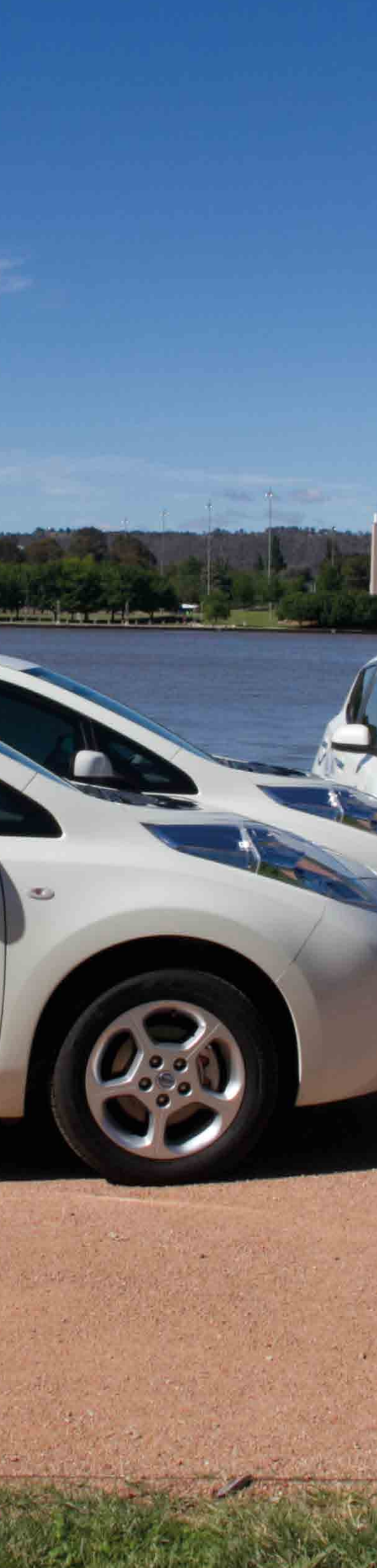
Upgrading existing buildings to improve energy efficiency and climate change resilience will also be important.

To promote climate-wise, zero emissions homes and buildings, Government will implement higher minimum energy performance standards and climate resilience standards, facilitate access to information, facilitate access to innovative financing options for making gas to electric upgrades, finalise an improved energy rating tool, trial new incentives for all-electric buildings, continue the EEIS to support low income priority households, and establish a program targeted at medium and large businesses to support the transition to more climate-wise buildings. Government will also undertake a review of the current regulatory framework and pursue opportunities to ensure new buildings and surrounding areas are climate-wise, providing high-quality and resilient homes, workplaces and urban environments.

Reducing urban heat

Canberra's Living Infrastructure Plan outlines how Government will use plants, soils and water to improve liveability of our city and reduce urban heat. It sets a target of achieving 30% tree canopy cover to shade and cool our city, and a target of 30% permeable surfaces to help manage water flow and avoid flash flooding. In addition to implementing Canberra's Living Infrastructure Plan, Government will continue exploring opportunities to reduce heat absorption of building surfaces and pavements and encourage air flow throughout the city.


ZERO
emissions
ACT
Government



ACT GOVERNMENT LEADERSHIP

Government is committed to leading by example to showcase best practice sustainability in Government operations. This includes implementing the Zero Emissions Government Framework to reduce emissions from Government operations, as outlined in the following section. Government will also demonstrate leadership in procurement, climate-wise infrastructure and Government buildings.

The ACT participates in a number of national and international alliances, and will continue to partner with local, regional and national governments around the world to promote meaningful action on climate change. In addition, the ACT Government will advocate for federal policies to support the transition to net zero emission reductions and increased resilience to climate change impacts.

Government will ensure the social cost of carbon and climate change adaptation considerations are considered in procurement and capital works decisions to embed climate change risks and impacts into operations and factor in the true cost of carbon pollution. Through innovation and leadership, the Government will continue to encourage others to take action for a successful transition to net zero emissions.

GOALS AND ACTIONS

GOAL 5A
Reducing risk in a changing climate

5.1 Reflect climate change projections and risk vulnerabilities in disaster and emergency prevention, preparedness, response and recovery, particularly for extreme heat, bushfire and flash flooding.

5.2 Encourage community preparedness for climate risks through targeted Emergency Services Agency outreach and the Actsmart sustainability programs.

GOAL 5B
Leading by example

5.3 Reduce staff travel needs by co-locating staff in centralised offices, providing facilities for teleconferencing, exploring co-working hubs and supporting flexible work arrangements and explore incentives to support staff use of public transport and active travel.

5.4 Implement a user-friendly sustainable procurement approach for goods and services and capital works that ensures greenhouse gas and adaptation outcomes are considered in all procurement decisions.

5.5 Ensure the social cost of carbon and climate change adaptation outcomes are considered in all ACT Government policies, budget decisions, capital works projects and procurements.

5.6 Ensure all new Government capital works with a budget of more than $10 million either seek or are consistent with an independent sustainability rating such as an Infrastructure Sustainability rating from the Infrastructure Sustainability Council of Australia (ISCA), or a Greenstar rating from the Green Building Council of Australia or equivalent, and review ratings at least every five years.

GOAL 5C
Collaborating for increased ambition

5.7 Foster partnerships with sub-national governments and non-government organisations locally, nationally and internationally to promote climate action and increased ambition.

5.8 Join in Global Green and Healthy Hospitals network to improve sustainability performance and reduce emissions from ACT Health facilities.

GOAL 5D
Zero emissions Government

5.9 Develop and implement a roadmap for transitioning Transport Canberra buses to zero emissions by 2040 at the latest while continuing to improve service levels, and review progress every five years.

5.10 Establish and implement a pathway to a zero emissions ACT Government health sector by 2040 informed by an assessment of all current and planned public health facilities.

5.11 Invest an interim price of $20 per tonne of emissions from Government operations into measures to meet the Zero Emissions Government target from 2020–21, and arrange for an independent body to develop a social cost of carbon for application from 2025.

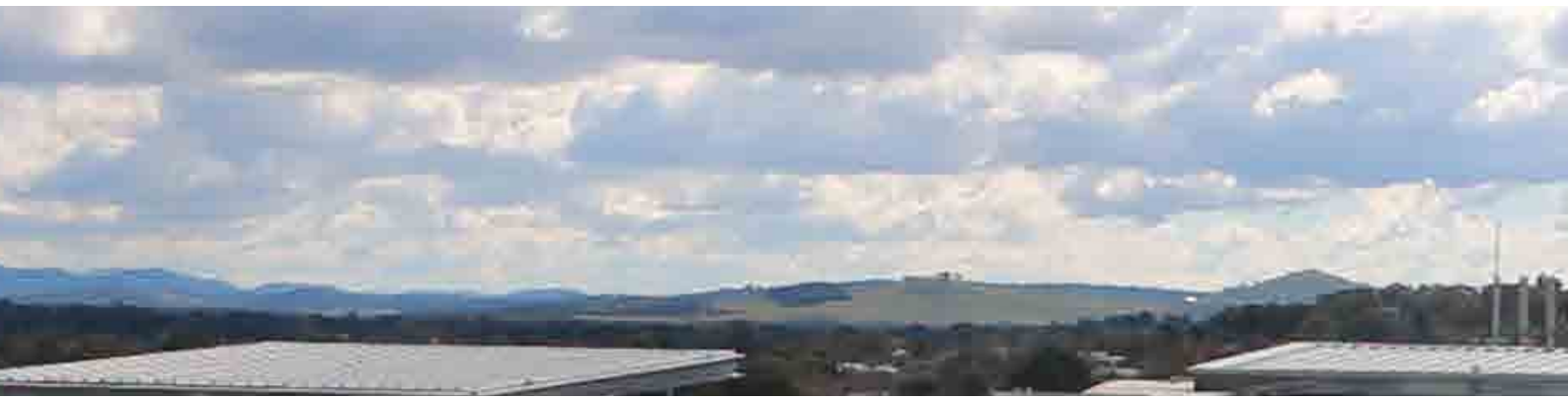
5.12 Establish a pathway to zero emissions ACT Government schools supported by an interim emissions reduction plan to 2025.

5.13 Ensure all newly built or newly leased Government buildings and facilities are all-electric and climate-wise (where fit for purpose).

5.14 Replace all space and water heating systems in Government facilities with electric systems at the end of their economic lives (where fit for purpose).

5.15 Ensure all newly leased ACT Government passenger fleet vehicles will be zero emissions vehicles from 2020–21 (where fit for purpose).

5.16 Investigate the use of innovative finance options such as Energy Performance Contracting as a method of reducing costs and emissions in Government assets.



Carbon offsets and the social cost of carbon

Government is committed to achieving its emissions reduction targets and net zero emissions goal without the purchase of carbon offsets. This approach has been adopted based on advice from the ACT Climate Change Council that purchasing carbon offsets is a short-term solution that does not help the ACT to achieve true net zero emissions. This is because offsets apply to emissions generated over a particular period, but do not help to permanently reduce or eliminate those emissions. A more effective approach focuses on using funds which would have paid for offsets to invest in initiatives which can achieve more lasting emission reductions. In adopting this approach, the ACT Government will focus on investments within our region which directly reduce ACT emissions. For example, regional waste processing solutions have the potential to help reduce the ACT's emissions from food and organic waste. Such investments will not be limited to within the ACT's borders, but must directly contribute to permanently reducing ACT emission.

The 'social cost of carbon' is an estimate of the actual economic, social and environmental cost of emitting greenhouse gases. Substantial work has been done on estimating the social cost of carbon pollution. In 2017 the United States Government was applying a social cost of US $39 per tonne of carbon pollution (around AUD $54).

Government will set a social cost of carbon for the ACT, will embed this in policies, budget decisions, procurement and capital works decisions, and will invest the equivalent social cost of emissions from Government operations as outlined in the 'Zero Emissions Government Framework' section.

Reducing risk in a changing climate

Through implementing the ACT Climate Change Adaptation Strategy, Government has developed a more thorough understanding of climate risks to Government infrastructure, service delivery and emergency planning and is working to reduce risk exposure. Government will continue to ensure climate risks are adequately considered and reflected in decisions, service delivery, emergency planning and infrastructure.

Government will also encourage community preparedness through Emergency Services Agency outreach and the Actsmart sustainability programs.

Leading by example

Government is committed to leading by example. Government will implement a user-friendly sustainable procurement approach that ensures greenhouse gas and adaptation outcomes are considered in all procurement decisions, ensure that capital works projects over $10 million achieve or are consistent with an independent sustainability rating, and will reduce staff travel needs by providing facilities for teleconferencing, exploring co-working hubs and supporting flexible work arrangements.

Collaboration and alliances

The Government aims to lead by example to inspire others to take action, and to learn from other jurisdictions locally, nationally and internationally. Government is a member of alliances and partnerships, including the Cities Power Partnership and the Climate Action Roundtable at the national level, and the Under 2 Coalition, Powering Past Coal Alliance, Carbon Disclosure Project and the 2050 Pathway Platform at the international level. The ACT's participation in these alliances enables sharing of learnings and information to encourage others to act, and has drawn international attention to our innovative work on climate change solutions.

Government will continue to collaborate to share knowledge, learn from leading jurisdictions and accelerate global climate change action.

Zero Emissions Government Framework

The Zero Emissions Government Framework enables and coordinates a whole of government approach to reducing Government emissions in a cost-effective manner. It replaces the previous Carbon Neutral Government Framework. The Government aims to demonstrate leadership by pursuing rapid emissions reductions that are consistent with achieving emission reduction targets of:

- greater than a 33% reduction in emissions from Government operations by 2025 (from 2020 levels)
- zero emissions from Government operations by 2040.

By pursuing these targets the Government will be guided by the following principles:

- Government leadership by example
- Demonstration of low emissions technologies
- Cost-effective greenhouse gas emissions abatement
- Transparency and accountability

Subsequent emissions reduction targets for the Government to achieve a zero emissions goal will be established as part of the review process for the ACT Climate Change Strategy.

From carbon neutral to zero emissions

The Carbon Neutral Government Framework committed the Government to achieving carbon neutrality in its own operations by 2020. This meant that any residual Government emissions from 2020 onwards would be balanced by purchasing certified carbon offsets.

Under the new Zero Emissions Government Framework, Government will not purchase carbon offsets to meet its targets. Instead, Government will invest a "social cost of carbon" equivalent to emissions from Government operations into new emission reduction initiatives. Government will apply an interim $20 cost per tonne of emissions from 2020–21. The Government will adopt a revised social cost of carbon from 2025, informed by an independent assessment of an appropriate social cost of carbon price for the ACT.

Application of a social cost of carbon to Government operations is a better outcome for the ACT economy than purchasing offsets. Funds committed under a social cost of carbon will be directly invested in the ACT to modernise public facilities and infrastructure, such as schools and emergency services, rather than being spent outside the ACT.

Government emission boundary

The Zero Emissions Government Framework applies to greenhouse gas emissions from assets over which the Government has operational control, including all facilities and assets operated by Government staff to conduct Government business. The emissions boundary includes both owned and leased assets, such as fleet vehicles, offices, public schools and hospitals. Assets not operated by employees of the Government are outside of the Government emissions boundary.

All direct emissions (from combustion of transport fuel and natural gas) and indirect energy emissions (from the generation of electricity) associated with these assets are considered within the boundary.

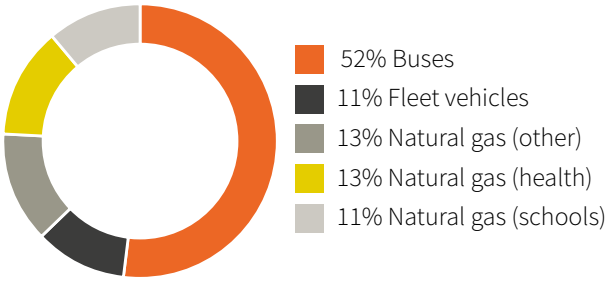
Achieving the Zero Emissions ACT Government Framework

By 2020–21 the Government will source all its electricity from renewable sources. However, Government operations will continue to generate emissions from natural gas used for space and water heating and from transport fuel use (see Table 4).

Table 4: Projected ACT Government emissions sources in 2020. Source: ACT Government Enterprise Sustainability Platform, data extracted December 2018.

CATEGORY	%	kt CO_2-e
Transport Canberra buses	52%	33
Natural gas (other facilities)	13%	8
Natural gas (health facilities)	13%	8
Fleet vehicles	11%	7
Natural gas (schools)	11%	7

Figure 9: Projected ACT Government emissions in 2020



The primary focus of emissions reduction activities under the Zero Emissions Government Framework will be reducing natural gas and transport fuel use. Significant cost savings can be achieved in Government operations by reducing ongoing energy consumption and reducing exposure to volatile energy prices.

Transport Canberra bus fleet

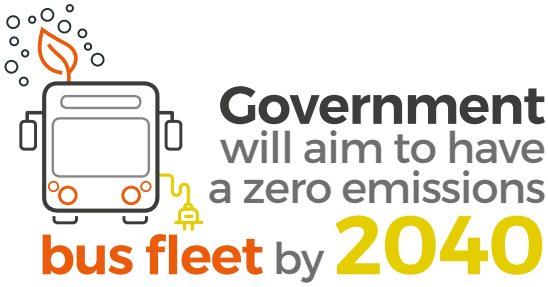
The Transport Canberra bus fleet plays an important role in reducing greenhouse gas emissions in the community by providing a low-emissions alternative to private vehicle use. However, by 2020, the bus fleet will be the source of approximately half of all Government greenhouse gas emissions (see Figure 9). The growth of the size of the Transport Canberra fleet, and its reliance on diesel fuel means that action is required to cut emissions from the fleet.

Government will aim to achieve a zero emissions bus fleet by 2040 by progressively phasing zero emissions buses into the fleet to provide clean and sustainable transport for the community.

Public health sector

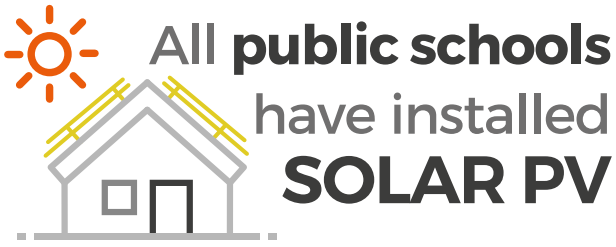
Public hospitals and medical centres provide vital services to the community; however, they are also responsible for a significant portion of the Government's natural gas use and therefore emissions. In 2018, The Canberra Hospital campus was responsible for approximately 30% of ACT Government natural gas consumption, while public health centres were responsible for an additional 2%.

By 2020, the Canberra Hospital campus will be the single largest source of Government natural gas emissions. Under the Zero Emissions Government Framework, Government will establish and implement a pathway to achieve zero emissions public health sector by 2040. The pathway will be developed by 2020 and be informed by a feasibility assessment of all current and planned public health facilities. The pathway will be reviewed every 5 years to assess progress and identify opportunities to address assets that are not currently fit for purpose for transition to zero emissions technologies.



ACT Government schools

Every public school now has solar PV installed, and the ACT's first all-electric school, Margaret Hendry School, in Taylor, opened in 2019. However, many schools have aging infrastructure with heating systems reaching the end of their operational lives. Government will establish a pathway to zero emissions public schools and replace these aging gas heating systems with efficient electric systems (where fit for purpose). The pathway will also support improvements to the thermal performance of school buildings through draught-proofing, window treatments and other energy efficiency improvement measures. Energy audits will identify opportunities for emissions reductions, increasing energy efficiency and facilitating improved student comfort to support learning outcomes. Government will also ensure all new public schools are climate-wise and all-electric.



Electric space and water heaters in Government facilities

Space and water heating is responsible for almost all natural gas use in Government facilities so efforts will focus on replacing natural gas heating with systems powered with renewable electricity.

Government will require electric space and water heating systems for all new facilities, where fit for purpose. In existing government facilities including schools and offices, water and space heaters will be replaced with electric alternatives at the end of their economic lives. A whole of government gas appliance audit will allow facilities managers to identify end-of-life equipment. Feasibility studies will be vital to select appropriate heating technology for each site.

Government passenger vehicle fleet

Under the ACT's Transition to Zero Emissions Vehicles Action Plan 2018–21 (the Action Plan):

- 50% of all newly Government leased fleet passenger vehicles will be zero emissions vehicles from 2019–20 (where fit for purpose)
- 100% of all newly leased passenger fleet vehicles will be zero emissions vehicles from 2020–21 (where fit for purpose).

Implementing the Action Plan will position the Government as a leader in sustainable fleet purchasing and demonstrate that zero emissions fleet vehicles are feasible in the ACT, the wider region and the nation.

The Action Plan requires the replacement of vehicles where there is a zero emissions vehicle model that is fit for purpose. Under the Zero Emissions Government Framework these vehicles will be assessed at the end of their leases to determine whether a suitable zero emissions vehicle replacement has become available.

As more zero emissions vehicles become available the Government will transition non-passenger vehicles, such as light commercial and large utility vehicles to zero emissions alternatives.

Zero Emissions Government Fund

Projects supported by the Carbon Neutral Government Fund currently generate annual savings to Government of approximately $2 million. Renamed the Zero Emissions Government Fund (the Fund), it will continue as the key mechanism for supporting cost effective and innovative emissions reduction projects in the Government.

The Zero Emissions Government Fund will provide interest free loans to Government agencies to support approved emissions reduction projects. Energy bill or fuel savings are used to repay loans, continually replenishing the fund to make funds available for new projects.

The Fund will focus on projects that cut emissions from natural gas and transport, taking advantage of the ACT's 100% renewable electricity target and demonstrating the feasibility of new technologies ahead of full market acceptance. The Fund's rules and procedures will be geared to maximise uptake across Government through mechanisms that return immediate project benefits to borrowers, manage risk and minimise red tape, while maintaining robust monitoring and verification practices.

Innovative finance options

The adoption of emerging zero emissions technologies may require the Government to invest in asset upgrades through innovative financing methods. Government has already demonstrated the success of innovative finance methods through the Carbon Neutral Government Fund. This fund will continue to pursue innovative finance options such as Energy Performance Contracts to achieve ambitious emissions reductions in Government assets.

Monitoring and reporting

The Government will maintain its robust monitoring and reporting regime to track progress towards zero emissions from Government operations. Monitoring and reporting is vital to demonstrate benefits and challenges posed by the adoption of zero emissions technologies to the community.

Monitoring progress

The Government has successfully established a robust and verifiable emissions measurement and reporting system. The Enterprise Sustainability Platform provides accurate and reliable data to all Government entities and enables consistent monitoring and reporting of electricity, natural gas, water, fuel, emissions and cost.

Minister's Annual Report

Progress towards the Zero Emissions Government targets will be publicly reported each year in the Minister's Annual Report under the Climate Change and Greenhouse Gas Reduction Act 2010. The progress report will provide information on:

- Government emissions and energy use
- projects undertaken as part of the Framework
- agency-specific performance against key performance indicators.

Director-General Key Performance Indicators

Achieving the Zero Emissions Government Framework target will require commitment from each Government agency. Individual agencies will be accountable for their greenhouse gas emissions through Director-General Key Performance Indicators. This mechanism requires all Government directors-general to report emissions reductions and activities undertaken as part of the Zero Emissions Government Framework. Directors-general will report progress to the Head of Service annually. This measure allows high-level executive oversight and ensures incorporation of sustainability and emissions reduction into the Government's strategic policy direction.


waste
to land
recycle
here!
Just like the yellow bin at home
PIZZA
SOFT DRINK
MILK

WASTE AVOIDANCE AND MANAGEMENT

In 2017–18, around 235,000 tonnes of waste was sent to landfill in the ACT—around 560 kilograms per person. The organic component of this waste breaks down in the landfill and releases methane, a potent greenhouse gas. The ACT landfill at Mugga Lane is fitted with a facility that captures the methane and uses it to generate electricity. This facility captures an estimated 70% of the methane from the landfill, with the remaining 30% being released into the atmosphere. In 2017–18 emissions from landfill were 60.7 kt CO_2-e, representing 2.2% of total emissions. From 2020, once electricity emissions are zero, waste treatment is projected to account for 4% of emissions.

Around 75,500 tonnes of general waste were collected from households in 2017–18. A 2014 audit found that, by weight, an estimated 35% of household general waste is food waste, and around 10% is garden waste. Using these estimates, around 34,000 tonnes of organic waste from households were sent to landfill in 2017–18. Around 117,000 tonnes of commercial and industrial waste was sent to landfill in the ACT in 2017–18. An estimated 13% of this, or 15,000 tonnes, was organic material.

Around 34,000 tonnes of co-mingled recyclables were collected from households and businesses in 2017–18. Diverting more recyclable materials from landfill will make better use of these resources. In addition, the recycled products that are created from these materials can help reduce environmental impacts by reducing the need to mine resources and manufacture new materials.

GOALS AND ACTIONS

GOAL 6A
Reduce waste generation

6.1 Support food rescue organisations to avoid food waste.

6.2 Implement the Actsmart programs and household waste education programs to reduce waste generation and increase recycling.

GOAL 6B
Reduce emissions from waste treatment

6.3 Introduce a food and garden waste collection for all households (including multi-unit dwellings) from 2023, and support with an education program from 2020.

6.4 Develop and consult on a scheme for requiring large organic waste producers such as hospitality and food retail businesses to have a separate organic waste collection.

6.5 Identify opportunities to reduce emissions from organic waste treatment including sewage such as through the use of anaerobic digestion and composting, and investigate potential sites for organic waste processing.

Reducing waste generation

The Roadmap to Improved Resource Recovery outlines Government's approach to reducing waste and improving waste management. The actions in this strategy are additional and will help to deliver on the recommendations of the Roadmap. Government will continue to implement the Actsmart Business Recycling and Schools programs and household waste education programs to encourage reduced waste generation and increased recycling.

Buying new items to replace those being sent to landfill has environmental impacts. Reducing the amount of waste we generate, by reducing the amount of products we consume and increasing reuse and recycling, will help to reduce emissions and broader environmental impacts.

Government will support food rescue organisations to collect excess food from retailers and redistribute to those in need. These organisations provide a valuable service to the community while helping reduce emissions from landfill.

The shift to zero emissions vehicles and the installation of stationary energy batteries in homes and businesses will result in waste at the end of the battery life. Batteries are expected to last around ten years, after which they can often be re-purposed. If not re-purposed they can be recycled at a dedicated facility. Government has strict recycling requirements in place for the Next Generation Battery Storage Program and will continue to encourage re-use and recycling of vehicle and stationary energy batteries at the end of their useful life. The ACT is working with other jurisdictions and industry to establish a national product stewardship scheme for photovoltaics and batteries.

Re-using organic materials

After reducing waste generation, diverting organic materials from landfill is the main way to reduce emissions from waste management. Their valuable nutrients and organic matter can be used to create a quality product that can be used to enrich soils. As the climate changes, making better use of organic materials to fertilise and mulch farmland could help to mitigate the impacts of longer and more severe droughts on local farms.

Collecting organic materials separately to other waste streams is the most effective way to divert them from landfill. A garden organics collection service is currently being rolled out to all Canberra households. To divert more organic materials from landfill, Government will expand this service to include household food waste, as recommended in the Roadmap to Improved Resource Recovery.

A 2015 landfill audit found that an estimated 13% of commercial waste is organic materials. Applying this estimate, businesses in the ACT sent an estimated 15,000 tonnes of organic waste to landfill in 2017–18. Diverting these materials from landfill will help to reduce emissions as well as make better use of these materials to improve soils.

Government will develop a scheme for requiring large producers of organic waste to have a separate organic waste collection. Many cities around the world have introduced mandatory separate collection of organic waste. San Francisco in California introduced a law in 2009 requiring all residents and businesses to separate organic materials for collection and composting. This has resulted in a major reduction of waste to landfill and is enabling production of nutrient-rich compost from the material. The Canadian city of Vancouver banned the disposal of food waste to landfill in 2015 for all residents and businesses. The City of Melbourne has introduced food waste recycling in the Degraves Street precinct. Over 90 businesses are participating and the initiative is diverting around 130 tonnes of food waste each year.

Government will evaluate options for large-scale composting or anaerobic digestion of the organic materials collected from households and businesses and for the treatment of wastewater and sewage.

LAND USE AND BIODIVERSITY

How we use and manage the land affects greenhouse gas emissions and the impacts of climate change on our rural communities and natural ecosystems. Efficient and sustainable use of land for urban development can minimise emissions from transport, buildings and land use change, as well as contribute to maintaining and enhancing our living infrastructure and biodiversity assets. Canberra's Living Infrastructure Plan outlines the approach Government will take to improving liveability and reducing urban heat and flash flooding through increasing tree canopy cover and permeable surfaces to allow water infiltration. Some agricultural activities and land clearing for urban development release greenhouses gas emissions, while reforestation and increasing soil carbon can store —'sequester'—carbon, reducing net emissions. In 2017–18 the Territory's emissions from agriculture and plantation forestry were 24kt CO_2-e and net emissions from agriculture, land clearing, reforestation and forest management were -9.8kt CO_2-e. This was largely achieved by reforestation (planting of recently cleared areas) and afforestation (planting of land that had been cleared of vegetation for a long period).

GOALS AND ACTIONS

GOAL 7A
Protect local species and habitats

7.1 Identify opportunities to increase resilience of terrestrial and aquatic habitats at risk from climate change and implement land management changes and relevant on-ground works with delivery partners.

7.2 Ensure action plans for threatened species and communities consider the impact of climate change.

GOAL 7B
Sequester carbon in the landscape

7.3 Identify suitable sites in the ACT for 'carbon sinks' and develop a plan for planting trees or using soil carbon in these areas to sequester carbon with consideration of biodiversity outcomes and competing land uses.

GOAL 7C
Encourage sustainable and resilient farming

7.4 Encourage sustainable farming practices which are fit for the current and future climate and enhance soil and water quality, and work with farmers to identify opportunities for net zero emissions farming and innovation to increase resilience.

The ACT is fortunate to have large areas of national park and nature conservation reserves, which are important for protecting biodiversity and promoting healthy soils and water catchments. We have an extensive urban forest, which adds beauty and life to our urban environment and helps keep our city cool during summer. Canberra's Living Infrastructure Plan outlines the approach Government will take to protect and enhance our street trees, soils and waterways to ensure Canberra remains a highly liveable and attractive city in a changing climate.

The main types of non-urban land uses in the ACT:

- Biodiversity and water—or nature conservation, ecosystem services, recreation and managing Canberra's potable water supply.
- Agriculture—predominantly grazing sheep and cattle, with some limited processing and equine pursuits.
- Plantation forestry—for timber production and in some locations for sport and recreation.

As the climate changes and droughts become more severe, agricultural and land management practices will need to adapt, and the 'products' from the land may need to change. Government will consider climate change impacts in its land and forest management decisions and will support sustainable, climate-wise farming. The ACT Nature Conservation Strategy 2013–23 details actions to be taken to improve conservation outcomes across the ACT and reserve management plans are prepared to guide management of national parks and nature reserves.

Government acknowledges the long history of Aboriginal and Torres Strait Islander people in caring for Country and adapting to climatic changes and will endeavour to learn from traditional knowledge in caring for natural areas in a changing climate, including fire management. The Nature Conservation Strategy and the Parks and Conservation Service Healthy Country Programs support the engagement of Aboriginal and Torres Strait Islander people in the management of natural resources and acknowledge the connection between the health of the environment and cultural wellbeing. Progress has been made in several areas including involving Indigenous people in woodland restoration, continuing the Murrumbung Ranger Program, adopting traditional cool burning techniques, continuing to employ an Indigenous Natural Resource Management Facilitator and ongoing engagement on Natural Resource Management including the development of the Aboriginal Fire Management Framework. Government will continue to work to increase knowledge transfer and apply cultural land management practices in our parks and reserves.

Sustainable urban land use

In 2016, Canberra's urban footprint was 372.6km^2, with a population density of approximately 1080 residents per km^2. If the current density of urban development in the ACT were to continue unchanged, the urban footprint required to accommodate the currently projected population of 589,000 residents at 2041 would be around 544km^2, an increase of 46%. This pattern of development would not support a compact and efficient urban form. It would increase our travel times, decrease sustainable transport options and increase our ecological footprint, as well as placing increased pressure on agricultural land and environmentally sensitive areas.

By planning for the development of Canberra as a compact and efficient city with increased prioritisation of urban infill to support future growth, we can reduce pressure on valued natural resources and improve the sustainability of our urban land use.

Canberra's urban forest and network of nature reserves and green spaces provide important areas of habitat for the conservation of biodiversity, as well as opportunities for people to enjoy connecting with nature. Expanding urban land use can also pose a significant threat to our biodiversity. As habitat becomes smaller and more fragmented through urban development, flora and fauna can face increased threats, such as lack of habitat and reduced habitat connectivity to allow movement and dispersal.

To protect our habitats and ecosystems from the future effects of climate change, we will need to include consideration of maintaining and enhancing our living infrastructure and biodiversity assets, and improving landscape connectivity and resilience, as part of urban planning and development processes. Canberra's Living Infrastructure Plan sets out policy and actions to ensure urban development is supportive of a healthy, liveable and biodiverse urban environment.

Resilient agriculture

ACT emissions from agriculture as reported in the Greenhouse Gas Inventory are based on data from the National Greenhouse Gas Inventory. The largest contributor is methane emissions from enteric fermentation (digestion process of livestock). The majority of agriculture emissions are from enteric fermentation in sheep (48%) and cattle (40%). Emissions from agriculture are low at 0.7% of total emissions in 2017–18.

Sustainable local food production can help reduce emissions from transporting food (from a global, rather than ACT perspective). Local farming practices will need to respond to a changing climate. Government will continue to support sustainable, climate-wise farming practices including approaches to reduce emissions, increase carbon sequestration in the landscape, improve efficiency of water use and encourage soil health.

Due to the changing climate, landholders will be encouraged to improve their resilience to increasing drought frequency, longer heatwaves, increasing bushfire risk, more extreme storms and increasingly variable rainfall. Landholders will be encouraged to adopt best management practices that incorporate both climate change mitigation and adaptation measures for resilient and viable farms.

Land-based sequestration

Land-based carbon sequestration projects such as tree planting and increasing soil carbon can help reduce emissions while potentially offering other benefits such as habitat for wildlife and improving visual amenity. Land-based sequestration projects are susceptible to being destroyed by bushfire and drought, releasing stored carbon back into the atmosphere. In a warmer and drier climate, this risk will increase. In addition, land-based sequestration is vulnerable to changes in land management practices or to changes in legislation (e.g. relaxing of land-clearing legislation) which can result in a return of sequestered carbon to the atmosphere. Government will consider carbon sequestration as an additional measure where there are adaptation, economic or biodiversity co-benefits.

This will involve identifying suitable sites in the ACT for ‘carbon sinks’ and developing a plan for planting trees or using soil carbon in these areas to sequester carbon with consideration of biodiversity outcomes and competing land uses.

Climate change impacts on biodiversity

The projected changes to our climate will affect many local plant and animal species as well as water supply. These climatic changes are already occurring, with noticeable impacts such as species decline and increased bushfire frequency and intensity which results in changes to the landscape and consequential impacts on species and ecosystems. The cumulative impacts on threatened ecosystems, such as high country bogs and fens, are likely to be severe over the long term. Closer to home, in the grassy woodlands surrounding the city, impacts can be seen, such as decline and death of trees and changes in the distribution of species. Volunteer organisations such as the Canberra Ornithologists and FrogWatch assist the ACT Government to monitor changes over time.

Understanding climate risks to species and ecosystems will enable strategic action to manage species and ecosystems to increase resilience and foster adaptation where possible. The ACT Nature Conservation Strategy 2013–23 provides a strategic approach to mitigating the impacts on species.

To protect species and habitat, Government will continue to ensure actions plans for threatened species and communities consider the impact of climate change. Government will also continue to identify opportunities to increase resilience of terrestrial and aquatic habitats at risk from climate change and implement land management changes and relevant on-ground works with delivery partners.

INDUSTRY DEVELOPMENT AND INNOVATION

The ACT has taken an innovative approach to reducing emissions to date. The large scale reverse auction process for procuring renewable electricity resulted in approximately $2 billion of investment into 640 megawatts of wind and solar projects both in the ACT and across Australia and attracted $500 million in low carbon investment to the ACT. This reverse auction model has since been adopted by the Victorian Government. The Energy Efficiency Improvement Scheme has resulted in $350 million in lifetime bill savings across the community. The demand reduction obtained through the Next Generation Battery Storage program could result in the order of $60–220 million in avoided infrastructure costs and thereby further reduction in household bills across the Territory. These are examples of how an innovative approach, in partnership with industry, can deliver benefits for the ACT and drive market transformation.

Other world leading capabilities provided by the businesses and researchers in Canberra's renewables precinct include renewable resource analysis, smart, data-driven energy storage integration, hydrogen storage and transport solutions. This is supported by the Australian National University's Masters Course in Wind Energy, delivered in conjunction with Windlab, and Canberra Institute of Technology's Renewable Energy Skills Training Centre, which is offering one of Australia's first Global Wind Organisation accredited wind safety and technical training programs. In late 2018 the centre also commenced solar PV and battery courses that allow licensed electricians to apply for Clean Energy Council PV Accreditation and battery storage endorsement.

The next stage of our work towards net zero emissions provides a new opportunity for further economic benefits from attracting local low carbon investment, improving efficiency and increasing resilience to climate change. The ACT is in a great position to build on our successes to become an even stronger knowledge economy that is a hub for zero emissions research and investment. As a global leader in climate change action we are attracting bright and innovative professionals and business leaders who will help to shape smart solutions for the future.

Taking an innovative approach will become increasingly important as we move to the next challenge of reducing emissions from transport and gas. Existing examples are the beginning of an exciting chapter in the ACT's transport and energy system transition, and include the ACT trialling electric buses, our new electric light rail system, and the Ginninderry all-electric 'solar suburb'. The scale of the emission reductions required to meet our targets are unprecedented and will require a new way of thinking. Government will trial new approaches and will invite industry participation in developing innovative solutions.

GOAL 8A
Promote a zero emissions economy

8.1
Work with industry to support innovation, research and partnerships that will enable and accelerate the transition to a net zero emissions economy.

MONITORING, EVALUATION AND REPORTING

Measuring and evaluating our progress

Regular monitoring and evaluation will be an important part of successfully meeting our targets and achieving net zero emissions. Progress will be measured and reported via the annual ACT Greenhouse Gas Inventory.

The Minister for Climate Change and Sustainability reports annually on action to achieve the emission reduction targets, emissions from Government operations, effectiveness of actions and impacts on cost of living. This report will be used to provide a summary of this strategy's implementation progress including a status update for each action. An independent review by the Office of the Commissioner for Sustainability and the Environment will be completed in 2024 to assess progress and inform the development of the next strategy from 2025.

There will be challenges in working towards net zero emissions that we do not yet have all the answers for. Government will trial and evaluate new approaches and will provide a high level of transparency and accountability throughout this process. To support this, Government will continue to improve data sharing, capture and integration across Government, collect and report ACT travel data, and collect and report data against key resilience indicators.

Continuing to lead

Government will continue to collaborate nationally and internationally and participate in research projects and alliances to remain at the forefront of climate change action and ensure we are acting on the latest information. Technologies and approaches will continue to advance rapidly as jurisdictions and markets around the world respond to climate change; we will monitor these so our work is based on the best available information and advice.

The ACT will continue to collaborate with other jurisdictions to provide updated climate change impact projections to inform our climate change response and will periodically update risk analyses as the science improves.

GOAL 9A
Evaluate and improve

9.1
Improve data capture, integration and sharing across Government to enable accurate tracking and reporting of progress.

GOAL 9B
Measure and report progress

9.2
Collect and report ACT travel data at least every two years on a range of journey types.

GOAL 9C
Measure and report resilience

9.3
Collect and report data to monitor progress against resilience indicators including continuation of the longitudinal survey and climate-related health impacts and costs.

Photo by Nathan Scays

INCREASING AMBITION

Contributing to global effort

Government understands the need for immediate and decisive action on climate change. The IPCC Special Report on Global Warming of 1.5˚C identified that immediate, large-scale and transformative action is required in order to keep global average temperature increase to under 2˚C (from pre-industrial levels). The report found that the global community will not be able to keep warming to below 2˚C without the widespread application of carbon capture and storage technologies. It underlined the immediacy and extent of change that is required to secure a safe climate for the future.

The ACT emission reduction targets represent our contribution to the required global reductions to keep warming to below 2˚C. Achieving these targets will demonstrate that a rapid reduction in emissions is possible and provide valuable examples for others to learn from. The ACT can play an important role in driving higher ambition and accelerating change elsewhere by continuing to demonstrate leadership and provide working examples of innovative solutions. Our strong knowledge economy, previous successes in renewable energy and high level of community support for, and leadership on, climate change action make the ACT well placed to lead by example on climate change.

Government will continue to find new ways of working that showcase smart solutions to climate change and will continue to participate in national and international alliances to exchange information and learn from global best practice. Government is committed to achieving these targets to play our role in the global effort. The ACT is a small jurisdiction and our emissions, at around 3,300 kt CO_2-e annually, are a very small fraction of global annual emissions, which are around 40 million kt CO_2-e. However, global efforts will rely on action being taken by each jurisdiction; we are already seeing that climate action is, in many cases, being driven by sub-national jurisdictions such as the ACT. The ACT also continues to provide a role model for other governments looking to achieve ambitious targets.

GOAL 10A Explore negative emissions technologies

10.1
Investigate opportunities for implementation of negative emissions technologies in, or supported by, the ACT.

Opportunities to increase ambition

The immediate priority is to reduce emissions to meet the 2025 target and establish a pathway to net zero emissions by 2045. In the interests of understanding whether higher ambition may be possible, the ACT will investigate the potential for large-scale negative emissions technologies. Emerging opportunities for reducing aviation emissions through the use of alternative fuels will also be explored.

The ACT's targets include only scope 1 and 2 emissions (direct emissions in the ACT and emissions from purchased electricity respectively), and exclude scope 3 emissions (emissions generated in growing the food and producing the goods brought in from outside the ACT). Government acknowledges that scope 3 emissions are substantial and efforts are required to influence both consumption patterns and supply chains to further reduce them. This strategy includes actions aimed at achieving this, including introducing a sustainable procurement framework for Government and running waste avoidance education programs. There will be a higher priority placed on reducing scope 3 emissions in future strategies, once the ACT is on track to meet its initial targets.

Depending on progress, and as new technologies become available and markets change, further ambition may be possible. Opportunities to increase the ACT's climate change response will be evaluated when each new strategy is developed.

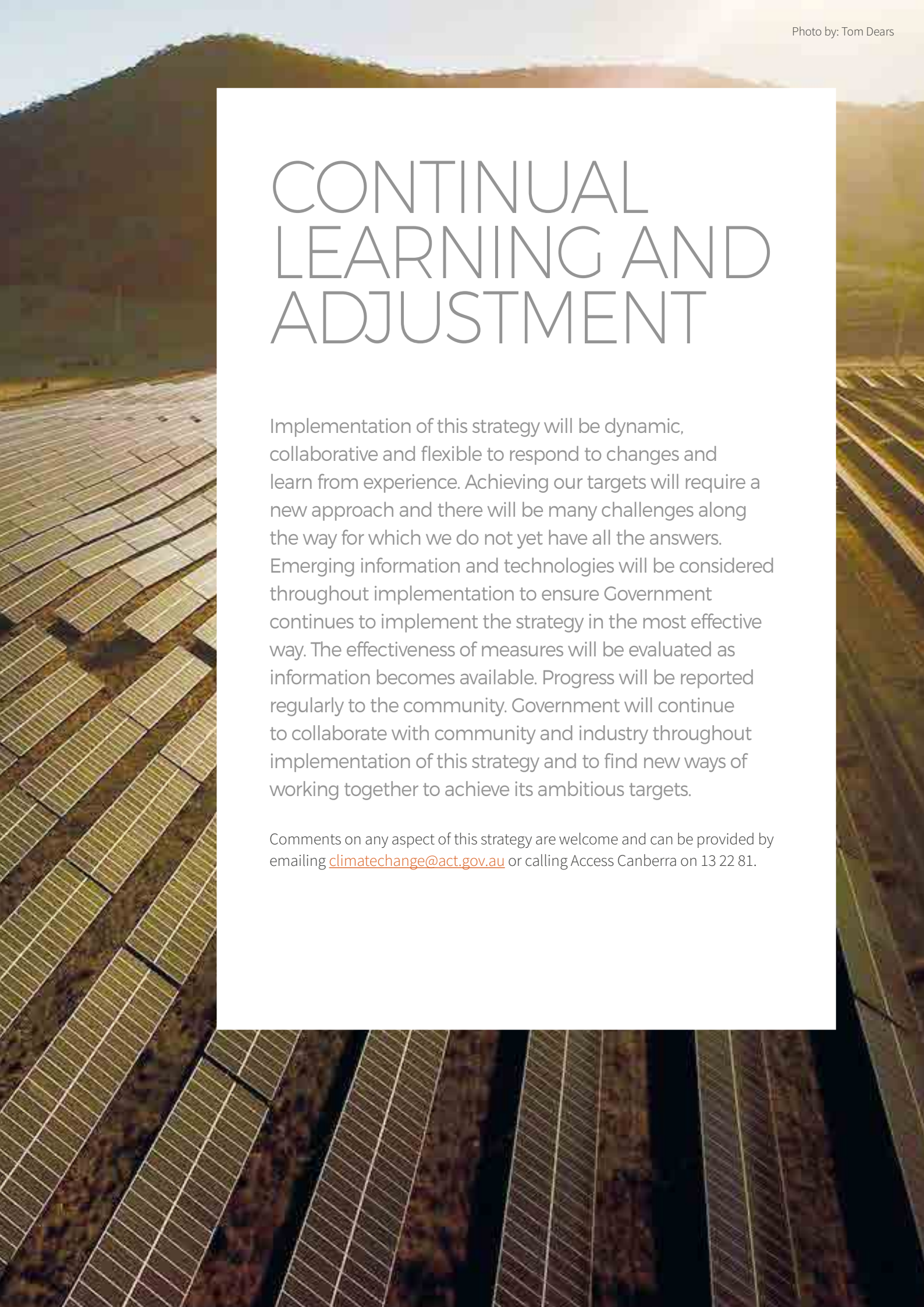


Photo by: Tom Dears

CONTINUAL LEARNING AND ADJUSTMENT

Implementation of this strategy will be dynamic, collaborative and flexible to respond to changes and learn from experience. Achieving our targets will require a new approach and there will be many challenges along the way for which we do not yet have all the answers. Emerging information and technologies will be considered throughout implementation to ensure Government continues to implement the strategy in the most effective way. The effectiveness of measures will be evaluated as information becomes available. Progress will be reported regularly to the community. Government will continue to collaborate with community and industry throughout implementation of this strategy and to find new ways of working together to achieve its ambitious targets.

Comments on any aspect of this strategy are welcome and can be provided by emailing climatechange@act.gov.au or calling Access Canberra on 13 22 81.

LINKS TO SUPPORTING INFORMATION

This strategy draws on various information sources including research reports, expert advice, implementation reviews, community consultation events and strategies. Key sources are listed below, all are available at www.yoursay.act.gov.au.

Community engagement

- ACT's Climate Strategy to a net zero emissions Territory Discussion Paper, December 2017
- Canberra's Living Infrastructure Discussion Paper, February 2018
- Technical Reference Paper on ACT's Climate Strategy to a Net Zero Emissions Territory, December 2017
- Register of ideas received during community consultation, June 2018
- ACT's Climate Strategy Community Engagement Report, July 2018
- ACT's Climate Strategy to a net zero emissions Territory – Listening Report, May 2018

Strategies

- ACT Climate Change Strategy and Action Plan 2 (AP2), 2012
- ACT Climate Change Adaptation Strategy, 2016
- ACT Planning Strategy 2018
- ACT Housing Strategy, 2018
- Canberra's Living Infrastructure Plan: Cooling the City, 2019
- Draft Moving Canberra: Integrated Transport Strategy, 2017
- ACT Nature Conservation Strategy 2013–23
- ACT Practice for Water Sensitive Urban Design Guidelines and Code, 2009

Expert advice

- Climate Change Council advice, October 2017 www.environment.act.gov.au/cc

Research and emissions modelling

- Mapping surface heat in Canberra report, CSIRO, 2018
- Climate mitigation and adaptation in the ACT: costs, benefits and implications, Energetics, 2018
- ACT Transition to Net Zero Emissions – Stationary Energy/Buildings, Strategy Policy Research, 2017
- Pathway report ACT 2050 emissions modelling – land use, Point Advisory, 2017
- Reforestation and afforestation opportunities within 100 km of the ACT, Point Advisory, 2017
- Pathway report ACT 2050 emissions modelling – waste sector, Point Advisory, 2017
- Strategic Options for Reducing Emissions in 2030, 2040 and 2050, AECOM, 2017
- ACT Updated integrated emissions model, 2019

Government programs

- Energy Efficiency Improvement Scheme - www.environment.act.gov.au
- Actsmart Programs - www.actsmart.act.gov.au
- Household waste education programs - www.tccs.act.gov.au/recycling-and-waste

REFERENCES

GLOSSARY OF TERMS

Active travel
Active travel means a mode of transport that involves physical activity such as walking and cycling to get from one destination to another, including travel to and from the places we live, work, learn, visit and play. The most common forms of active travel are walking and cycling. Active travel can also be an incidental activity associated with the use of public transport (e.g. walking or cycling to bus stops).

Biodiversity
Biodiversity describes the variety of life in all its forms and at all levels of organisation, as well as the ecological and evolutionary processes through which genes, species and ecosystems interact with one another and with their environment.

Carbon sink
A natural or artificial reservoir that accumulates and stores carbon for an indefinite period. Examples of natural carbon sinks include forests, oceans and soils.

Climate change adaptation
Actions taken to help communities and ecosystems adjust to changing climate conditions and their effects.

Climate change mitigation
Efforts to reduce or prevent the release of greenhouse gas emissions into the atmosphere.

Climate-wise building
A building designed so that it can be operated to provide a reasonable level of comfort in all seasons, minimising the use of artificial heating and cooling, particularly through passive solar design including good orientation, appropriate use of thermal mass, natural ventilation and summer shading. It will also be reasonably resilient to climate-related risks the building may face including bushfires, particularly in locations close to nature reserves, severe storms and local flooding (in flood-prone areas).

COAG
The Council of Australian Governments

CO_2-e
Carbon dioxide equivalent. A measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

CMTEDD
Chief Minister, Treasury and Economic Development Directorate.

CSD
Community Services Directorate

Ecosystem
A dynamic combination of plant, animal and micro-organism communities and their non-living environment (e.g. soil, water and the climatic regime) interacting as a functional unit.

Ecosystem services
The benefits people obtain from functioning ecosystems. These include provisioning services such as food and water; regulating services such as urban cooling and flood control; cultural services such as recreational and cultural benefits; and supporting services such as nutrient cycling.

ED
Education Directorate

EEIS
Energy Efficiency Improvement Scheme, established by the Energy Efficiency (Cost of Living) Improvement Act 2012, which requires energy retailers to undertake energy saving activities.

EPSDD
Environment, Planning and Sustainable Development Directorate

Greenhouse gas emissions
Any of the gases whose absorption of solar radiation is responsible for the greenhouse effect including carbon dioxide, methane, nitrous oxide and fluorocarbons.

Group centre
Centres that service several nearby suburbs and provide easy access to major services, retailing and other commercial and community uses that meet the weekly needs of its catchment population.

Gt
Gigatonne (1000 million tonnes)

HD
Health Directorate

Infill
Development of unused or underutilised land in existing urban areas. It involves increasing the capacity of our existing urban area to support growth.

Innovative finance
Non-traditional methods of sourcing financing for sustainability, which can tackle barriers such as knowledge gaps and split incentives.

JACS
Justice and Community Safety Directorate

kt
Kilotonne (1000 tonnes)

Liveability
A measure of quality of life used to benchmark cities around the world. It includes socio-economic, environmental, transport and recreational measures.

Living infrastructure
The interconnected ecosystems within an urban catchment, including the 'green infrastructure' of trees, gardens, green walls and roofs, parks, reserves and open spaces, and the 'blue infrastructure' of our waterbodies including lakes, wetlands and waterways.

Natural resources
Includes soil, water and marine resources; geological features and landscapes; native vegetation; native animals and other native organisms; and ecosystems.

Resilience
The capacity of individuals, communities, businesses and systems in a region to survive, adapt and thrive, no matter what chronic stresses and acute shocks they experience.

Social cost of carbon
An estimate of the long-term economic damage caused by a tonne of carbon dioxide emissions in a given year. The social cost of carbon therefore represents the value of damages avoided by a one tonne reduction in carbon dioxide emissions, or the marginal benefit from reducing emissions.

Sustainable transport
Sustainable transport is transport that is compatible with a net zero emissions Canberra. It includes walking, cycling, public transport, and zero emissions private vehicles (such as electric motor vehicles and electric motorcycles, and personal mobility devices such as electric scooters).

t
Tonne

TCCS
Transport Canberra and City Services Directorate

Town centre
A town centre offers a wide range of facilities and services to serve the community and visitors from the surrounding district. Typically a town centre offers employment opportunities and provides higher order retail facilities, offices and consulting rooms; cultural, community and public administration; entertainment, educational, religious and residential facilities. Generally most urban districts in the ACT has a town centre providing access to goods and services bought less frequently.

Urban footprint
The geographic extent of the existing urban area.

ENDNOTES

1. ACT community surveys on climate change, 2013 and 2016, available at https://www.environment.act.gov.au/cc/community-engagement.
2. Letter from the ACT Climate Change Council to the Minister for Climate Change and Sustainability, October 2017, https://www.environment.act.gov.au/cc/climate_change_council/climate_change_council_documents.
3. AP2 Implementation Status Report, Office of the Commissioner for Sustainability and the Environment, 2018, http://www.environmentcommissioner.act.gov.au/__data/assets/pdf_file/0018/1116324/CSE-ISR-Report-Aug2017_FA_AccPDF_c2.pdf.
4. Living well with a changing climate: Findings of the 2018 ACT Longitudinal Survey on Climate Change, July 2018, University of Canberra - Health Research Institute on behalf of the ACT Government.
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6. 'Exploring 167 years of vulnerability: An examination of extreme heat events in Australia 1844–2010', Coates et al., Environmental Science and Policy, 42, p33-44, 2014.
7. ACT emissions are reported in the annual Greenhouse Gas Inventory and are based on the geographic boundary of the ACT. Direct (scope one) emissions, such as fuel combustion, and indirect (scope two) emissions such as purchased electricity, are included in the inventory. Further information on the inventory methodology is available at www.environment.act.gov.au .
8. Australian Electric Vehicle Market Study, Prepared by ENERGEIA for the Australian Renewable Energy Agency and the Clean Energy Finance Corporation, May 2018.
9. ACT community surveys on climate change, 2013 and 2016, available at https://www.environment.act.gov.au/cc/community-engagement.
10. City of Copenhagen. (2017). Copenhagen City of Cyclists - Facts and Figures 2017.
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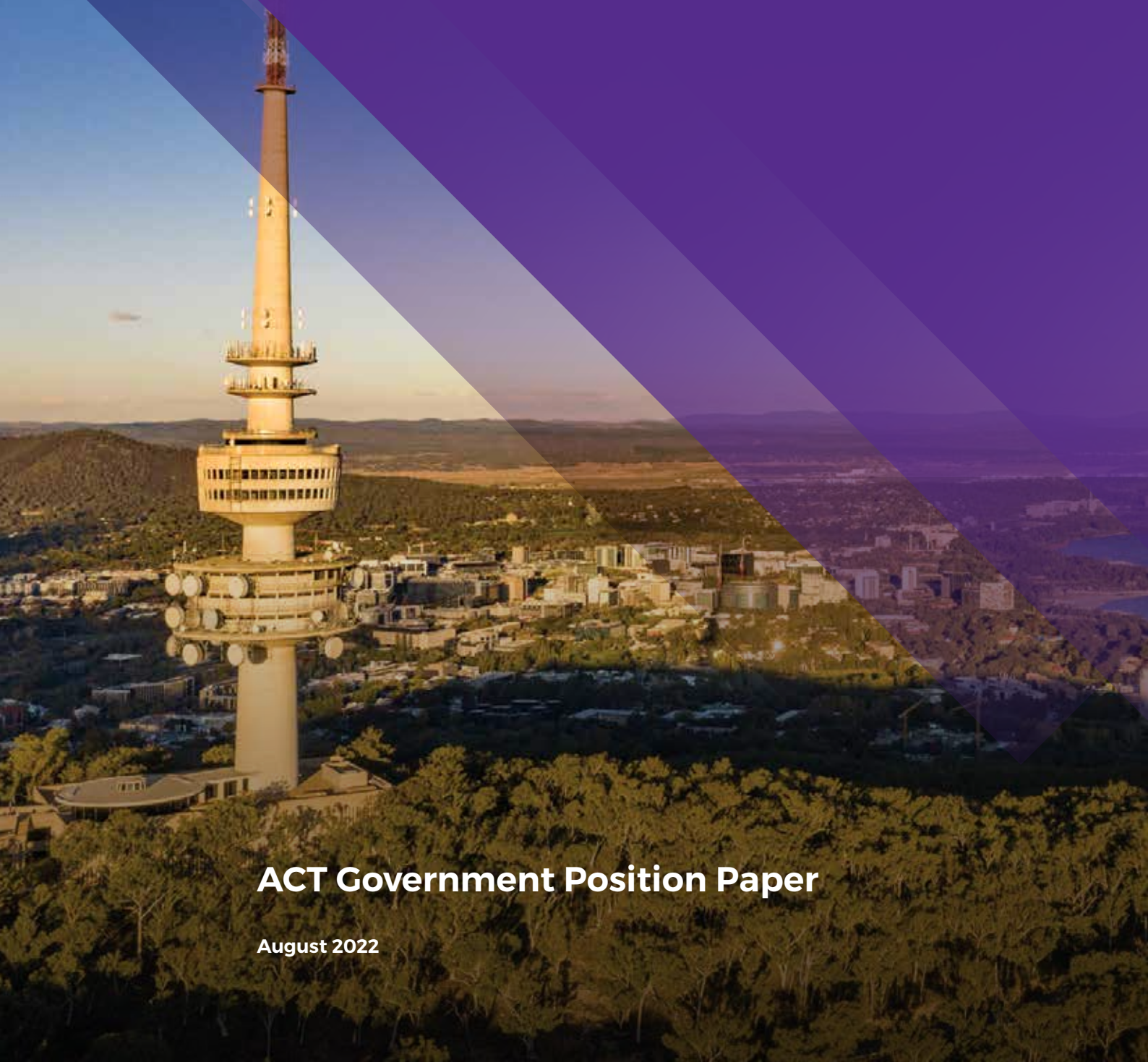
ACT Government

POWERING CANBERRA

Our Pathway To Electrification



ACT Government Position Paper

August 2022

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Foreword

Yuma,

The ACT is proud to be a world leader in climate action and we are now taking the next step forward to get us closer to net zero emissions by committing to an electrification pathway and transition away from fossil fuel gas by 2045.

Our Government values the things Canberrans care about and this includes taking real action on climate change and supporting our most vulnerable. We are committed to managing the transition to a net zero emissions energy future in a responsible and considered manner, and recognise that this is a long-term transition.

We should be proud that we are leading the nation on climate action. As we have seen across Australia in recent times, our community wants and expects Government at all levels to take real action. But, we know that there is still a great deal of work to be done here in the Territory and our decision to pursue an electrification pathway supports the decisive and leading climate action role our community has asked of us.

We're doing this because an all-electric Canberra will allow us to power our Territory, our homes, our businesses and our transport in a cleaner and cheaper way. Transitioning to an electric energy supply is going to help many in the ACT to save money in the coming years.

We want to enable the majority of ACT energy consumers to save money by transitioning at a time that is right for them by providing early, long-term certainty around our zero emissions energy pathway. Ensuring energy is affordable and people can make the best energy choices remains a key goal of this Government.

We're responding to climate change as an economic opportunity to attract innovative new enterprises and high-value jobs and we will work collaboratively with Canberra's businesses on this long-term transition away from fossil-fuel gas.

The ACT Government's pathway to electrification is another step forward in Canberra's journey to be Australia's first net zero jurisdiction in 2045.

Andrew Barr MLA
Chief Minister and Minister for Climate Action

Foreword

One of the greatest challenges faced by governments across the world is managing the risks created by the effects of climate change and learning to build smart, climate resilient cities.

The ACT Government continues to lead the world in cutting emissions. In 2020, we achieved our target of 100% renewable electricity supply, making a significant cut in our greenhouse gas emissions. Now we are working on our two remaining highest sources of emissions; transport and fossil fuel gas use.

This position paper focuses on our work to transition the Territory away from gas use, to help reach our target of net zero emissions by 2045. It outlines the reasons for the transition, the analysis we have done so far and the considerations for community and business as we make this transition. Importantly, it sets out the next steps we will take in close consultation with industry, business, and the community.

This is a long-term transition and we are not turning off the gas network overnight. We have time to consider the challenges and opportunities carefully and develop solutions where required to ensure it is a just transition. Over the coming years, we want to better understand the specific barriers that consumers may face in transitioning to full electrification by 2045 in the places that you live and you work.

It is also a transition that will rely on the combined efforts of the entire ACT community over the coming decades. We are fortunate in the Territory to have such an engaged, informed and sustainability-conscious community.

I encourage all Canberrans to take time to consider what the shift away from fossil gas will mean for their homes and businesses and develop a transition plan that will work for them. I look forward to working together to make Canberra a world-leading net zero emissions city.

Shane Rattenbury MLA
Minister for Energy, Water and Emissions Reduction

Executive Summary

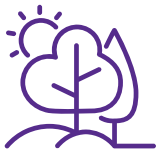
The ACT Government is committed to reaching net zero emissions by 2045. In 2020, we secured a nation-leading 100% renewable electricity supply for the ACT, which was a huge achievement for the Territory and a significant step towards net zero emissions. Our effort is now focused on reducing emissions from the two most significant remaining sources – transport and fossil fuel gas received through the gas network at our homes and businesses.

The ACT will transition away from fossil fuel gas use to renewable electricity, with the potential use of renewable gases for specific purposes where needed, by 2045. This Position Paper explores how the ACT Government have come to this decision and some of the key challenges moving forward.

This transition requires a coordinated and planned approach to be completed over the next 22 years to maintain a secure, affordable and reliable energy supply across the ACT. To guide this transition, the government will deliver a new Integrated Energy Plan for the Territory by 2024.

The way we live as we move toward net zero emissions will change rapidly, with many benefits for Canberrans. Renewable electricity will be our primary energy source – replacing gas for heating and cooking and replacing petrol and diesel in our cars. Canberrans will save time and money by being able to charge their electric vehicles at home, and efficient electric appliances have lower running costs than gas alternatives. If we start working towards the transition now, Canberrans can make a plan to swap gas appliances for electric options when they are due for replacement rather than have to rapidly replace appliances earlier than necessary.

The key reasons for transitioning away from fossil fuel gas use are:



The environment

Fossil fuel gas is the second largest remaining source of emissions after transport (now that we have 100% electricity) in the ACT. It accounts for 20% of our overall emissions.

Costs

People are already transitioning away from fossil fuel gas. We need a plan to manage this change sustainably and responsibly in the best interests of consumers and the ACT.

Savings

The Government is offering incentives to switch from fossil fuel gas to electricity. Transitioning away from fossil fuel gas and using rooftop solar and battery storage will enable ACT energy consumers to save money.

The first step in the transition pathway has been detailed modelling work, which helped identify the best pathway for the transition. Several factors were considered such as:

- Costs to consumers
- The amount of emissions reduction that could be achieved
- What is currently technically possible
- The overall economic effects for the ACT.

The transition pathway means that over the next 20 years, the price of fossil fuel gas will increase over time, such that it will be in the interests of ACT energy consumers to gradually transition their homes and businesses off a fossil fuel gas supply at a time that is right for them.

For most Canberrans, this transition will be very similar to the introduction of digital TV or the phase out of leaded petrol – gas cooking, heating and hot water will be replaced with electric options when that household or business is in the market for a new appliance. However, the ACT Government recognises that this transition may be complex for households with lower incomes and for businesses where electric technology doesn't currently exist or it is too expensive to transition. The ACT Government will be investigating how best to support these groups to transition away from gas use at a time that is right for them.

Some key challenges we will need to address include:

The Integrated Energy Plan

The Integrated Energy Plan will set out the big picture for how the ACT will transition away from fossil fuel gas use, optimise our energy system, engage and support energy consumers, and establish collaborative partnerships with organisations across the ACT to support all this work.

It will include the gas transition pathway alongside community battery storage, electric vehicles, funding options to support electricity network upgrades, and renewable gas opportunities, among other projects, and demonstrate how all these aspects of our energy transition will interconnect.

The Integrated Energy Plan will be developed in a series of stages as the ACT energy sector transitions, technology improves, and we learn more about how we produce and use energy in the new environment.

Our journey to 2045

We are here

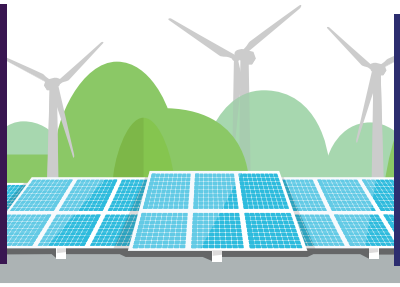
A variety of ACT Government programs and supports are already available to help consumers begin to transition to efficient electric appliances, and access rooftop solar PV and battery storage.

First Step

Find out what to expect during the transition and understand what key challenges and opportunities your home, business or industry might experience during the transition.

2023

Regulation to prevent new gas connections commences.



2022

Commence consultation on a regulation to prevent new gas connections for certain types of developments.

2023-2024

It's a good time to start to develop your own transition plan for your home using our personalised transition tool.

2024

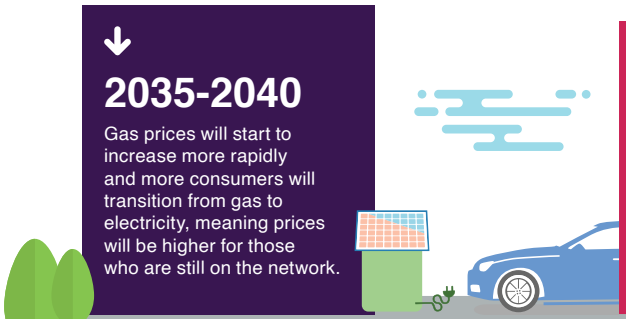
The ACT Government will release the first stage of the Integrated Energy Plan.

Over the next 5-10 years

More households and business consumers may start to replace their gas appliances with electric appliances when gas appliances stop working. It may take up to 15 years for some appliances.

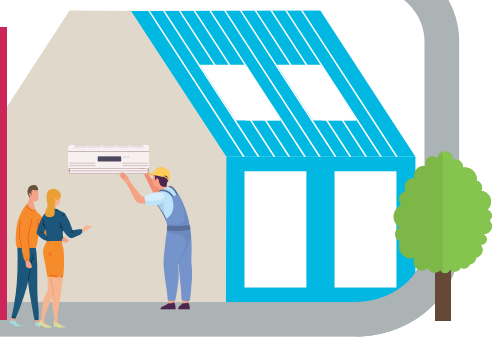
2035-2040

Gas prices will start to increase more rapidly and more consumers will transition from gas to electricity, meaning prices will be higher for those who are still on the network.



Within 15 years

You may start to abolish your gas connections once your final gas appliances are replaced. This means the connection is closed off and cannot be reconnected.



2040-2045

Remaining consumers who are still connected to the gas network will need to transition to electricity unless zero emissions alternatives are available.

2045

The ACT reaches net zero emissions.

PART ONE

Why is the ACT transitioning away from fossil fuel gas?

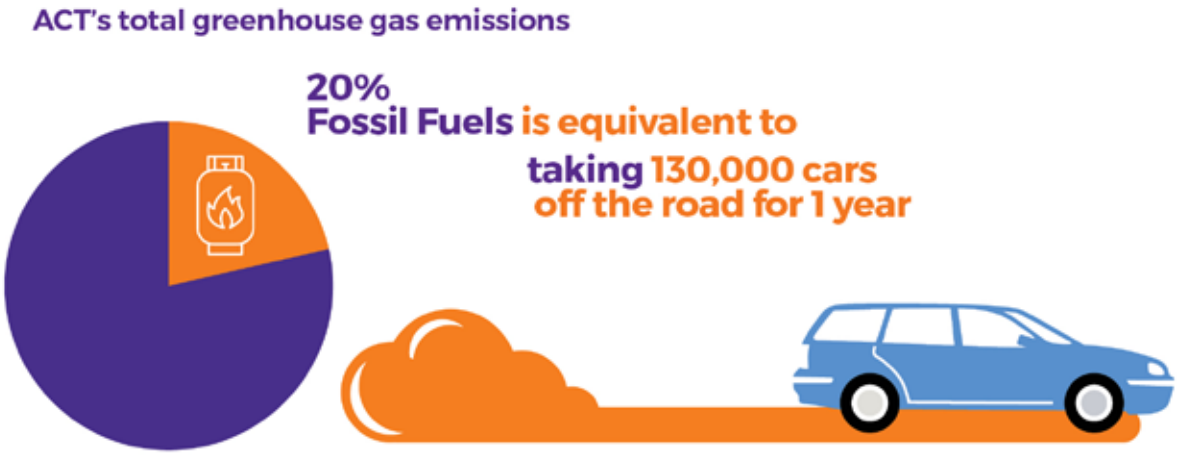
Government Policy

In 2019 the ACT Government released the ACT Climate Change Strategy 2019-2025, a strategy that outlines the next steps to reducing emissions in the ACT and increasing resilience to the impacts of climate change. This strategy includes actions to reduce emissions from fossil fuel gas, including developing a plan, by 2024, for achieving zero emissions from gas use by 2045.

In 2020, the Government reinforced its focus and attention on reducing emissions from fossil fuel gas by including a range of commitments in the Parliamentary and Governing Agreement for the 10th Legislative Assembly for the Australian Capital Territory (Parliamentary and Governing Agreement), which sets out the government's commitments for the current term.

These commitments include legislating to prevent new gas connections in greenfield residential developments in the ACT and commencing a project to advance all-electric infill developments, with a goal of no new gas connections to future infill developments from 2023.

Fossil fuel gas use accounts for about 20% of our current emissions and finding a way to reduce those emissions is a complex challenge. While our renewable electricity supply has been able to be secured largely through direct government action by contracting with renewable energy generators, reducing emissions from gas use will be something the entire ACT community needs to work towards together over the coming decades.



Consumer trends

While reaching our emissions reduction target is an important priority, the other key reason for the transition is that this change is already underway.

Technical and economic modelling showed that gas usage will decline by 2.5% a year through to 2045, a decline of around 57% mainly due to falling gas consumption per connection, as well as a projected steady decline in connections from 2023. Many new builds are already opting for an all-electric energy supply as the retail bills are on average less expensive per year, particularly when the gas connection fee is factored in.

We also know that gas prices have increased significantly and are a substantial component of the cost of living. Retail gas prices increased by 100% in real terms over the period from 2000 to 2020 and real gas prices for ACT residential customers increased by around 25% in the period 2016-2021. Gas prices will continue to increase, primarily due to external factors because our gas prices are linked to the international market.

Because of this, we also know that transitioning to an all-electric energy supply is going to help many households in the ACT to save money in the coming years, particularly when combined with rooftop solar PV and battery storage. There will be a smaller group of consumers who will not be able to achieve a cost saving due to the nature of their home, for example some apartments where there are difficulties installing rooftop solar. There are a range of government programs available to assist with the up front costs. A carefully considered plan for the gas transition is critical for managing the transition and making the change as efficient and low cost as possible.

The ACT's gas transition will be a key part of a new Integrated Energy Plan for the ACT, which will set out the pathway for us to maintain a secure, reliable, and increasingly sustainable entire energy system into the future.

The ACT Government's journey to net zero emissions

2010

- Legislated emissions target

2011

- Release sustainable energy policy

2012

- First reverse auction
- Release ACT Climate Change Strategy and Action Plan 2

2018

- Updated legislated emissions targets

2019

- Release ACT Climate Change Strategy

2020

- Reaffirm climate ambition in Parliamentary and Governing Agreement
- ACT Achieves 100% renewable electricity

2021

- Gas Transition Taskforce established
- Undertake technical and economic modelling of electricity network

2022

- Government commits to an electrification pathway

Understanding how we produce and use energy in the ACT

According to the Australian Energy Regulator (AER), in Quarter 2 of 2021-22, electricity and gas customer numbers in the ACT were as listed below.

Total gas users in the ACT Q2, 21/22	131,550
Total ACT residential gas customers Q2, 21/22 (per the AER)	127,827
Total ACT small business gas customers Q2, 21/22	3,559
Total ACT large gas customers Q2, 21/22	164

Electricity users in the ACT Q2, 21/22:	
TOTAL	201,870
Residential	186,676
Small business	13,259
Large	1,935

Despite our high energy use, in terms of the cost per unit of energy, the ACT's Evoenergy networks are really good compared to networks in other jurisdictions.

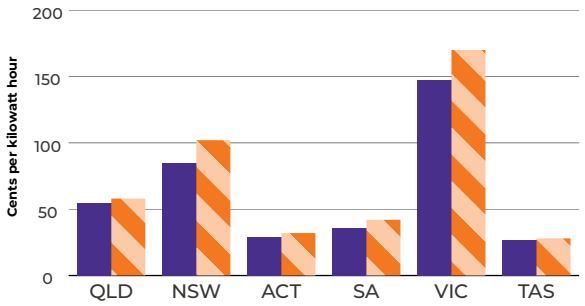


Figure 3: Residential electricity median market and standing offer prices compared to other jurisdictions

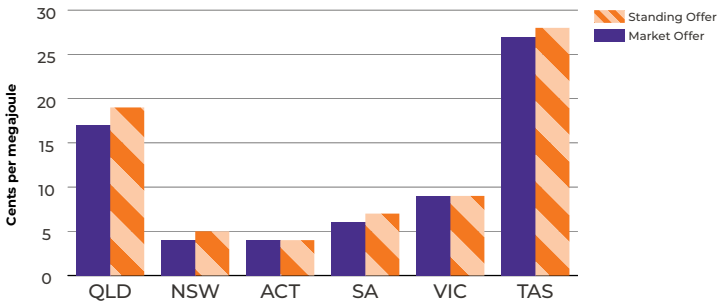


Figure 4: Residential gas median market and standing offer prices compared to other jurisdictions

Since 2015-16, we have seen a decreasing trend of households having a gas connection as well as an electricity connection, but interestingly, for small business and large customers, there has been a slight increase in recent years.

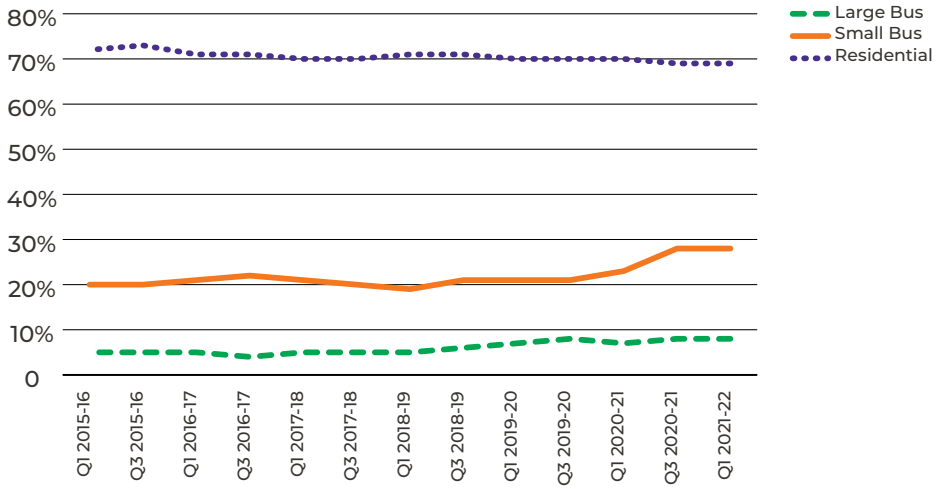


Figure 5: Percentages of ACT electricity customers who are also gas customers

Although our large customers use quite a bit of fossil fuel gas, they do not use anywhere near as much on average as large customers in NSW.

Our 100% electricity supply is largely provided through around 840 MW of contracts with eleven different wind and solar farms in the ACT, NSW, Victoria and South Australia, plus around 181.45 MW of rooftop solar, and the ACT's share of the Commonwealth's Large-scale Renewable Energy Target (LRET). We also have small-scale biogas extraction that is used to generate electricity. Our fossil fuel gas supply is provided from interstate.

PART TWO

The preferred pathway and how we got here

The ACT Government is moving to an electrification pathway to transition away from fossil fuel gas. Research to date shows that electrification provides a low-cost transition option, with mature and emerging technology already available for many consumers. The electrification pathway will be supported by continued growth and uptake of household and business solar PV systems and battery energy storage, as well as increased energy efficiency of buildings and appliances.

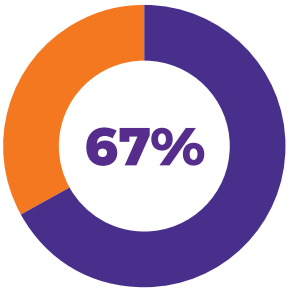
Electrification is and will be the most cost-effective option for many energy consumers, however the pathway will include investigating the use of renewable gases, like hydrogen and biomethane, for specific uses where electrification is not an appropriate option. This pathway has been informed by detailed modelling work, consumer insights and research to date.

Consumer insights

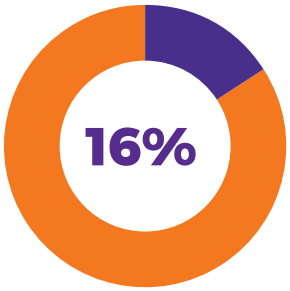
We have been listening to our community on how they feel about using electricity and fossil fuel gas. In February 2022, we surveyed 1900 Canberrans through our YourSay Community panel about their perceptions of gas. There was broad awareness that electricity was a more environmentally friendly energy source than gas, where the electricity is generated through renewable sources.

- 67% of respondents use mains gas in their house, predominantly for water heating, cooking and home heating.
- In just the last 2 to 3 years, 16% of respondents had replaced a gas-powered appliance with an electric equivalent, reflecting a gradual transition and preference for electric appliances.
- The main reasons were that it was the right thing to do for the environment, better energy efficiency, and that it will save them money in the long term.

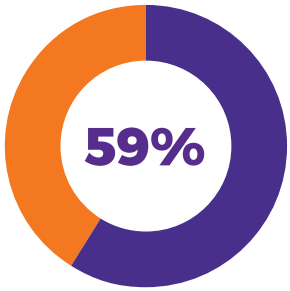
Household Situation



Currently have gas in the household



Have switched a gas to electric appliance

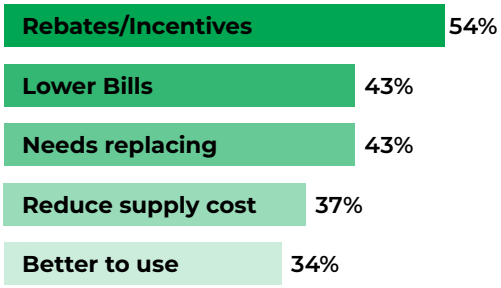


With gas considered transitioning

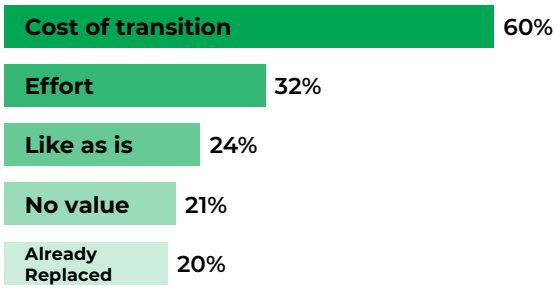
The survey also provided insights as to why 35% of households with gas have not considered switching from gas. Reasons ranged from:

- Having little choice because they were renting or living in an apartment
- Personal preferences for cooking with gas
- Having no need to replace appliances in good working condition
- Not seeing any benefit or incentive to transition

Top Motivators to Transition



Main Barriers to Transition



The findings of this survey help us to understand people's preferences for using gas and electricity and understand the reasons behind people's choices. As we develop the Integrated Energy Plan, these findings as well as additional engagement, will assist in the development of measures to support people in shifting to electric appliances.

Analysis of consumer segmentation research commissioned in recent years by Energy Consumers Australia has indicated that around 30% of ACT consumers face barriers to making changes to their energy supply and usage due to lack of opportunity or ability. We also know that for around 60% of our energy consumers, the biggest barrier is motivation. This means that while there is a significant group of more vulnerable consumers who will need support to make the transition away from fossil fuel gas, the majority of consumers across the Territory are able to make the transition, but need to understand why it would benefit them, and may also need advice on choosing the best time for their household or business to transition.

Government gas transition

Government operations account for around 7% of total fossil fuel gas emissions in the ACT. The ACT Climate Change Strategy 2019-25 aims to demonstrate leadership in the gas transition in the Government's own operations. Government is pursuing a 33% reduction in its own emissions with a target of net zero by 2040.

As part of the ***Parliamentary and Governing Agreement***, ACT Government is ensuring that all new ACT Government buildings and facilities are fossil-fuel-gas free, including new leases. In addition, all retrofits of Government facilities have the goal of net-zero emissions post retrofit. Under the Strategy, Government is also establishing pathways to net zero ACT Government schools and hospitals. The ACT now has three all electric schools: Margaret Hendry (Taylor), Evelyn Scott (Denman Prospect) and Throsby.

Government currently manages a Social Cost of Carbon (SCC) Fund at an interim price of $20 per tonne of emissions from government operations. The SCC funds are invested in measures to meet Government emissions reductions targets. In 2021-22 SCC funding of $1.34m was used to support the electrification of three Government facilities.

Our technical and economic modelling

In 2021, the ACT Government engaged GHD Pty Ltd and ACIL Allen to model the impacts to the electricity network and broader ACT economy of different approaches to the gas transition. This was done in two stages. The first stage was to model what the ACT's energy future would look like based on the ACT Government's existing and committed policies and also expected market trends. This is what we could expect our energy needs to look like if we made no further changes to our policies and no further specific efforts to transition away from fossil fuel gas.

The second stage was to model a number of scenarios to test the impacts of different transition approaches such as costs to consumers, the amount of emissions reduction that could be achieved and by when, what is currently technically possible, and the overall economic effects for the ACT.

Retail price impacts of the gas transition

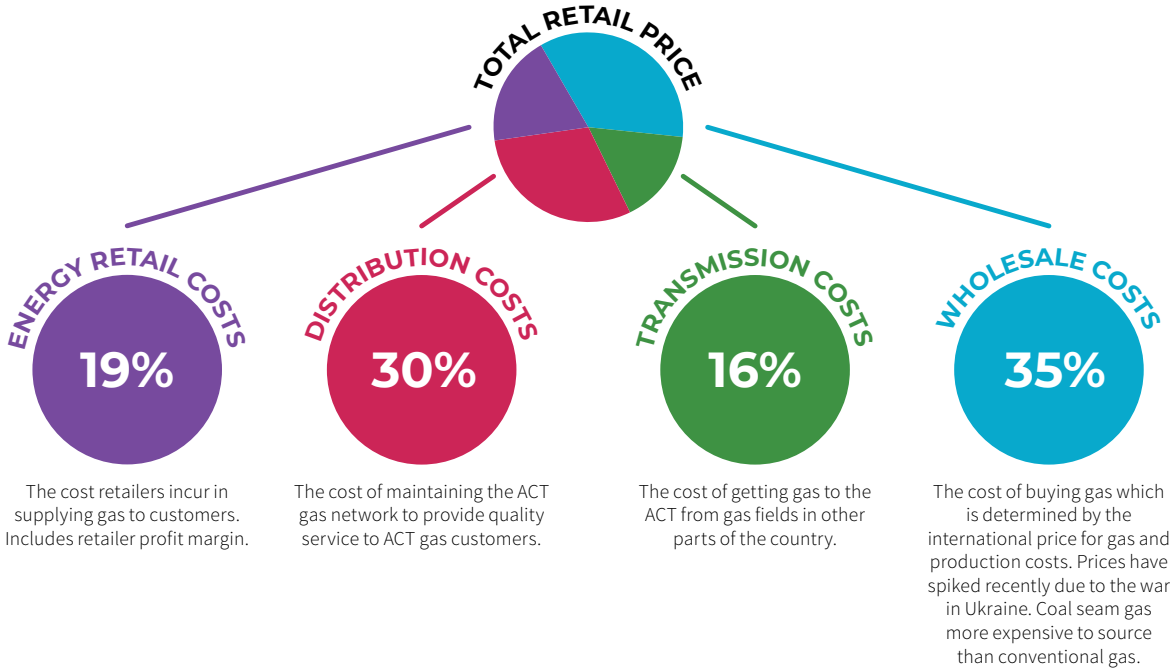
GHD modelling shows that retail gas prices are expected to increase by around 19 per cent over the period 2022-2029, adding approximately $220 to the annual gas bill for the average household in 2029. The overwhelming drivers of gas price increases over this period will be the international price of gas (wholesale costs) and the cost of maintaining and moving gas through the ACT gas network (distribution cost). The electrification pathway has a minor impact on the gas distribution costs component of the gas price. Modelling by GHD demonstrates that the pathway is not expected to have a material impact on household energy prices over the period 2022-2029.

Further information on retail price impacts is provided in this Gas transition factsheet.

Average Use

Sam's household uses gas for heating, instant hot water and cooking. Sam uses around 35GJ of gas a year, which is in line with average ACT residential gas use. This year, Sam's gas bill is expected to be around $1,165 . If Sam still has the same appliances in 2029, and assuming their household use remains unchanged, Sam's gas bill is likely to be $1,385 - an increase of $220 for the year. (The cost is primarily driven by rises in the gas distribution and wholesale costs, and not related to the electrification pathway).

What drives the price of gas?



The cost retailers incur in supplying gas to customers. Includes retailer profit margin.

The cost of maintaining the ACT gas network to provide quality service to ACT gas customers.

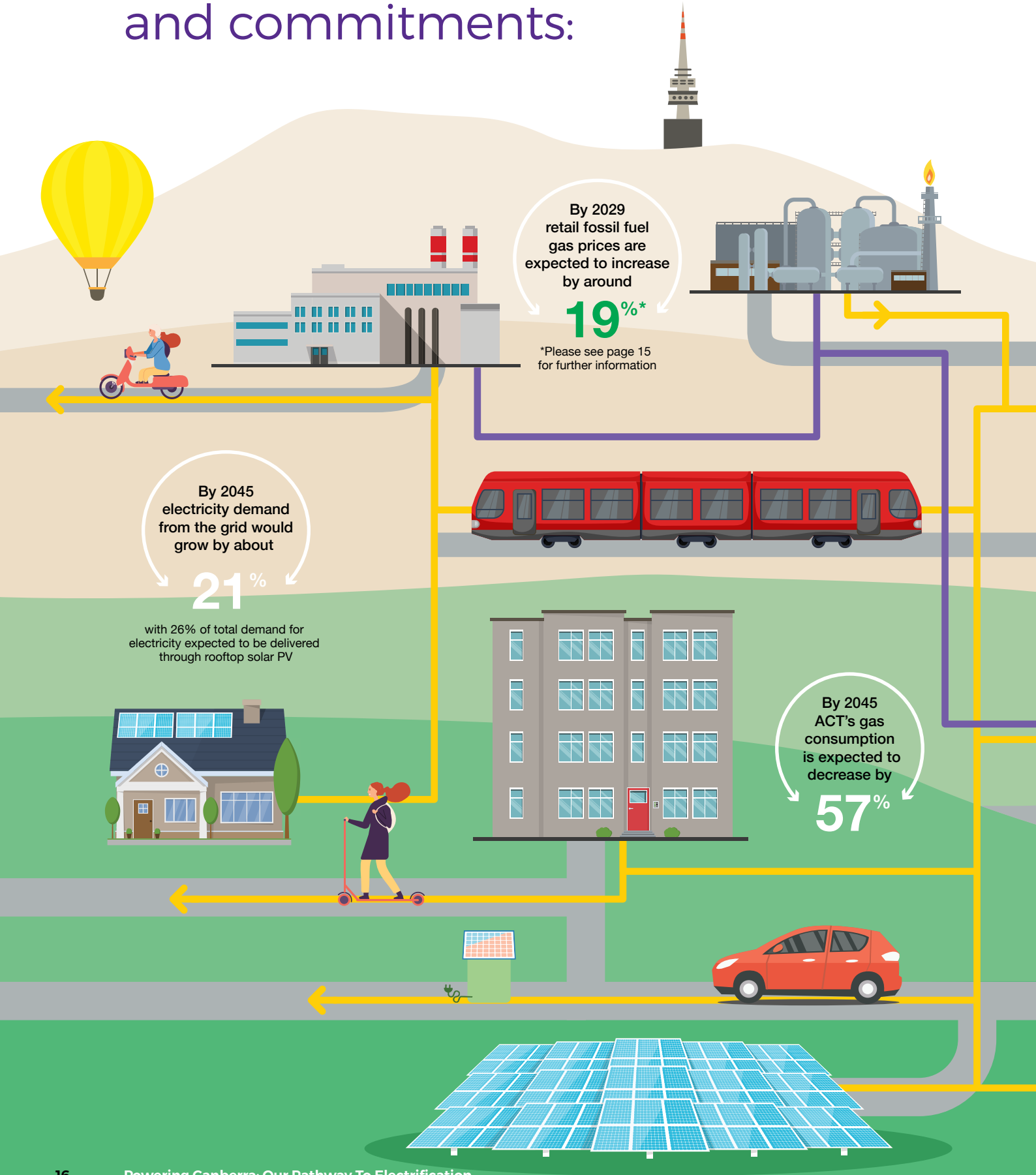
The cost of getting gas to the ACT from gas fields in other parts of the country.

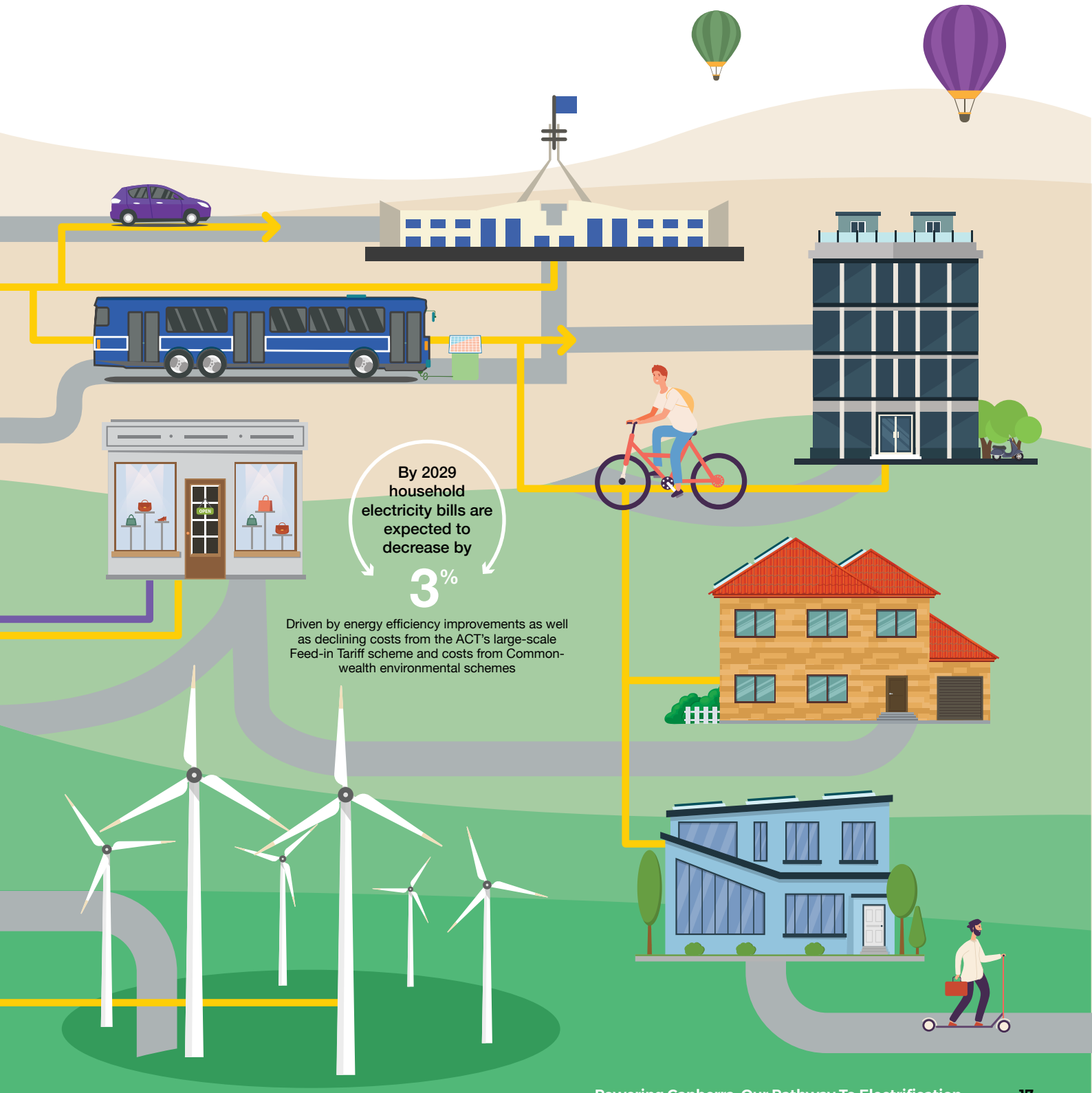
The cost of buying gas which is determined by the international price for gas and production costs. Prices have spiked recently due to the war in Ukraine. Coal seam gas more expensive to source than conventional gas.

Where do our current policies get us?

The modelling of what our energy future would look like when the Government has implemented all of the *Parliamentary and Governing Agreement* commitments for a fossil fuel gas transition provided some important insights about energy usage and costs.

A snapshot of our energy future with current policies and commitments:




By 2029 household electricity bills are expected to decrease by
3%
Driven by energy efficiency improvements as well as declining costs from the ACT's large-scale Feed-in Tariff scheme and costs from Common-wealth environmental schemes

What these results tell us is that regardless of what we do next, a large portion of gas users in the ACT will be transitioning away from fossil fuel gas use over the coming few decades, and as people use less gas, this will drive up prices. When we pay for our gas supply, a part of our bill is actually paying to maintain the network that delivers the gas to our homes and businesses. If there are fewer connections, then the maintenance cost needs to be shared across fewer customers, meaning this part of their bill will increase, which will encourage more people to disconnect from gas and further increase costs for those who want to stay connected to the gas network.

What about other scenarios?

We looked at whether the ACT would be better off with a centralised energy model which is what we currently have, or a decentralised model, where there is greater uptake of Distributed Energy Resources (DER), such as household and business solar PV and battery energy storage.

Centralised model versus decentralised model

In the more decentralised model, consumers would have greater control over their energy supply while still being able to draw electricity from the grid when needed. This scenario sets out a quicker pathway to achieve zero emissions from gas use, however the costs to consumers and the Territory would outweigh the benefits.

Overall, the modelling told us that a move towards the more decentralised energy system with integrated DER would offer better overall outcomes for the ACT than maintaining the current centralised energy model.

Strategic use of DER will play a vital role in maintaining grid stability, reducing peak energy demand, network upgrades and consumer bills. It will also give consumers more control over their energy, as they will be able to produce and use their own electricity, meaning they will need to use less from the grid and be able to save money on their retail energy bills.

Impacts to the gas network

It is expected that gas will remain an important energy source until the mid-2030s, after which point rising costs will likely encourage more and more consumers to transition away from gas. From the mid-2030s, declining customer numbers and lower demand for gas may put pressure on the economic viability of the gas network.

ACT Government and Evoenergy (ACT's Gas Network operator) will work closely together to allow time for consumers to adjust to changes and ensure the ongoing security of energy supply. Evoenergy will also need to continue to maintain the gas network in accordance with a variety of legislation, regulation and technical codes, and will provide annual updates to the ACT Government on the gas network, including gas abolishment requests and non-consuming meter trends across the Territory.

With these arrangements in place, and based on current consumer trends, it is not currently anticipated that there will be any changes in the operations of the gas network in the next 10 years. There will be significant planning before any changes can occur, as well as plenty of notice and guidance provided.

Renewable gas still has a role to play

The ACT Government considered whether we could use renewable gases such as hydrogen or biogas to replace the ACT's fossil fuel gas supply, rather than full electrification. However, it isn't realistic for the ACT's entire fossil fuel gas supply to be replaced by a renewable gas alternative.

Why not? Our analysis has found there would be significant barriers. While the gas network and the appliances of existing customers wouldn't need to change if we transitioned to biogas, the largest barrier at present to the feasibility of biogas and hydrogen are the high costs associated with producing renewable gases at volume.

Hydrogen

A 2020 study commissioned by the ACT Government found that although small amounts of hydrogen may be safely blended with fossil fuel gas in our existing network, switching to 100% hydrogen is not currently achievable. Producing hydrogen requires a lot of electricity, and it would be far more efficient to use the electricity itself. Also, it would be very expensive to convert gas-connected properties to hydrogen only due to needing to replace appliances. While a lot of work is being done nationally on hydrogen, this is primarily focused on large-scale industrial uses and export opportunities, so there is limited potential for hydrogen use in the ACT at present.

There are currently significant challenges that would need to be overcome to transport high quantities of hydrogen safely from interstate, or to produce this within the ACT or nearby for use in the ACT. This is because of the large investment required in electricity generation and electrolysers to produce green hydrogen, or the investment in large chemical facilities and carbon capture and storage technology to produce blue hydrogen from fossil fuel gas through methane steam reformation.

Biogas

Biogas is another renewable gas option that has been considered. Like hydrogen, biogas is still quite expensive to produce. It also requires a lot of feedstock to make, which is made up of biodegradable waste materials, and there would be an insufficient supply of this in the ACT. Most biogas is also expensive to produce and demand would likely far exceed supply availability, putting further pressure on gas prices for consumers. The issue of limited feedstock is Australia-wide, so transporting it from interstate is not a realistic option.

Although renewable gases will likely have future uses in the ACT for certain industrial, transport and niche applications, they are simply not suitable to fully replace our fossil fuel gas supply. We need to base our plan around electrifying everything we are able to, with scope for renewable gases to be used for specific purposes in future.

2020 Green Gas Trading report

The July 2020 report, 'Green Gas Trading – A tool for a zero emissions ACT' commissioned from ITP Thermal by the ACT Government (refer to 'Further reading' below), noted that in 2018-19, there was demand for 7.1 petajoules (PJ) of fossil fuel gas in the ACT, representing 20% of our total energy demand. The ACT could produce 0.74 PJ of biogas from landfill gas, but if the garden waste currently composted was also converted into biogas, the biogas yearly potential would increase to 1.98 PJ.

In terms of green hydrogen, injection of up to 10% hydrogen into the existing distribution network was expected to require minimal alterations to the distribution system, and could be produced with the electricity from a 31 MW wind farm. However, to completely replace the ACT's fossil fuel gas supply with green hydrogen would require installation of a 1043 MW wind farm, which would be about seven times larger than the Capital Wind Farm near Lake George. A key recommendation from the report was that the ACT consider introducing a target of 10% renewable energy gas supply from 2025. The report's findings did not support that renewable gases could fully replace the fossil fuel gas supply in the ACT.

PART THREE

What will this mean for households and businesses?

Energy is an essential service and we know that consumers just want it to work so they can get on with their day without having to worry about it – so we will support consumers to make the gas transition as straightforward and easy as possible. It is also important to remember that we have two decades to make these changes. There is no need to rush.

Over the next 20 years the price of fossil fuel gas will incrementally increase over time, such that it will be in the interests of ACT gas consumers to gradually transition their homes and businesses off fossil fuel gas supply at a time that is right for them.

We are not asking households or businesses to transition before you're ready. We're asking you to consider making your next one electric. So, when your gas appliance needs replacement, this is the right time to switch to an electric appliance. While there is an upfront cost, you will save considerable money in the longer term and also contribute to reducing emissions.

Over time, your transition plan may span the replacement of:

- any gas heating appliances with efficient electric appliances
- any gas water heating appliances with efficient electric appliances
- any gas cooking appliances with efficient electric appliances, and
- any remaining gas-powered appliances with efficient electric appliances where possible

Once all your gas appliances have been replaced, you will also need to abolish your gas connection

The timing and choice of these steps is up you, but it is worth noting that gas prices are expected to continue to increase and your choice can save you money in the long run.

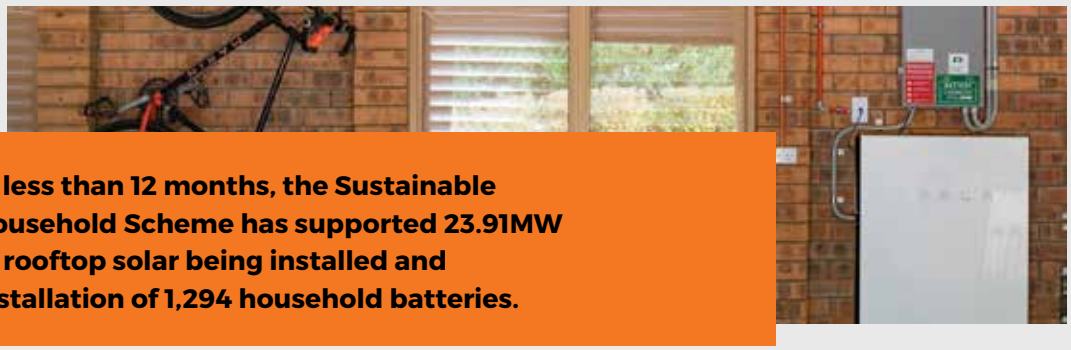
Some consumers may have replaced all their appliances, but not yet abolished their gas connection, and some consumers may have already transitioned from gas altogether. Other consumers, particularly in business settings, may have appliances that they will struggle to transition off gas for different reasons, although electric alternatives may become available in years to come.

The ACT Government published an ACT-specific study in 2020 'Household energy choice in the ACT' that looked at the economics of household fuel choices, finding that nearly all household types would be better off financially with an all-electric setup. The modelling has been updated with 2022 data and continues to show that transitioning away from fossil fuel gas would be a good choice for most households, particularly if they have solar installed.

Accessing Government supports for households

Sustainable Household Scheme:

The ACT Government's Sustainable Household Scheme aims to help households reduce their energy use and costs. The Scheme provides zero-interest loans of between $2,000 and $15,000 to eligible households, to help with the upfront costs of investing in energy efficient products and appliances for their homes. Products include rooftop solar, household battery storage, hot water heat pumps, electric cooktops, electric vehicle chargers and electric vehicles.



In less than 12 months, the Sustainable Household Scheme has supported 23.91MW of rooftop solar being installed and installation of 1,294 household batteries.

Around 90% of houses and units in the ACT are eligible for the Scheme, and landlords can also apply for the loans to make sustainable upgrades to their rental homes.

Home Energy Support Program:

Australian Pensioner Concession and Veterans' Affairs Gold Card holders may be able to get rebates of up to $5,000 for sustainable home upgrades though the Home Energy Support Program.

Next Gen Energy Storage Program:

The Next Gen program supports the development of the energy storage industry in the ACT, along with research and training. Rebates are available for eligible homes and businesses within the ACT to purchase a battery.

- For households, the rebate is $3,500 (excluding GST) or 50% of the battery price (excluding GST) – whichever is lowest.
- For businesses the rebate is $35,000 (excluding GST) or 33% of the battery price (excluding GST) – whichever is lowest.

Accessing Government supports for business

The ACT Government has a number of programs available to support businesses to become more sustainable.

Business Energy and Water Program:

The Business Energy and Water Program offers a 50% rebate, capped at $5,000 for eligible businesses to upgrade to more sustainable water and energy systems, and access to energy assessor workplace visit to create a tailored plan.

ACT Businesses are saving money

- **Cook IGA Friendly Grocer, a small supermarket located in the northern suburbs of Canberra, was able to save $1,000 a month in electricity**
- **Xchange on London, a restaurant/bar on London Circuit in Canberra's CBD, was able to cut $3,300 off its annual electricity bill.**

Solar for Business Program:

The Solar for Business Program helps businesses adopt solar energy through free tailored advice on the best rooftop solar system for the business, as well as advice on any Federal Government rebates that may be available.

Why is it important to abolish a gas connection?

When you've replaced all your gas appliances with efficient electric options and no longer use gas, you can either abolish your gas connection or just close your account. Closing a gas account involves a temporary disconnection (also known as "wadding") and is generally intended to stop gas consumption for only a short amount of time. Abolishing your gas meter physically removes the asset from your property. The service line in the street is then disconnected.

Many consumers are discouraged from permanently abolishing their gas connection due to the cost for this process. The current fee is around $770-$800 (including energy retailer fees and Evoenergy fees). The reason for this cost is the amount of work that needs to be done to permanently abolish the connection. By comparison, a temporary disconnection costs around $150, plus an administration fee, for a standard meter.

Safety

Failing to abolish the gas meter and disconnect the service line means that you have pressurised gas assets remaining on your property that need to be managed appropriately. Abolishing your gas meter when it is no longer in use removes the risk of the gas meter failing and leaking gas. It also removes the risk of a gas leak from any onsite excavation.

Cost to others

If you just close your account, your connection still needs to be maintained, and the cost of this is still passed on to all other gas consumers through the part of their bill that covers network maintenance.

PART FOUR

Key opportunities and challenges

Over the course of this long term transition, we will face different opportunities and challenges. In this immediate phase we are focussing on five key areas:

Supporting households with lower incomes and renters

Particular energy consumer groups, such as low-income and vulnerable consumers and renters, face greater challenges in managing their energy costs and being able to switch gas appliances to electric. A particular issue for renters is that they are limited in their ability to replace gas appliances without the cooperation of their rental provider, but they pay for the cost of gas, which will become increasingly expensive.

The ACT Government recognises the need for a 'just transition' as part of its climate change response. A key element of this recognition is that poorly insulated and energy inefficient homes contribute to higher energy bills and poor thermal comfort. The Home Energy Support Program offers financial and other support for Canberra's most vulnerable households to replace inefficient appliances and improve thermal efficiency. Participating households will benefit from reduced energy costs and improved wellbeing that comes from greater thermal comfort and gas transition.

Funding from the 2021-22 Budget provided rebates to support energy efficient home improvements for low income homeowners and existing community housing providers registered under the Affordable Community Housing Land Tax Exemption Scheme.

In 2022-23 funding for the program will continue with additional support for the introduction of the minimum energy standards for rental homes, and to expand the eligible products for low-income homeowner rebates.

According to the ACT Council of Social Services (ACTCOSS) over the last five years, Canberrans have seen the prices of several essential goods and services increase significantly and at rates above the overall CPI for Canberra and nationally. These include electricity (27.7% increase) and gas (26.2% increase). The report noted that over the past 20 years, electricity prices in Canberra have increased by almost 60%, while gas prices have doubled. [1]

Energy costs are comparatively higher for low-income households, as they have less income to cover their living costs. The AER's Annual Retail Markets Report data demonstrated that in 2020, a median market offer gas bill cost 1.33% of disposable household income for an average income household, but 3.05% for a low-income household. For electricity, the percentages were 1.53% and 3.60% respectively.

A September 2020 YourSay Community Panel survey found that more than four in 10 renters in Canberra cannot keep their home comfortably warm, with three in 10 renters saying this was due to the cost of heating. Better Renting has also reported that cold housing contributes to at least 42 deaths each year in the ACT, with these deaths generally caused by cardiovascular or respiratory disease and that three factors can make someone more vulnerable to the health effects of cold; they are aged 65 or older, they have an increased need to heat their home (such as the home is not very energy efficient), or they have a reduced capability to heat their home (such as they have a lower income combined with higher utility costs).[2] They also found that 43% of ACT rental properties had the lowest possible energy rating of 0, while in comparison only 4% of properties for sale had this low rating and over half of properties for sale had an Energy Efficiency Rating (EER) of 5 or greater.[3]

The Energy Efficiency Improvement Scheme's Priority Household Target

The ACT Government's Energy Efficiency Improvement Scheme (EEIS) aims to encourage the efficient use of energy and reduce household and business energy use and costs. It requires large electricity retailers, who have more than a certain number of customers and sell above a minimum amount of electricity, to deliver activities that improve energy efficiency to households and small to medium-sized businesses. Eligible activities include insulation, lighting, efficient space heating and cooling systems and water heaters.

The EEIS also aims to increase opportunities for low-income households to reduce energy use and costs through a Priority Household Target, which means that 40% EEIS savings must be delivered in priority households. Priority households are defined as households in which at least one resident holds an eligible concession, are experiencing financial hardship or are residents of priority dwellings. These households are most affected by energy price rises, but least able to invest in efficient items and reduce their energy demand.

1 (ACTCOSS): August 2021 Cost of Living Report

2 Better Renting: August 2019 'Unsafe as Houses: Cold-housing deaths in the ACT' report

3 Better Renting: April 2018 'The efficiency of rental properties in the ACT' report

Transitioning complex buildings

While it will be fairly easy to transition most houses away from gas use, there will be buildings where this will be more of a challenge, such as some apartment buildings that use gas for heating, hot water and/or cooking. In these buildings, the structure of the building itself and its gas and electricity systems will be key to how easy or difficult it may be to transition, but factors such as body corporate arrangements may also present challenges.

Finding alternatives for specific gas requirements

In some instances, electric alternatives will not be a viable or cost effective option. It may be that there is no suitable electric replacement for a particular piece of equipment that a business needs to use. We know that where electric alternatives are available, challenges for businesses include the cost of new equipment, which in some cases may be higher for electric options, as well as the space required and whether there is enough electricity supply available. In many restaurants, there is also a preference for cooking with gas. There are new electric induction technologies being introduced all the time, but are not well promoted or known.

Opportunities for the workforce and the economy

The ACT Government also understands that the gas transition will be concerning for those working in the gas industry, such as gas fitters. Skills and job transfer will be an important part of the transition, as will identifying opportunities for new business opportunities, and the government will investigate options to support this throughout the transition. It is also important to remember that this will be a long-term transition, and homes and businesses will transition away from fossil fuel gas use over an extended period of time.

The future of the gas network

The ACT's gas network is a valuable community asset and has been assessed to be in good condition.

The distribution system network is owned by Evoenergy and operated by Jemena and consists of approximately 4,000km of pipeline and delivered approximately 8.2 PJ (2,274 GWh) in 2018 (43% of the total energy supplied). Assuming no further investment in the network, the value of the gas distribution system is likely to be approximately $88 million in 2045 (in current dollar terms).

Under current policy settings, the gas network is expected to remain an important energy source for the next 10-15 years and will remain economically viable until the mid-2030s. After this time the decline in customers and gas demand may put pressure on the economic viability of the network remaining in its current form.

There may be a range of alternative uses for elements of the gas distribution network that could be considered. These may represent innovative solutions that can guide other cities seeking to move away from fossil fuels. The ACT will work with industry and other stakeholders to consider alternative uses for the gas distribution network. These could include limited applications of green gases for niche applications, likely for specific industrial applications.

PART FIVE

What's next?

Now that the ACT Government have made a decision on the direction of the pathway we need to develop the best approach to implement it. This will be a long term transition that involves us all and we will engage the community on what they think are going to be the big issues and hear ideas on how we can best deliver this pathway over the coming years.

While our existing policies and programs provide a good foundation, further work needs to be done to examine the challenges and develop the best solutions. The next significant change will be the introduction of a regulation to prohibit new gas connections for certain types of new developments, including greenfield residential and urban infill developments.

ACT Government has established a Gas Transition Taskforce, as per the Government's commitment in the Parliamentary and Governing Agreement, to lead this work. The Gas Transition Taskforce responsibilities include:

- Lead the development of the Integrated Energy Plan
- Deliver existing government commitments, such as preventing new gas connections in greenfield residential and urban infill developments
- Identify and engage with groups and business sectors who will need additional support to transition and how to best support them
- Develop and deliver education and engagement programs to encourage consumers to transition to efficient electric appliances at a time that is right for them
- Assess the potential for a renewable gas network, including how it may be used for particular situations where solutions other than electrification may be needed
- Collaborate with stakeholder groups across the ACT, including property developers, gas fitters and Evoenergy, ACT's electricity and gas network operator

The transition pathway, and the broader Integrated Energy Plan that it will form part of, will be staged to manage the likelihood of changing circumstances over the coming decades. We expect that there will be changes and improvements in technology, how energy is supplied to and used by consumers, and appliances that will become available to businesses to replace currently gas-reliant options. As things change, we will review our plan and adapt to make sure we get the greatest possible benefit from those new opportunities.

How can I engage and provide feedback?

Our community is part of the solution. Your suggestions and feedback on how we can achieve this transition and the challenges we need to overcome are crucial to success.

The transition away from gas will affect everyone across the ACT: our households, businesses, industry, trades, developers, and community groups. We want to approach this transition responsibly and sustainably over the next 20 years. There will be community engagement activity over the coming years as we hear from you on what you think are going to be the big issues and how we can best deliver this pathway.

To provide your feedback, ideas, or concerns, please contact us:

Explore more about our pathway to electrification and learn about how you can begin your transition journey. Visit us at climatechoices.act.gov.au/poweringcanberra

Email us at gastransition@act.gov.au

Further reading

Green Gas Trading: A tool for a zero emissions ACT, ITP Thermal, July 2020
https://www.environment.act.gov.au/__data/assets/pdf_file/0005/1784318/Green-Gas-Trading-A-tool-for-zero-emissions-ACT.pdf

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https://www.environment.act.gov.au/__data/assets/pdf_file/0010/1784314/Electricity-and-gas-networks-in-the-ACT.pdf

Flame Out: The Future of Natural Gas, Grattan Institute, November 2020
https://grattan.edu.au/report/flame-out-the-future-of-natural-gas/

Regulating Gas Pipelines Under Uncertainty, Australian Energy Regulator, November 2021
https://www.aer.gov.au/networks-pipelines/performance-reporting/regulating-gas-pipelines-under-uncertainty-information-paper

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ACT Government